Application Development for Operations (Oral)

Are SAR wave spectra from Sentinel-1A ready for operational use in the wave model MFWAM?
Lotfi Aouf (Département Marine et Océanographie Météo-France, France), Alice Dalphinet (Département Marine et Océanographie, Météo-France, France)

Improved Representation of Eddies in Fine Resolution Forecasting Systems Using Multi-Scale Data Assimilation of Satellite Altimetry
Zhijin Li (JPL, US)

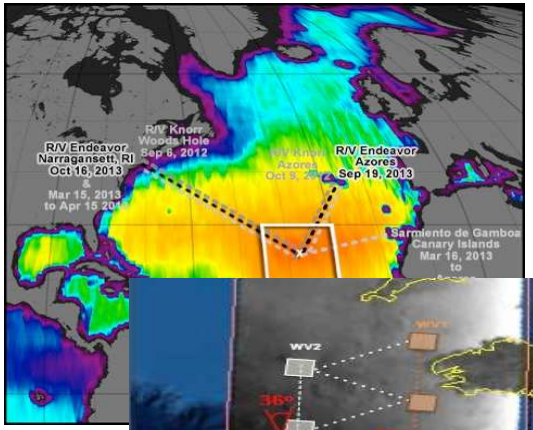
NOAA Operational Satellite Derived Oceanic Heat Content Products
Eileen Maturi (NOAA/NESDIS/STAR, US), David Donahue (NOAA/NESDIS/OSPO, US), Nick Shay (RSMAS - University of Miami, US), Jodi Brewster (RSMAS - University of Miami, US), Jerry Guo (MAXIMUS, US)

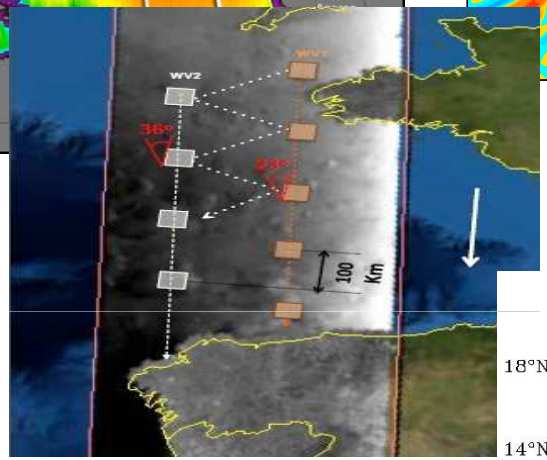
On the use of recent altimeter products in NCEP ocean forecast system for the Atlantic (RTOFS Atlantic)
Liyan Liu (NOAA, US), Carlos Lozano (NOAA, US), Avichal Mehra (NOAA, US), Dan Iredell (NOAA, US)

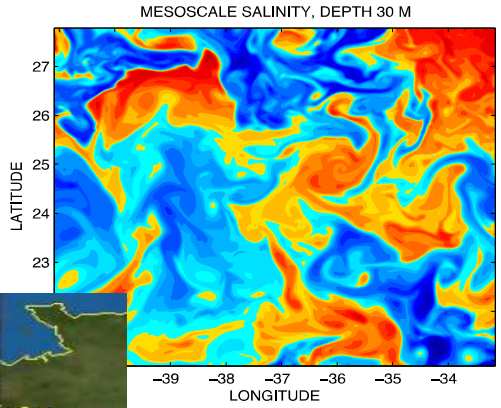
Operational Oceanography in support of the search for MH370
David Griffin (CSIRO, Australia)

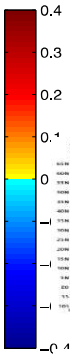
Predictability of marine debris motion, simulated with numerical models and diagnosed using oceanographic satellite data
Nikolai Maximenko (IPRC/SOEST, University of Hawaii, US), Jan Hafner (IPRC/SOEST, University of Hawaii, US), Amy MacFadyen (NOAA Emergency Response Division, US), Masafumi Kamachi (Meteorological Research Institute, Japan Meteorological Agency, Japan)

