



Met Office

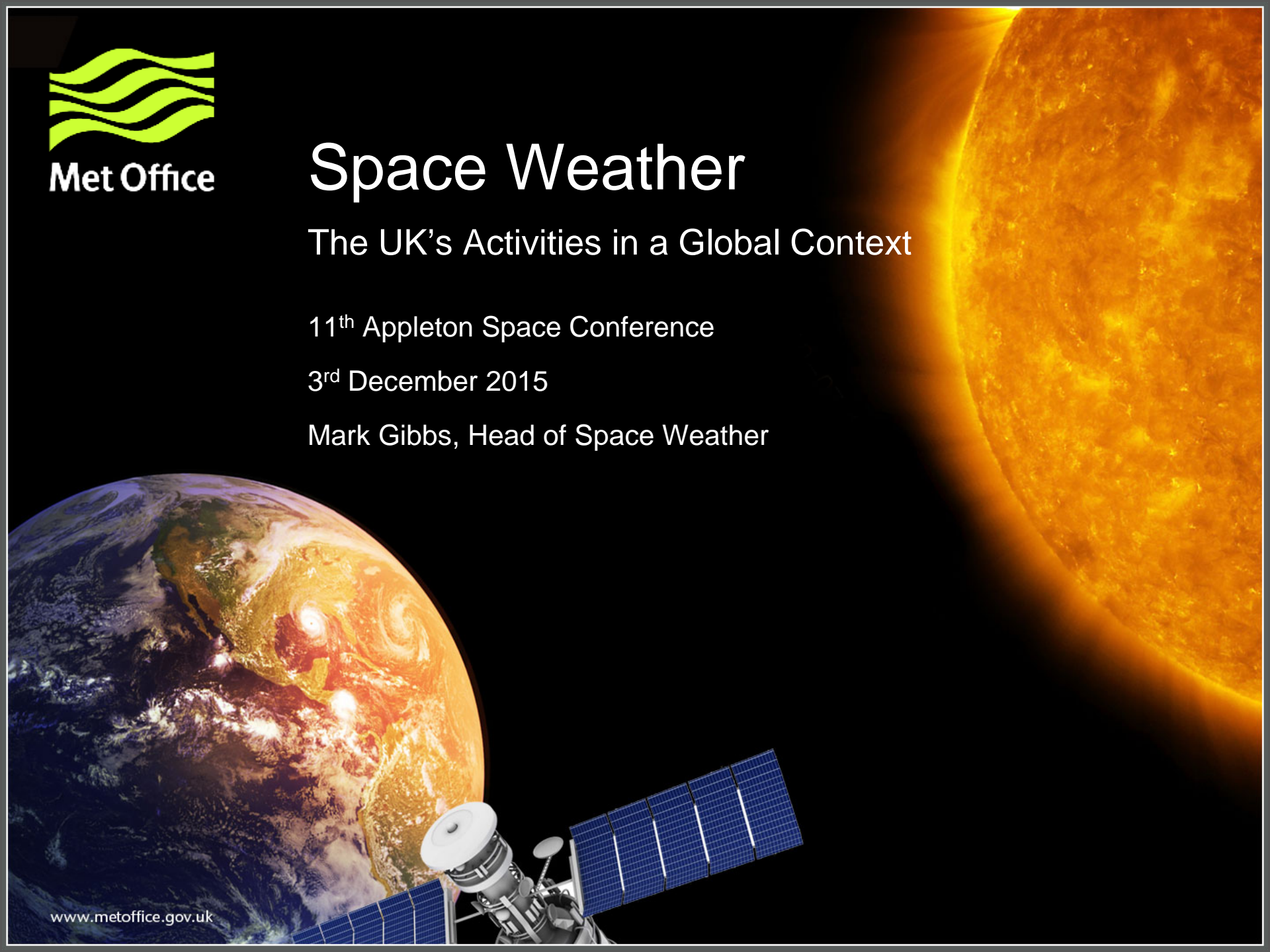
Space Weather

The UK's Activities in a Global Context

11th Appleton Space Conference

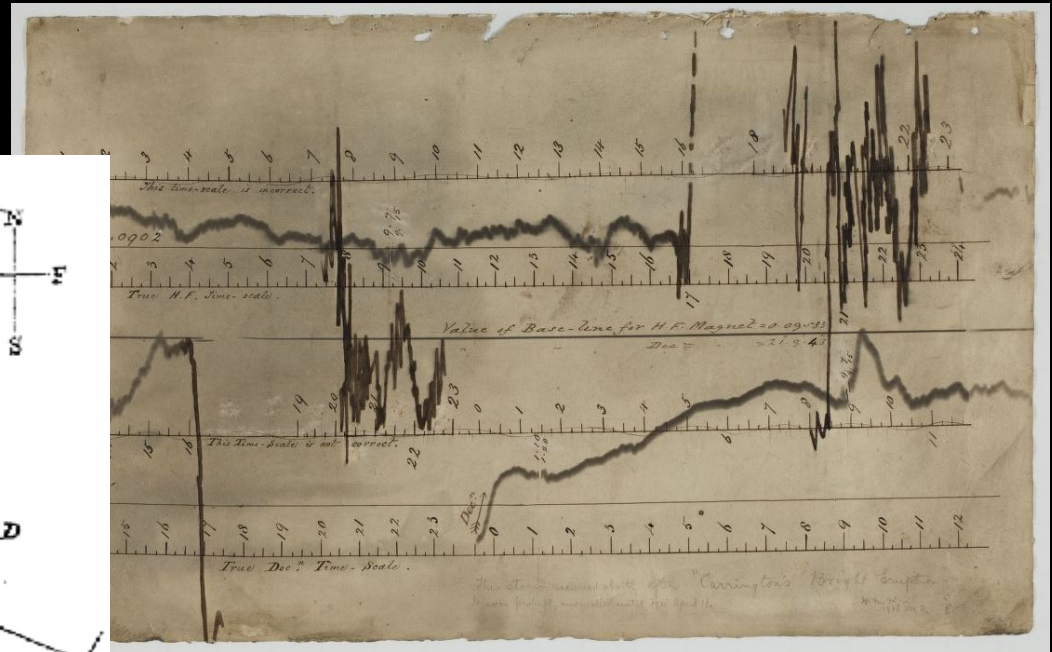
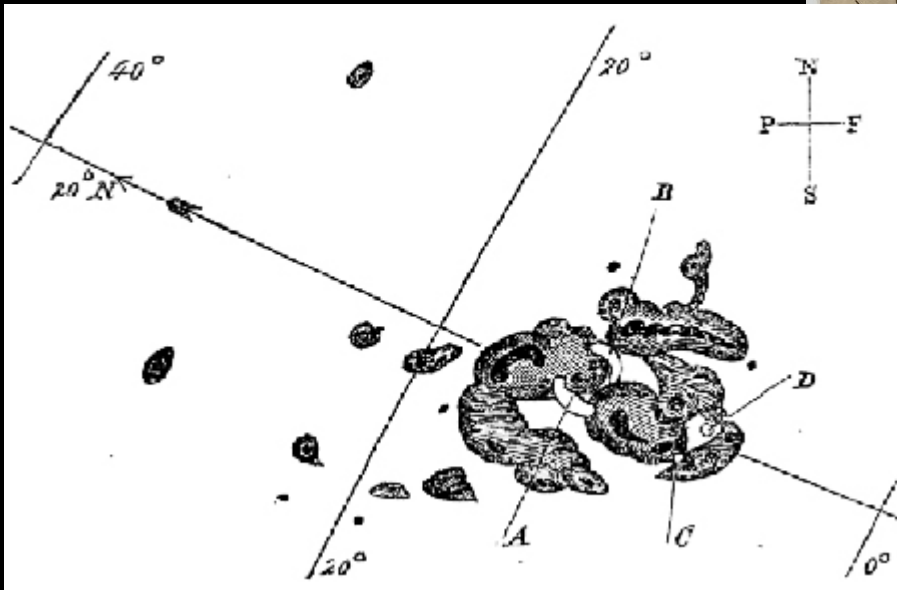
3rd December 2015

Mark Gibbs, Head of Space Weather



Space weather

1st & 2nd September 1859



British Astronomer – Richard Carrington

The 'operational' fleet

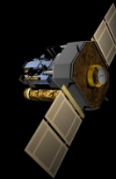
STEREO-A
(NASA, 2006)



GOES
(NOAA)



SOHO
(ESA, 1995)



