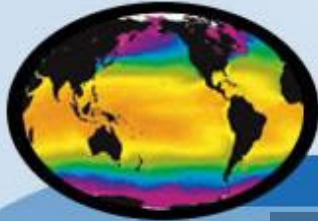


# ESA Support to GHRSSST



## GHRSSST



Group for High Resolution Sea Surface Temperature

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### Integrated S

The Group for High-Res  
(GHRSSST) provides a n  
( $<10\text{km}$ ) SST products to  
meteorological, climate

In a hurry to



Craig Donlon and Olivier Arino

GHRSSST-XIV, Woods Hole, USA, 17-21<sup>st</sup> June 2013

- ESA and GHRSSST
- ESA Missions
  - ENVISAT AATSR
  - Developments with Sentinel-3
  - Future Mission concepts: Microwat
- Support to the GHRSSST Project Office
- Science Projects and Programmes
- CEOS SST-VC



# Ministerial Council November 2012 – Outcome in details / figures



- **Overall** subscription to ESA programmes: **10,119 Billion Euro**
- **EO Budget:** 1,9 Billion Euro
  - **EOEP-4: 1002 Meuro (64%)**
  - **Metop Second Generation:** 808 Meuro.  
**GSC-3** (core elements Sentinel-5 and Jason-CS): 47 Meuro for phase 1 and an advance subscription of 43 MEuro for phase 2, open for subscription until 2014
  - **Additional contributions for:**
    - **CCI programme (13,3 Meuro)**
    - GMES Service Element (2,4 Meuro)



# ESA support to GHRSSST



## Infrastructure

[www.esa.int](http://www.esa.int) (Satellite and archives)

[www.esa.int/duel](http://www.esa.int/duel) (Application Programme)

[due.esrin.esa.int/stse/](http://due.esrin.esa.int/stse/) (Science Programme)

[www.esa-cci.org](http://www.esa-cci.org) (Climate Change Programme)

[www.ceos.org](http://www.ceos.org) (CEOS SST-Virtual Constellation)

...

## Projects

[www.ghrss.org](http://www.ghrss.org) (GPO)

[www.medspiration.org](http://www.medspiration.org) (SST project)

[www.microwat.org](http://www.microwat.org) (New Microwave mission concept)

[www.globwave.info](http://www.globwave.info) (Ocean Waves)

[www.storm-surge.info](http://www.storm-surge.info) (Storm Surges)

[www.oceanflux-ghg.org/](http://www.oceanflux-ghg.org/) (Ocean Carbon Flux)

## New Studies and new programmes

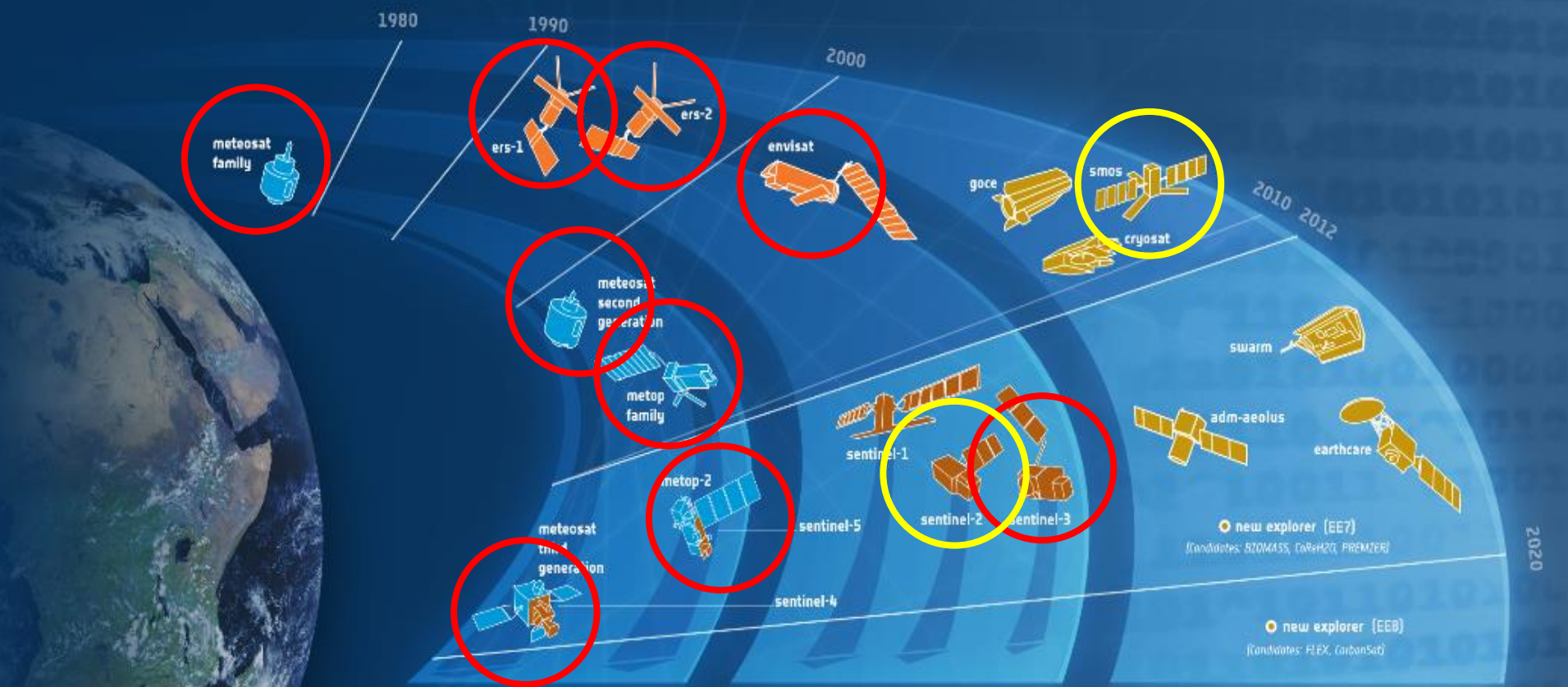
...



# → OBSERVING EARTH FROM SPACE

## Expanding European Earth Observation capability

Why is GHRSSST important to ESA?  
Because we build a lot of SST missions!



### Meteorological Missions

driven mainly by Weather forecasting and Climate monitoring needs. These missions developed in partnership with EUMETSAT include the Meteorological Operational satellite programme (MetOp), forming the space segment of EUMETSAT's Polar System (EPS), and the new generation of Geostationary Meteosat satellites (MSG & MTG satellites).

### GMES Sentinel Missions

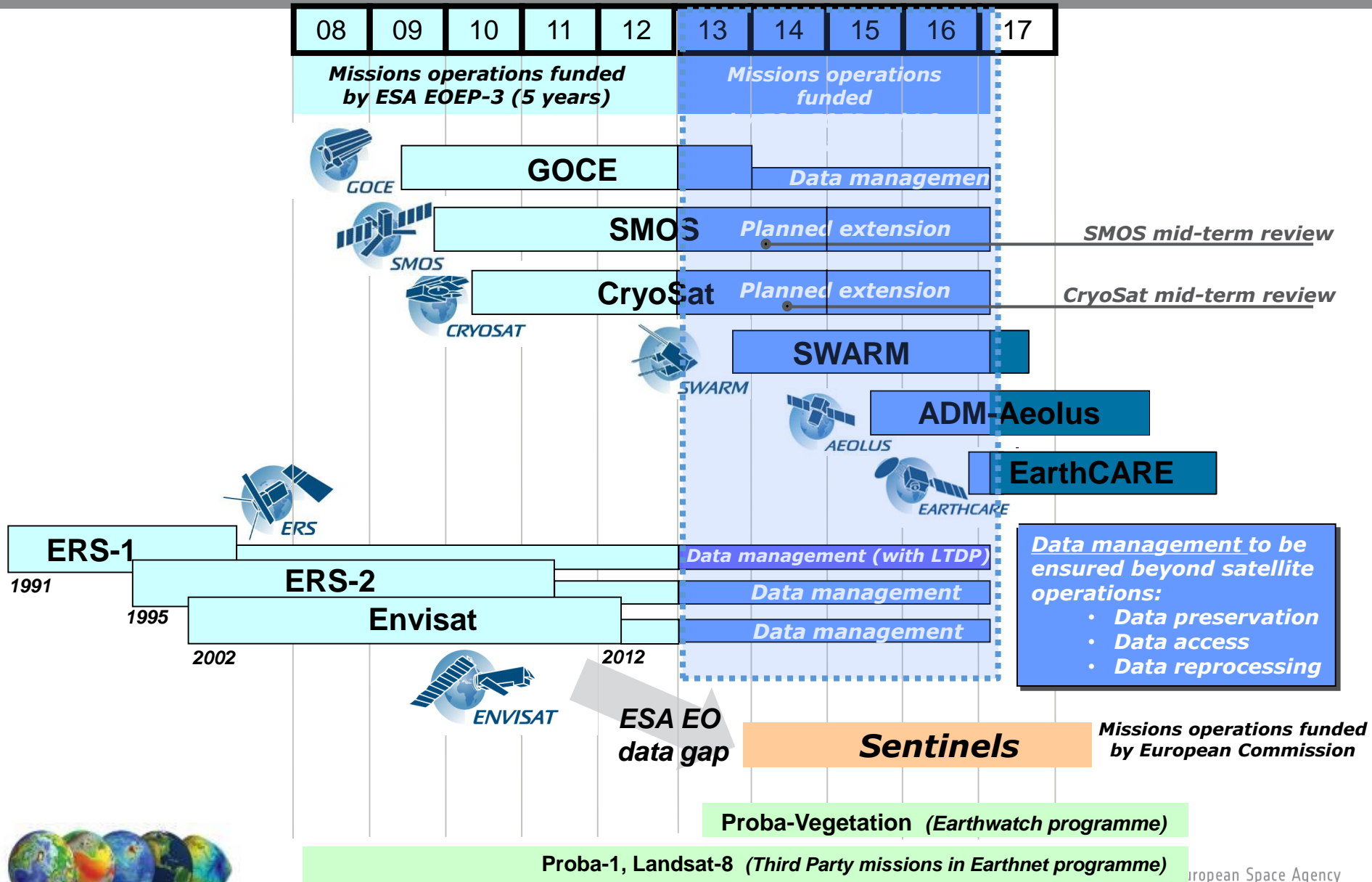
driven by Users needs to contribute to the European Global Monitoring of Environment & Security (GMES) initiative. These satellite missions developed in partnership with the EC include C-band imaging radar (Sentinel-1), high resolution optical (Sentinel-2), optical and infrared radiometer (Sentinel-3) and atmospheric composition monitoring capability (Sentinel-4 & Sentinel-5 on board Met missions MTG and EPS-SG respectively).

### Earth Explorer Missions

driven by Scientific needs to advance our understanding of how the ocean, atmosphere, hydrosphere, cryosphere and Earth's interior operate and interact as part of an interconnected system. These Research missions, exploiting Europe's excellence in technological innovation, pave the way towards new development of future EO applications.

