Summary of SMOS ocean user meeting at EGU 2012

At the recent EGU 2012 conference ESA together with lead scientists in the field organised a SMOS ocean user meeting. The aim of the meeting was twofold (see agenda in the Annex), namely to

- Inform and prepare SMOS sea surface salinity (SSS) data users for the content, quality and the caveats of the data available from the operational processing and the recent reprocessing of SMOS level 2 SSS data and to raise awareness for the present issues in the level 1 brightness temperatures and how they progress to level 2 SSS data; and
- To gather detailed feedback from present data users across various areas of interest.

The meeting was attended by approximately 30 to 40 people. The presentations are available on www.earth.esa.int/smos (link to “Ocean user meeting EGU 2012” on right column) and contain detailed recommendations. This report aims at providing a summary of the main recommendations.

Feedback from data users (from presentations)

Users welcomed the briefing provided on the quality of the SMOS level 1 and level 2 SSS data provided by ESA. Most users have also already used Level 3 SSS for their research projects and have generally recommended to use this data for oceanographic exploitation. The data users presenting their results showed a wide spectrum of applications and commented positively on the scientific opportunities that the availability and content of SMOS level 2 and 3 data provides (e.g. SSS freshening; hurricane tracking; studies on river discharge, ocean color, SSS in the Amazon Plume, investigations into seasonal dynamics of SSS etc). They recognized the improved data quality of successive versions of the level 1 and level 2 SSS data. The following recommendations were made:

1. Improve information flow/support to and interaction with SMOS SSS data users, in particular
    a. Make information about changes/improvements of the processors as well as data content (e.g. usage of flags) for analyses and validation easily accessible, also for non-expert users;
    b. Contact with expert labs and ESA through regular science meetings is absolutely essential (hence this meeting was very welcome and should be repeated);
    c. Rethink the data format (users prefer netcdf) or provide software to read data;
    d. Provide tools to educate potential new users of SMOS data;

2. Scientists need consistent time series of SMOS SSS to interpret temporal and spatial changes of SMOS SSS and diagnose anomalies; frequent processor changes/updates render temporal inter-comparisons difficult.
3. For data assimilation applications:
    a. Need for a SMOS NRT ocean product? Level 1 ocean or Level 2 SSS?
    b. Low bias data, with an accuracy of ~1 PSU within 6 hours of sensing and an attached error estimate for each data point are requested (but NB: present limitations in assimilating SSS data and available models);
    c. Improvements in assimilating SMOS SSS data were found in regions far from coasts or RFI sources, unrealistic results are due to the lack of data, or in regions where the data was not flagged according to low data quality, i.e. improve flagging (CSIC).
4. For bio-geochemical applications: even though SSS data for the Amazon, Orinoco etc are already supporting interesting results, other river influenced areas such the Mississippi need to be better represented, i.e. improve representation of coastal areas.
5. Encourage multi-sensor studies, beyond the use of (only) SMOS data.
6. Continue to collaborate with Aquarius mission.

ANNEX

Agenda for ocean user meeting at EGU 2012, Vienna, Austria
Thursday 26 April 8:30 – 12:00, room SM1

Topic	Speaker	Time
Briefing to ocean salinity data users		
Introduction and scope of this meeting	Susanne Mecklenburg (ESA)	5 min
SMOS MIRAS instrument performance and status of level 1 data processing	Manuel Martin-Neira (ESA)	20 min
Status of the level 2 ocean salinity retrieval	Jordi Font (ICM-CSIC)/ Jacqueline Boutin (LOCEAN)/ Nicolas Reul (IFREMER)	15 min
Level 3 and 4 data products based on SMOS data	Nicolas Reul (IFREMER) for CATDS Antonio Turiel (ICM-CSIC) for CP34	20 min
Use of SMOS ocean salinity data for other user communities: introduction to the user feedback	Nicolas Reul (IFREMER)	10 min
User feedback on		
Global Level 3 SMOS ocean salinity assessment • Global Level 3 Ocean Salinity from SMOS: The NOC Experience • Validation of a new SMOS salinity L3 product	Ch. Gommenginger (NOC, UK) M.S.Martins, J.Köhler, D.Stammer (University of Hamburg)	10-15 min per presentation
Data assimilation • Proposed use of satellite salinity data in the FOAM ocean forecasting system: validation and data assimilation • Surface salinity data to validate ocean simulations and data assimilation experiments in the North-eastern Atlantic Ocean • Use of SMOS-derived surface salinity products to improve the quality of ocean estimates obtained by Mercator Océan using assimilative ocean models	N. McConnell (UK Metoffice) J. Ballabrera (UTM-CSIC) E. Dombrowsky (Mercator Océan)	
Bio-geochemical use • Spatial and temporal coherence between Amazon River discharge, salinity, ocean color variables in western tropical Atlantic surface waters	J. Salisbury and D. Vandemark (UNH), N. Reul and B. Chapron (IFREMER)	
Salinity retrieval in warm waters • Seasonal cycle of the low-salinity pool off Panama, Eastern Pacific, from in situ and SMOS data • Rain impact on SMOS SSS intertropical convergence zone of the Pacific: SOLAS	G. Alory (LEGOS) J.Boutin (LOCEAN)	
Summary discussion		15 min