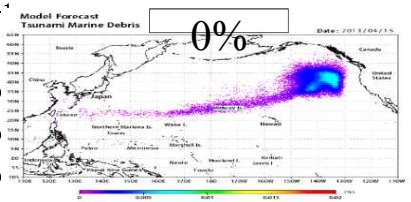
Applications to Operations

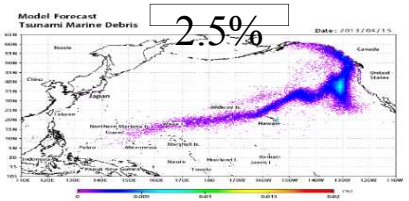


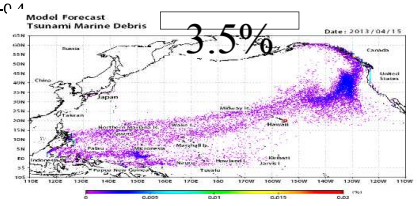


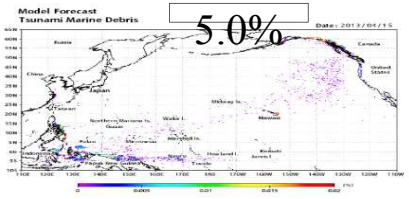


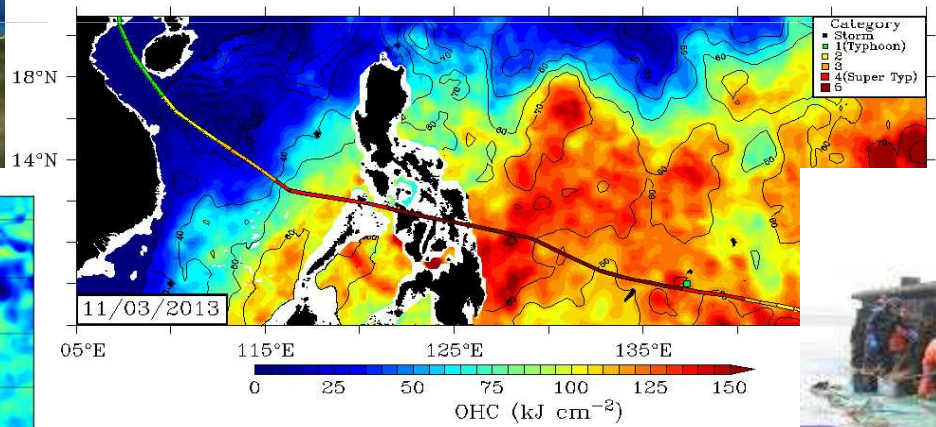


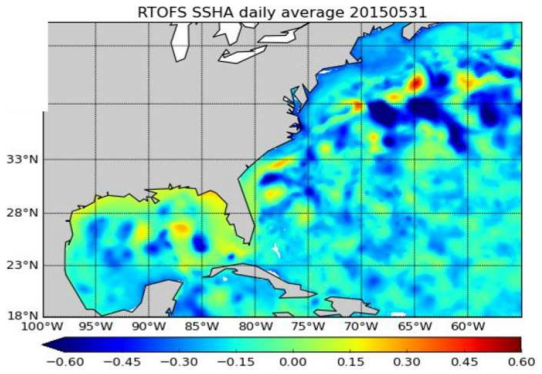












Application Development for Operations (Poster)

DUACS sea level products, a step beyond with Jason-3 and Sentinel-3
Yannice Faugere (CLS Space Oceanography Division), Isabelle Pujol (CLS), Frederic Briol (CLS), Claire Dufau (CLS), Antoine Delepoulle (CLS), Gerald Dibarboure (CLS), Damien Desjonquere (CNES), Nicolas Picot (CNES)