# Mission Operations and Maintenance

## - overview -



# Envisat satellite failure on 8<sup>th</sup> April 2012

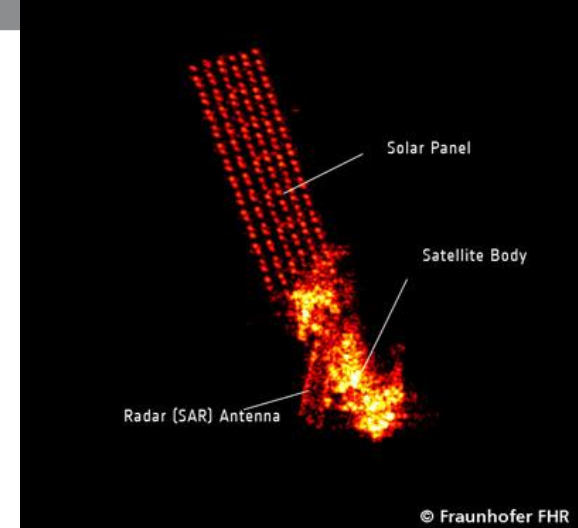


Based on the anomaly events on 8<sup>th</sup> April and on the external observations since then, several failure scenarios were devised.

Two failure scenarios were retained as most coherent with the observations:

- ✓ Failure Scenario 1: Non-observable double failure in the Power Subsystem (e.g. a silent first failure could have happened in the past, then second failure on 8<sup>th</sup> April)
- ✓ Failure Scenario 2: Failure in Central Communication Unit followed by a failure while the satellite was in transition towards Safe Mode

Fraunhofer TIRA image (10 April 2012)



14:52:03



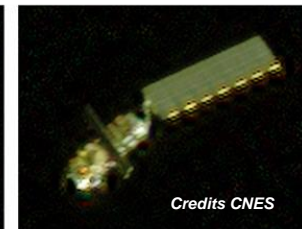
14:59:07



14:59:57



Pleiades images  
(15 April 2012)



# AATSR L1, L2 3<sup>rd</sup> Reprocessing



## Overall Status

- First run completed 9<sup>th</sup> April.
- Completed 8<sup>th</sup> May with other
- 50150 orbits processed. 120 failures
- Peak rate 218 X real-time
- Success rate 99.76% (L1 from L0)

- 0 ATS\_TOA\_\_1P
- 0 ATS\_AST\_\_BP
- 0 ATS\_NR\_\_2P
- 0 ATS\_AR\_\_2P
- 0 ATS\_MET\_\_2P

Average daily AATSR productions to date:	1576
Processing days to date:	32.0
Actual total days for processing:	31.8
Actual days to complete processing:	0.0
Actual completion date:	09 April 2013



- **To be released to CCI ahead of full validation by QWG (2013 Q2)**



# AATSR: L2P/L3U Processing



L2P/L3U: Dependency on copying generated data to local storage.

- System used for L2P previously not appropriate for new L2P software . Too slow.
- Ported to Astrium's Processing Farm (APF)
- Time to process one orbit reduced from 30 minutes to 90 seconds.
- Started with delay due to problems with the NAS hosting the L1. Now resolved.
- Restarted 31<sup>st</sup> May but with ramp-up
- One year of data processed in 48 hours (fastest).
- 600 orbits processed in 24 hours (40 X real-time) (as of 7<sup>th</sup> June).

- **2002 and 2003 data complete.**
- **Expected completion date for AATSR end July (perhaps earlier).**
- **Data to be available on NAS and on ftp**
- **2TBytes for all AATSR**



# AATSR4<sup>th</sup> reprocessing



Format will be revised → alignment with Sentinel-3 (netCDF4)



Target date for the 4<sup>th</sup> reprocessing: before launch of Sentinel-3 (Q4 2014)

Reprocessing will be done in the framework on the new Data Service Initiative frame contract (ITT to be issued soon).



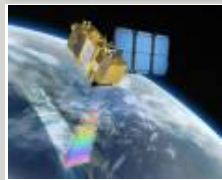
# GMES Space Component: dedicated missions



## Sentinel-1 (A/B) – SAR imaging

All weather, day/night applications, interferometry

2013 /2015



## Sentinel-2 (A/B) – Multi-spectral imaging

Land applications: urban, forest, agriculture,...  
Continuity of Landsat, SPOT

2014 /2016



## Sentinel-3 (A/B) – Ocean and global land monitoring

Wide-swath ocean color, vegetation, sea/land  
surface temperature, altimetry

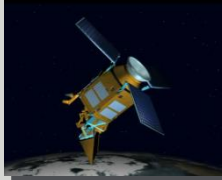
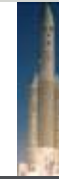
2014/2017



## Sentinel-4 (A/B) – Geostationary atmospheric

Atmospheric composition monitoring, trans-boundary pollution

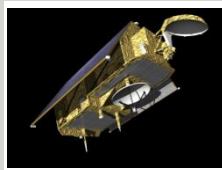
2019/2027



## Sentinel-5 precursor/ Sentinel-5 (A/B) – Low-orbit atmospheric

Atmospheric composition monitoring

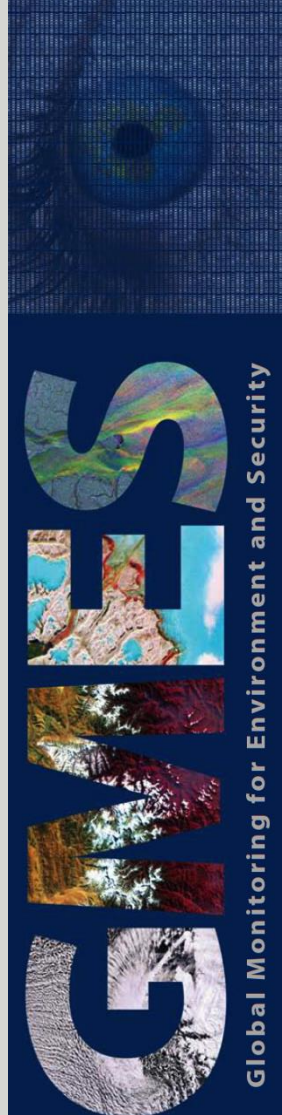
2015/2020/2027



## Jason-CS (A/B) – Low inclination Altimetry

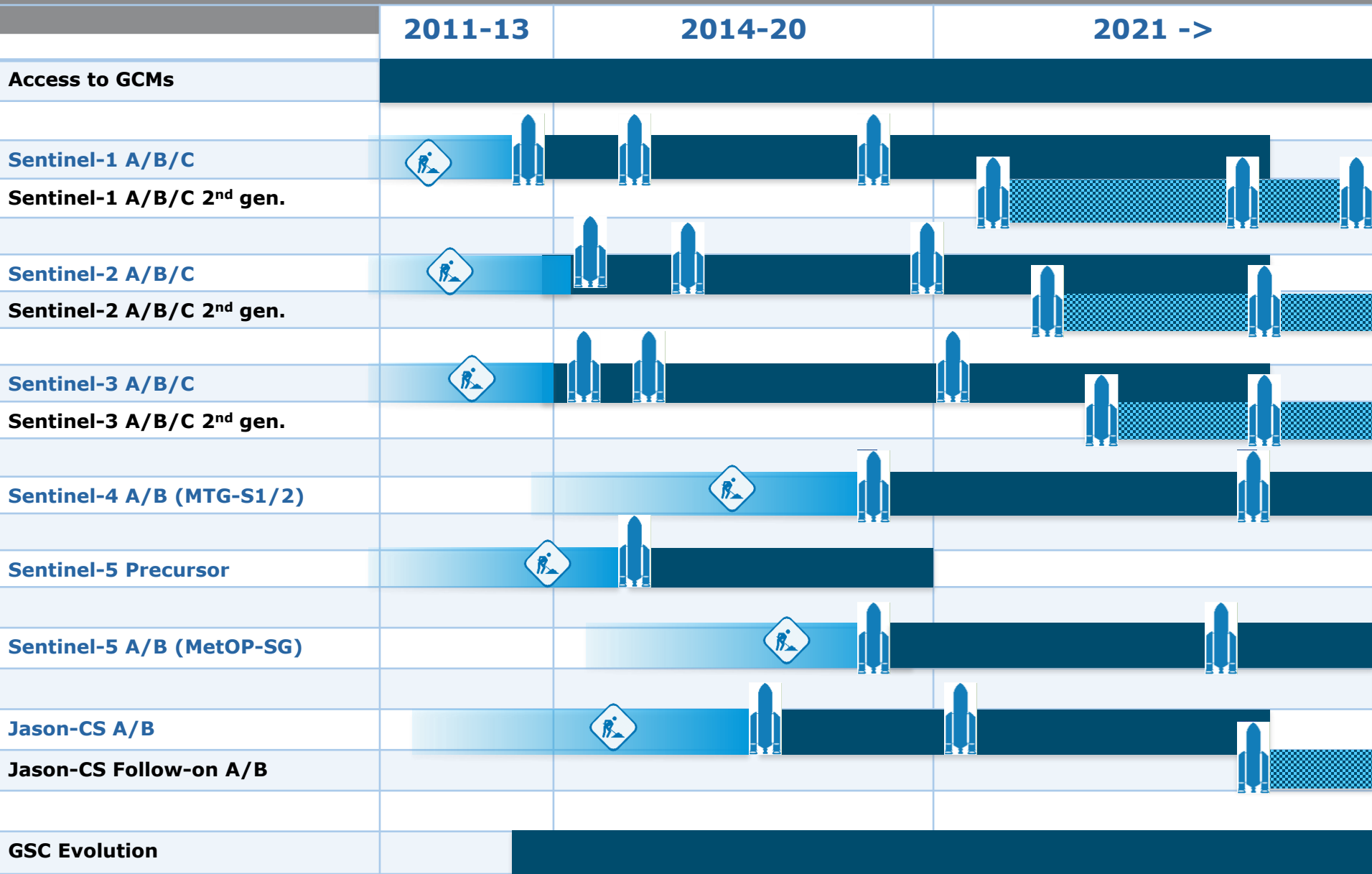
Sea-level, wave height and marine wind speed

2018/2023



Global Monitoring for Environment and Security

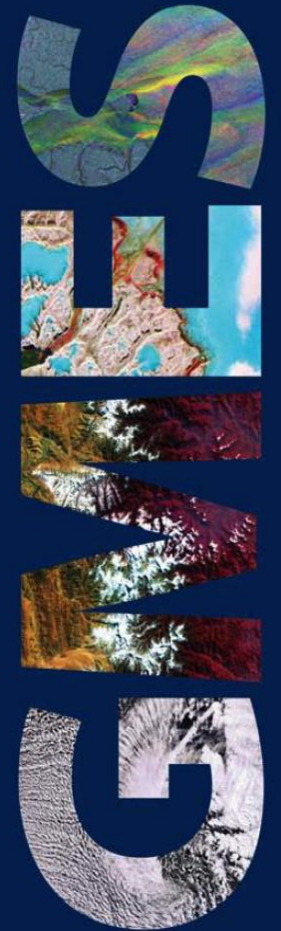
# Users need long term perspectives



# Sentinel-3



See Donlon et al (2012) *The GMES Sentinel-3 Mission, Remote Sensing of Environment*,  
<http://dx.doi.org/10.1016/j.rse.2011.07.024>



