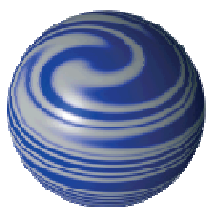


NCEO: some immediate priorities

Alan O'Neill
NCEO



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Some Big Things

- Testing & Improving Earth System Models used for Prediction (CMIP5)
- Legacy Data Sets (ESA CCI)
- Infrastructure to exploit EO data for **science & applications**: proposed Facility for Climate & Environmental Monitoring from Space (CEMS) & ESA/Harwell
- Public investment in EO from space: making the case with the UKSA.

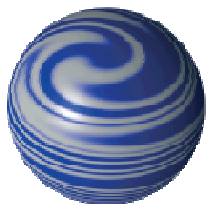
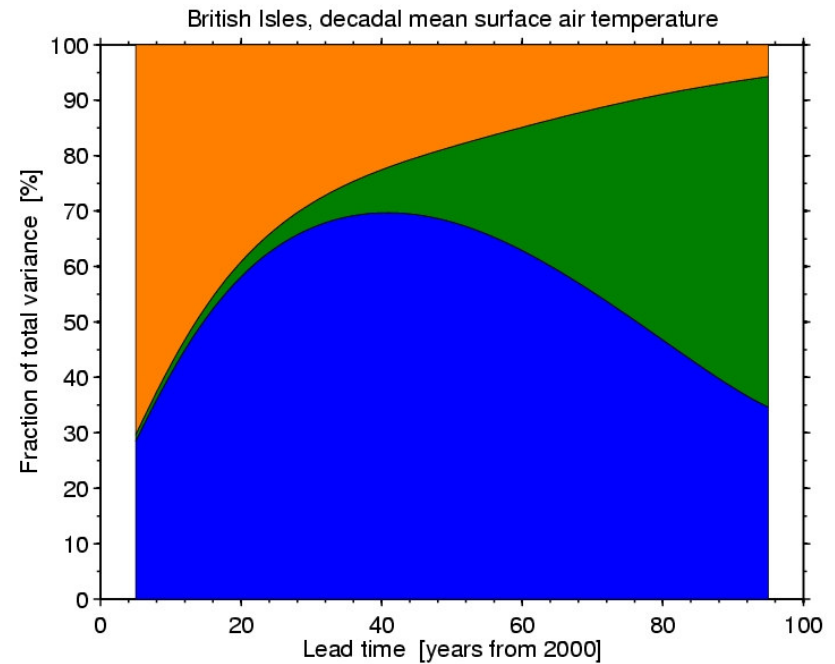
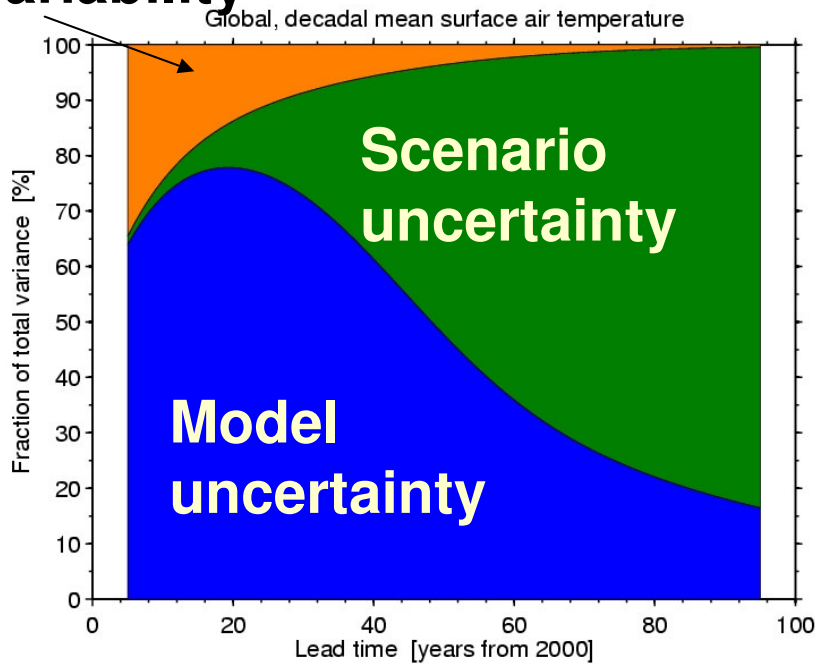