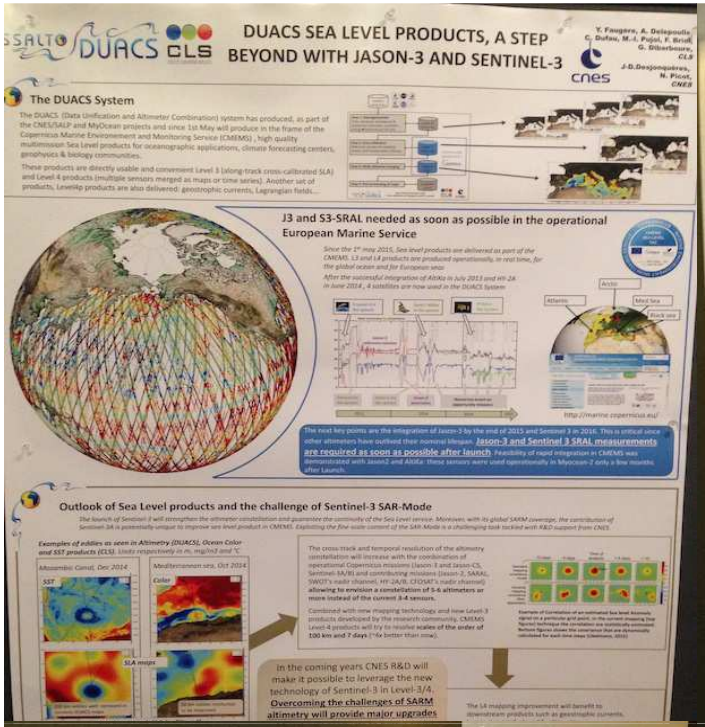
20 years of reprocessed Lyapunov exponents from altimetry available on Aviso
Marie Isabelle Pujol (CLS), Yannice Faugere (CLS), Francesco d'Ovidio (LOCEAN - IPSL), Rosemary Morrow (LEGOS), Jean-Damien Desjonquères (CNES), Nicolas Picot (CNES)

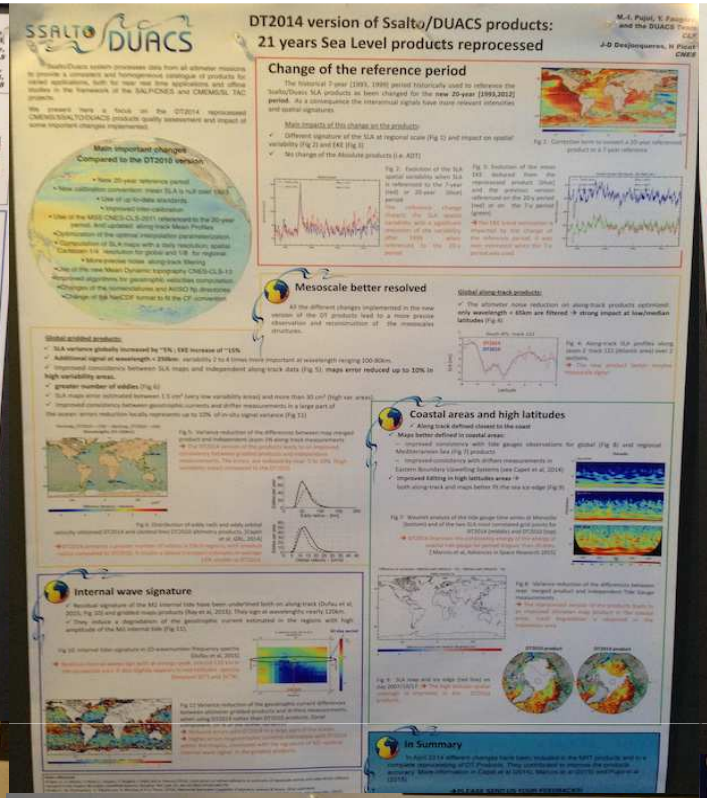
DT2014 version of Ssalto/DUACS products: 21 years Sea Level products reprocessed
Marie Isabelle Pujol (CLS), Yannice Faugere (CLS), Guillaume Taburet (CLS), Jean-Damien Desjonquères (CNES), Nicolas Picot (CNES)

