

ESA Climate Change initiative

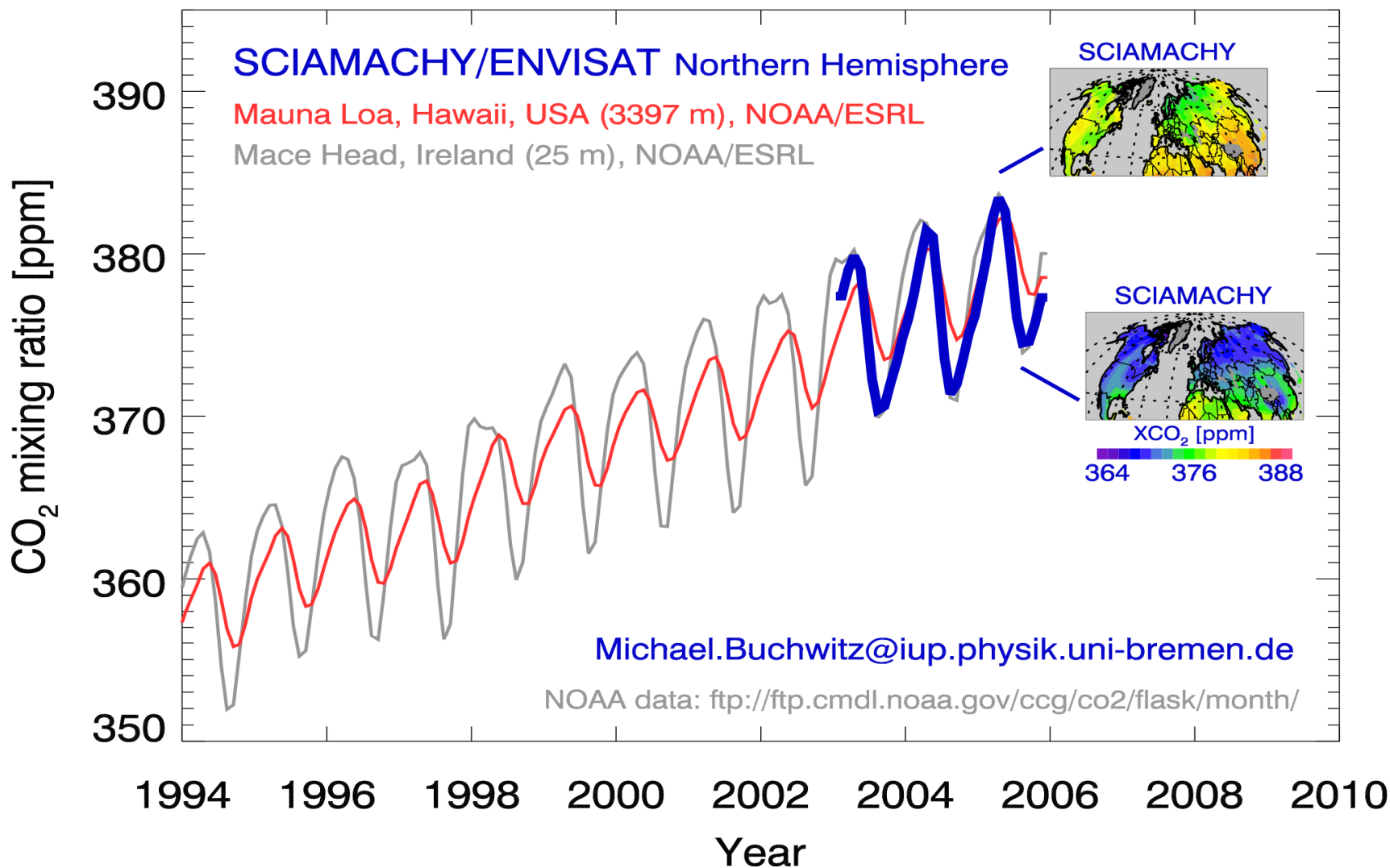
- Sea Surface Temperature ECV
- Ocean Colour ECV

