

Commons Science and Technology Committee: Brexit, Science and Innovation: Preparations for 'No-Deal' inquiry

Written evidence submitted by the Royal Astronomical Society

1. This is the official response from the Royal Astronomical Society (RAS) to the inquiry by the House of Commons Science and Technology Committee into the preparations for a 'No-Deal' Brexit relating to science and innovation.
2. The RAS represents more than 4,000 astronomers and geophysicists, in the UK and around the world, in occupations in academia, industry, education and public engagement, and journalism, as well as others in the wider economy. Our members are described as 'Fellows'.
3. This response was shaped by input from our governing Council, and more generally from RAS Fellows and others in universities and research establishments around the world.

Declaration of interests

4. The RAS is not in receipt of funding from any EU source.
5. Our publication income principally derives from sales of two academic journals: Monthly Notices of the Royal Astronomical Society (MNRAS) and Geophysical Journal International (GJI)¹. There are subscriptions to both of these from authors in the EU27 and other European Economic Area (EEA) countries. For MNRAS, 42%, and for GJI, 27% of submitted papers came from authors residing in the 27 EU countries excluding the UK. MNRAS and GJI respectively had 42% and 29% of their submissions from authors in all European Economic Area countries. Authors in Switzerland contributed 1% of the papers submitted to MNRAS, and 2% of those submitted to GJI.
6. At present all of our employees are based in the UK, and hold British passports or have leave to remain, so their residence here is not directly affected by Brexit.

Summary

7. The UK Government and its agencies point to the current strength and international reputation of UK science in many instances, including in the Industrial Strategy² and the UKRI Strategic Prospectus³ documents. Notwithstanding our documented concerns about public funding for basic research, the RAS still agrees with this assessment, and we frequently refer to metrics such as international citation indices,

¹ <https://ras.ac.uk/journals>

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

³ <https://www.ukri.org/files/about/ukri-strategy-document-pdf/?pdf=Strategic-Prospectus>

where the UK is ranked second or third in the world in astronomy⁴⁵ and geophysics⁶, despite relatively modest national investment in R&D.

8. The RAS has serious concerns about the health of these disciplines in the event of a no-deal Brexit. The most pressing of these are access to European grant funding and collaborations, and the status of UK nationals in EU countries.
9. We ask the Committee to press the UK Government to seek reciprocal guarantees on these issues, to avoid serious damage to our national research base. It is vital that our international reputation is protected: the UK needs to continue to be seen as a place where world class science is done, and one where scientists from elsewhere in the EU, and the rest of the world, are welcomed.

Access to funding and shared resources

10. EU grants are an important component of astronomy, space science and geophysics resource funding. The most visible part is the support provided by the European Research Council through its different schemes, with researchers in the UK also utilising other aspects of the Horizon 2020 Framework Programme. The ERC is valued as a funding scheme that puts excellence in science first and foremost.
11. Estimates from the Science and Technology Facilities Council and ourselves⁷ suggest that at least 30% of resource grant funding for astronomy and space science comes from these EU programmes. Taking the example of the European Research Council, from 2007-18 UK based researchers won €139m (£123m) of funds from the starter, consolidated and advanced grant schemes for astronomy projects, and €140m (£124m) of funds from the same schemes for geophysics projects⁸⁹.
12. Research infrastructures are another benefit for astronomy and geophysics. One excellent example is Europlanet, co-founded by UK scientists, linking 39 institutions and companies across the European Economic Area; providing shared access to lab and field test sites in different countries, and now supported by an individual membership scheme to act as a voice for the planetary science community across national boundaries¹⁰.
13. Overall, the EU-wide schemes ensure the international collaboration essential for scientific endeavour, and as a result Europe is seen as a global ‘superpower’ in science, including in astronomy and geophysics.
14. If the UK leaves the EU with a no deal Brexit, its membership of programmes like Horizon 2020 would end and it instead would become a ‘third country’. In that event

⁴ <https://www.scimagojr.com/countryrank.php?category=3103>

⁵ <https://www.scimagojr.com/countryrank.php?category=1912>

⁶ <https://www.scimagojr.com/countryrank.php?category=1908>

⁷ STFC, private communication

⁸ <https://erc.europa.eu/projects-figures/statistics>

⁹ <https://erc.europa.eu/projects-figures/erc-funded-projects>

¹⁰ <http://www.europlanet-2020-ri.eu/>

the Government has guaranteed to maintain equivalent funding for UK research groups in the event of a no deal Brexit¹¹.

15. These guarantees however do not cover the international partners receiving funds divested from a UK project lead. In those cases it is difficult to see how work on these projects would continue, and research groups elsewhere in the EU would rightly see the UK as an unreliable scientific partner.
16. Membership of EU-supported infrastructures such as Europlanet would lapse in the same way. The immediate effect would be to end the UK leadership role in its work, end straightforward UK access to resources like the Centre for Microbial Life Detection in Graz, Austria, and similarly EU27 scientists would lose access to facilities like the Mars Chamber at the Open University in the UK.
17. As a member of both the EU and the European Space Agency (ESA), the UK benefits from involvement in the Galileo and Copernicus programmes. Assuming that involvement in both is greatly reduced after Brexit, even with a deal, the UK net contribution to ESA will be concomitantly lower. Over time this may lead to a lower 'juste retour' geo-return to UK industry, and overall employment of a lower number of UK staff in ESA. The Committee may wish to explore this point in more detail.