Global Monitoring for Environment and Security



# S3 SLSTR: performance predictions (DU FM components)



**Performance Predictions are based on FM DU**

**S1/2/3/4/5/6 for albedo: 0.5% GSD: 500m**

**S1/2/3/4/5/6 for albedo: 3% GSD: 500m**

**S7 "FEE soft reset"**

**S7: EoL 84K (FM B7 10)**

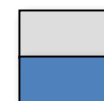
**F1: at 350K (scene temp)**

**S8/9 "new design"**

**S8: EoL 90K 2mA (FM D22/41/44/45)**

**S9: EoL 90K 2mA (FM D8/12/57)**

SLSTR Band	$\lambda_{center}$ [ $\mu\text{m}$ ]	$\Delta\lambda$ [ $\mu\text{m}$ ]	SNR@3% [-] / NeDT [mK]	SSD [km]
S1	0.555	0.02	28	0.5 x 0.49
S2	0.659	0.02	34	0.5 x 0.49
S3	0.865	0.02	20	0.5 x 0.49
S4 *	1.375	0.015	63	0.5
S5 *	1.61	0.06	123	0.5
S6 *	2.25	0.05	67	0.5
S7	3.74	0.38	67 mK	1.0
S8	10.95	0.9	37 mK	1.0
S9	12	1.0	40 mK	1.0
F1	3.74	0.38	90 mK (@350K)	1.0
F2	10.95	0.9	56 mK	1.0



AATSR Heritage  
SLSTR New Bands

**S1-6: SNR with 3% Albedo**

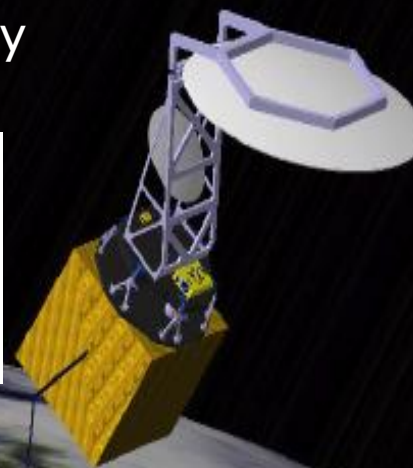
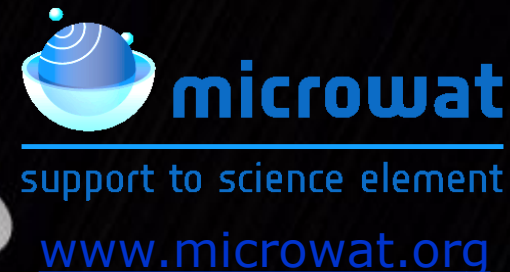
**Asterix \*: on-ground TDI possible, SNR increase by factor 1.4**

Revisit the Microwat 5-25 km  
(NEdT<0.3K) real aperture 6.6 GHz SST  
retrievals



Conical Scanner 5-10m, <10 rpm, 4x  
Feeds, 6.9 and 18.7 GHz channels, fully  
polarimetric

**NEW (2013) follow-on  
study to further develop  
conical scanning antenna**



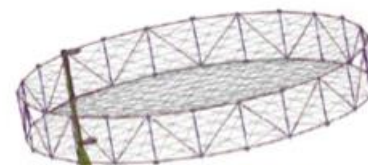
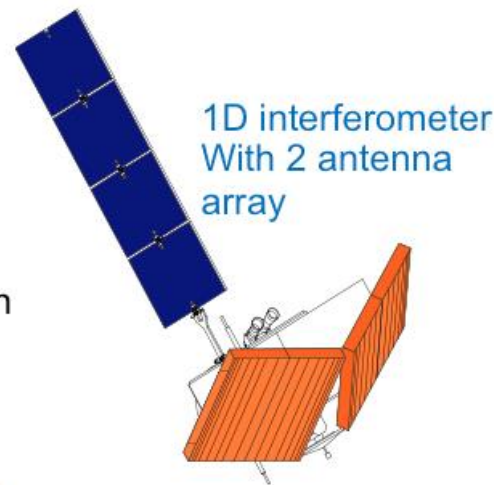
High sensitivity instrument due to  
longer integration time and  
Fore/Aft view

Robust calibration process and  
RFI detection and mitigation is  
under investigation



# Technology/Science Challenges

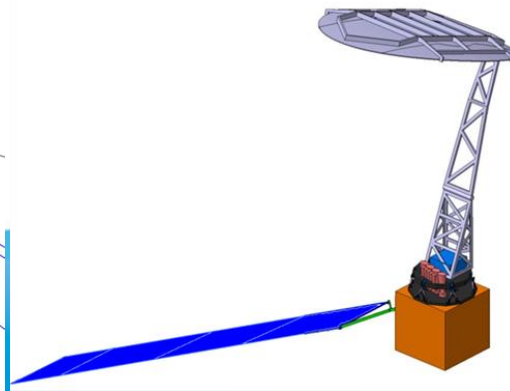
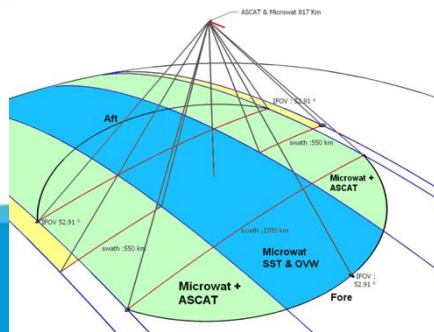
- Passive Microwave radiometers for SST are essential yet continuity is fragile (only GCOM-Wx, AMSR-2)
- However, some significant challenges to the concept:
  - Large LV required due to large (solid) antenna size (7 x 5 m)- needed for 6.9 GHz channel achieving required spatial resolution
  - Deployment of Triptic type antenna is complicated
  - Momentum compensation is challenging- must be dealt with to ensure bearing lifetime → mission lifetime
- New study: Advanced Radiometer for SST just started
  - Study to look at making Microwat compatible with **VEGA**- flexible mesh antenna
  - Will also use trade-off alternative 1D interferometer concept- may be challenging to accommodate on VEGA.
- Further information: [www.microwat.org](http://www.microwat.org)
- Thank you



Real aperture  
with Mesh antenna  
similar in appearance to SMAP



credit: NASA)

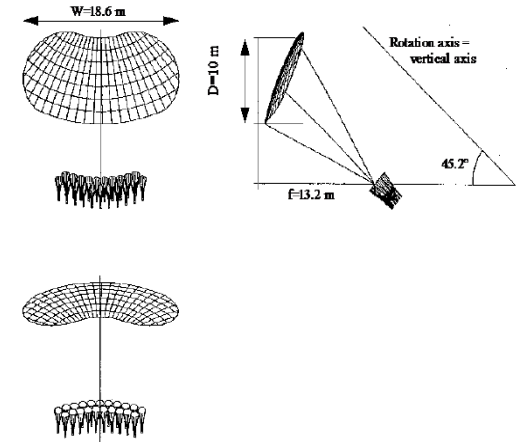


# Complementary Study on Advanced Multiple-Beam Radiometers (Microwatt+): **Pushbroom sensor approach**

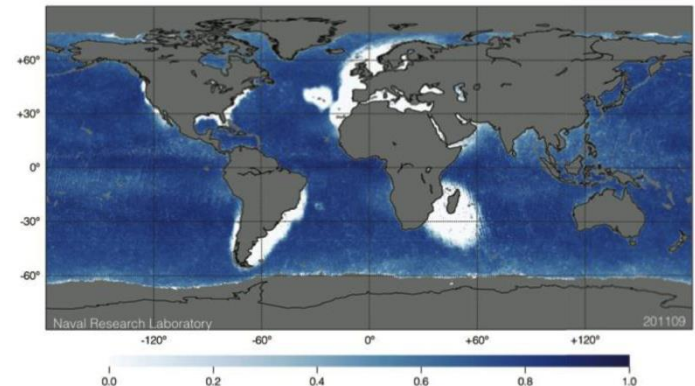
- Study led by TICRA (DK)
- Comparing pushbroom concepts to conical scanning (which is a challenge)
- C-band Pushbroom configuration
- This approach gains significantly in sensitivity and accuracy ( $NE\Delta T \ll 0.1K$ ) at the cost of swath coverage ( $\sim 600$  km at a resolution of 20km)
- Have more skill with RFI filtering on-board and on ground



(Aircraft Testbed @ 37GHz N. Skou)



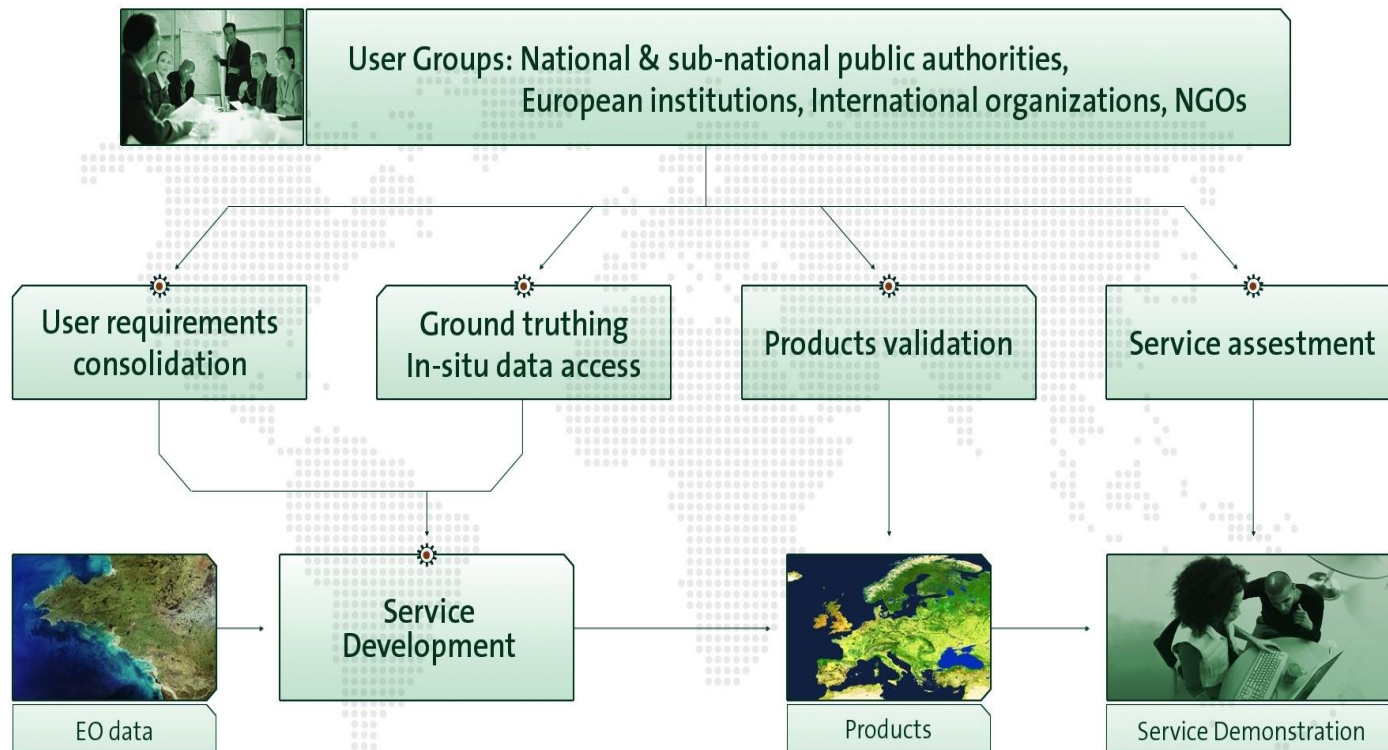
(Toroidal reflector concept TICRA, DTU, N. Skou)