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Testing Earth System Models

Partitioning Uncertainty

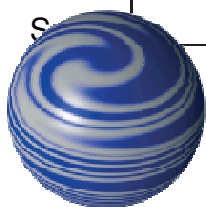
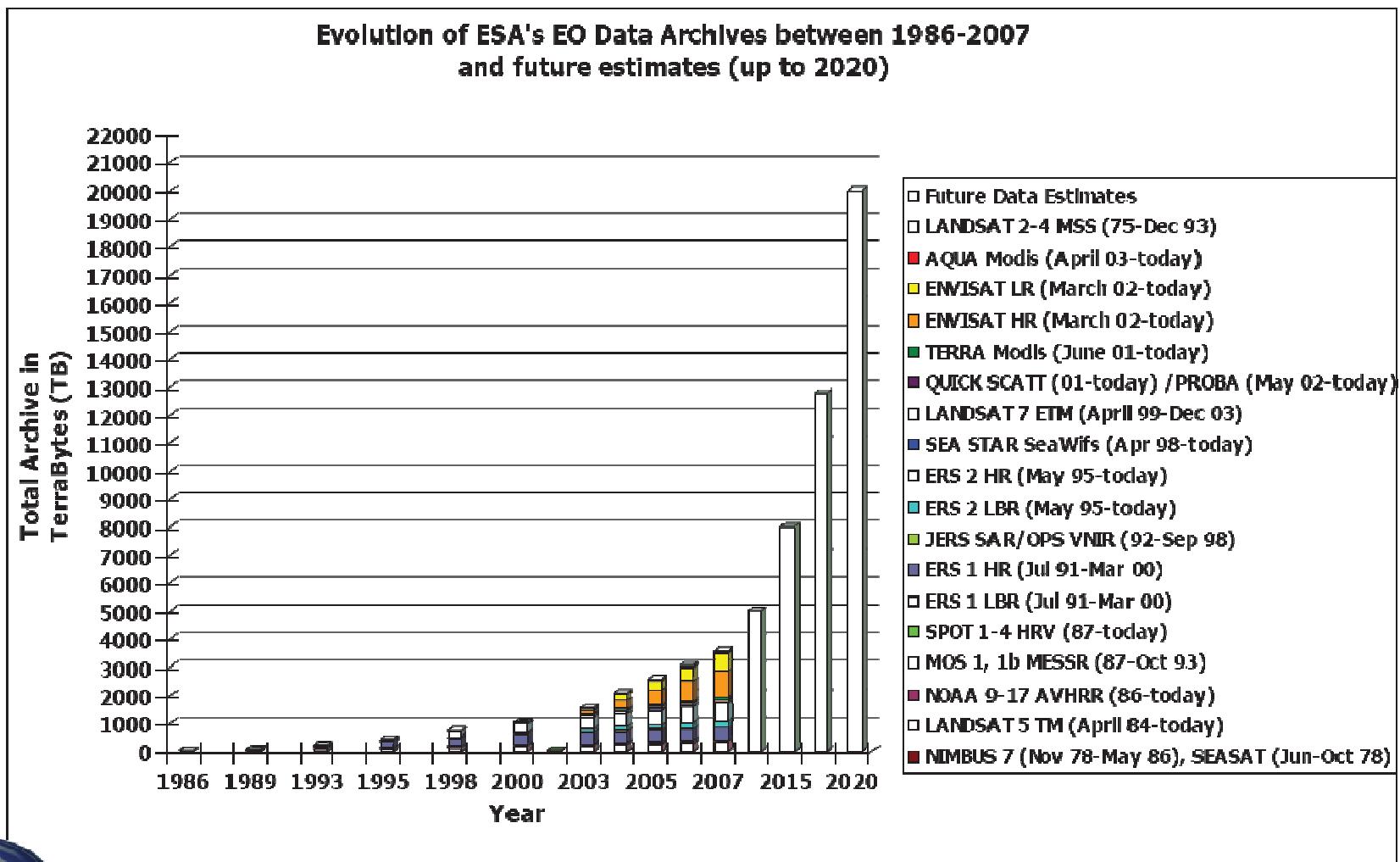
Internal variability



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Hawkins & Sutton, BAMS, 2009

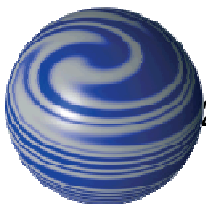
EO Data Deluge



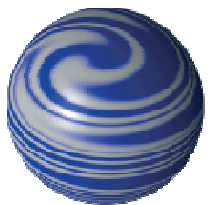
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CMIP5 in numbers

- **Simulations: 10-year and 30-year hindcast and prediction ensembles**
- ~90,000 years
- ~60 experiments
- ~20 modelling centres using
- ~30 major(*) model configurations
- ~2 million output datasets
- Data stored at CEDA/RAL

