

Developing the Sea Surface Temperature Virtual Constellation

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for

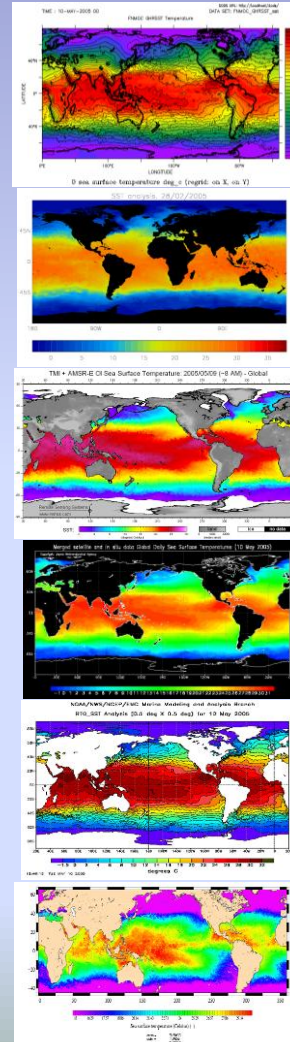
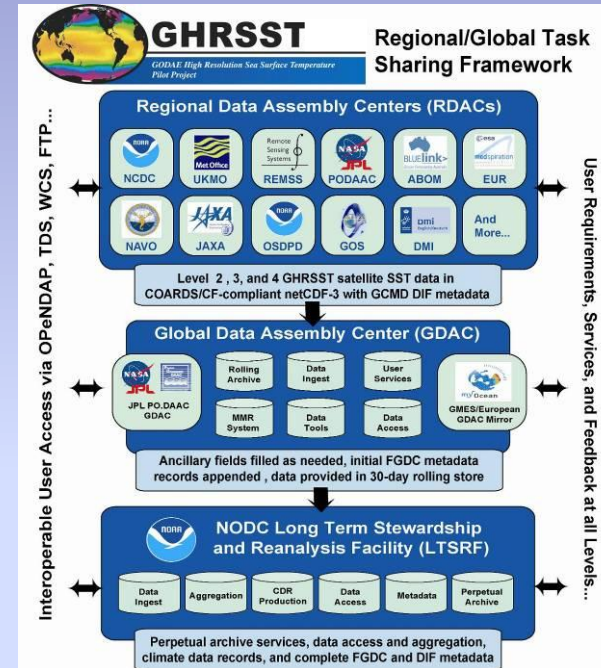
Drs. Craig Donlon, ESA and Kenneth S. Casey, NOAA