*“The DUE - like its forerunner DUP - is an instrument to support the development of operational EO applications. It is in particular working to support the users of such applications along with the EO service industry, and is instrumental also to encourage the cooperation between parties in the various participating states.”*

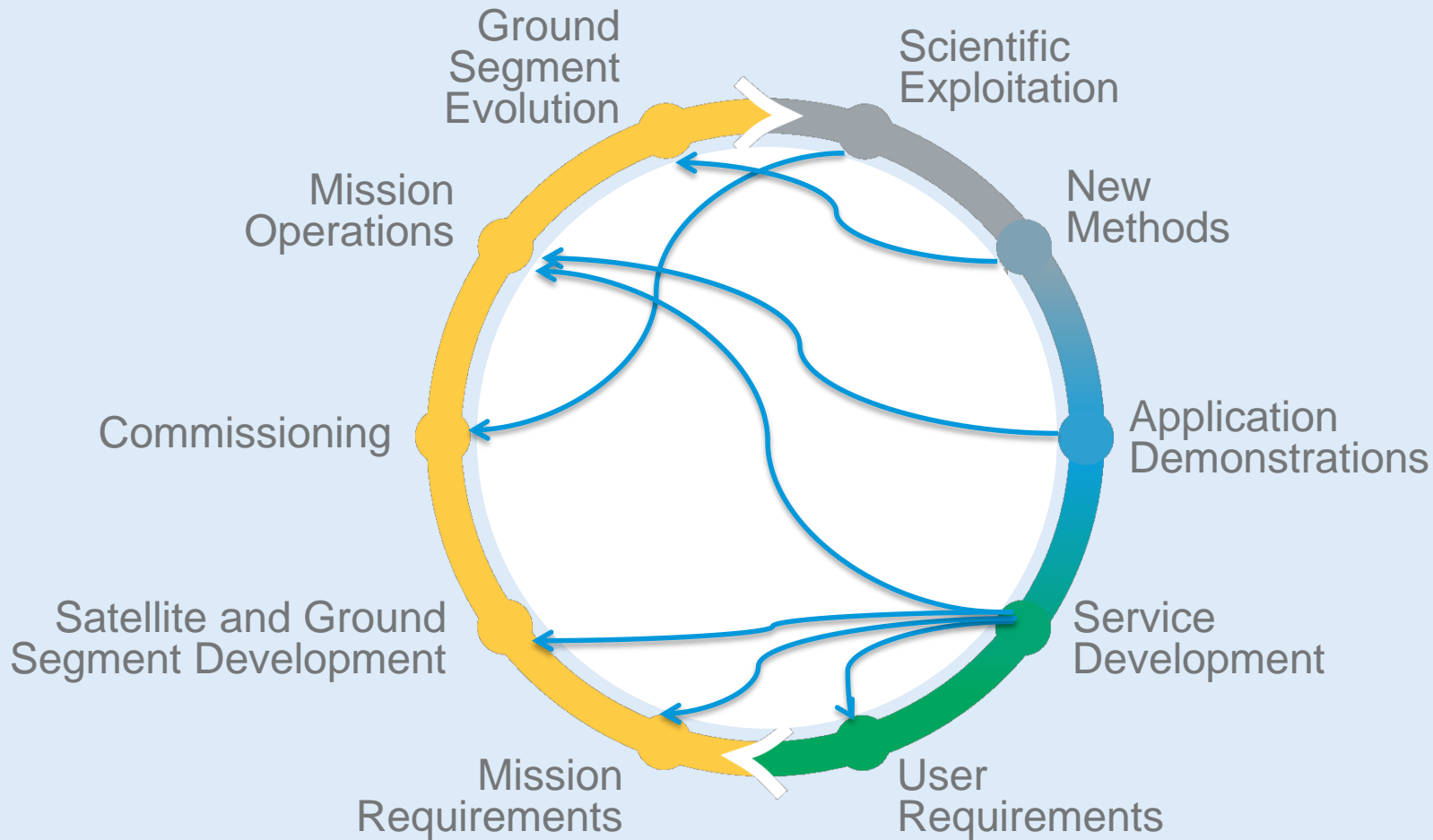
*Dr. Nico Bunnik - Former National Delegate to the Earth Observation (EO) Programme Board*



# The DUE GlobSeries: serving the global change community

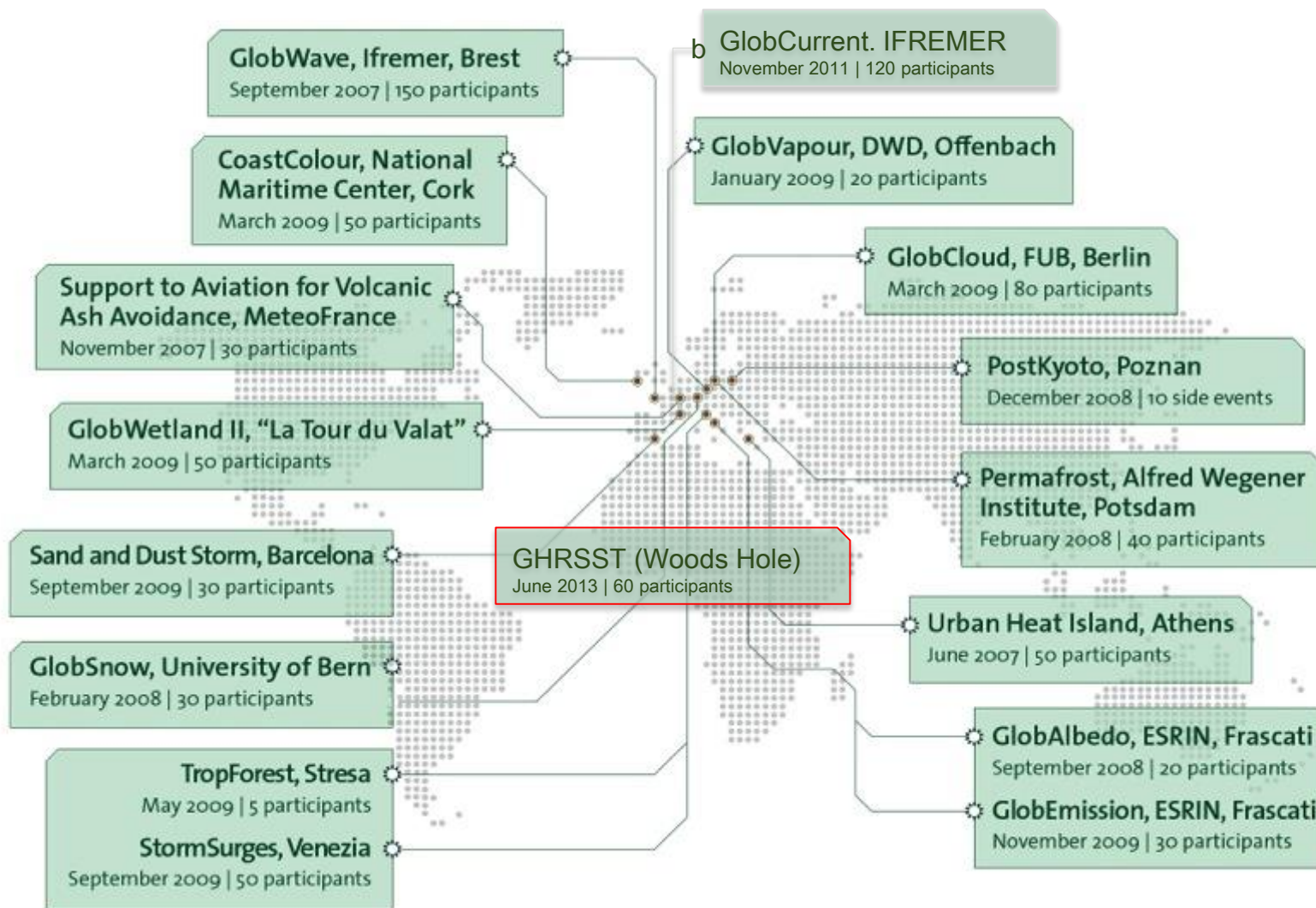


# EO Exploitation Life Cycle



**Science => Applications => Services => Benefits**

# ESA Data User Element (DUE) consultation meetings, listening to user communities



# Medspiration Evolution (J-F Piolle)



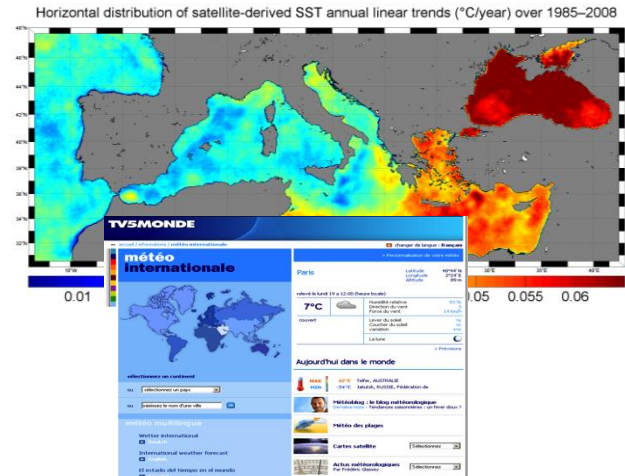
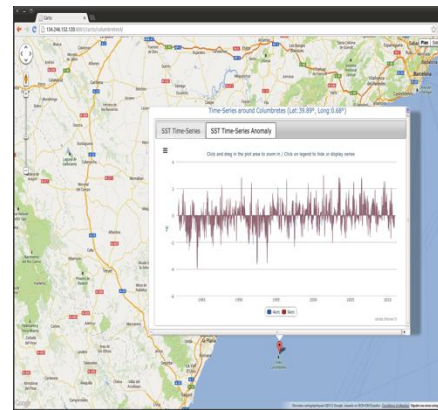
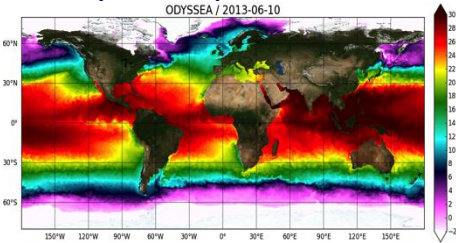
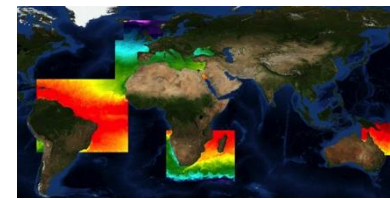
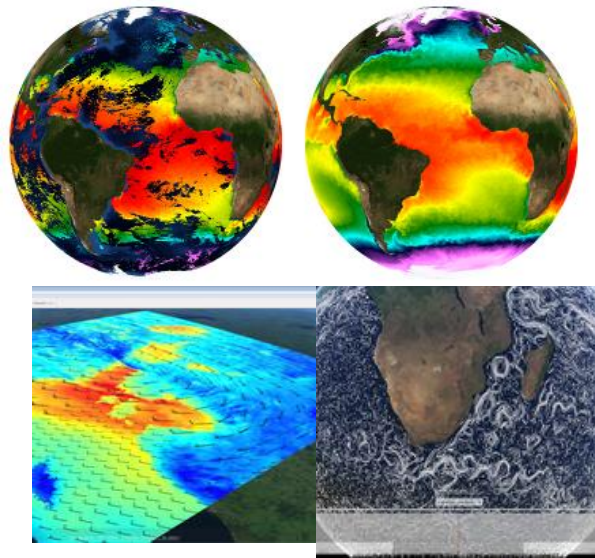
Build on Medspiration assets and reach further user community

