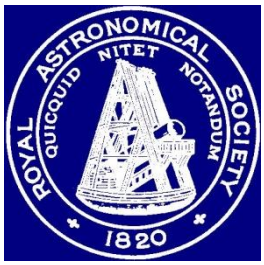

The Demographics and Research Interests of the UK Astronomy and Geophysics Communities 2016

September 2017

A report for the Royal Astronomical Society
by
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Executive Summary

The study followed the same methodology as that carried out in 2010. Questionnaires were distributed to university departments and research establishments to collect data about the staff and research students engaged in astronomy, solar system science, and solid earth geophysics research. 40 university departments/research groups and two research establishments returned the questionnaire. Data for a further 47 university departments and six other research establishment were taken from their websites. The number of questionnaire returns was comparable with 2010, but the web survey was significantly larger.

As in 2010 a second questionnaire, designed to collect detailed information about how individuals spend their time and what their research interests are, as well as demographic information, was made available to departments and research establishments as a link to the survey website. The link was also publicised by the Royal Astronomical Society.

Results from the departmental/research establishment questionnaires and web research show that:

- Astronomy is the most populous RAS research area within universities with 1301 full time equivalent (FTE) staff, followed by solid Earth geophysics with 766.5 FTE staff and solar system science with FTE 234 staff. 270 FTE staff were recorded as working in cross-disciplinary areas.
- As in 2010, there is a relatively high proportion of professors in all research areas in universities (49% of astronomy staff in universities on academic grades are professors, 41% of staff in solar system science, 40% of staff in solid earth geophysics, and 48% of staff in cross disciplinary areas).
- The number of researchers in universities (both those on fixed-term and open-ended contracts) has continued to rise. In astronomy and solar system science the 1993 survey recorded 362 researchers, rising to 524 in 2010, and to 599 in 2016.
- The total number of technical staff recorded in universities has risen from around 140 in 2010 to 208 in 2016.
- In universities 12% of professors, 18% of Senior Lecturers/ Readers and 29% of lecturers in astronomy are female, 21% of professors, 22% of Senior Lecturers/ Readers and 27% of lecturers in solar system science are female, and 9% of professors, 23% of Senior Lecturers/ Readers and 28% of lecturers in geophysics are female. It should be noted that the number for academic staff in solar system science is much smaller than in astronomy and solid earth geophysics leading to greater variation in the proportions of staff who are female at particular grades. Comparing the data for 2010 and 2016 shows that in most staff grade/research area categories the proportion of staff who are female has risen, the exceptions being senior lecturers/readers in solar system science and lecturers in solid earth geophysics. The proportion of staff who are female varies by research grade, and between the research areas within each grade. In line with other

university subjects, among the permanent academic grades, the proportion of staff who are women decreases with seniority.

- Astronomy, solar system science and geophysics appears to attract a higher proportion of women than physics, and in fact at lower levels attracts a higher proportion of women than might be expected, since only around 20% of entrants to A level physics are female.
- Across universities, in astronomy and solar system science the median age for research staff is 30-34 years and the median age for academic staff is 45-49 years. Among academic staff the median ages by grade are 35-39 years for lecturers (2010: 35-39 years), 40-44 years for senior lecturers/readers (2010: 40-44 years), and 50-54 years for professors (2010: 55-59 years). Compared to 2010, the permanent academic staff and the research staff are on average slightly older. As in 2010, the proportion of staff who are female falls with age.
- The numbers of PhD research students in universities and research establishments were 1112 in astronomy, 177 in solar system science and 625 in solid earth geophysics. 99 research students were recorded as working in cross-disciplinary areas. 66% of research students are full-time and domiciled (permanently resident) in the UK and just 4% are studying part-time. The proportion of women is 27% among UK-domiciled students and 39% among non-UK domiciled. The data suggest that most students complete their studies within 4 years.
- The total full-time equivalent sizes of the respective communities (staff and students) are 2437 in astronomy, 429 in solar system science, and 2050.5 in solid earth geophysics. The equivalent of 381 members of the community have cross disciplinary interests. The calculated sizes of all the communities has increased but specifically the measured size of the solid earth geophysics community has increased significantly from 357.2 to 2050.5. This increase most likely reflects a more thorough assessment of the size of the community, in particular the geophysicists working in research establishments, rather than a real increase.
- 79% of fixed-term researchers in astronomy and geophysics who left their roles, and for whom destinations are known, moved on to new roles within academia or research institutes.

999 individuals started the on-line individual questionnaire, and 903 respondents provided enough information for analysis.

Key results drawn from the data for permanent staff in universities and research establishments are:

- Among permanent staff 73% are British, 19% are from other European Union countries, 3% are from the USA, and 7% are from other countries. 88% of permanent staff specified their ethnicity as White. Considering only British respondents, 95% are White. Results from the 2011 census showed that 87.1% of the UK population were white.

- 95% of permanent staff who indicated their sexual orientation reported themselves as heterosexual or straight, 2% as gay or lesbian and 4% as bisexual. The figure for the whole population for comparison are 97.7% heterosexual or straight, 1.2% gay or lesbian, and 0.7% bisexual. The declared sexual orientation of the permanent staff respondents is broadly in line with the national data.
- 72% of permanent staff respondents who disclosed their religious beliefs stated that they had no religion/were atheists, and 27% reported that they were Christian. The 2011 census data for England and Wales, and for Northern Ireland and Scotland combined shows a very different pattern with 25.7% reporting that they had no religion. 59.5% of the population described themselves as Christian, 4.4% as Muslim and 1.3% as Hindu, and 2.2% other religions. Respondents to the survey were almost three times as likely as the general population to report that they had no religion.
- All grades of academic staff spend between 33% and 38% of their time on research activities. Lecturers, senior lecturers and readers spend more time on undergraduate teaching (between 26% and 34%) than professors (20%), and all staff spend around 10% on postgraduate teaching. The proportion of time spent on administration and on external professional activities increases with seniority. Staff spend about 5% of their time on public engagement and outreach. There has been relatively little change in the distribution of effort between 2010 and 2016.
- Outside universities, research staff report spending 60% of their time on research.
- 76% of permanent staff indicated that they have research interests in an *Astronomy* research area with 69% of the whole sample indicating an interest in *Astronomy and/or Astrophysics* and 7% indicating an interest in *Particle Astrophysics,* 29% indicated an interest in some aspects of *Solar System Science*, and 12% indicated an interest in *Geophysics*.

Key results drawn from the data for fixed-term postdoctoral research associates are:

- 48% of temporary/fixed-term postdoctoral research associates are British, and, of these, 97% of those who indicated their ethnicity are White. 33% of the sample are of other European Union nationalities and, like the British sample, 91% of those who indicated their ethnicity are White. Only 10% of the sample indicated that they hold citizenship from outside the European Union or the United States.
- 72% of the postdoctoral research associates who disclosed their religious beliefs stated that they had no religion/were agnostic, and 24% reported that they were Christian.
- 86% who indicated their sexual orientation reported themselves as heterosexual or straight, 4% as gay or lesbian and 4% as bisexual.
- 45% of postdoctoral research associates are funded by the STFC and 27% by the European Commission/European Research Council. 5% are funded by NERC.

- As in 2010, on average postdoctoral research associates spend 82% of their time on research activities which is more than double the proportion of time spent by permanent academic staff.

Key results drawn from the data for postgraduate research students are:

- Of the 246 postgraduate research students working in areas related to astronomy who specified their sex, 65% are male, 33% are female and 2% did not indicate their sex as other. These results are very like those recorded in 2010, when 65% were male and 34% female. Of the 33 respondents who indicated interests in geophysics, 22 (61%) are male and 14 (39%) are female.
- Overall, 69% of postgraduate research student respondents are British, 16% are from elsewhere in the European Union, and 2% are from the USA.
- 83% of postgraduate research student respondents who indicated their sexual orientation reported themselves as heterosexual or straight, 8% as gay or lesbian and 9% as bisexual. The declared sexual orientation of the survey postgraduate research student respondents suggests that a higher proportion is gay, lesbian or bisexual than the UK national population.
- 75% of postgraduate research student respondents who disclosed their religious beliefs stated that they had no religion, and 18% reported that they were Christian.
- Most British astronomy and solar system science student respondents (62%) receive funding from the STFC, 5% from the NERC, and 23% from their university or department. 41% of non-British students are supported by their host university and/or department, 27% by research councils, and 33% are self-funded. 11% of all students indicated that they have "other" sources of funding.
- The majority of solid earth geophysics research students are funded by NERC.

Considering the results for all respondents:

- Combining the data for permanent staff and postdoctoral research associates allowed the assessment of the proportion of total effort expended on each general research activity. 32% of effort is expended on *Theory and numerical modelling* and 34% on *Data analysis*, 10% on *Observation/Data Collection*, 12% on *Data reduction*, and 8% on *Instrumentation*, 1% on *Facility operation and maintenance* and 4% on *Other* activities. Activities are split 59%, 30% and 12% between *Ground-based*, *Space* and *Other* areas respectively. The pattern of activity is very much like that found in 2010.
- The astronomy community makes the greatest use of facilities at optical wavelengths, followed by facilities operating in the infrared and mm and sub-mm regions of the electromagnetic spectrum. Between 2010 and 2016 the main change was an increase in the effort on observations in, and analysis of data from, the mm and sub-mm regions

from 8% to 17% and a fall in the effort on the infrared region from 24% to 17%. Between 1998 and 2016 the main changes are a fall in the effort on the X-ray region from 20% to 9% and an increase in the effort on the mm and sub-mm region from 7% to 17%.

- Within *Astronomy* the most popular specific research areas were *Galaxies/Extragalactic; Stars; Cosmology; and Radio, sub millimetre, infrared sources or background which is the same order as in 2010.*
- Within *Solar System Science* the most popular research areas were *Solar Studies; Solar System — origin/evolution; Plasma physics; and Meteorites/Comets*. Within *Solid Earth Geophysics* the most popular research areas are *Seismology; Earth Structure*; and *Tectonophysics*.

Acknowledgement

I would like to thank all those who took the time to provide information about staff and research students in their departments and research establishments. I would also like to thank all those individuals who completed the on-line questionnaire.

Thanks are also due to those staff and members of the Royal Astronomical Society who helped and advised with this project. I would like to thank in particular Nush Cole and Robert Massey.

Sean McWhinnie
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1. Background

This report presents the results of a study of the Demographics and Research Interests of the UK Astronomy and Geophysics Communities carried out over the Summer and Autumn of 2016.

This study follows surveys carried out in 1988[1], 1993[2], 1998[3], 2003 and 2010.[4] Results of the 2003 survey were not published.

The current study, like that in 2010, comprised two parts. In the first part, departmental/group/institution heads were asked to complete a breakdown of staff working in astronomy, solar system science, and/or solid earth geophysics by grade, gender, age and broad research area. Heads were also asked about staff leavers and joiners in the last 5 years, and about the numbers of PhD students in their departments. The second part of the study collected data directly from individuals using an electronic web-based questionnaire. The questionnaire collected demographic details and asked for details of the research interests of individuals and how they divided their time between different aspects of their roles and between different research activities. Postdoctoral researchers and research students were also asked several questions about their career intentions. The analysis of these data will be presented in a separate report.

This report follows a similar structure to the 2010 report to allow comparisons between the datasets. Where appropriate comparisons are made between the 2016 and 2010 data.

1 A. Wilkinson, Quarterly Journal of the RAS, 1990, 31, 411-455.

2 A. Wilkinson, Quarterly Journal of the RAS, 1996, 37, 769-817.

3 C. Tadhunter, Astronomy & Astrophysics, Journal of the RAS, 2000, 41, 2.19-22

4 https://www.ras.org.uk/images/stories/ras_pdfs/Demographics%20and%20Research%20Interests%20of%20the%20UK%20Astronomy%20and%20Geophysics%20Communities%202010%20-%20Revised%202013.pdf

2. Methodology

As in 2010, a questionnaire was distributed to university departments and research establishments to collect data about the staff and research students engaged in astronomy, solar system science, and solid earth geophysics research (Appendix C). The questionnaire was a slightly modified version of that used in 2010 and was designed to find the grades, gender and age of staff, and details of those staff who had joined or left in the last 5 years. The questionnaire also collected data about the current cohort of research students.

The questionnaire was distributed by email to university departments and research establishments believed to have some research activity in the areas of interest. The list of departments and establishments was constructed by drawing together lists of departments contacted to participate in previous studies, by consulting with Royal Astronomical Society members, by consulting the Science and Technology Facilities Council (STFC) list of grants in astronomy, and by carrying out research on the internet. The full list of departments and research establishments that returned the questionnaire for university departments and research establishments is presented in Appendix B.

Where departments and research establishments believed to have research of interest did not return the questionnaire, their websites were consulted, and data on the numbers of staff and research students working in the broad research areas of interest were collected (Appendix B). For the most part, grades could be identified for staff in universities but grade information was, for all practical purposes, impossible to ascertain for staff working in research establishments.

It is also important to note that for staff data collected from websites, arbitrary decisions were made how to classify their research interests on the basis of the website entries, rather than through completion of the questionnaire by an informed person. Particularly in the case of geophysics, this is likely to have affected the numbers.

A second questionnaire (Appendix D) was designed to collect detailed information about how individuals spend their time and what their research interests are, as well as asking for demographic information. The questionnaire also included questions for postdoctoral researchers and research students about their motivations and career intentions.

The questionnaire was made available to departments and research establishments as a link to the survey website. In addition, the link was publicised by the Royal Astronomical Society.

It is not known whether all the departments and research establishments approached distributed the link to the survey, although we do know to which institutions those that responded are affiliated.

3. Results from the departmental and research establishment questionnaires

40 university departments/research groups and two research establishments returned the questionnaire. The figures for 2010 were 41 and four, respectively. Data for a further 47 university departments/research groups and six other research establishments were taken from their websites. In 2010 data for 27 further university departments/research groups and two other research establishment were taken from their websites.

The increased number of departments/research groups in 2016 compared to 2010 was in part because additional research groups had been established in the research areas of interest, and because additional research groups were identified by RAS members. The full list of university departments and research establishments are presented in Appendix B.

3.1 Staff numbers

Table 1 shows the numbers of staff working in the broad research areas under consideration, and staff working in cross disciplinary areas. The same data are presented in Figure 1.

Astronomy is the most populous research area within universities with 1301 full time equivalent (FTE) staff, followed by solid earth geophysics with 766.5 and solar system science with 234 FTE staff. 270 FTE staff were recorded as working in cross-disciplinary areas. Within research establishments, the most populous area is solid earth geophysics with 638 FTE staff. The other areas had relatively small numbers of staff. Astronomy had 110 staff in research establishments, solar system science had 18 staff, and 12 staff work in cross disciplinary areas.

The greatest proportion of staff in all research areas are fixed-term researchers,[5] the majority of whom will be postdoctoral researchers. In universities, 27% of staff are fixed-term researchers in astronomy, 17% are in solar system science, 22% in solid earth geophysics, and 14% are in cross disciplinary areas.

[5] Throughout section 3 it is assumed that the majority of fixed-term researchers are postdoctoral research associates.

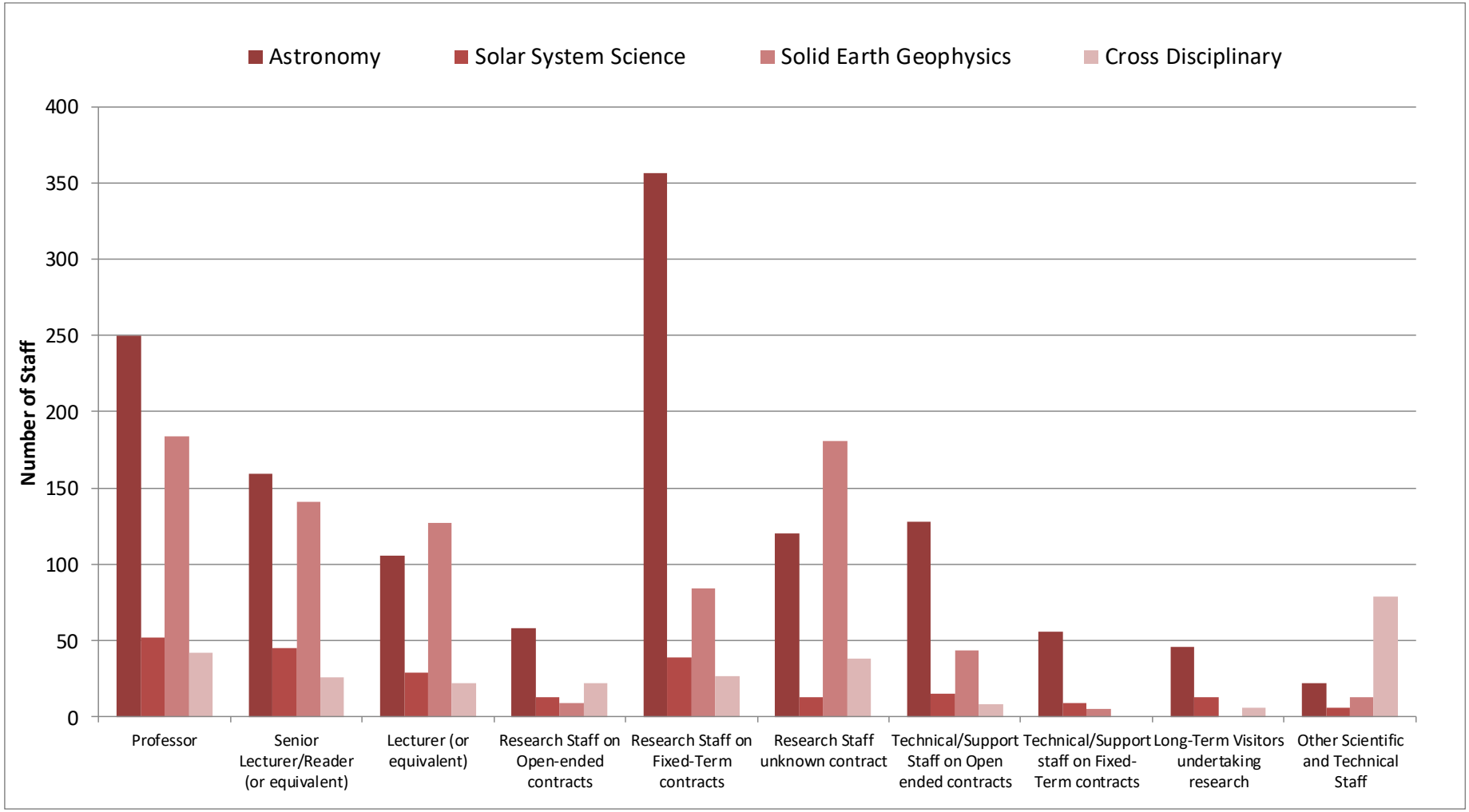

Figure 1: Total number of staff in post in universities with research interests in Astronomy, Solar System Science and/or Solid Earth Geophysics 2016

Table 1: Numbers (and proportions) of staff by grade working in universities and research establishments with research interests in Astronomy, Solar System Science and/or Solid Earth Geophysics in 2016

Position	Broad Research Area											
	Astronomy			Solar System Science			Solid Earth Geophysics			Cross Disciplinary		
	U	RE	Total	U	RE	Total	U	RE	Total	U	RE	Total
Professor	250 (19.2%)	6 (7.8%)	256 (18.6%)	52 (22.2%)	4 (22%)	56 (22.2%)	184 (23.4%)	9 (37.5%)	193 (23.8%)	42 (15.6%)	0 (0%)	42 (15.4%)
Senior Lecturer/Reader (or equivalent)	159 (12.2%)	6 (7.8%)	165 (12.0%)	45 (19.2%)	2 (11%)	47 (18.7%)	141 (17.9%)	1 (4.2%)	142 (17.5%)	26 (9.6%)	0 (0%)	26 (9.6%)
Lecturer (or equivalent)	106 (8.1%)	0 (0.0%)	106 (7.7%)	29 (12.4%)	2 (11%)	31 (12.3%)	127 (16.1%)	2 (8.3%)	129 (15.9%)	22 (8.1%)	0 (0%)	22 (8.1%)
Research Staff on Open-ended contracts	58 (4.5%)	0 (0.0%)	58 (4.2%)	13 (5.6%)	0 (0%)	13 (5.2%)	9 (1.1%)	8 (33.3%)	17 (2.1%)	22 (8.1%)	0 (0%)	22 (8.1%)
Research Staff on Fixed-Term contracts	356 (27.4%)	0 (0.0%)	356 (25.8%)	39 (16.7%)	0 (0%)	39 (15.5%)	84 (10.7%)	3 (12.5%)	87 (10.7%)	27 (10.0%)	0 (0%)	27 (9.9%)
Research Staff on Unknown Contracts	120 (9.2%)	12 (15.6%)	132 (9.6%)	15 (6.4%)	8 (44%)	17 (6.7%)	181 (23.0%)	0 (0.0%)	181 (22.3%)	38 (14.1%)	0 (0%)	38 (14.0%)
Technical/Support Staff on Open ended contracts	128 (9.8%)	53 (68.8%)	181 (13.1%)	13 (5.6%)	2 (11%)	21 (8.3%)	43.5 (5.5%)	0 (0.0%)	43.5 (5.4%)	8 (3.0%)	0 (0%)	8 (2.9%)
Technical/Support staff on Fixed-Term contracts	56 (4.3%)	0 (0.0%)	56 (4.1%)	9 (3.8%)	0 (0%)	9 (3.6%)	5 (0.6%)	1 (4.2%)	6 (0.7%)	0 (0.0%)	0 (0%)	0 (0.0%)
Long Term Visitors undertaking research	46 (3.5%)	0 (0.0%)	46 (3.3%)	13 (5.6%)	0 (0%)	13 (5.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	6 (2.2%)	0 (0%)	6 (2.2%)
Other Scientific and Technical Staff	22 (1.7%)	0 (0.0%)	22 (1.6%)	6 (2.6%)	0 (0%)	6 (2.4%)	13 (1.7%)	0 (0.0%)	13 (1.6%)	79 (29.3%)	2 (100%)	81 (29.8%)
Total staff of known grade	1301 (100.0%)	77 (100.0%)	1378 (100.0%)	234 (100.0%)	18 (100%)	252 (100.0%)	787.5 (100.0%)	24 (100.0%)	811.5 (100.0%)	270 (100.0%)	2 (100%)	272 (100.0%)
Scientific Staff (Unknown Grade)	0	33	33	0	0	0	0	614	614	0	10	10
Total Staff	**1301**	**110**	**1411**	**234**	**18**	**252**	**787.5**	**638**	**1425.5**	**270**	**12**	**282**

U - Universities, RE - Research Establishments

Consideration of the traditional academic grades of staff (professors, senior lecturers/readers, and lecturers) shows that, as in 2010, there is a relatively high proportion of professors in all research areas (49% of astronomy staff in universities on academic grades are professors, 41% of staff in solar system science, 40% of staff in solid earth geophysics, and 48% of staff in cross disciplinary areas). As in 2010, on average these figures are higher than the proportion of professors in the physics cost centre, which stood at 30% in 2015/16.[6] (The figures for physics include a proportion of astronomy staff). It should be noted that physics had the highest proportion of professors among the cost centres in the HESA data: the proportion of professors across all cost centres is 17%. The proportions of senior lecturers/readers and lecturers in physics were 24% and 45%, respectively.

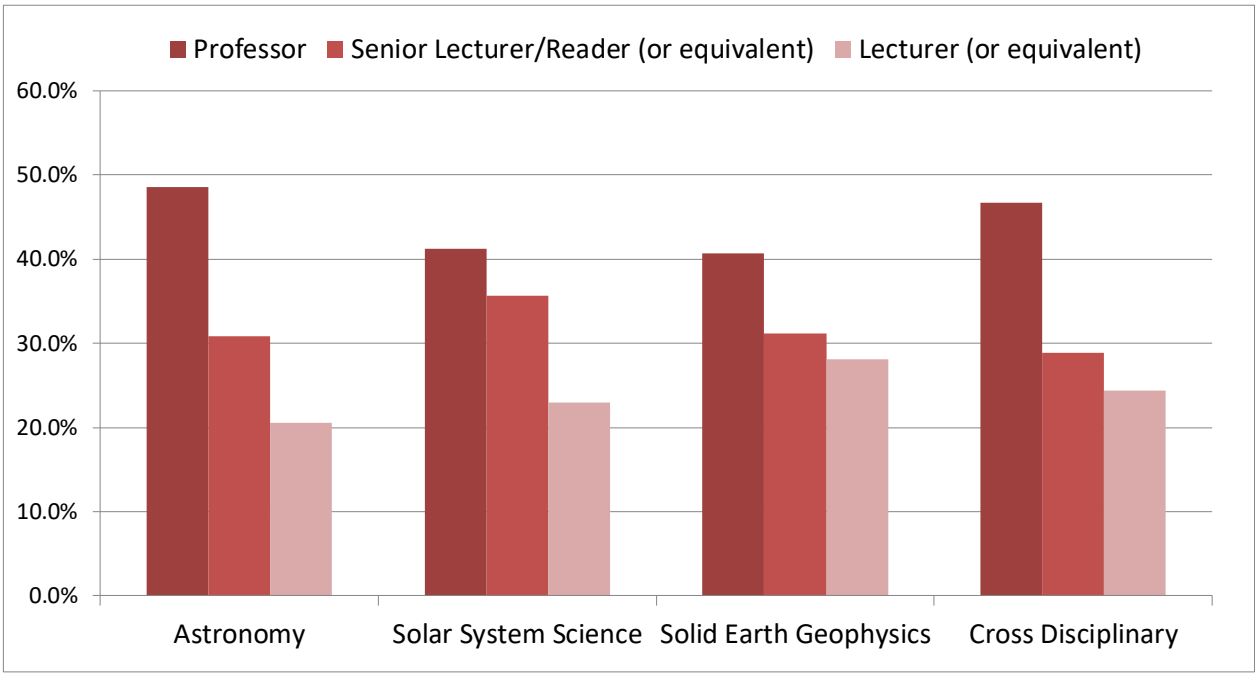

Figure 2: Proportion of academic staff at each grade in universities in each broad research area 2016.

Another indicator to consider is the ratio of research staff to academic staff in each research area. Considering only staff based in universities, the values for the ratio of research staff to academic staff for astronomy, solar system science, solid earth geophysics are 1.04, 0.52, 0.61, respectively (2010: 0.89, 1.08 and 0.45, respectively); the value for physics in 2014/15 was 0.69 - only two subjects had higher ratios than physics in 2014/15, clinical medicine at 0.99 and chemistry at 0.74. The data suggest that, relative to the number of academic staff, astronomy academic staff employ significantly more postdoctoral researchers than physics academics do overall.

[6] Higher Education Statistical Agency (HESA) Staff Data 2014/15

Table 2 presents data drawn from the 1998, 1993 and 2010 studies, together with equivalent data from the current survey, generated by combining the data for astronomy and solar system science. Although the data are not directly comparable some general trends are clear. The number of professors rose significantly between 1998 and 2010 and has continued to rise. The number of readers and senior lecturers has also continued to rise, and the number of lecturers has also risen having remained steady between 1998 and 2010. Overall the number of academic staff with research interests in astronomy and solar system science has risen from 292 in 1993, through 312 in 1998 and 514 in 2010, to 641 in 2016.

The number of postdoctoral researchers in universities (permanent, fixed-term and unknown contract type) has continued to rise and now stands at 599 compared to 524 in 2010. The ratio of research to academic staff in astronomy and solar system science has risen from 0.98 in 2010 to 1.07 in 2016.

The number of recorded technical staff has risen. 143 permanent and 65 fixed-term technical staff were recorded in 2016. However, it should be noted that identifying technical staff from university websites is difficult compared to identifying academic staff so changes in numbers may well be a function of the universities that returned their questionnaires. The number recorded is close to the number recorded in 1998 and higher than that in 2010.

Data for the research establishments are not directly comparable given that the number of establishments included in the 2010 survey was higher than the 2016 survey.

Table 2: Staff in astronomy and solar system science in 1993, 1998, 2010 and 2016*

Job Type	Number of staff			
	1993	1998	2010	2016
Staff in Universities				
Professors	77.5	98	231.7	302
Senior lecturers/Readers	99.5	97	165.5	204
Lecturers	114.7	117	117	135
Research Staff on Open-ended contracts	39.5	20	51	71
Research Staff on Fixed-Term contracts	322.7	412	473	395
Research Staff on unknown contract				135
Permanent technical	128.6	77	76	141
Fixed-term technical	106.7	137	62	65
Other	18.8	16	16	28
Total staff in Universities	908	974	1192.2	1476
Staff in PPARC/STFC establishments**				
Permanent scientific	246	89	75	73
Permanent Technical	109	201	6	55
Fixed-term scientific	28	55	8	0
Fixed-term technical	11	64	0	0
Total in PPARC/STFC establishments	394	409	89	128

* The figures presented for 1993 and 1998 are astronomy and Earth observation/atmospheric science combined. Data have been combined as appropriate to enable the earlier data to be comparable with 2010 and 2016 data. Note that long term visitors undertaking research have not been included in the totals.

** Data for 10 research establishments are included in 1993 and 1998 figures. Data for 5 establishments are included in the 2010 figures. Data for 3 establishments are included in the 2016 figures.

3.2 Proportion of female staff

Table 3 shows the proportions of female staff at each grade in each broad research area for 2010 and 2016, and Figure 3 shows the proportions of female staff at each grade in each broad research area for 2016. Data for "Long Term Visitors undertaking research" and "Other Scientific and Technical Staff" and that for cross-disciplinary areas are not presented as the numbers of staff are too small to allow a meaningful analysis.

The proportion of staff who are female varies by research grade, and between the research areas within each grade. In line with other university subjects, among the permanent academic grades, the proportion of staff who are women decreases with seniority.

In astronomy 12% of professors, 18% of Senior Lecturers/ Readers and 29% of lecturers are female, in solar system science 21% of professors, 22% of Senior Lecturers/ Readers and 27% of lecturers are female, and in geophysics 9% of professors, 23% of Senior Lecturers/ Readers and 28% of lecturers are female. Comparing the data for 2010 and 2016 shows that in most staff

grade/research area categories, the exceptions being senior lecturers/readers in solar system science and lecturers in solid earth geophysics, the proportion of staff who are female has risen. The contrast between the "pipeline" for solar system science with its relatively high proportion of professors who are female and astronomy and solid earth geophysics is interesting although it should be noted that solar system science has relatively few academic staff compared to the other two areas. Specifically, in astronomy there are 221 male and 29 female professors, in solid earth geophysics there are 188 male and 18 female professors while in solar system science there are 41 male and 11 female professors.

Table 3: Proportion of female staff in universities at each grade by broad research area 2010 and 2016

Grade	Proportion of female staff by grade in each research area							
	Astronomy		Solar System Science		Solid Earth Geophysics		Physics*	
	2010	2016	2010	2016	2010	2016	2010	2016
Professor	6.4%	11.6%	12.9%	21.2%	8.1%	9.8%	5.5%	10.9%
Senior Lecturer/ Reader	14.5%	18.2%	23.3%	22.2%	16.2%	22.7%	18.3%	14.1%
Lecturer	27.3%	29.2%	26.1%	27.6%	32.4%	27.6%		22.3%
All Academics	**13.5%**	**17.3%**	**19.9%**	**23.0%**	**16.5%**	**18.8%**	**14.1%**	**17.1%**
Research Staff on Open-ended contracts	11.1%	20.7%	14.3%	7.7%	16.7%	33.3%	18.8%	19.2%
Research Staff on Fixed-Term contracts	27.2%	27.5%	29.7%	33.3%	30.0%	40.5%		
Research Staff on Unknown Contracts		21.7%		13.3%		21.8%		
All researchers	**25.7%**	**25.5%**	**27.6%**	**29.2%**	**28.8%**	**34.3%**		
Permanent Technical/ Support Staff	30.2%	28.1%	15.4%	38.5%	21.7%	31.5%		
Fixed-Term Technical/ Support staff	20.8%	17.9%	42.9%	11.1%	0.0%	20.0%		

* 2010: HESA Staff Data 2009/10; 2016: HESA Staff Data 2015/16

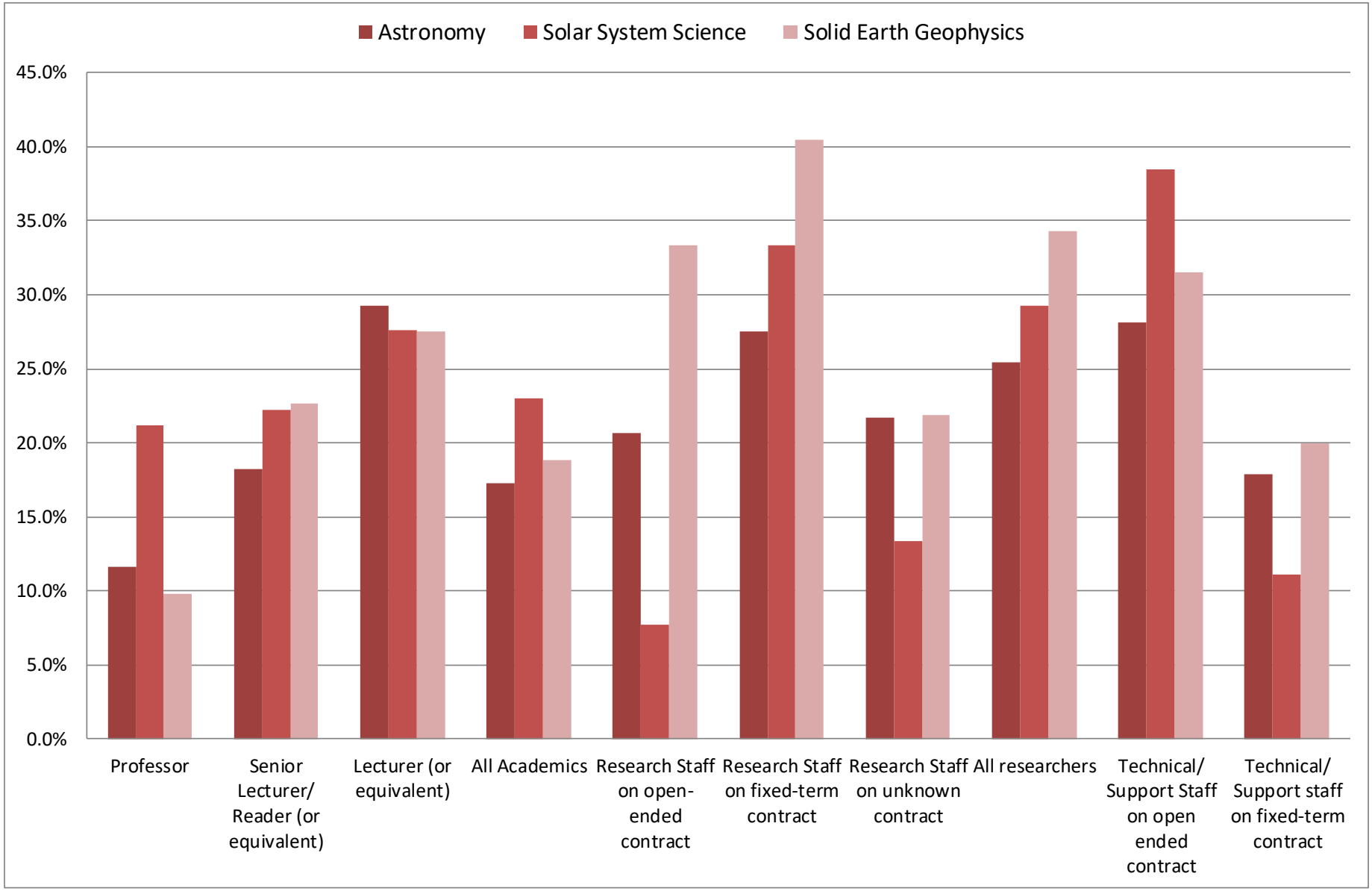

Figure 3: Proportion of female staff in universities at each grade by broad research area 2016

As noted in 2010, comparison with data for physics shows that in the research areas under consideration, the proportions of staff who are female are higher confirming that women are more likely to work in (academic) astronomy and geophysics than in physics.

The data confirm the 2010 conclusion that in common with all subjects the proportion of women is rising at all levels but that in astronomy and solid earth geophysics in particular there is significant "leakage" of women in moving from junior to senior grades. Astronomy, solar system science and geophysics appears to attract a higher proportion of women than physics, and in fact at lower levels attracts a higher proportion of women than might be expected since only around 20% of entrants to A level physics are female. It is notable that the proportion of professors who are female in Solar System Science is 21.2% which is notably higher than in astronomy, geophysics or physics in general.

3.3 The age of staff

University departments and research establishments were asked to break their staff data down by age. As in 2010, the number of staff in each 5-year age band was too small in solar system science and solid earth geophysics and in cross-disciplinary areas for meaningful analysis. The data presented below are for astronomy and solar system science staff in universities combined.

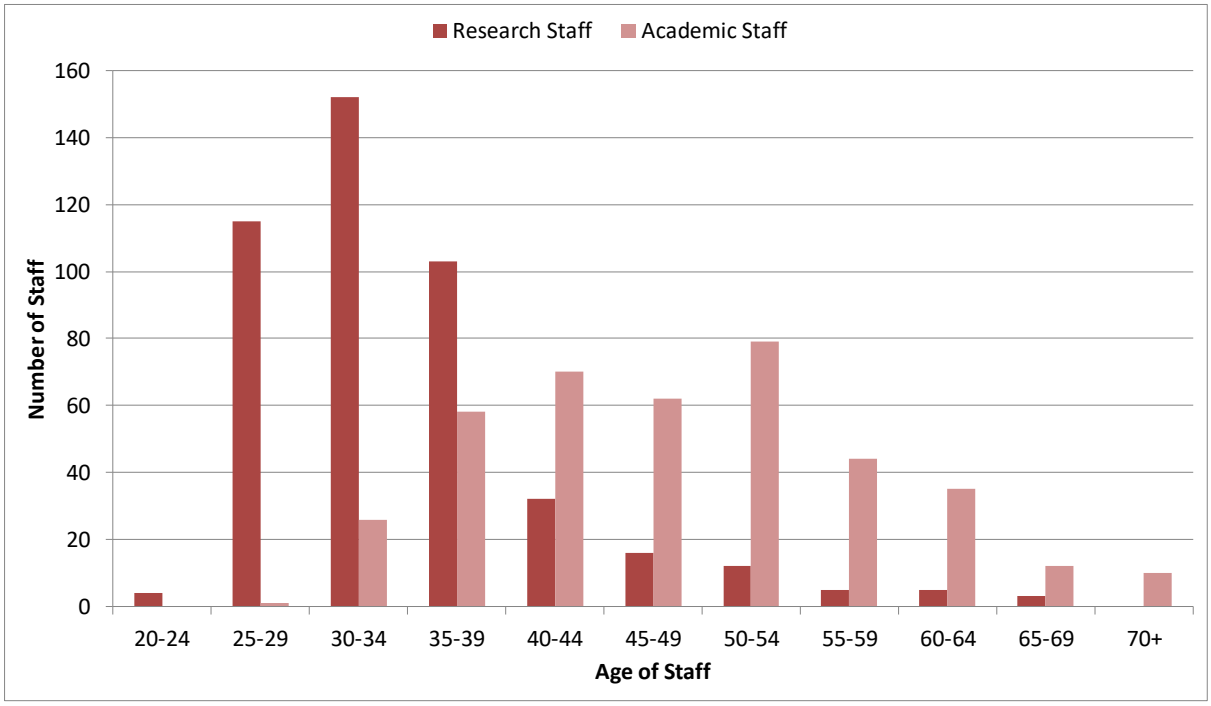

Figure 4: The age profiles of research and academic staff in university astronomy and solar system science 2016

Figure 4 shows data for the ages of research and academic staff in university astronomy and solar system science. As in 2010, the median age for research staff is 30-34 years. The median age for academic staff is 45-49 years in contrast to 2010 when it was 40-44 years.

The data in Figure 5 show the age profiles of staff in astronomy and solar system science by grade. The median ages for each grade are: 30-34 years for fixed-term research staff (2010: 30-34 years), 35-39 years for research staff on open-ended contracts (2010: 30-34 years), 35-39 years for lecturers (2010: 35-39 years), 40-44 years for senior lecturers/readers (2010: 40-44 years), and 50-54 years for professors (2010: 55-59 years).

Compared to 2010, the permanent academic staff and the research staff are on average slightly older.

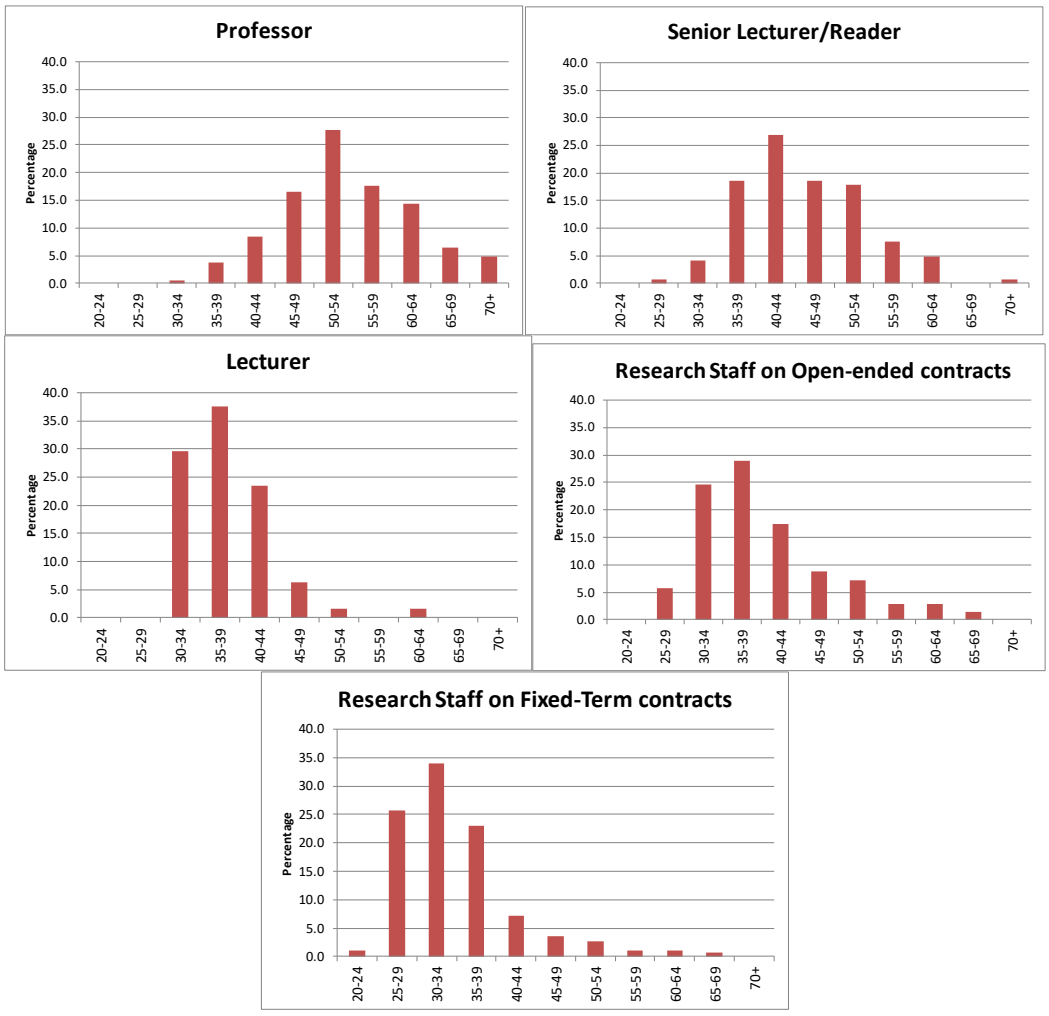

Figure 5: The age profiles of staff in astronomy and solar system science 2016

In 2010 the proportion of staff who are female fell with age. Data in Figure 6 and Figure 7 illustrate that in 2016 the proportion of research and academic staff who are female also falls as age increases.

