



D7.1 Report Describing Web Site.

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Collaborative project

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1. Introduction

The establishment and maintenance of a public website of the project is essential to provide general and targeted dissemination as well as data for exploitation. This task includes the design, implement and operate a suitable web-portal (or else) for disseminating the data products of the projects.

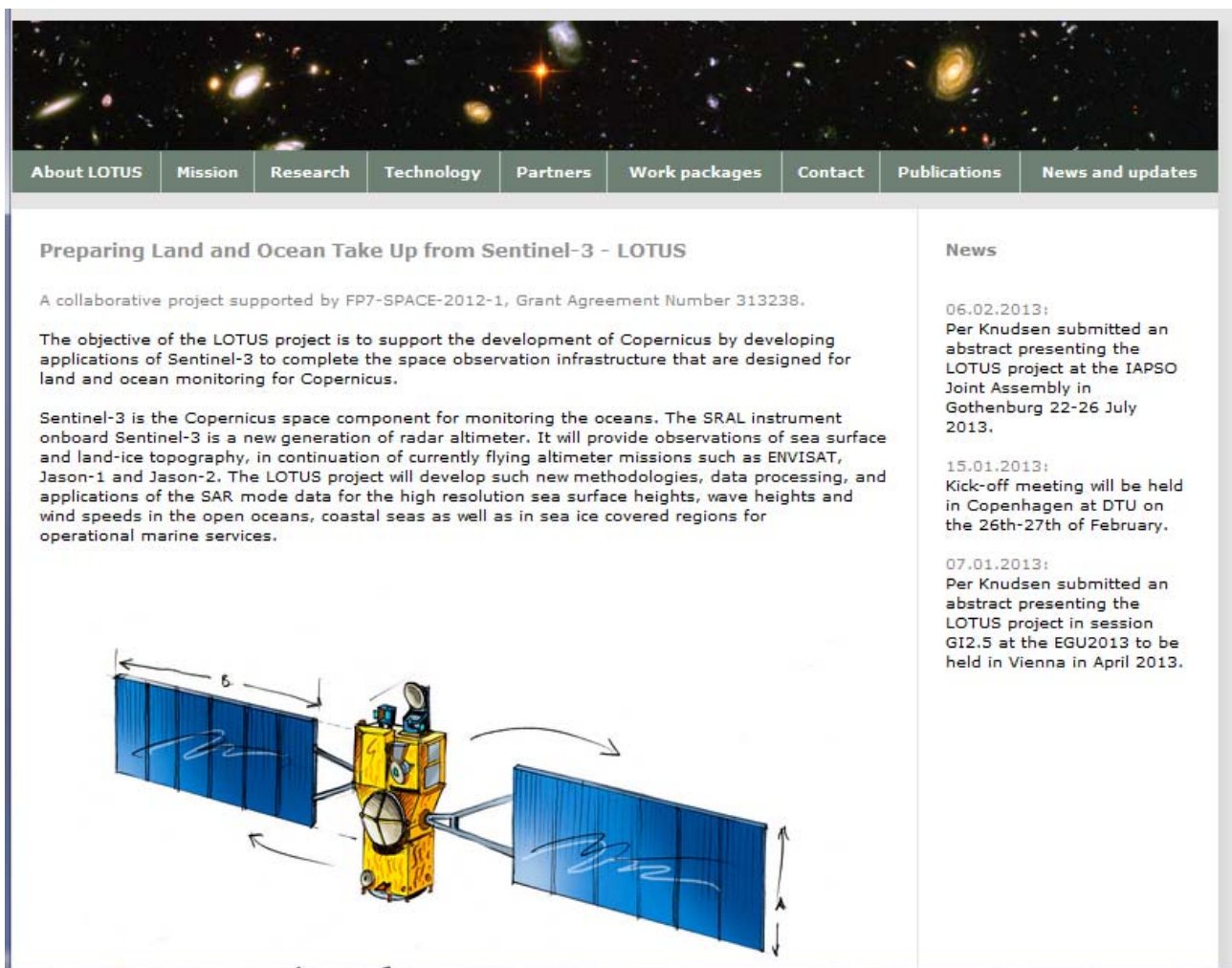
This website provides the front window for the project external communication. The web pages contain descriptions of the general purpose and aims of the project; news and events; description of main technical aspects; partners; sponsoring, Copernicus context, press materials. All public deliverables are planned to be made available on the public web. Demonstration data and validation report based on D3.1 and D 3.2 as well as guides on "how to" use new data and products will be prepared and made available too.

The web site is established at <http://www.fp7-lotus.eu>

The different web pages are shown below.

Note that some recent updates have not yet been included due to technical problems in transferring the web site to a new sitecore environment.

2. Main page



About LOTUS **Mission** **Research** **Technology** **Partners** **Work packages** **Contact** **Publications** **News and updates**

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

A collaborative project supported by FP7-SPACE-2012-1, Grant Agreement Number 313238.

The objective of the LOTUS project is to support the development of Copernicus by developing applications of Sentinel-3 to complete the space observation infrastructure that are designed for land and ocean monitoring for Copernicus.

Sentinel-3 is the Copernicus space component for monitoring the oceans. The SRAL instrument onboard Sentinel-3 is a new generation of radar altimeter. It will provide observations of sea surface and land-ice topography, in continuation of currently flying altimeter missions such as ENVISAT, Jason-1 and Jason-2. The LOTUS project will develop such new methodologies, data processing, and applications of the SAR mode data for the high resolution sea surface heights, wave heights and wind speeds in the open oceans, coastal seas as well as in sea ice covered regions for operational marine services.

News

06.02.2013:
Per Knudsen submitted an abstract presenting the LOTUS project at the IAPSO Joint Assembly in Gothenburg 22-26 July 2013.