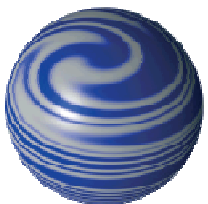
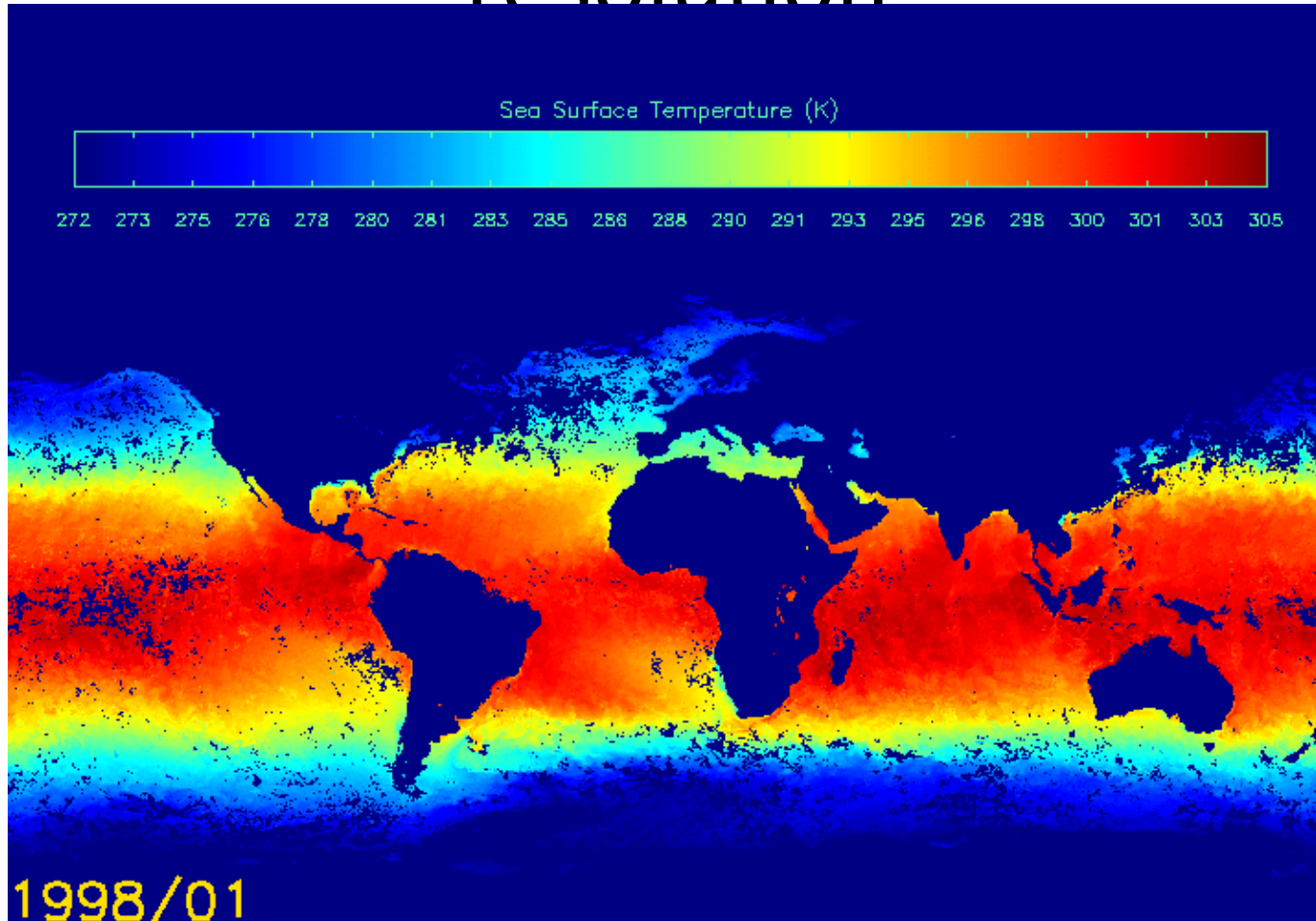


Legacy Data Sets & ESA CCI



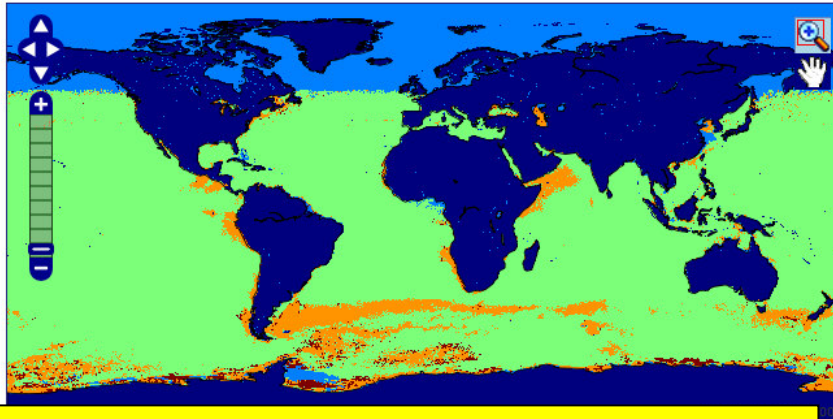
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ATSR-2 SST at 0.5 x 0.5 degree⁸ resolution