Sustain and develop new products

Outreach

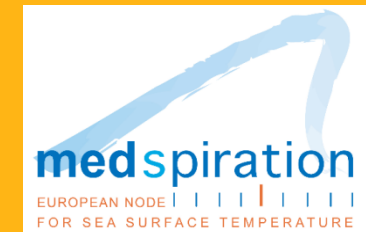
Analytics

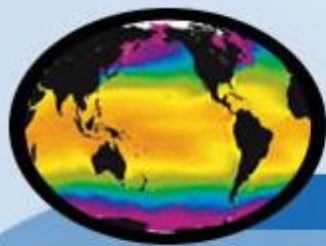
User applications



## Access

Data are accessible through FTP, OpenDAP, WMS  
 Static and dynamic visualisation available  
 Details at : <http://www.medspiration.org>





# GHRSSST



## Group for High Resolution Sea Surface Temperature

Search:



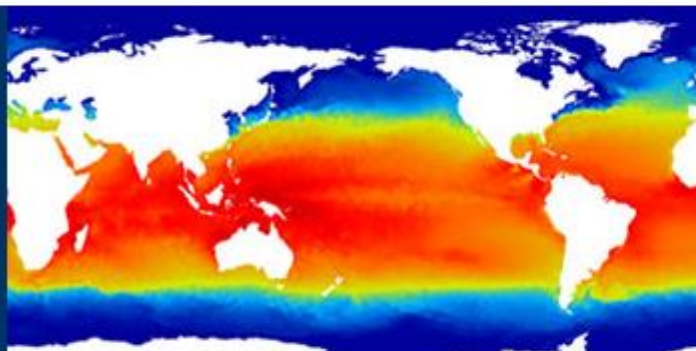
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## Integrated SST Data Products

The Group for High-Resolution Sea Surface Temperature (SST) (GHRSSST) provides a new generation of global high-resolution (<10km) SST products to the operational oceanographic, meteorological, climate and general scientific community.

## In a hurry to use SST?



## Login

Email:

Password:



## News

### Ocean Flux Science Workshop

Added: 12-Jun-2013

### GOV Symposium – Abstracts & Registration

Added: 12-Jun-2013

### Final agenda for G-XIV

Added: 11-Jun-2013

### Release of Turbulent Flux analyses by Ifremer

Added: 06-Jun-2013

### Links to recordings of GHRSSST Webinar

Added: 06-Jun-2013

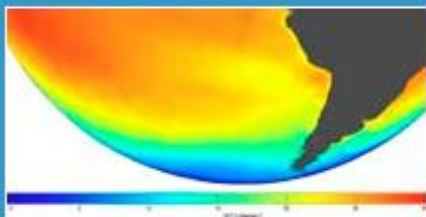
### GHRSSST XIV - Latest draft agenda (4th June 2013)

Added: 04-Jun-2013

### OSISAF - LEO SST format change from GDS V1 to GDS V2

Added: 30-May-2013

## Data



Latest SST map

Real-time

Historical data

RDAC Data Servers

Data Descriptions

GHRSSST Data Tools

Operational Announcements

## GHRSSST Science



SST definitions

What is GHRSSST?

Organisation

Science Team Members 2012/2013

Science Team & Groups

Product Validation

GHRSSST Publications

Documents

Meetings and workshops

## Users & Partners



Applications

CEOS SST VC

GHRSSST related projects

Sponsors

Community links

New Satellite Programs

Input data streams

User Requirements

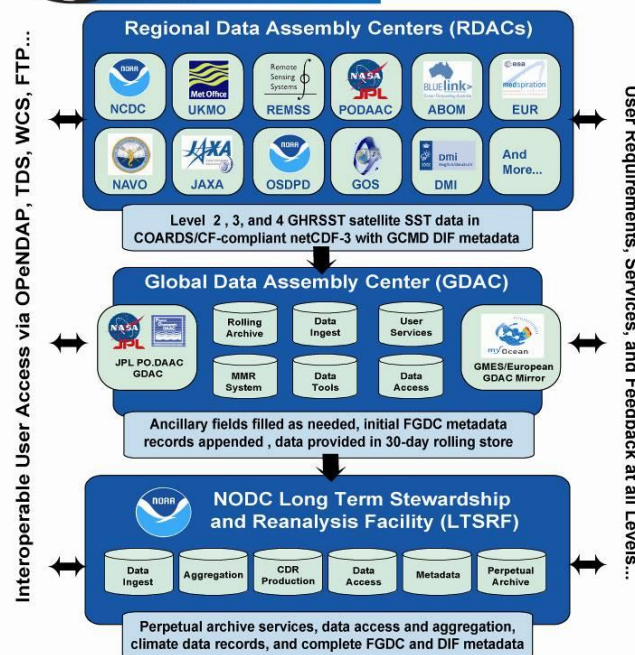
Education



# GHRSSST Project Office (G Corlett)



- 2003-2008: UK Met Office: Direttore Dr Craig Donlon
- 2010-2012: University of Reading: Direktor Dr. Andrea K. Kaiser-Weiss
- **2012-2014: University of Leicester: Director Dr Gary Corlett**



# DUE GlobCurrent (includes SST feature tracking)



## Objective:

Strengthen user uptake of satellite ocean surface current OSC information.

## User Consultation in Brest, March 2012

User Requirements from:

- Marine and NWP forecasting systems
- Marine Search and Rescue/Coastguards
- Shipping industry
- Renewable energy sector
- Oceanographic science community
- Pollution monitoring and management

## Project Activities:

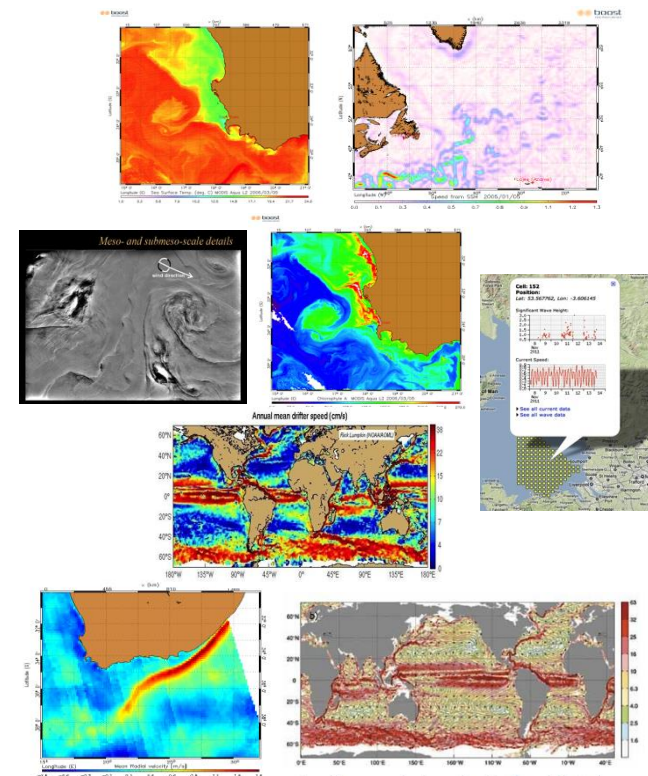
- OSC user and producer international community federation
- OSC L2 and L4 merged product development
- Product validation and intercomparison
- User Case Studies testing impacts of satellite OSC
- Passive and active satellite data merging
- Uncertainty analysis for all products
- GlobCurrent data processing system operation

ITT issue: April 2013

KO: Q3 2013

Budget: €1,500,000

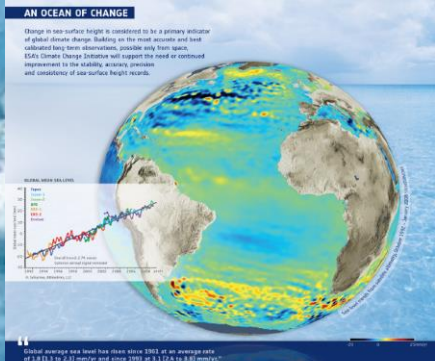
Duration: 3 years



# → UNDERSTANDING CLIMATE CHANGE FROM SPACE

### AN OCEAN OF CHANGE

Change in sea surface height is considered to be a primary indicator of global climate change. Tracking on the most accurate and best calibrated long-term observations, available only from space, ESA's Climate Change Initiative will support the need or continued improvement to the stability, accuracy, precision and consistency of sea surface height records.

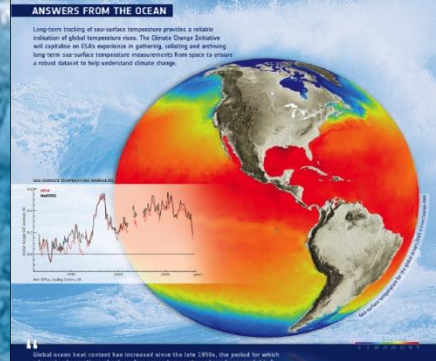


**Global average sea level has risen since 1993 at an average rate of 3.8 (± 0.3) to 2.2 (± 0.2) mm/year and since 1993 at 3.1 (± 0.4 to 3.8) mm/year\*\***

Source: Cheng 2010, Satellite Altimetry - Inter-governmental Panel on Climate Change

### ANSWERS FROM THE OCEAN

Long-term tracking of sea-surface temperature provides a reliable indicator of global temperature rise. The Climate Change Initiative will continue an ESA experience in gathering, validating and archiving long-term sea surface temperature measurements from space to ensure a robust dataset to help understand climate change.