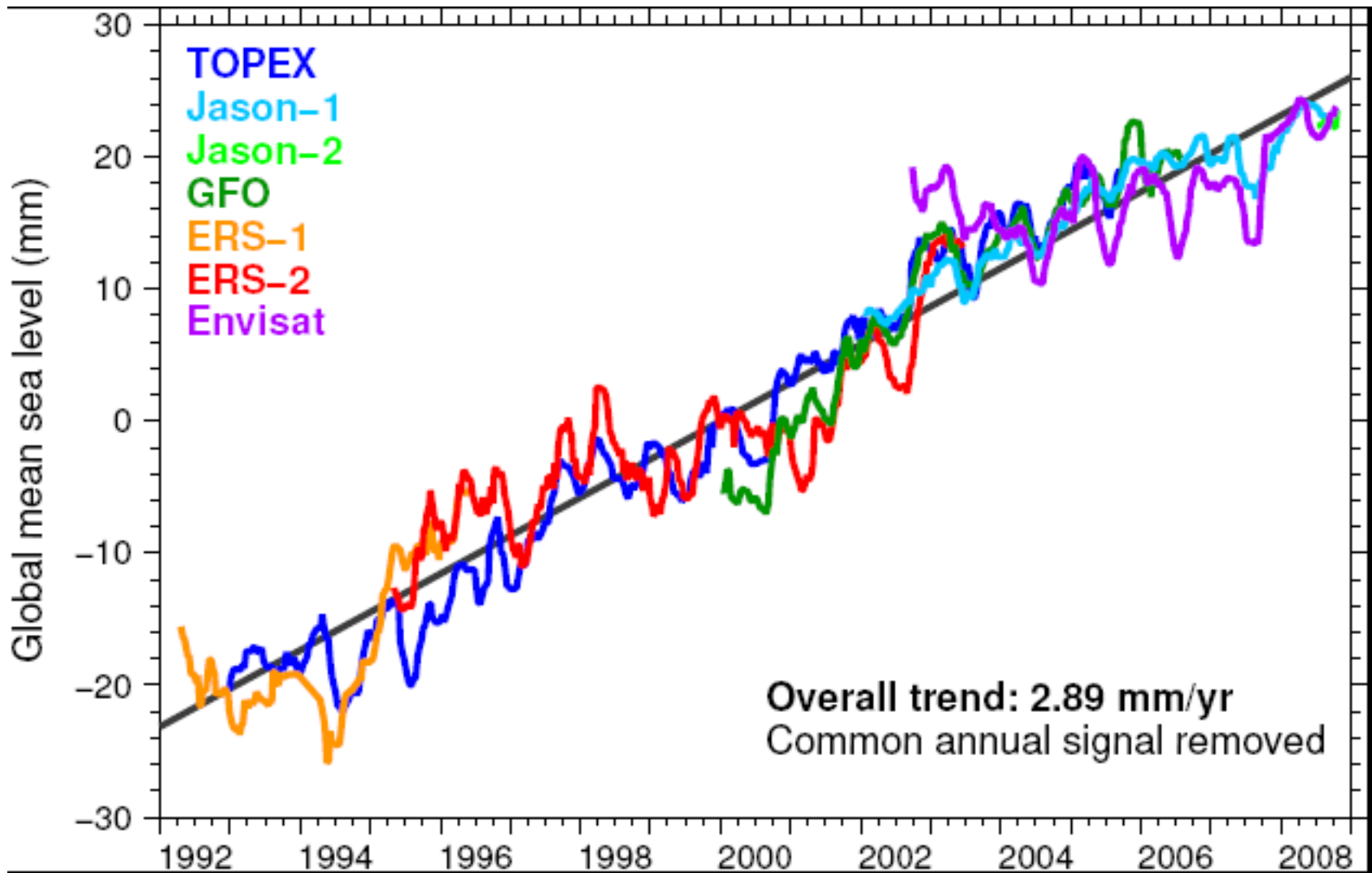
19 November 2008

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