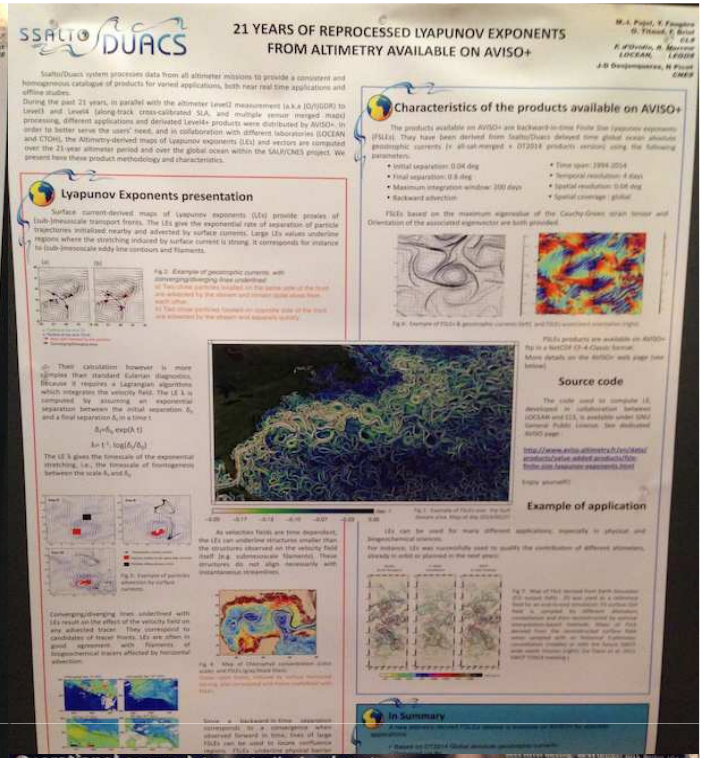
Validation of Cryosat-2 SAR Wind and Wave Products
Saleh Abdalla (European Centre for Medium-Range Weather Forecasts (ECMWF)), Salvatore Dinardo (Serco/ESRIN), Jérôme Benveniste (European Space Agency/ESRIN)

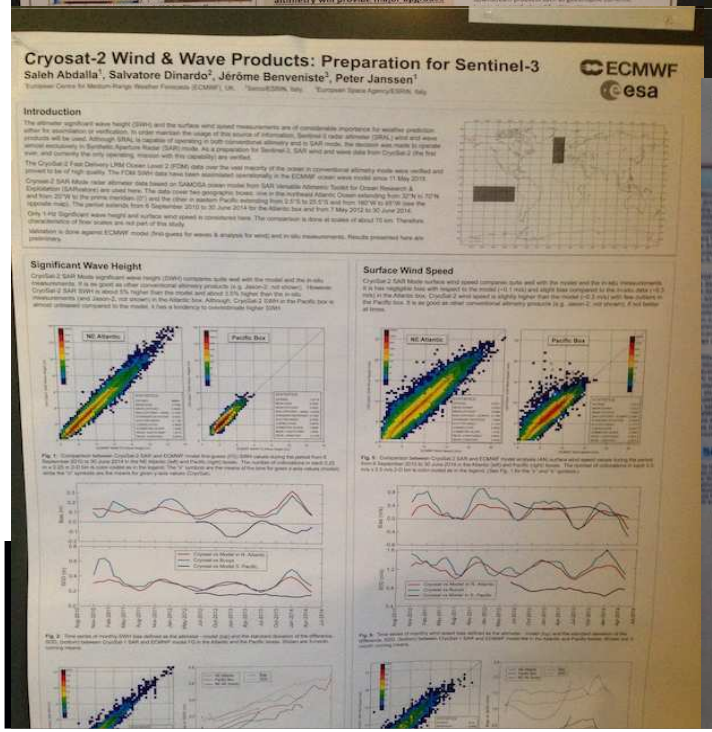
Satellite Altimetry Sea Surface Height Anomaly Processing at the Naval Oceanographic Office's Altimetry Data Fusion Center
Carolyn Cooper (Naval Oceanographic Office)