SDO
(NASA, 2010)



STEREO-B
(NASA, 2006)

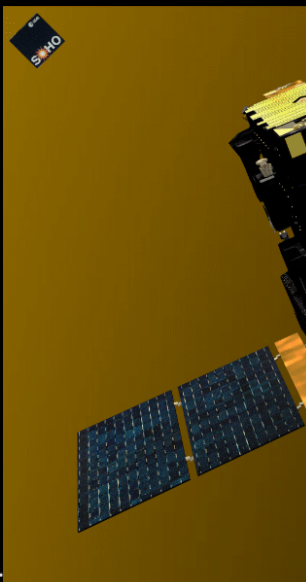
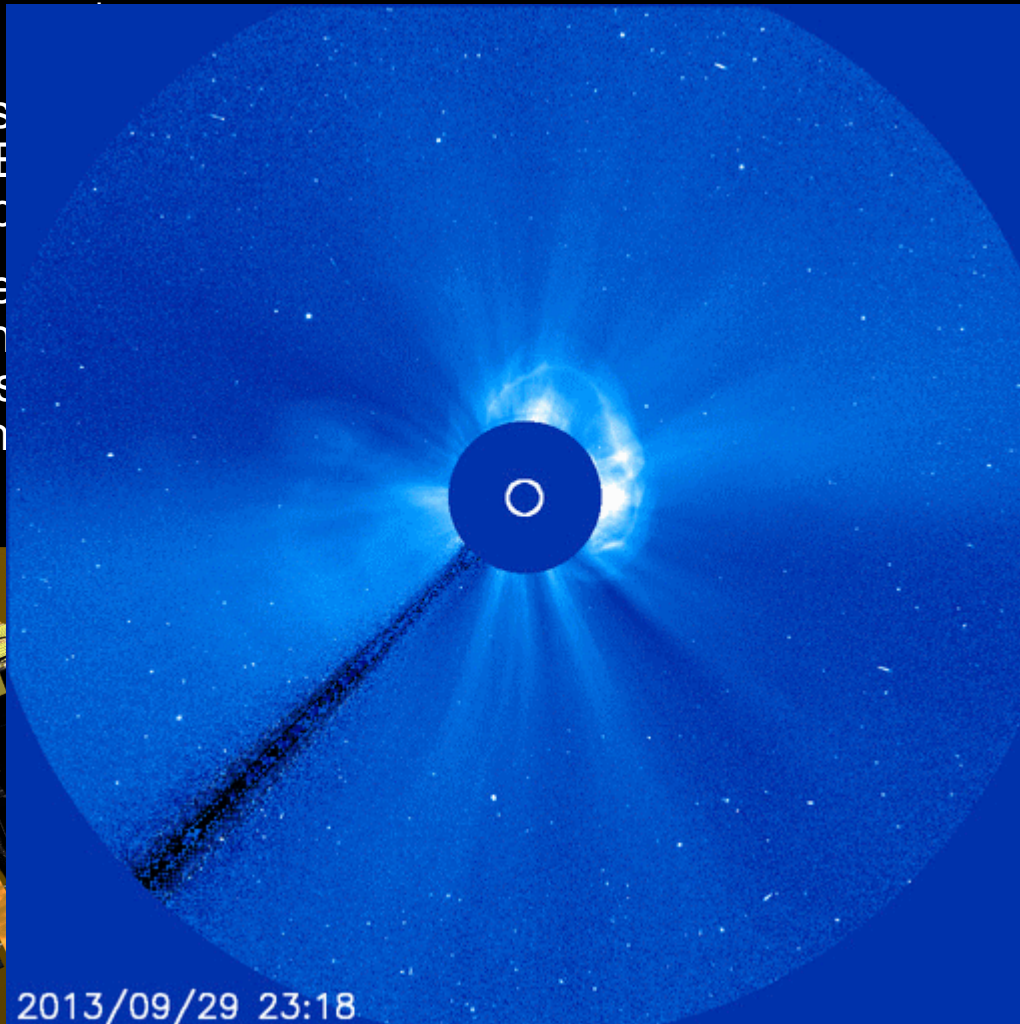


Met Office

SOHO

20 years ago yesterday
SOHO – part of ESA's
mission (in collaboration with NASA)

