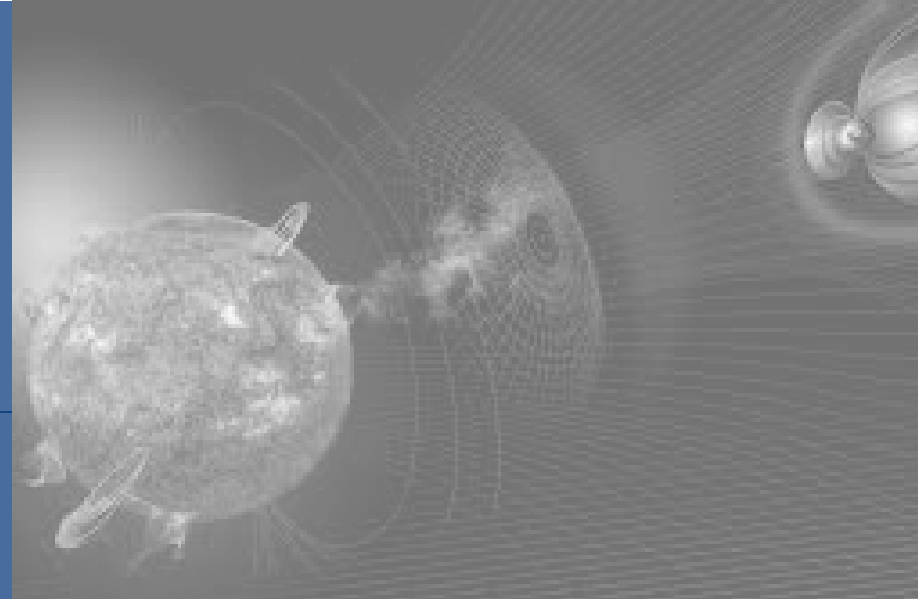


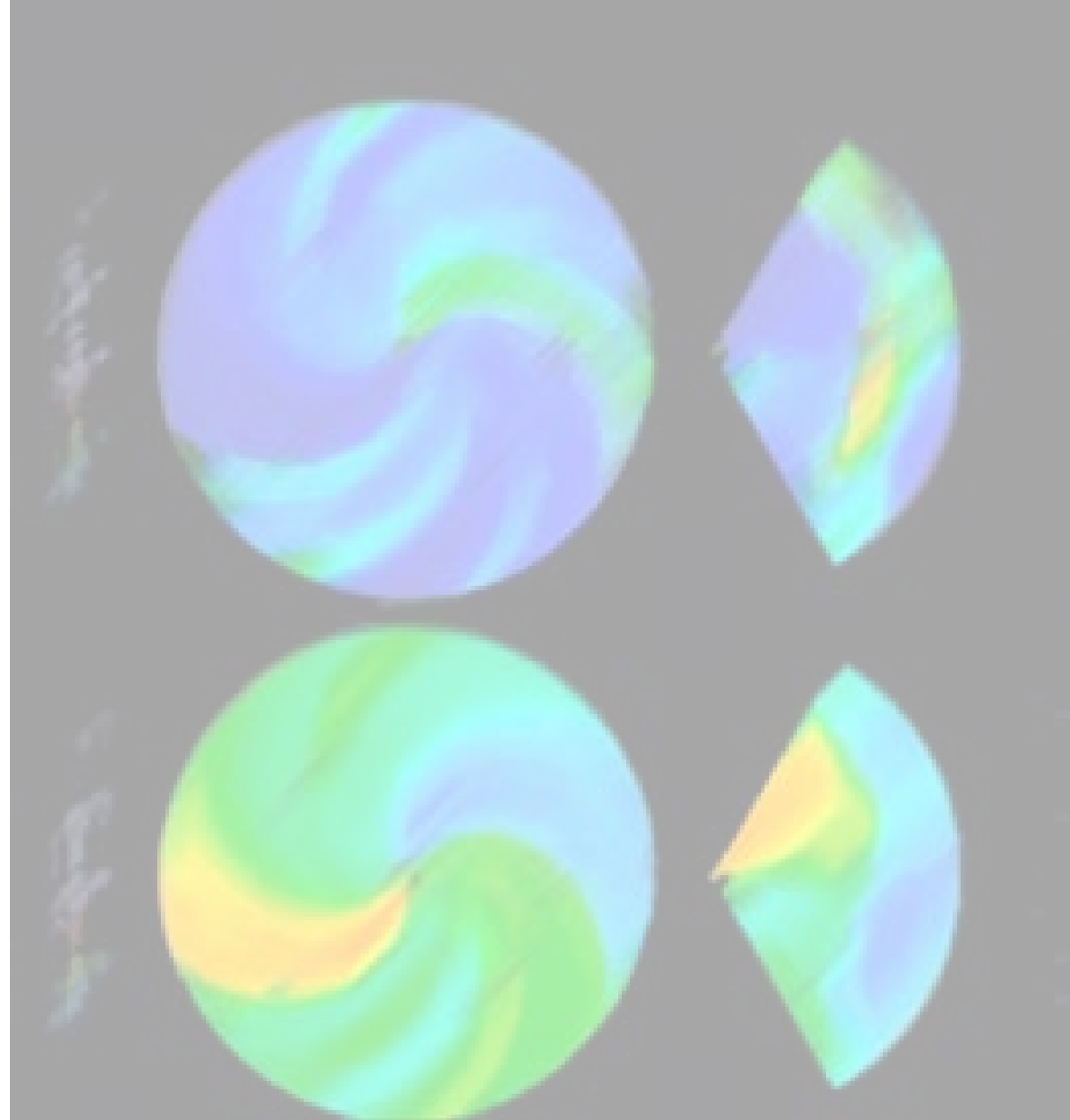
# Space Weather Innovation, Measurement, Modelling and Risk programme