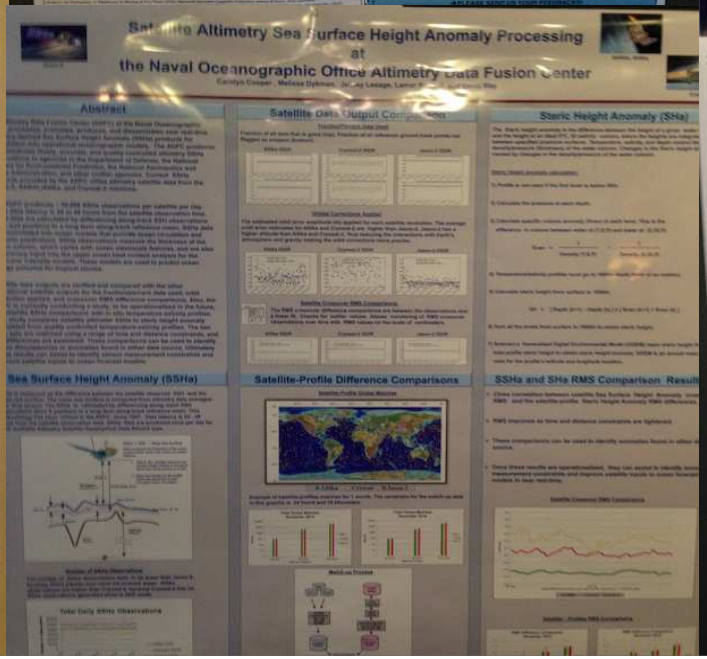
Operational ocean data assimilation/prediction system for the western North Pacific at JMA
Toshiyuki Sakurai (Japan Meteorological Agency), Mikitoshi Hirabara (Japan Meteorological Agency), Masakazu Higaki (Japan Meteorological Agency), Norihisa Usui (Meteorological Research Institute), Yosuke Fujii (Meteorological Research Institute), Hiroyuki Tsujino (Meteorological Research Institute)

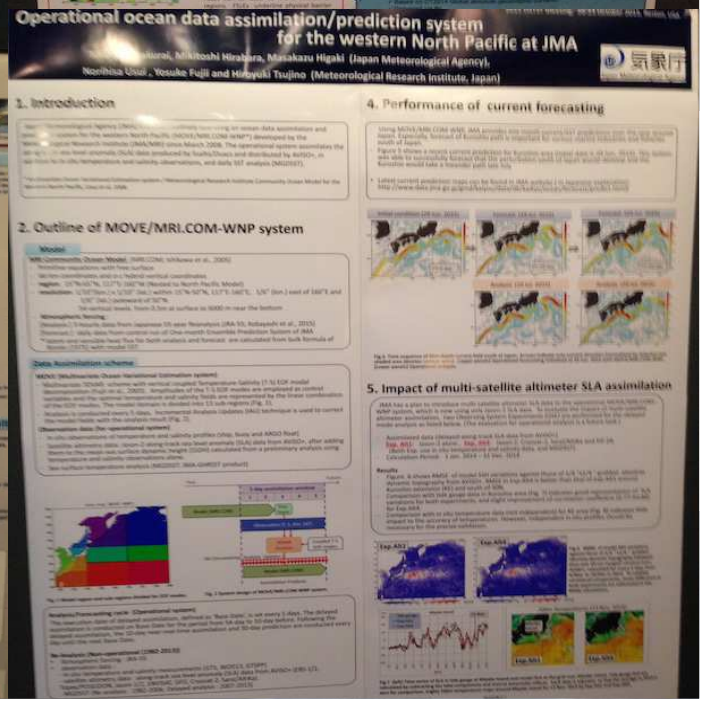

DUACS SEA LEVEL PRODUCTS, A STEP BEYOND WITH JASON-3 AND SENTINEL-3
Y. Faugère, A. Delepoulle, C. Dufau, M.-I. Pujol, F. Briol, G. Dibarboure, CLS
J-D.Desjonquères, N. Picot, CNES
The DUACS System
J3 and S3-SRAL needed as soon as possible in the operational European Marine Service
Outlook of Sea Level products and the challenge of Sentinel-3 SAR-Mode
In the coming years CNES R&D will make it possible to leverage the new technology of Sentinel-3 in Level-3/4. Overcoming the challenges of SARM altimetry will provide major upgrades


