



Minutes of second Review meeting

Project number

313238

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LOTUS - Second Review Meeting, 18 September 2014.

CLS
8-10 Rue Hermès
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France

Participants:

REA: Inés T. Marín Moreno (IM)
Stefano Vignudelli (SV) (REA Reviewer)

Starlab: Alejandro Egido (AE), Antonio Reppucci (AR), Javier Marín,
Laura Moreno (LM) (Skype during WP6)

CLS: Pierre Thibaut (PT), Thomas Moreau (TM)

DHI: Henrik Madsen (HM) Morten Andersen (MA), Ole S. Petersen (OP)

DTU: Karina Nielsen (KN), Ole B. Andersen (OA), Per Knudsen (PK), Raphael Schneider (RS)

UNEW: Philippa Berry (PB) (Skype)

Agenda:

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

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

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

4. LOTUS project overview (DTU) a. Status and use of resources (DTU) b. Follow ups from RV1 (DTU REA)

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

5. WP1 Processing SRAL SAR mode waveforms over ocean (STARLAB) (50' total)
 - a. Overall objectives, work plan and status (STARLAB)
 - b. Task 1.4 Develop processing for Open Ocean (CLS)
 - c. Task 1.5 Develop processing for Polar Ocean (DTU)
 - d. Task 1.6 Develop processing for Coastal Zone (STARLAB)
6. WP2 Processing SRAL SAR mode waveforms over land (DTU) (40' total)
 - a. Overall objectives, work plan and status (DTU)
 - b. Task 2.4 Develop processing for River and Lake Levels (DTU)
 - c. Task 2.5 Develop processing for Soil Moisture (UNEW)
 - d. Task 2.6 Develop processing for Snow Depths (STARLAB)
7. WP3 Definition of new data products and processing chains (CLS) (20' total)
 - a. Overall objectives, work plan 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)

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

- 8. WP4 Production of demo data and assessment (DTU) (30' 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)
- 9. WP5 Applications of new GMES data in value adding ocean services (DHI) (20' 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)
- 10. WP6 Applications of new GMES data in value adding land services (STARLAB) (20' total)
 - a. Overall objectives, work plan and status (STARLAB)
 - b. Task 6.1: Downstream services definition
 - c. Task 6.2: Proof of concept

Impact of the project (15:15-15:45):

- 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)

Project management session (15:45-16:15):

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

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

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

Minutes:

Introductory session incl opening, welcome and practical information

PK opened the meeting and welcomed the participants from the project and REA and thanked CLS for organizing the meeting. The proposed Agenda was presented. It followed the agenda distributed prior to the meeting. A round table was run for the participants to present themselves.

Project Overview, Status, Use of resources and Follow up from RV1.

PK went through the general objectives of LOTUS noticing that the project is well underway and progressing. Whereas marine products and river and lake products are well understood and mature, some of the proposed applications are less mature like snow depth applications and soil moisture extraction. It had been agreed at an earlier stage (during the 1st review meeting – RV1) to detach these from the original plan and keep these at a more scientific level. Also, it was decided during RV1 to restructure WP6.

PK presented the status of the review action (see minutes from RV1). All open issues were handled and closed at the project meeting at Starlab during January 2014. There was no follow-up to get information about the project “My wave”.

Re-organizing and re-installment of key personnel and key-expertise caused some delays in WP1+WP2 which in turns have delayed WP3+WP4. WP5 and WP6 initiated using preliminary data sets. The project appears to be 4-6 month delayed currently but some of this will be gained by running things in parallel. As a result only 14 out of 19 deliverables are completed. However 7 out of 9 milestones have been achieved. This is also reflected in the actual costs for the first period which are 34% below budget.

SV mentioned the importance of using the test-regions and demonstrating the results within these.

Work Packages – progress and status.

WP1. Processing SRAL SAR mode waveforms over ocean.

AE gave an overview of the WP. The WP has been completed at M18. Currently, the deliverable D1.3 has been uploaded to EU/REA in a draft version. However, the system does not allow upload of a revised version at the current stage.