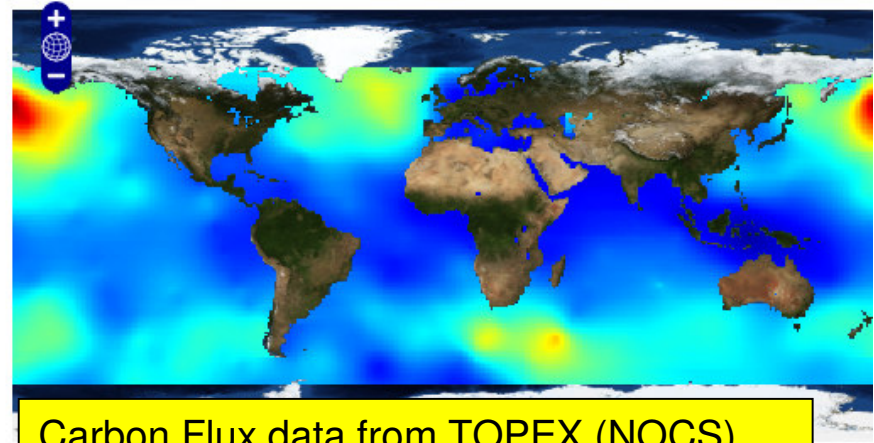


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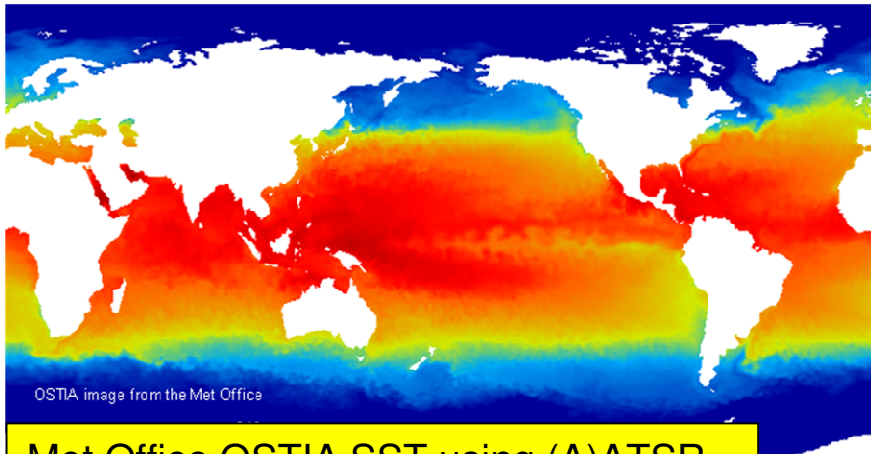
NCEO science products - examples



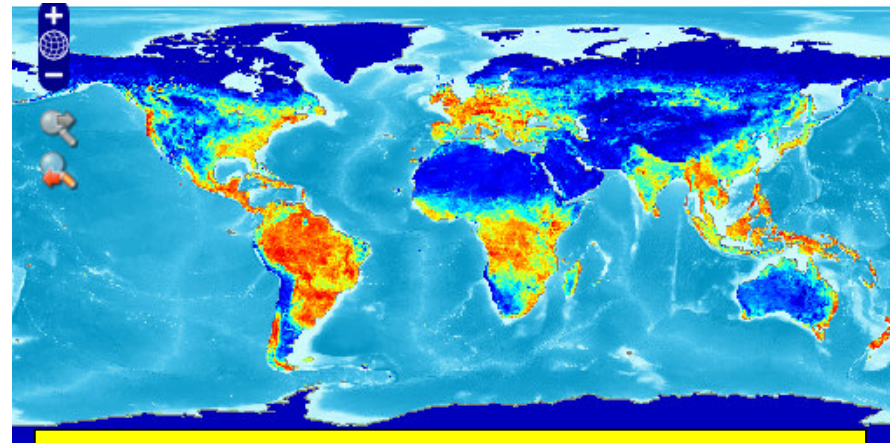
Plankton products from SeaWiFS (PML)



Carbon Flux data from TOPEX (NOCS)



