



Minutes of third Review meeting

Project number

313238

Project title

LOTUS- Preparing Land and Ocean Take Up from Sentinel-3

Call (Part) identifier

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1	2015-04-30	All	Draft submitted to participants	Per Knudsen
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LOTUS Third Review Meeting, 29 April 2015, 9:30-16:30.

DHI

Agern Allé 5

DK-2970 Hørsholm

Denmark

Meeting room: TBA

Draft Agenda:

Introductory session (9:30-9:45):

1. Opening and welcome (REA+DTU)
2. Practical information (DHI)
3. Round-table (all)

Project overview and status (9:45-10:30)

4. LOTUS project overview (DTU)
 - a. Status (DTU)
 - b. Follow-ups from RV2 (DTU & REA)

Coffee break (10:30-10:45)

Work packages – progress and status (10:45-12:30):

5. WP1 Processing SRAL SAR mode waveforms over ocean (STARLAB) (15' total)
 - a. Overall objectives and results (STARLAB)
6. WP2 Processing SRAL SAR mode waveforms over land (DTU) (15' total)
 - a. Overall objectives and results (DTU)
7. WP3 Definition of new data products and processing chains (CLS) (30' total)
 - a. Overall objectives and status (CLS)
 - b. Task 3.1: Definition and design of ocean data products (CLS)
 - c. Task 3.2: Definition and design of land data products (CLS)
 - d. Task 3.3: Specific products dedicated to applications (CLS)
 - e. Task 3.4: Data product formats and dissemination services (CLS, DTU)
8. WP4 Production of demo data and assessment (DTU) (45' total)
 - a. Overall objectives, work plan and status (DTU)
 - b. Task 4.1 Processing of Cryosat-2 ocean data. (STARLAB with input from CLS and DTU)
 - c. Task 4.2 Processing of Cryosat-2 land data. (DTU with input from UNEW and STARLAB)
 - d. Task 4.3 Preparation of prototype data sets (CLS)

- e. Task 4.4 Development of multi-satellite and in-situ validation and long term referencing data set (STARLAB and DTU)
- f. Task 4.5 Assessment of Cryosat-2 ocean prototype data (DHI and DTU)
- g. Task 4.6 Assessment of Cryosat-2 land prototype data (STARLAB and DTU)

Lunch break (12:30-13:30)

Work packages – progress and status (13:30-15:00):

- 9. WP5 Applications of new GMES data in value-adding ocean services (DHI) (40' total)
 - a. Overall objectives, work plan and status (DHI)
 - b. Task 5.1 Improved wave and wind design data (DHI and CLS)
 - c. Task 5.2 Characterization of coastal scale hydrodynamics (DHI and DTU)
 - d. Task 5.3 New current design and forecast data (DHI, DTU, CLS, and Starlab)
 - e. Task 5.5 Climate change services (CLS and DHI)

- 10. WP6 Applications of new GMES data in value-adding land services (STARLAB) (40' total)
 - a. Overall objectives, work plan and status (STARLAB)
 - b. Task 6.1 Monitoring river and Lake levels (Starlab and CLS)
 - c. Task 6.2 Monitoring snow depth (Starlab)
 - d. Task 6.3 Monitoring of Soil moisture (Starlab)
 - e. Task 6.4: Hydrological modelling and data assimilation (DTU, DHI and Starlab)

Coffee break (15:00-15:15)

Impact of the project (15:15-16:00):

- 11. WP7 Dissemination and exploitation (DTU)
 - a. Overall objectives, work plan and status (DTU)
 - b. Task 7.1 Project web site (DTU)
 - c. Task 7.2 GMES land and ocean (STARLAB)
 - d. Task 7.3 SME exploitation (DHI)
 - a. *Potential areas of application for Venice protection by Giovanni Cecconi*
 - e. Task 7.4 Climate Change monitoring (DTU)
 - f. Task 7.5 Security and emergency management (CLS)

Project management session (16:00-16:15):

- 12. WP8 Management (DTU)
 - a. Overall objectives, work plan and status (DTU)

Closing session (16:15-16:30):