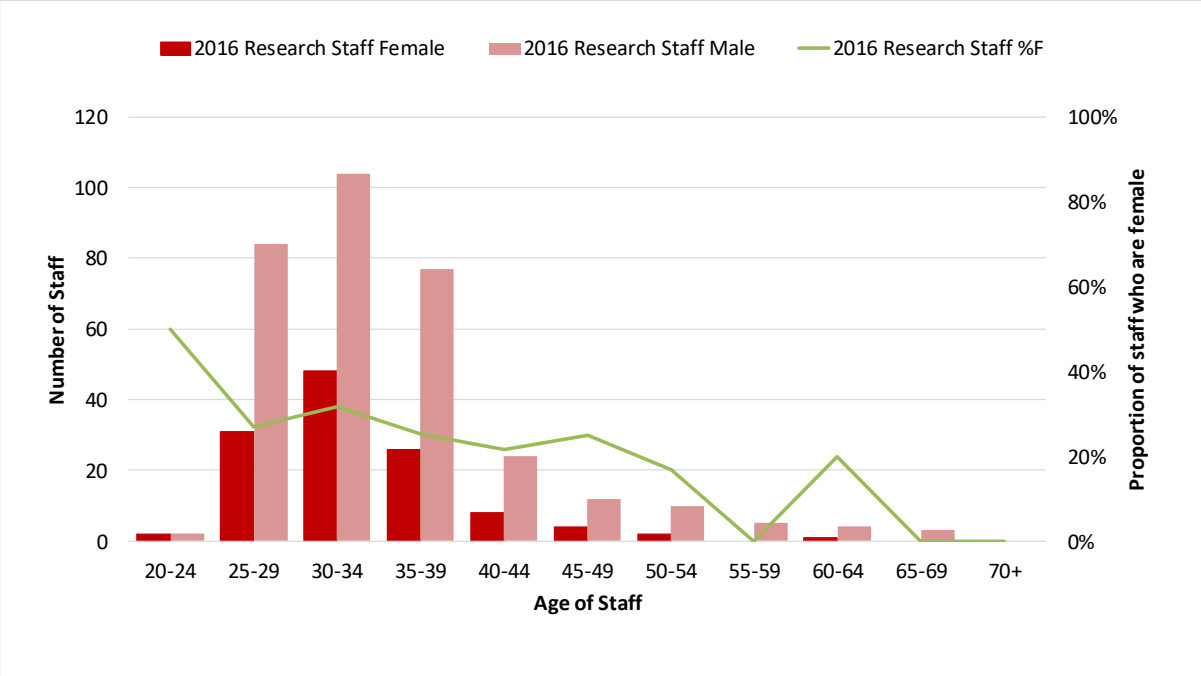

Figure 6: Numbers of research staff and proportion of research staff who are female by age in astronomy and solar system science 2016

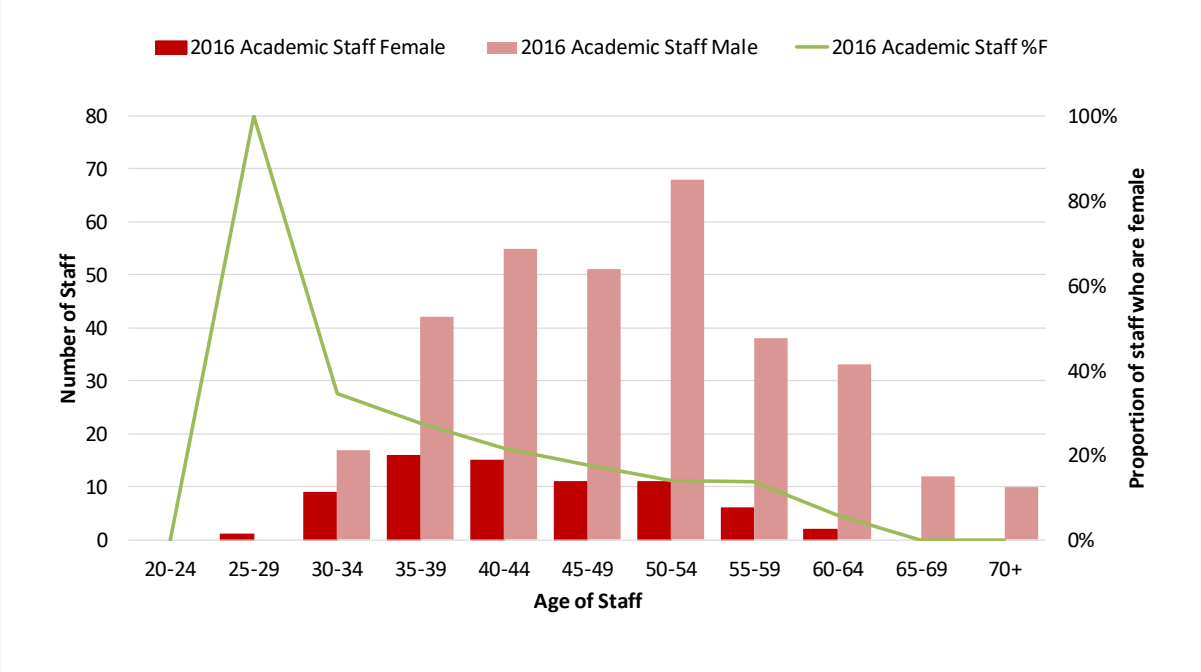

Figure 7: Numbers of academic staff and proportion of academic staff who are female by age in astronomy and solar system science 2016

3.4 Staff leaving and joining

Table 4 presents data on the leavers and joiners in the four broad research areas over the last 5 years. Data are only presented for the departments and research establishments that returned the questionnaires, so this is a sample of around 50% of the total staff cohort.

Table 4: Staff leaving and joining by broad research area over the previous 5 years 2016*

	Grade	Staff leaving			Staff joining			Net change		
		M	F	All	M	F	All	M	F	All
Astronomy	Permanent Academic Staff	39	9	48	66	21	87	27	12	39
	Research Staff on Open-ended contracts	28	4	32	27	11	38	-1	7	6
	Research Staff on Fixed-Term contracts	235	93	328	198	92	290	-37	-1	-38
	Research Staff on Unknown Contracts	2	4	6	0	0	0	-2	-4	-6
	Permanent Technical/Support Staff	8	8	16	6	8	14	-2	0	-2
	Fixed-Term Technical/Support Staff	5	6	11	4	7	11	-1	1	0
	Other scientific and Technical Staff	1	2	3	1	1	2	0	-1	-1
	Total	**320**	**130**	**450**	**302**	**140**	**442**	**-18**	**10**	**-8**
Solar System Science	Permanent Academic Staff	10	1	11	7	5	12	-3	4	1
	Research Staff on Open-ended contracts	4	2	6	5	4	9	1	2	3
	Research Staff on Fixed-Term contracts	57	16	73	53	12	65	-4	-4	-8
	Research Staff on Unknown Contracts	0	0	0	0	0	0	0	0	0
	Permanent Technical/Support Staff	1	0	1	1	0	1	0	0	0
	Fixed-Term Technical/Support Staff	6	1	7	11	1	12	5	0	5
	Other scientific and Technical Staff	5	2	7	0	1	1	-5	-1	-6
	Total	**83**	**22**	**105**	**77**	**23**	**100**	**-6**	**1**	**-5**
Solid Earth Geophysics	Permanent Academic Staff	6	1	7	17	12	29	11	11	22
	Research Staff on Open-ended contracts	1	2	3	2	1	3	1	-1	0
	Research Staff on Fixed-Term contracts	48	29	77	39	19	58	-9	-10	-19
	Research Staff on Unknown Contracts	0	0	0	0	0	0	0	0	0
	Permanent Technical/Support Staff	3	1	4	11	4	15	8	3	11
	Fixed-Term Technical/Support Staff	0	0	0	2	2	4	2	2	4
	Other scientific and Technical Staff	0	0	0	6	3	9	6	3	9
	Total	**58**	**33**	**91**	**77**	**41**	**118**	**19**	**8**	**27**
Cross Disciplinary	Permanent Academic Staff	1	0	1	1	2	3	0	2	2
	Research Staff on Open-ended contracts	1	0	1	2	0	2	1	0	1
	Research Staff on Fixed-Term contracts	3	2	5	6	3	9	3	1	4
	Research Staff on Unknown Contracts	0	0	0	0	0	0	0	0	0
	Permanent Technical/Support Staff	3	0	3	2	0	2	-1	0	-1
	Fixed-Term Technical/Support Staff	1	0	1	0	0	0	-1	0	-1
	Other scientific and Technical Staff	4	0	4	1	0	1	-3	0	-3
	Total	**13**	**2**	**15**	**12**	**5**	**17**	**-1**	**3**	**2**

* Data are presented only for those departments and research establishments which returned the questionnaire

The data suggest that in the departments for which data are available staff numbers have remained relatively stable at all grades over the last 5 years. As expected the largest turnover of staff is for fixed-term research staff. The largest changes have been increases in numbers of permanent academic staff in astronomy, and a fall in the number of male research staff on fixed-term contracts in astronomy. The data are in line with increases in the proportion of staff who are female.

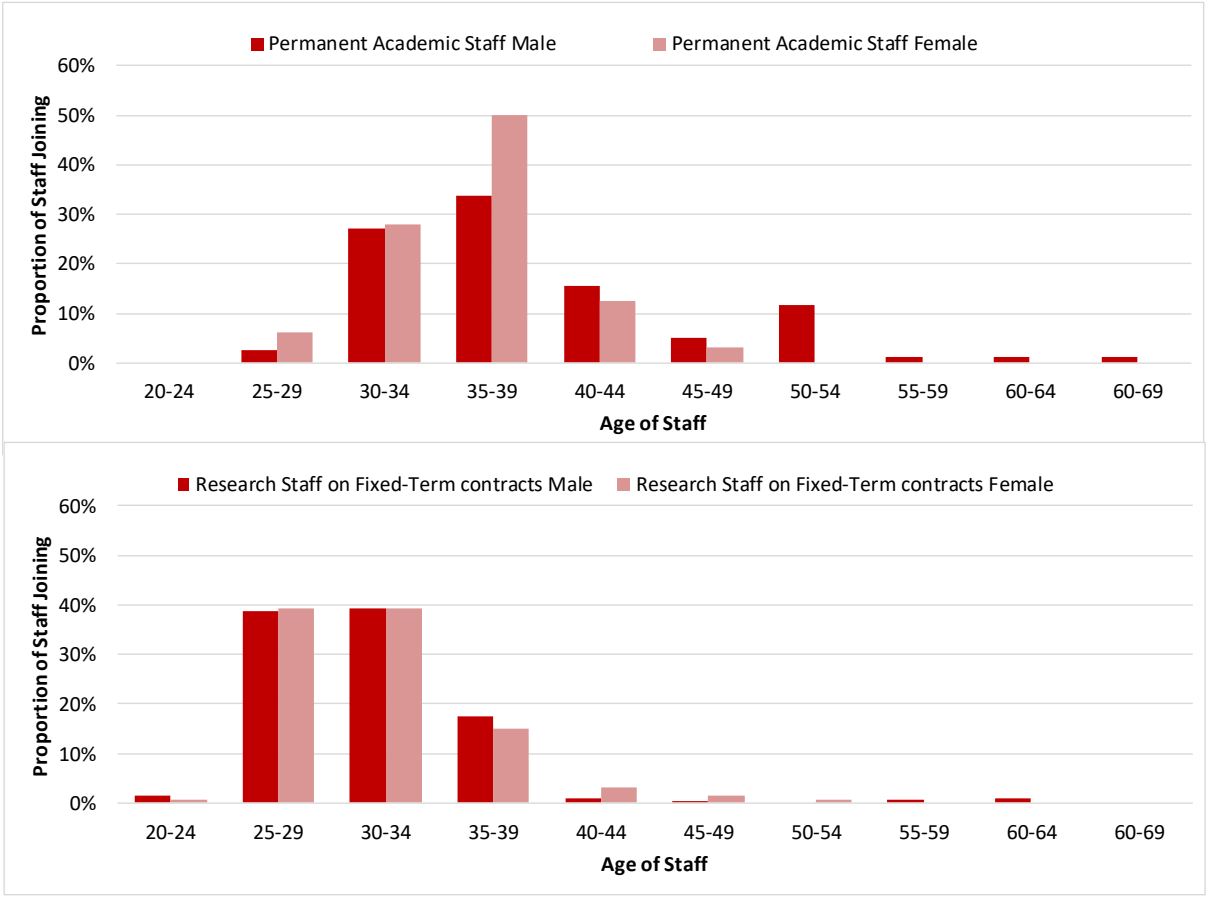

Figure 8: Distribution by age and gender of academic and research staff joining universities and research institutes across all broad research areas 2016

In Figure 7 data are presented illustrating the distribution by age of men and women joining universities and research institutes across the four broad research areas under consideration. For academic posts the median age for men and women joining is 35-39 while for research posts there is a broadly even distribution for men and women across 25-29 and 30-34. This pattern fits with a picture of early career researchers moving between short-term posts before some of those eventually gaining academic posts on open-ended contracts. Although the numbers are relatively small, the data for academic staff might also indicate that older men are more likely to move than older women.

Table 5 presents data on the reasons given by those completing the questionnaires for why staff left. Patterns are like those in 2010. Considering fixed-term research staff of whom there are by far the greatest number of leavers, 27% left to take up a new job in academia

or in a research institute aboard, and 13% for a new job in academia or in a research institute in the UK. 37% are recorded as leaving because it was the end of their contracts and 14% for unknown reasons. As in 2010 a relatively small proportion of fixed-term researchers are reported as leaving for a job in industry, 7%, and for a job outside scientific research, 3%.

Table 5: Reasons for leaving employment in astronomy, solar system science, geophysics and cross-disciplinary research 2016*

Reason for leaving	Staff Role							
	Permanent Academic Staff	Research Staff on Open-ended contracts	Research Staff on Fixed-Term contracts	Research Staff on Unknown Contracts	Permanent Technical/Support Staff	Fixed-Term Technical/Support Staff	Other scientific and Technical Staff	Total
Retirement	37%	2%	0.2%	0%	38%	5%	7%	5.7%
New job in Academia/a research institute in the UK	25%	24%	13.1%	0%	8%	26%	36%	15.6%
New job in Academia/a research institute abroad	18%	30%	26.7%	0%	8%	10%	7%	24.3%
Move to a job in industry	2%	20%	6.9%	0%	8%	5%	7%	7.2%
Move to a job outside Scientific Research	3%	9%	3.1%	0%	0%	15%	0%	3.6%
End of contract	0%	13%	36.5%	0%	0%	5%	14%	28.2%
Death in Service	3%	0%	0.0%	0%	4%	0%	0%	0.5%
Unknown	12%	2%	13.5%	100%	33%	32%	29%	14.0%
Sample size	**67.0**	**46.0**	**490.0**	**6.0**	**24.0**	**19.0**	**14.0**	**666.0**

* Data are presented only for those departments and research establishments which returned the questionnaire

Considering only the fixed-term researchers for whom destinations are known, 53% left to take up a new job in academia or in a research institute aboard, and 26% to take up a new job in academia or in a research institute in the UK. In other words, 79% of fixed term researchers in astronomy and geophysics moved on to roles within academia or research institutes. Only about 14% of fixed-term research staff for whom destinations are known moved to roles in industry. These patterns are very like those found in 2010, which suggests

that despite the continuing squeeze on public spending in the UK little has changed in the patterns of leaving destinations of research staff, although of course it should be emphasised that the largest proportion of those with known destinations are moving to roles abroad and so are less affected by the number of employment opportunities in the UK.

For permanent academic staff, the most common reason for leaving was retirement. 42% of those whose leaving destinations are known retired. 29% moved to other academic/research jobs in the UK and 20% to academic/research jobs abroad. For permanent research staff only 3% of those with known leaving destinations retired. 29% moved to new academic/research jobs in the UK, and 36% moved to an academic/research role abroad. A relatively large proportion moved to a job in industry, 23% of those with known destinations, and 10% moved to a role outside scientific research.

The numbers of women were too small to allow comparisons to be made with men except for fixed-term researchers. In that group, as in 2010, there were no significant differences observed in the known destinations of men and women.

3.5 Postgraduate research students

Table 6 shows the number of research students registered in each of the broad research areas, including those currently writing up and

Table 6: Research students in Astronomy, Solar System Science and/or Solid Earth Geophysics 2016

Broad research area	Research students in universities	Research students in research establishments	Total number of research students	Proportion of research students who are female
Astronomy	1091	21	1112	30.0%
Solar System Science	168	9	177	26.0%
Solid Earth Geophysics	617	8	625	41.4%
Cross Disciplinary	99	0	99	29.3%
Total	**1969**	**38**	**2007**	**33.1%**

Table 7 shows the equivalent data from 2010.

Table 7: Research students in Astronomy, Solar System Science and/or Solid Earth Geophysics 2010

Broad research area	Research students in universities	Research students in research establishments	Total number of research students	Proportion of research students who are female
Astronomy	851	18	869	31.5%
Solar System Science	149	3	152	32.9%
Solid Earth Geophysics	167	2	169	35.5%
Cross Disciplinary	37	1	38	44.7%
Unknown	4	0	4	
Total	**1208**	**24**	**1232**	**32.7%**

Numbers of research students are higher in all four areas in 2016 than 2010, and significantly so in Solid Earth Geophysics. The proportion of students who are women has risen in Solid Earth Geophysics, but has fallen in the other three areas. However, as shown in Table 8, the ratio of research students to academic staff has not changed a great deal in each of the broad research areas. The ratio did rise in Solid Earth Geophysics but only from 1.2 to 1.4. The ratio of academic staff to research students does vary, with astronomy having a significantly higher ratio of research students to permanent academic staff than the other areas.

Table 8: Research students and permanent academic staff in universities in Astronomy, Solar System Science and/or Solid Earth Geophysics 2016

Research area	Number of research students	Number of academic staff	Ratio of research students to academic staff 2016	Ratio of research students to academic staff 2010
Astronomy	1091	515	2.1	2.0
Solar System Science	168	126	1.3	1.3
Solid Earth Geophysics	617	452	1.4	1.2
Cross Disciplinary	99	90	1.1	1.2
Total	**1969**	**628**	**1.7**	**1.9**

Table 9 shows that 66% of research students are full-time and domiciled in the UK. Only 4% of students are studying part-time. The proportion of women among non-UK domiciled (permanently resident) students (39%) is higher than that among UK-domiciled students

(27%). This is the same patterns seen in 2010, albeit the proportion of UK-domiciled students who are women fell from 32%.

Table 9: Number of research students studying part and full-time, and their domicile in Astronomy, Solar System Science and/or Solid Earth Geophysics 2016

Mode of study and domicile of research students	Research Area	Number of research students		Proportion of research students who are female	Proportion of total population
		Male	Female		
Full Time, UK Domiciled Post Graduate Students	Astronomy	425	112	20.9%	42.0%
	Solar System Science	69	26	27.4%	7.4%
	Solid Earth Geophysics	90	83	48.0%	13.5%
	Cross Disciplinary	26	7	21.2%	2.6%
	Total	**610**	**228**	**27.2%**	**65.6%**
Full Time, Other-EU Domiciled Post Graduate Students	Astronomy	54	29	34.9%	6.5%
	Solar System Science	10	3	23.1%	1.0%
	Solid Earth Geophysics	38	32	45.7%	5.5%
	Cross Disciplinary	0	1	100.0%	0.1%
	Total	**102**	**65**	**38.9%**	**13.1%**
Full Time, Non-UK, non-EU Domiciled Post Graduate Students	Astronomy	99	53	34.9%	11.9%
	Solar System Science	8	2	20.0%	0.8%
	Solid Earth Geophysics	28	31	52.5%	4.6%
	Cross Disciplinary	3	3	50.0%	0.5%
	Total	**138**	**89**	**39.2%**	**17.8%**
Part time Students Post Graduate Students (both UK and non-UK Domiciled)	Astronomy	18	9	33.3%	2.1%
	Solar System Science	5	1	16.7%	0.5%
	Solid Earth Geophysics	3	7	70.0%	0.8%
	Cross Disciplinary	2	1	33.3%	0.2%
	Total	**28**	**18**	**39.1%**	**3.6%**
Total Post Graduate Students	Astronomy	596	203	25.4%	62.5%
	Solar System Science	92	32	25.8%	9.7%
	Solid Earth Geophysics	159	153	49.0%	24.4%
	Cross Disciplinary	31	12	27.9%	3.4%
	Total	**878**	**400**	**31.3%**	**100.0%**

Data in Table 10 show the distribution of PhD students by year of study drawn from the returned questionnaires. The data suggest that, as in 2010, most students complete their studies within 4 years, and that most students do work on into a fourth year.

Table 10: Distribution of PhD student by year of study and broad research area*

Research Area	Year of study of PhD students					
	1st Year	2nd Year	3rd Year	4th Year	5th Year	Writing up
Astronomy	216	196	187	115	17	68
Solar System Science	29	34	31	15	4	11
Solid Earth Geophysics	55	79	71	50	9	48
Cross Disciplinary	14	6	10	8	3	2
Total	**314**	**315**	**299**	**188**	**33**	**129**
Proportion of students in each year of study 2016	24.6%	24.6%	23.4%	14.7%	2.6%	10.1%
Proportion of students in each year of study 2010	26.3%	25.4%	20.8%	17.2%	2.2%	8.2%

* Years of study are only known for students studying in universities and research institutes that returned questionnaires.

There were significant increases in the number of postgraduate research students between 1998 and 2010. Since 2010, numbers have continued to rise in line with increases in the numbers of academic staff. The data in Table 10 do not indicate that students were spending longer on their doctorates in 2016 compared to 2010, so increased length of study can be discounted as an explanation for the increase in numbers. The fact that the ratios of research students to academic staff are very similar in 2016 to 2010 does suggest that the numbers of postgraduate research students are correct.

3.6 Total size of communities

The total sizes of the communities with interests in the broad research areas under consideration in this study and in 2010 are shown in Table 11. The sizes of the communities were calculated by summing the all staff and research students in universities and research institutes.

Table 11: The full-time equivalent sizes of the research communities (totals of research staff and research students in universities and research establishments) in astronomy and geophysics

Broad research area	Community size 2016	Community size 2010
Astronomy	2437	1689
Solar System Science	429	371.2
Solid Earth Geophysics	2050.5	357.2
Cross-disciplinary	381	203.8

The calculated sizes of all the communities has increased but specifically the measured size of the Solid Earth Geophysics community has increased significantly from 357.2 to 2050.5. This increase in part reflects a more thorough assessment of the size of the community in particular the geophysicists working in research establishments rather than a real increase.

4. Results from the individual questionnaires

The individual questionnaire was designed to collect demographic data from members of the UK astronomy and geophysics communities, to find out their detailed research interests, and how their time is divided between different tasks.

The questionnaire was made available to departments and research establishments as a link to the survey website. In addition, the link was publicised by the Royal Astronomical Society.

It is not known whether all the departments and research establishments approached distributed the link to the survey.

999 individuals started the on-line individual questionnaire, and 903 respondents provided enough information for analysis.

358 academic/research staff from 65 departments/research units in 36 institutions/research organisations, 33 technical staff from 18 departments/research units in16 institutions/research organisations, 213 postdoctoral researchers from 60 departments/research units in 39 institutions/research organisations and 279 research students from 49 departments/research units in 35 institutions/research organisations began the questionnaire. 5 long term visitors also began the survey.

4.1 The sample

Table 12 shows a breakdown of the roles and gender of respondents.

Table 12: The roles and gender of respondents to the individual questionnaire

Role/Position of respondents	Count of respondents by gender								Total
	Male		Female		Unknown		Other		
	N	%	N	%	N	%	N	%	
Professor	119	89%	12	9%		0%	2	2%	133
Reader	40	75%	11	21%		0%	2	4%	53
Senior Lecturer or equivalent (e.g. Associate Professor)	41	76%	11	20%		0%	2	4%	54
Lecturer or equivalent (e.g. Assistant Professor)	40	71%	14	25%		0%	2	4%	56
Permanent Research Fellow/Staff (University)	11	55%	8	40%		0%	1	5%	20
Research Fellow/Staff on open-ended contract (Research Facility/Research Institute)	31	74%	10	24%		0%	1	2%	42
Long-term visitor	3	60%	2	40%		0%	0	0%	5
Technical or support staff (excl. admin)	21	64%	10	30%	1	3%	1	3%	33
Postdoctoral Research Associate	114	54%	91	43%	7	3%	1	0%	213
Postgraduate Research Student	179	61%	103	35%	6	2%	6	2%	294
Grand Total	**599**	**66%**	**272**	**30%**	**14**	**2%**	**18**	**2%**	**903**

Data in Table 12 suggest that the proportion of female respondents by role/position is in line with the proportion of women in the general population of astronomers and geophysicists.

Table 13: Comparison of the respondents to the individual questionnaire and the population of astronomy and geophysics researchers established for university departments and research establishments

Role/Position	Individual questionnaire population		Departmental/Research establishment questionnaire population	
	N	%	N	%
Professor	133	14.7%	505	14.1%
Reader	53	5.9%	354	9.9%
Senior Lecturer or equivalent (e.g. Associate Professor)	54	6.0%		
Lecturer or equivalent (e.g. Assistant Professor)	56	6.2%	266	7.4%
Permanent Research Fellow/Staff (University)	20	2.2%	80	2.2%
Research Fellow/Staff on open-ended contract (Research Facility/Research Institute)	42	4.7%	8	0.2%
Research Staff on Unknown Contracts		0.0%	318	8.9%
Postdoctoral Research Associate	213	23.6%	482	13.5%
Total Research Staff	275	30.5%	888	24.8%
Long-term visitor	5	0.6%	59	1.6%
Technical or support staff (excl. admin)	33	3.7%	275.5	7.7%
Postgraduate Research Student	294	32.6%	1190	33.3%
Other Scientific and Technical Staff			41	1.1%
Grand Total	**903**	**100.0%**	**3578.5**	**100.0%**

A comparison of the distribution of the roles/positions with the population in Table 1 is shown in Table 13. These data suggest that research staff are over represented in the sample. However, since the permanent staff, fixed-term researcher, postgraduate research student and technician populations are analysed separately, their relative proportions in the population are not important.

4.2 Permanent Staff

This section examines the data for permanent staff in universities and research establishments. In many tables data for long term visitors and other staff are not presented as the numbers responding to the survey were low.

Table 14 gives the reported sexual orientation of permanent staff respondents. Overall 83% of staff reported themselves as heterosexual or straight, 2% as gay or lesbian and 3% as bisexual. The national statistics are also shown. A smaller proportion of respondents in the national survey did not give their sexual orientation or reported it as "other". Comparing just those who reported their sexual orientation, 95% of staff reported themselves as heterosexual or straight compared to 97.7% in the national data, 2% as gay or lesbian compared to 1.2% nationally, and 4% as bisexual compared to 0.7% nationally. 0.4% of the national population also reported their sexual orientation to be "other". The declared sexual orientation of the survey respondents is broadly in line with the national data.

Table 14: Sexual orientation of permanent staff responding to the individual questionnaire and the comparable Office of National Statistics Data

Sexual Orientation	Permanent staff		ONS Data*
	Number	Distribution	
Heterosexual or straight	298	83.2%	93.7%
Gay or lesbian	6	1.7%	1.1%
Bisexual	11	3.1%	0.6%
Other	0	0.0%	4.5%
Do not wish to say	43	12.0%	
Total	**358**		

* Sexual identity estimates are based on social survey data from the Annual Population Survey (APS). The questions collect information on self-perceived sexual identity from the household population aged 16 and over in the UK.

Table 15 shows the nationalities of respondents: 73% of permanent staff are British, 19% are from other other-EU countries, 3% are from the USA, and 6% are from other countries. In 2010, the figures were 78% of permanent staff are British, 12% are from other EU countries, 2% are from the USA, and 7% are from other countries. The data suggest that the proportion of permanent staff from the rest of the EU has increased by 7% so that around 1 in 5 permanent researchers are from the rest of the EU.

Table 15: Nationalities of permanent staff responding to the individual questionnaire

Role/Position of respondents	Count of permanent staff by nationality			
	British (inc. dual nationality)	Other European Union	USA	Other
Professor	108	18	3	3
Reader	36	13	1	3
Senior Lecturer or equivalent (e.g. Associate Professor)	40	8	2	4
Lecturer or equivalent (e.g. Assistant Professor)	35	11	3	5
Permanent Research Fellow/Staff (University)	13	3	0	4
Research Fellow/Staff on open-ended contract (Research Facility/ Institute)	27	14	0	1
Total	**259**	**67**	**9**	**20**

Table 16 shows that 90% of respondents that indicated their ethnicity specified their ethnicity as White, with 62% describing themselves as White (British), 27% as Other White and 1% as British -Irish. The Labour Force Survey[7] gives the breakdown of the working population as 80% White British and 8% Other White/White Irish, so although the proportion of respondents who are White is in line with the UK's working population, a significantly smaller proportion are White British

Considering only British respondents, 95% are White. Results from the 2011 census for England and Wales, and for Northern Ireland and Scotland combined showed that 87.1% of the population of the UK were white. The ethnic diversity of permanent staff in astronomy and geophysics is like that in 2010. Overall the proportion of staff who are White has fallen significantly from 95% in 2010, and for British respondents alone shows a slight fall from 97%. Among British respondents, Black and Minority Ethnic (BME) staff are significantly underrepresented relative to the general population.

6 respondents reported that they had a disability.

[7] Labour Force Survey 4 quarter average 2016, ONS

Table 16: Ethnicity of all permanent staff responding to the individual questionnaire

Role/Position of respondents	White (British)	Other White	British-Irish	Asian: Indian	Asian: Chinese	Other Asian	Mixed: White and Asian	Mixed: White and Black Caribbean	Other Mixed Background	Other	Total
Professor	95	25	0	1	0	1	2	0	2	2	129
Reader	30	15	0	1	0	0	0	0	2	2	50
Senior Lecturer or equivalent (e.g. Associate Professor)	31	12	2	0	1	1	0	0	1	1	50
Lecturer or equivalent (e.g. Assistant Professor)	29	19	0	0	1	1	1	1	0	0	52
Permanent Research Fellow/Staff (University)	11	7	0	0	0	0	0	0	0	0	19
Research Fellow/Staff on open-ended contract (Research Facility/Institute)	25	13	0	1	0	0	0	0	0	1	40
Total	**221**	**91**	**2**	**3**	**2**	**3**	**3**	**1**	**5**	**6**	**340**
Distribution	**62%**	**27%**	**1%**	**1%**	**1%**	**1%**	**1%**	**0%**	**1%**	**2%**	**100%**

Respondents were asked about their religious beliefs. The results are shown in Table 17. 72% stated that they had no religion/were atheists, and 27% reported that they were Christian. No other religions attracted more than 1 respondent. The pattern of reported religious belief was the same if the respondents are restricted to British nationals only.

The 2011 census data for England and Wales, and for Northern Ireland and Scotland combined shows a very different pattern with 25.7% reporting that they had no religion. 59.5% of the population described themselves as Christian, 4.4% as Muslim and 1.3% as Hindu, and 2.2% other religions. Respondents to the survey were almost three times as likely as the general population to report that they had no religion.

Table 17: Religions of permanent staff responding to the individual questionnaire

Religion	Permanent staff	
	Number	Distribution
No religion/Atheist	237	72.0%
Christian	89	27.1%
Hindu	1	0.3%
Muslim	1	0.3%
Humanist	1	0.3%
Do not wish to say	43	10%
Total	**358**	

Table 18 presents data on the gender and working mode of permanent staff. 13% of females and 10% of males work part-time. The data suggest that the part-time women are under-represented in the sample as women are more likely to work part-time than men. In 2010, 26% of the female respondents worked part-time. Given the numbers of women it is not possible to draw firm conclusions about any changes in the pattern of part-time working.

Table 18: Gender and working mode of permanent staff responding to the individual questionnaire

Role/Position of respondents	Count of permanent staff by gender and working mode					
	Male		Female		Unknown	
	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Professor	103	16	11	0	1	0
Reader	39	1	6	4	2	0
Senior Lecturer or equivalent (e.g. Associate Professor)	35	6	9	2	2	0
Lecturer or equivalent (e.g. Assistant Professor)	39	1	14	0	2	0
Permanent Research Fellow/Staff (University)	9	2	8	0	1	0
Research Fellow/Staff on open-ended contract (Research Facility/ Institute)	29	2	8	2	1	0
Total	**254**	**28**	**56**	**8**	**9**	**0**

Table 19 presents data on the number of children permanent staff have, broken down by whether the children are pre-school age, school age (5 to 18 years old) or grown up (above 18 years old). It was not specified to respondents whether or not they ought to include stepchildren and adopted children. Table 20 presents the same data but shows the total number of children. The number and age of children increases with seniority which is, of course, related to the fact that more senior staff are on average older.

Table 19: Number of children of permanent staff responding to the individual questionnaire 2016

Number and ages of children				Number of respondents by role/position						
Number of pre-school age children (under 5 years old)	Number of school age children (5 to 18 years old)	Number of grown up children (above 18 years old)	Total number of children	All	Professor	Reader	Senior Lecturer or equivalent (e.g. Associate Professor)	Lecturer or equivalent (e.g. Assistant Professor)	Permanent Research Fellow/Staff (University)	Research Fellow/ Staff on open-ended contract (Research Facility/ Institute)
0	0	0	0	149	33	18	24	35	14	25
		1	1	9	8	0	1	0	0	0
		2	2	31	21	5	5	0	0	0
		3	3	14	12	1	0	0	1	0
		4	4	1	1	0	0	0	0	0
		5	5	3	3	0	0	0	0	0
	1	0	1	17	3	3	3	5	1	2
		1	2	1	1	0	0	0	0	0
		2	3	2	2	0	0	0	0	0
		3	4	1	1	0	0	0	0	0
	2	0	2	38	22	8	5	3	0	0
		1	3	3	3	0	0	0	0	0
		2	4	1	1	0	0	0	0	0
	3	0	3	7	5	1	0	1	0	0
	4	0	4	2	2	0	0	0	0	0
1	0	0	1	34	2	8	8	6	4	6
		1	2	1	0	0	0	0	0	1
	1	0	2	17	6	2	3	4	0	2
	2	0	3	5	0	3	1	0	0	1

2	0	0	2	12	1	3	3	1	0	4
		2	4	1	1	0	0	0	0	0
	1	0	3	3	2	1	0	0	0	0
	2	0	4	1	0	0	0	1	0	0
Do not wish to say				4	4	3		1	0	0
Total				**362**	**357**	**133**	**53**	**54**	**56**	**20**

Table 20: Number of children of permanent staff responding to the individual questionnaire 2016

Role/Position of permanent staff	Count of permanent staff by number of children											
	0		1		2		3		4		5	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Professor	27	5	11	2	47	4	23	1	6	0	3	0
Reader	16	1	8	3	11	7	5	0	0	0	0	0
Senior Lecturer or equivalent (e.g. Associate Professor)	20	2	8	4	11	5	1	0	0	0	0	0
Lecturer or equivalent (e.g. Assistant Professor)	23	10	9	2	7	1	0	1	1	0	0	0
Permanent Research Fellow/Staff (University)	8	6	2	2	0	0	1	0	0	0	0	0
Research Fellow/Staff on open-ended contract (Research Facility/ Institute)	19	6	6	2	6	1	0	1	0	0	0	0
Total	**113**	**30**	**44**	**15**	**82**	**18**	**30**	**3**	**7**	**0**	**3**	**0**

Table 21 presents data on the proportions of male and female academic staff without children. As in 2010, among professors a much larger proportion of women than men do not have children but the number of women is not large enough to allow the significance of this to be tested (5 female professors do not have children). More generally, at individual grades, the numbers of women are not high enough to enable firm conclusion to be drawn. Overall, similar proportions of men and women do not have children.

17% of women in UK born in 1970 remained childless.[8] The childless rates by birth year do vary. For women born in 1945 onwards the rates vary from 9% for women born in 1946 to 20% for women born between 1962 and 1966. So for the cohort of women aged between 46 and 71 years in 2016, around 17% are childless. The data in Table 21 suggest that the proportion of senior women academics who do not have children is higher than that in the general population.

Table 21: Proportion of permanent academic staff who responded to the individual questionnaire without children

Role/Position of respondents	Proportion of respondents without children by gender		
	Male	Female	Overall
Professor	23%	42%	25%
Reader	40%	9%	33%
Senior Lecturer	50%	18%	43%
Lecturer	58%	71%	61%
Total	**36%**	**38%**	**36%**

Among those respondents who specified their sex, 10 men (4%) and 24 (35%) women report that they have had one or more career breaks totalling more than 3 months. Most of the career breaks were for parental leave, as shown in Table 22.

Considering only those permanent academic staff who report having one or more children, the proportions of those staff who report having at least one career break of three months or longer are shown in Table 23. As expected women are much more likely than men to have taken parental leave of three months or more. It is interesting to consider why overall a greater proportion of women have not taken at least one career break of three months or more for parental leave. It is possible that some women took less than three months, or that some women were not working when they had children. There does not seem to be any link to the nationality of the respondents.

[8] Childbearing for women born in different years, England and Wales: 2015, Office of National Statistics (https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/conceptionandfertilityrates/bulletins/childbearingforwomenbornindifferentyearsenglandandwales/2015)

Table 22: Reasons for career breaks reported by permanent academic staff who responded to the individual questionnaire 2016

Role/Position of respondents	Parental Leave		Caring for a family member		Illness	
	Female	Male	Female	Male	Female	Male
Professor	2	6	0	0	0	1
Reader	1	5	0	0	0	0
Senior Lecturer or equivalent (e.g. Associate Professor)	2	6	0	0	0	0
Lecturer or equivalent (e.g. Assistant Professor)	1	1	0	0	0	0
Permanent Research Fellow/Staff (University)		1	0	0	0	0
Research Fellow/Staff on open-ended contract (Research Facility/ Institute)		2	0	1	0	1
Total	**6**	**21**	**0**	**1**	**0**	**2**

Table 23: Proportions of permanent academic staff who responded to the individual questionnaire with children reporting taking a career break of three months or longer for parental leave 2016

Role/Position of respondents	Male			Female		
	Number with at least one child	Parental leave reported	Proportion taking parental leave	Number with at least one child	Parental leave reported	Proportion taking parental leave
Professor	90	2	2%	7	6	86%
Reader	24	1	4%	10	5	50%
Senior Lecturer or equivalent (e.g. Associate Professor)	20	2	10%	9	6	67%
Lecturer or equivalent (e.g. Assistant Professor)	17	1	6%	4	1	25%
Permanent Research Fellow/Staff (University)	3	0	0%	2	1	50%
Research Fellow/Staff on open-ended contract (Research Facility/ Institute)	12	0	0%	4	2	50%
Total	**166**	**6**	**4%**	**36**	**21**	**58%**

Respondents were asked to estimate how their time is divided between a number of activities. The results are shown in Table 24. and for comparison the 2010 results are shown in Table 25.

All grades of academic staff spend between 33 and 38% of their time on research activities. Lecturers, senior lecturers and readers spend more time on undergraduate teaching (between 26 and 34%) than professors (20%), and all staff spend around 10% on postgraduate teaching. The proportion of time spent on administration and on external professional activities increases with seniority. Staff spend about 5% of their time on public engagement and outreach.

In contrast to academic staff, staff in other roles spend a higher proportion of their time undertaking research. In universities, research fellows spend about 68% of their time on research and only 4% of their time on undergraduate teaching, 8% on postgraduate teaching and 8% on administration. Outside universities, research staff report spending 60% of their time on research and correspondingly smaller amounts of time on other activities.

Overall, and in particular for university academic staff, the way in which respondents divide their time between different areas has not changed greatly since 2010. The most significant change is the amount of time that Permanent Research Fellows/Staff (in universities report spending on research which has increased by 22% at the expense of time spent on administration and other tasks.

Table 24: How permanent staff respondents divide their time between different activities 2016

Role/Position of respondents	N	Proportion of time spent by respondents on specific activities						
		Research	Undergraduate teaching	Postgraduate teaching	Administration associated with job	External professional activities	Public engagement/ outreach	Other
Professor	129	38%	20%	9%	19%	8%	4%	2%
Reader	52	34%	28%	10%	16%	7%	6%	0%
Senior Lecturer or equivalent (e.g. Associate Professor)	53	33%	30%	9%	16%	5%	6%	2%
Lecturer or equivalent (e.g. Assistant Professor)	56	36%	26%	11%	15%	3%	5%	4%
Permanent Research Fellow/Staff (University)	20	68%	4%	8%	7%	4%	3%	7%
Research Fellow/Staff on open-ended contract (Research Facility/ Institute)	40	60%	6%	6%	8%	2%	7%	10%
Long-term visitor	5	83%	0%	0%	16%	0%	1%	0%

Table 25: How permanent staff respondents divide their time between different activities 2010

Role/Position of respondents	N	Proportion of time spent by respondents on specific activities						
		Research	Undergraduate teaching	Postgraduate teaching	Administration associated with job	External professional activities	Public engagement/ outreach	Other
Professor	163	39%	19%	9%	21%	7%	4%	2%
Senior lecturer/Reader	106	35%	27%	10%	17%	6%	5%	1%
Lecturer	60	38%	33%	8%	13%	3%	5%	1%
Permanent Research Fellow/ Staff (Research Facility/ Research Institute)	29	46%	2%	8%	14%	4%	5%	22%
Permanent Research Fellow/Staff (University)	62	58%	8%	8%	13%	2%	3%	8%
Long term research visitor	6	60%	3%	5%	0%	3%	13%	16%

Table 26: Research interests of permanent staff

Broad research area*	Count of permanent research staff by gender			
	Male (N=285)	Female (N=68)	Unknown (N=12)	Total (N=363)
Astronomy: Astronomy and/or Astrophysics	209	36	4	249
Astronomy: Particle Astrophysics	19	4	1	24
Solar System: Planetary Science	32	13	1	46
Solar System: Earth Observation	3	3	0	6
Solar System: Atmospheric Science	9	2	1	12
Solar System: The Sun	20	12	2	34
Solar System: Solar-Terrestrial Physics	15	9	1	25
Solar System: Cross Discipline Topics	5	2	0	7
Geophysics: Solid Earth Geophysics	29	12	2	43
Other Related Subject	4	0	0	4

* Respondents could indicate more than one research area

Table 26 shows the broad research areas which permanent staff work in. 290 respondents indicated that they research a single area, 47 indicated 2 research areas, 14 indicated 3 areas, and 5 respondents indicated 4 or more areas.

76% of respondents indicated that they have research interests in an *Astronomy* research area with 69% of the whole sample indicating an interest in *Astronomy and/or Astrophysics* and 7% indicating an interest in *Particle Astrophysics,* 29% indicated an interest in some aspects of *Solar System Science*, and 12% indicated an interest in *Geophysics*.

Staff were asked to indicate how they divided their research time between various activities and between the facilities they used at various wavelengths.

As in 2010, the data are presented in the form of the number of full-time equivalent staff (FTEs) working on each research area and wavelength. To calculate these figures, the proportion of research time each respondent reported spending on each activity was weighted by the proportion of the total time that that respondent reported spending on research.

Table 27 indicates the relative effort expended on each research area by all permanently employed respondents with research interests in astronomy and Figure 9 shows the proportion of total effort expended on each general activity for astronomy in 2016. Figure 10 shows the proportion of total effort expended on each general activity for astronomy in 2010 for comparison.