Met Office OSTIA SST using (A)ATSR



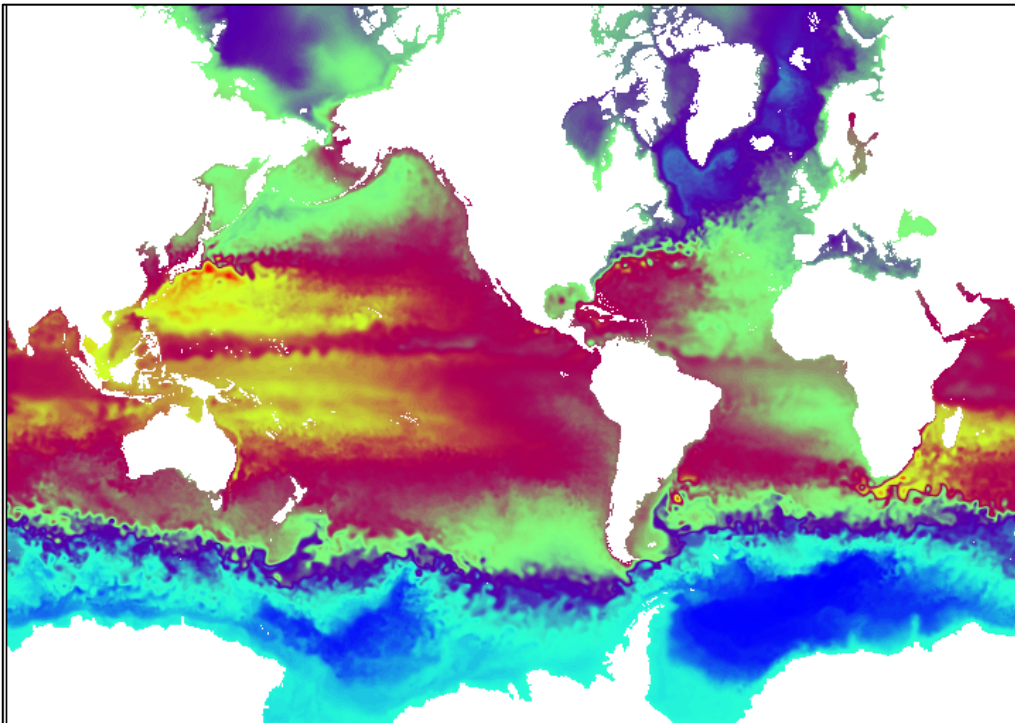
NDVI data from AVHRR (Univ. Swansea)



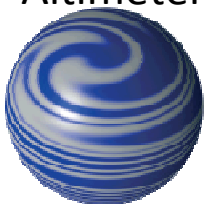
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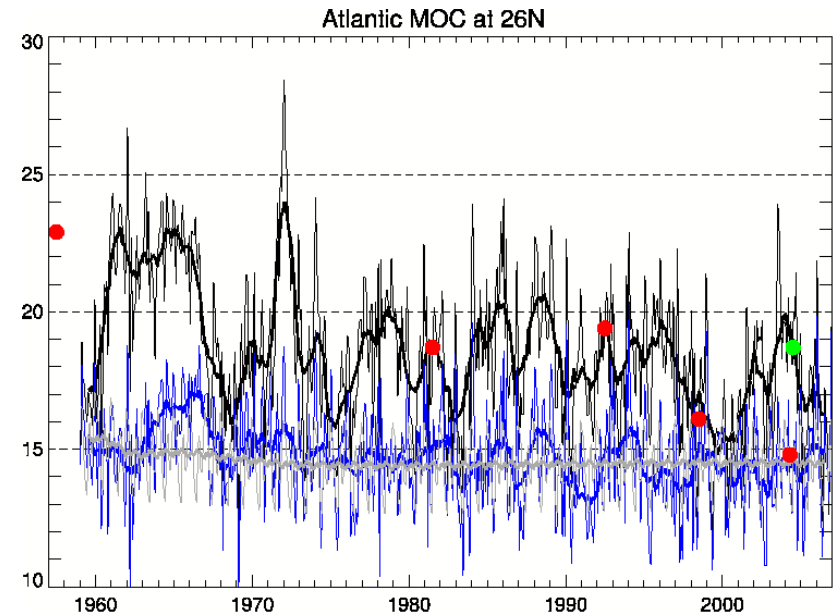
Uses of Ocean Reanalysis



Analysed sea level 26-31 Dec 2004
Global $\frac{1}{4}$ NEMO 18 yr Synthesis with assimilation
Eg. Better Gulf Stream separation here aids
Altimeter and GOCE assimilation for NCEO)



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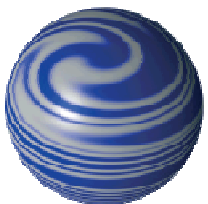
Thermohaline MOC transports in
ECMWF reanalysis compared to
Bryden section based annual means
(Black line is assimilation)
Balmaseda et al 2007