- 13. AOB
- 14. Review of action items
- 15. Next meeting
- 16. End of meeting

Participants:

REA:

Inés T. Marín Moreno
Stefano Vignudelli (REA Reviewer)

Advisory board:

Giovanni Cecconi (THETIS)
Remko Scharroo (EUMETSAT)

MyOcean Sea Level TAC:

Claire Dufau (CLS)

CLS:

Pierre Thibaut
Thomas Moreau

DHI:

Henrik Madsen
Marc-Etienne Ridler
Ole S. Petersen
Patrick Dich Grode
Peter Nygaard Godiksen

DTU:

Heidi Villadsen
Karina Nielsen
Ole B. Andersen
Per Knudsen
Peter Bauer-Gottwein
Raphael Schneider

Starlab:

Antonio Reppucci
Camille Pelloquin

UNEW:

Philippa Berry (Skype)

Minutes:

Project overview and status

PK gave an overview of the project and its general status.

The status of the project is that the development of the SAR processing in WP1 and WP2 and the processing of demo data in WP3 and WP4 are completed. There are still some issues with five WP3 and WP4 deliverables, which should be discussed at this meeting. At the RV2 the project was considered to be 4-6 months delayed. This is still the case with respect to the full completion of this part of the project. Again it should be noted that the use of SAR altimetry for soil moisture and snow depth estimation have been found to be little mature. However, the compilation of preliminary demo data sets has made it possible to initiate the activities in WP5 and WP6 earlier.

Currently, the activities of WP5 and WP6 on the development of applications of SAR altimetry in both ocean and land services are on-going and there is a constructive interaction between partners. WP7 on exploitation and dissemination are starting up. Results from the project were presented at the last EGU meeting (2015). We have a special focus on dissemination towards Copernicus service developments and SMEs in the down-stream sector.

The status with respect to deliverables is that 18 out of 26 due deliverables have been completed and submitted at the Participants Portal. It should be noted that five out of the eight missing deliverables might be completed when minor issues are clarified. This will be discussed later at the meeting.

The status with respect to the milestones is that nine out of 14 milestones are met. Again two out of the missing five milestones will be met when the minor issues are clarified.

The actual total cost is around 34% below the budget.

All action items from RV2 have been completed. Subsequent to the clarification that for changing the structure of WP6 a contract amendment was necessary, the plans were given up as defined in the actual DOW.

At this stage, the project appears to be only 1-2 months delayed. All deliverables will be completed and all milestones will be met according to the original time schedule.

WP1 Processing SRAL SAR mode waveforms over ocean

Camille gave an overview of the work package including objectives and goals. Status is that it is completed. During the project the various waveforms characteristic for the areas in focus were studied and different strategies for re-tracking investigated.

Remko was interested in if effort was used to optimize the processing time. This is however not an issue in this project since only small data sets in selected geographical regions and over limited time periods are been produced (Thomas).

WP2 Processing SRAL SAR mode waveforms over land

Ole BA gave an overview of the WP 2 including its objectives and goals. Status is that it is completed.

During the project the various waveforms characteristic for the areas in focus were studied and different strategies for retracking investigated.

It should be noted that both soil moisture and (especially) snow depth application are very much at the experimental level and still very little mature for operational services.

WP3 Definition of new data products and processing chains

Thomas gave an overview of the WP 3 including its objectives and goals. Status is that it is completed; however there are a few issues w.r.t. the deliverables.

Task 3.1: Definition and design of ocean data products:

This task is completed.

Task 3.2: Definition and design of land data products:

This task is also completed together with deliverable D3.1, which describes the results of Task 3.1 and 3.2.

Task 3.3 Specific products dedicated to applications:

Thomas also presented results from the wind-wave modelling as well as the Sea State Bias correction for SARM. The along-track sampling frequency was studied – both for SLA (sea level anomalies), wave heights and wind speed.

Task 3.4: Data product formats and dissemination services:

Thomas presented the cloud hosting system for the storage of projects prototype data, which is close to operational. This system should host the GDR product and higher level products

Task 3.5 Specification and definition of processing chains.