As in 2016, in astronomy 33% of effort is expended on *Theory and numerical modelling* and 30% is expended on *Data analysis*. Smaller proportions of effort are expended on *Observation/Data Collection* (12%), *Data reduction* (11%), and *Instrumentation* (9%).

Significantly less effort is expended in *Facility operation and maintenance* (2%) and *Other* activities (4%). Activities are split between *Ground-based* (59%), *Space* (31%) and *Other* (10%) areas. So between 2010 and 2016, there has been little change in the relative distribution of research effort in Astronomy.

Table 27: The distribution of research effort of respondents with permanent roles with interests in astronomy shown as full-time equivalents 2016 (N=329)*

General research area	Research effort expended (FTEs)			
	Ground-based	Space	Other	Totals
Theory and numerical modelling	20.0	10.2	9.4	39.6
Observation/Data Collection	9.8	4.5	0.5	14.8
Instrumentation	6.9	3.7	0.3	10.9
Data reduction	8.1	4.5	0.2	12.8
Data analysis	21.9	13.2	1.3	36.4
Facility operation & maintenance	1.9	0.5	0.0	2.4
Other	2.7	1.1	0.8	4.6
Totals	**71.4**	**37.7**	**12.5**	**121.5**

* Table 27 contains information on all respondents who indicated a broad research interest in an astronomy-related research area. There is some overlap with the respondents included in Table 29 who indicated research interests in both astronomy and geophysics.

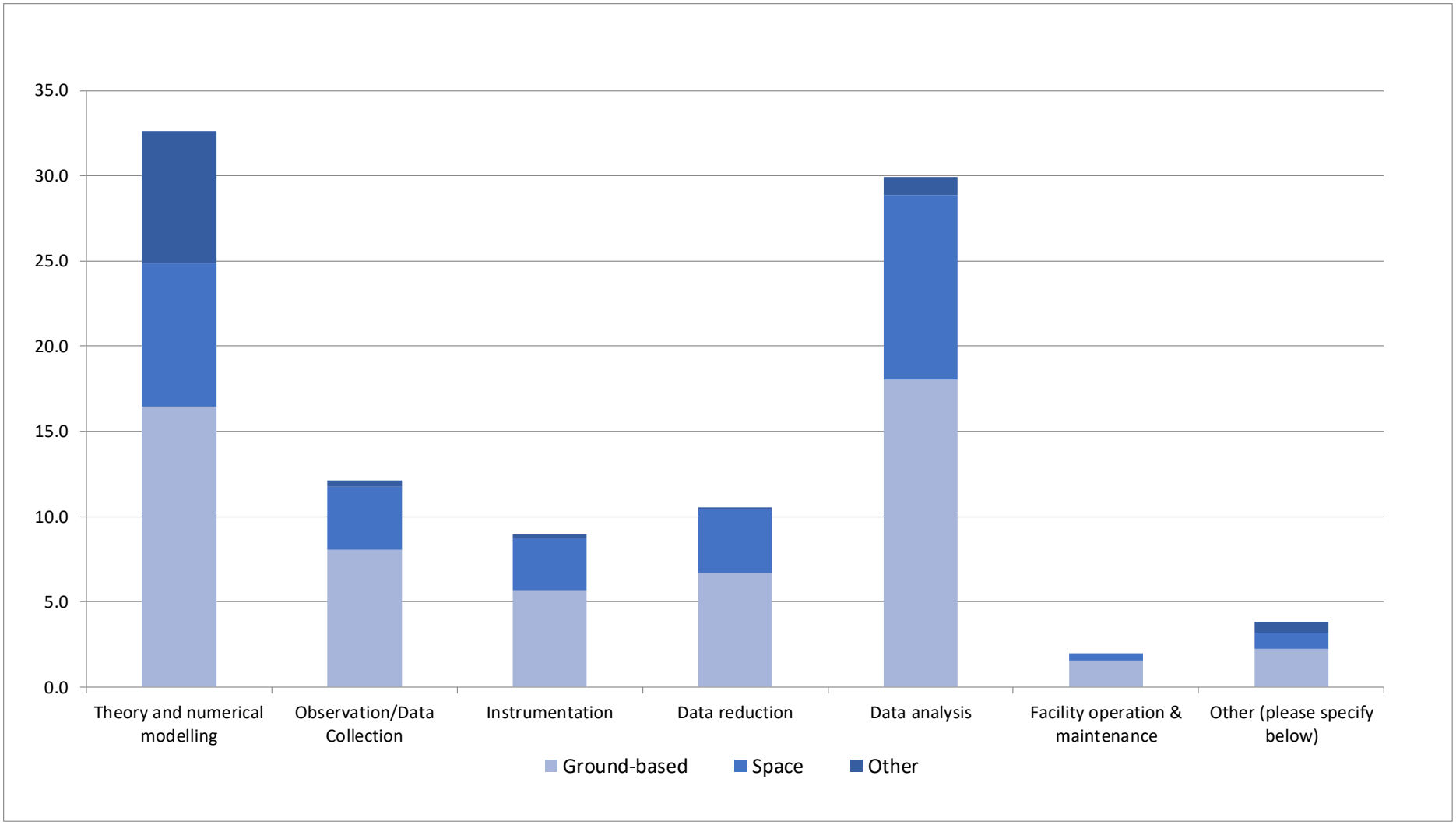

Figure 9: Proportion of effort spent on various general research activities by respondents with research interests in astronomy 2016

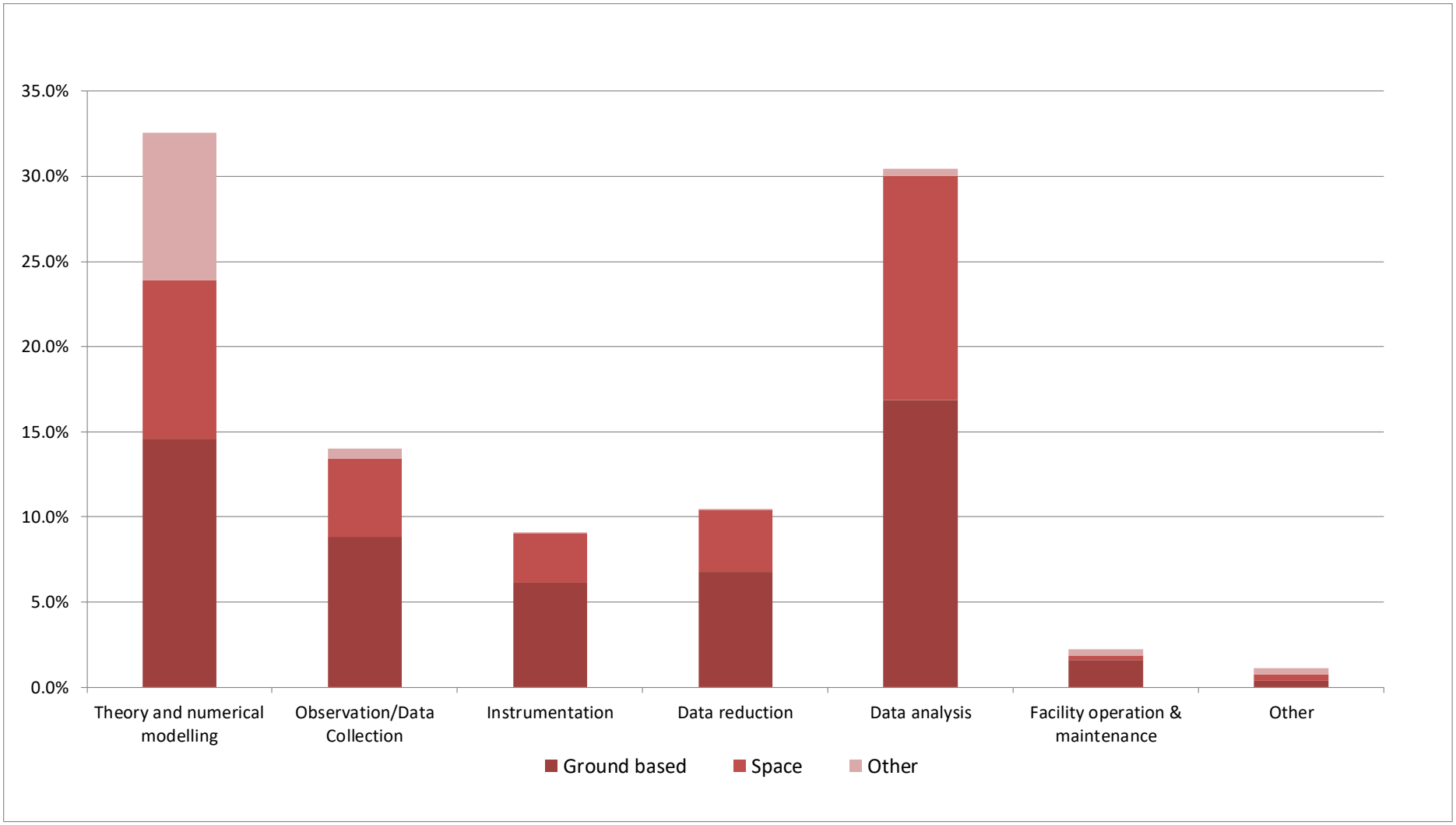

Figure 10: Proportion of effort spent on various general research activities by respondents with research interests in astronomy 2010

Table 28 shows the pattern of use of facilities at various wavelengths by those respondents with research interests in astronomy as FTEs and Figure 11 presents the data as proportions of total effort. Figure 12 presents the equivalent chart from 2010 for comparison.

Table 28: The pattern of use of facilities at various wavelengths by respondents with permanent roles with interests in astronomy shown as full-time equivalents 2016 (N=329)

General area of research	Research effort expended on facilities by wavelength (FTEs)									
	Radio	mm and sub-mm	IR	Optical	UV	X-ray	Gamma and Cosmic Ray	Other	Not applicable	Totals
Theory and numerical modelling	2.8	3.9	2.3	5.4	2.3	1.9	0.7	3.4	13.0	35.7
Observation/Data Collection	1.0	1.4	2.8	6.2	0.9	0.9	0.1	0.5	0.2	14.0
Instrumentation	1.0	0.1	0.9	2.4	0.3	0.6	0.4	2.6	1.9	10.1
Data reduction	1.0	1.6	2.3	4.2	1.0	1.3	0.0	0.3	0.2	12.0
Data analysis	1.8	3.4	4.6	10.8	2.0	3.2	0.3	2.9	0.8	29.6
Facility operation & maintenance	0.3	0.0	0.2	1.2	0.0	0.2	0.0	0.3	0.3	2.3
Other	0.0	0.1	0.1	1.1	0.1	0.1	0.0	0.6	1.3	3.4
Totals	**7.8**	**10.4**	**13.2**	**31.3**	**6.5**	**8.3**	**1.4**	**10.7**	**17.5**	**107.2**

The data show that there have been some changes in the reported use of facilities by wavelength. Use of facilities at radio and gamma and cosmic ray have fallen and those at mm and sub-mm wavelengths have increased, perhaps reflecting the advent of facilities like ALMA. However, as in 2010, the greatest use is made of facilities at optical wavelengths, followed by infra-red.

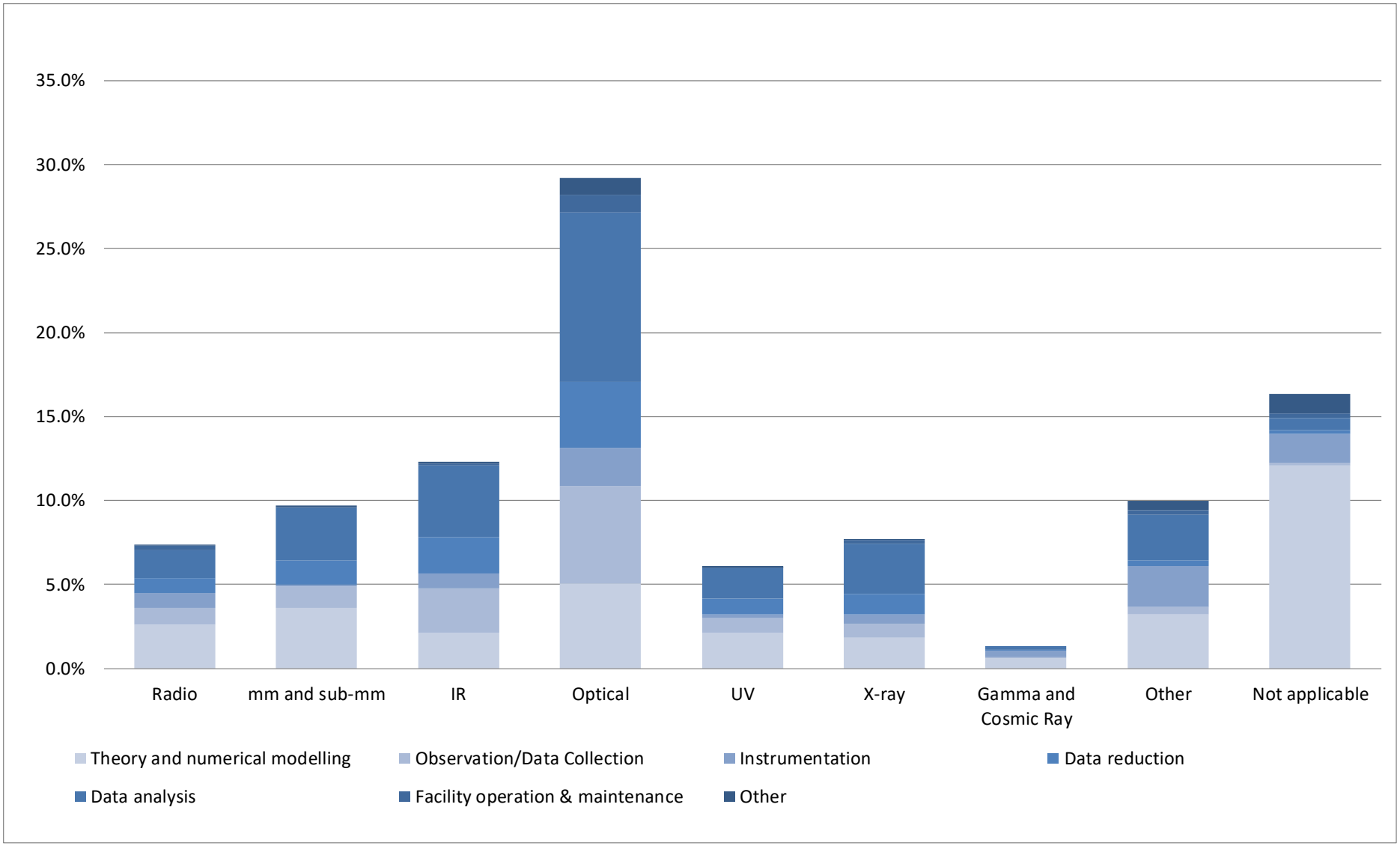

Figure 11: Proportion of effort spent on use of facilities at various wavelengths by permanent staff respondents with permanent roles with research interests in astronomy 2016

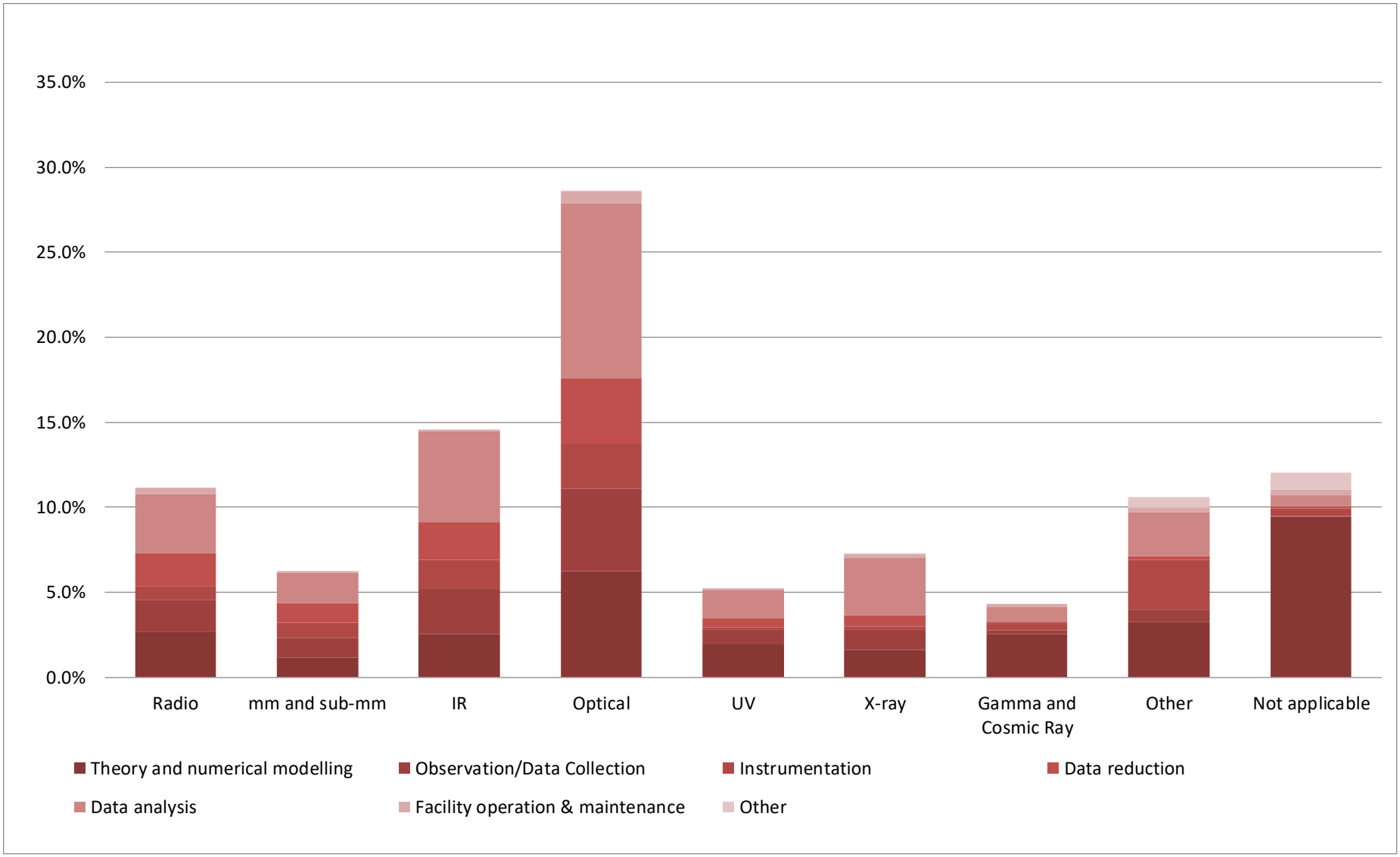

Figure 12: Proportion of effort spent on use of facilities at various wavelengths by respondents with permanent roles with research interests in astronomy 2010

Table 29 indicates the relative effort expended on each research area by all permanently employed respondents with research interests in geophysics and Figure 13 shows the proportion of total effort expended on each general activity for geophysics. Figure 14 show proportion of total effort expended on each general activity for geophysics in 2010 for comparison.

Table 29: The distribution of research effort of respondents with permanent roles with interests in geophysics shown as full-time equivalents (N=43)*

General research area	Research effort expended (FTEs)			
	Ground-based	Space	Other	Totals
Theory and numerical modelling	3.2	0.2	0.3	3.7
Observation/Data Collection	1.3	0.7	0.2	2.3
Instrumentation	0.4	0.1	0.1	0.6
Data reduction	0.9	0.1	0.0	1.0
Data analysis	3.7	0.6	0.3	4.6
Facility operation & maintenance	0.1	0.0	0.1	0.1
Other	0.5	0.0	0.3	0.7
Totals	10.1	1.8	1.3	13.1

* Table 29 contains information on all respondents who indicated a broad research interest in geophysics. There is some overlap with the respondents included in Table 27 who indicated research interests in both astronomy and geophysics.

In Geophysics 35% of effort is expended on *Data Analysis*, 29% is expended on *Theory and numerical modelling* and 17% is expended on *Observation/Data Collection*. These three areas were also the most popular in 2010 but the order differed. Less effort is expended on *Data reduction* (7%), *Instrumentation* (5%), *Other activities* (6%) and *Facility operation and maintenance* (1%). Effort is biased towards *Ground-based activities* at 77%, with *Space activities* representing 14% of effort and *Other activities* 10%.

Respondents were asked to indicate their main research areas by selecting up to 5 research areas from lists specified for astronomy, solar system science and solid earth geophysics, or from the broad areas. Those respondents indicating research interests in *stars*, *galaxies/extragalactic*, *cosmology*, and/or *planetary science* were asked to give more detail. A full breakdown of the responses is shown in Appendix A and the overall results are discussed in Section 4.5.

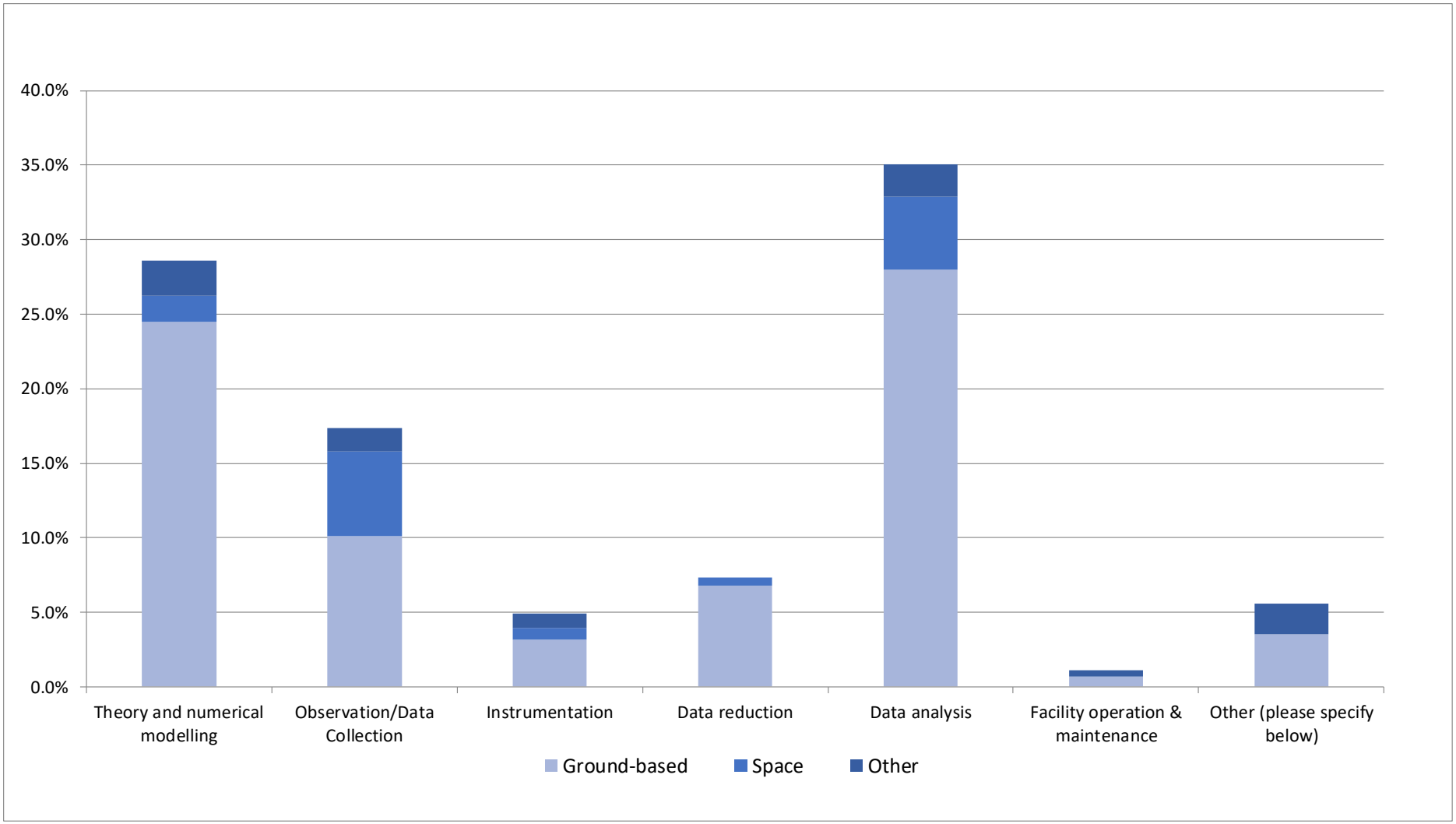

Figure 13: Proportion of effort spent on various general research activities by permanent staff respondents with research interests in geophysics 2016

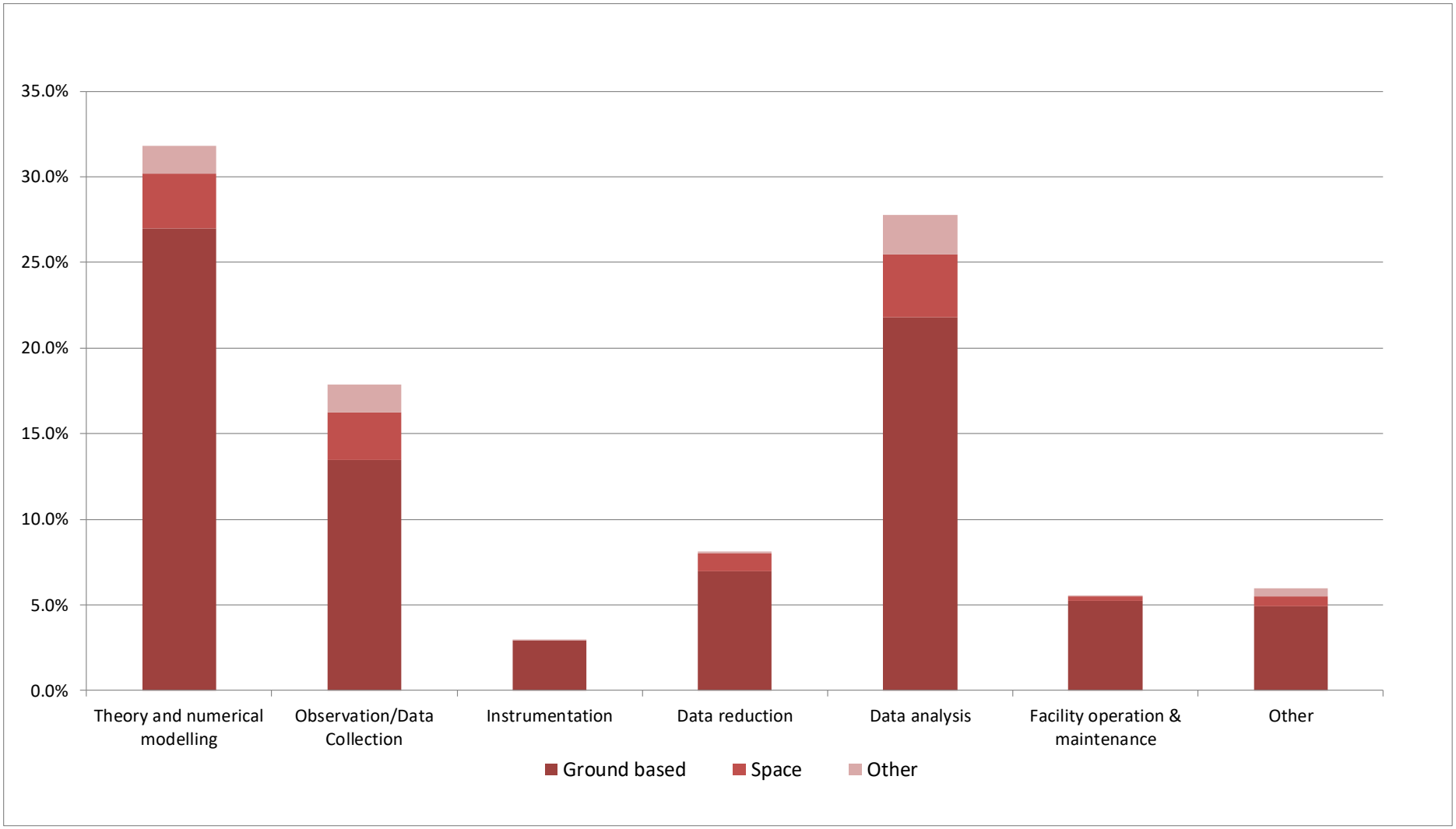

Figure 14: Proportion of effort spent on various general research activities by respondents with research interests in geophysics 2010

4.2 Fixed-term postdoctoral research associates

213 respondents who completed the questionnaire indicated that they were temporary/fixed-term postdoctoral research associates, comprising 114 males, and 91 females and 1 other (7 respondents did not indicate their sex).

1 male and 4 females indicated that they worked part-time. 5 staff reported that they considered themselves disabled.

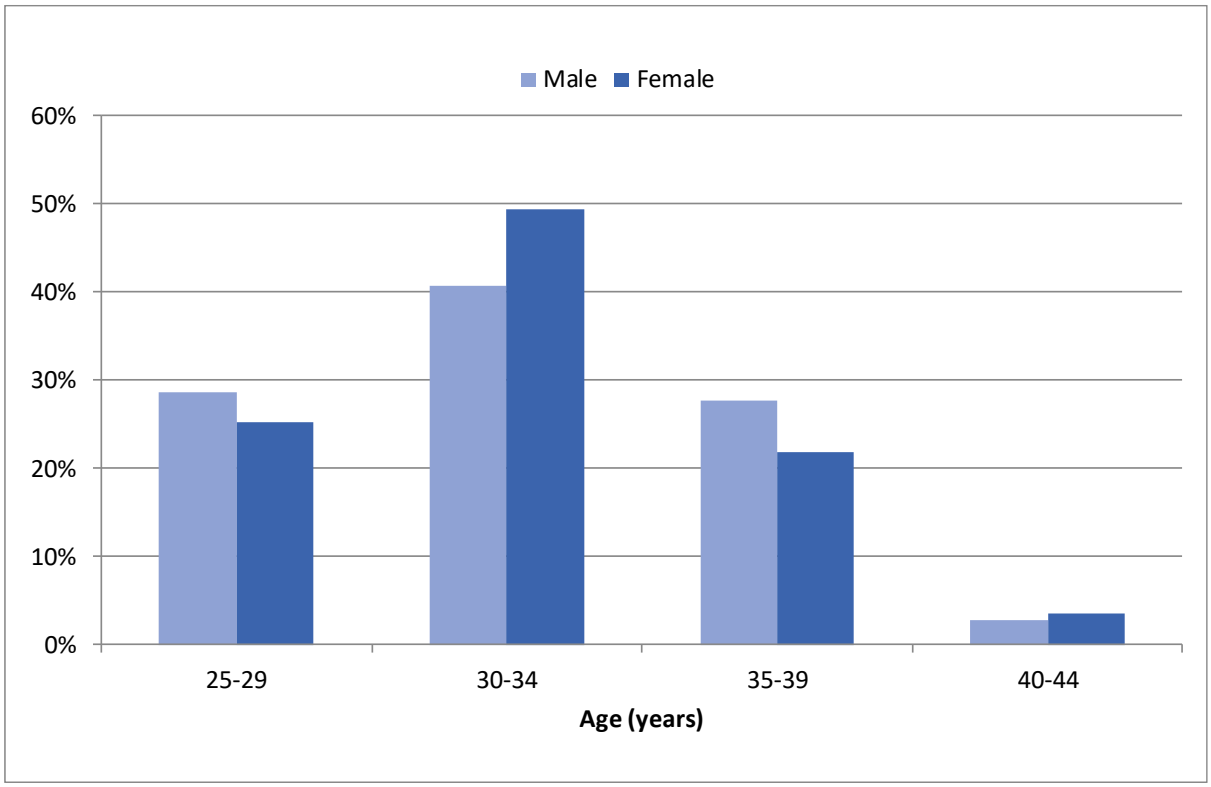

Figure 15: Age profiles of male and female postdoctoral research associates 2016

As shown in Figure 15 there is relatively little difference between the age profiles of male and female research associates: the women in the sample are on average slightly older than the men.

Table 30: The age and length of time since postdoctoral research associate respondents completed their PhDs

Number of years since respondents obtained their PhD	Count of postdoctoral research associates by age in years									
	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Do not wish to say	Total
Not yet	2	1	0	0	0	0	0	0	0	3
1	20	10	4	1	0	1	0	0	2	38
2	17	13	0	1	0	0	0	0	0	31
3	11	23	3	1	0	0	0	0	1	39
4	3	12	3	0	1	0	0	0	0	19
5	0	6	3	0	0	0	0	0	0	9
6	0	15	6	0	0	0	0	1	0	22
7-9	0	6	8	1	0	0	0	0	0	15
>10	0	3	3	0	0	0	0	0	0	6
11-15	0	0	8	1	0	0	0	0	0	9
16-20	0	1	2	0	0	0	0	0	0	3
>20	0	0	11	1	0	0	1	0	0	13
Totals	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**2**

Table 30 shows the age and length of time since postdoctoral research associates completed their PhDs. 52% of respondents had completed their PhD within the last 4 years, and 61% with the last 5 years. This is a similar pattern to that in 2010.

Respondents were asked about their religious beliefs. The results are shown in Table 31. 72% of those who disclosed their beliefs stated that they had no religion/were agnostic, and 24% reported that they were Christian. The results are in line with those for permanent staff and as such postdoctoral research associate who responded to the survey were almost three times as likely as the general population to report that they had no religion

Table 31: Religious beliefs of postdoctoral research associates responding to the individual questionnaire 2016

Religion	Postdoctoral Research Associates	
	Number	Distribution
No religion/Agnostic	143	72.3%
Christian	46	23.6%
Hindu	3	1.5%
Buddhist	1	0.5%
Jewish	2	1.0%
Do not wish to say	18	
Total	**213**	

Table 32: Sexual orientation of postdoctoral research associates responding to the individual questionnaire 2016

Sexual Orientation	Postdoctoral Research Associates		ONS Data for people aged 25-34*
	Number	Distribution	
Heterosexual or straight	177	83.1%	92.5%
Gay or lesbian	9	4.2%	1.7%
Bisexual	8	3.8%	0.4%
Do not wish to say	19	8.9%	4.5%
Other	0	0%	
Total	**213**		

* Sexual identity estimates are based on social survey data from the Annual Population Survey (APS). The questions collect information on self-perceived sexual identity from the household population aged 16 and over in the UK.

Table 32 gives the reported sexual orientation of postdoctoral research associate respondents. Overall 83% of postdoctoral research associates reported themselves as heterosexual or straight, 4% as gay or lesbian and 4% as bisexual. The national statistics for people aged 25-34 are also shown. As for the permanent staff, a smaller proportion of postdoctoral research associates in the national survey did not give their sexual orientation or reported it as “other”. Comparing just those who reported their sexual orientation, 91% of staff reported themselves as heterosexual or straight compared to 96.8% in the national

data, 5% as gay or lesbian compared to 1.8% nationally, and 4% as bisexual compared to 0.9% nationally. 0.4% of the national population also reported their sexual orientation to be "other". The declared sexual orientation of the survey respondents is broadly in line with the national data although there is some indication that among the postdoctoral research associates who responded the proportion who declare themselves as gay or lesbian, or bisexual is higher than in the UK national population.

The ethnicity and nationality of the postdoctoral research associate respondents is shown in Table 33.

Table 33: Ethnicity and nationality of postdoctoral research associates 2016

Ethnicity	Count of postdoctoral research associates by nationality					
	British	Other European Union	USA	Other	Do not wish to say	Total
White	98	64	14	12	1	189
Indian	1	0	0	3	0	4
Chinese	1	0	0	3	0	4
Other	1	1	0	1	0	3
Mixed	2	1	1	1	0	5
Do not wish to say	0	4	1	1	2	8
Totals	**103**	**70**	**16**	**21**	**3**	**213**

Overall 48% of respondents are British, and, of these, 97% of those who indicated their ethnicity are White which is a similar proportion to the 95% of permanent staff respondents who responded to the survey. 33% of the sample are of other European Union nationalities, and like the British sample, 91% of those who indicated their ethnicity are White. Only 10% of the sample indicated that they hold citizenship from outside the European Union or the United States.

Compared to 2010, the ethnicities of respondents are similar but the proportion of respondents who are British has fallen from 61% to 48%, and the proportions who are of other European Union and American nationalities have risen.

Table 34 shows the nationality of respondents together with the country in which they carried out their PhD research. 57% of all respondents, and 99% of British respondents, carried out their PhD research in the UK.

Table 34: Nationality and country in which postdoctoral research associates studied for their PhD 2016

Country in which postdoctoral research associates studied for their PhD	Count of postdoctoral research associates by nationality					
	British	Other European Union	USA	Other	Do not wish to say	Total
UK	102	16	2	1	0	121
Other European Union	1	49	0	5	2	57
USA	0	0	12	2	0	14
Elsewhere	0	5	2	13	1	21
Totals	**103**	**70**	**16**	**21**	**3**	**213**

Table 35 presents data on the number of children postdoctoral research associates have, broken down by whether the children are pre-school age, school age (5 to 18 years old) or grown up (above 18 years old). Table 36 presents the same data but shows the total number of children. 79% of postdoctoral research associates do not have children.

Table 35: Number and age of children of postdoctoral research associates responding to the individual questionnaire 2016

Number and age of children				Number of postdoctoral research associate respondents
Number of pre-school age children (under 5 years old)	Number of school age children (5 to 18 years old)	Number of grown up children (above 18 years old)	Total number of children	
0	0	0	0	167
	1	0	1	4
		2	3	1
	2	0	2	2
		1	3	2
	5	0	5	1
1	0	0	1	18
	1	0	2	4
		2	4	1
	2	0	3	2
2	0	0	2	9
Do not wish to say				4
Total				**213**

Table 36: Number of children of postdoctoral research associates responding to the individual questionnaire 2016

Number of Children	Sex of of postdoctoral research associates				
	Male	Female	Other	Do not wish to say	Total
0	87	75	1	5	167
1	13	8	0	0	22
2	10	5	0	0	15
3	3	2	0	0	5
4	0	1	0	0	1
5	1	0	0	0	1
Do not wish to say	0	0	0	2	2
Total	**114**	**91**	**1**	**7**	**213**

Table 37: Funding sources for postdoctoral research associates responding to the individual questionnaire by nationality 2016

Funding Source*	Nationality of postdoctoral research associates			
	British	Other European Union	Other	Total
STFC	46	23	15	84
European Commission/ European Research Council	17	21	12	50
NERC	7	2	1	10
The University/Department	3	6	1	10
UK Space Agency	2	4	0	6
The Leverhulme Trust	2	3	0	5
EPSRC	1	1	0	2
Royal Astronomical Society	2	0	0	2
Royal Society	1	0	1	2
Industry	0	1	1	2
Other sources	9	4	2	15
Total Respondents	**90**	**65**	**33**	**188**

The sources of funding for postdoctoral research associates broken down by nationality are shown in Table 37. 51% of British postdoctoral research associates are funded by the STFC, and the majority of those of other nationalities. Just 8% of British postdoctoral research associates are funded by NERC, and 3% of other nationalities. 19% of British postdoctoral research associates are funded by the European Commission/European Research Council and 34% of other nationalities. The SERC and the European Commission/European Research Council funds 72% of the postdoctoral research associates responding to the individual questionnaire.

The proportion of time that postdoctoral research associates spend on various activities is shown in Table 38. On average 82% of time is spent on research activities, which as expected in a research-centred role, is more than double the proportion of time spent by permanent academic staff. 98 respondents indicated that they spend at least 90% of their time on research-related activities.

As in 2010, postdoctoral associates report spending relatively little time on other activities.

Table 38: How postdoctoral research associates divide their time between different activities 2016

Activity	Proportion of time spent on specific activities
Research	82%
Undergraduate teaching	5%
Postgraduate teaching	2%
Administration associated with job	4%
Public engagement/ outreach	3%
Other	5%

Table 39 shows the broad research areas in which postdoctoral research associates work. 183 respondents indicated activity in a single research area, 18 indicated 2 areas, and 5 indicated 3 areas.

Table 39: The main research areas of postdoctoral research associates 2016 (N=200)

Broad research area of postdoctoral research associates*	Count of postdoctoral research associates by gender			
	Male	Female	Unknown	Total
Astronomy: Astronomy and/or Astrophysics	84	66	7	157
Astronomy: Particle Astrophysics	6	0	1	7
Solar System: Planetary Science	11	12	0	23
Solar System: Earth Observation	3	1	0	4
Solar System: Atmospheric Science	3	3	0	6
Solar System: The Sun	8	2	0	10
Solar System: Solar-Terrestrial Physics	6	2	0	8
Solar System: Cross Discipline Topics	1	2	0	3
Geophysics: Solid Earth Geophysics	8	8	0	16

* Respondents were able to indicate more than one research area

70% of respondents indicated that they have interests in some aspect of *Astronomy*, 23% indicated an interest in some aspects of *Solar System Science*, and 7% indicate an interest in *Geophysics*.

Table 40: The distribution of research effort of respondents who are postdoctoral research associates with interests in astronomy shown as full-time equivalents 2016 (N=191)*

General research area	Research effort expended (FTEs)			
	Ground-based	Space	Other	Totals
Theory and numerical modelling	22.1	11.4	12.7	46.1
Observation/Data Collection	10.3	2.2	0.2	12.7
Instrumentation	7.4	2.1	0.8	10.3
Data reduction	14.3	5.3	0.1	19.7
Data analysis	32.3	19.9	3.0	55.2
Facility operation & maintenance	1.1	0.1	0.1	1.4
Other (please specify below)	2.4	0.8	2.0	5.2
Totals	**90.0**	**41.9**	**18.8**	**150.7**

* Table 40 contains information on all respondents who indicated a broad research interest in an astronomy-related research area.

Table 40 presents data on how postdoctoral research associate respondents with research interests in astronomy expend their research time in terms of full-time equivalent members of staff (FTEs) and Figure 16 shows the proportion of total effort expended on each general activity. The equivalent data from 2010 are presented in Figure 17.

As in 2010, the pattern of usage shown in Figure 16 is very similar to that for permanent staff in astronomy. 31% of effort is expended on *Theory and numerical modelling* and 37% on *Data analysis*. For permanent staff the figures were 33% and 30% respectively. Smaller proportions of effort are expended on *Observation/Data Collection* (9%), *Data reduction* (13%), and *Instrumentation* (7%). Activities are split 60%, 28% and 13% between *Ground-based*, *Space* and *Other* areas respectively, compared to 59%, 31% and 10% respectively for permanent staff.

Data are not presented for postdoctoral research associates with research interests in geophysics as there were very few survey responses from this group.