Metadata and FP7 GMES Call

Facility for Climate and Environmental Monitoring from Space

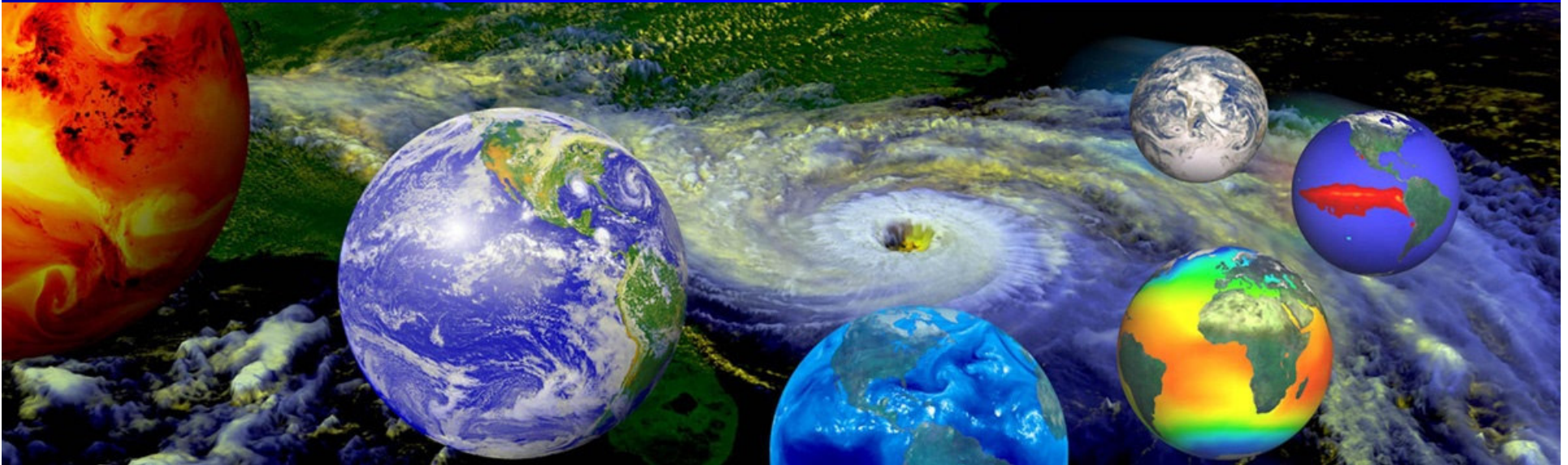
&

ESA/Harwell



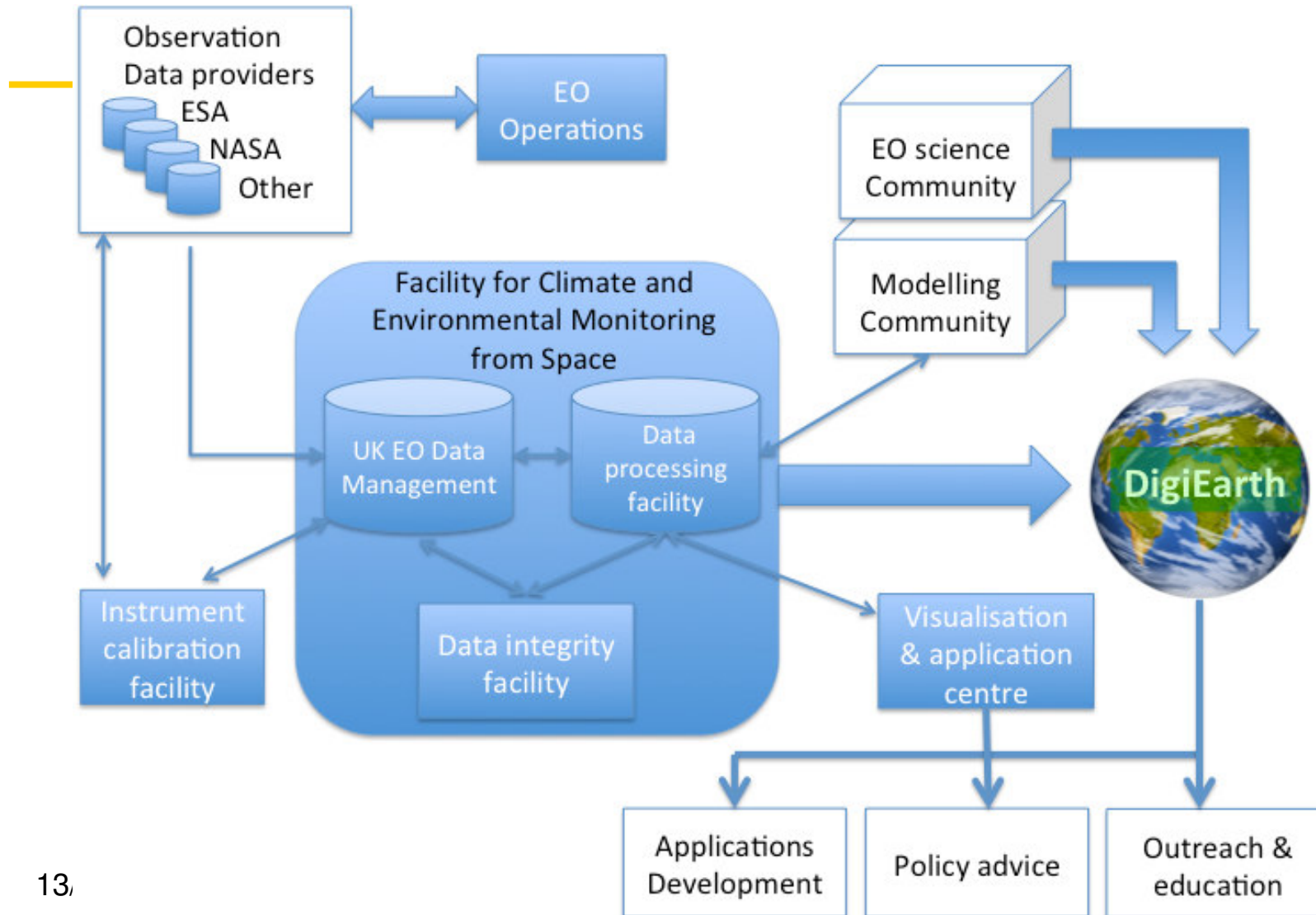
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***International Space Innovation Centre
(Harwell campus):
monitoring the health of our
changing planet from space***



