



Summary of COASTALT Open Workshop (Tue 21 June 2011 @ ESRIN, Frascati, Italy)

Chair: J. Benveniste (ESA/ESRIN, COASTALT Scientific Officer), P. Cipollini (NOC, COASTALT Project Manager),

Participants: S. Barbosa (Univ. Lisbon), F. Birol (LEGOS, via teleconf), M. Caparrini (Starlab), P. Challenor (NOC), R. Cullen (ESA/ESTEC), S. Dinardo (ESA/ESRIN), L. Fenoglio-Marc (ITG Darmstadt), M. J. Fernandes (Univ. Porto), J. Gomez-Enri (Univ. Cadiz), V. Guidetti (ESA/ESRIN), A. Horvath (ESA/ESRIN), B. M. Lucas (ESA/ESRIN), C. Martin-Puig (Starlab), R. Morrow (LEGOS, via teleconf), P.-P. Mathieu (ESA/ESRIN), A. Nunes (Univ. Porto), S. Vignudelli (CNR), P. Woodworth (NOC)

Workshop started at 9:10 CEST. Paolo Cipollini introduced the workshop saying its purpose was to showcase COASTALT results, issue and discuss ideas for future work, and discuss how to translate the technical work done into applications. It is expected that these issues will also be dealt with at the 5th Coastal Altimetry Workshop in San Diego (16-18 October) and that COASTALT work will take a prominent role in the workshop.

Paolo then showed a message of wishes from Remko Scharroo in which he says that "*coastal altimetry is (maybe next to sea level rise) the most challenging field in altimetry at the moment*" - which is important to support further R&D in this area.

Then Paolo gave an Executive summary presentation of COASTALT, starting from the rationale for Coastal Altimetry, going through some results and closing with a list of draft recommendations [the presentation is available on the COASTALT web site]

In particular on the recommendation about further studies of the SSB, Peter Challenor commented that the algorithms were derived over limited regions, it is expected the coastal wind to affect σ_0 in ways different from open ocean, therefore it is probably necessary to understand the relationship between σ_0 and wind (from next generation of re-trackers and scatterometers) first, then move to SSB.

Rosemary Morrow (in teleconference from LEGOS) agreed with the summary and all recommendations; in particular she commented that we need to rediscuss retracking at next OSTST meeting, as there are different communities working on retracking and it is necessary to bring them together; It is also required to promote coastal applications using multi-mission coastal altimetry using the improved products (e.g. PISTACH for Jason)

CTOH worked a lot with HF corrections and tides - how we go further to continue development of corrections?

Rosemary and Phil Woodworth made a few comments about filtering. DORIS ionospheric correction for instance is filtered at ~200 km. Phil said in the open sea you can filter at those scales. But in the coastal zone how is it best to filter? Further investigation is needed (hence they agree on the recommendation)

In the next few days it will be appropriate to have some coordination between the organizers of the 5CA-WS and those of OSTST to make sure all these things (like retrackers intercalibration, for instance) are discussed in a proficient way.

Luciana Fenoglio of IPG-TU Darmstadt asked a clarification on "users" vs "expert users". Paolo Cipollini commented that one needs to cater for both groups and maintain a user base as wide as possible: on one side to provide easy to use 'standard' products, but on the other same time

one wants to attract expert users (for instance a developer of retrackerers who can test his/her own retracker) and provide them with more technical information. It is a continuous process: when an improvement in the expert group is consolidated it can migrate to a wider dissemination product or even better to the standard products.

Joana Fernandes of Univ. of Porto then presented one of the highlights from COASTALT, the GPD Wet Tropo correction, and this was briefly discussed after Joana's presentation, in particular its applicability to past missions and what can be done for its full validation.

Jesus Gomez-Enri of Univ. of Cadiz presented another COASTALT highlight, i.e. the work on bright targets around Tuscan Islands. Rob Cullen of ESA/ESTEC asked for some technical details on the waveforms presented. It is clear that this work calls for more sophisticated retrackerers, giving a better estimation of geophysical parameters. One parameter to gauge the quality of the estimation is the goodness of fit that is available in the CGDRs

Cristina Martin-Puig of Starlab illustrated the work done by Starlab on the ionospheric correction which led to the development of a new correction, based on models + GPS measurements and adopting a variable effective height in the computation.

The rest of the workshop dealt with the new initiatives following (and even stemming from) COASTALT. Stefano Vignudelli of CNR presented the extension of coastal altimetry to the Indonesian Seas with the pilot project RESELECSEA funded by Asia-Pacific Network for Global Change Research (APN) Agency. There is a huge network of Tide Gauges but it will be important to assess their quality. This is also apparent from some other results in the area, which were presented by Luciana Fenoglio who has been looking for long-term characteristic of sea level change in the Indonesian region. Due to lack of good-quality tide gauge data, the use of satellite altimetry data is necessary (and promising) for determination of the linear-term of sea level change at the coast in Indonesia region, but advanced retracking and data screening methods are needed.

Finally Paolo Cipollini gave a presentation on the new ESA-funded eSurge project on storm surges, and on how eSurge will inherit some legacy from COASTALT. eSurge is managed on ESA's side by the Data User Element (DUE), which is run from the same division where Jérôme Benveniste's R&D section belongs. The project is led by Logica UK, with the National Oceanography Centre (NOC), the Danish Meteorological Institute (DMI), the Dutch KNMI and the Irish Coastal and Marine Resources Centre (CMRC) as partners. DUE projects represent the transition from R&D to applications and are run in close cooperation with users: eSurge is no exception, so users will help to define key requirements. eSurge includes a database of Earth Observation data and in situ data from multiple sources for each of the 'surge' events' that it will catalogue, called SEARS; the main purpose of the project is to show that EO data improve the monitoring and forecasting of the surges when assimilated into models, like those run by the National Oceanography Centre and the Danish Meteorological Institute. The eSurge work will include also the generation of dedicated coastal altimetry products, via a coastal altimetry processor that is the extension of the COASTALT processor to other missions and regions. So eSurge has a huge demonstrative value for coastal altimetry, as one of its first strategic



applications. ESA and CNR are currently negotiation a parallel project called “eSurge Venice”, to do the same kind of study over the Northern Adriatic, and Stefano Vignudelli will lead the coastal altimetry effort in that.

Paolo also reported that CNES is about to re-process PISTACH coastal altimeter data in the Agulhas region, which is now recognized as one of the key areas for the development of coastal altimetry, thanks to the availability of good in situ data from the ACT array managed by Lisa Beal, Univ. Miami. The idea is to establish a relationship between altimetry and current meter measurements of Agulhas Current Transport over the three years of the ACT array and then use it to go back 20 years using altimetry.

Jérôme Benveniste made the closing remarks. He and Paolo will sift through the results and materials from COASTALT, including the recommendations, to put together a good web story and a final brochure. It is clear that COASTALT has had a great role in catalysing the community, and this is for instance shown by the increasing number of participants to the coastal altimetry workshops. Future activities will have to include more studies on specific retrackers, multi-instrument approach, more on calibration and validation, including international cooperation to establish protocols for validation, and perhaps including new calibration sites like estuaries which are particularly sensitive to climate change.

Jérôme and Paolo thanked everyone for attending and closed the workshop at 13:25 CEST.