Action (24-09-2014): IM (EU/REA) will reject the D1.3 document on the participants portal.

AE to upload the final updated version, subsequently.

TM presented the processing development for ocean of the WP as well as the architecture of the CLS processing chain. CLS is reprocessing everything from telemetry. CLS has developed methods to handle the mis-pointing of the instrument. Wind speed and sea state bias (SSB) models have been computed from 2D models and a global dataset has been prepared combining LRM and SAR data. Also cross-calibration with Jason-2 has been performed at CLS. Hence, the Cryosat 2 Level 1BS SAR data set has been prepared and is available for the subsequent data processing to prepare demo data sets in both open ocean at CLS, polar ocean at DTU, and coastal ocean at Starlab (WP4). Particular Level-1 processing (over-sampling and along-track weighting function) has been developed and analyzed for dedicated ocean surfaces (and lands). Also, CLS has completed the development of the Level-2 processing for open ocean based on physical (implemented using numerical methods for retrieving range, wave height and σ_0 from the multilooked power SAR echo) as well as empirical retracking (exploiting the power distribution in the stack).

OA presented the Polar Ocean LOTUS data processing system based on the multi-retracking system called “Lars’ Altimetry Retracking System” (LARS) with 13 retrackers. The priority is to use physical retrackers for the Ocean to extract wave information. The combined use of physical and empirical retrackers might result in SSH offsets which is handled in the post-processing of the data.

SV commented that for the assessment (and for estimating such offset) we could introduce the data from the ESA CryoVex underflight in the processing. OA will look into this as part of the validation activities in WP4

AE presented the developed processing for the coastal zones. Starlab has further developed the SAMOSA retracker to correct for the mitigation of land contamination in the coastal areas. The algorithm is based on geo-referencing of the delay-Doppler stack. Coastal areas are selected based on coastline data from NOAA’s “Global Self-consistent, Hierarchical, High-resolution Geography“ (GSHHG) Database. Preliminary results show very good performance of the retracking algorithm. SV asked about validation datasets like tide gauges.

It was stated that the WP1 is concluded once the updated version of D1.3 is submitted and accepted by EU/REA.

WP 2 Processing SRAL SAR mode waveforms over land.

PK introduced the WP which is split into three main tasks. River and Lakes, Soil moisture and Snow water depth. Again it was noted that the soil moisture and the snow depth retrievals are less mature and that the associated parts of the deliverables may be completed later than originally planned.

KN presented the DTU development within River and Lake SSH retrieval (Task 2.4). The processing system used MODIS masks to identify water bodies, then applied FFT to the waveforms to get a better representation of the peaks, thus the algorithm “peakdet” was used to identify peaks and finally the PPT retracker was applied to estimate high resolution river and lake heights from the L1B waveforms. The system included a post processing system to estimate a robust mean lake level for river/lake

crossings as the users request this.

AR presented the developed processing for snow depth (T2.6). Data from the two selected test regions (around Quebec and the Northern Plains in the US respectively). The results do not show any correlation or relationship with changes in the snow depth when using Cryosat-2. These conclusions, however, cannot be transferred to Sentinel-3 due to the very different orbital track layouts. It was also said that the tracker on board CryoSat-2 is not sufficiently stable and it may track the internal noise rather than the surface. SV stimulated the continuation of the work and processing of demonstration data using ENVISAT data. Starlab agreed to follow this path in WP4.

PB presented the UNEW development within River and Lake SSH retrieval (Task 2.4). Their contribution is diminished due to reallocation of resources for the task. SAR waveforms show evidence of multi target response over rivers. This is consistent with behaviour of prior altimeters as physics governs the response. Consequently prior altimeters waveform can give useful information on probable target response of S-3. Some outputs were presented about analysis over Nile (LRM), Amazon (SAR) and USA lakes (using SAMOSA retracker). SV clarified that there will be no contribution to/from the ESA river and lake system within LOTUS as this relies extensively on repeat track information and Cryosat-2 does not have such.