SST VC co-chairs

CEOS SST-VC: Implementation



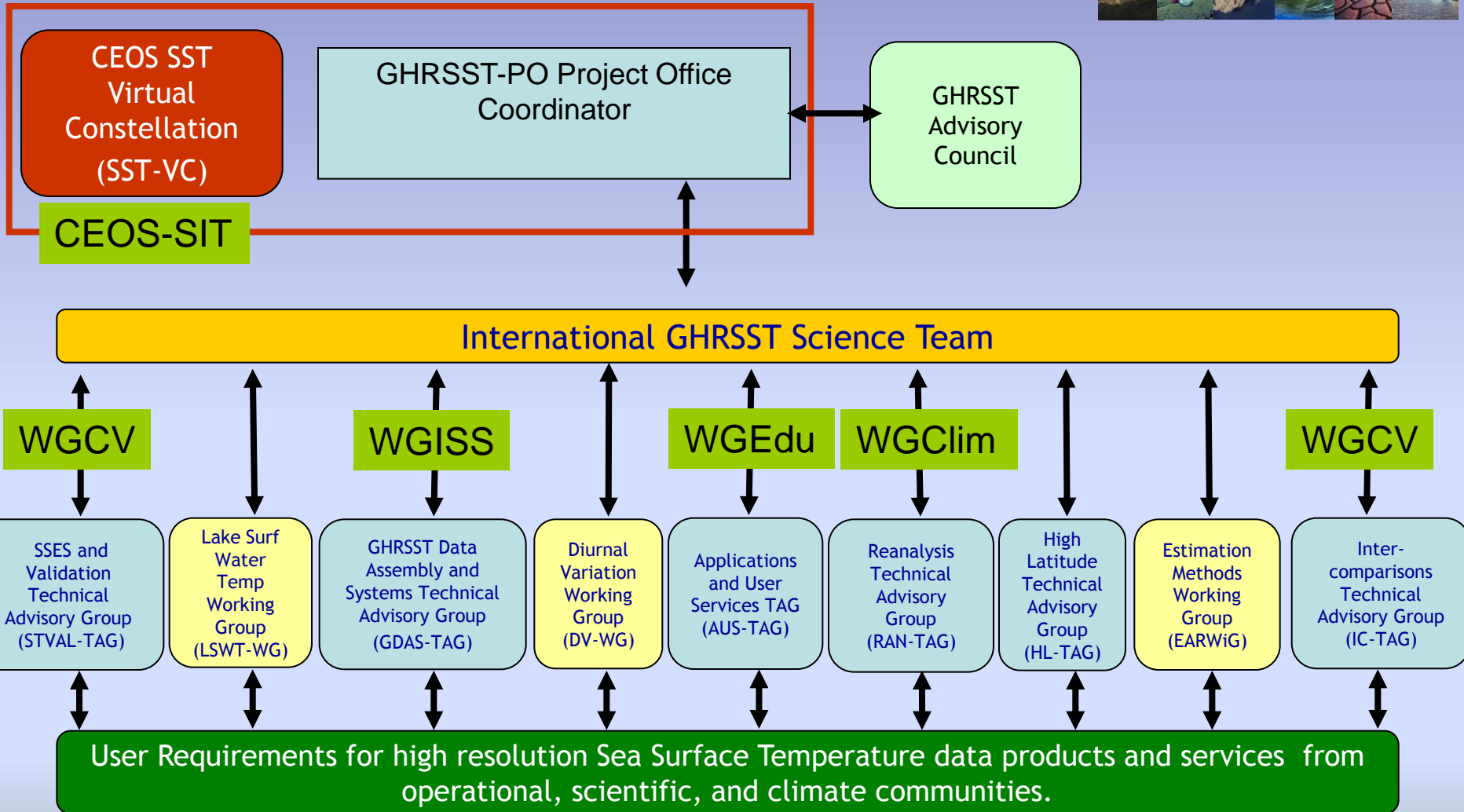
- We propose to implement the SST-VC building on the existing Group for High Resolution SST (GHRSSST) framework.
- Using this approach, the CEOS SST-VC has instant access to:
 - A baseline SST virtual constellation system of systems
 - Internationally agreed SST products, services and user outreach services
 - Initial consensus technical documentation for the constellation
 - A functional coordination mechanism active at the international level (science team, project office)



CEOS interface to GHRSSST activities

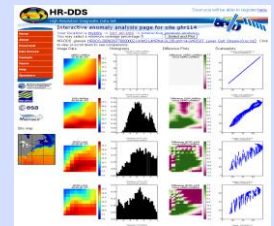
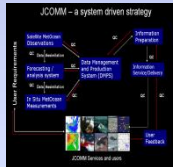
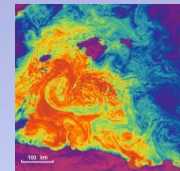


CEOS interface



Benefits of the proposed approach

- **Strengthen CEOS Agency SST activities** through better synergy and communication;
- Nurture a global framework and through CEOS, **encourage wider participation of all Agencies;**
- **Better SST product and service interoperability** building on the strengths of CEOS Agencies;
- Facilitate **better data access** and **product applications;**
- Provide **value for money** by capitalising on the investments already committed to GHRSSST;
- Allow a **rapid spin up of SST-VC** activities with minimal overhead.



