

## **House of Commons Science and Technology Select Committee Inquiry into the Spending Review 2010: RAS submission**

1. The RAS welcomes the opportunity to provide input to the Committee's inquiry. We submitted evidence to the previous inquiry that specifically concentrated on particle physics and astronomy, largely funded by the Science and Technology Facilities Council (STFC).
2. The British Geophysical Association, a joint association of the RAS and the Geological Society, covers the work of our Fellows who are employed in the area of geophysics. The BGA and Geological Society have submitted separate evidence relating to the Spending Review, including the issue of funding for MSc studentships for geophysics.
3. This note covers the work of our Fellows who work in the area of ground-based Solar-Terrestrial Physics (STP), which is now largely funded by the Natural Environment Research Council (NERC).
4. STP and in particular the ability to predict 'space weather' events caused by outburst (coronal mass ejections) on the Sun is recognised as an area of direct importance to the wider economy, for example in understanding how to secure infrastructure such as power supplies and communications systems. A full description of this work can be seen in the RAS submission to the Committee inquiry into 'Emergencies' in 2010)

### **Capital spending**

5. One of the major features of the CSR settlement for the Research Councils is the BIS-led marked reduction in capital spending (amounting to 50% for NERC) by 2012-2013. This decision is seen as a short-term measure that allows the Research Councils to protect the UK skills base in scientific research by giving some protection to their resource budgets, although nonetheless has serious consequences for some groups that for example depend on frequently updating high-performance computing facilities.
6. The Society wishes to highlight the future consequences of the decision to make drastic cuts to capital spending. We believe that it is crucial that current planning for UK science expenditure beyond 2015 (i.e. the next Spending Review) can assume a restoration of capital budgets, so that UK scientists can participate effectively now in preparatory work for the next generation of major scientific projects. Many of these projects are now being coordinated at European level through the European Strategy Forum for Research Infrastructures (ESFRI) and thence to a broader world level, e.g. through discussions between ESFRI and the US National Science Foundation (NSF).
7. Recent ESFRI-NSF discussions have focused on a number of environmental research projects including several within the scientific remit of the RAS. A key example is the European Incoherent SCATter radar system (EISCAT\_3D) that will revolutionise studies of the upper atmosphere at high latitudes with potential for major impacts in areas such as space weather and also solar effects on climate and the surveillance of near-Earth space. It is now a major focus for the next generation of research in solar-terrestrial physics in Europe.
8. This new radar will exploit recent advances in radar technologies (now available for civilian use) to give the UK and the rest of Europe a leading position in this area of

research. The UK has played a major leadership role in the preparatory work for EISCAT\_3D – as we did for the original EISCAT radar system, built 30 years ago. British scientists are well-positioned to maintain that role and exploit the exciting new science that it will produce – and that will address the growing recognition that the Earth's upper atmosphere is an important part of the environment within which human activities take place. The project will also create opportunities for UK industry to develop and build the advanced hardware and software technologies that will be at the heart of the new radar.

9. However, it is crucial that the UK is seen as a serious international player in programmes for the next generation of major scientific projects. Thus it is important that the long-term financial planning for the Research Councils, beyond the immediate CSR settlement, can assume a significant level of capital expenditure – so that there is the potential for projects such as EISCAT\_3D to develop bids for funding and have a reasonable chance of success. It does not require commitment to any particular project at this time, just the opportunity to make reasonable plans.

## **References**

RAS submission to Select Committee inquiry into Emergencies

[http://www.ras.org.uk/images/stories/ras\\_pdfs/S\\_and\\_T\\_-\\_Scientific\\_evidence\\_and\\_advice\\_in\\_emergencies.pdf](http://www.ras.org.uk/images/stories/ras_pdfs/S_and_T_-_Scientific_evidence_and_advice_in_emergencies.pdf)

RAS submission to Select Committee inquiry into Particle Physics and Astronomy

[http://www.ras.org.uk/images/stories/ras\\_pdfs/RAS\\_submission\\_to\\_astronomy\\_and\\_particle\\_physics\\_inquiry.pdf](http://www.ras.org.uk/images/stories/ras_pdfs/RAS_submission_to_astronomy_and_particle_physics_inquiry.pdf)