PB presented the UNEW development of soil Moisture estimates (Task 2.5) using the Dry Earth Models. Cryosat-2 does not have a useful repeat cycle so the system must be re-designed to accommodate Cryosat-2. Simpson desert 3-month beta release product generated. Adding to this there are also the problems that deserts are normally under LRM mask. Only one relative dry area (South Africa) is in SAR mode. Re-crafting DREAMS enable viable soil surface moisture estimated to be generated from Cryosat-2 LRM data. For Sentinel-3 some test areas are very valid, but not for Cryosat-2 due to the track pattern.

With this it was concluded that the WP2 is completed.

Due to flight scheduling WP5+6 was shifted forward before WP 3+4

WP 5 Applications of new GMES data in value adding ocean services.

OP presented the WP and the various regions and investigations to be performed.

Task 5.4 and Deliverable 5.4 was cancelled at the start of the project as it was previously decided to concentrate only on the Sentinel-3 SRAL Altimetry to limit the scope of the project.

For completing the WP, the approach is to start with the North Sea region to gain experience with the new Cryosat-2 data before moving on to the other test areas. Subsequently, MA presented the DHI approach to altimeter data assimilation and the distribution of the first Cryosat-2 SAR they have acquired for testing. Currently, and to avoid delays in this WP, the North Sea study is using a preliminary data set provided by DTU.

SV mentioned the importance of a proper reference to a geoid model for data assimilation.

WP 6 Applications of new GMES data in value adding land services.

LM presented the WP and its objectives mentioning how the methodology was changed during the last meeting at StarLab. The restructuring of the workpackage was agreed at the RV1, partly as a consequence of the less matureness on the soil moisture and snow depth applications. This change only has minor influence on the deliverables. For the snow depth activities, the change of data from Cryosat-2 to Envisat for snow depth retrievals was discussed and accepted by Starlab. For soil moisture PB cannot give a firm commitment on when she can finish the production of the soil moisture data, but most likely within months.

IM commented that the WP has been changed due to the DOW. LM confirmed that the WP has a better focus/structure now and that these changes are only a restructuring – so there will be only minor influence on the deliverables. However, the number of deliverables has been reduced from five to three as the contents of D6.4 and D6.5 have been merged into D6.1, D6.2, and D6.3.

Action: IM will investigate if the changes in WP5 and WP6 require an amendment to the contract.

HM mentioned that DHI/DTU has already started the work within Task 6.3 for river and lakes level using a preliminary data set prepared by DTU Space. RS presented this work and findings so far. One result is that a static river mask for extraction of Cryosat-2 processes a problem for a river like Bahmaputra as the river changes course after the spring flood. The approach by DHI/DTU to river data assimilation for hydrological modelling has to be generic to allow for the non-repeat data from C-2. However, this approach has the advantage that the assimilation can be used generically for multi-mission assimilation.

For completion of D6.3 there will be the constraint that the model for snow depth should be available for the evaluation in due time.

WP 3. Definition of new data products and processing chains

PT presented the WP and the five tasks and the product description. The CLS (Labrou and Tran) model will be applied to retrieve SAR mode wind speed. A SAR mode SSB model has been derived at CLS.

The Level-0 to Level-1BS (experimental) processing chain have been developed and tested within a large region Computation of corrections at high resolution is also implemented. Similarly the processing from Level-1BS to Level -2 has been implemented Level-1BS to Level -2 has been implemented.

D3.1 is delayed and the deadline for delivery to EU/REA was agreed by October 15th.

Action (26-09-14) Partners to deliver input for the D3.1: Coastal (Starlab) , Polar Ocean (DTU), Snow Depth (Starlab) and Soil Moisture (UNEW).

Action (15-10-14) CLS need to complete the D3.1 document with input from partners and deliver to EU/REA.

D3.2 DPUM data product user manual is not started. Will be completed by end December (M24)

D 3.3 Algorithm Theoretical baseline document will be delivered to EU/REA by October 15th.