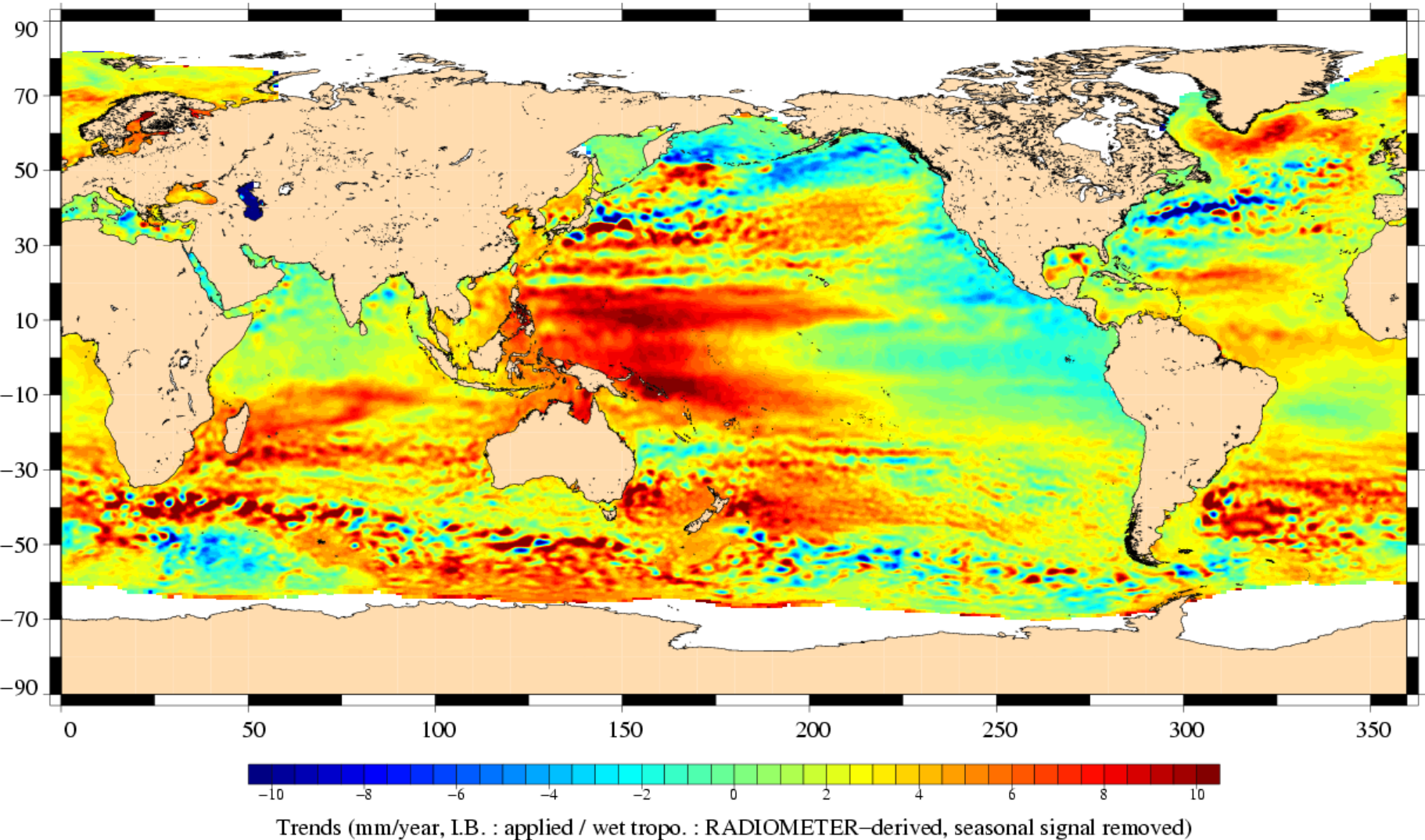
Atmospheric Carbon Dioxide