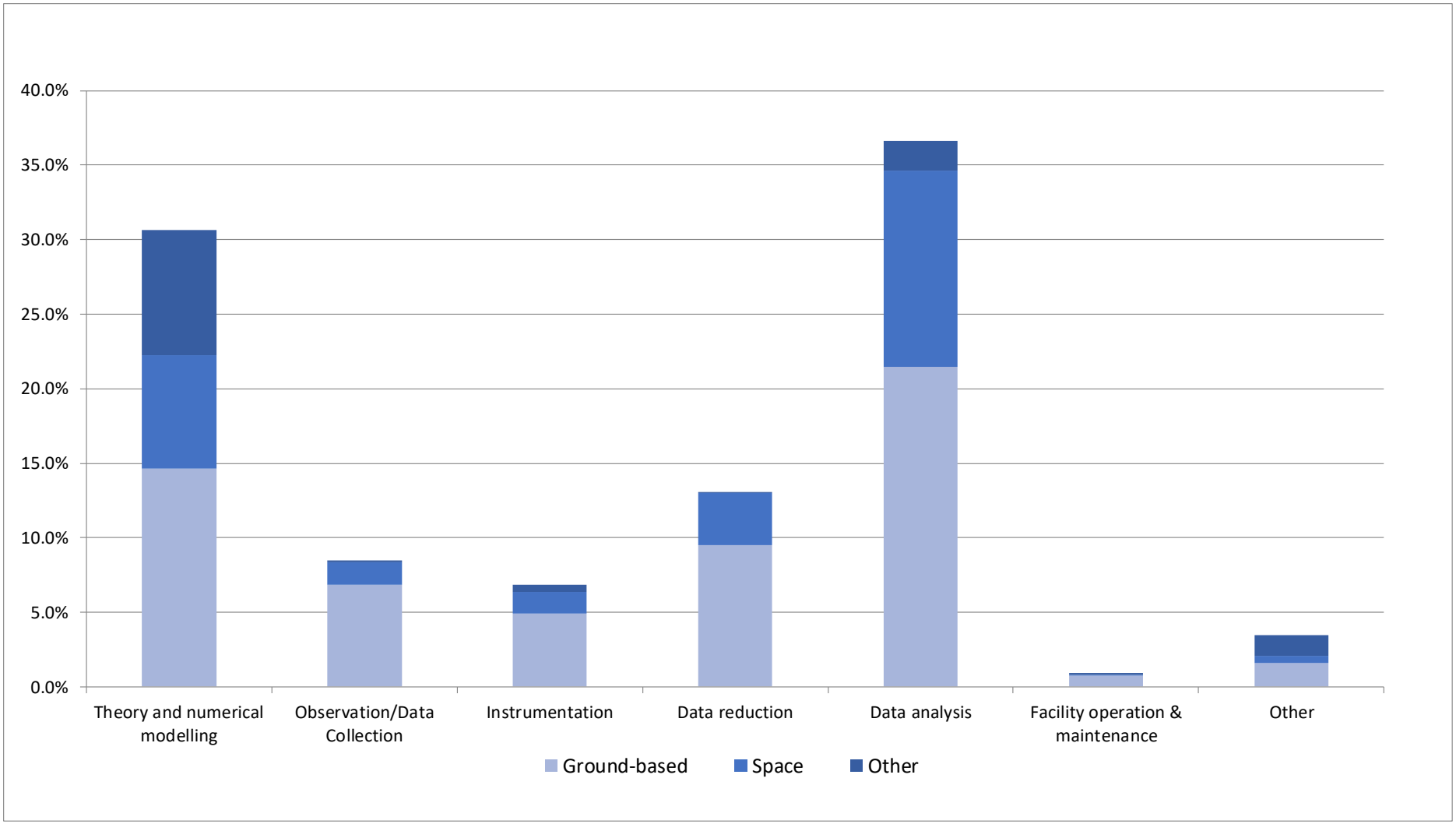

Figure 16: Proportion of effort spent on various general research activities by postdoctoral research associates with research interests in astronomy 2016

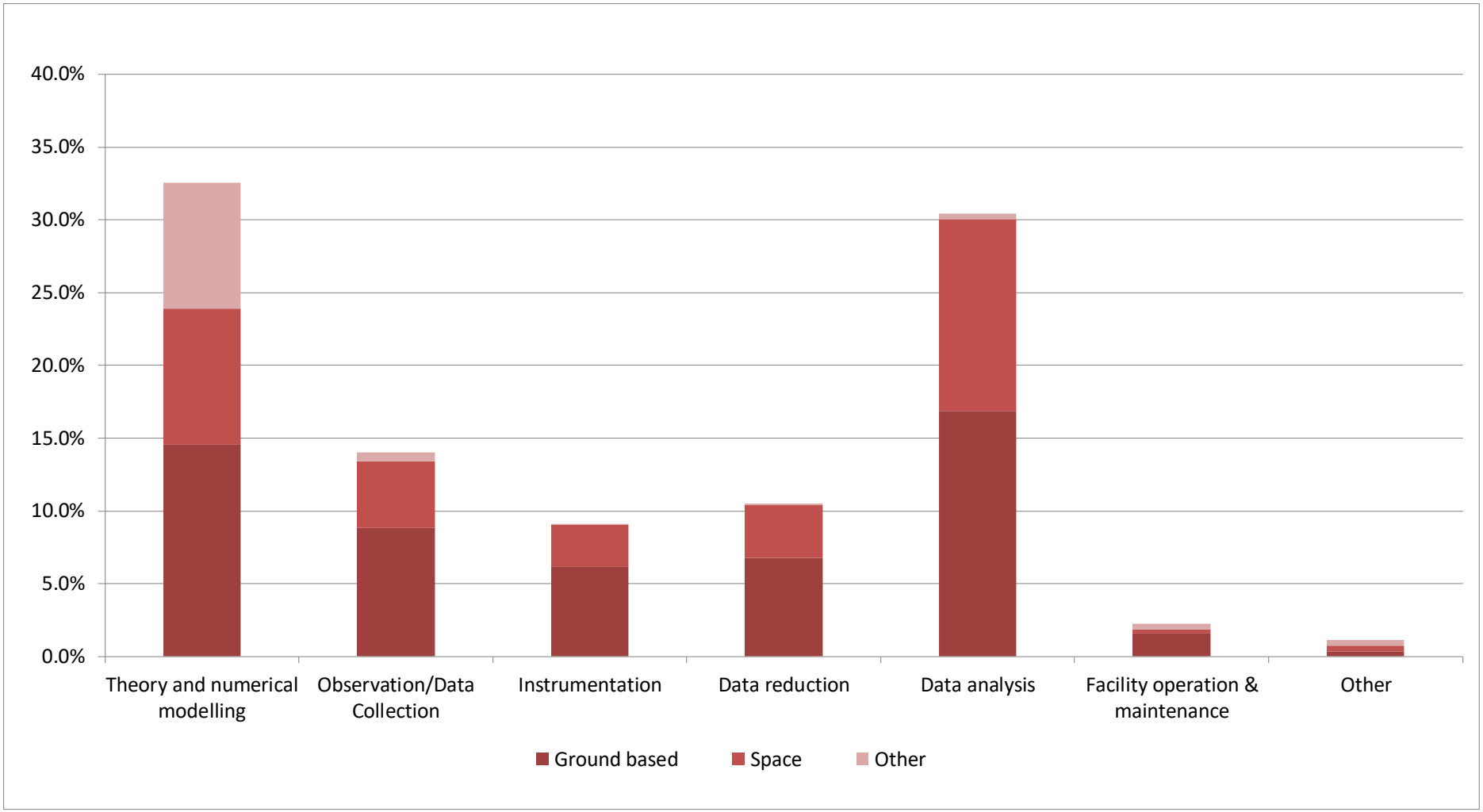

Figure 17: Proportion of effort spent on various general research activities by postdoctoral research associates with research interests in astronomy 2010

Table 41: The pattern of use of facilities at various wavelengths by postdoctoral research associates with research interests in astronomy shown as full-time equivalents 2016 (N=191)*

General area of research	Research effort expended on facilities by wavelength (FTEs)									
	Radio	mm and sub-mm	IR	Optical	UV	X-ray	Gamma and Cosmic Ray	Other	Not applicable	Totals
Theory and numerical modelling	5.3	4.6	3.4	6.2	1.2	1.7	0.4	5.0	10.6	38.4
Observation/Data Collection	1.2	2.1	1.7	4.0	0.5	0.4	0.2	0.2	0.5	10.7
Instrumentation	0.7	1.0	0.8	1.6	0.2	1.7	0.0	0.8	0.6	7.3
Data reduction	3.1	2.8	3.0	5.9	1.3	0.9	0.1	0.0	0.5	17.7
Data analysis	4.0	9.2	9.0	15.1	2.0	2.8	0.1	2.0	0.6	44.9
Facility operation & maintenance	0.2	0.0	0.1	0.4	0.0	0.2	0.0	0.0	0.7	1.5
Other (please specify below)	1.8	0.0	0.1	0.1	0.0	0.2	0.5	0.9	2.7	6.4
Totals	**16.3**	**19.7**	**18.1**	**33.4**	**5.3**	**7.9**	**1.3**	**9.0**	**16.1**	**127.0**

Table 41 shows the pattern of use of facilities at various wavelengths by postdoctoral research associates with research interests in astronomy as a Full-Time Equivalent number of staff and Figure 18 presents the same data as proportions of total research effort. The 2010 data is presented in Figure 19 for comparison.

As with the permanent staff, the data show that the greatest use is made of facilities at optical wavelengths. Compared to 2010, use of IR facilities has fallen, while the use of those at Radio and mm and sub-mm wavelengths has risen. In 2010, the use of facilities at infrared wavelengths was the second most popular, and the use of mm and sub-mm facilities ranked sixth. In 2016, the use of facilities at mm and sub-mm wavelengths was the second most popular.

A full breakdown of the postdoctoral research associates' research interests is shown in Appendix A and the overall results are discussed in Section 4.5.

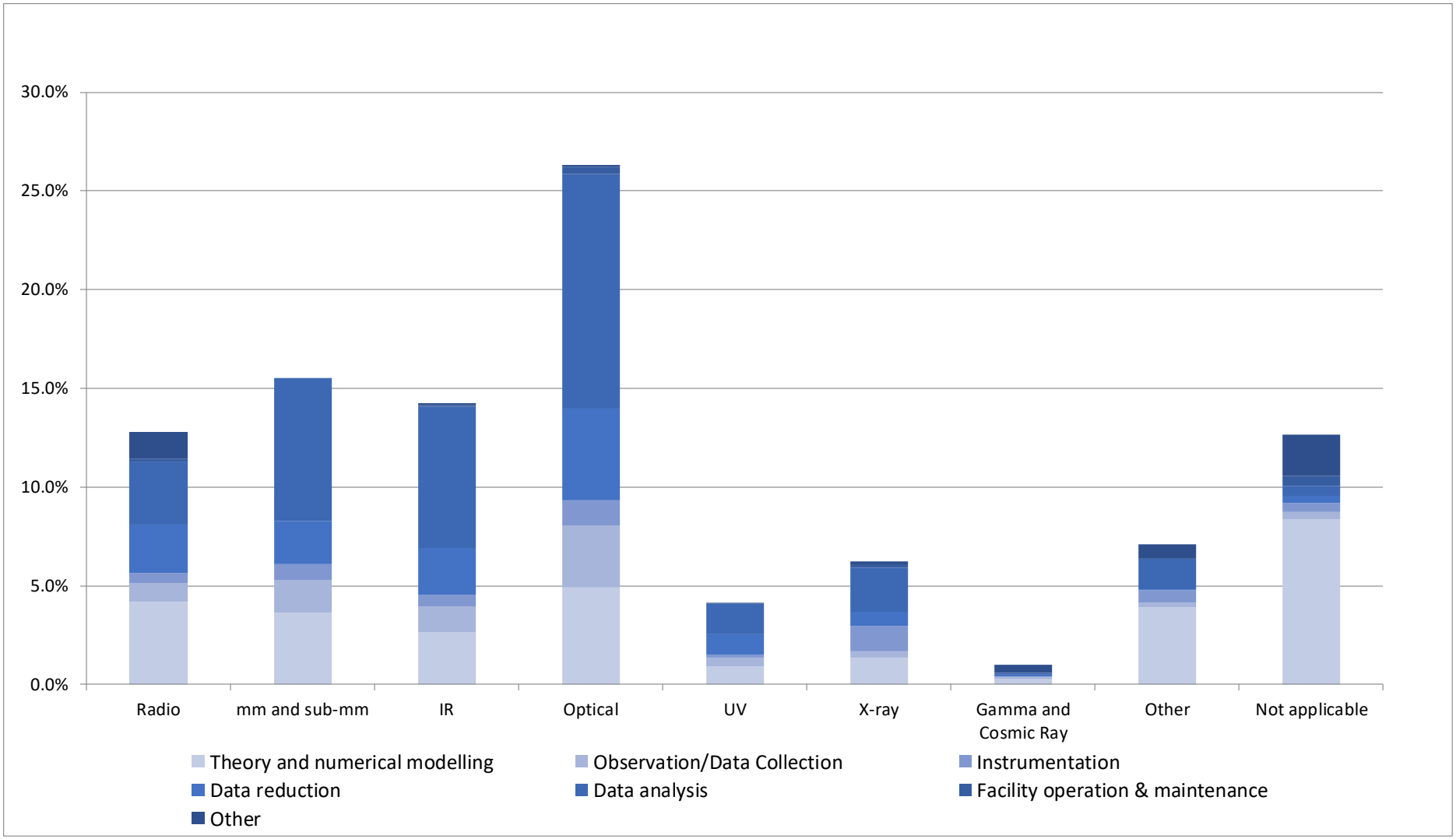

Figure 18: Proportion of effort spent on various general research activities by fixed-term postdoctoral research associates with research interests in astronomy 2016

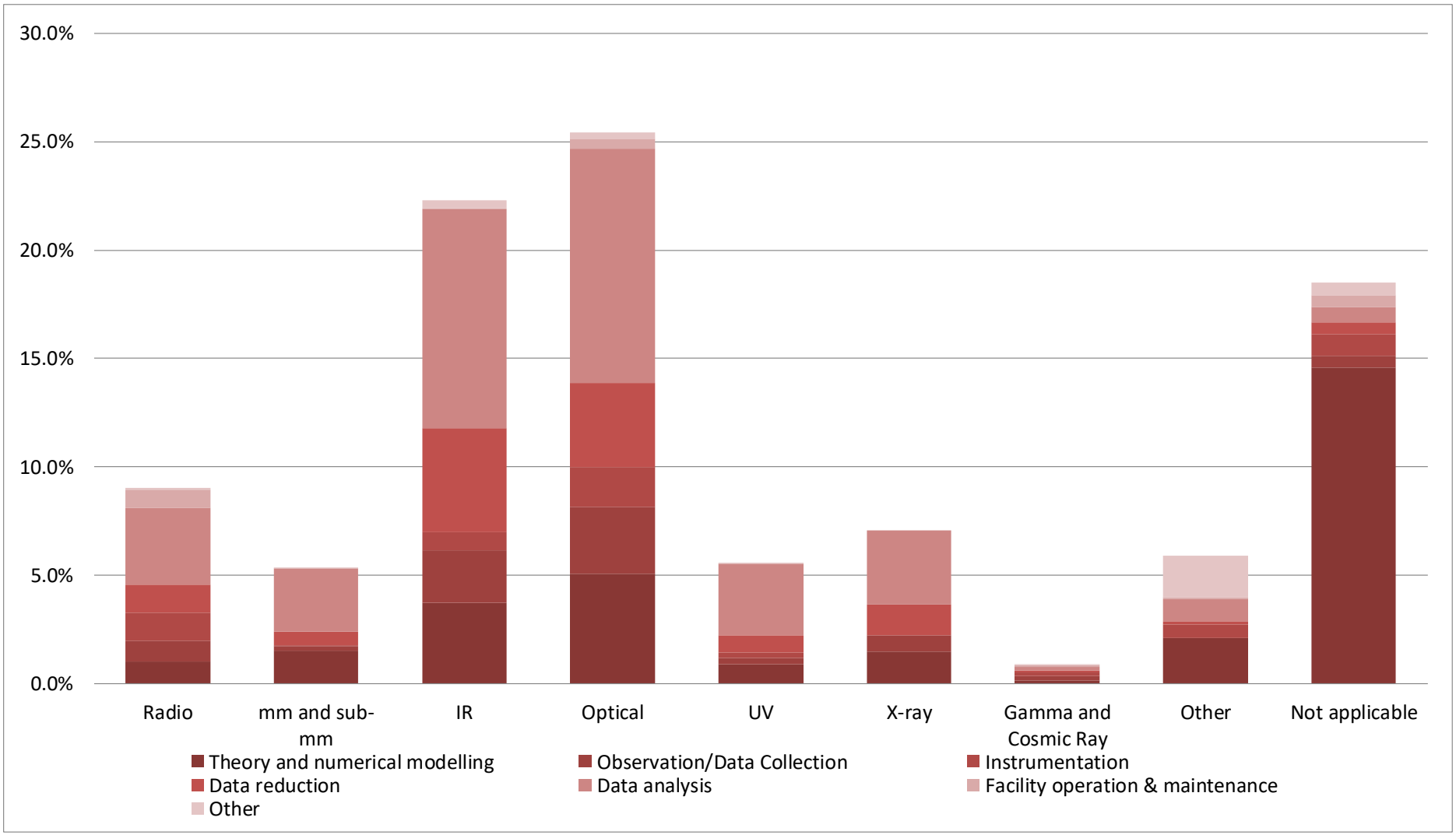

Figure 19: Proportion of effort spent on various general research activities by fixed-term postdoctoral research associates with research interests in astronomy 2010

4.3 Postgraduate research students

308 research students began the questionnaire of which 20 did not complete the questionnaire and 9 reported that they did not have work in areas related to Astronomy or Geophysics. 269 students are studying for doctorates and 10 for master's degrees. 5 students are studying part-time. 6 research students reported that they considered themselves to be disabled.

Of the 246 respondents working in areas related to astronomy who specified their sex, 65% are male, 33% are female and 2% did not indicate their sex. These figures are very like the figures in 2010 in which 65% were male and 34% were female. Of the 33 respondents who indicated interests in geophysics, 22 (61%) are male and 14 (39%) are female.

Just 7 postgraduate research students indicated that they have children, and all of those indicated that the children were over the age of 18.

Table 42 gives the reported sexual orientation of postgraduate research students respondents. Overall 76% of postgraduate research students reported themselves as heterosexual or straight, 7% as gay or lesbian and 8% as bisexual. The patterns for men and women were different albeit the numbers of women are too small to draw any firm conclusions. As for the other groups, a smaller proportion of postgraduate research students in the national survey did not give their sexual orientation or reported it as "other". Comparing just those who reported their sexual orientation, 83% of staff reported themselves as heterosexual or straight compared to 96.8% in the national data, 8% as gay or lesbian compared to 1.8% nationally, and 9% as bisexual compared to 0.9% nationally. The declared sexual orientation of the survey postgraduate research student respondents suggests that a higher proportion is gay, lesbian or bisexual than the UK national population.

Table 42: Sexual orientation of postgraduate research students responding to the individual questionnaire 2016

Sexual Orientation	Postgraduate research students						ONS Data for people aged 25-34*
	Male		Female		Total		
Heterosexual or straight	143	93.5%	66	70%	210	76%	92.5%
Gay or lesbian	16	1.5%	3	3%	20	7%	1.7%
Bisexual	9	0.6%	12	13%	23	8%	0.4%
Do not wish to say	9	4.4%	13	14%	23	8%	4.5%
Other	0	0%	0	0%	0	0%	
Total	**168**		**81**		**253**		

As shown in Table 43, overall 69% of postgraduate research students are British, 16% are from elsewhere in the European Union, and 1% are from the USA. There is no significant difference between the distributions of nationalities of males and females. The distribution is very like that in 2010.

Table 43: The nationality and gender of postgraduate research students in astronomy and geophysics 2016 (N=279)

Nationality of postgraduate research students	Number and gender of postgraduate research students				Proportion of research students by nationality	
	Male	Female	Other	Do not wish to say	2016	2010
British	129	60	2		68.5%	68.2%
Other European Union	25	17	2	1	16.1%	15.9%
USA	3	1			1.4%	2.3%
Other	19	14	1		12.2%	13.6%
Do not wish to say	1	2		2	1.8%	
Total	**177**	**94**	**5**	**3**	**100.0%**	**100.0%**

The ethnicity and nationality of postgraduate research student respondents is shown in Table 44.

Table 44: Ethnicity and nationality of postgraduate research students 2016

Ethnicity	Count of postgraduate research students by nationality					
	British	Other European Union	USA	Other	Do not wish to say	Total
White	165	40	4	11	1	221
Indian	7	0	0	5	1	13
Other Asian	5	1	0	9	0	15
Black	1	1	0	2	0	4
Mixed	11	2	0	5	0	18
Do not wish to say	0	0	0	2	0	2
Totals	**189**	**44**	**4**	**34**	**2**	**273**

87% of the British who indicated their ethnicity are White which is in line with the 2011 census data for the UK population. Although the numbers of the BME British students are too small to draw any firm conclusions, only 1 respondent reported their ethnicity as Black. The postgraduate research student population is more diverse that the permanent staff or postdoctoral research associate populations. 91% of those of nationalities of other European Union countries who indicated their ethnicity are White.

Respondents were asked about their religious beliefs. The results are shown in Table 45. 75% of those who disclosed their beliefs stated that they had no religion, and 18% reported that they were Christian.

Table 45: Religious beliefs of postgraduate research students responding to the individual questionnaire 2016

Religion	Postgraduate research students	
	Number	Distribution
No religion	195	74.7%
Christian	46	17.6%
Hindu	9	3.4%
Muslim	4	1.5%
Jewish	2	0.8%
Buddhist	1	0.4%
Other religion	4	1.5%
Do not wish to say	15	
Total	**276**	

Table 46 shows the sources of funding for postgraduate students in astronomy and solar system science. 159 respondents indicated a single source of funding, 40 indicated 2 sources of funding and 1 respondent indicated 4 sources.

Most British students (62%) in astronomy and solar system science receive funding from the STFC, 5% from the NERC, and 23% from their university. The proportion receiving funding from their university is significantly higher than in 2010 when the figure was 11%. 13% of British student report that they are self-funded either fully or in combination with another source of funding. 41% of non-British students are supported by their host university and/or department, 27% by research councils, and 33% are self-funded. 11% of all students indicated that have "other" sources of funding which comprise a variety of sources including funding from the research students' home governments.

The majority of British solid earth geophysics students receive their finding from the NERC (65%).

Table 46: Sources of funding and nationality for postgraduate research students in astronomy and solar system science 2016

Funding source*	Nationality of postgraduate research students			
	British	Other European Union	Other	Total
STFC	106	13	7	126
NERC	9	1	0	10
EPSRC	5	0	0	5
The University/Department	39	18	17	74
UK Space Agency	2	0	0	2
Industry	1	0	0	1
European Commission	5	4	4	13
Royal Astronomical Society	1	0	0	1
Self-funded	23	23	23	23
Other	9	5	12	26
Total Respondents	**171**	**37**	**38**	**246**

* Respondents were able to indicate multiple funding sources

Table 47 shows the broad research areas which post graduate research students work in. 225 respondents indicated a single research area, 18 indicated 2 areas, 1 indicated 3 areas, and 1 respondent indicated 4 areas.

Table 47: The main research areas of postgraduate research students 2016

Broad Research Area*	Male	Female	Total
Astronomy: Astronomy and/or Astrophysics	126	61	191
Astronomy: Particle Astrophysics	7	1	8
Solar System: Planetary Science	14	7	21
Solar System: Earth Observation	1	1	2
Solar System: Atmospheric Science	3	4	7
Solar System: The Sun	15	4	21
Solar System: Solar-Terrestrial Physics	2	1	3
Solar System: Cross Discipline Topics	2	2	4
Geophysics: Solid Earth Geophysics	7	4	12
Total Respondents	**158**	**80**	**246**

* Respondents were able to indicate more than one research area

81% of respondents indicated that they have interests in astronomy and/or astrophysics, 24% indicated an interest in some aspects of solar system science, and 5% indicate an interest in geophysics.

Postgraduate research students were not asked the details of how they divided their time. It was assumed that the overwhelming majority of their time would be spent on research.

A full breakdown of the postgraduate research students' research interests is shown in Appendix A and the overall results are discussed in Section 4.5.

4.4 Technical staff

33 technical staff completed the questionnaire. 10 (31%) of the sample were female and 21 (66%) were male. Fours staff worked part-time. 8 of the female staff and 6 of the male staff, were in temporary posts.

29 (88%) of the technicians were British, and 30 (94%) reported their ethnicity as White.

2 staff reported that they regarded themselves as disabled.

6 staff reported that they supervised research students.

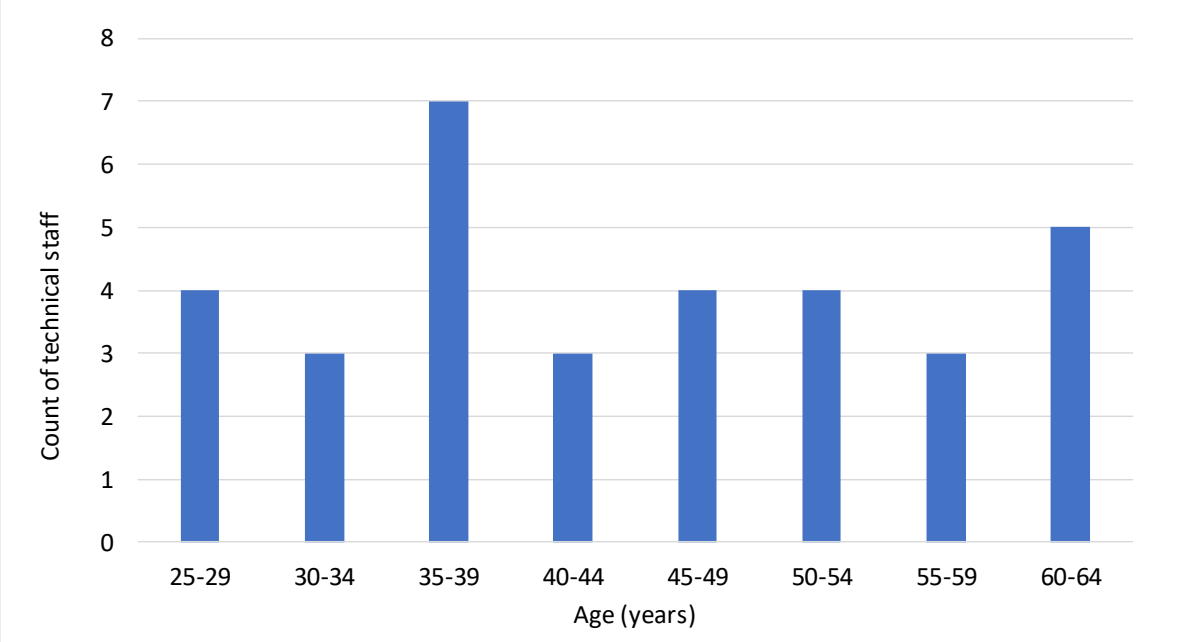

Figure 20: The age profile of technical staff in astronomy and geophysics 2016

Figure 20 shows the age profile of the technical staff. The sample includes staff across the full working age range but is too small to draw any firm conclusions.

Table 48 presents the information on the sexual orientation of technical staff. 94% report that they are heterosexual or straight.

Table 48: Sexual orientation of technical staff responding to the individual questionnaire 2016

Sexual Orientation	Count	Distribution
Heterosexual or straight	29	94%
Gay or lesbian	1	3%
Bisexual	1	3%
Total	**31**	

Respondents were asked about their religious beliefs. Among those who replied, 26 (81%) reported that they had no religion, and 6 (19%) reported that they were Christian.

Table 49: Number of children of technical staff responding to the individual questionnaire 2016

Number and ages of children				Number of technical staff respondents
Number of pre-school age children (under 5 years old)	Number of school age children (5 to 18 years old)	Number of grown up children (Above 18 years old)	Total number of children	
0	0	0	0	20
		1	1	2
		2	2	4
		3	3	1
	1	0	1	2
	2	0	2	1
	3	0	3	1
1	0	0	1	1
2	0	0	2	1
Total				**33**

Table 50: Number of children of technical staff responding to the individual questionnaire 2016

Number of Children	Male	Female	Total
0	11	7	20
1	3	2	5
2	5	1	6
3	2	0	2
Total	21	10	33

Table 49 presents data on the number of children technical staff have, broken down by whether the children are pre-school age, school age (5 to 18 years old) or grown up (above 18 years old). Table 50 presents the same data but shows the total number of children. 61% of technical staff do not have children. This figure appears high but given the sample size is too small to draw any firm conclusions.

29 technicians provided information on how they divided their time between various general activities. The results are shown in Table 51 together with the data from 2010. As with the age data, the sample size is too small to draw firm conclusions, but the overall pattern is the same as in 2010. Technical staff split the bulk of their time between general support activities, facility operations and maintenance, instrumentation and/or research activities.

Table 51: How technical staff divide their time between different activities 2010 (N=32) and 2016 (N=29)

Activity	Proportion of time	
	2016 (N=29)	2010 (N=32)
Support	39%	30%
Facility operations and maintenance	17%	21%
Instrumentation	13%	21%
Research	14%	16%
Teaching	4%	4%
Administration	7%	3%
Public engagement/Outreach	6%	1%
Other	1%	4%

Table 52 presents data on whether technicians work on ground-based or space-based facilities. The data suggest that that as in 2010 there is a tendency towards ground-based work, however, the small sample sizes mean that these comparisons can only be tentative.

Table 52: Whether technicians' work is ground-based or space-based 2010 (N=31) and 2016 (N=29)*

Nature of work	Count	
	2016 (N=31)	2010 (N=29)
Both space- and ground-based	2	5
Ground-based	19	16
Space-based	1	7
Not applicable	7	3
Total	**29**	**31**

* Note small sample sizes mean that direct comparisons are only indicative.

Respondents were asked about their pattern of use of facilities at various wavelengths. The results are shown in Table 53. Of the 29 respondents who completed this part of the questionnaire, 15 indicated that they did not work on any specific wavelength. Of the remaining 14 respondents that provided data, 8 specified a single wavelength region, 4 specified 2 regions, and 3 specified 3 regions.

In line with the data for other staff, and with the 2010 data, the most frequently used facilities operate in the optical, infrared and radio, mm and sub-mm regions, albeit again the small sample sizes mean that these comparisons can only be tentative

Table 53: Use of facilities at various wavelengths by technical staff 2010 (N=32) and 2016 (N=29)*

Wavelength region	Count	
	2016 (N=29)	2010 (N=32)
Not applicable	15	10
Radio mm and sub-mm	8	8
IR	5	7
Optical	8	13
UV	1	2
X-ray	1	1
Gamma and Cosmic Ray	1	0
Other	1	2

* Note small sample sizes mean that direct comparisons are only indicative.

4.5 Overall results from individual questionnaires

Although most data generated by the individual questionnaires was designed to be analysed by category of individual, i.e., permanent staff, postdoctoral research associates, postgraduate research students and technical staff, some data, in particular that for permanent staff and for postdoctoral research associates can usefully be considered together.

Figure 21 shows the combined data for permanent staff and postdoctoral research associates for proportion of total effort expended on each general research activity. 32% of effort is expended on *Theory and numerical modelling* and 34% on *Data analysis*, 10% on *Observation/Data Collection*, 12% on *Data reduction*, and 8% on *Instrumentation*, 1% on *Facility operation and maintenance* and 4% on *Other* activities. Activities are split 59%, 30% and 12% between *Ground-based*, *Space* and *Other* areas respectively. The pattern of activity is like that found in 2010.

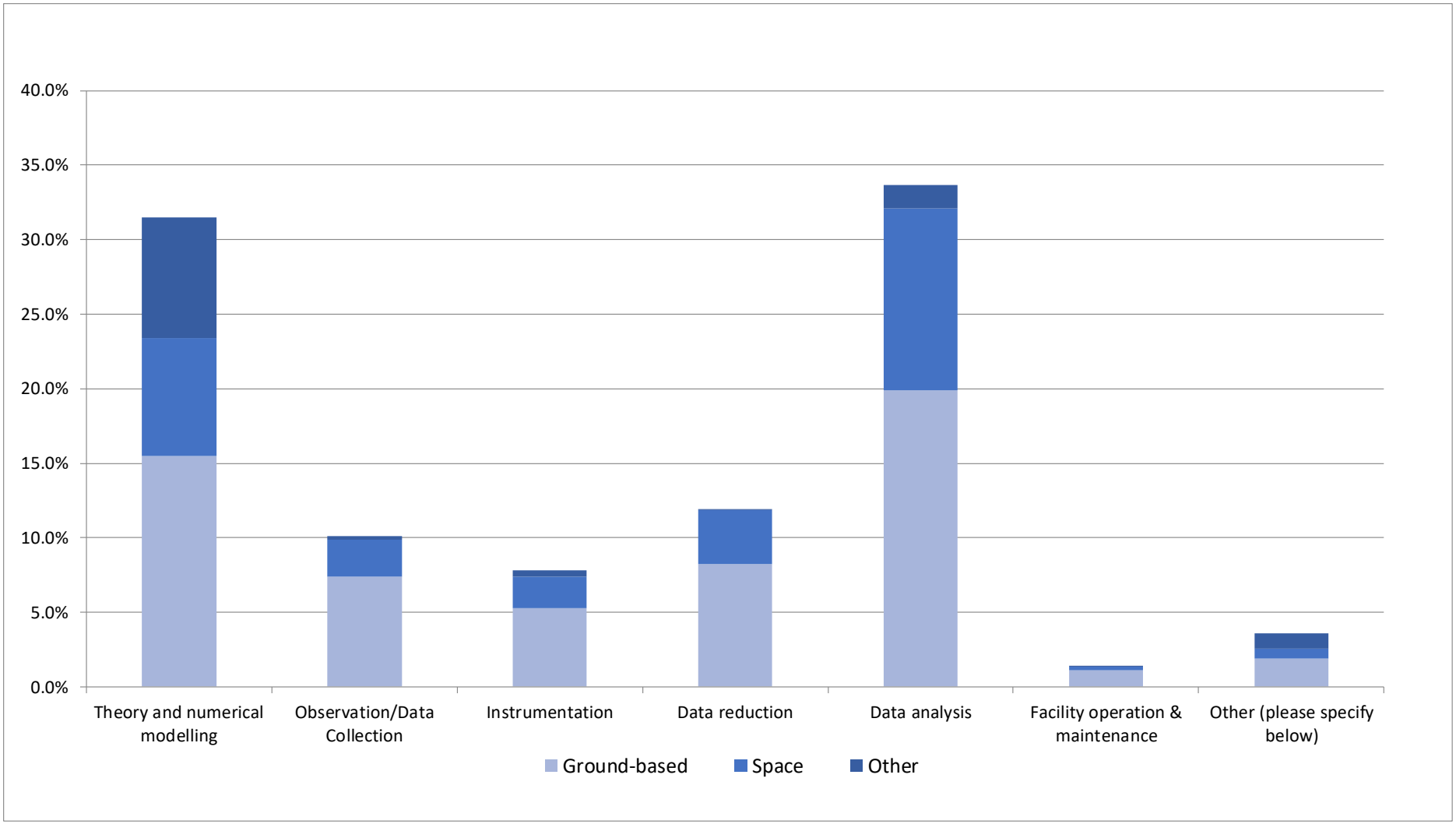

Figure 21: Proportion of effort spent on various general research activities by permanent staff and fixed-term researchers with research interests in astronomy 2016

Figure 22 shows just the relative proportions of effort devoted to facilities in different wavelength regions from the current study and that from the 2010 and 1998 surveys.

The data show that there was relatively little change in the proportions of effort between 1998 and 2010 except at X-ray wavelengths where the proportion of effort fell from 20% to 10% and that the effort expended on the IR region increased from 17% to 24%. Between 2010 and 2016 the main change was an increase in the effort on the mm and sub-mm region from 8% to 17% and a fall in the effort on the IR region from 24% to 17%.

Between 1998 and 2016 the main changes are a fall in the effort on the X-ray region from 20% to 9% and an increase in the effort on the mm and sub-mm region from 7% to 17%.

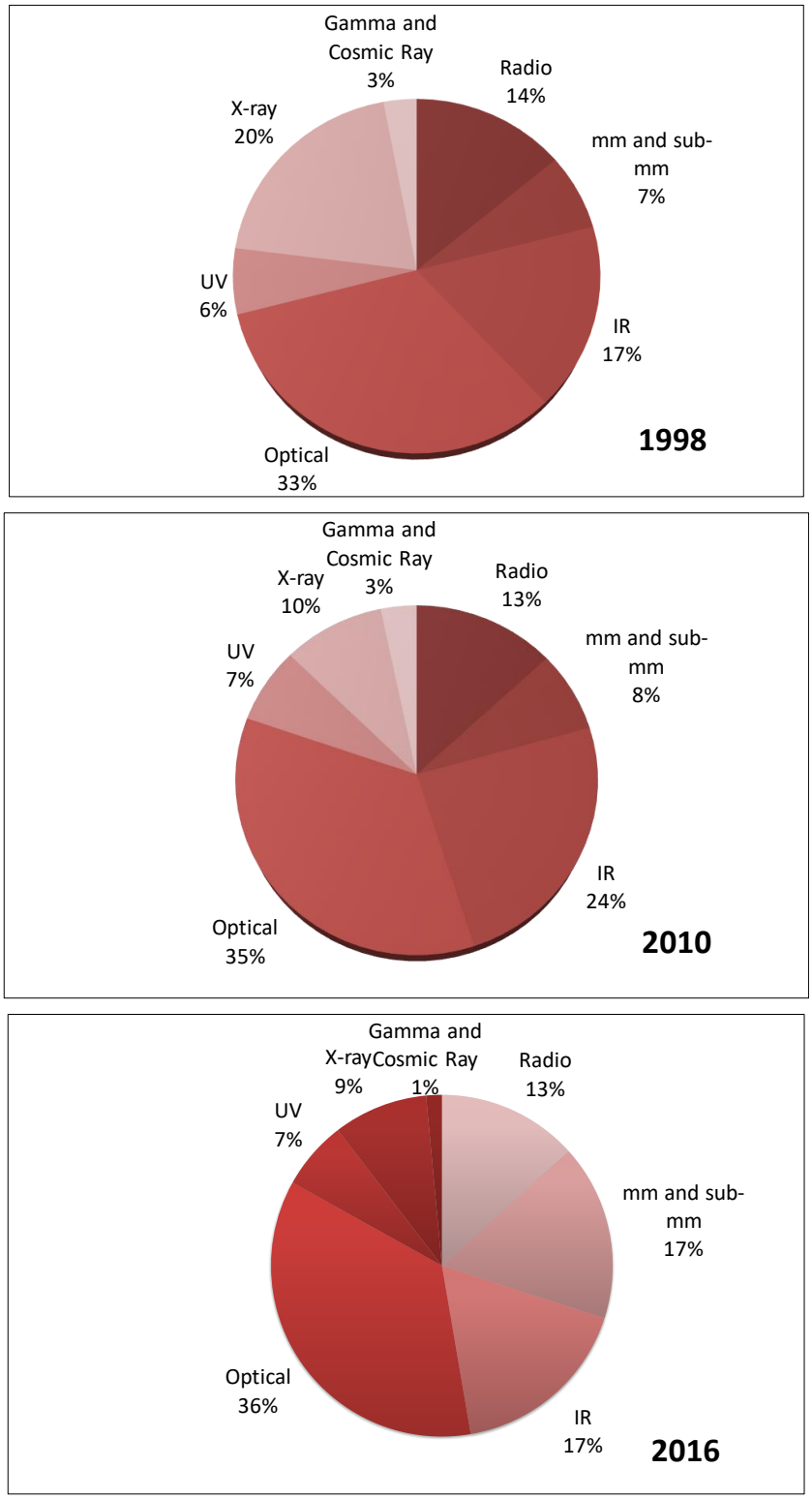

Figure 22: Relative proportions of effort devoted to facilities in different wavelength regions from the current study and that from the 2010 and 1998 surveys.

A full breakdown of the detailed research interests of researchers is presented in Appendix A. The popularity of each research area was judged by summing the number of permanent staff, postdoctoral researchers, and research students who indicated an interest in that area. No account was taken of the number of research interests each individual indicated. The relative popularity of each area was ascertained by calculating the proportion of the total "votes" that each sub-area received within *astronomy, solar system science* and *solid earth geophysics*, respectively, and also across all research areas.

Within *Astronomy* the most popular research areas were *Galaxies/Extragalactic (18.5%)*, *Stars* (15.5%), *Cosmology (11.0%) and Radio, sub millimetre, infrared sources or background* (8.7%) which is the same order as in 2010. The most popular areas within *Galactic and Extragalactic Research* are *Formation and Evolution* (28.9% within sub-field)*, Normal Galaxies* (17.3%) and *Active Galaxies* (15.8%). Within *Stellar Research* the most popular areas are *Formation and Evolution* (23.7% within sub-field), *Binary Stars* (17.6%), and *Variable (pulsating/eruptive) stars* (13.3%). Within *Cosmology Research*, the most popular research areas are *Large scale structure* (27.6% within sub-field), *Dark Energy* (18.3%) and *Dark matter* (17.4%).

Within *Solar System Science* the most popular research areas were *Solar Studies* (11.9%), *Solar System — origin/evolution (8.0%)*, *Cross Discipline Area — Plasma physics* (8.0%), and *Meteorites/Comets* (7.6%). Of those who indicated their interests in planetary science, 30.8% indicated an interest in the *Earth*, 18.7% in *Mars*, and *15.4%* in the *Gas Giants.*

Within *Solid Earth Geophysics* the most popular research areas are *Seismology* (11.3%), *Earth Structure* (10.9%) and *Tectonophysics* (9.9%).

4.6 Facilities

Permanent staff and postdoctoral researchers who responded to the individual questionnaire were asked to indicate which major facilities they had used in the UK and abroad within the last 24 months. Respondents were presented with a list of the most popular facilities listed by respondents to the 2010 survey and were invited to indicate which of those facilities that they had used and to list other facilities. The data for permanent staff were analysed by classifying the facilities by research area or whether they were computing facilities, and where appropriate by operating wavelength.

The facilities reported used by 10 or more permanent staff in the previous 24 months are presented in Figure 23 and the equivalent plot of facilities reported used by permanent staff in the 2010 survey is shown in Figure 24.

It is worth noting that the frequency which a facility is mentioned is not necessarily a direct measure of its usage given that respondents were asked to list all the facilities they had used in the last two years, without indicating the frequency of usage.