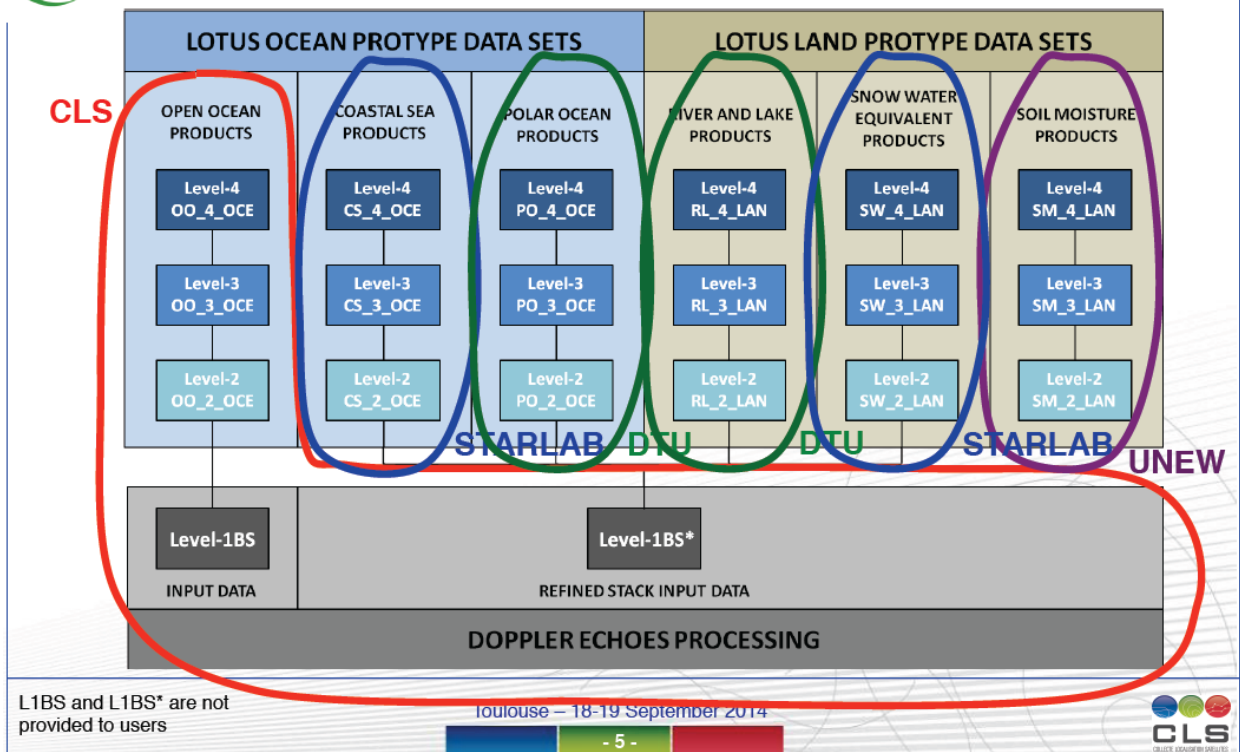
D3.4 SAR Mode for ocean corrections ATBD should have been submitted to EU/REA, but it was not registered as delivered by EU/REA.

Action (26-09-14) PK will look into the status of this document.

WP 4 Production of demo data and assessment

PK presented the WP and the individual tasks. He emphasised that it is important that demo data sets are available for the activities related to the developments of applications in WP5 and WP6 to avoid delays. Hence, activities in the North Sea and the Brahmaputra test areas have been initialised using preliminary data sets. The production of “official” LOTUS demo data in those test areas should have priority.

The low-level data for the coastal ocean and in-land data for each test area (Level-1BS) dataset are ready to be delivered to the users/partners in LOTUS and will be processed further as described below and shown in the slide:



The periods defined in the Test Area definition document as seen in the Table below:

- Level1BS CY2 data are provided internally to each partner:
 - According to different processing needs (with weighting function and oversampling method applied or not)
 - Over the selected periods
 - Over the selected geographical zones
 - Processing : extensive time CPU (e.g. 10days for processing NE Altantic zone) and 34Go delivered data