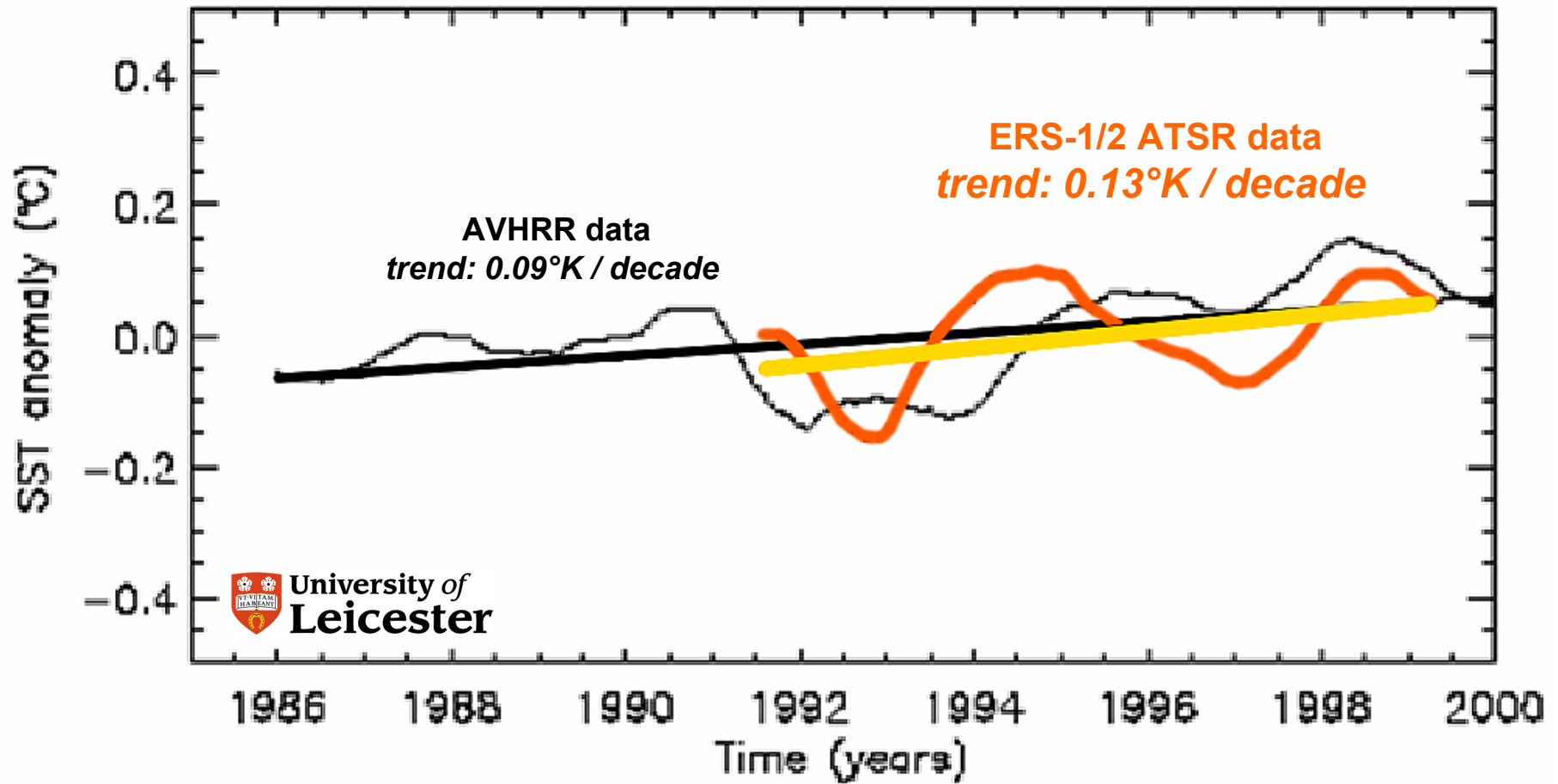


Global Sea Level Trend

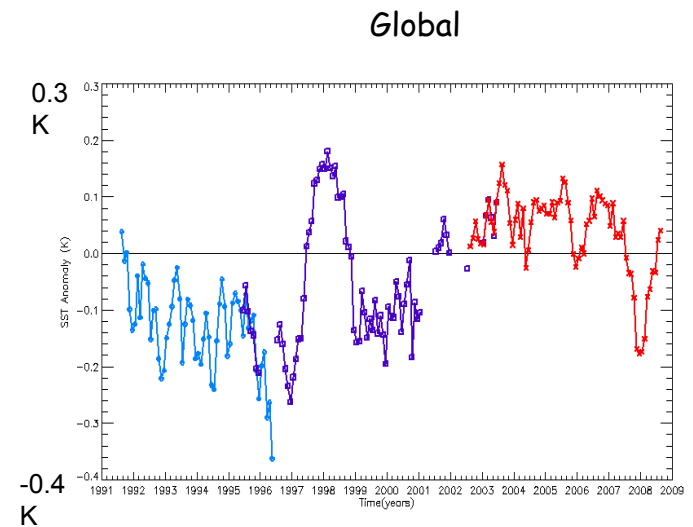
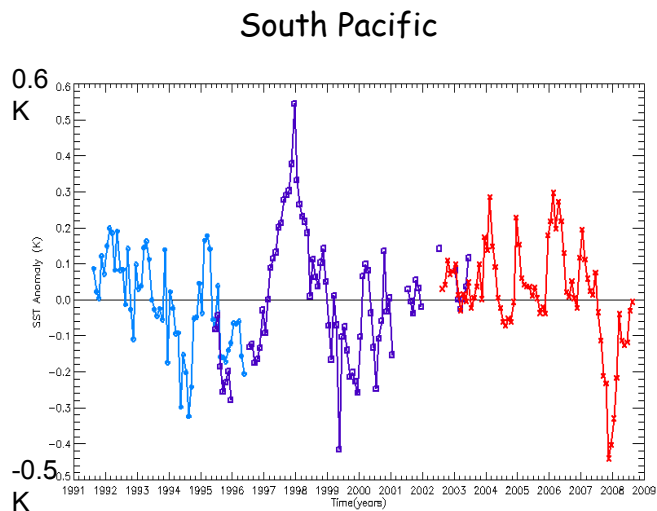