People

18. The Society welcomes the Government guarantees to most EU nationals resident in the UK by 29 March 2019 who will be granted 'settled status', irrespective of the terms of Brexit¹². We also recognise the positive statement of the European Commission in this and its invitation to member states to take a "generous approach" to the rights of UK nationals residing in EU27 countries¹³.
19. The implementation of this though appears to depend very much on the country in question. For example, the governments of Germany, the Netherlands and Sweden have all guaranteed UK nationals already living in these countries that they can apply to remain resident. Others such as Austria have at the time of writing yet to offer specific advice on this.
20. Residence and employment rights clearly affect all citizens, their spouses, partners, and families, irrespective of their occupations. Astronomers and geophysicists are though a particularly international community. Although we do not have detailed information on the number of UK nationals working in astronomy and geophysics in the EU27 and other EEA countries, we do know that 9% of RAS Fellows are resident in other European countries, corresponding to around 360 people, the vast majority of whom will be active researchers. This is likely to be an underestimate, as many UK

¹¹ <https://www.gov.uk/government/publications/horizon-2020-funding-if-theres-no-brex-it-deal/horizon-2020-funding-if-theres-no-brex-it-deal--2>

¹² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762222/Policy_paper_on_citizens_rights_in_the_event_of_a_no_deal_Brexit.pdf

¹³ http://europa.eu/rapid/press-release_IP-18-6851_en.htm

citizens working in astronomy and geophysics elsewhere in Europe will not be RAS Fellows¹⁴.

21. It is clear too that a large number of European nationals work in astronomy and geophysics research in the UK, and according to our most recent demographic survey, around one third of postdoctoral researchers meet this description¹⁵.
22. Geophysicists are also employed in many key industries, specifically energy, petroleum, nuclear and renewables. These industries provide employment through contracts, data supply, and collaborations. Oil & Gas UK has already stated that a "deal outcome" is in the best interests of its industry, to give "minimal friction" between the UK and EU.¹⁶ Geophysicists, usually working in international multi-disciplinary teams, are important to the energy industry to meet future demand in the UK while reducing greenhouse gas emissions and preventing harm caused by climate change. A "no-deal" outcome that impedes recruitment, and thus industrial geophysical surveying and industry-related research, can therefore be expected to cause a certain amount of global harm, as well as being directly detrimental to the energy industry and geophysicists within it.
23. With these people and their families in mind, we urge the Committee to press the Government on these points in its negotiations with its European counterparts, even if there is no wider Brexit agreement. It is of the utmost importance that the movement of people that enables science to thrive is able to continue. UK scientists and their spouses, partners, and families who live elsewhere in Europe also urgently need assurances on their status.
24. The UK Government frequently points out that membership of ESA and the European Southern Observatory (ESO) is not directly connected to EU membership. As both organisations are intergovernmental treaty organisations, we are advised that the residence rights of their employees and their immediate families are protected.
25. These rights though are only in place for employees of ESA and ESO. Once that employment ends, then after Brexit they will be third country nationals. Both organisations also have a significant number of contract employees, who will not benefit from the same treaty obligations.

Visas and travel

26. Another key risk for science in a no-deal Brexit is at least temporary disruption to travel between the UK and EU²⁷. This is likely to discourage astronomers and geophysicists from attending conferences in that period. Examples include the

¹⁴ <https://ras.ac.uk/sites/default/files/2018-06/RAS%20membership%20survey%202014.pdf>

¹⁵ <https://ras.ac.uk/sites/default/files/2018-11/Demographics%20and%20Research%20Interests%20of%20the%20UK%20Astronomy%20and%20Geophysics%20FINAL%20V1.4%2019-10-2017.pdf>

¹⁶ <https://oilandgasuk.co.uk/statement-on-brexit/>

European Geophysical Union¹⁷ taking place in Vienna in early April, which typically attracts tens of thousands of delegates, and the smaller, but nonetheless important Public Awareness of Research Infrastructures¹⁸ meeting at the STFC Rutherford Appleton Laboratory at the same time.

27. If a no-deal Brexit goes ahead, the RAS urges the Government to put an ad hoc agreement in place to minimise this disruption and enable researchers to continue to share ideas with their peers at scientific meetings.

Reputation

28. The Society recognises that multiple ad hoc agreements may be put in place fairly quickly after a no-deal Brexit. These may cover the issues we raise here around funding and resources, collaboration and people.
29. If however these agreements are established after a period of great uncertainty, where researchers are preoccupied with their status, where holders of EU grants residing in the UK can no longer provide the funds agreed to collaborators elsewhere, and where access to shared resources is lost, then much damage will already have been done to our international reputation.
30. The Society believes that a no deal Brexit will inevitably be bad for science, including astronomy and geophysics. We do though recognise the need to prepare for this scenario. In framing its contingency plans, we ask that the Government considers the effect of a no deal Brexit on the strength of UK research, on the fruitful relationships our scientists enjoy with their peers in Europe and the rest of the world, and on the perception those peers have of the UK as an international partner.

¹⁷ <https://www.egu2019.eu/>

¹⁸ <https://www.isis.stfc.ac.uk/Pages/PARI2019.aspx>