Activity Status



- Short summary:
 - Initial Proposal accepted and Full Proposal submitted. Membership updated based on agency review.
 - Implementation plan completed by end of 2011



Activity Status

- Main 2011 Achievements/Outcomes:
 - GHRSSST Project Office funded and in place
 - GHRSSST Data Specification 2.0 in place
 - XII GHRSSST Science Team meeting held in June
 - SST VC participated in the CEOS WGClimate meeting
 - ESA SST_cci established, team at work
 - Pathfinder v5.2 SST Climate Data Record published in September
 - Contribution made to GCOS update of the Satellite supplement to the implementation plan
 - Outreach activities including website updates, new GHRSSST brochure, etc
 - Increasing use of GHRSSST data

SST-VC Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis



Strengths	Weakness
Existing and functioning International coordination through GHRSSST is established	Not all relevant Space Agencies are currently engaged in SST-VC/GHRSSST activities
Effective NRT data access to EO SST, mature long-term data archive and data stewardship services are in place that will form the basis for climate work.	<i>In situ</i> data are limited in their accuracy and thus their ability to demonstrate the performance and improve EO SST sensors to a climate standard. Better coordination is required.
Extensive scientific user community in place that are actively engaged with SST-VC/GHRSSST.	Sustained Passive Microwave SST continuity is fragile.
Extensive operational community in place and community is actively engaged with SST-VC/GHRSSST.	There is a lack of performance metrics for the SST constellation today. It is thus difficult to demonstrate the full scope of user uptake and applications of CEOS member capability.
Leadership of SST EO climate activities through the GHRSSST mechanism and CEOS WG-Climate including response to GCOS requirements in place.	While Agencies do provide EO SST uncertainty estimates according to a common specification their comparability and application is currently sub-optimal.
Systematic user feedback at all levels within the SST-VC/GHRSSST Regional/Global task sharing framework	Consolidated documentation of user feedback and queries is currently sub-optimal.
International data format, operations and development consensus documentation in place and actively maintained.	
International project office in place and fully functioning on the international stage.	
SST-VC/GHRSSST is actively addressing CEOS QA4EO requirements	
Demonstrated improvements in operational capability with clear societal benefit (e.g. weather forecast, ocean forecasting, climate services).	

SST-VC Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis



Opportunities	Threats
Better participation by CEOS Members having an EO SST capability in SST-VC activities.	Sustained funding for SST-VC/GHRSSST activities remains a threat.
Better coordination of in situ SST activities (e.g. new drifting buoys with accurate sensors for EO validation is now being piloted through GHRSSST) leading to EO improvements.	Loss of key people leading SST-VC/GHRSSST activities.
Coordinate the sustained provision of passive microwave SST data within the SST Constellation.	Loss of EO Passive microwave capability from the current SST constellation will lead to a degradation of SST services and data quality.
Develop more widespread awareness and utility of CEOS Member SST data sets leading to improved societal benefit (e.g. better weather and ocean forecasts)	
There is much work to be done to improve, through better re-processing and re-analysis activities, EO SST data holdings to address climate services.	
Using the new GEO work-plan, strengthen and further formalize contributions to GEO.	



Current SST-VC Membership

SST-VC Co-leads:

1. Kenneth S. Casey, National Oceanic and Atmospheric Administration (NOAA), USA
2. Craig Donlon, European Space Agency (ESA), Netherlands

SST-VC members:

1. Hans Bonekamp, European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), Germany
2. Andrew Bingham, Jet Propulsion Laboratory, National Aeronautics and Space Administration (NASA), USA
3. Misako Kachi, Japan Aerospace Exploration Agency (JAXA), Japan
4. Peter Minnett (GHRSSST ST Chair), University of Miami, USA.

Desired members for the SST-VC



We specifically identify the following Space Agencies and other entities whose participation could be solicited:

- Comision Nacional de Actividades Espaciales (CONAE), Argentina.
- Indian Space Research Organisation (ISRO)
- Korea Aerospace Research Institute (KARI)
- Chinese Academy of Space Technology (CAST)
- National Remote Sensing Center of China (NRSCC)
- National Satellite Meteorological Center/Chinese Meteorological Administration (NSMC/CMA)
- Russian Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET)
- Russian Aviation and Space Agency (Roskosmos)
- Global Climate Observing System (GCOS)
- Group for Earth Observation (GEO)
- **Other CEOS members with an interest in SST**



Near Future Plan

- Information on any decisions that need to be made at CEOS Plenary: **SST VC anticipated to be accepted during Plenary.**
- Additional Expected Achievements by the end of 2011: **SST VC Implementation Plan to be developed.**