DT2014 version of Ssalto/DUACS products: 21 years Sea Level products reprocessed
Change of the reference period
Main important changes Compared to the DT2010 version
Mesoscale better resolved
Coastal areas and high latitudes
Internal wave signature
In Summary


21 YEARS OF REPROCESSED LYAPUNOV EXPONENTS FROM ALTIMETRY AVAILABLE ON AVISO+
Characteristics of the products available on AVISO+
Lyapunov Exponents presentation
Source code
Example of application
In Summary


Cryosat-2 Wind & Wave Products: Preparation for Sentinel-3
Saleh Abdalla, Salvatore Dinardo, Jérôme Benveniste, Peter Janssen
Introduction
Significant Wave Height
Surface Wind Speed


Satellite Altimetry Sea Surface Height Anomaly Processing at the Naval Oceanographic Office Altimetry Data Fusion Center
Abstract
Satellite Data Output Comparisons
Steric Height Anomaly (SHa)
Sea Surface Height Anomaly (SSHa)
Satellite-Profile Difference Comparisons
SSHa and SHa RMS Comparison Results


Operational ocean data assimilation/prediction system for the western North Pacific at JMA
1. Introduction
2. Outline of MOVE/MRI.COM-WNP system
4. Performance of current forecasting
5. Impact of multi-satellite altimeter SLA assimilation

APOP/NRT Round Table

1. Jason-2 Extension of Life

- For operations the best scenario is to stay on interleaved track as long as possible.
- Geodetic data may benefit NRT SWOT thru improved MSS. By how much do we expect J-2 EoL to contribute to reducing MSS errors?
- In terms of orbit selection, we endorse G. Dibarboure's selection.
- When we have 6 operational satellites, the incremental benefit of Jason-2 will be less, but this will still not be oversampling the ocean.

2. **Altika Drifting Orbit**

- AltiKa has a bigger influence on ocean forecasts than J2 (perhaps even J2+J3).
- Drifting orbit will be sub-optimal, but would be desirable if it ensures significantly longer mission.
- When it's time to move, try to optimize the drifting orbit to benefit the MSS.
- Is there any possibility that the fuel will be consumed prematurely due to station keeping?
- If possible maintain the +/-1km orbit until Jason-3 is launched.

3. **Other Issues**

- Jason-3 Launch Delay
  - Sooner we get Jason-2 into interleaved orbit the better.
  - It isn't a matter of bridging a gap: we will lose the operational capability all together.
  - We are living in fear of a losing ocean forecasting: J2 beyond design life; SARAL has health issues; C-2 sampling isn't sufficient for ocean predictions.
  - However, do NOT launch Jason-3 until it is absolutely safe to do so!
- COP21 Recommendation
  - We support the altimetry for climate recommendation, but recommend stressing regional as well as global sea level rise, and understanding extreme events.
  - We should also be putting forward recommendations to operational satellite group, such as WMO, IOC,…
- We need to reduce data latency from current 2.5 hours to ~1 hour for wind/wave applications.

Back to the Future…

- More operational centers than in prior years: JMA, NAVO, NOAA, Meteo-France, ECMWF
- 100+ participants in oral session
- New operational products: OHC from NOAA; Lyapunov exponents from DUACS
- Real-world applications: MH370 & tsunami debris
- We are pushing envelope with operational models to submesoscale
- Synergy with altimetry from Sentinel-3 & Jason-2/3 with SAR wave information from Sentinel-1
- Expand operational outreach & education for users