The processing has been validated using two years of Cryosat-2 – most results presented in WP4. Also checked star-tracker pitch bias – show very good agreement between waveform modelling and star tracker information.

Deliverables:

- D3.1 Delivered
- D3.2 Pending because input regarding level 3 and 4 depends on the progress in WP5 and WP6.

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- D3.4 Delivered

Actions:

It was decided to focus the deliverables D3.2 and D3.3 on level-1 and -2 only to avoid the dependencies so that the deliverables may be completed very soon.

- Action: CLS must complete D3.2 and D3.3 ASAP (22 May 2015) with input from DTU (Ole and Karina) on the polar and river&lakes processing chains.

Comments:

Giovanni: Will data be processed at real time? Thomas: Only the prototype data sets will be available in this project.

Inés: The description of the level 3 and 4 data products should be included in the final report.

WP4 Production of demo data and assessment

Ole BA presented an overview of the status and results of the WP4.

Task 4.1 Processing of Cryosat-2 ocean data:

Prototype data set at specified areas for the three subthemes open, coastal, and polar ocean have been processed.

Task 4.2 Processing of Cryosat-2 land data:

Prototype data set at specified areas for the three subthemes River and Lake, soil moisture, and snow depth have been processed. Karina has updated the processing algorithm for River and Lake to account for a potential slope on the water surface. This has proven to improve the stability of the re-tracked water levels.

Philippa presented her results on Soil moisture modelling in the Simpson, Tenere and Kalahari deserts. All dry earth models have been enhanced and re-calibrated. Soil moisture products have been derived for 2013 from Cryosat-2 LRM mode data to form the validation dataset; this will be validated using Jason-2 derived soil moisture data currently being processed. A Cryosat-2 SAR track was tested over the Gibson Desert in Australia. Conclusions are that the technique works with LRM data and will work with SAR mode data.

Antonio presented results on the Snow depth estimation. It was decided to use Envisat because repeat track backscatter data are needed. Results show that the method works – it is noisy but there is a clear dependency between backscatter and snow depth.

Task 4.3 Preparation of prototype data sets

Thomas described Task 4.3 on the processing/preparations of demo data.

Task 4.4 Development of multi-satellite and in-situ validation and long term referencing data set

Ole BA reported on status of the assessment. The compilation of validation data is being completed. Those data will primarily consist of data from other altimeter missions such as JASON, AltiKa, and Envisat. GNSS-R data could not be provided. Gauge data for rivers and lakes will only be described. Since river and lake gauges in general are restricted, these will not be made publically available.

Task 4.5 Assessment of Cryosat-2 ocean prototype data

Patrick presented results from the assessment of wave and wind data in the North Sea. It was suggested to associate error/confidence measures with the data. Also it was suggested to study the development of the parameters going from offshore towards the coast. Also, the correlations may be utilised in the retracking/estimation.

Ole BA presented results from an assessment of sea level and wave height data obtained using different re-trackers and SAR data from one track in the North Sea. The results that much more information may be extracted near the coast – even in estuaries like the Waden Sea. Care should be taken, though, that the reflection point might be located far from the nadir point.

Ole BA also showed results from the Polar ocean near Svalbard. They showed that the physical conditions assumed by the samosa retracker may not hold in the polar ocean, hence, it is recommended to apply the empirical retracker. Pierre T. mentioned that this processing could introduce discontinuities between deep ocean (processed with a physical retracker) and polar ocean (processed with an empirical retracker).

Thomas presented results from an assessment of two years of SSH and SWH from Cryosat and a cross-calibration against Jason derived data in open ocean. The results show very good agreement. PLRM and LRM show seamless transition, and PLRM and SARM are in very good agreement.

Task 4.6 Assessment of Cryosat-2 land prototype data

Karina presented results from small Danish lakes. The precision of the along-track mean water level is just a few cm, which is approximately one order of magnitude better than Envisat. Estimated water levels based on CryoSat was compared with gauge data. After bias correcting the data and agreement within a few cm was found.