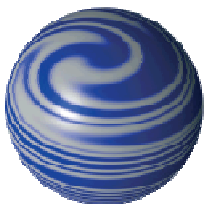
- ◆ *quality-assured evidence to respond to climate change*
- ◆ *advanced infrastructure to visualize & exploit vast data assets*
- ◆ *end-to-end capability from satellite control, through science to applications for government and business*

Facility for Climate & Environmental Monitoring from Space



EO: Making the case to Government & ESA Ministerial

- Earth Observation Envelope Programme
- National programme in instrument development
- Mission support
- ESA Climate Change Initiative
- GMES (space segment)



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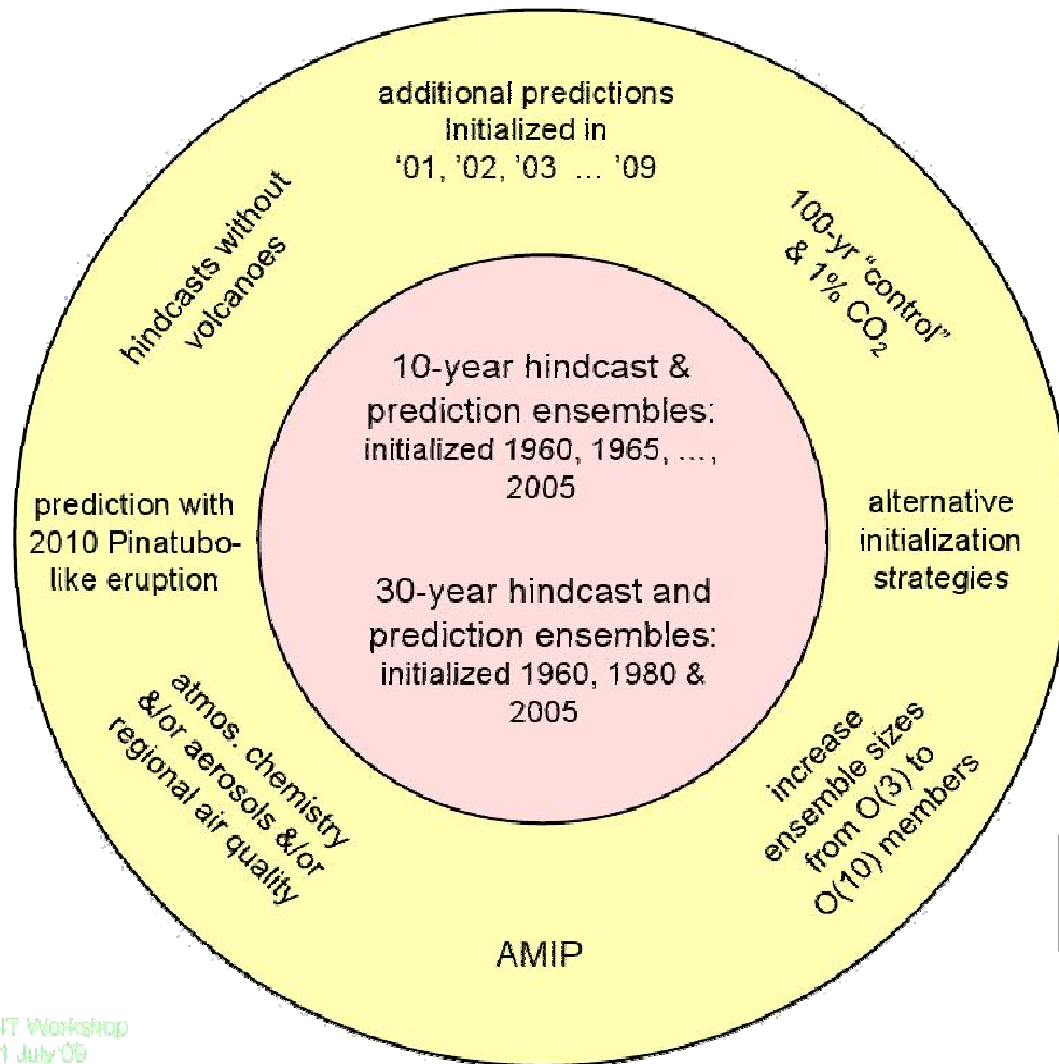