Site	Zone	Partners	2012										2013						
			Mar	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Jun	Jul	Aug	Sept		
NE Atlantic	Lon : 5E / 9E Lat : 53.5N / 57.5N	Starlab																	
Venice	Lon : 12E / 13E Lat : 45N / 46.5N	DHI																	
Icebridge	Lon : Lat : > 60N	DTU											some tracks						
Svalbard	Lon : 10°E / 30°E Lat : 78°N / 85°N	DTU																	
Denmark	Lon : 8°E / 13°E Lat : 54.5N / 58N	DTU																	
Thailand	Lon : 99°E / 101.5°E Lat : 13.25N / 17N	DTU																	
Brahmaputra river	Lon : 89.5°E / 91.5°E Lat : 21.75N / 24.25N	DTU																	
Amazon river	Lon : 61°W / 47°W Lat : 5°S / 3°N	DTU																	
Switzerland	Lon : 6°E / 11°E Lat : 45°N / 49°N	Starlab																	

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Ocean-data:

CLS will produce the demo data set for the test areas (North Sea, South China Sea, and Venice bay) to be delivered to the users/partners in LOTUS by end of November 2014.

A preliminary dataset for Polar Ocean based on ESA L-1B has been processed and will shortly be uploaded to the project ftp site. The updated product based on the CLS L-1BS data set will be delivered by end of December 2014 for this region.

For the processing of the data in the Coastal Zone the North Sea will be prioritized and delivered by the end of November by Starlab and, subsequently, uploaded the project web site. The remaining two coastal ocean test areas data sets will be completed by Starlab by end the of February 2015.

Inland-data:

KN presented the Datasets for the land test areas within River and Lakes. The MPT retracker provides promising results. Data sets have been produces for the Brahmaputra, Thailand, Amazonas and the Danish lakes areas. Consolidation of the method will go on over the upcoming months and the datasets based on the L1BS data will be produced by end February 2015.

PB presented the data set for Soil Moisture for Task 4.2 for the Simpson, Tenere and Kalahari deserts with stage 1 pre-processing completed for 1 year. The processing and generation of next version of the dataset will be completed soon. Due to personal reason there can be no firm delivery date on this dataset.

StarLab will produce a test dataset for the snow depth estimation for the two test sites based on Envisat which will be provided to WP6 in due time for completion of the work there. The Proof of Concept and the data set was agreed to be delivered by end February 2015.

WP 4.4 Validation datasets:

KN presented the validation datasets for the river and lake part. DTU has laser scanning dataset for validating/assessing the Danish Test site. For the Brahmaputra and Thailand we have some sea level recording datasets from DHI of questionable quality. It was decided that DTU/CLS will liaise on AltiKa dataset for the Brahmaputra and Thai rivers for validation as Envisat ceased operation in early 2012.

StarLab will most likely not be able to provide the promised GNSS reflectometry data for assessment of the river and lake test datasets, due to schedule incompatibility. Still to be investigated.

WP7. Dissemination and exploitation

PK presented the WP.

Website:

SV mentioned that the status of the website is changing from presenting the deliverable and the project to enable the distribution of data. PK mentioned that the website currently fulfil the requirements mentioned in the DoW but that consideration of the future use of the website should be made.

Action: (26-09-14) On the project website the EU logo and EU-FP7 program logo is missing. Also some dead links have been found. This will be available on the project website by the end of September.

As for the Task 7.2 GMES. There is an obvious error/mistyping in the DOW on the date where the Milestone MS14 is due at +13. The corresponding report, D7.2, is due at +24. MS14 will be achieved at +24 too.

The spreading of knowledge in the GMES community (task 7.2) will be done via MyOcean and the exploitation of the new LOTUS services involving SMEs (task 7.3) will be done via DHI using promotion material.

Next meeting:

The next meeting is the third review meeting RV3 and planned to take place on the DHI premises in Hørsholm North of Copenhagen in the April 2015. DHI will launch a Doodle on potential dates (HM).

It had been decided that the involvement of a MyOcean contact persons was better postponed to the 3RV meeting in order to have test datasets and first results of WP5 and WP6 ready beforehand.

Advisory board:

It was suggested to invite Joel Dorandean to represent My Ocean/Mercator on the Advisory Board.