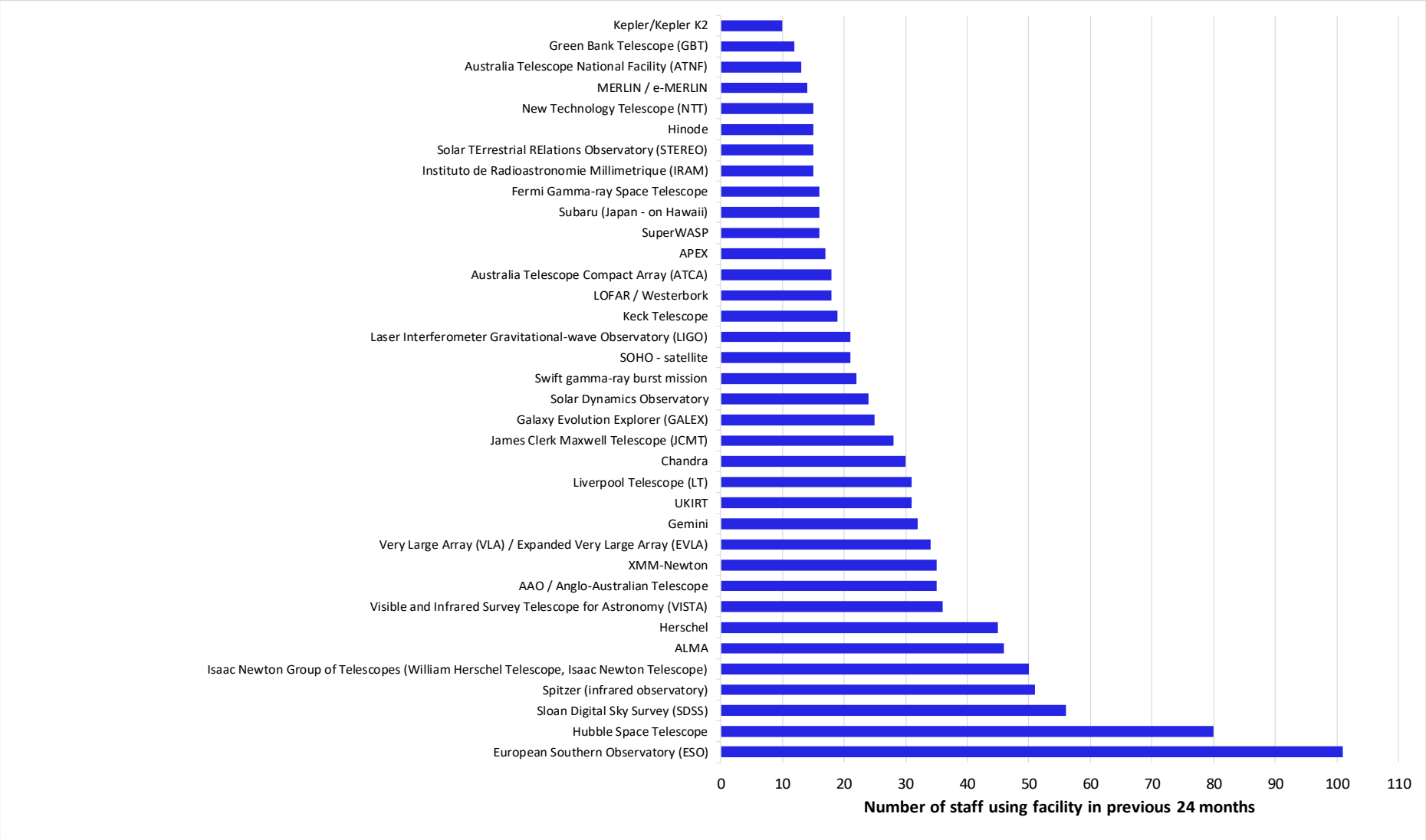

Figure 23: The facilities most frequently used by permanent staff in astronomy and geophysics in the previous 24 months 2016 (A number of ESO instruments are listed separately from the ESO, i.e., APEX, ALMA, NTT, VISTA)

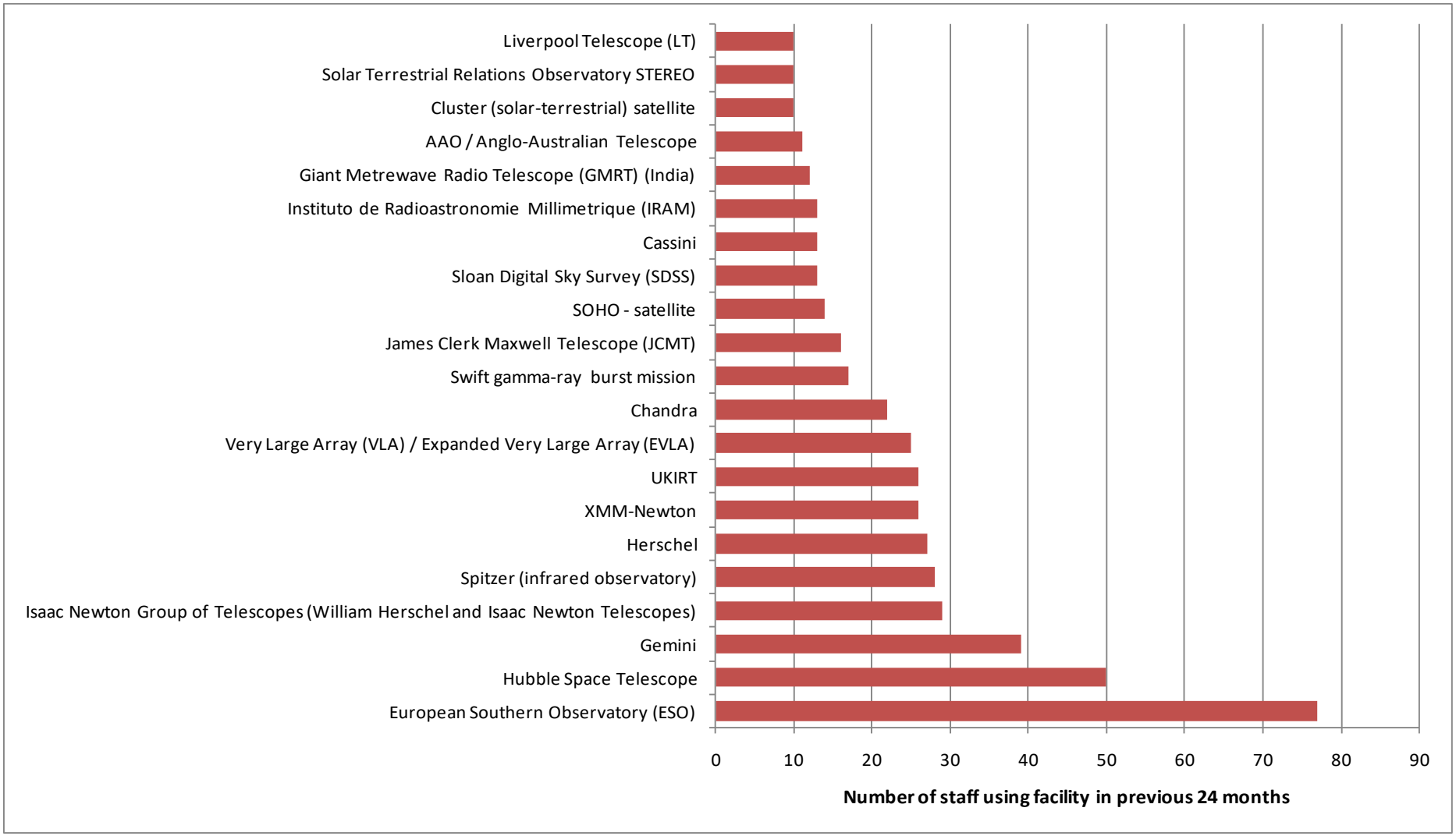

Figure 24: The facilities most frequently used by permanent staff in astronomy and geophysics in the previous 24 months 2010

Comparison of the numbers of permanent staff responding to the 2010 and 2016 surveys shows fewer staff responded to the 2016 survey (see Table 54). Nonetheless in 2010 respondents mentioned 1002 instances of facilities having been used in the previous 24 months while in 2016 1264 instances were mentioned. The data suggest that a wider range of facilities were used in 2016 than in 2010.

Table 54: Comparison of the broad research interests of permanent staff in 2010 and 2016

Broad research area*	Count of permanent research staff	
	2010 (N=392)	2016 (N=363)
Astronomy: Astronomy and/or Astrophysics	237	249
Astronomy: Particle Astrophysics	34	24
Solar System: Planetary Science	56	46
Solar System: Earth Observation	10	6
Solar System: Atmospheric Science	17	12
Solar System: The Sun	31	34
Solar System: Solar-Terrestrial Physics	39	25
Solar System: Cross Discipline Topics	17	7
Geophysics: Solid Earth Geophysics	59	43
Other Related Subject	43	4

* Respondents were able to indicate more than one research area

5 Conclusions

5.1 Departmental and research establishment questionnaires

40 university departments/research groups and two research establishments returned the questionnaire. Data for a further 47 university departments and six other research establishments were taken from their websites.

Astronomy is the most populous research area in universities with 1301 staff (academic staff, fixed-term and permanent research staff, and technical and support staff), followed by solid earth geophysics with 787.5 staff and solar system science with 234 staff. 270 staff were recorded as working in cross-disciplinary areas.

Within research establishments, the most populous area is solid earth geophysics with 638 staff (permanent research/scientific staff, and technical and support staff).

Among academic staff, as in 2010 there is a high proportion of professors in all research areas: 49% of astronomy staff on academic grades are professors, 41% of staff in solar system science, 40% of staff in solid earth geophysics, and 48% of staff in cross disciplinary areas. As in 2010, on average these figures are higher than the proportion of professors in the physics cost centre, which stood at 30% in 2015/16.[9] It was noted in the 2010 report that the number of professors has risen significantly since 1993, and the number has continued to rise since then. This is also the case in physics overall in which the number of staff at all academic grades has risen. The number of lecturers has also risen since the last survey, having remained steady between 1998 and 2010. Overall the number of academic staff with research interests in astronomy and solar system science has risen from 292 in 1993, through 312 in 1998 and 514 in 2010, to 641 in 2016.

It remains difficult to explain why the numbers of academic staff in the areas of interest to this study continue to rise. Data presented in the 2010 report suggested that astronomy-related undergraduate courses were a popular option and it is a possibility that the supply line of potential researchers continues to be strong. It remains difficult to establish exactly how many undergraduate students are reading astronomy as many courses are based in physics departments and a significant proportion of students are reading astronomy as part of other degree courses. The Higher Education Statistics Agency (HESA) collects data on the full-time equivalent (FTEs) students taking course in specific subjects including astronomy and physics. Higher Education Institutes can classify their courses as they see fit degree. Hence some caution needs to be shown when considering data on numbers of students reading astronomy.

Data in Table 55 show a headcount of undergraduate students spending at least 50% of their time reading physics or astronomy as part of their first-degree studies and data in Table 56 shows similar data but just for those in their first year. It should be noted that not all astronomy modules will necessarily be labelled as astronomy and so the astronomy numbers

[9] Higher Education Statistical Agency (HESA) Staff Data 201/15

are likely to be an under-estimate. The data suggest that overall the headcount of those reading physics has increased over the time period under consideration, while the headcount of those reading astronomy has fallen.

Table 55: Headcount of student registered in all years of physics or astronomy first degree courses in UK institutions for 0.5 FTE or more of their time

Subject	Degree	Gender	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Physics	First Degree	Male	5665	5355	5415	6045	6480	6850
		Female	1645	1445	1460	1575	1745	1855
	Enhanced First Degree	Male	5760	6420	6835	7445	7795	8040
		Female	1475	1625	1720	1890	2000	2135
	Total	Male	11425	11775	12250	13485	14275	14885
		Female	3120	3075	3180	3465	3745	3990
Astronomy	First Degree	Male	1480	1155	865	780	660	670
		Female	455	365	295	255	205	235
	Enhanced First Degree	Male	405	415	475	475	515	560
		Female	150	175	190	220	245	240
	Total	Male	1885	1575	1340	1255	1175	1230
		Female	605	535	485	480	450	475

Table 56: Headcount of students registered in the first-year of physics or astronomy first degree courses in UK institutions for 0.5 FTE or more of their time

Subject	Degree	Gender	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Physics	First Degree	Male	1850	1735	1785	2325	2330	2370
		Female	485	400	475	530	650	655
	Enhanced First Degree	Male	1740	2125	1985	2200	2195	2200
		Female	480	520	505	590	620	660
	Total	Male	3590	3860	3770	4525	4525	4570
		Female	965	920	975	1120	1270	1320
Astronomy	First Degree	Male	380	320	195	160	165	245
		Female	110	95	70	55	50	90
	Enhanced First Degree	Male	115	120	135	105	130	160
		Female	45	60	50	60	70	60
	Total	Male	490	440	330	265	295	400
		Female	160	155	125	115	115	155

Comparing acceptances onto physics courses and astronomy-related courses (astrophysics, cosmology, space science, astronomy and planetary science) between 2002 and 2014 using data supplied by the University and College Admissions Service (UCAS), and analysed by the RAS, shows that physics acceptance rose from 3779 to 4495 in 2010, and then to 6035 in 2014 while acceptances onto astronomy-related courses fell from 879 to 696 between 2003 and 2010, but

then rose to 1005 in 2014.[10] So overall the UCAS data suggest that numbers on astronomy-related courses are rising, and hence the supply of students from UK higher education institutions into PhD courses will continue and the potential supply of astronomy researchers will remain healthy.

The number of postdoctoral researchers in universities (those on open-ended, fixed-term and unknown contract type) in astronomy and solar system science has continued to rise and now stands at 599 compared to 524 in 2010. The ratio of research-only to academic (teaching and research staff) staff in astronomy and solar system science has risen from 0.98 in 2010 to 1.07 in 2016.

The number of recorded technical staff has risen. 143 permanent and 65 fixed-term technical staff were recorded in 2016. The number recorded is close to the number recorded in 1998 and higher than that in 2010.

In astronomy 12% of professors, 18% of Senior Lecturers/ Readers and 29% of lecturers are female, in solar system science 21% of professors, 22% of Senior Lecturers/ Readers and 27% of lecturers are female, and in geophysics 9% of professors, 23% of Senior Lecturers/ Readers and 28% of lecturers are female. Comparing the data for 2010 and 2016 shows that in most staff/research area categories, the proportion of staff who are female has risen. Solar system science has the least leaky pipeline.

As noted in 2010, comparison with data for physics shows that in the research areas under consideration, the proportions of staff who are female are higher suggesting that women are more likely to work in (academic) astronomy and geophysics than in physics.

Astronomy, solar system science and geophysics appears to attract a higher proportion of women than physics, and in fact at student levels attracts a higher proportion of women than might be expected given only around 20% of entrants to A level physics are female.

As in 2010, the median age for research-only staff is 30-34 years. The median age for academic staff is 45-49 in contrast to 2010 when it was 40-44 years.

The median ages for each grade are: 30-34 years for fixed-term research staff (2010: 30-34 years), 35-39 years for research staff on open-ended contracts (2010: 30-34 years), 35-39 years for lecturers (2010: 35-39 years), 40-44 years for senior lecturers/readers (2010: 40-44 years), and 50-54 years for professors (2010: 55-59 years).

Compared to 2010, the permanent academic staff and the research staff are on average slightly older. Also, as in 2010, the proportion of female staff falls with age.

The total number of research students in 2016 stood at 2007, compared to 1232 in 2010. Recorded numbers have risen in astronomy, from 869 to 1112, in solar system science from 152 to 177 and, most significantly, in solid earth geophysics from 169 to 625. *It is likely that in part*

[10] R. Massey, Private communication.

the increase in solid earth geophysics numbers is because the additional research institutes have been included in the data in 2016.

66% of research students are full-time and domiciled in the UK. Only 4% of students were studying part-time in 2016, a similar proportion to the 3% that were doing so in 2010. The proportion of women among non-UK domiciled students (39%) remained higher than that among UK-domiciled students (27%).

The headcount of the astronomy research community (here a combination of the astronomy and solar system science research areas) under consideration in 2016 was 2866 compared to 2060 in 2010. The geophysics community is 2050.5 in 2016 but was only recorded as 357 in 2010. 381 people were identified as being in cross disciplinary areas in 2016 compared to 204 in 2010.

It is worth noting that the coverage of geophysics in the 2016 study has been much more thorough than that in 2010 and consequently the significantly higher figure for the size of the solid earth geophysics community should be regarded as a better estimate of the size of the community than the low figure in 2010. In contrast, the coverage for astronomy was similar in 2016 to 2010, and therefore the figure presented is likely to represent a real growth in the size of the community.

For permanent academic staff, the most common reason for leaving was retirement. 42% of those whose leaving destinations are known retired. 49% moved to other academic/research jobs.

Among fixed-term researchers in astronomy and geophysics for whom leaving destinations are known, 79% moved on to roles within academia or research institutes. Only about 14% of fixed-term research staff moved to roles in industry. There were no significant differences observed in the known destinations of men and women. These patterns are very like those found in 2010, which suggests that despite the continuing squeeze on public spending in the UK little has changed in the patterns of leaving destinations of research staff. However, it should be emphasised that most those with known destinations are moving to roles abroad and so are less affected by the availability of employment opportunities in the UK.

5.2 Individual Questionnaires

Analysis of the data provided by individuals completing the on-line questionnaire yielded detailed information on the demographics of the astronomy and geophysics communities.

The analysis of data relating to permanent staff shows that:

- 73% of permanent staff are British, 19% are from other European Union countries, 3% are from the USA, and 6% are from other countries;
- 88% of permanent staff specified their ethnicity as White. When only British respondents are considered, 95% are White;

- 95% of staff who indicated their sexual orientation reported themselves as heterosexual or straight, 2% as gay or lesbian and 4% as bisexual;
- 72% of those who disclosed their religious beliefs stated that they had no religion/were atheists, and 27% reported that they were Christian;
- All grades of academic staff spend between 33 and 38% of their time on research activities. Lecturers, senior lecturers and readers spend more time on undergraduate teaching than professors.

Analysis of data relating to postdoctoral research associates show that:

- 52% of postdoctoral research associates had completed their PhD within the last 4 years, and 61% with the last 5 years;
- Overall 48% of respondents are British, and, of these, 97% of those who indicated their ethnicity are White. 33% of the sample are of other European Union nationalities and, like the British sample, 91% of those who indicated their ethnicity are White. Only 10% of the sample indicated that they hold citizenship from outside the European Union or the United States;
- 72% of those who disclosed their beliefs stated that they had no religion/were agnostic, and 24% reported that they were Christian;
- 86% who indicated their sexual orientation reported themselves as heterosexual or straight, 4% as gay or lesbian and 4% as bisexual;
- On average postdoctoral research associates spend 82% of their time on research activities which is more than double the proportion of time spent by permanent academic staff.

For postgraduate research students:

- Overall 69% of postgraduate research students are British, 16% are from elsewhere in the European Union, and 1% are from the USA;
- 87% of the British who indicated their ethnicity are White. 91% of those of nationalities of other European Union countries who indicated their ethnicity are White;
- 75% of those who disclosed their beliefs stated that they had no religion, and 18% reported that they were Christian;
- 83% who indicated their sexual orientation reported themselves as heterosexual or straight, 8% as gay or lesbian and 9% as bisexual;
- The majority of astronomy and solar system science British students (62%) receive funding from the STFC. In contrast, the majority of British solid earth geophysics students receive their finding from the NERC (65%).

76% of respondents indicated that they have research interests in an Astronomy research area with 69% of the whole sample indicating an interest in Astronomy and/or Astrophysics and 7% indicating an interest in Particle Astrophysics, 29% indicated an interest in some aspects of Solar System Science, and 12% indicated an interest in Geophysics.

70% of postdoctoral research associates indicated that they have interests in some aspect of *Astronomy*, 23% indicated an interest in some aspects of *Solar System Science*, and 7% indicated an interest in *Geophysics*.

Combined data for permanent staff and research staff on open-ended and fixed-term contracts for the proportion of total effort expended on each general research activity shows that 32% of effort is expended on *Theory and numerical modelling* and 34% on *Data analysis*, 10% on *Observation/Data Collection*, 12% on *Data reduction*, and 8% on *Instrumentation*, 1% on *Facility operation and maintenance* and 4% on *Other* activities. Activities are split 59%, 30% and 12% between *Ground-based*, *Space* and *Other* areas respectively.

Consideration of the relative proportions of effort devoted to facilities in different wavelength regions show that between 2010 and 2016 the main change was an increase in the effort on mm and sub-mm region from 8% to 17% and a fall in the effort on the IR region from 24% to 17%. Overall between 1998 and 2016 the main changes are a fall in the effort on the X-ray region from 20% to 9% and an increase in the effort on the mm and sub-mm region from 7% to 17%.

Appendix A: Research interests of the astronomy and geophysics communities

The tables and charts below show a count of the popularity of each research area. Respondents were asked to indicate up to 5 research areas across the broad areas of *astronomy (including particle astrophysics)*, *solar system science (including the Earth as a planet)*, and *solid Earth geophysics*. Respondents were also offered some additional broad categories to be used when the other more specific categories were not appropriate.

In addition, respondents who indicated research interest in *Stars*, *Galaxies/Extragalactic*, *Cosmology*, or a group of categories related to *planetary science* were asked to provide more details of their interests. The charts record a head count of the number of people who indicated an interest in each area rather than giving effort in terms of full-time equivalents. The charts show the relative popularity of each research area and as such give only a crude indication of the relative research effort.

Tables are presented for all personnel and then charts are presented for all personnel, and then separately for permanent staff, postdoctoral research associates, and finally for postgraduate research students.

Table A1: Popularity of research fields in astronomy 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of research areas in astronomy	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
AA Historical and Educational research	6	0	2	**8**	0.6%	1.0%
AB Positional astronomy/Celestial mechanics	6	5	2	**13**	1.0%	1.3%
AC* Stars	105	56	51	**212**	15.5%	14.8%
AD Interstellar matter	44	23	14	**81**	5.9%	5.5%
AE Radio, sub millimetre, infrared sources or background	51	38	30	**119**	8.7%	9.1%
AF UV/X-ray sources or background	31	9	17	**57**	4.2%	6.4%
AG Gamma-ray sources or background	7	2	4	**13**	1.0%	3.1%
AH Cosmic rays	6	1	3	**10**	0.7%	1.5%
Al Particle astrophysics	11	2	3	**16**	1.2%	2.7%
AJ Gravitational waves	28	13	26	**67**	4.9%	3.3%
AK* Galaxies/Extragalactic	109	66	78	**253**	18.5%	19.6%
AL* Cosmology	64	38	49	**151**	11.0%	12.2%
AM Databases (incl Virtual Observatories)	25	12	5	**42**	3.1%	3.3%
AN Physical data and processes	18	7	10	**35**	2.6%	2.9%
AO Site testing — astronomical sites	2	1	1	**4**	0.3%	0.8%
AP Circumstellar matter, debris disks, exoplanets	49	26	21	**96**	7.0%	5.9%
CB Cross Discipline — Internal magnetic dynamos in stars and planets	11	4	5	**20**	1.5%	1.0%
CC Cross Discipline — Helioseismology/Asteroseismology	5	1	5	**11**	0.8%	1.0%
CE Cross Discipline — Plasma physics	11	6	14	**31**	2.3%	1.6%
CF Cross Discipline - Space Weather	3	3	4	**10**	0.7%	
CG Cross Discipline - Telescopes and Instrumentation	27	27	12	**66**	4.8%	
Other astronomy area	22	10	21	**53**	3.9%	2.8%

Table A2: Popularity of sub-fields in stellar research (AC Stars) 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of areas in stellar research	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
1 Binaries	46	21	16	**83**	17.6%	19.9%
2 Interiors — Structure	18	4	4	**26**	5.5%	5.4%
3 Atmospheres	29	10	7	**46**	9.7%	9.1%
4 Formation and Evolution	59	30	23	**112**	23.7%	19.9%
5 Pulsars	9	4	5	**18**	3.8%	5.2%
6 Supernovae	25	6	7	**38**	8.1%	10.3%
7 Planetary Nebulae	10	3	3	**16**	3.4%	3.7%
8 Planetary Systems	26	17	5	**48**	10.2%	9.1%
9 Variable (Pulsating/Eruptive)	39	13	11	**63**	13.3%	12.6%
10 Other	11	6	5	**22**	4.7%	4.7%

Table A3: Popularity of sub-fields in galactic/extragalactic research (AK Galaxies/Extragalactic) 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of areas in extragalactic research	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
1 Active Galaxies	43	28	27	**98**	15.8%	18.3%
2 Clusters	36	11	23	**70**	11.3%	13.9%
3 Normal Galaxies	59	27	21	**107**	17.3%	17.8%
4 Quasars	36	15	20	**71**	11.5%	11.0%
5 Formation and Evolution	80	48	51	**179**	28.9%	26.4%
6 Interactions	31	18	21	**70**	11.3%	9.2%
7 Other	7	9	9	**25**	4.0%	3.3%

Table A4: Popularity of sub-fields in cosmology research (AL Cosmology) 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of areas in cosmology research	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
1 Cosmic Microwave Background	18	10	9	**37**	11.1%	12.1%
2 Relativity	8	3	11	**22**	6.6%	6.9%
3 Dark Matter	23	15	20	**58**	17.4%	25.6%
4 Gravitational Lenses	20	7	10	**37**	11.1%	13.4%
5 Large Scale Structure	39	26	27	**92**	27.6%	32.8%
6 Dark Energy	31	13	17	**61**	18.3%	
7 Other	7	9	10	**26**	7.8%	9.2%

Table A5: Popularity of research fields in solar system science (including the Earth as a Planet) 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of research areas in solar system science	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
SA Solar System — origin/evolution	17	15	5	**37**	8.0%	5.9%
SB Meteorites/Comets	16	12	7	**35**	7.6%	5.1%
SC Solar studies	29	10	16	**55**	11.9%	9.1%
SD Heliospheric studies	14	4	2	**20**	4.3%	4.5%
SE* Magnetosphere(s) (Induced Magnetospheres, Cometary Plasmas)	14	6	8	**28**	6.1%	10.4%
SF* Ionosphere/Thermosphere (incl radio propagation)	11	5	2	**18**	3.9%	6.2%
SG* Planetary atmospheres	18	6	9	**33**	7.2%	7.9%
SH* Planetary surface features	16	4	7	**27**	5.9%	5.7%
SI* Planetary sub-surface (incl search for water)	12	6	4	**22**	4.8%	3.4%
SJ* Planetary interiors	11	6	4	**21**	4.6%	3.8%
SK* Exobiology	9	6	2	**17**	3.7%	4.0%
SL Earth — Middle atmosphere and climate	2	4	3	**9**	2.0%	5.3%
SM Earth - Lower atmosphere (incl Oceanography)	2	3	5	**10**	2.2%	4.3%
CA Cross Discipline — Earth and planetary atmospheres	9	4	3	**16**	3.5%	4.3%
CB Cross Discipline — Internal magnetic dynamos in stars and planets	7	2	3	**12**	2.6%	2.1%
CC Cross Discipline — Helioseismology/Asteroseismology	2	0	2	**4**	0.9%	1.3%
CD Cross Discipline — Sun-climate studies	2	3	1	**6**	1.3%	2.8%
CE Cross Discipline — Plasma physics	18	6	13	**37**	8.0%	9.6%
CF Cross Discipline - Space Weather	14	4	4	**22**	4.8%	
CG Cross Discipline - Telescopes and Instrumentation	7	2	3	**12**	2.6%	
Other solar system science area	11	5	4	**20**	4.3%	4.2%

Table A6: Popularity of sub-fields in planetary research (SE to SK Planetary Science) 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of areas in planetary research	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
1 Mercury	6	4	1	**11**	6.0%	7.4%
2 Venus	8	2	2	**12**	6.6%	9.8%
3 Earth	27	20	9	**56**	30.8%	28.5%
4 Mars	21	7	6	**34**	18.7%	19.1%
5 Gas Giants	17	6	5	**28**	15.4%	18.4%
6 Titan	6	1	1	**8**	4.4%	7.4%
7 Pluto	1	1	0	**2**	1.1%	
8 Other	19	6	6	**31**	17.0%	9.4%

Table A7: Popularity of research fields in solid earth geophysics 2010 and 2016

Research Area	Count of research interests 2016				Relative popularity of research areas in geophysics	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
GA Earth Structure	12	7	11	**30**	10.9%	11.4%
GB Electromagnetics	2	1	3	**6**	2.2%	2.8%
GC Exploration Geophysics	6	5	10	**21**	7.7%	6.8%
GD Geodesy and Gravity	5	0	3	**8**	2.9%	5.5%
GE Geomagnetism and Palaeomagnetism	9	2	5	**16**	5.8%	6.5%
GF Global Change GH Hydrology	2	0	2	**4**	1.5%	3.1%
GI Marine Geophysics	6	1	7	**14**	5.1%	7.1%
GJ Mathematical Geophysics	3	6	12	**21**	7.7%	6.2%
GK Mineral Physics	2	3	5	**10**	3.6%	2.8%
GL Oceanography	9	1	14	**24**	8.8%	5.2%
GM Physical Properties of Rocks	6	5	12	**23**	8.4%	8.6%
GN Physics of the Earth's Interior	12	5	5	**22**	8.0%	8.0%
GN Seismology	11	7	13	**31**	11.3%	11.1%
GO Tectonophysics	14	4	9	**27**	9.9%	10.2%
GP Site testing	1	0	1	**2**	0.7%	0.6%
Other solid earth geophysics area	5	5	5	**15**	5.5%	4.3%

Table A8: Popularity of other broad research areas

Research Area	Count of research interests 2016				Relative popularity of all research areas	
	Permanent Staff	PDRs	Research Students	Total	2016	2010
XA Theoretical Astrophysics	**29**	14	13	56	2.5%	2.2%
XB Theoretical Solar System work	**6**	0	4	10	0.4%	0.4%
XC Theoretical Geophysics	**0**	4	4	8	0.4%	0.2%
Y Instruments and Techniques	**21**	17	8	46	2.0%	3.2%
Z Spacecraft	**9**	3	3	15	0.7%	1.1%
+ Other - please specify	**5**	2	4	11	0.5%	0.4%