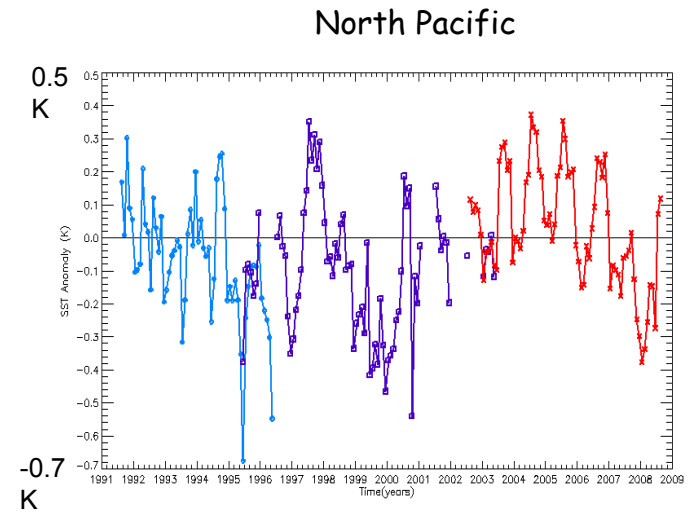
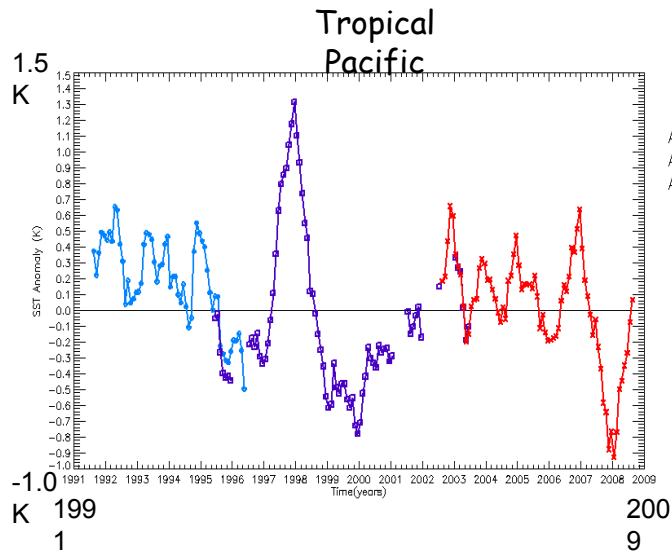
Multi-Mission Sea Level Trends (period : Oct-1992 to Jan-2008)