**John Loughhead**, Chief Scientific Advisor  
*Department for Business, Energy and Industrial Strategy*



# Contents

- **Space:**
  - Space as a sector.
- **UK Government:**
  - Space Weather;
  - Improving our understanding;
  - SWIMMR bid aims.



# Space as a sector

- UK investment in Civil Space is a success story.
  - Space sector productivity is higher than the national average.
- Investment in Space supports wider economic prosperity.
- Space is a strategic and inherently dual-use sector.
  - As a consequence of the value of space, we must mitigate risks like Space Weather.



**41,900**

Employees in 2016/17



**£14.8bn**

Total Income in 2016/17



**£566m**

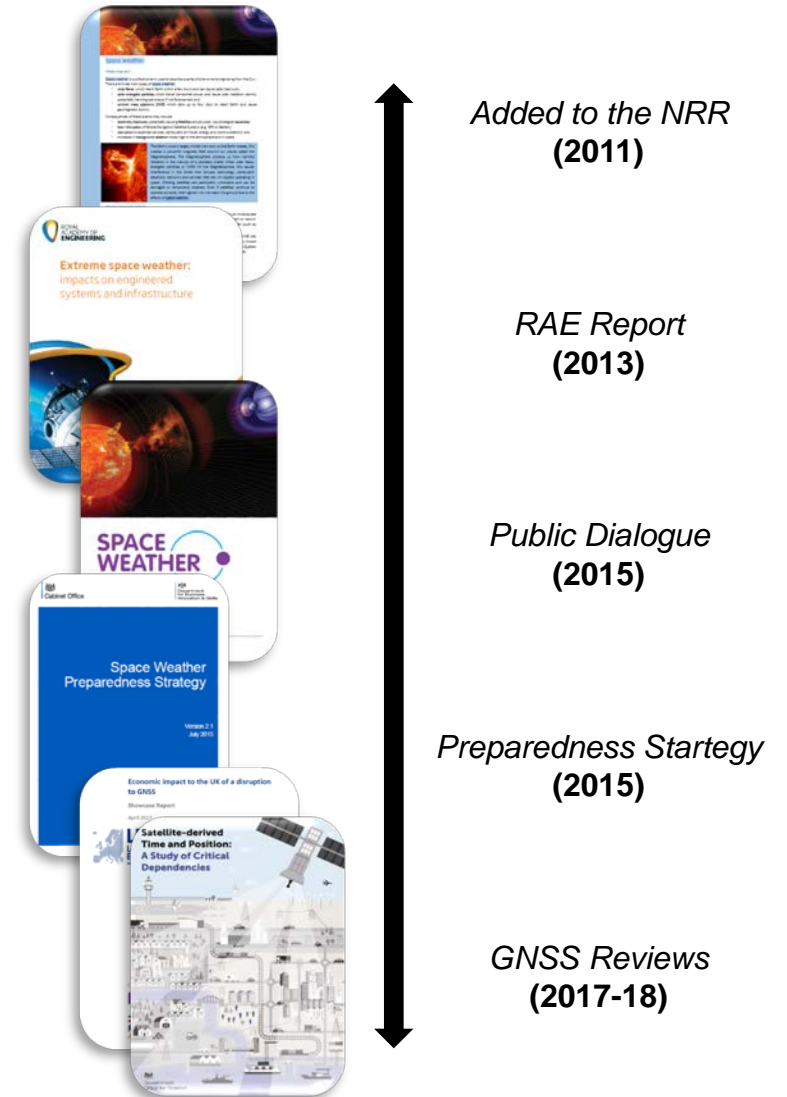
R&D expenditure in  
2016/17



*Stats taken from 'Size and Health of the Space Sector' (2018)*

# UK Government & Space Weather (SW)

- SW is recognised on the UK National Risk Register (2011-onwards).
  - Our planning assumptions recognise SW poses widespread disruptions to a number of sectors: Energy, Telecommunications, Space enabled CNI and Transport.
- 24/7 SW forecasting: the Met Office Space Weather Operations Centre (MOSWOC).
- We have improved impact understanding through reviews (*see right*) but we require R&D investment to better understand knowledge gaps.



# SWIMMR Bid: 3 Objectives



**Space Weather  
Radiation Hazards**



**SW effects on  
Communications/GPS**



**SW effects on Power  
Distribution**

***Thanks for your time and  
congratulations on securing  
the SWIMMR Bid***