A1 Research interests of all personnel

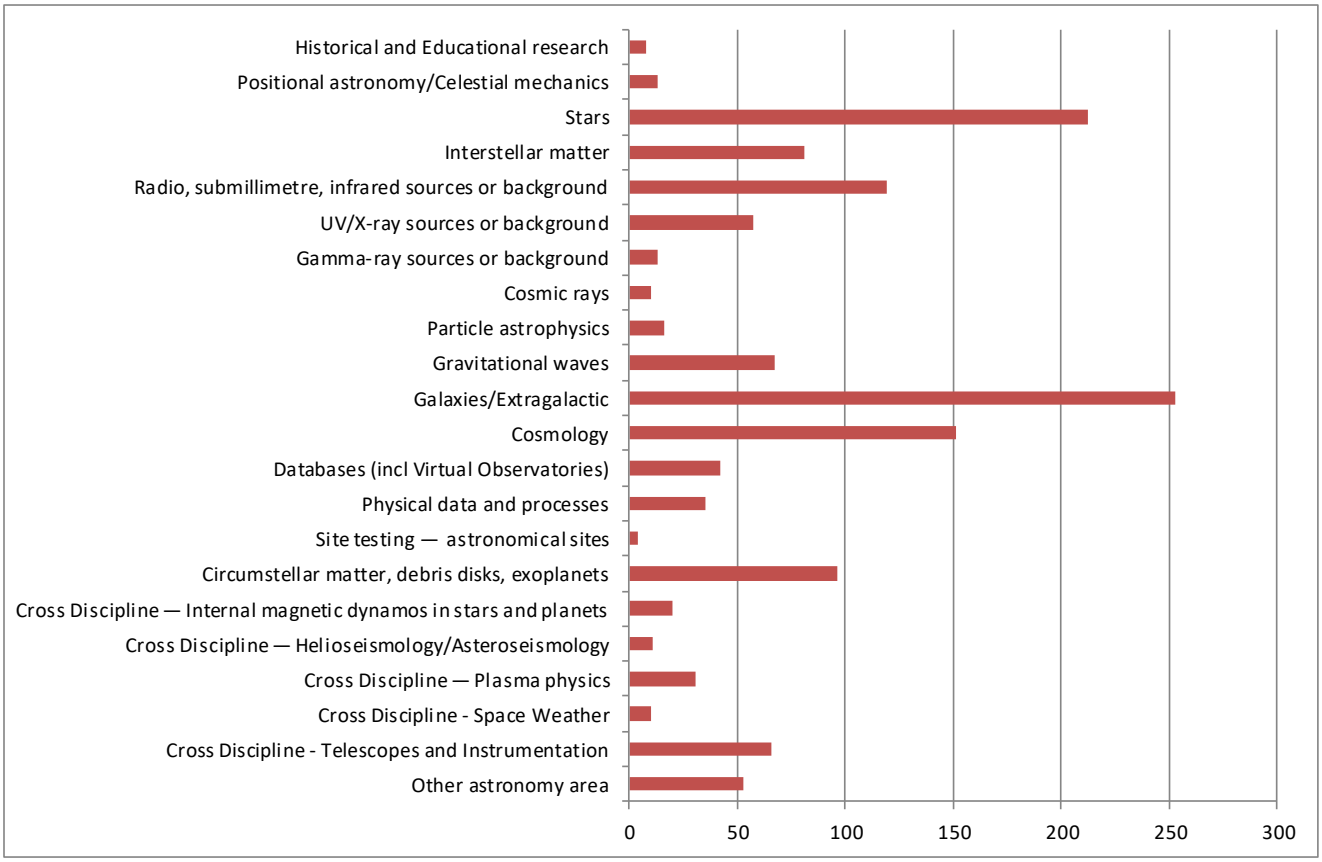

Figure A1: Breakdown of interest in Astronomy research 2016

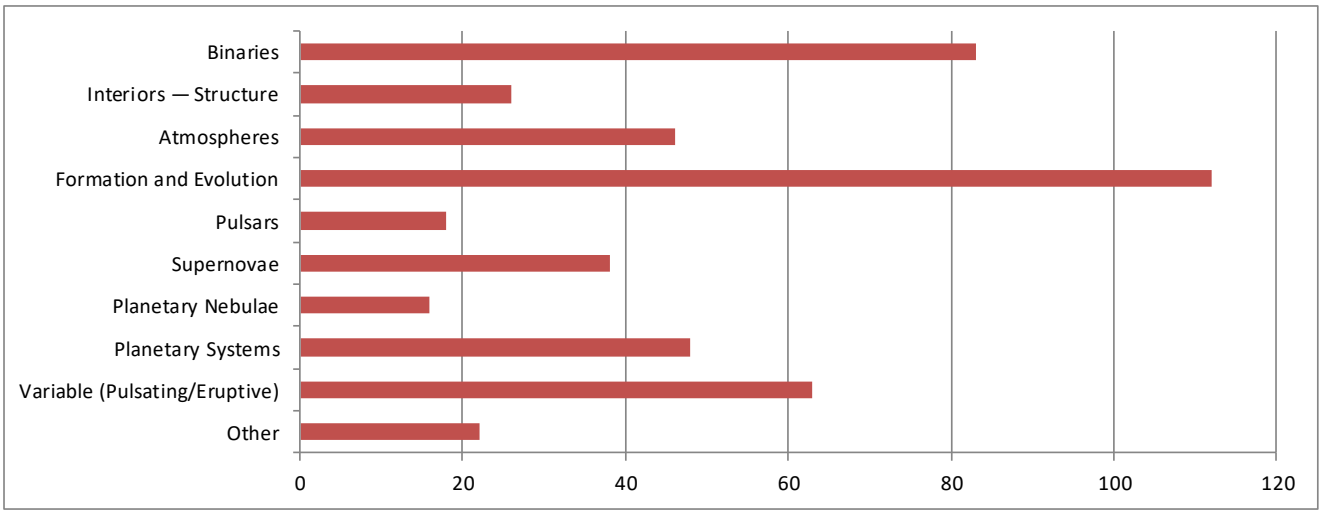

Figure A2: Breakdown of interest in stellar research 2016

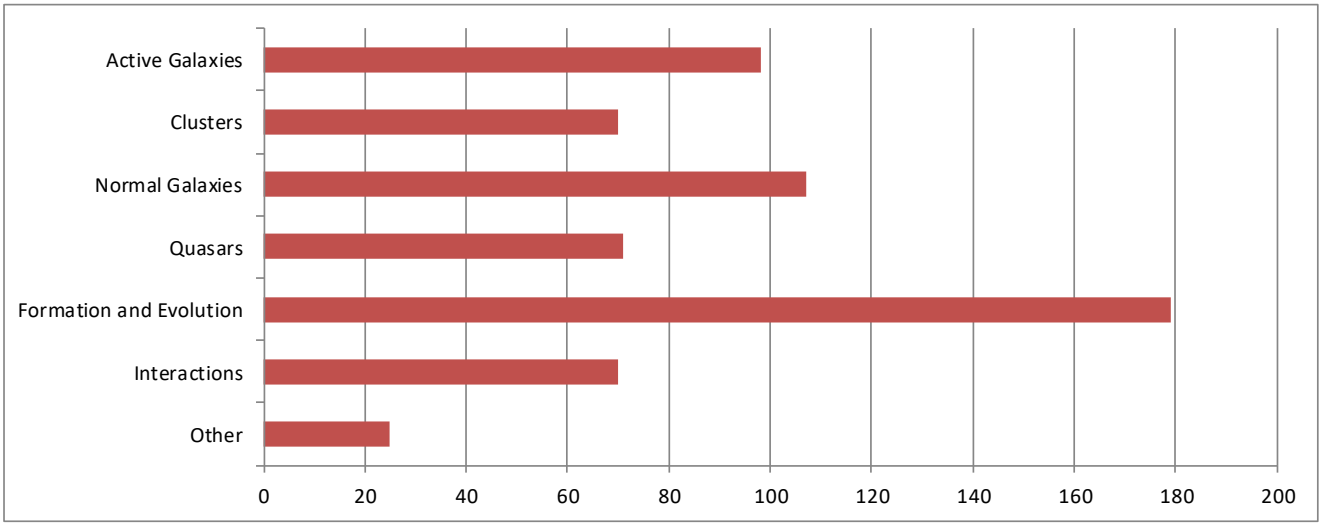

Figure A3: Breakdown of total effort in extragalactic research 2016

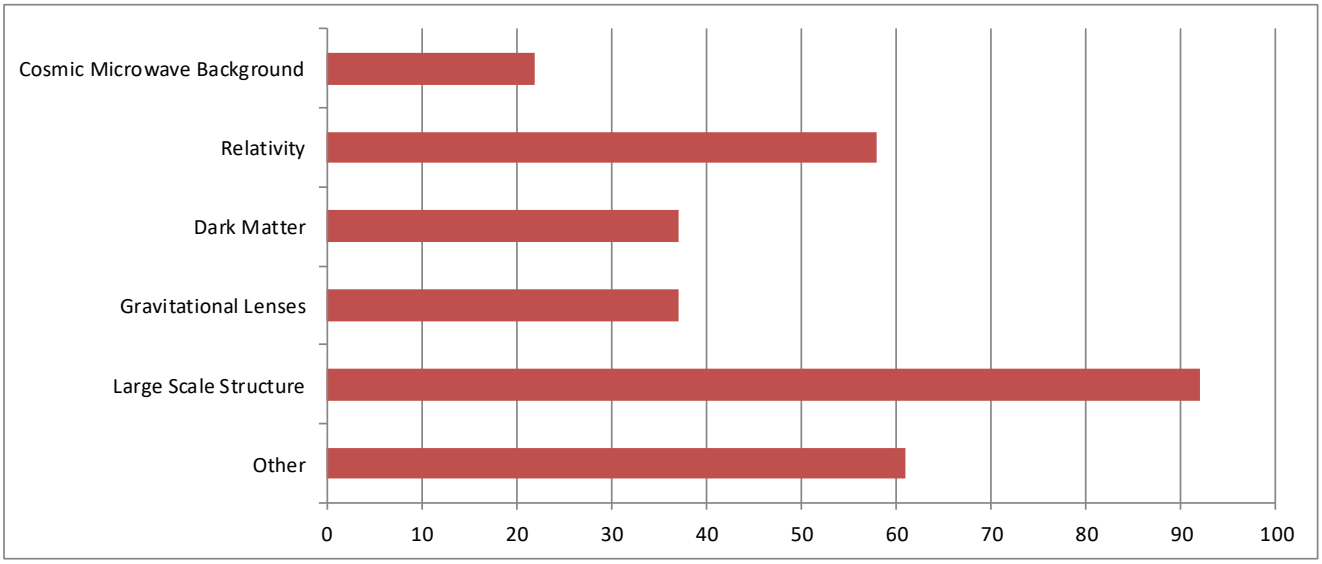

Figure A4: Breakdown of interest in cosmology research 2016

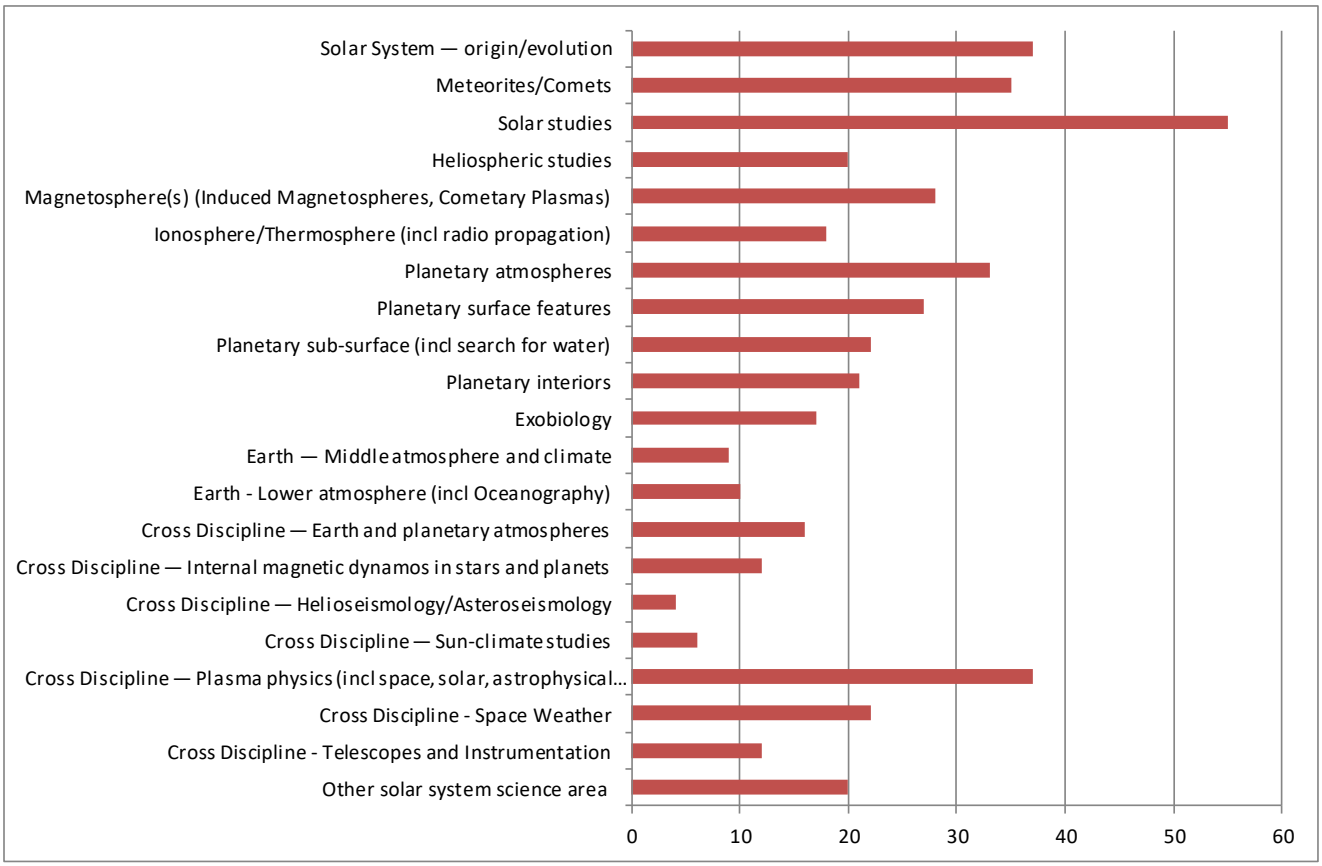

Figure A5: Breakdown of interest in solar system science 2016

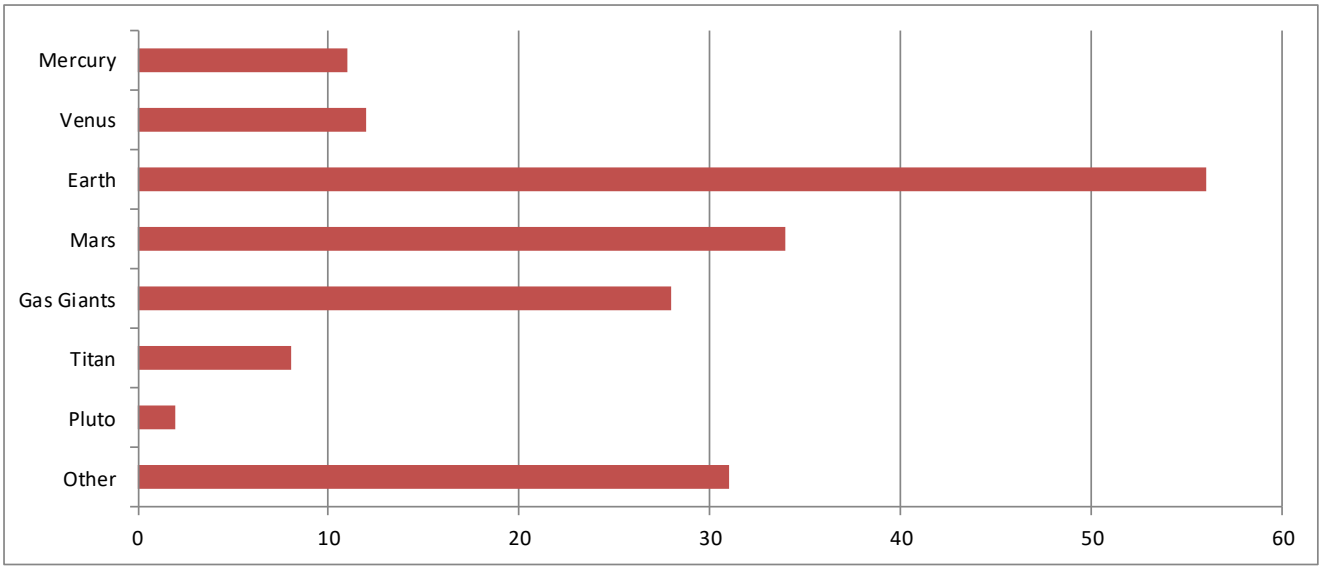

Figure A6: Breakdown of interest in planetary research 2016

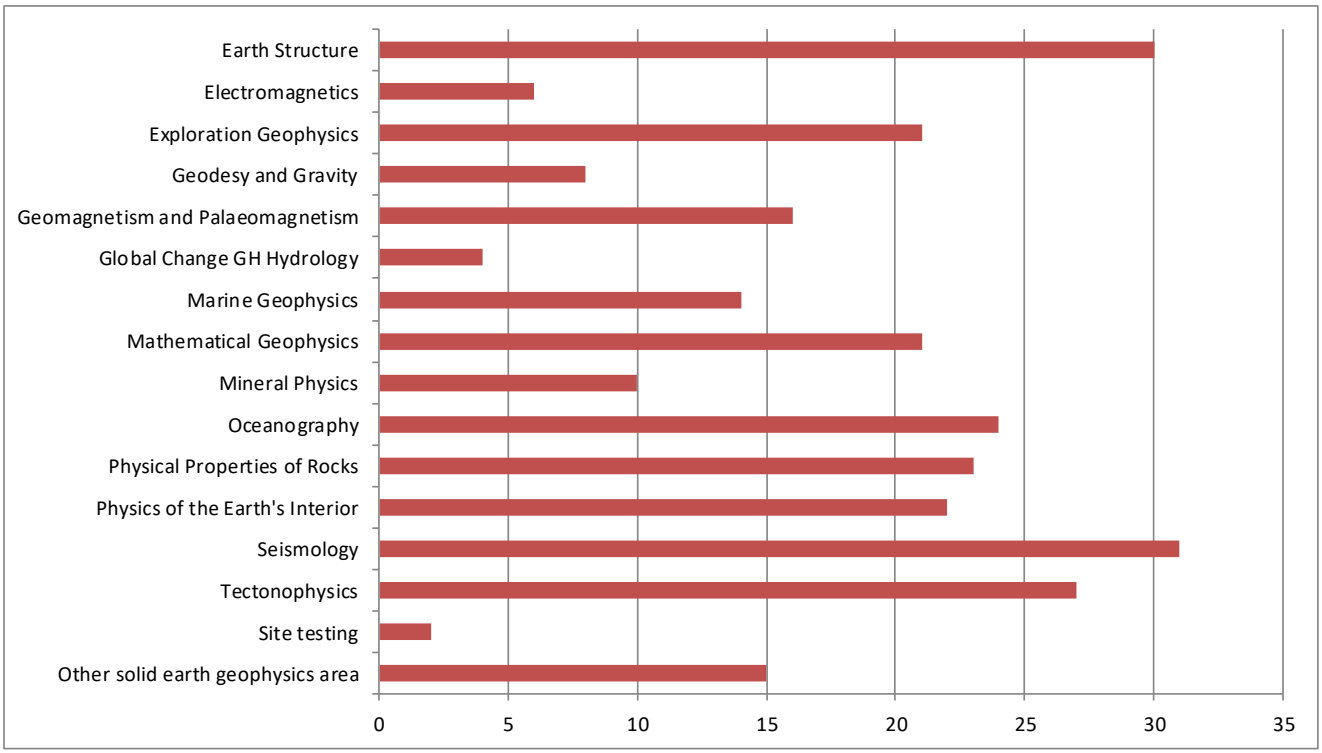

Figure A7: Breakdown of interest in solid Earth geophysics research 2016

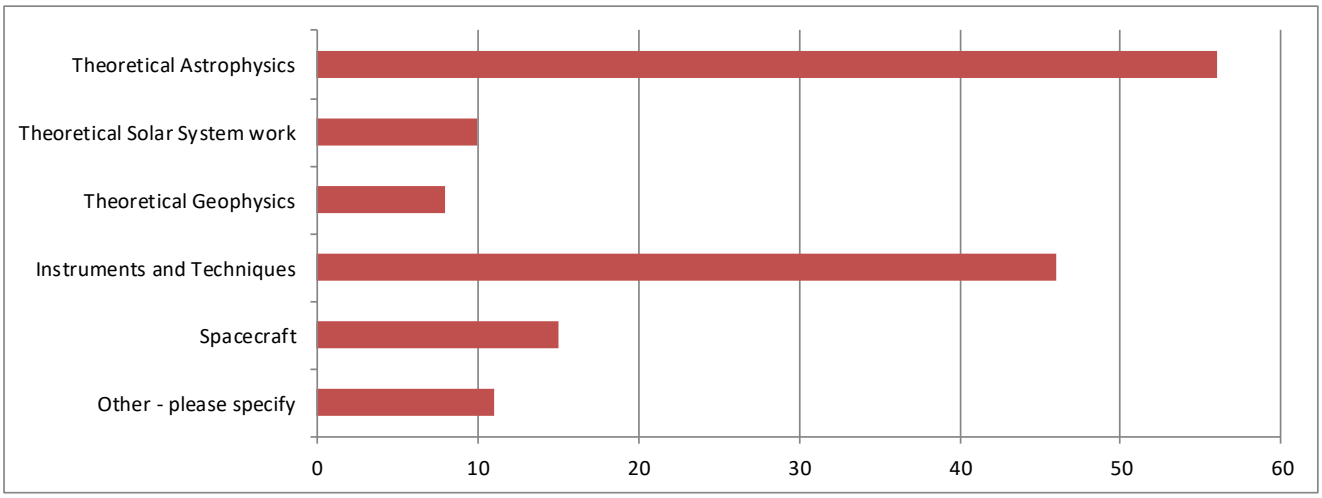

Figure A8: Breakdown of interest in other broad research areas 2016

A2 Research interests of permanent staff

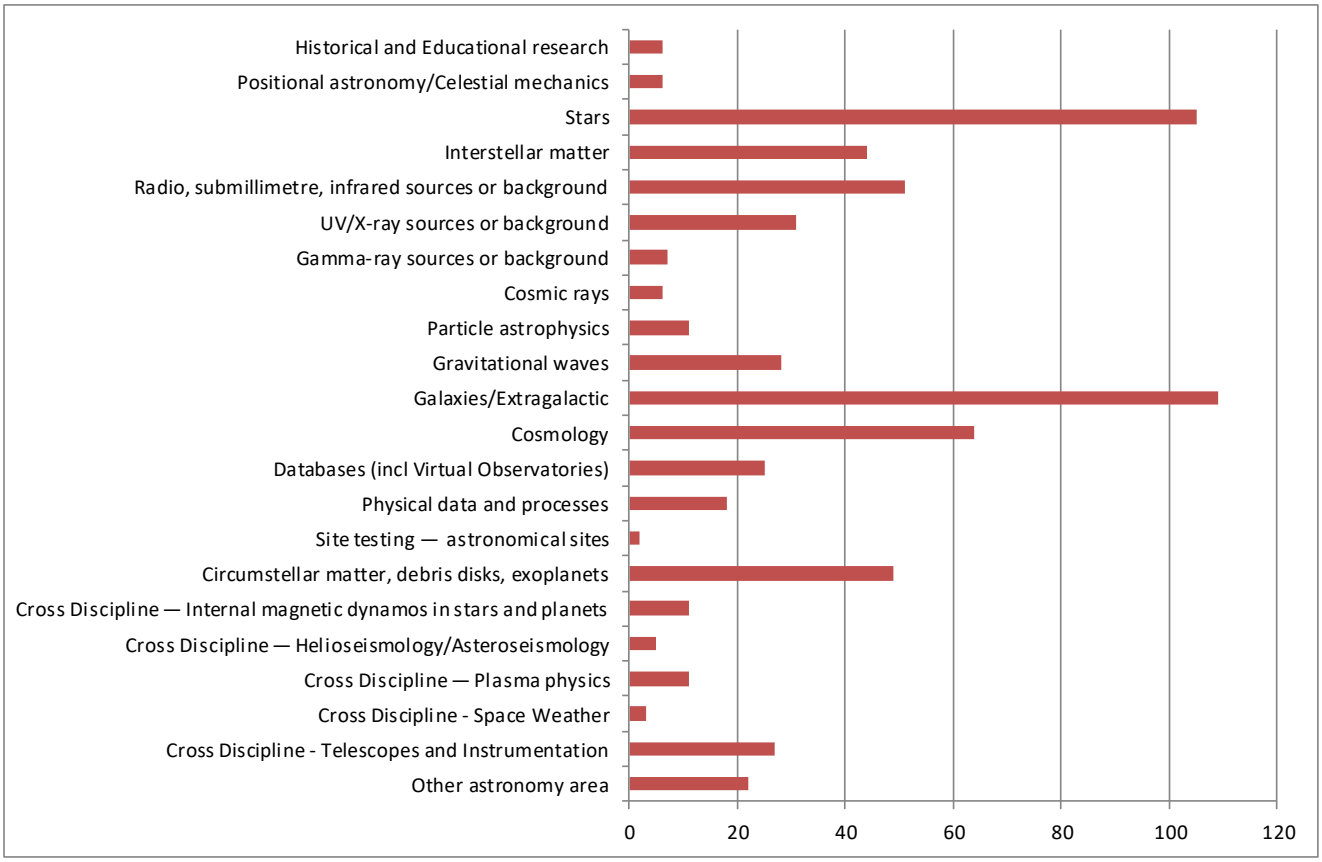

Figure A9: Breakdown of the interest of permanent staff in astronomy research 2016

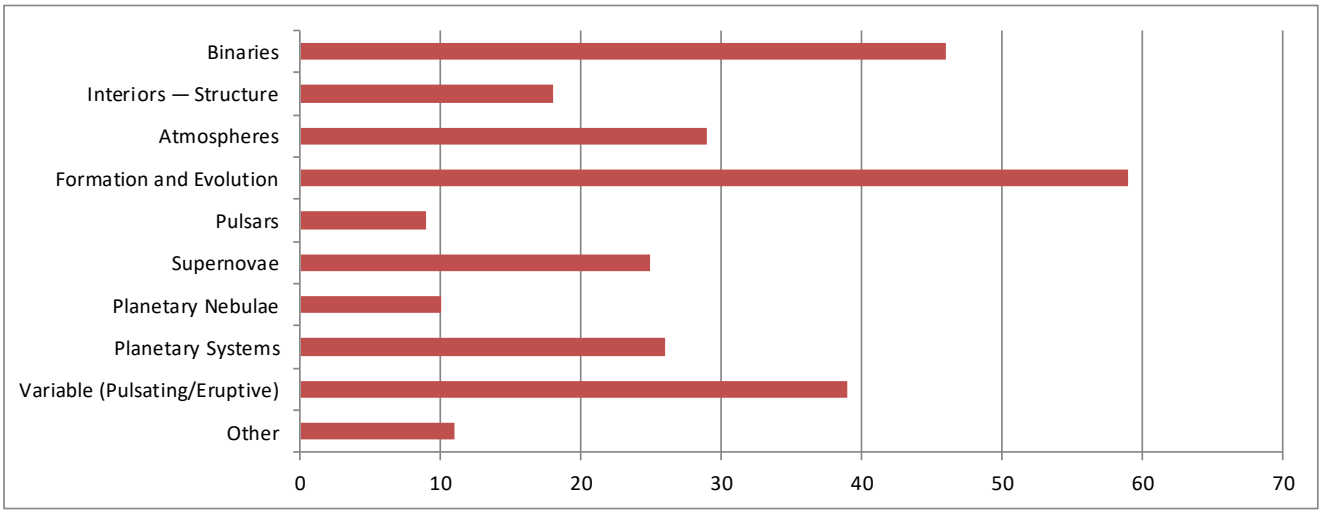

Figure A10: Breakdown of the interest of permanent staff in stellar research 2016

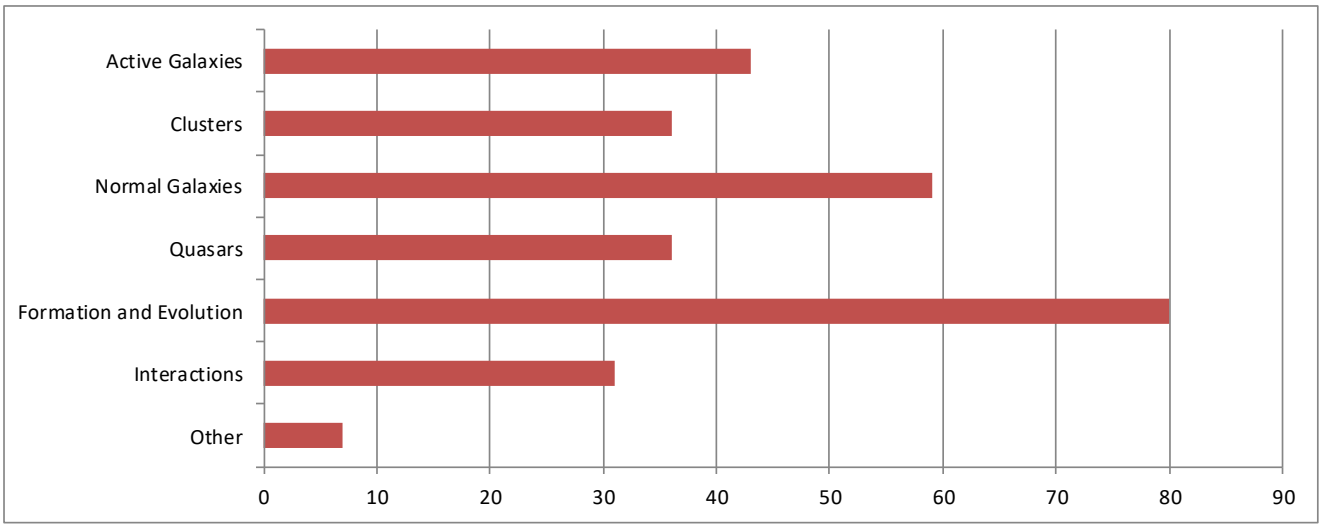

Figure A11: Breakdown of the interest of permanent staff in extragalactic research 2016

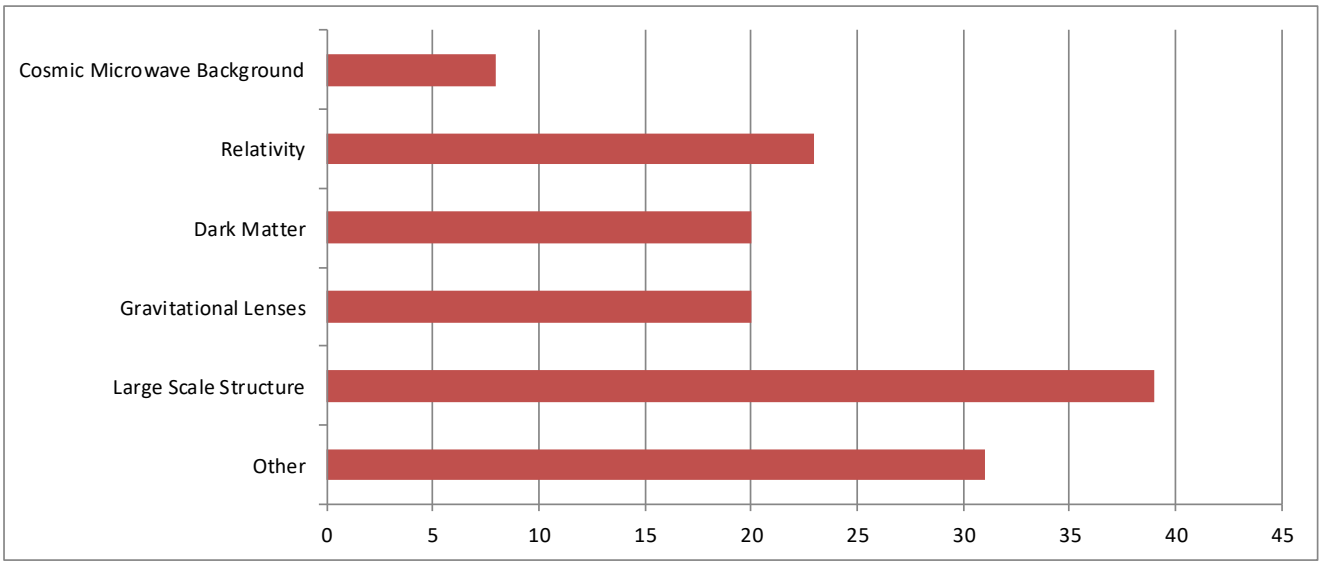

Figure A12: Breakdown of the interest of permanent staff in cosmology research 2016

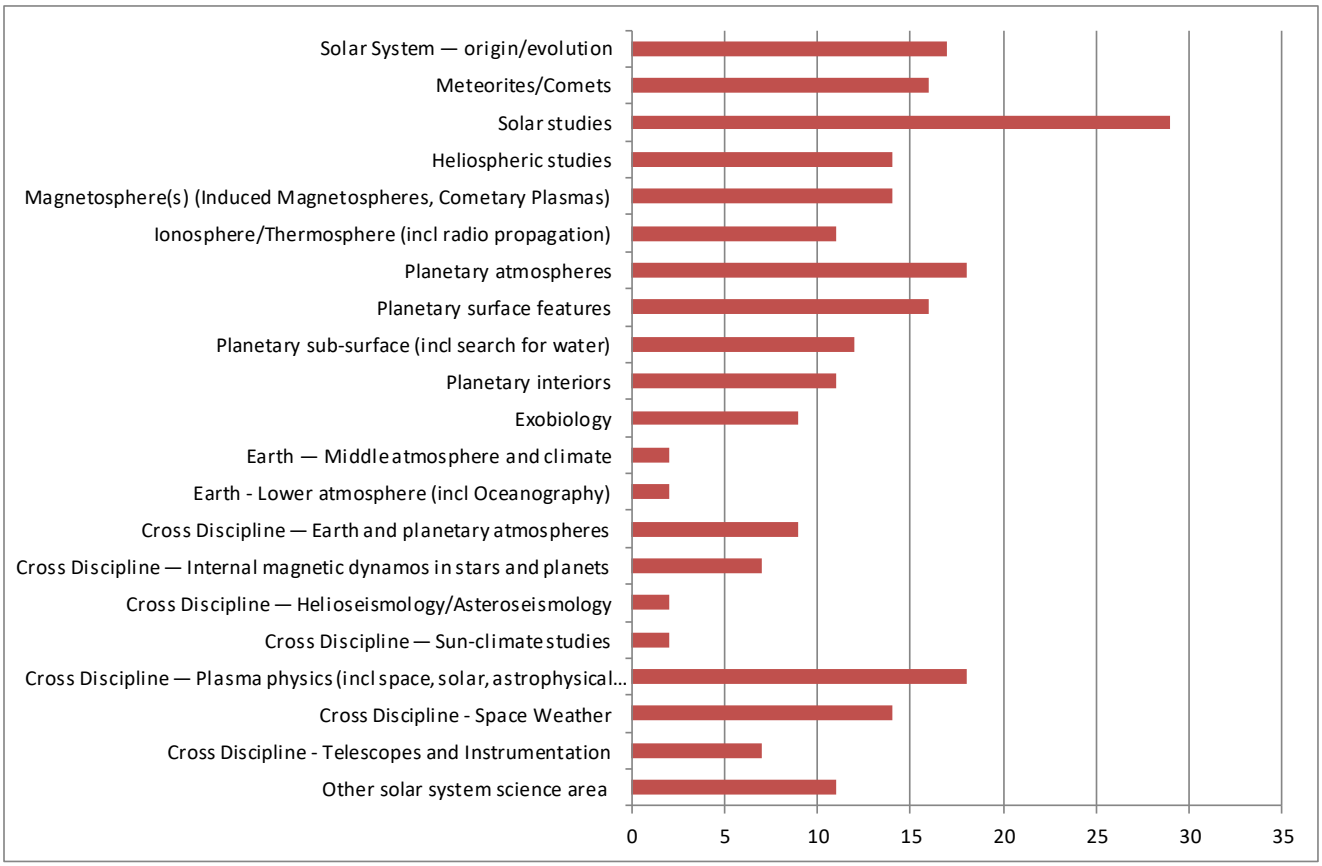

Figure A13: Breakdown of the interest of permanent staff in solar system science 2016

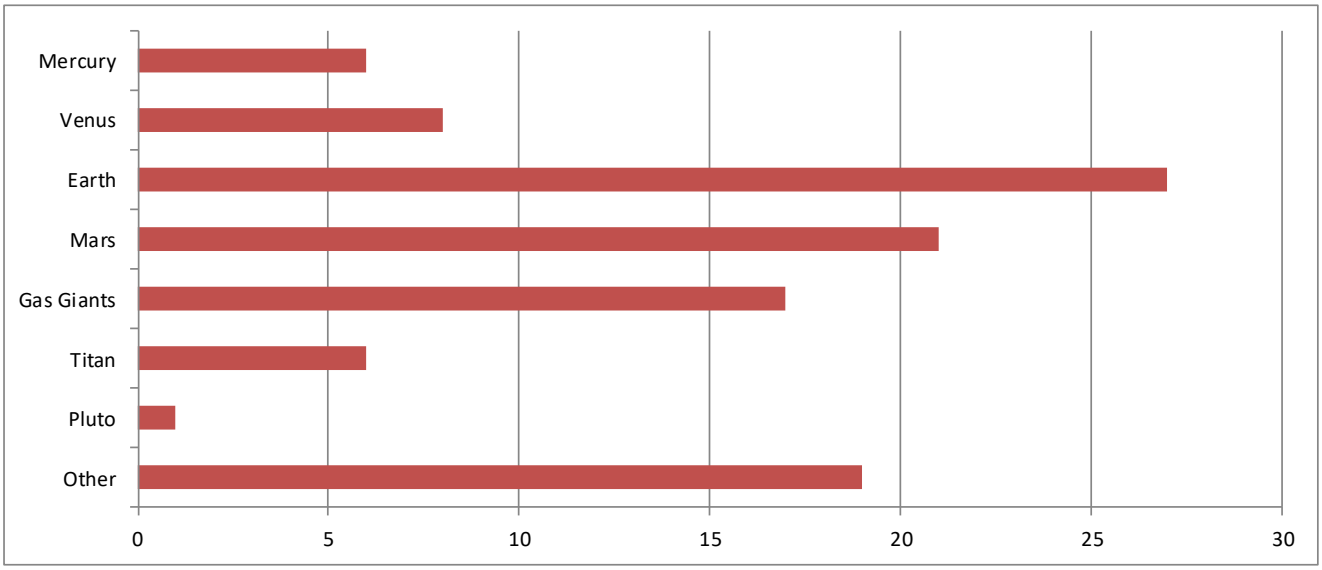

Figure A14: Breakdown of the interest of permanent staff in planetary research 2016

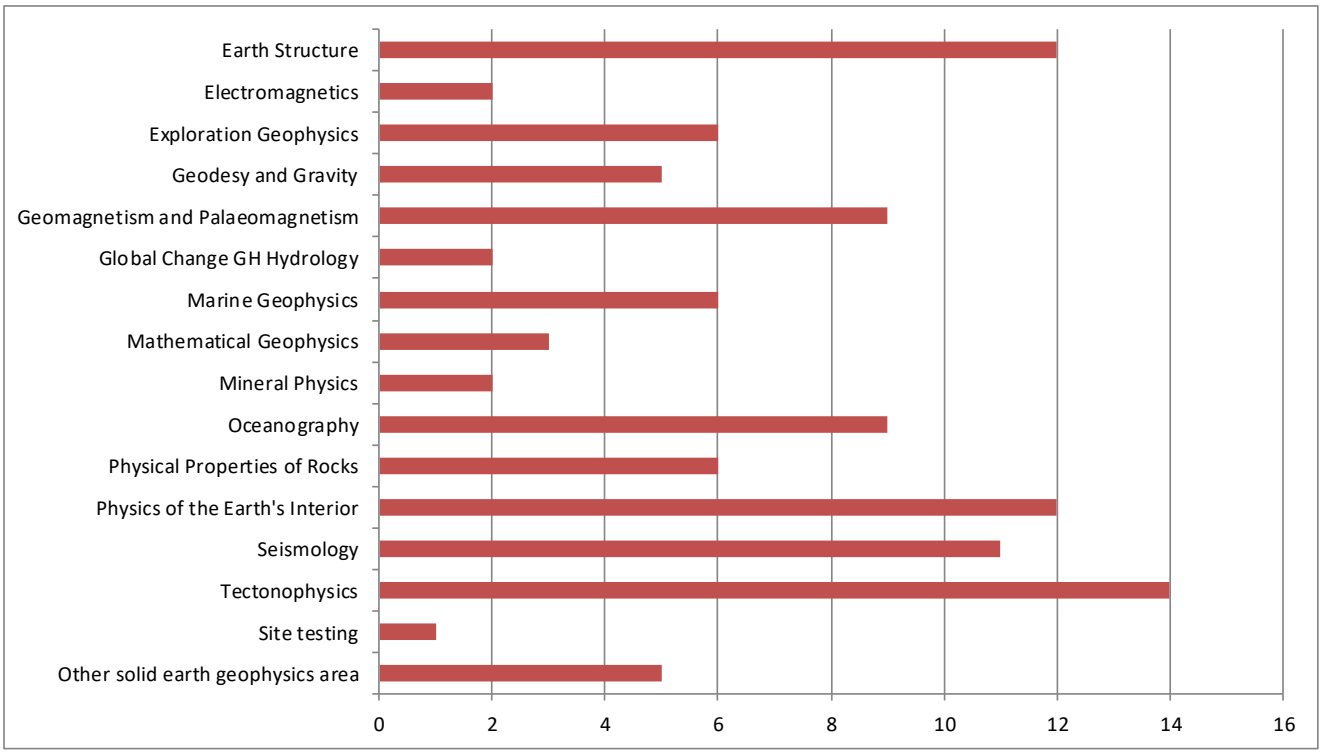

Figure A15: Breakdown of the interest of permanent staff in solid Earth geophysics research 2016

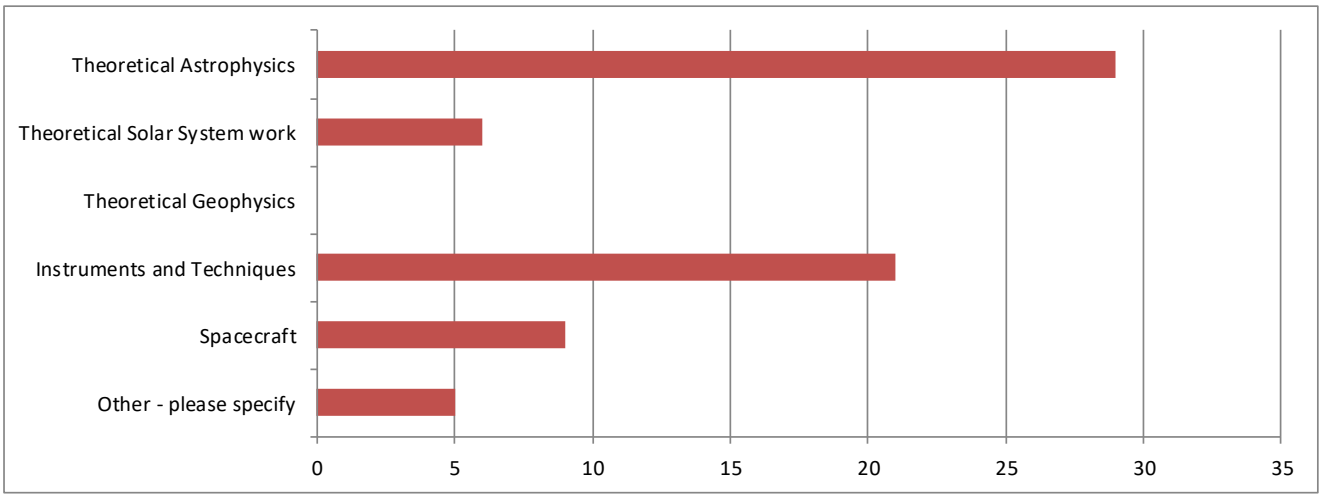

Figure A16: Breakdown of the interest of permanent staff in other broad research areas 2016

A3 Research interests of postdoctoral research associates

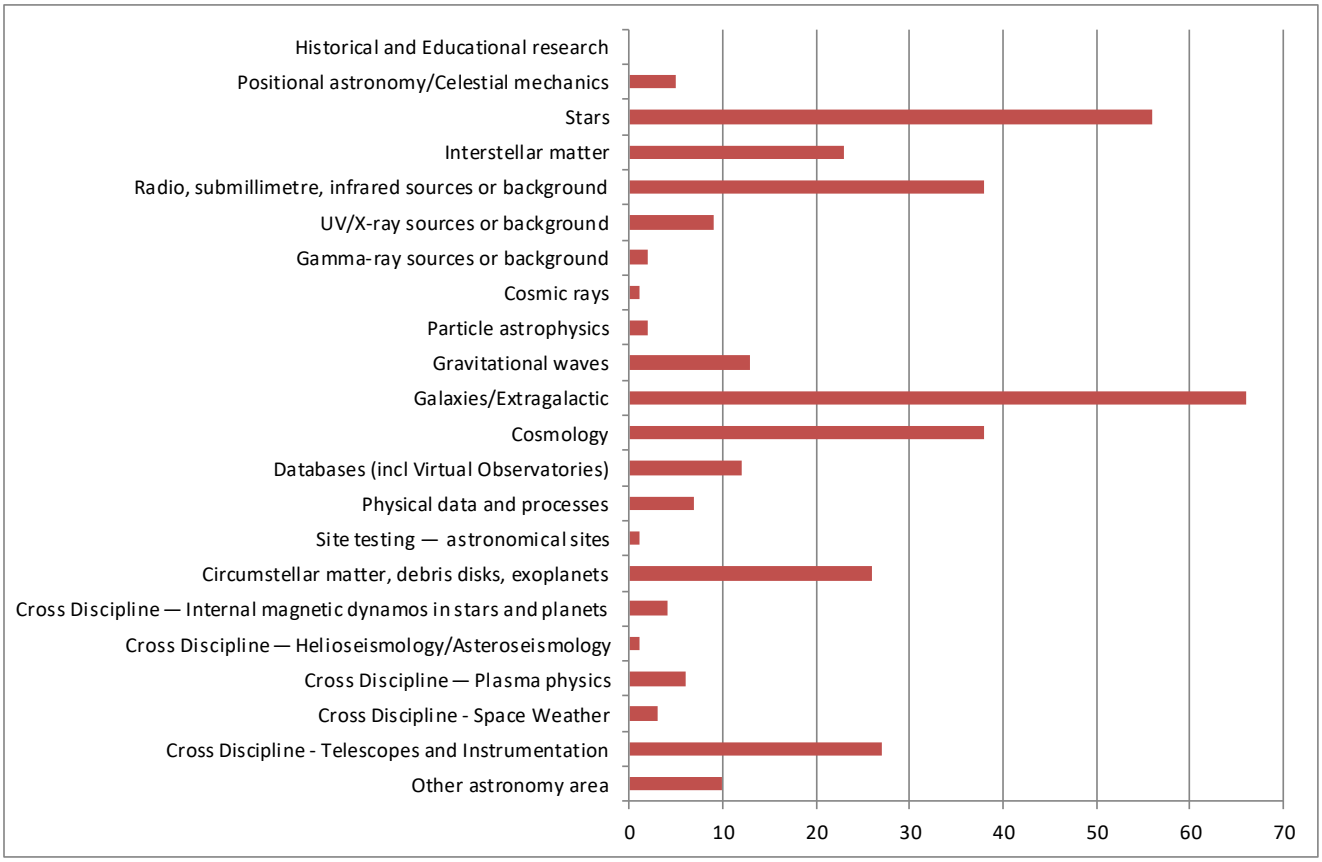

Figure A17: Breakdown of the interest of postdoctoral research associates in astronomy research 2016

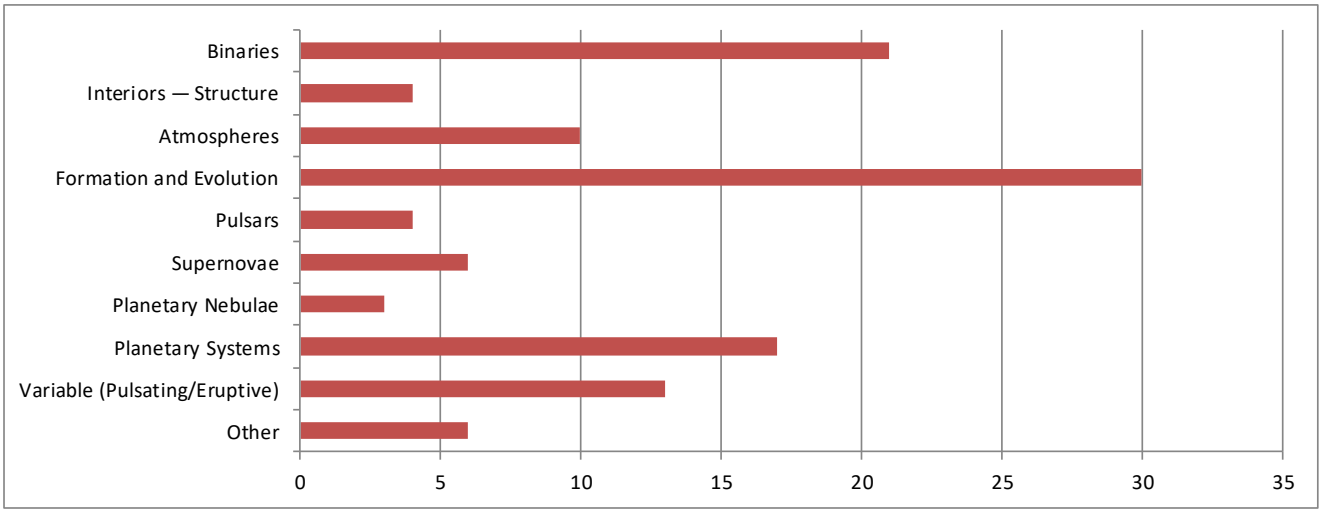

Figure A18: Breakdown of the interest of postdoctoral research associates in stellar research 2016

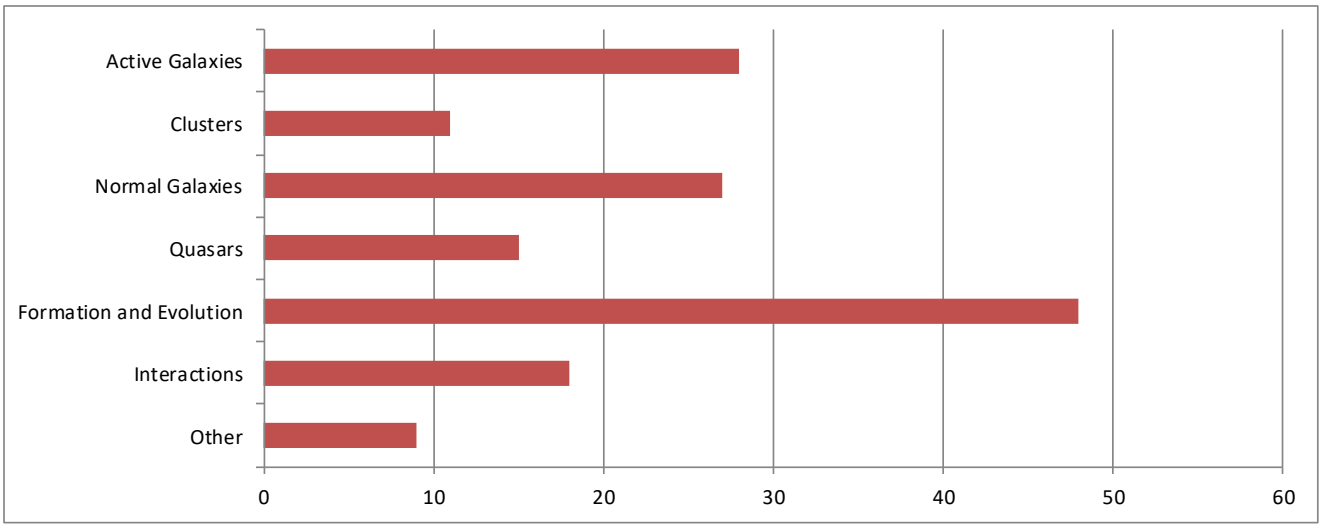

Figure A19: Breakdown of the interest of postdoctoral research associates in extragalactic research 2016

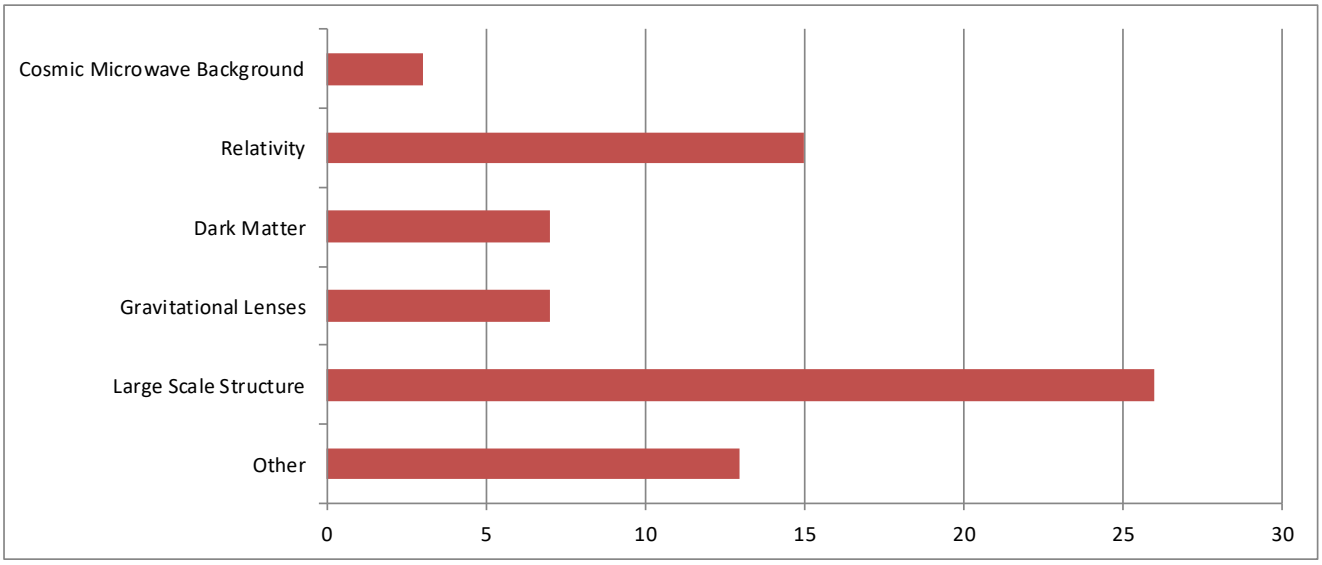

Figure A20: Breakdown of the interest of postdoctoral research associates in cosmology research

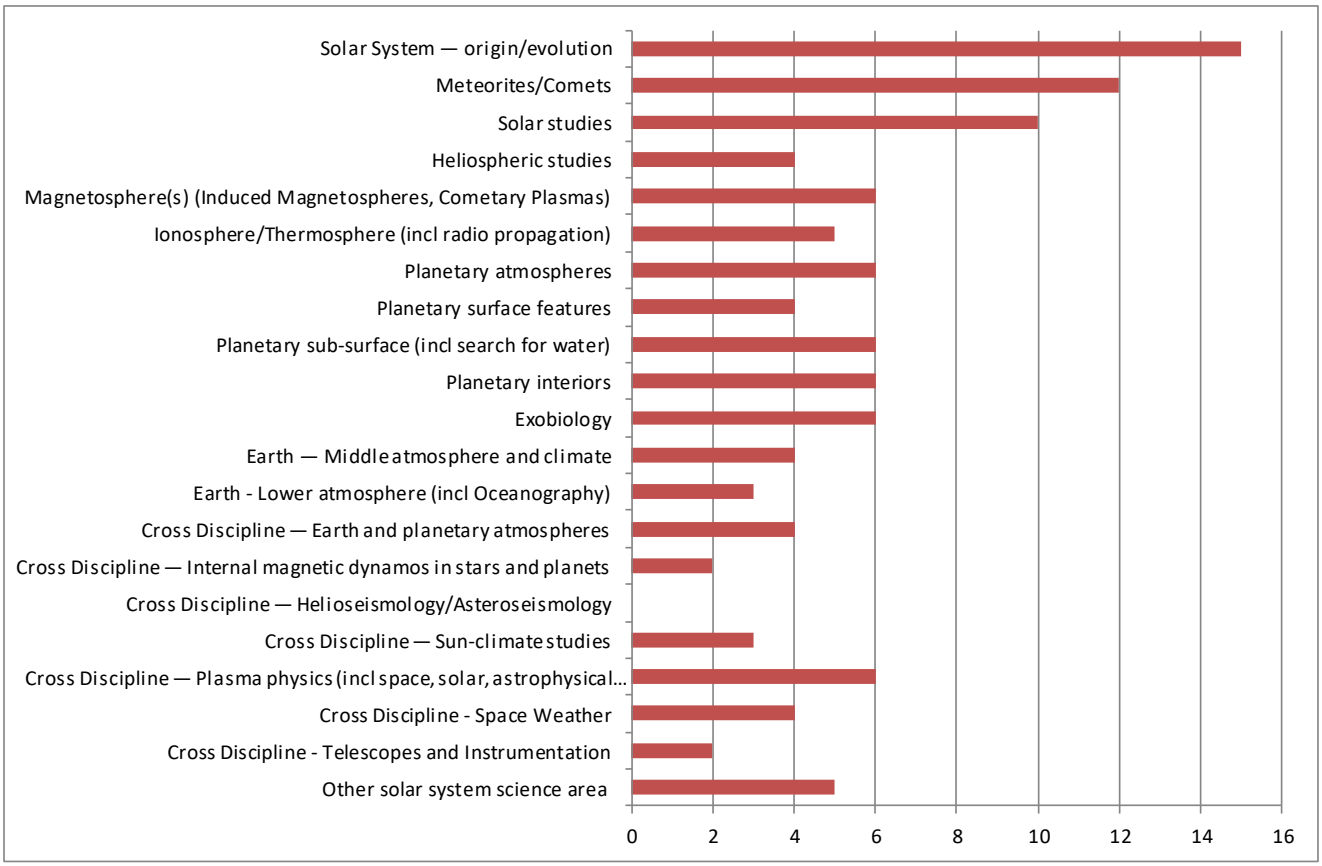

Figure A21: Breakdown of the interest of postdoctoral research associates in solar system science 2016