esa Sea Surface Temperature Change



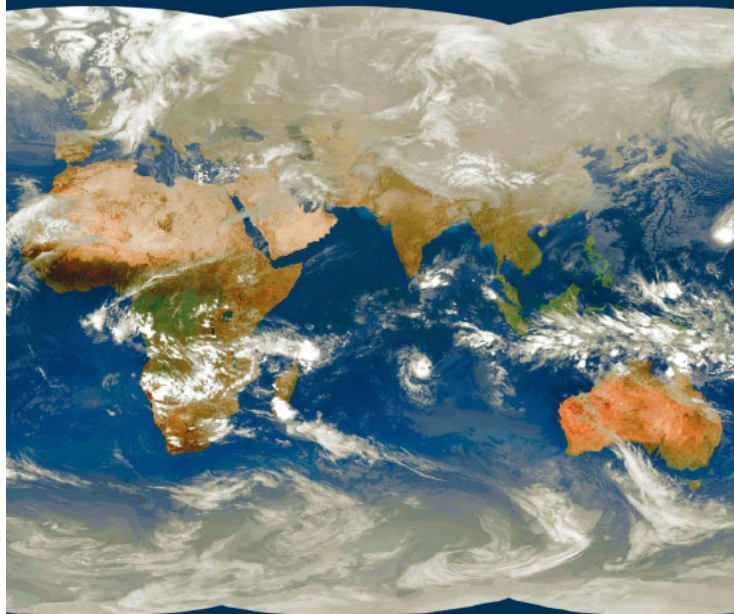
esa Sea Surface Temperature Change



(Veal et al., 2008)

GEO 1000R
February 2005

Global Earth Observation System of Systems GEOSS



10-Year Implementation Plan Reference Document

Group on Earth Observations

THE CEOS IMPLEMENTATION PLAN FOR SPACE-BASED OBSERVATIONS FOR GEOSS

Version 0.1.10
7th May 2007



33 organizations
 e.g. IPCC, IGBP, WCRP, GODAE, ECMWF, GOFC; participate in projects addressing the monitoring of Global Change on the different elements of the Earth system