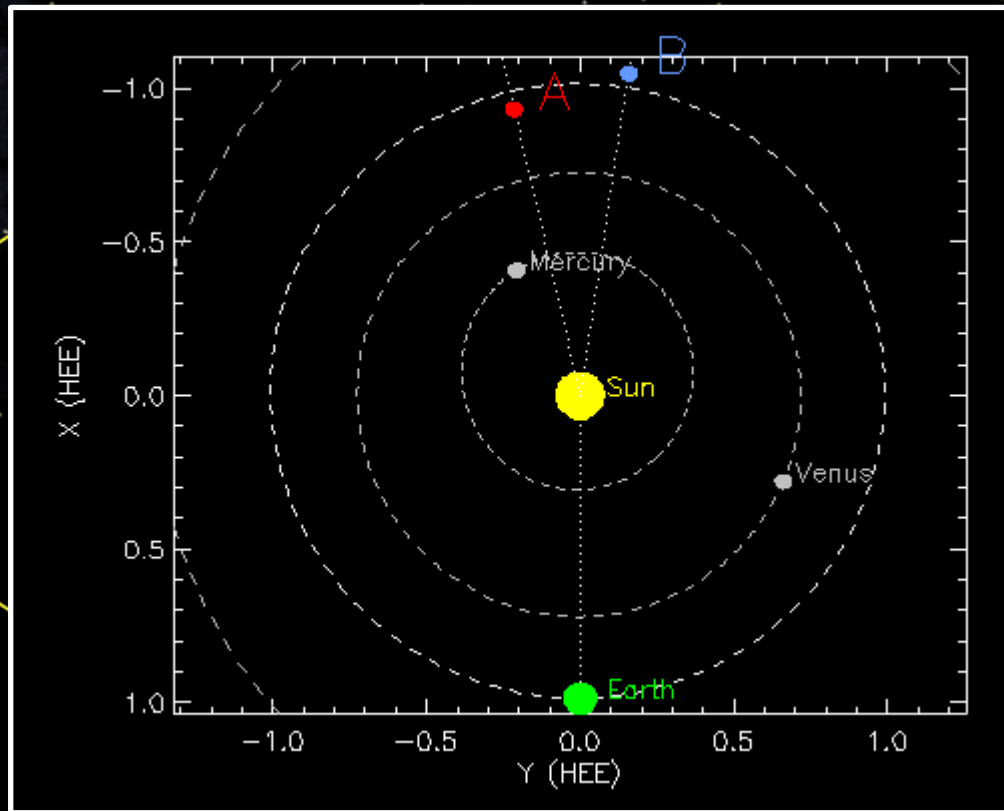
A solar-heliospheric
mission representing the
consolidation of space
science research



STEREO Mission



STEREO
(Behind)
"B"



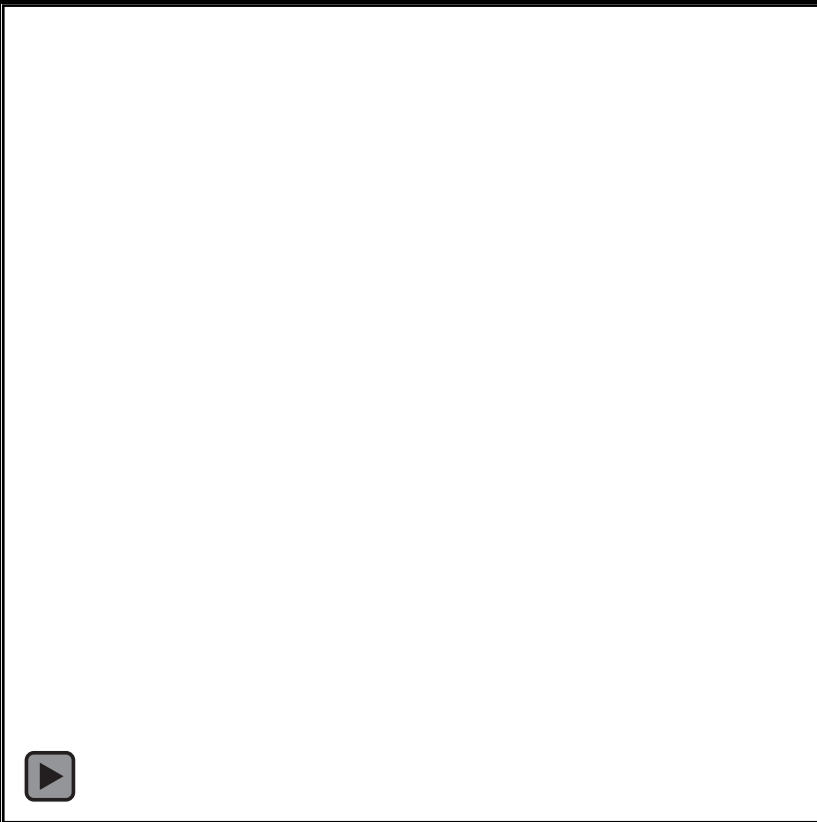
STEREO
(Ahead)
"A"