Actions:

- Action: Starlab must complete D4.1 ASAP (15 May 2015 TBC)
- Action: DTU must complete D4.2 ASAP (15 May 2015 TBC)
- Action: CLS must complete D4.3 ASAP (22 May 2015 TBC)
- Action: DTU and DHI must send contributions regarding the validation to Starlab for D4.5 ASAP (15 May 2015 TBC)
- Action: Starlab must compile available validation data sets and compile short description for completing D4.4 ASAP (1 June 2015 TBC)

Comments:

Ole BA raised the question on what is required in terms of reporting on the data product deliverables. It was agreed to compile a short description of each data set together with info on how access it. The D4.2 draft document that has been submitted is a very good example on how the reporting may be done.

Giovanni: Wind driven slopes over larger lakes should be investigated. The effect could be significant in shallow lakes.

WP5 Applications of new GMES data in value-adding ocean services

Ole S. presented the objectives and goals of the WP.

Task 5.1 Improved wave and wind design data

Patrick presented work done regarding improved detection and modelling. Results for both waves and winds in the North Sea were presented. A comparison of Jason and Cryosat respectively, with models showed very good agreement and consistency. Some biases in both waves and winds are identified near the coasts (within the uncertainty range of wind speed model of 2m/s). Patrick also showed some results of waves and winds from an extreme event, the storm Bodil. The CryoSat data sets still contains data over land, this need to be fixed.

Task 5.2 Characterization of coastal scale hydrodynamics

In this task the Venice lagoon will be studied in collaboration with Giovanni Cecconi.

Task 5.3 New current design and forecast data

CryoSat and Sentinel -3 data should be combined with models to improve the resolution and accuracy. The methodologies and software needs to be updated. Henrik (on behalf of Jesper Mariegaard) presents status of the activities and the details of the assimilation. Claire (MyOcean) stated that this activity is very important for the developments of MyOcean

Task 5.5 Climate change services

Some delays due to personnel/staff challenges – delay in D5.1. Everything will be completed in time (before the end of the project).

Actions

- DHI must complete the D5.1 within a few weeks (15 June 2015 TBC)

WP6 Applications of new GMES data in value-adding land services

Camille presented an overview of the WP including its objectives and goals.

Task 6.1 Monitoring river and Lake levels

D6.1 will be delivered in September 2015.

Task 6.2 Monitoring snow depth

This task is ongoing.

Task 6.3 Monitoring of Soil moisture

This task is ongoing.

Task 6.4: Hydrological modelling and data assimilation

Raphael presented status on the activities at DTU Environment on the assessment of data from Brahmaputra. Data are used in the lower end of the river. He also described principles of the model so that both height and discharge are calibrated consistently by adjusting both river depth as well as cross section.

Marc and Peter presented status on the DHI side on the development of the assimilation framework including altimetry interpolation, inclusion of catchment models to take rainfall into account.

WP7 Dissemination and exploitation

Per presented an overview of this WP.

Activities related to the development of Land service components related to hydrology needs to be identified. The Third Space for Hydrology Workshop <http://www.hydrospace2015.org/> at ESA-ESRIN 15-17 September will be an excellent opportunity to identify land serviced for the project. Furthermore, Jerome Benveniste should be contacted for knowledge of other land services.

Actions

- DTU should compile a list of publications and presentations with results relevant to the LOTUS project (1 June)
- DTU must draft a draft exploitation plan (1 September)

WP8 Project management session

Actions

- DTU to check up on payments (1 June)
- DTU to check up on procedures for accounting w.r.t. the final meeting and reporting/auditing (1 September)

AOB

- Next meeting February 2016 (eg. During the week 8-12)
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Actions:

- Action: CLS to complete D3.2 and D3.3 ASAP (22 May 2015 TBC)
- Action: Starlab to complete D4.1 ASAP (15 May 2015 TBC)
- Action: DTU to complete D4.2 ASAP (15 May 2015 TBC)
- Action: CLS to complete D4.3 ASAP (22 May 2015 TBC)
- Action: DTU and DHI to sent contributions to the validation to Starlab for D4.5 ASAP (15 May 2015 TBC)
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