**Global ocean heat content has increased since the late 1950s, the period for which adequate observations of sea surface temperatures have been available.\*\***

Source: Cheng 2010, Satellite Altimetry 1, The Scientific Basis - Inter-governmental Panel on Climate Change

### ICE SIGNALS

Over the last 25 years, satellites observing the Arctic have witnessed a reduction in the thickness and extent of summer sea ice. Thanks to the OS and Ocean Sentinel, ESA Earth observation data collected over the Arctic since 1993 will be included in the Climate Change Initiative. New satellites such as ESA's CryoSat mission and the Sentinel will ensure continued observations of the polar region.

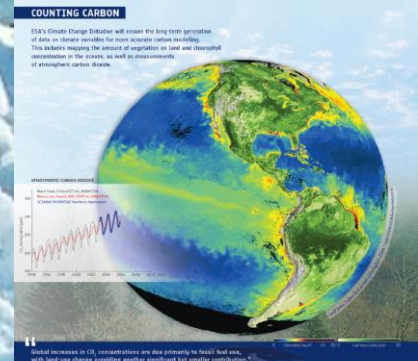


**Satellite data since 1979 shows that average Arctic sea ice extent has shrunk by 0.7 (± 0.1) to 0.4 km<sup>2</sup>/year\*\***

Source: Cheng 2012, Satellite Altimetry 1 - Inter-governmental Panel on Climate Change

### COUNTING CARBON

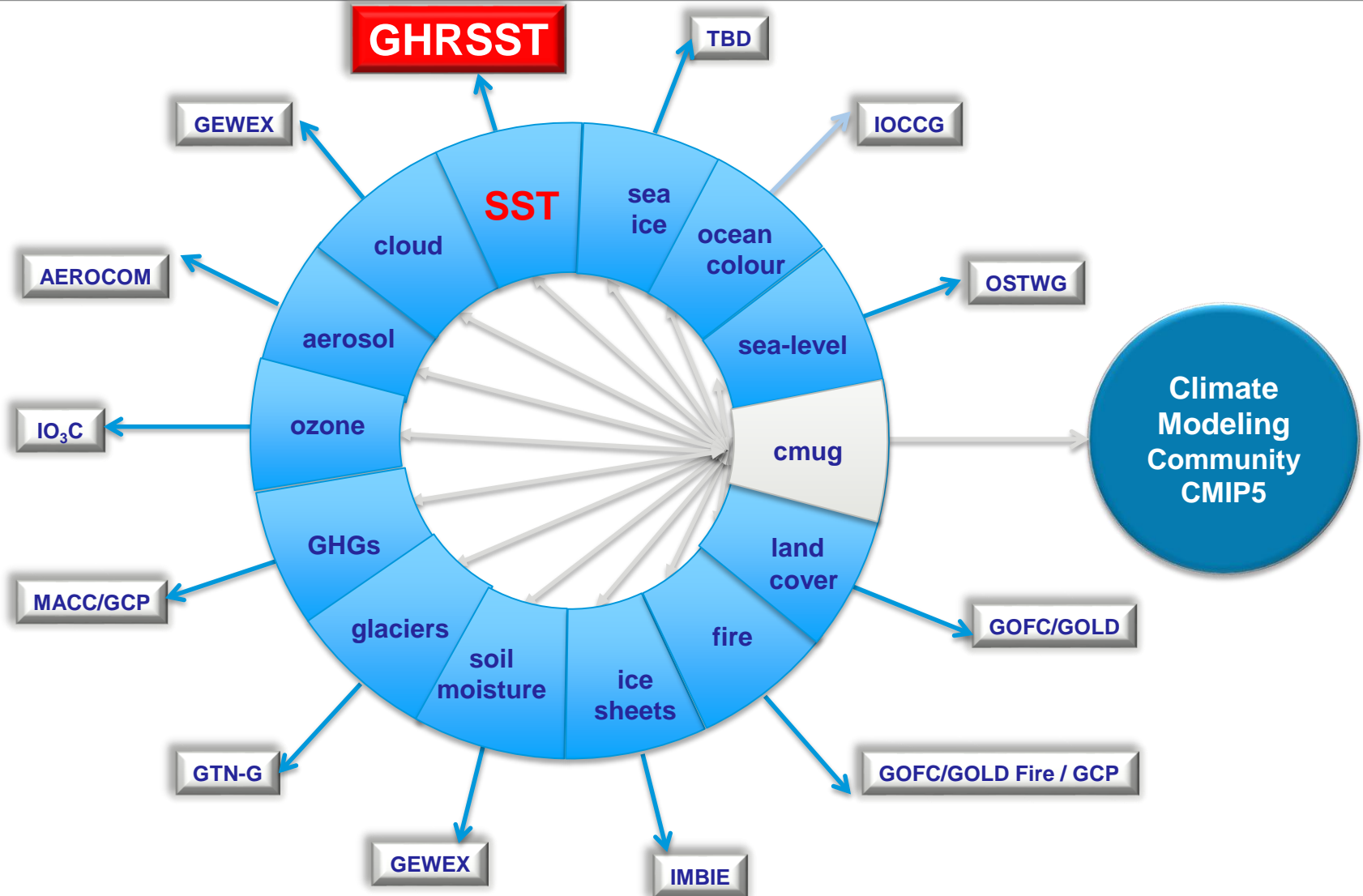
ESA's Climate Change Initiative will assess the long-term generation of data on climate variables for more accurate carbon modelling. This includes measuring the amount of vegetation on land and dissolved organics in the ocean, as well as measurements of atmospheric carbon dioxide.



**Global increases in CO<sub>2</sub> concentrations are also primarily to blame for sea level rise, with land-use change providing another significant but smaller contribution.\*\***

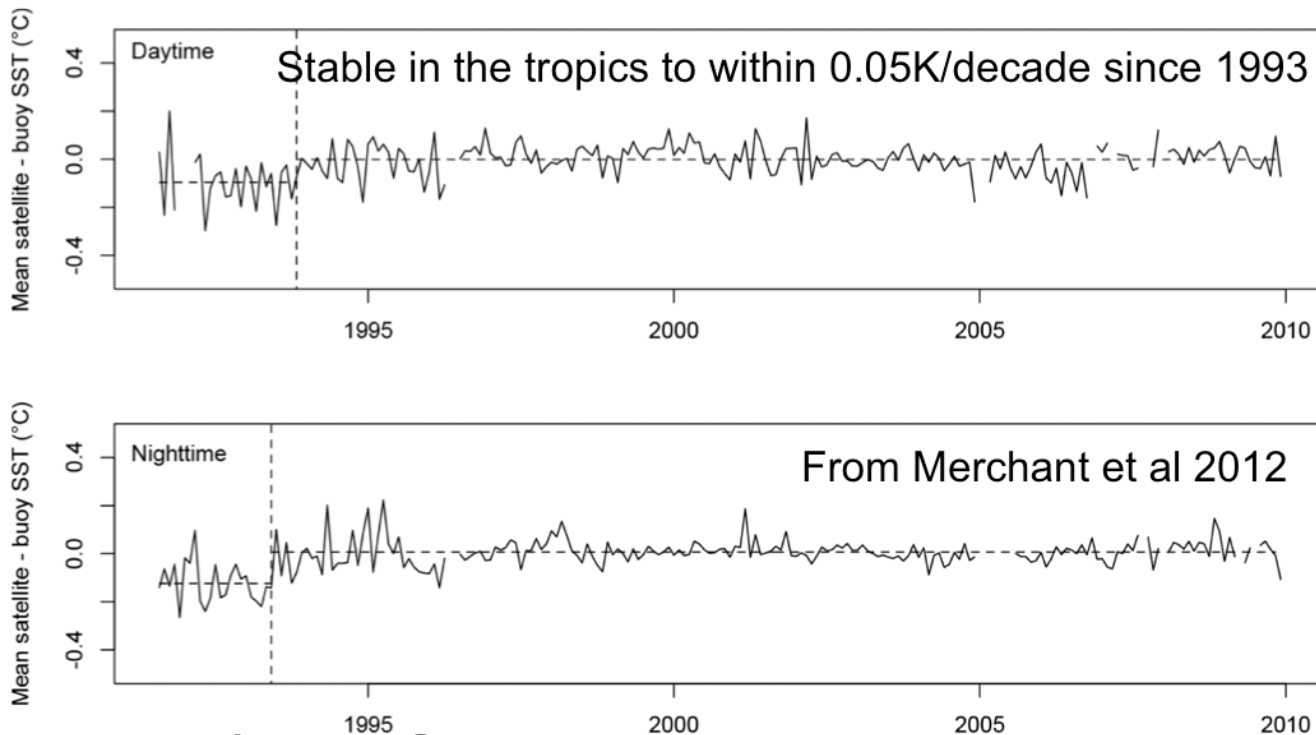
Source: Cheng 2011, Satellite Altimetry 1 - Inter-governmental Panel on Climate Change

# CCI is coordinated with internationally recognized Science Teams





## A stable, low bias, long-term, satellite based data record of sea surface temperature



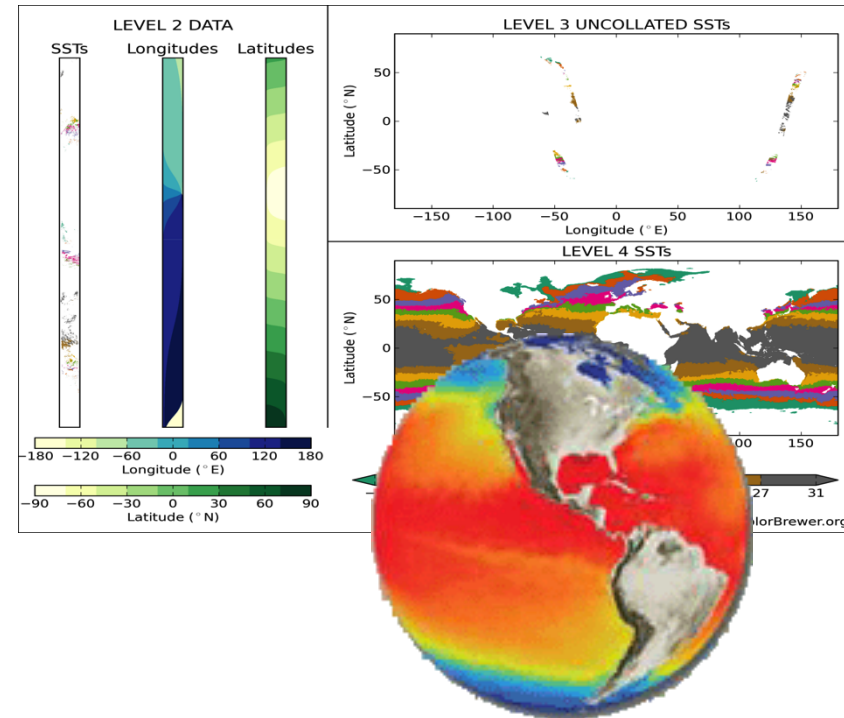
Products from:

<http://www.esa-sst-cci.org/PUG/home.htm>

# SST\_cci Long-term Products



- Satellite only – independent of measurements made *in situ*
- Period: 1991-2010
- Different levels: level 2 (AVHRR), level 3 (ATSR) and level 4 (combined)
- Depths:  $SST_{skin}$ ,  $SST_{0.2m}$
- CF-compliant NetCDF in Group for High Resolution SST compatible format
- Documentation, including a Product User Guide with quick start guide and also more detailed information