Relative orbital positions of both STEREO spacecraft for each year
from June 2007 to June 2015
(Diagram not to scale)



Met Office

A new perspective





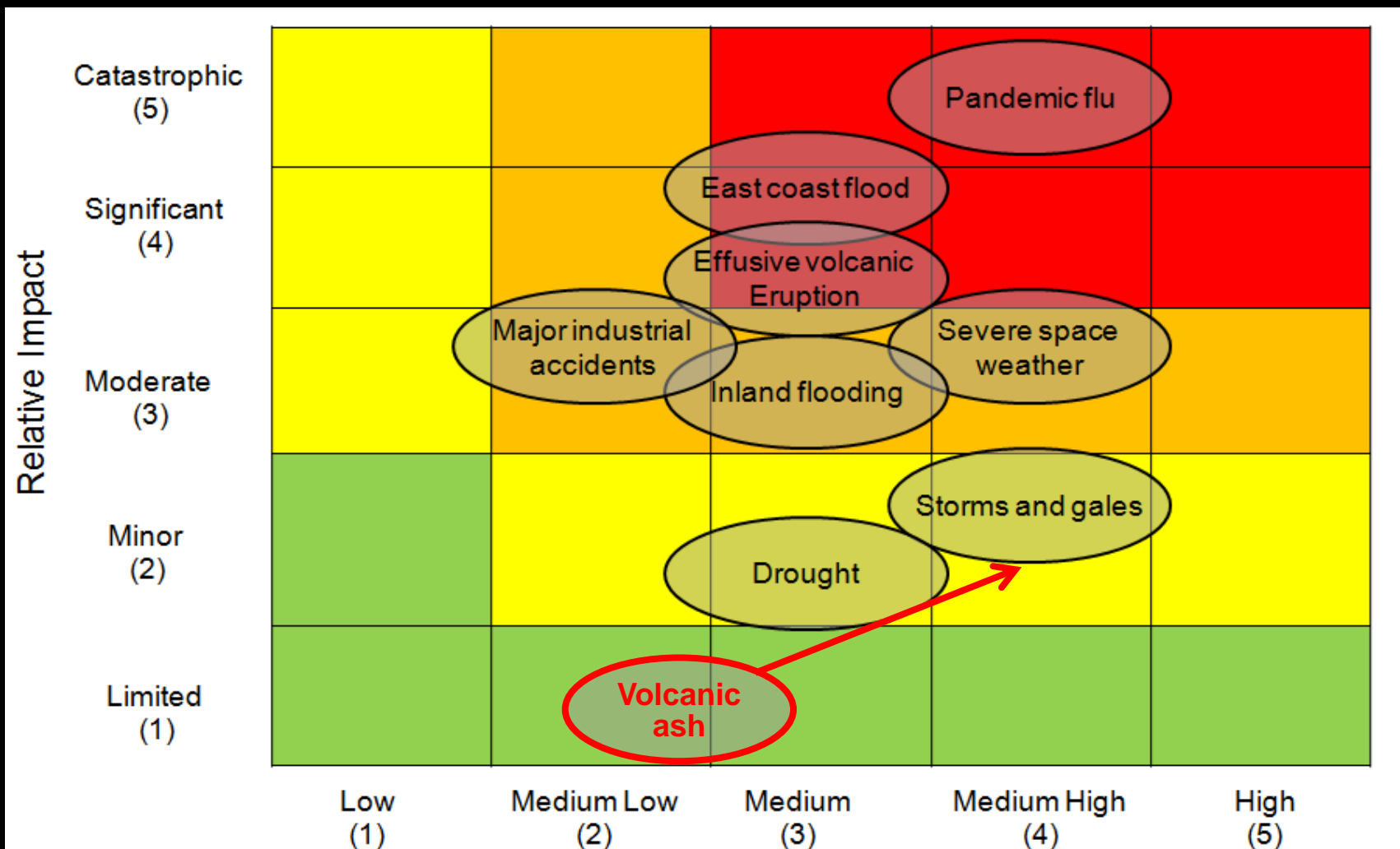
Met Office