Ocean related ECVs

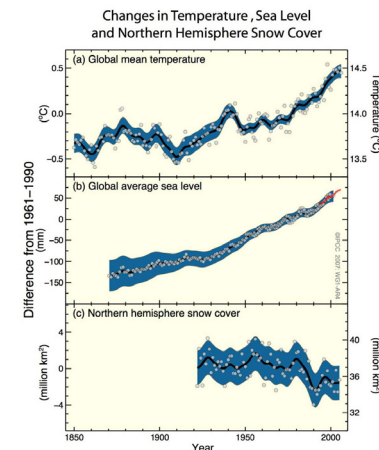
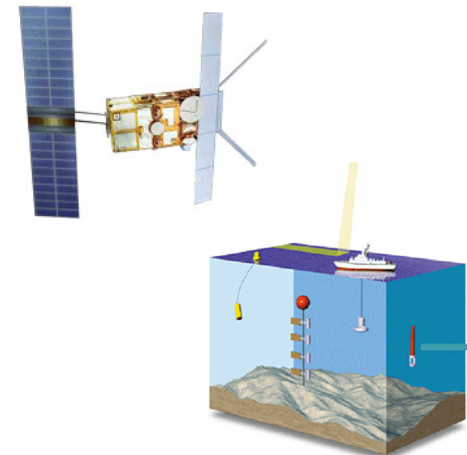
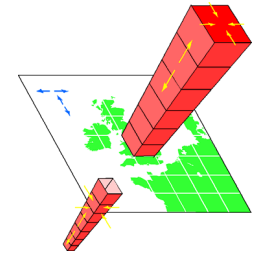
Essential Climate Variable	ESA global observation commitments
Sea Ice	<i>GlobIce</i>
Sea Level	<i>ERS-1 & ERS-2 & ENVISAT altimeters</i>
Sea Surface Temperature	<i>Medspiration</i>
Ocean Colour	<i>GlobColour</i>
Sea State	<i>GlobWave*</i>
Ocean Salinity	<i>SMOS**</i>

* in preparation (start 2008 and 2009)

** future dedicated satellite mission (launch 2009)

- Europe is leading **post-Kyoto** negotiations 2008-2009 (Bali-roadmap)
- Space Agencies have taken **actions wrt** UNFCCC
 - Systematic observations / ECVs
- **No** dedicated funded programme exists
- Key **European Asset**: EO Archives (ESA & other)
- Opportunity to strengthen **European role**
- ESA in coordination with other Space Agencies
 - International partners, Eumetsat
- High **communication value** for benefits of space
- DUE Global projects provide **precursors**

- **Total proposed budget of 250 Meuro.**



Five Programme Steps

1. Gathering, **collating and preserving** the long-term time series in ESA's distributed archives.
2. **(Re-)Processing** periodically the basic EO-data sets from each individual mission and applying the most up-to-date algorithms and cal/val corrections
3. **Integrating** the calibrated data sets derived from individual contributing EO mission and sensors to constitute the most comprehensive and well-characterized **global long term records** possible for each ECV
4. Assessing the trends and **consistency of the ECV records** in the context of climate models and assimilation schemes
5. Developing improved **models and algorithms for production of the required variables** from emerging data sources, consistent with the long term record

INPUT FROM

*Long Term Archiving Programmes
Multi-mission infrastructure*

**Re-processing ex archive
(e.g. calibration)**

“Gather”

**ECV generation
(e.g. validation & bias)**

“Deliver”

**ECV assimilation
& assessment**

“Exploit”

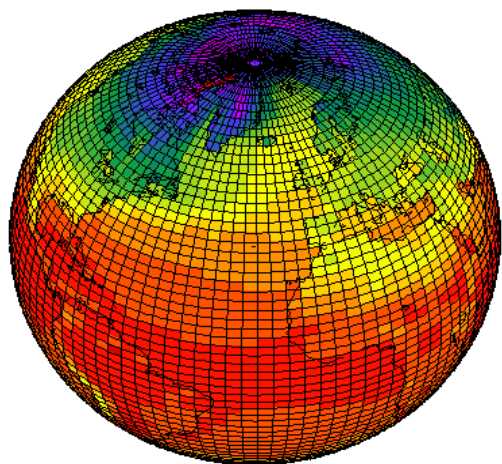
**FEEDBACK LOOP:
6 year programme
for 3 cycles**

OUTPUT TO

*International Climate Programmes
EC & MS R&D Programmes
IPCC Process, UNFCCC*

Education & Awareness

“Show”



- Medspiration builded on GDS 1.5
- GlobColour on IOCCG report from WG on data merging

We would need

- SST and OC ECV products specification (down to bit level)
- SST and OC Data Processing Model (as detailed as possible or with placeholder on work TBD)

GHRSSST already took action