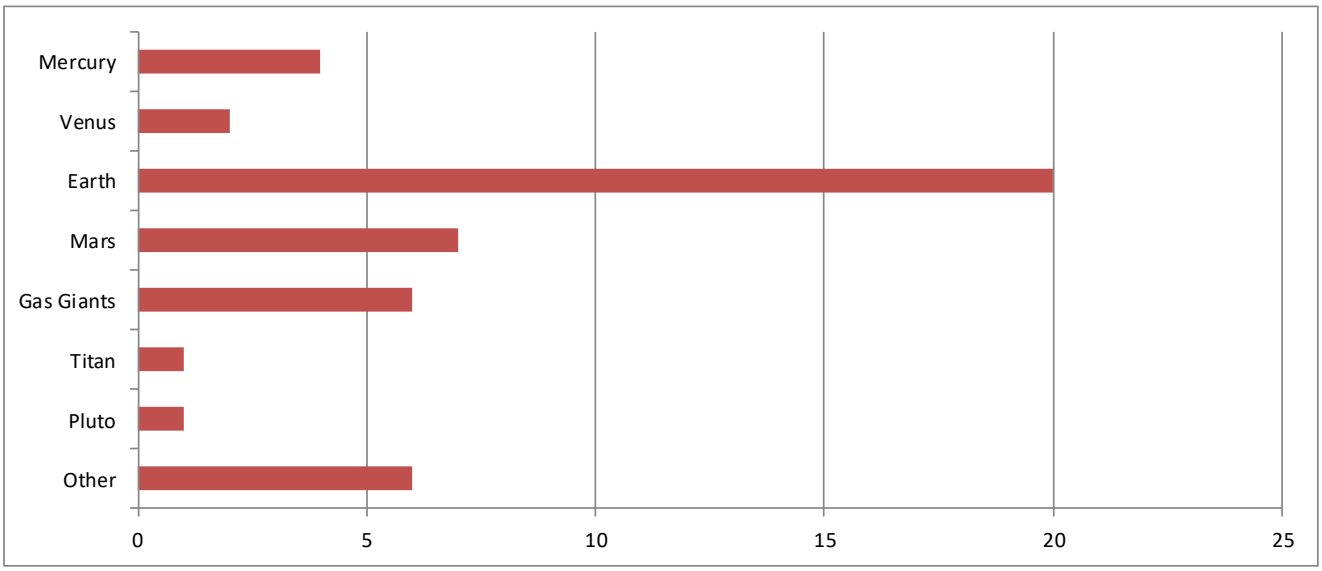

Figure A22: Breakdown of the interest of postdoctoral research associates in planetary research 2016

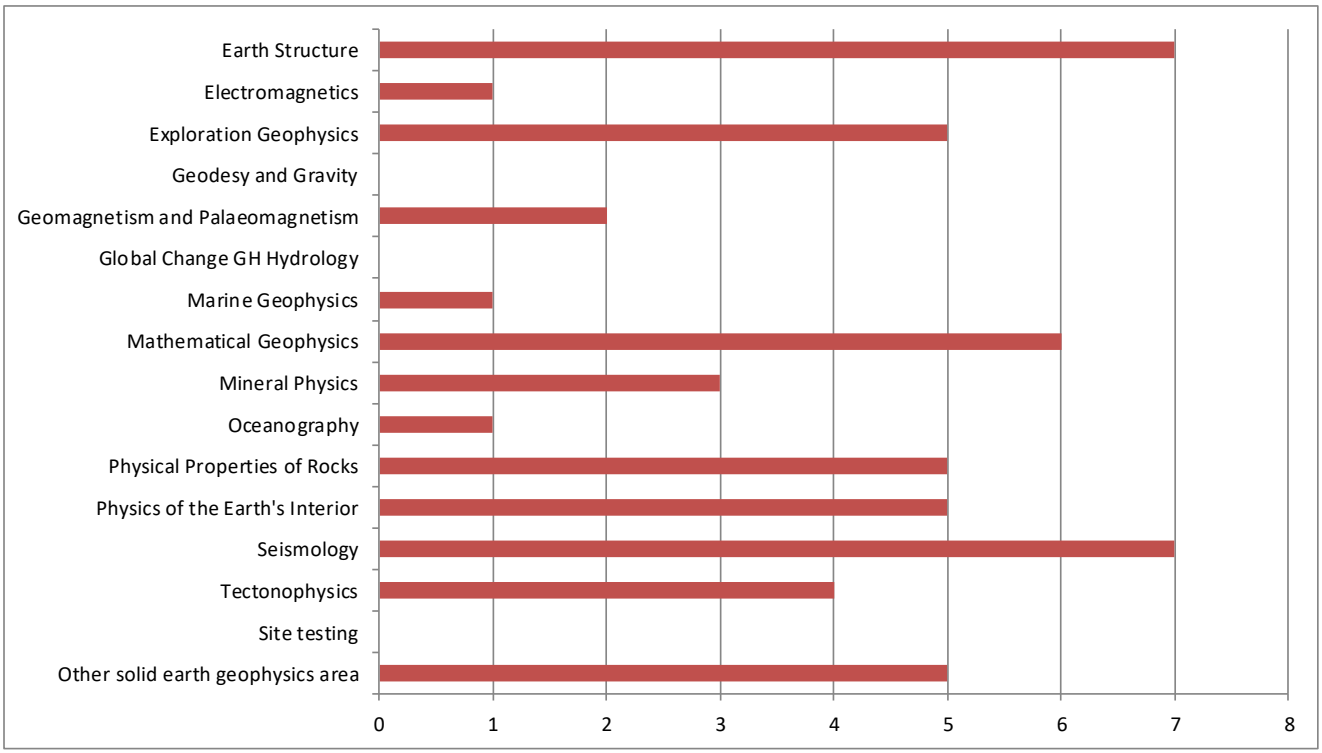

Figure A23: Breakdown of the interest of postdoctoral research associates in solid Earth geophysics research 2016

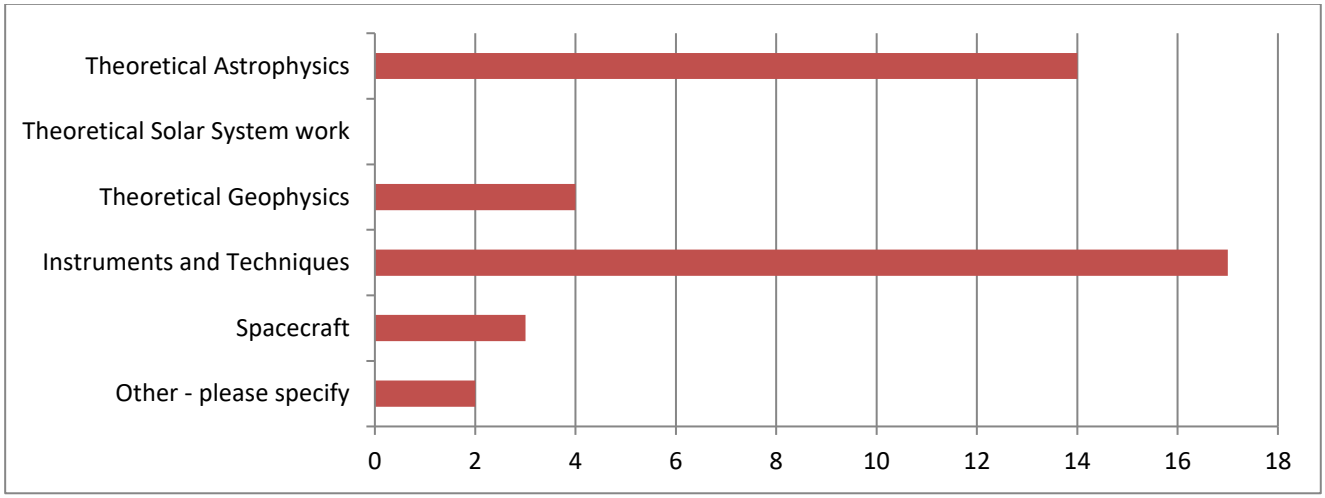

Figure A24: Breakdown of the interest of postdoctoral research associates in other broad research areas 2016

A3 Research interests of Postgraduate Students

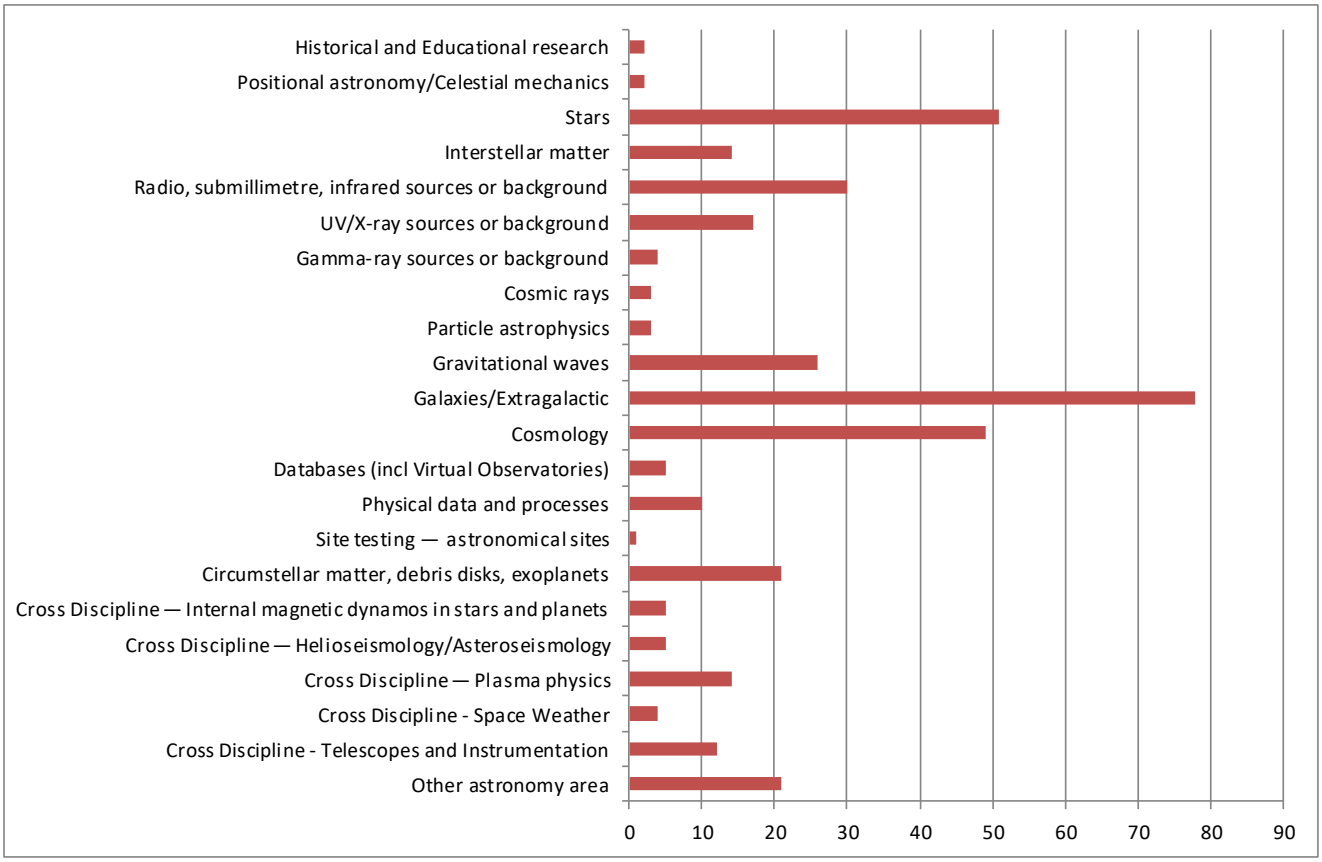

Figure A25: Breakdown of the interest of postgraduate students in astronomy research 2016

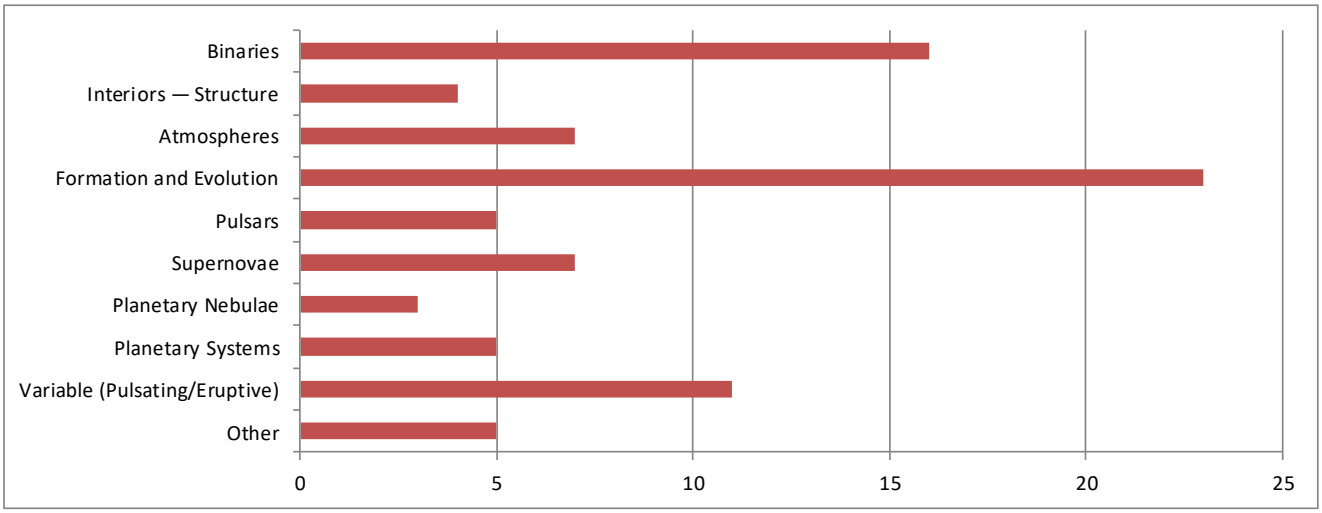

Figure A26: Breakdown of the interest of postgraduate students in stellar research 2016

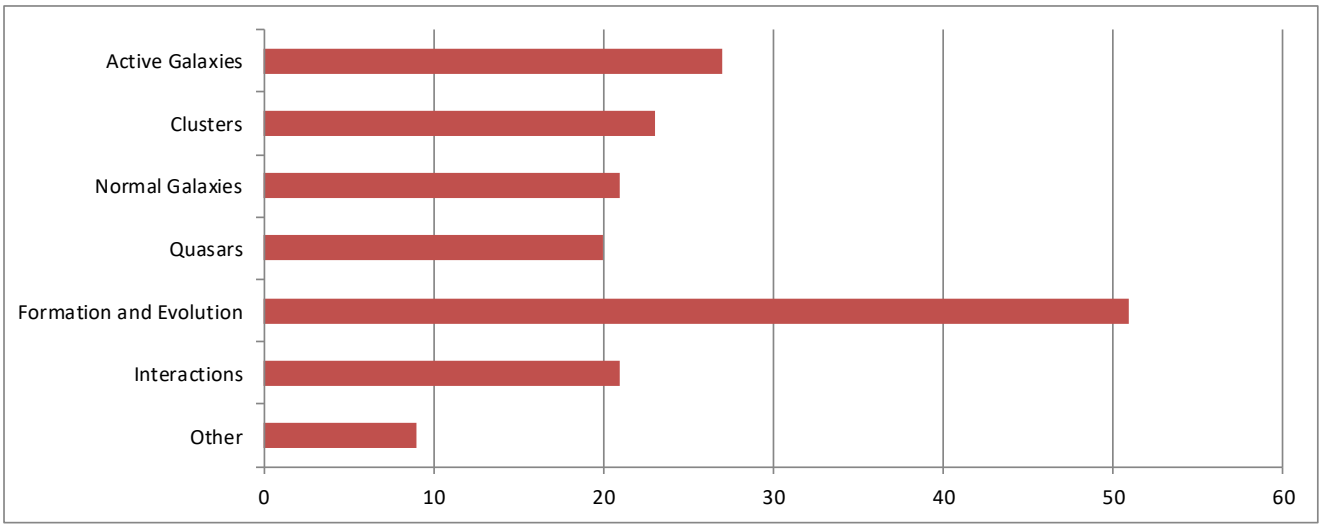

Figure A27: Breakdown of the interest of postgraduate students in extragalactic research 2016

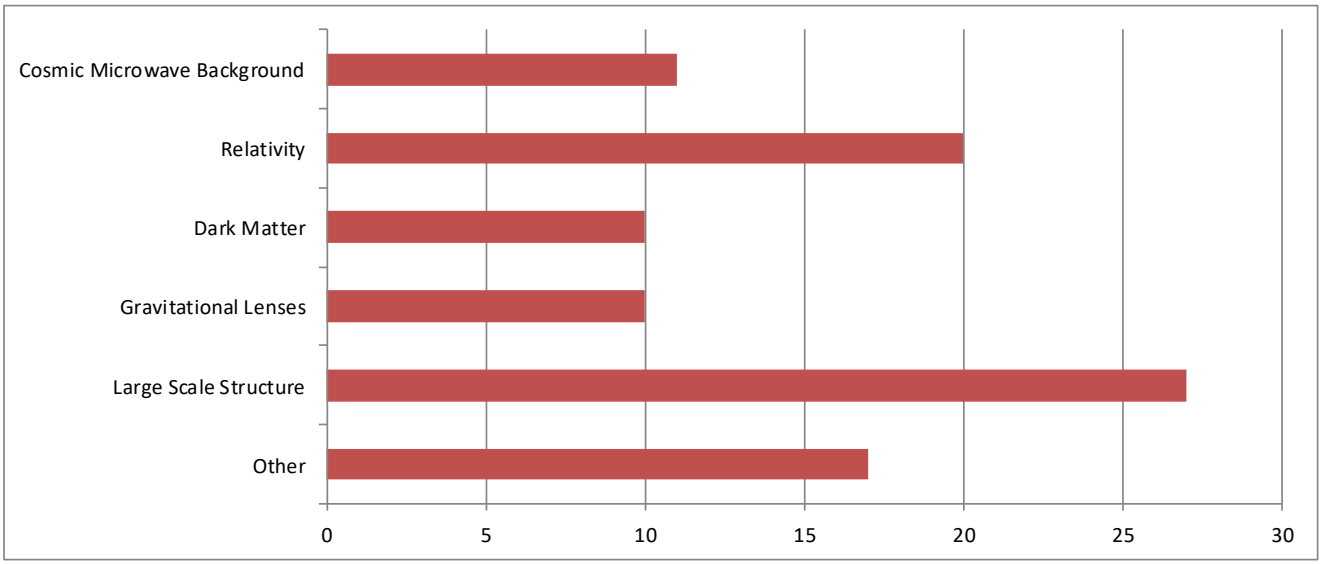

Figure A28: Breakdown of the interest of postgraduate students in cosmology research 2016

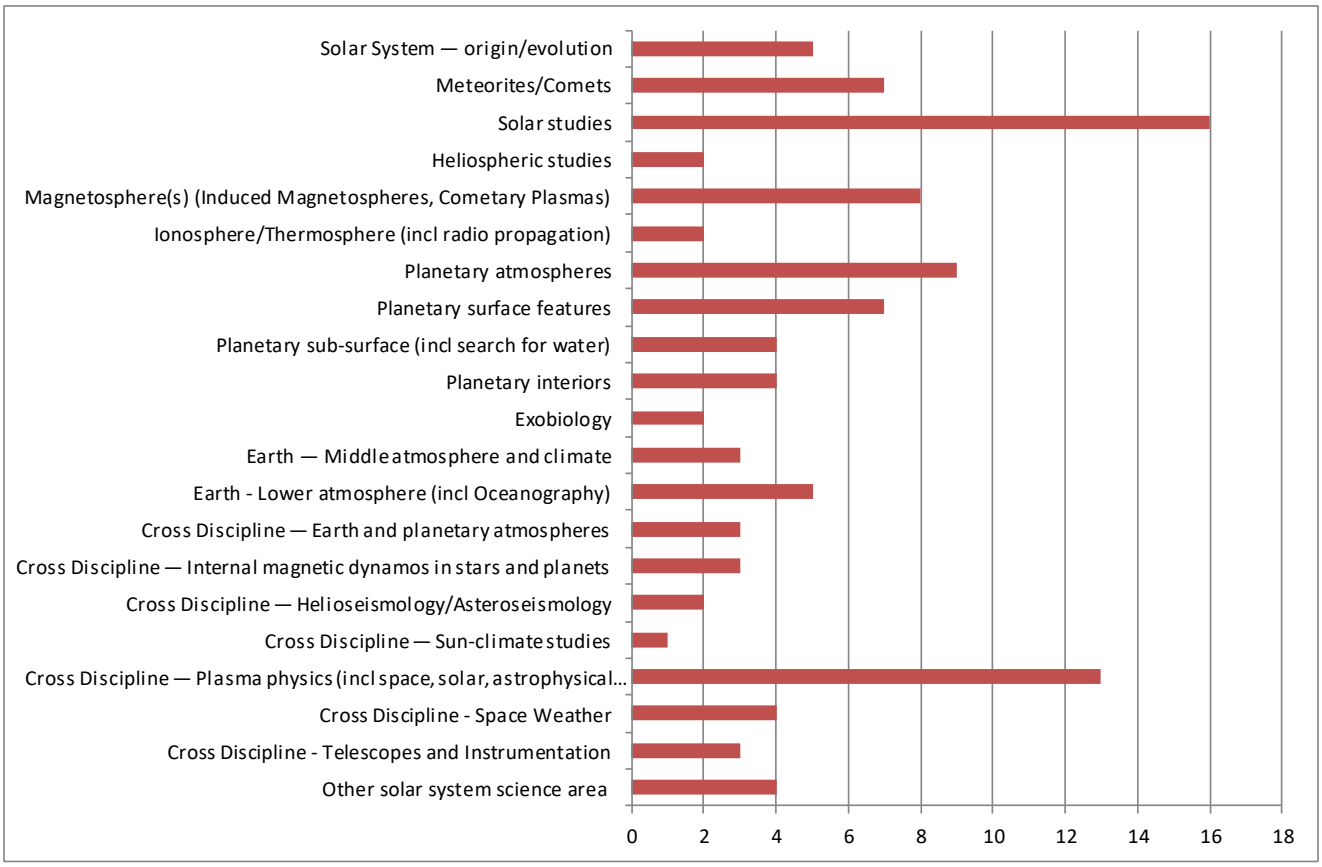

Figure A29: Breakdown of the interest of postgraduate students in solar system science 2016

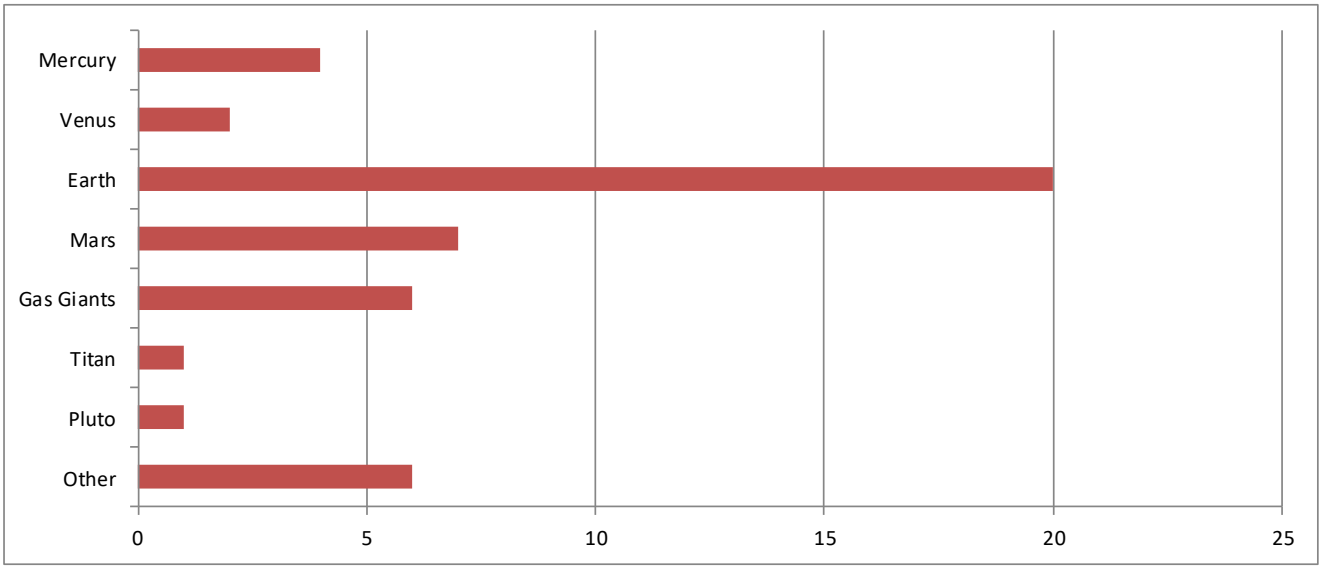

Figure A30: Breakdown of the interest of postgraduate students in planetary research 2016

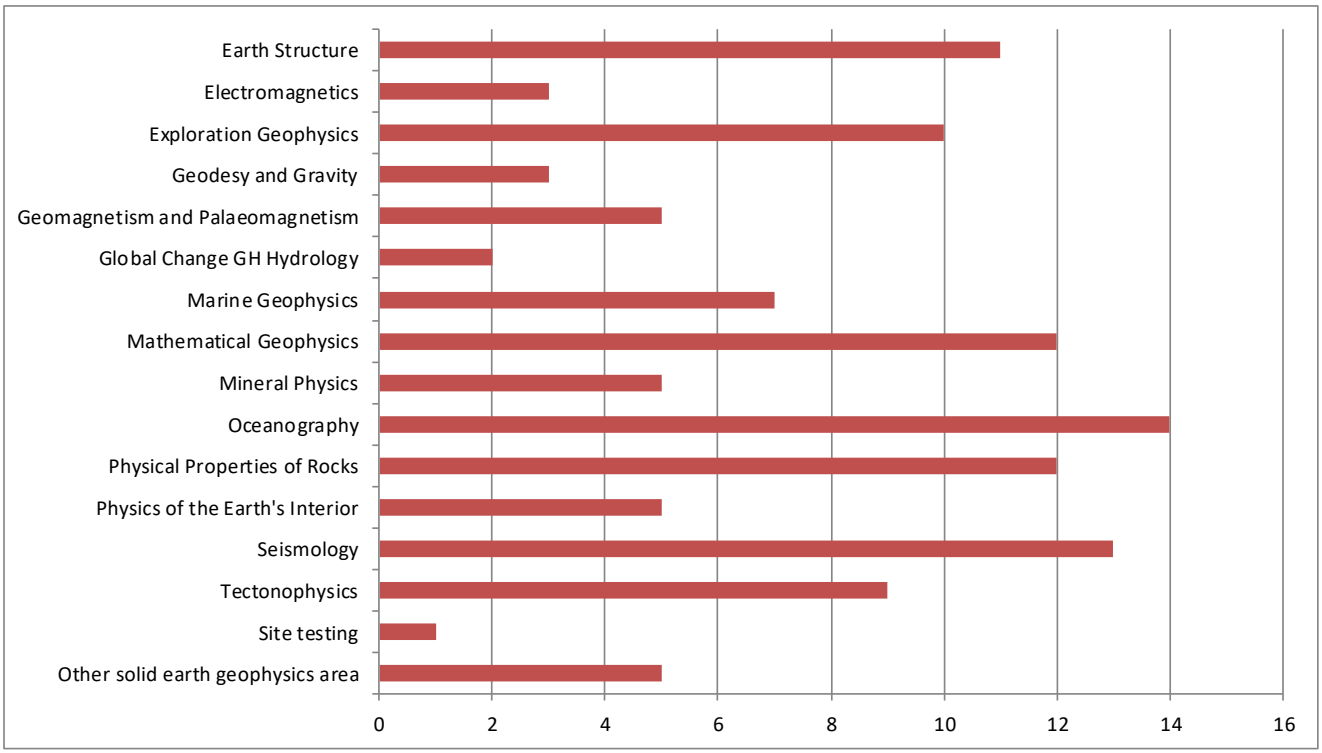

Figure A31: Breakdown of the interest of postgraduate students in solid Earth geophysics research 2016

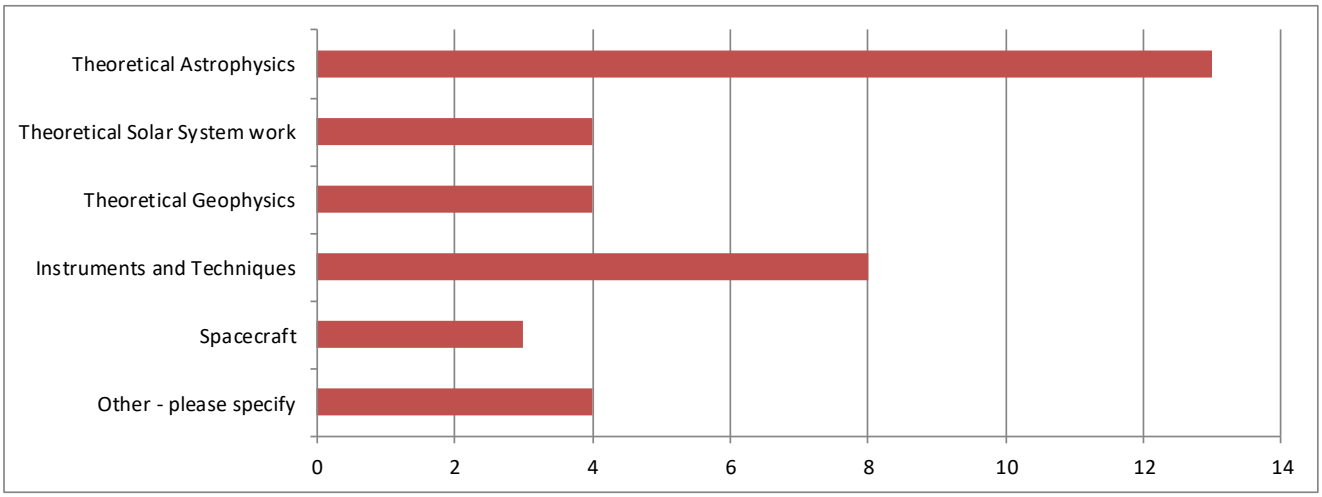

Figure A32: Breakdown of the interest of postgraduate students in other broad research areas 2016

Appendix B: Departments and Research Establishments that participated

The following university department and research groups contributed to the 2016 survey. Departments marked with an asterisk did not respond to the survey, information was collected from the departments' websites:

University of Aberdeen, School of Geosciences*
Abertay University, Division of Computing and Mathematics*
Aberystwyth University, Institute of Geography and Earth Sciences*
Aberystwyth University, Institute of Mathematics and Physics*
Bangor University, School of Ocean Sciences*
University of Bath, Department of Electronic and Electrical Engineering*
University of Bath, Department of Physics*
Birkbeck, University of London, Department of Earth and Planetary Sciences
University of Birmingham, School of Geography, Earth and Environmental Sciences*
University of Birmingham, School of Physics and Astronomy*
University of Bristol, School of Earth Sciences*
University of Bristol, School of Physics*
University of Cambridge, Department of Applied Mathematics and Theoretical Physics (DAMTP)*
University of Cambridge, Department of Physics
University of Cambridge, Institute of Astronomy
University of Cambridge, Department of Earth Science
Cardiff University, School of Earth and Ocean Sciences*
Cardiff University, School of Physics and Astronomy
University of Central Lancashire, Jeremiah Horrocks Institute
University of Dundee, Space Technology Centre*
University of Dundee, School of Science & Engineering, Division of Mathematics*
University of Dundee, School of Science & Engineering, Division of Physics*
Durham University, Department of Earth Sciences
Durham University, Department of Physics
University of East Anglia, School of Environmental Sciences*
University of Edinburgh, Institute for Astronomy
University of Edinburgh, School of Geoscience*
University of Edinburgh, School of Mathematics*
Exeter University, Department of Physics and Astronomy
Exeter University, Department of Mathematics*
University of Glasgow, School of Mathematics and Statistics
University of Glasgow, School of Physics and Astronomy
University of Glasgow, School of Geographical and Earth Sciences*
University of Hertfordshire, School of Physics, Astronomy and Mathematics
Heriot-Watt University, School of Energy, Geoscience, Infrastructure and Society*
University of Hull, Department of Physics and Astrophysics
Imperial College London, Department of Earth Sciences*
Imperial College London, Department of Physics

Keele University, School of Physical and Geographical Sciences*
University of Kent, School of Physical Sciences
Kings College London, Department of Physics*
Lancaster University, Department of Physics*
The Lancaster Environment Centre*
University of Leeds, Department of Applied Mathematics*
University of Leeds, School of Earth and Environment
University of Leeds, School of Physics and Astronomy*
University of Leicester, Department of Geology*
University of Leicester, Department of Physics and Astronomy
University of Liverpool, School of Environmental Sciences*
Liverpool John Moores University, Astrophysics Research Institute
University of Manchester, School of Physics and Astronomy
University of Manchester, School of Earth and Environmental Sciences*
Newcastle University, School of Civil Engineering and Geosciences*
Newcastle University, School of Mathematics and Statistics
Northumbria University, Department of Mathematics, Physics and Electrical Engineering*
University of Nottingham, School of Physics & Astronomy*
Open University, Department of Environment, Earth & Ecosystems
Open University, Department of Physical Sciences
Oxford University, Department of Earth Sciences*
Oxford University, Atmospheric, Oceanic and Planetary Physics
Oxford University, Astrophysics*
Plymouth University, Centre for Research in Earth Sciences (CRES)*
University of Portsmouth, Institute of Cosmology and Gravitation
Queen Mary, University of London, Astronomy Unit*
Queen's University Belfast, School of Mathematics and Physics
University of Reading, Department of Meteorology*
Royal Holloway, University of London, Department of Earth Sciences*
University of Sheffield, Department of Mathematics and Statistics
University of Sheffield, Department of Physics and Astronomy
University of Southampton, School of Physics & Astronomy
University of Southampton, School of Ocean and Earth Sciences
University of St Andrews, School of Mathematics and Statistics
University of St Andrews, School of Physics & Astronomy
University of Strathclyde, Department of Physics*
University of Surrey, Department of Physics
University of Sussex, Astronomy Centre*
Swansea University, Department of Geography*
University College London, Department of Earth Sciences*
University College London, Department of Physics and Astronomy
University College London, Department of Space & Climate Physics (MSSL)*
University of the West of Scotland, School of Science and Sport*
University of Warwick, Department of Physics*

The following research establishments and contributed to the 2016 survey. Research establishments marked with an asterisk did not respond to the survey, information for the survey was reconstructed from the research establishments' websites:

Astronomy Technology Centre
Armagh Observatory*
British Antarctic Survey (BAS)*
British Geological Survey (BGS)*
International Seismological Centre
Met Office*
National Oceanography Centre*
Rutherford Appleton Laboratory (RAL): Space Science and Technology Department (SSTD)

Appendix C: The Questionnaire for University Departments and Research Establishments

The Demographics and Research Interests of the UK Astronomy and Geophysics Communities 2016

The Royal Astronomical Society has carried out a number of surveys to establish the number of staff and postgraduate students in the UK in astronomy, space science and geophysics. The last such survey was carried out in 2010.

We would be very grateful for your help in completing this year's survey which is following the same pattern as the 2010 project. Our approach is to collect demographic information directly from departments/institutes carrying out research in astronomy, solar system science and solid-Earth geophysics. It would be enormously helpful if you could provide demographic information about your current staff working in the areas of interest, and provide information on those staff in those areas who have left and joined in the last 5 years. Additionally, we are asking you to provide information on the research students currently registered with you. The attached questionnaire will guide you through the data we would like you to provide.

The second part of our study will comprise a questionnaire for individuals to collect more detailed information from all staff (permanent academic, research and technical/support) and research students working in the fields of astronomy, solar system science and solid-Earth geophysics. This questionnaire will be available online and we will be contacting you again in the near future to ask you to distribute the link to the questionnaire to all relevant staff and research students.

We realise that completing the attached questionnaire will take some time, however, the information that we collect will enable us to assess how the make-up of the community has changed over the last few years, and to help us plan for the future and provide information and numbers to aid our policy work. The focus of the Society is very much on encouraging representative diversity in the workforce and student body, and we need reliable data to help us establish whether our initiatives in this area are effective.

Once again we have engaged Sean McWhinnie at Oxford Research and Policy to help us with this project. Please could you return the questionnaire either electronically or in paper form directly to Sean McWhinnie as soon as is reasonably possible

The results of this questionnaire and the data from the individual questionnaires will be published in non-attributable form with a commentary. Information relating to individuals or specific institutions will be confidential to the RAS and Oxford Research and Policy and will not be released in attributable form without prior permission. It is our intention to use the data only in the way that is declared here. Under the provision of the Data Protection Act, however we ask you to be aware that the information will be held on a computerised database. We will assume that return of the questionnaire indicates your agreement unless you wish to advise us otherwise.

We are in touch with the Science and Technology Facilities Council (STFC) and the Natural Environment Research Council (NERC) about this survey.

If you have any questions please do not hesitate to contact us, or to contact Sean McWhinnie.
Thank you for your help with this project.

Robert Massey
Deputy Executive Director
Royal Astronomical Society

Profile of Staff in Astronomy, Solar System Science and Solid-Earth Geophysics

We would like to know the age and gender of the staff supported by your institution/department in the areas of Astronomy, Solar System Science and Solid Earth Geophysics. More details of what is covered by these broad areas are provided at the end of this questionnaire: some examples of cross disciplinary research areas are listed but in general staff may be entered as cross disciplinary if they spend significant time researching/teaching in more than one broad area.

The Table below and continued on the next page asks you to list numbers of staff in each of the broad research/teaching categories by age and sex.

	Position/Grade	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Not dis-closed		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Astronomy	Professor																										
	Senior Lecturer/Reader (or equivalent)																										
	Lecturer (or equivalent)																										
	Research Staff on Open-ended contracts																										
	Research Staff on Fixed-Term contracts																										
	Technical/Support Staff on Open ended contracts																										
	Technical/Support staff on Fixed-Term contracts																										
	Long Term Visitors undertaking research																										
	Other Scientific and Technical Staff																										
	Total																										
Solar System Science	Professor																										
	Senior Lecturer/Reader (or equivalent)																										
	Lecturer (or equivalent)																										
	Research Staff on Open-ended contracts																										
	Research Staff on Fixed-Term contracts																										
	Technical/Support Staff on Open ended contracts																										
	Technical/Support staff on Fixed-Term contracts																										
	Long Term Visitors undertaking research																										
	Other Scientific and Technical Staff																										
	Total																										

	Position/Grade	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		70+		Not dis-closed		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			M	F
Solid Earth Geophysics	Professor																										
	Senior Lecturer/Reader (or equivalent)																										
	Lecturer (or equivalent)																										
	Research Staff on Open-ended contracts																										
	Research Staff on Fixed-Term contracts																										
	Technical/Support Staff on Open ended contracts																										
	Technical/Support staff on Fixed-Term contracts																										
	Long Term Visitors undertaking research																										
	Other Scientific and Technical Staff																										
	Total																										
Cross Disciplinary	Professor																										
	Senior Lecturer/Reader (or equivalent)																										
	Lecturer (or equivalent)																										
	Research Staff on Open-ended contracts																										
	Research Staff on Fixed-Term contracts																										
	Technical/Support Staff on Open ended contracts																										
	Technical/Support staff on Fixed-Term contracts																										
	Long Term Visitors undertaking research																										
	Other Scientific and Technical Staff																										
	Total																										

Turnover of staff in the last 5 years

For each of the broad research/teaching areas please could you indicate the numbers of staff in various categories who have left your institution/department in the last 5 years, and their reasons for leaving (if known).

	Staff Leavers 2011-2016	Reason for leaving															
		Retirement		New job in Academia/ a research institute in the UK		New job in Academia/a research institute abroad		Move to a job in industry		Move to a job outside Scientific Research		End of contract		Death in Service		Unknown	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Astronomy	Permanent Academic Staff																
	Research Staff on Open-ended contracts																
	Research Staff on Fixed-Term contracts																
	Technical/Support Staff on Open-ended contracts																
	Technical/Support staff on Fixed-Term contracts																
	Other Scientific and Technical Staff																
Solar System Science	Permanent Academic Staff																
	Research Staff on Open-ended contracts																
	Research Staff on Fixed-Term contracts																
	Technical/Support Staff on Open-ended contracts																
	Technical/Support staff on Fixed-Term contracts																
	Other Scientific and Technical Staff																
Solid Earth Geophysics	Permanent Academic Staff																
	Research Staff on Open-ended contracts																
	Research Staff on Fixed-Term contracts																
	Technical/Support Staff on Open-ended contracts																
	Technical/Support staff on Fixed-Term contracts																
	Other Scientific and Technical Staff																
Cross Disciplinary	Permanent Academic Staff																
	Research Staff on Open-ended contracts																
	Research Staff on Fixed-Term contracts																
	Technical/Support Staff on Open-ended contracts																
	Technical/Support staff on Fixed-Term contracts																
	Other Scientific and Technical Staff																

Please indicate the number of staff who have joined your department/institution in the last 5 years, indicating the broad area they work in, the category of staff into which they fall, their gender, and the age at which they were appointed. Please include staff who have already left and also include those individuals in the leavers table above.

	Staff Joining 2011-2016	20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59		60-64		65-69		Not disclosed	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			M	F
Astronomy	Permanent Academic Staff																						
	Research Staff on Open-ended contracts																						
	Research Staff on Fixed-Term contracts																						
	Technical/Support Staff on Open-ended contracts																						
	Technical/Support staff on Fixed-Term contracts																						
	Other Scientific and Technical Staff																						
Solar System Science	Permanent Academic Staff																						
	Research Staff on Open-ended contracts																						
	Research Staff on Fixed-Term contracts																						
	Technical/Support Staff on Open-ended contracts																						
	Technical/Support staff on Fixed-Term contracts																						
	Other Scientific and Technical Staff																						
Solid Earth Geophysics	Permanent Academic Staff																						
	Research Staff on Open-ended contracts																						
	Research Staff on Fixed-Term contracts																						
	Technical/Support Staff on Open-ended contracts																						
	Technical/Support staff on Fixed-Term contracts																						
	Other Scientific and Technical Staff																						
Cross Disciplinary	Permanent Academic Staff																						
	Research Staff on Open-ended contracts																						
	Research Staff on Fixed-Term contracts																						
	Technical/Support Staff on Open-ended contracts																						
	Technical/Support staff on Fixed-Term contracts																						
	Other Scientific and Technical Staff																						

Postgraduate Research Students

Please indicate the numbers of postgraduate research students in your institute/department indicating what year of research they are in, their broad area of research, and their gender. Please also indicate whether they are full time or part time, and for full time students whether they are UK domiciled or non-UK domiciled.