2011 heralded the dawn
of a new chapter



Met Office

NRR & impacts

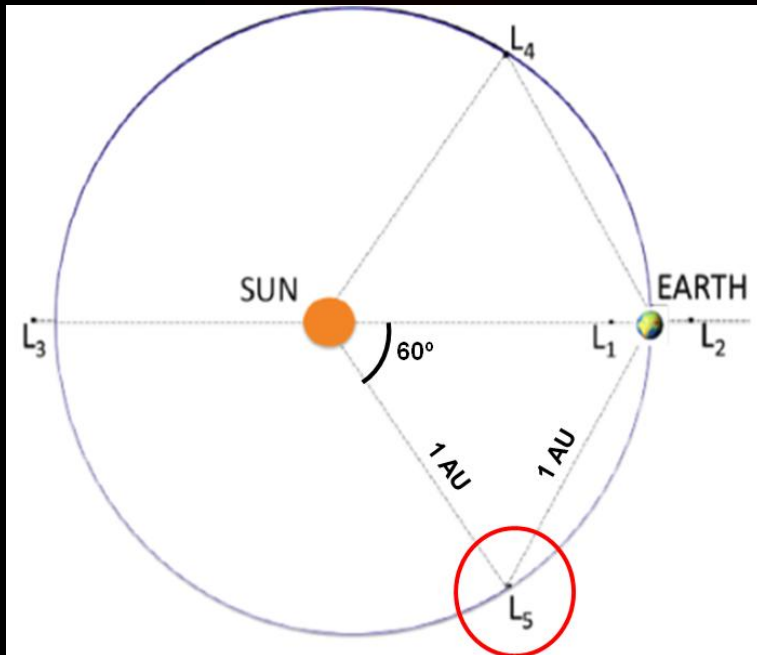




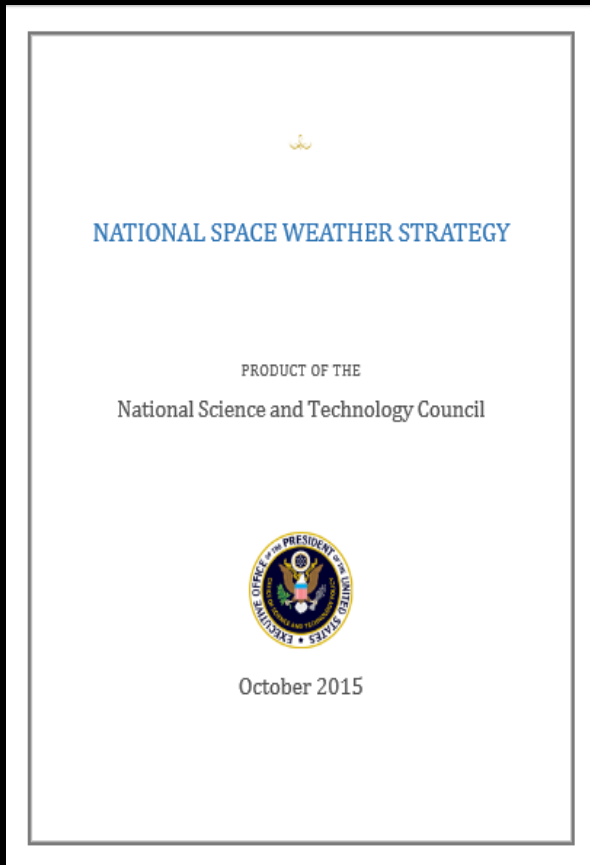
Met Office Space Weather Operations Centre (MOSWOC)