# CCI Phase-II Approach (2014-2016)



- International coordination (GCOS-CEOS)
- Pursue work on 13 ECVs started in phase 1
- Maintain interface to climate modelers (CMUG)
- Develop interfaces to climate services
- Extend products temporally, geographically
- Improve quality to meet climate needs
- New data sets: Explorers / prepare for sentinels
- Ensure free open access to CCI data products
- Promote wide exploitation of CCI data sets
- Maximize scientific impact (publications)
- Evolve from prototype to sustainable systems



# ESA STSE OceanFlux GHG: New Climatology of CO<sub>2</sub> Gas flux

<http://www.oceanflux-ghg.org/>



## Oceanflux Greenhouse Gases

Site map | Contact

oceanflux ghg support to science element

stse support to science element

ifremer eri PML

The Project | Science | Products | Documents | Meetings & Events | Blog | News | Links | Workshop | Contacts

### Latest news

- Published on the 15/04/2013  
**Science workshop registration**  
The registration for the science workshop is open.  
[Read the news](#) +
- Published on the 01/02/2013  
**Brochure**  
The brochure of the project is available.  
[Read the news](#) +
- Published on the 22/11/2012  
**Observing gas transfer between ocean and atmosphere from space**  
Short wind waves in the order of centimeters can be observed by satellite altimeters; their relation with gas transfer velocity through the sea surface is used to develop gas transfer algorithms for the world's oceans.  
[Read the news](#) +

### Zoom

Air-sea CO<sub>2</sub> flux using the KH06 Ho et al., 2006 gas transfer velocity (k) (g C m<sup>-2</sup> day<sup>-1</sup>)

The Project

Partners: Ifremer





# OceanFlux GHG – Global community data



Global regular grid 1° x 1° climatology + processing tools

Uncertainty information

Attribute layers (inc surface biology, diurnal warming etc).

Normalised to 2010

Data at different depths (e.g. interfacial CO<sub>2</sub> concentrations, pCO<sub>2</sub> at base of micro-layer)

Quantities: air-sea CO<sub>2</sub> flux, SST<sub>skin</sub>, SST<sub>fnd</sub>, salinity, whitecap coverage, solubility, fugacity, k<sub>total</sub>, k<sub>rain</sub> +..)

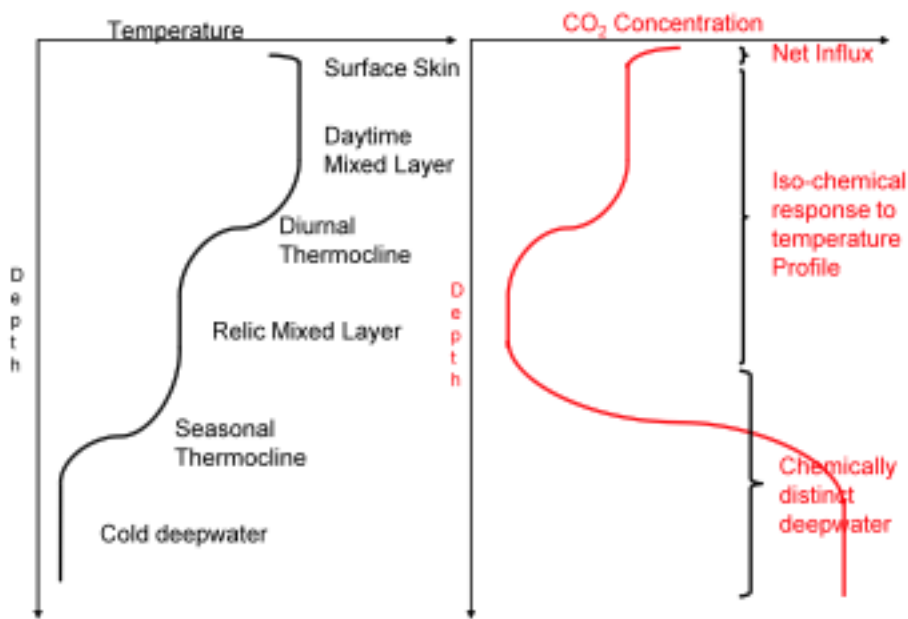


Figure 1. Schematics of Vertical Profiles of Temperature and CO<sub>2</sub> Concentration

SST data are used for calculating fugacity of CO<sub>2</sub>, gas transfer velocity k, whitecap coverage, Solubility etc...

SST<sub>skin</sub> and SST<sub>fnd</sub> are both used as we need to capture vertical gradients.



# OceanFlux GHG – Science workshop – Registration now Open!!



**The OceanFlux Greenhouse Gases project**

Aims to Improve the quantification of air-sea exchanges of greenhouse gases, of prime importance in the climate system.



**solas 2013**

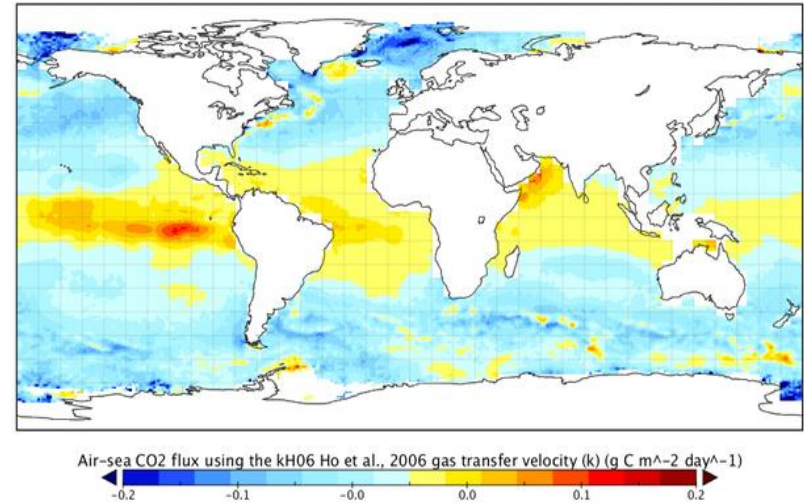


**SCIENCE WORKSHOP**

**24-27 Sept. 2013**

**BREST | FRANCE**

Scientists, engineers, and Reference User Group members are invited to attend the Science Workshop which will take place towards the end of the project, to allow the partners to present the results, gain user feedback and to plan future aims and collaborations.



Example user generated Air-sea flux of CO<sub>2</sub> generated on the IFREMER Nephelae Cloud using OceanFlux tools.



<http://www.oceanflux-ghg.org/Workshop>

# ESA Felyx: New High resolution diagnostic data system to access and study long-term archives of satellite earth observations



Free open software solution for the analysis of large Earth Observation datasets

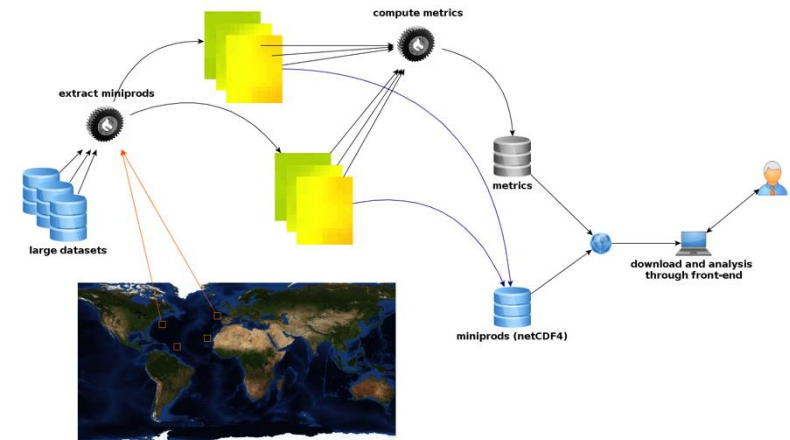
Felyx is a free software solution, written in python and javascript, whose aim is to provide EO data producers and users with an open-source, flexible and reusable tool to allow the quality and performance of data streams (satellite, in situ and model) to be easily monitored and studied.

The development of Felyx is funded by the European Space Agency and realised by IFREMER, PML and Pelamis.

DISCOVER THE PROJECT

LATEST BLOG ENTRIES

- Building on the HRDDS concept
- A new system that allows **federation of distributed DDS**
- Processing and analysis tools
- Sub-setting, Metrics, analysis
- Everything we dreamt of with the DDS...
- See JF-Piolle and Dave Poulter (yes he's back!!)...



<http://hrdds.ifremer.fr>

# ESA Support to the CEOS SST-VC



## CEOS Committee on Earth Observation Satellites



[HOME](#) | [Calendar](#) | [GEO](#) | [Actions](#) | [EO Handbook](#) | [COVE](#)

*To foster the best quality sea surface temperature data for applications in short, medium, and climate time scales in the most cost effective and efficient manner through international collaboration, scientific innovation, and rigor*

### CEOS Main

- [CEOS Home](#)
- [Background](#)
- [Organization](#)
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- [Governing Docs](#)
- [Meetings](#)
- [Publications](#)
- [Contacts](#)

### Constellations

- [ACC-Atmos Composition](#)
- [LSI-Land Surface Imaging](#)
- [OST-Ocean Surf Topography](#)
- [PC-Precipitation](#)
- [OCR-Ocean Color Radiometry](#)
- [OSVW-Ocean Surf Vect Wind](#)
- [SST - Sea Surface Temp](#)

### Facebook Like Box



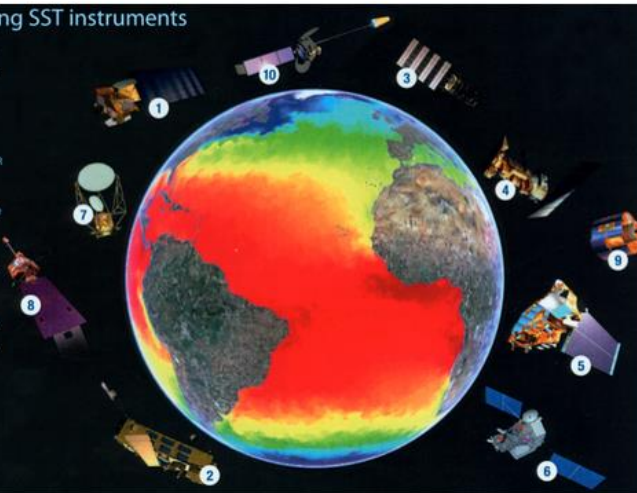
The Committee on Earth Observation Satellites (CEOS)

Like 295

## Sea Surface Temperature Virtual Constellation

### Satellites carrying SST instruments

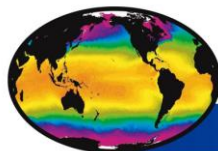
- Low Orbiting Satellites, their SST Sensors and Space Agencies:
- 1) AQUA MODIS NASA& AMSR-E JAXA, image credit: NASA
  - 2) ENVISAT AATSR ESA, image credit: ESA
  - 3) METOP-A AVHRR and IASI EUMETSAT, image credit: ESA-ANES Medialab
  - 4) NOAA-18 and NOAA-19 AVHRR NOAA, image credit: NOAA
  - 5) Terra MODIS NASA, image credit: NASA
  - 6) TRMM TMI & VIRS NASA, image credit: NASA
  - 7) Coriolis WindSat NRL, image credit: US Navy
- Geostationary Satellites, their SST Sensors and Space Agencies:
- 8) GOES-E and GOES-W GOES NOAA, image credit: NOAA
  - 9) MSG SEVIRI EUMETSAT, image credit: ESA-DUCROS
  - 10) MTSAT-2 MTSAT JMA, image credit: JMA



The SST-VC serves as the formal link between the Group for High Resolution Sea Surface Temperature (GHRSSST) and the broader CEOS community. At the highest level, the SST-VC provides a means for CEOS to present to GHRSSST its needs and requirements, and for GHRSSST to present its needs directly to global community of space agencies. In addition, there are several thematic connections between GHRSSST and CEOS that take place at the working group level (for example, between the GHRSSST Climate Data Record TAG and the CEOS Working Group on Climate).