Full Time, UK Domiciled Post Graduate Students

	1st Year		2nd Year		3rd Year		4th Year		5th Year		Writing Up	
	M	F	M	F	M	F	M	F	M	F	M	F
Astronomy												
Solar System Science												
Solid Earth Geophysics												
Cross Disciplinary												

Full Time, Other-EU Domiciled Post Graduate Students

	1st Year		2nd Year		3rd Year		4th Year		5th Year		Writing Up	
	M	F	M	F	M	F	M	F	M	F	M	F
Astronomy												
Solar System Science												
Solid Earth Geophysics												
Cross Disciplinary												

Full Time, Non-UK Domiciled Post Graduate Students

	1st Year		2nd Year		3rd Year		4th Year		5th Year		Writing Up	
	M	F	M	F	M	F	M	F	M	F	M	F
Astronomy												
Solar System Science												
Solid Earth Geophysics												
Cross Disciplinary												

Part time Students Post Graduate Students (both UK and non-UK Domiciled)

	1st Year		2nd Year		3rd Year		4th Year		5th Year		Writing Up	
	M	F	M	F	M	F	M	F	M	F	M	F
Astronomy												
Solar System Science												
Solid Earth Geophysics												
Cross Disciplinary												

Definitions of Broad Teaching/Research Areas

The lists below give the sub-disciplines which comprise the broad areas used in this study. You will find examples of cross-disciplinary areas listed under astronomy and Solar System Science: these are also repeated in the list of cross-disciplinary areas.

ASTRONOMY (including PARTICLE ASTROPHYSICS)
AA Historical and Educational research
AB Positional astronomy/Celestial mechanics
AC Stars
AD Interstellar matter
AE Radio, submillimetre, infrared sources or background
AF UV/X-ray sources or background
AG Gamma-ray sources or background
AH Cosmic rays
Al Particle astrophysics
AJ Gravitational waves
AK Galaxies/Extragalactic
AL Cosmology
AM Databases (incl Virtual Observatories)
AN Physical data and processes
AO Site testing - astronomical sites
AP Circumstellar matter, debris disks, exoplanets

CA Cross Discipline - Earth and planetary atmospheres
CB Cross Discipline - Internal magnetic dynamos in stars and planets
CC Cross Discipline - Helioseismology/Asteroseismology
CD Cross Discipline - Sun-climate studies
CE Cross Discipline - Plasma physics (incl space, solar, astrophysical and laboratory)
CF Cross Discipline - Space Weather
CG Cross Discipline - Telescopes and Instrumentation

SOLAR SYSTEM SCIENCE (including The EARTH as a Planet)
SA Solar System - origin/evolution
SB Meteorites/Comets/Asteroids
SC Solar studies
SD Heliospheric studies
SE Magnetosphere(s) (incl. Induced Magnetospheres, Cometary Plasmas)
SF Ionosphere/Thermosphere (incl. radio propagation)
SG Planetary atmospheres
SH Planetary surface features
Sl Planetary sub-surface (incl search for water)
SJ Planetary interiors
SK Exobiology
SL Earth - Middle atmosphere and climate
SM Earth - Lower atmosphere (incl Oceanography)

CA Cross Discipline - Earth and planetary atmospheres
CB Cross Discipline - Internal magnetic dynamos in stars and planets
CC Cross Discipline - Helioseismology/Asteroseismology
CD Cross Discipline - Sun-climate studies
CE Cross Discipline - Plasma physics (incl space, solar, astrophysical and laboratory)
CF Cross Discipline - Space Weather

CG Cross Discipline - Telescopes and Instrumentation

SOLID EARTH GEOPHYSICS
GA Earth Structure
GB Electromagnetics
GC Exploration Geophysics
GD Geodesy and Gravity
GE Geomagnetism and Palaeomagnetism
GF Global Change
GH Hydrology
GI Marine Geophysics
GJ Mathematical Geophysics
GK Mineral Physics
GL Oceanography
GM Physical Properties of Rocks
GN Physics of the Earth's Interior
GN Seismology
GO Tectonophysics
GP Site testing

CROSS DISCILINARY
CA Cross Discipline - Earth and planetary atmospheres
CB Cross Discipline - Internal magnetic dynamos in stars and planets
CC Cross Discipline - Helioseismology/Asteroseismology
CD Cross Discipline - Sun-climate studies
CE Cross Discipline - Plasma physics (incl space, solar, astrophysical and laboratory)
CF Cross Discipline - Space Weather
CG Cross Discipline - Telescopes and Instrumentation

Appendix D: The Individual Questionnaire

The Demographics and Research Interests of the UK Astronomy and Geophysics

The Royal Astronomical Society (RAS) wants to know about your research interests and the way you spend your time at work.

The following survey will ask different questions depending on whether you are a permanent member of staff, a fixed-term postdoctoral researcher, or a postgraduate student in a university or research institute.

Surveys have been carried out by the RAS periodically since 1988. The information that we collect will enable us to assess how the make-up of the community has changed over the last few years, and to help us plan for the future and provide information and numbers to aid our policy work.

For information about the background to the survey please contact Robert Massey, Deputy Executive Director (rm@ras.org.uk).

The RAS has commissioned Oxford Research and Policy to administer and analyse the survey.

For enquiries about this survey please contact Sean McWhinnie of Oxford Research and Policy at sean.mcwhinnie@oxfordresearchandpolicy.co.uk

The results of this questionnaire will be published in non-attributable form with a commentary. Information relating to individuals or specific institutions will be confidential to the RAS and Oxford Research and Policy and will not be released in attributable form without prior permission. It is our intention to use the data only in the way that is declared here. Under the provision of the Data Protection Act, however we ask you to be aware that the information will be held on a computerised database.

Your status

What role do you hold? Please pick the one which is closest

☐ Professor *(Go to Permanent staff: about you)*
☐ Reader *(Go to Permanent staff: about you)*
☐ Senior Lecturer or equivalent *(Go to Permanent staff: about you)*
☐ Lecturer or equivalent *(Go to Permanent staff: about you)*
☐ Research Fellow/Staff on open-ended contract (Research Facility/Research Institute) (*Go to Permanent Research Fellows: funding*)
☐ Permanent Research Fellow/Staff (University) (*Go to Permanent Research Fellows: funding*)
☐ Postdoctoral Research Associate *(Go to Postdoctoral fellows: about you)*
☐ Technical or support staff (excl. admin) *(Go to Technical and support staff: about you)*
☐ Long-term visitor (*Go to Long-term visitor*)
☐ Postgraduate Research Student (*Go to Research students: about you*)
☐ Honorary Staff
☐ Other (please specify) _____

Long-term visitor

After answering the question below about where you are visiting from, you will be asked to answer questions about yourself and how you spend your time. Please answer these questions based on how you spend your time as an academic visitor.

Where are you visiting from? Please indicate your institution/company and its location.

_____

Permanent Research Fellows: funding

After answering the question below about the source of funding for your post, you will be asked a series of questions about you and how you spend your research and non-research time.

Where does the funding for your post come from?

☐ STFC
☐ NERC
☐ EPSRC
☐ BBSRC
☐ UK Space Agency
☐ The University/Department
☐ Industry
☐ European Commission
☐ Royal Astronomical Society
☐ Self-Funded
☐ Other (please specify) _____

Permanent staff: about you

What is your age?

- ☐ 20-24
- ☐ 25-29
- ☐ 30-34
- ☐ 35-39
- ☐ 40-44
- ☐ 45-49
- ☐ 50-54
- ☐ 55-59
- ☐ 60-64
- ☐ 65-69
- ☐ 70+
- ☐ Do not wish to say

What is your sex?

- ☐ Female
- ☐ Male
- ☐ Other
- ☐ Do not wish to say

Do you consider yourself to be:

- ☐ Bisexual
- ☐ Gay or lesbian
- ☐ Heterosexual or straight
- ☐ Do not wish to say

In which institution/organisation and department do you hold your current position?

_____

Are you part-time or full-time?

- ☐ Part-time
- ☐ Full-time
- ☐ Do not wish to say

What is your nationality?

- ☐ British
- ☐ Other European Union
- ☐ USA
- ☐ Do not wish to say
- ☐ Other (please specify)_____

What is your ethnic group?

- ☐ Arab
- ☐ Asian: Chinese
- ☐ Asian: Bangladeshi
- ☐ Asian: Indian
- ☐ Asian: Pakistani
- ☐ Other Asian
- ☐ Black African
- ☐ Black Caribbean
- ☐ Other Black
- ☐ White (British)
- ☐ Irish
- ☐ Gypsy or Irish Traveller
- ☐ Other White
- ☐ Chinese
- ☐ Mixed: White and Asian
- ☐ Mixed: White and Black African
- ☐ Mixed: White and Black Caribbean
- ☐ Other Mixed Background
- ☐ Do not wish to say

☐ Any other ethnic group (please specify) _____

What is your religion?

- ☐ Buddist
- ☐ Christian
- ☐ Hindu
- ☐ Jewish
- ☐ Muslim
- ☐ Sikh
- ☐ No religion
- ☐ Do not wish to say

☐ Any religion (please specify) _____

Have you had one or more career breaks since you first held a permanent post totalling 3 months or more?

- ☐ Yes
- ☐ No

Do you consider yourself disabled?

- ☐ Yes
- ☐ No
- ☐ Do not wish to say

How many children do you have?

	Number of Children
Pre-school children (under 5 years old)	☐
School age children (5 to 18 years old)	☐
Grown up children (Above 18 years old)	☐

Permanent staff: career breaks

For what reasons have one or more career break(s)? Please mark all that apply

- ☐ Parental leave
- ☐ Caring for a family member
- ☐ Illness
- ☐ Other (please specify below if you wish to)

Other (from above)_____

How long in total have you had off during your career break(s)?

- ☐ 3-6 months
- ☐ 6-12 months
- ☐ 1-2 years
- ☐ 2-3 years
- ☐ 3-4 years
- ☐ 4-5 years
- ☐ 5-10 years
- ☐ More than 10 years

Permanent staff: your research

What is/are the main discipline(s) that you work in? Please mark all that apply.

- ☐ I don't work in any areas related to Astronomy or Geophysics
- ☐ Astronomy: Astronomy and/or Astrophysics (A)
- ☐ Astronomy: Particle Astrophysics (PA)
- ☐ Solar System: Planetary Science (PS)
- ☐ Solar System: Earth Observation (EO)
- ☐ Solar System: Atmospheric Science (AS)
- ☐ Solar System: The Sun (S)
- ☐ Solar System: Solar-Terrestrial Physics (STP)
- ☐ Solar System: Cross Discipline Topics
- ☐ Geophysics: Solid Earth Geophysics (SEG)
- ☐ Other Related Subject (please specify)_____

Permanent staff: your time

Please indicate how your time is divided between the activities listed below. Please ensure that the percentages total to 100.

	Proportion of time
Research	
Undergraduate teaching	
Postgraduate teaching	
Administration associated with job	
External professional activities (journal editing, professional body work, etc)	
Public engagement/outreach	
Other	

Please describe your other activities_____

Permanent staff: your research areas

We are interested to learn which area(s) of research you spend your time on. Please could you select up to 5 research areas from the lists below.

What are your main research areas?

Please select NO MORE THAN A TOTAL OF 5 research areas from the lists specified for Astronomy, Solar System Science and Solid Earth Geophysics, or from the broad areas. Where you select one of the ASTERISKED AREAS, please specify below more details.

Note: categories to some extent overlap, and we have identified some cross disciplinary categories. Please use the combination of category and activity, which most accurately describes your research

ASTRONOMY (including PARTICLE ASTROPHYSICS)

☐ AA Historical and Educational research
☐ AB Positional astronomy/Celestial mechanics
☐ AC* Stars
☐ AD Interstellar matter
☐ AE Radio, submillimetre, infrared sources or background
☐ AF UV/X-ray sources or background
☐ AG Gamma-ray sources or background
☐ AH Cosmic rays
☐ Al Particle astrophysics
☐ AJ Gravitational waves
☐ AK* Galaxies/Extragalactic
☐ AL* Cosmology
☐ AM Databases (incl Virtual Observatories)
☐ AN Physical data and processes
☐ AO Site testing — astronomical sites
☐ AP Circumstellar matter, debris disks, exoplanets
☐ CB Cross Discipline — Internal magnetic dynamos in stars and planets
☐ CC Cross Discipline — Helioseismology/Asteroseismology
☐ CE Cross Discipline — Plasma physics (incl space, solar, astrophysical and laboratory)
☐ CF Cross Discipline — Space Weather
☐ CG Cross Discipline — Telescopes and Instrumentation
☐ Other astronomy area (please specify) _____

SOLAR SYSTEM SCIENCE (including The EARTH as a Planet)

☐ SA Solar System — origin/evolution
☐ SB Meteorites/Comets
☐ SC Solar studies
☐ SD Heliospheric studies
☐ SE* Magnetosphere(s) (Induced Magnetospheres, Cometary Plasmas)
☐ SF* Ionosphere/Thermosphere (incl radio propagation)
☐ SG* Planetary atmospheres
☐ SH* Planetary surface features
☐ Sl* Planetary sub-surface (incl search for water)
☐ SJ* Planetary interiors
☐ SK* Exobiology
☐ SL Earth — Middle atmosphere and climate
☐ SM Earth - Lower atmosphere (incl Oceanography)

☐ CA Cross Discipline — Earth and planetary atmospheres
☐ CB Cross Discipline — Internal magnetic dynamos in stars and planets
☐ CC Cross Discipline — Helioseismology/Asteroseismology
☐ CD Cross Discipline — Sun-climate studies
☐ CE Cross Discipline — Plasma physics (incl space, solar, astrophysical and laboratory)
☐ CF Cross Discipline — Space Weather
☐ CG Cross Discipline — Telescopes and Instrumentation
☐ Other solar system science area (please specify)_____

SOLID EARTH GEOPHYSICS

☐ GA Earth Structure
☐ GB Electromagnetics
☐ GC Exploration Geophysics
☐ GD Geodesy and Gravity
☐ GE Geomagnetism and Palaeomagnetism
☐ GF Global Change GH Hydrology
☐ GI Marine Geophysics
☐ GJ Mathematical Geophysics
☐ GK Mineral Physics
☐ GL Oceanography
☐ GM Physical Properties of Rocks
☐ GN Physics of the Earth's Interior
☐ GN Seismology
☐ GO Tectonophysics
☐ GP Site testing
☐ Other solid earth geophysics area (please specify) _____

The following broad categories should only be used when the more specific ones are not appropriate.

☐ XA Theoretical Astrophysics
☐ XB Theoretical Solar System work
☐ XC Theoretical Geophysics
☐ Y Instruments and Techniques
☐ Z Spacecraft
☐ + Other - please specify

Please give more information if you have selected one of the broad categories.

_____

If you have selected one or more of the ASTERISKED CATEGORIES above as one of your research areas, please indicate your research interests in more detail by selecting the appropriate research area(s) from the lists below.

AC Stars:

☐ 1 Binaries
☐ 2 Interiors — Structure
☐ 3 Atmospheres
☐ 4 Formation and Evolution
☐ 5 Pulsars
☐ 6 Supernovae
☐ 7 Planetary Nebulae
☐ 8 Planetary Systems

☐ 9 Variable (Pulsating/Eruptive)
☐ 10 Other

AK Galaxies/Extragalactic:

☐ 1 Active Galaxies
☐ 2 Clusters
☐ 3 Normal Galaxies
☐ 4 Quasars
☐ 5 Formation and Evolution
☐ 6 Interactions
☐ 7 Other

AL Cosmology:
☐ 1 Cosmic Microwave Background
☐ 2 Relativity
☐ 3 Dark Matter
☐ 4 Gravitational Lenses
☐ 5 Large Scale Structure
☐ 6 Dark Energy
☐ 7 Other

SE to SK Planetary Science:

☐ 1 Mercury
☐ 2 Venus
☐ 3 Earth
☐ 4 Mars
☐ 5 Gas Giants
☐ 6 Titan
☐ 7 Pluto
☐ 8 Other

Permanent staff: your research time

Please could you estimate the proportion of your research time that you spend on each of the following activities.

Please note that the total across all research areas should add to 100.

	Ground based	Space	Other
Theory and numerical modelling			
Observation/Data			
Collection			
Instrumentation			
Data reduction			
Data analysis			
Facility operation & maintenance			
Other (please specify below)			

We should like to identify the pattern of use of facilities at various wavelengths.
Please estimate below the percentage of your last year's research which you spent working on each wavelength.

Please could you ensure that the total adds to 100.

	Radio	MM and sub-MM	IR	Optical	UV	X-ray	Gamma and Cosmic Ray	Other (see below)	Not appli-cable
Theory and numerical modelling									
Observation/Data Collection									
Instrumentation									
Data reduction									
Data analysis									
Facility operation & maintenance									
Other (please specify below)									

Other (from above). Please use this category if these wavelength categories are not applicable.

_____

Permanent staff: research facilities

Please list the national and international research facilities that you have used, or used data from, in the last 24 months.

The most commonly reported facilities from the 2010 survey are listed below. If any of the facilities you have used are not listed please list them below in the text box.

- ☐ AAO / Anglo-Australian Telescope
- ☐ Advanced Composition Explorer (ACE)
- ☐ ALMA
- ☐ APEX
- ☐ Australia Telescope Compact Array (ATCA)
- ☐ Australia Telescope National Facility (ATNF)
- ☐ Cassini
- ☐ Chandra
- ☐ Cluster (solar-terrestrial) satellite
- ☐ European Incoherent Scatter Scientific Association (EISCAT)
- ☐ European Southern Observatory (ESO)
- ☐ Fermi Gamma-ray Space Telescope
- ☐ Galaxy Evolution Explorer (GALEX)
- ☐ Gemini
- ☐ Giant Metrewave Radio Telescope (GMRT) (India)
- ☐ Green Bank Telescope (GBT)
- ☐ Herschel
- ☐ Hinode
- ☐ Hubble Space Telescope
- ☐ Instituto de Radioastronomie Millimetrique (IRAM)
- ☐ James Clerk Maxwell Telescope (JCMT)
- ☐ Keck Telescope
- ☐ Laser Interferometer Gravitational-wave Observatory (LIGO)
- ☐ Liverpool Telescope (LT)
- ☐ LOFAR / Westerbork
- ☐ MERLIN / e-MERLIN
- ☐ New Technology Telescope (NTT)
- ☐ Rosetta
- ☐ Sloan Digital Sky Survey (SDSS)
- ☐ SOHO - satellite
- ☐ Solar Dynamics Observatory
- ☐ Solar TErrestrial RElations Observatory (STEREO)
- ☐ South African Astronomical Observatory (SAAO)
- ☐ Spitzer (infrared observatory)
- ☐ Subaru (Japan - on Hawaii)
- ☐ SuperWASP
- ☐ Swift gamma-ray burst mission
- ☐ UKIRT
- ☐ Very Large Array (VLA) / Expanded Very Large Array (EVLA)
- ☐ Visible and Infrared Survey Telescope for Astronomy (VISTA)
- ☐ XMM-Newton

If any of the facilities you have used are not listed above please list them below.

Permanent staff: any comments

In the space below we would be grateful for your comments:
• on issues relating to research and its funding
• your experiences of working as a researcher and how they could be improved
• anything else you wish to say

Technical and support staff: about you

What is your age?

- ☐ 20-24
- ☐ 25-29
- ☐ 30-34
- ☐ 35-39
- ☐ 40-44
- ☐ 45-49
- ☐ 50-54
- ☐ 55-59
- ☐ 60-64
- ☐ 65-69
- ☐ 70+
- ☐ Do not wish to say

What is your sex?

- ☐ Female
- ☐ Male
- ☐ Other
- ☐ Do not wish to say

Do you consider yourself to be:

- ☐ Bisexual
- ☐ Gay or lesbian
- ☐ Heterosexual or straight
- ☐ Do not wish to say

Are you part-time or full-time?

- ☐ Part-time
- ☐ Full-time
- ☐ Do not wish to say

Do you have a permanent (open ended) contract or temporary (fixed term) contract?

- ☐ Permanent
- ☐ Temporary
- ☐ Do not wish to say

What is your nationality?

- ☐ British
- ☐ Other European Union
- ☐ USA
- ☐ Do not wish to say
- ☐ Other (please specify)_____

What is your ethnic group?

- ☐ Arab
- ☐ Asian: Chinese
- ☐ Asian: Bangladeshi
- ☐ Asian: Indian
- ☐ Asian: Pakistani
- ☐ Other Asian
- ☐ Black African
- ☐ Black Caribbean
- ☐ Other Black
- ☐ White (British)
- ☐ Irish
- ☐ Gypsy or Irish Traveller
- ☐ Other White
- ☐ Chinese
- ☐ Mixed: White and Asian
- ☐ Mixed: White and Black African
- ☐ Mixed: White and Black Caribbean
- ☐ Other Mixed Background
- ☐ Do not wish to say

☐ Any other ethnic group (please specify) _____

What is your religion?

- ☐ Buddist
- ☐ Christian
- ☐ Hindu
- ☐ Jewish
- ☐ Muslim
- ☐ Sikh
- ☐ No religion
- ☐ Do not wish to say

☐ Any religion (please specify) _____

Do you consider yourself disabled?

- ☐ Yes
- ☐ No
- ☐ Do not wish to say

How many children do you have?

	Number of Children
Pre-school children (under 5 years old)	☐
School age children (5 to 18 years old)	☐
Grown up children (Above 18 years old)	☐

Technical and support staff: your role

Do you supervise students?

- ☐ Yes
- ☐ No

Please indicate how your time is divided between the activities listed below.
Please ensure that the percentages total to 100.
Please note that you will need to select a value (even if that value is 0) for each cell.

	Proportion of time
Support	
Facility operations and maintenance	
Instrumentation	
Research	
Teaching	
Administration	
Public engagement/Outreach	
Other (please specify below)	

Please describe your "other" activities_____

Is your work mostly space-based or ground-based?

- ☐ Space-based
- ☐ Ground-based
- ☐ Both space- and ground-based
- ☐ Not applicable

We should like to identify the pattern of use of facilities at various wavelengths.

Please indicate below which wavelength(s) you work on.

For further information, please briefly describe your role including, where appropriate, which instruments/facilities you work on

- ☐ Not applicable
- ☐ Radio
- ☐ MM and sub-MM
- ☐ IR
- ☐ Optical
- ☐ UV
- ☐ X-ray
- ☐ Gamma
- ☐ Cosmic Ray
- ☐ Other (please specify below)

Other (from above). Please use this category if these wavelength categories are not applicable.

For further information, please briefly describe your role including, where appropriate, which instruments/facilities you work on.

Technical and support staff: any comments

In the space below we would be grateful for your comments:
• on issues relating to research and its funding
• your experiences of working in your current role
• anything else you wish to say

Postdoctoral fellows: about you

What is your age?

- ☐ 20-24
- ☐ 25-29
- ☐ 30-34
- ☐ 35-39
- ☐ 40-44
- ☐ 45-49
- ☐ 50-54
- ☐ 55-59
- ☐ 60-64
- ☐ 65-69
- ☐ 70+
- ☐ Do not wish to say

What is your sex?

- ☐ Female
- ☐ Male
- ☐ Other
- ☐ Do not wish to say

Do you consider yourself to be:

- ☐ Bisexual
- ☐ Gay or lesbian
- ☐ Heterosexual or straight
- ☐ Do not wish to say

What kind of fellowship do you hold?

- ☐ Postdoctoral Research Assistant
- ☐ Advanced Fellowship
- ☐ Royal Society Fellowship
- ☐ Other (please specify)

In which institution/organisation and department do you hold your current position?

_____

Are you part-time or full-time?

- ☐ Part-time
- ☐ Full-time
- ☐ Do not wish to say

What is your nationality?

- ☐ British
- ☐ Other European Union
- ☐ USA
- ☐ Do not wish to say
- ☐ Other (please specify)_____

What is your ethnic group?

- ☐ Arab
- ☐ Asian: Chinese
- ☐ Asian: Bangladeshi
- ☐ Asian: Indian
- ☐ Asian: Pakistani
- ☐ Other Asian
- ☐ Black African
- ☐ Black Caribbean
- ☐ Other Black
- ☐ White (British)
- ☐ Irish
- ☐ Gypsy or Irish Traveller
- ☐ Other White
- ☐ Chinese
- ☐ Mixed: White and Asian
- ☐ Mixed: White and Black African
- ☐ Mixed: White and Black Caribbean
- ☐ Other Mixed Background
- ☐ Do not wish to say

☐ Any other ethnic group (please specify) _____

What is your religion?

- ☐ Buddist
- ☐ Christian
- ☐ Hindu
- ☐ Jewish
- ☐ Muslim
- ☐ Sikh
- ☐ No religion
- ☐ Do not wish to say

☐ Any religion (please specify) _____

Do you consider yourself disabled?

- ☐ Yes
- ☐ No
- ☐ Do not wish to say

How many children do you have?

	Number of Children
Pre-school children (under 5 years old)	☐
School age children (5 to 18 years old)	☐
Grown up children (Above 18 years old)	☐

In which country did you obtain your doctorate?

☐ UK
☐ Other European Union
☐ USA
☐ Elsewhere (please specify)_____

How many years ago (whole or part) did you receive your doctorate?_____

Postdoctoral fellows: your research

What is/are the main discipline(s) that you work in?

☐ I don't work in any areas related to Astronomy or Geophysics
☐ Astronomy: Astronomy and/or Astrophysics (A)
☐ Astronomy: Particle Astrophysics (PA)
☐ Solar System: Planetary Science (PS)
☐ Solar System: Earth Observation (EO)
☐ Solar System: Atmospheric Science (AS)
☐ Solar System: The Sun (S)
☐ Solar System: Solar-Terrestrial Physics (STP)
☐ Solar System: Cross Discipline Topics
☐ Geophysics: Solid Earth Geophysics (SEG)
☐ Other Related Subject (please specify)

Please describe your "other" activities_____

Postdoctoral fellows: your time

Please indicate how your time is divided between the activities listed below. Please ensure that the percentages total to 100.

	Proportion of time
Research	
Undergraduate teaching	
Postgraduate teaching	
Administration	
Public engagement/outreach	
Other	

Please describe your other activities_____

Postdoctoral fellows: your research areas

We are interested to learn which area(s) of research you spend your time on. Please could you select up to 5 research areas from the lists below.

What are your main research areas?

Please select NO MORE THAN A TOTAL OF 5 research areas from the lists specified for Astronomy, Solar System Science and Solid Earth Geophysics, or from the broad areas. Where you select one of the ASTERISKED AREAS, please specify below more details.

Note: categories to some extent overlap, and we have identified some cross disciplinary categories. Please use the combination of category and activity, which most accurately describes your research

ASTRONOMY (including PARTICLE ASTROPHYSICS)

☐ AA Historical and Educational research
☐ AB Positional astronomy/Celestial mechanics
☐ AC* Stars
☐ AD Interstellar matter
☐ AE Radio, submillimetre, infrared sources or background
☐ AF UV/X-ray sources or background
☐ AG Gamma-ray sources or background
☐ AH Cosmic rays
☐ Al Particle astrophysics
☐ AJ Gravitational waves
☐ AK* Galaxies/Extragalactic
☐ AL* Cosmology
☐ AM Databases (incl Virtual Observatories)
☐ AN Physical data and processes
☐ AO Site testing — astronomical sites
☐ AP Circumstellar matter, debris disks, exoplanets
☐ CB Cross Discipline — Internal magnetic dynamos in stars and planets
☐ CC Cross Discipline — Helioseismology/Asteroseismology
☐ CE Cross Discipline — Plasma physics (incl space, solar, astrophysical and laboratory)
☐ CF Cross Discipline — Space Weather
☐ CG Cross Discipline — Telescopes and Instrumentation
☐ Other astronomy area (please specify)_____

SOLAR SYSTEM SCIENCE (including The EARTH as a Planet)

☐ SA Solar System — origin/evolution
☐ SB Meteorites/Comets
☐ SC Solar studies
☐ SD Heliospheric studies
☐ SE* Magnetosphere(s) (Induced Magnetospheres, Cometary Plasmas)
☐ SF* Ionosphere/Thermosphere (incl radio propagation)
☐ SG* Planetary atmospheres
☐ SH* Planetary surface features
☐ Sl* Planetary sub-surface (incl search for water)
☐ SJ* Planetary interiors
☐ SK* Exobiology
☐ SL Earth — Middle atmosphere and climate
☐ SM Earth - Lower atmosphere (incl Oceanography)
☐ CA Cross Discipline — Earth and planetary atmospheres
☐ CB Cross Discipline — Internal magnetic dynamos in stars and planets
☐ CC Cross Discipline — Helioseismology/Asteroseismology
☐ CD Cross Discipline — Sun-climate studies
☐ CE Cross Discipline — Plasma physics (incl space, solar, astrophysical and laboratory)
☐ CF Cross Discipline — Space Weather
☐ CG Cross Discipline — Telescopes and Instrumentation
☐ Other solar system science area (please specify)_____

SOLID EARTH GEOPHYSICS

☐ GA Earth Structure
☐ GB Electromagnetics
☐ GC Exploration Geophysics

☐ GD Geodesy and Gravity
☐ GE Geomagnetism and Palaeomagnetism
☐ GF Global Change GH Hydrology
☐ GI Marine Geophysics
☐ GJ Mathematical Geophysics
☐ GK Mineral Physics
☐ GL Oceanography
☐ GM Physical Properties of Rocks
☐ GN Physics of the Earth's Interior
☐ GN Seismology
☐ GO Tectonophysics
☐ GP Site testing
☐ Other solid earth geophysics area (please specify)_____

The following broad categories should only be used when the more specific ones are not appropriate.

☐ XA Theoretical Astrophysics
☐ XB Theoretical Solar System work
☐ XC Theoretical Geophysics
☐ Y Instruments and Techniques
☐ Z Spacecraft
☐ + Other - please specify

Please give more information if you have selected one of the broad categories.

_____

If you have selected one or more of the ASTERISKED CATEGORIES above as one of your research areas, please indicate your research interests in more detail by selecting the appropriate research area(s) from the lists below.

AC Stars:

☐ 1 Binaries
☐ 2 Interiors — Structure
☐ 3 Atmospheres
☐ 4 Formation and Evolution
☐ 5 Pulsars
☐ 6 Supernovae
☐ 7 Planetary Nebulae
☐ 8 Planetary Systems
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☐ 10 Other

AK Galaxies/Extragalactic:

☐ 1 Active Galaxies
☐ 2 Clusters
☐ 3 Normal Galaxies
☐ 4 Quasars
☐ 5 Formation and Evolution
☐ 6 Interactions
☐ 7 Other

AL Cosmology:
☐ 1 Cosmic Microwave Background

☐ 2 Relativity
☐ 3 Dark Matter
☐ 4 Gravitational Lenses
☐ 5 Large Scale Structure
☐ 6 Dark Energy
☐ 7 Other

SE to SK Planetary Science:

☐ 1 Mercury
☐ 2 Venus
☐ 3 Earth
☐ 4 Mars
☐ 5 Gas Giants
☐ 6 Titan
☐ 7 Pluto
☐ 8 Other

Postdoctoral fellows: your research time

Please could you estimate the proportion of your research time that you spend on each of the following activities.
Please note that the total across all research areas should add to 100.

	Ground based	Space	Other
Theory and numerical modelling			
Observation/Data Collection			
Instrumentation			
Data reduction			
Data analysis			
Facility operation & maintenance			
Other (please specify below)			

We should like to identify the pattern of use of facilities at various wavelengths.
Please estimate below the percentage of your last year's research which you spent working on each wavelength.
Please could you ensure that the total adds to 100.

	Radio	MM and sub-MM	IR	Optical	UV	X-ray	Gamma and Cosmic Ray	Other (see below)	Not appli-cable
Theory and numerical modelling									
Observation/Data Collection									
Instrumentation									
Data reduction									
Data analysis									
Facility operation & maintenance									
Other (please specify below)									

Other (from above). Please use this category if these wavelength categories are not applicable.

_____

Postdoctoral fellows: research facilities

Please list the national and international research facilities that you have used, or used data from, in the last 24 months.

The most commonly reported facilities from the 2010 survey are listed below. If any of the facilities you have used are not listed please list them below in the text box.

- ☐ AAO / Anglo-Australian Telescope
- ☐ Advanced Composition Explorer (ACE)
- ☐ ALMA
- ☐ APEX
- ☐ Australia Telescope Compact Array (ATCA)
- ☐ Australia Telescope National Facility (ATNF)
- ☐ Cassini
- ☐ Chandra
- ☐ Cluster (solar-terrestrial) satellite
- ☐ European Incoherent Scatter Scientific Association (EISCAT)
- ☐ European Southern Observatory (ESO)
- ☐ Fermi Gamma-ray Space Telescope
- ☐ Galaxy Evolution Explorer (GALEX)
- ☐ Gemini
- ☐ Giant Metrewave Radio Telescope (GMRT) (India)
- ☐ Green Bank Telescope (GBT)
- ☐ Herschel
- ☐ Hinode
- ☐ Hubble Space Telescope
- ☐ Instituto de Radioastronomie Millimetrique (IRAM)
- ☐ James Clerk Maxwell Telescope (JCMT)
- ☐ Keck Telescope
- ☐ Laser Interferometer Gravitational-wave Observatory (LIGO)
- ☐ Liverpool Telescope (LT)
- ☐ LOFAR / Westerbork
- ☐ MERLIN / e-MERLIN
- ☐ New Technology Telescope (NTT)
- ☐ Rosetta
- ☐ Sloan Digital Sky Survey (SDSS)
- ☐ SOHO - satellite
- ☐ Solar Dynamics Observatory
- ☐ Solar TErrestrial RElations Observatory (STEREO)
- ☐ South African Astronomical Observatory (SAAO)
- ☐ Spitzer (infrared observatory)
- ☐ Subaru (Japan - on Hawaii)
- ☐ SuperWASP
- ☐ Swift gamma-ray burst mission
- ☐ UKIRT
- ☐ Very Large Array (VLA) / Expanded Very Large Array (EVLA)
- ☐ Visible and Infrared Survey Telescope for Astronomy (VISTA)
- ☐ XMM-Newton

If any of the facilities you have used are not listed above please list them below.

Postdoctoral fellows: your funding

What is the main source of the funding for your post?

☐ STFC
☐ NERC
☐ EPSRC
☐ BBSRC
☐ UK Space Agency
☐ Royal Society
☐ European Commission
☐ Industry
☐ University/Department
☐ Royal Astronomical Society
☐ Other (please specify) _____

Do you hold another appointment concurrently with your fellowship (e.g. lectureship)?

☐ Yes
☐ No

Do you have an offer of a job or further training at the end of your current appointment?

☐ Yes
☐ No

Postdoctoral fellows: your offer

Is your offer in the UK or overseas?

☐ UK
☐ Outside UK but in the European Union
☐ Outside the European Union

Please indicate the nature of the offer?

☐ Further study: scientific
☐ Further study: non-scientific
☐ Postdoctoral researcher
☐ Permanent academic post
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Other science-related role (e.g. scientific publishing, science communication, technical sales, etc.)
☐ Non-scientific-related role
☐ Other (please specify)_____

Postdoctoral fellows: your prospects

Would you be prepared to take a permanent or long-term post outside the UK?

☐ Yes
☐ No
☐ No strong feelings

Ideally, would you like a permanent academic post in your scientific discipline?

☐ Yes
☐ No
☐ No strong feelings

Postdoctoral fellows: the future

In the medium-term (i.e. in 3-5 years time) which of the following do you think you are most likely to be doing?

☐ Further study: scientific
☐ Further study: non-scientific
☐ Postdoctoral researcher
☐ Permanent academic post
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Other science-related role (e.g. scientific publishing, science communication, technical sales, etc.)
☐ Non-scientific-related role
☐ Other (please specify)_____

In the long-term (i.e. in 6-10 years time) which of the following do you think you are most likely to be doing?

☐ Further study: scientific
☐ Further study: non-scientific
☐ Postdoctoral researcher
☐ Permanent academic post
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Other science-related role (e.g. scientific publishing, science communication, technical sales, etc.)
☐ Non-scientific-related role
☐ Other (please specify)_____

Postdoctoral fellows: any comments

In the space below we would be grateful for your comments on:
• your perceptions of working as a researcher
• your experiences and how they could be improved
• your career plans
• anything else you wish to say

Research students: about you

What is your age?

- ☐ 20
- ☐ 21
- ☐ 22
- ☐ 23
- ☐ 24
- ☐ 25
- ☐ 26
- ☐ 27
- ☐ 28
- ☐ 29
- ☐ 30
- ☐ 31-40
- ☐ 40+

What is your sex?

- ☐ Female
- ☐ Male
- ☐ Other
- ☐ Do not wish to say

Do you consider yourself to be:

- ☐ Bisexual
- ☐ Gay or lesbian
- ☐ Heterosexual or straight
- ☐ Do not wish to say

In which institution/organisation and department do you hold your studentship?

_____

What is your nationality?

- ☐ British
- ☐ Other European Union
- ☐ USA
- ☐ Do not wish to say
- ☐ Other (please specify)_____

What is your ethnic group?

- ☐ Arab
- ☐ Asian: Chinese
- ☐ Asian: Bangladeshi
- ☐ Asian: Indian
- ☐ Asian: Pakistani
- ☐ Other Asian
- ☐ Black African
- ☐ Black Caribbean
- ☐ Other Black
- ☐ White (British)
- ☐ Irish
- ☐ Gypsy or Irish Traveller
- ☐ Other White
- ☐ Chinese
- ☐ Mixed: White and Asian
- ☐ Mixed: White and Black African
- ☐ Mixed: White and Black Caribbean
- ☐ Other Mixed Background
- ☐ Do not wish to say
- ☐ Any other ethnic group (please specify) _____

What is your religion?

- ☐ Buddist
- ☐ Christian
- ☐ Hindu
- ☐ Jewish
- ☐ Muslim
- ☐ Sikh
- ☐ No religion
- ☐ Do not wish to say
- ☐ Any religion (please specify) _____

Do you consider yourself disabled?

☐ Yes
☐ No
☐ Do not wish to say

How many children do you have?

	Number of Children
Pre-school children (under 5 years old)	☐
School age children (5 to 18 years old)	☐
Grown up children (Above 18 years old)	☐

Research students: your research

What is/are the main discipline(s) that you work in?

☐ I don't work in any areas related to Astronomy or Geophysics
☐ Astronomy: Astronomy and/or Astrophysics (A)
☐ Astronomy: Particle Astrophysics (PA)
☐ Solar System: Planetary Science (PS)
☐ Solar System: Earth Observation (EO)
☐ Solar System: Atmospheric Science (AS)
☐ Solar System: The Sun (S)
☐ Solar System: Solar-Terrestrial Physics (STP)
☐ Solar System: Cross Discipline Topics
☐ Geophysics: Solid Earth Geophysics (SEG)
☐ Other Related Subject (please specify)

Please describe your "other" activities_____

Research students: your degree

What is the source of the funding for your degree?
Please mark as many sources as apply

☐ STFC
☐ NERC
☐ EPSRC
☐ BBSRC
☐ UK Space Agency
☐ Other (please specify) _____
☐ Royal Society
☐ European Commission
☐ Industry
☐ University/Department
☐ Royal Astronomical Society

What degree are you studying for?

☐ Masters
☐ Doctorate

Are you registered as full-time or part-time?

☐ Full-time
☐ Part-time

Research students: part time

If part-time, what else are you doing?

☐ Caring for family members
☐ Employed full-time
☐ Employed part-time
☐ Voluntary work
☐ Do not wish to say
☐ Other (please specify)

Research students: your research areas

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☐ XC Theoretical Geophysics
☐ Y Instruments and Techniques
☐ Z Spacecraft
☐ + Other - please specify

Please give more information if you have selected one of the broad categories.

_____

If you have selected one or more of the ASTERISKED CATEGORIES above as one of your research areas, please indicate your research interests in more detail by selecting the appropriate research area(s) from the lists below.

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☐ 4 Quasars
☐ 5 Formation and Evolution
☐ 6 Interactions
☐ 7 Other

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☐ 1 Cosmic Microwave Background
☐ 2 Relativity
☐ 3 Dark Matter
☐ 4 Gravitational Lenses
☐ 5 Large Scale Structure
☐ 6 Dark Energy
☐ 7 Other

SE to SK Planetary Science:

☐ 1 Mercury
☐ 2 Venus
☐ 3 Earth
☐ 4 Mars
☐ 5 Gas Giants
☐ 6 Titan
☐ 7 Pluto
☐ 8 Other

Research students: your progress

In what year of your postgraduate course are you?

☐ 1st Year
☐ 2nd Year
☐ 3rd Year
☐ 4th Year
☐ 5th Year
☐ 6th Year
☐ 7th or Higher Year

Are you currently writing up your thesis?

☐ Yes
☐ No

On balance, are you pleased or disappointed you decided to do a research degree?

☐ Very pleased
☐ Pleased
☐ Neither pleased nor disappointed
☐ Disappointed
☐ Very disappointed

Research students: Teaching activities

Have you undertaken any teaching activities during your doctorate?

Please mark all that apply.

☐ Yes, I have acted as a demonstrator in practical classes
☐ Yes, I have lead small group tutorials
☐ No, I have not done any teaching

Have you received any training to help you deliver your teaching?

☐ Yes
☐ No

Research students: Public Engagement Work

Have you been involved in delivering any public engagement/outreach activities during you doctorate?

Please mark all that apply.

☐ Yes, I've acted as a STEM ambassador
☐ Yes, I've helped at outreach events aimed at school children
☐ Yes, I've helped at events aimed at the general public
☐ Yes, I've helped at events specifically aimed at encouraging girls to study physics/astronomy
☐ No, I haven't taken part in any public engagement/outreach activities

On average, how much time do you estimate that you spend delivering public engagement/outreach activities each month?

☐ More than 5 hours
☐ 4 to 5 hours
☐ 3 to 4 hours
☐ 2 to 3 hours
☐ 1 to 2 hours
☐ Less than 1 hour
☐ Don't know

Have you had any training to help you deliver public engagement activities?

☐ Yes
☐ No

Research students: your plans for the future

Have you accepted a job offer or been accepted on a programme of further study or training, which is due to start on or near completion of your research degree?

☐ Yes
☐ No

Research students: your job or training offer

Which of the following, best describes the job or study/training offer you have accepted?

☐ Further study: scientific
☐ Further study: non-scientific
☐ Teacher Training
☐ Academic: Post doc
☐ Academic: Lecturer
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Other science-related role (e.g. scientific publishing, science communication, technical sales, etc.)
☐ Other (please specify)_____

Where is your offer?

☐ In the UK
☐ Outside the UK but elsewhere in the European Union
☐ In the USA
☐ Elsewhere

Research students: your next steps

Thinking ahead, are you likely to seek employment or apply for further study in the UK or abroad?

Please mark all that apply.

☐ I don't intend to seek employment
☐ Employment or further study in the UK
☐ Employment or further study outside the UK but elsewhere in the European Union
☐ Employment or further study in the USA
☐ Employment or further study elsewhere

Which of the following, best describes the role or further study/training that you are likely to apply for?

You may select up to two options.

☐ Further study: scientific
☐ Further study: non-scientific
☐ Teacher Training
☐ Academic: Post doc
☐ Academic: Lecturer
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Other science-related role (e.g. scientific publishing, science communication, technical sales, etc.)
☐ Role not directly related to science
☐ Other (please specify)_____

Research students: your career plans

In the medium-term (i.e. in 3-5 years time) which of the following do you think you are most likely to be doing?

☐ Further study: scientific
☐ Further study: non-scientific
☐ Postdoctoral researcher
☐ Permanent academic post
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Working in a non-scientific role
☐ Other (please specify)_____

In the long-term (i.e. in 6-10 years time) which of the following do you think you are most likely to be doing?

☐ Further study: scientific
☐ Further study: non-scientific
☐ Postdoctoral researcher
☐ Permanent academic post
☐ Scientist: Industry/commerce
☐ Scientist: Public sector
☐ Scientist: Other sector
☐ Working in a non-scientific role
☐ Other (please specify)_____

Research students: any comments

In the space below we would be grateful for your comments on:
• your perceptions of working as a researcher
• your experiences and how they could be improved
• your career plans
• the advice you have received

Thank you

Thank you for spending time completing the survey.

The Royal Astronomical Society will be publishing a report on the results of the survey later in 2016.

Oxford Research and Policy is a consultancy which carries out research and evaluation, and specialises in higher education, science policy, and equality and diversity.

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