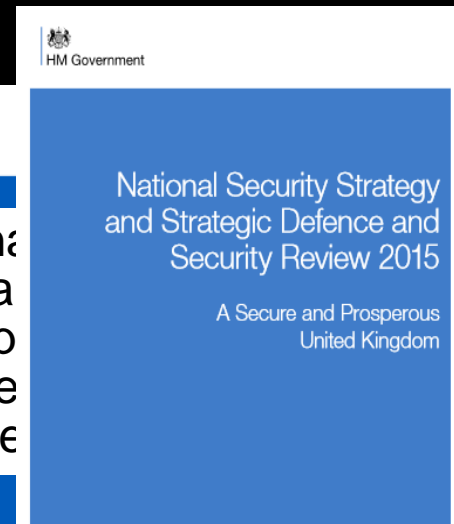
Carrington mission to L5



National strategies



work with international partners to explore potential for increased resilience to space weather events



...We will work with international partners to improve space weather forecasts and develop our capacity to respond to events such as major disruptive solar flares.

...We will work with international partners to improve space weather forecasts and develop our capacity to respond to events such as major disruptive solar flares.



Met Office

Leading in Europe

SWE Expert Service Centres

Solar
Weather

Ionospheric
Weather

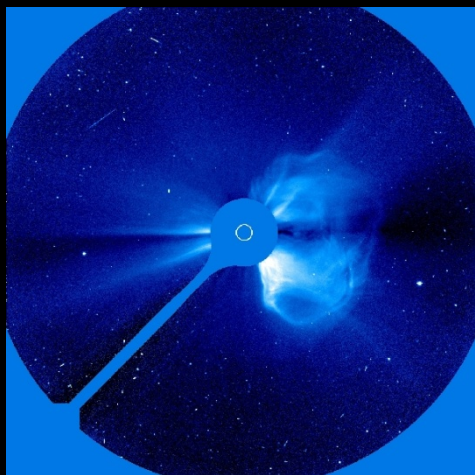
Space
Radiation

Geomagnetic
Conditions

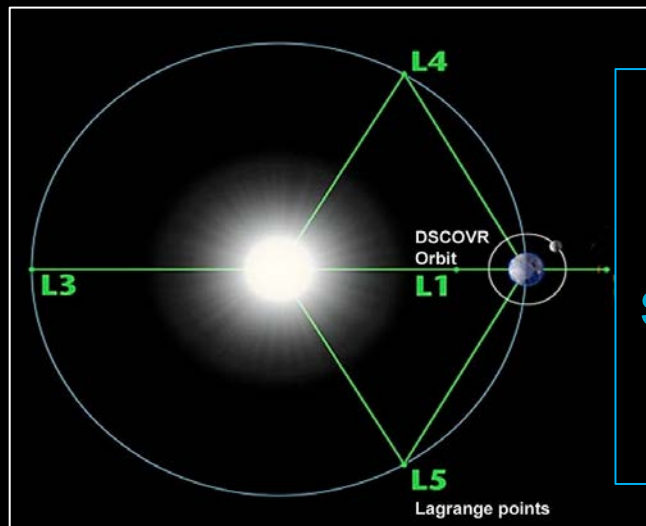
Heliospheric
Weather

RAL Space
Met Office

European expert groups and centres of excellence



RAL leading Phase A/B



2 ESA
L1/L5
studies
significant
UK
expertise



Met Office

Complete the evidence chain

Figure 2: Risks of natural hazards and major accidents



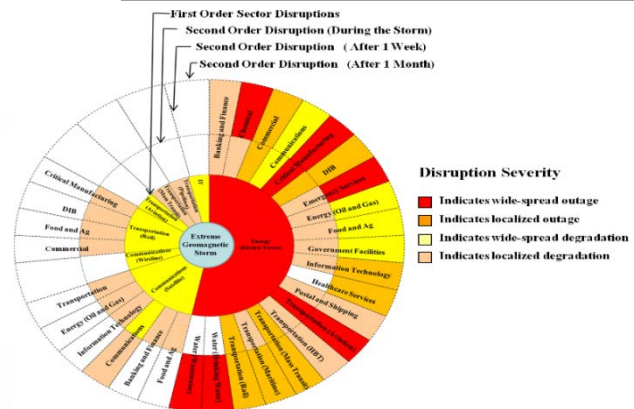
Overall relative impact score



Extreme space weather: impacts on engineered systems and infrastructure



Study due for completion May 2016





Met Office

Thank you