GHRSSST has

ice 2005 and



# GHRSSST

Group for High Resolution Sea Surface Temperature



Search...

### Recent News and Events

[Bangalore Statement](#)  
November 2012

[CEOS Newsletter No. 40](#)  
March 2013

[CEOS Videos](#)

### Portals

[CEOS International Directory Network \(IDN\)](#)

[Land Surface Imaging \(LSI\)](#)

[Atmospheric Composition \(AC\)](#)

[Climate Diagnostics](#)

[Calibration / Validation](#)

[Forest Carbon Tracking](#)

[CEOS Water Portal](#)

CEOS SST-VC ToR, 2012

# ESA International support to improved SST CDR



- ESA is supporting EO SST CDR activities through its contribution to the International Space Science Institute (ISSI) activities



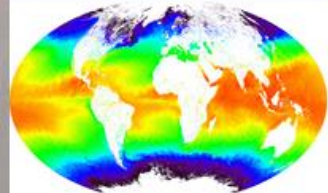
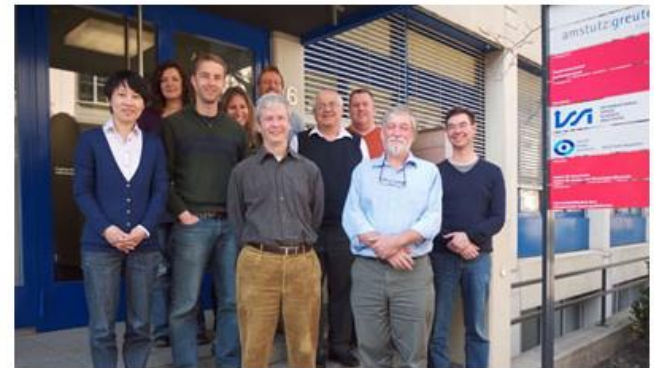
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SPACE  
SCIENCE  
INSTITUTE

- Home
- Proposal
- Team members**
- Schedule
- Publications
- Contact
- Private



## Team members

- Dr Peter Minnett (Team Leader) University of Miami, USA
- Dr Gary Corlett (Co-leader) University of Leicester, UK
- Mr Werenfrid Wimmer University of Southampton, UK
- Dr Tim Nightingale Rutherford Appleton Laboratory, UK
- Dr Nigel Fox National Physical Laboratory, UK
- Dr Theo Theocharous National Physical Laboratory, UK
- Dr Craig Donlon ESA-ESTEC, NL
- Dr Andrew Jessup University of Washington, USA
- Dr Gary Wick NOAA Earth System Research Laboratory, USA
- Dr Chelle Gentemann Remote Sensing Systems, USA
- Dr Sandra Castro University of Colorado, USA
- Dr Simon Hook NASA Jet Propulsion Laboratory, USA
- Mr Chris Wilson NASA Jet Propulsion Laboratory, USA
- Dr Bob Evans University of Miami, USA
- Mrs Anne O'Carroll EUMETSAT, DE
- Dr Lei Guan Ocean University of China, CN



# Living Planet Symposium 2013



## living planet symposium | EDINBURGH 09-13 September 2013



FIRST ANNOUNCEMENT AND CALL FOR ABSTRACTS

### DEADLINES:

Submission of Abstracts	15 February 2013
Notification of Acceptances	May 2013
Issue of Preliminary Programme	June 2013
Registration to the Symposium	June 2013
Release of Final Programme	September 2013
Submission of Full Papers	at the symposium

### THEMES:

- Oceanography
- Solid Earth/Geodesy
- Atmosphere
- Climate and Meteorology
- Cryosphere
- Hazards
- Near Earth Environment
- Land applications
- Methodologies and Products

<http://www.livingplanet2013.org/>

# Message from Olivier Arino

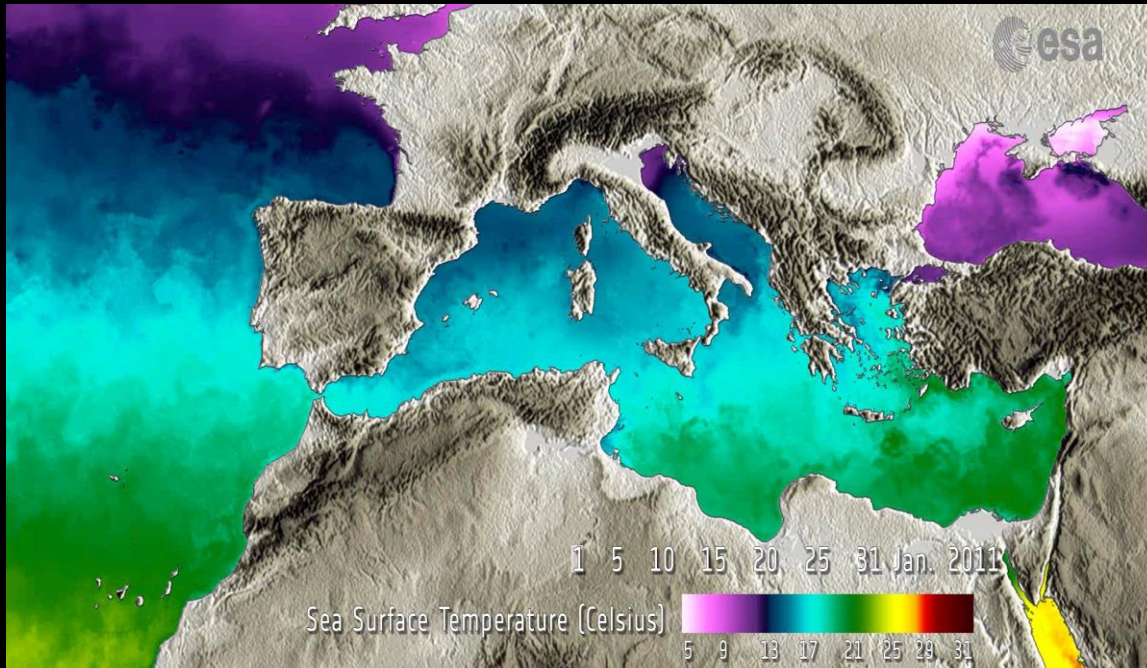


- "As many of you know it has been an interesting year for me! But, I am still with you all and I'm still worrying about the international collaboration on SST!
- I hope that GHRSSST will continue to develop clearly and serve as an example to other oceanographic and atmospheric communities of how to work together and grow.
- I'm sorry I can't be with everyone this year but in September "***I will be back***" - I hope to see some of you at the ESA Living Planet Symposium - to take the temperature of Science.
- I would have liked to visit Woods Hole for the first time but that can wait - Have a nice beer together in Woods Hole in the meantime."



# Thank you - any questions?

For more information <http://www.esa.int>







# ESA missions catalogue and ordering tool

## The EO-Help Desk



EOLI-SA: on-line multi-mission catalogue  
<http://earth.esa.int/EOLi/EOLi.html>

A screenshot of the EOLI website interface. The page has a blue header with the ESA logo and the text 'EOLI Screenshots'. Below the header, the main content area is divided into several sections: 'EOLI "ESA's Link to Earth Observation"', 'Contacts', 'Resources', and 'Download & Install'. The 'EOLI' section contains a description of the service and a list of satellite missions. The 'Contacts' section provides information on how to reach the Help Desk. The 'Resources' section lists various documents like a video tutorial, user manual, and quick guide. The 'Download & Install' section provides instructions on how to download and install the application on different operating systems.

**EOLI** Screenshots

### EOLI "ESA's Link to Earth Observation"

EOLI (Earth Observation Link) is the European Space Agency's client for Earth Observation Catalogue and Ordering Services.

Using EOLI, you can browse the metadata and preview images of Earth Observation data acquired by the satellites ENVISAT, ERS, Landsat, IKONOS, DMC, ALOS, SPOT, Kompsat, Proba, IRS, SCISAT.

Scientific Users with a registered account can order or download products of various processing levels.

#### Contacts

For any question on using EOLI, on the catalogue and ordering service, on registration, or any other EO related information, please contact our Help Desk:

**EO Helpdesk**

For comments and suggestions on the EOLI Client: [olivier.barois@esa.int](mailto:olivier.barois@esa.int)

#### Resources

- Video Tutorial (Requires Quicktime)
- User Manual [HTML] [PDF]
- Quick Guide [PDF]
- EOLI-SA procedure for data ordering [PDF]
- See how EOLI is linked to various Earth Observation resources. [PDF]

#### Download & Install

EOLI is a java application which is supported on all major platforms: Windows (95/98/ME/2000/NT/XP), Linux, MacOS X and other Unix systems. Java SE Runtime Environment 1.5 or later is required.

Windows	<a href="#">eoli-9.2.0-windows.msi</a>
MacOS X	<a href="#">eoli-9.2.0-macosx.dmg</a>
Linux	<a href="#">eoli-9.2.0-linux.deb</a> <a href="#">eoli-9.2.0-linux.rpm</a>
Generic Unix	<a href="#">eoli-9.2.0-unix-generic.tar</a>

**User interface is**  
[eohelp@eo.esa.int](mailto:eohelp@eo.esa.int)

**Help Desk:** handles users' requests for information and users' complaints

**Order Desk:** handles users' orders

**Documentation Desk:** distributes documentation

- 2 major axes of DUE actions:
  - **Preparing** for the large-scale production of global data sets in relation principally but not exclusively to the Essential Climate Variables.
  - **Reinforcing** the ESA contribution to the implementation of the International Environmental Conventions (UNFCCC, UNCCD, CBD, Ramsar and WHC).
- with an INNOVATION element, **allowing** innovative EO-based information services to be developed

Budget allocated for DUE contracts in EOEP-4	11.2 Meuro
• 10 innovator projects of 100 KEUR	1 Meuro
• 6 projects of 1.5 MEUR	9 MEuro
• 3 Offices 100 Keuro/year (GHRSSST, GOFC-LC, Biomass)	1.2 MEuro