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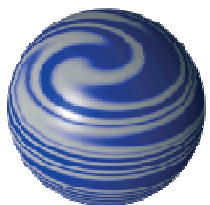
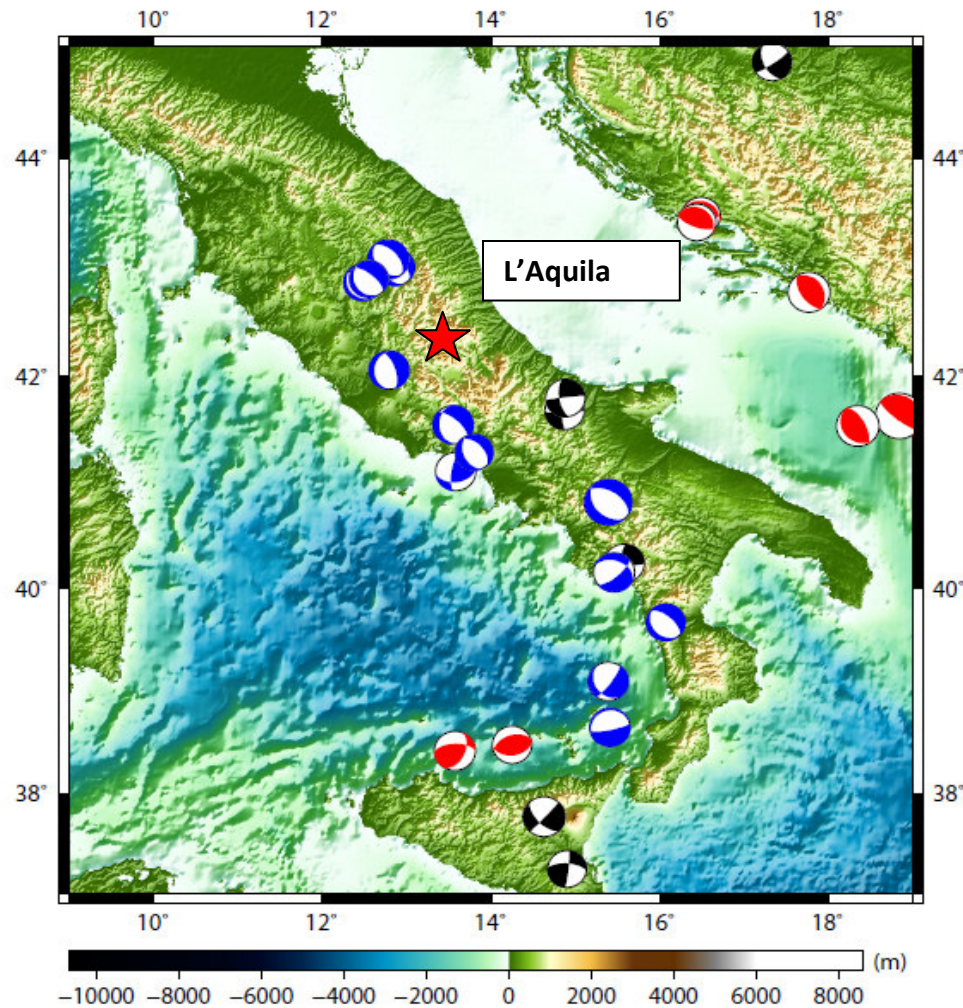
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END

CMIP5: Decadal Prediction



The 2009 L'Aquila Earthquake



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