15.01.2013:
Kick-off meeting will be held in Copenhagen at DTU on the 26th-27th of February.

07.01.2013:
Per Knudsen submitted an abstract presenting the LOTUS project in session GI2.5 at the EGU2013 to be held in Vienna in April 2013.

3. Subpage “About LOTUS”

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About LOTUS

Concept of the project - LOTUS

The objective of the LOTUS project is to support the development of Copernicus by developing applications of Sentinel-3 to complete the space observation infrastructure that are designed for land and ocean monitoring for Copernicus.

Sentinel-3 is the Copernicus space component for monitoring the oceans. The SRAL instrument onboard Sentinel-3 is a new generation of radar altimeter. It will provide observations of sea surface and land-ice topography, in continuation of currently flying altimeter missions such as ENVISAT, Jason-1 and Jason-2. However, the SRAL instrument will also operate in a SAR mode and provide along-track high-resolution heights of the sea surface in the open oceans, in the coastal seas, in-land water and sea ice areas. The SAR capability is a new feature and no data products based on this SAR mode data are provided or used operationally. Therefore, new methodologies, data processing, and applications need to be developed to prepare the take-up of the Copernicus Sentinel-3 data.

The LOTUS project will develop such new methodologies, data processing, and applications of the SAR mode data for the high resolution sea surface heights, wave heights and wind speeds in the open oceans, coastal seas as well as in sea ice covered regions for operational marine services.

For the operational land services, the LOTUS project will develop new methodologies, data processing, and applications of the SAR mode data for the monitoring in-land water levels in rivers and lakes as well as soil moisture.

For the support of operational services for emergency response and security in the events of, e.g.,

- river flooding, the new land products will provide valuable information about the hydrological cycle and support services on

4. Subpage “Mission”

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Mission

The LOTUS project will support the European Space Policy focusing on applications such as Copernicus, to complete the space observation infrastructures that are designed for land, ocean, as well as emergency response and security, in order to deliver on the "climate change" service of Copernicus.


The LOTUS project will contribute to the development of support to the (pre-)operational validation of Copernicus services and products based on the integration and harmonisation of related observation data (both satellite-based and in-situ, including ground-based, ship-borne and airborne), starting with the funded Copernicus Services by preparing the take-up of Copernicus Sentinel-3 data by Copernicus services mainly for land and ocean services.

Sentinel-3 to be launched in 2014 will carry a new instrumentation for acquiring information about the dynamics of the oceans. Data streams from the new instruments require the build-up of enhanced service infrastructure to ingest and process such quantities of data to a higher level, and user-friendly data-mining and searching techniques for accessing the data. The objective of the LOTUS project is to develop processing scheme for extracting high-resolution sea surface heights, wave heights and wind speeds from the new SAR mode data. Furthermore, LOTUS will develop processing scheme for extracting high-resolution river and lake heights, soil moisture, and snow water equivalents for land services.

Beyond this, the LOTUS project will develop new and improved coastal oceanographic services by utilizing the data features emerging with Sentinel-3. The services will primarily utilize the increased resolution of the SRAL SAR and place emphasis on value adding integration with complementary data such as ocean modelling, in-situ data and multiple sensors. The services are developed to have a global applicability. Furthermore, LOTUS will develop new and improved land services. Those services will be developed to have a global applicability and it will be demonstrated in selected case study regions.

To support the involvement of industry, the LOTUS project team include innovative companies and SMEs to carry out the required

5. Subpage “Research”



Navigation menu: About LOTUS, Mission, **Research**, Technology, Partners, Work packages, Contact, Publications, News and updates

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Research

The Sentinel-3 satellite mission with its SRAL instrumentation contains new features compared to the conventional radar altimeter mission that form the basis for new innovative Copernicus products and applications that are not considered or implemented in the Copernicus services yet. To utilize the full potential of the new data source, new methods and processing chains need to be developed.

Also, new potential Copernicus products should be developed that utilize the improved along-track resolution over both the oceans and over land. Then new operational processing, validation and delivery mechanisms need to be developed and implemented for generating the new dynamic products. A smooth transition from old to new products is important to ensure existing services. Finally, the take-up of the new Copernicus products by the value-adding sectors needs to be stimulated and demonstrated to ensure that they will be used for commercial activities.


The objectives of the LOTUS project to prepare the take-up of data from Sentinels 3 are:

Objective 1: Processing of SRAL SAR mode waveforms over ocean.
The objective of the LOTUS project is to develop processing scheme for extracting high-resolution sea surface heights, wave heights and wind speeds from SAR mode data. Furthermore, LOTUS will apply the RDSAR technique to convert SAR mode data into LRM data to complement the open ocean LRM data sets in the coastal areas and secure seamless transitions between converted SAR mode and open ocean LRM products.

Objective 2: Processing of SRAL SAR mode waveforms over land.
The objective of the LOTUS project is to develop processing scheme for extracting high-resolution river and lake heights, soil moisture, and snow water equivalents.

Objective 3: Definition of new data products and processing chains.

6. Subpage “Technology”



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Technology


Sentinel-3 is a European Earth observation satellite mission designed to ensure the long-term collection of uniform quality data products generated and delivered in an operational manner to Copernicus services in the marine environment with contributions to land, atmospheric, emergency, security and cryospheric applications. The mission includes a series of satellites over a 20 year period starting with the launch of Sentinel-3a in early 2014 and during full operations two identical satellites will be maintained in the same orbit with a phase delay of 180°. Sentinel-3 measurement requirements have been derived from operational user needs to insure data continuity for the observation and monitoring of (Donlon, et al., 2011):

- Sea surface topography (SSH), significant wave height (Hs) and surface wind speed derived over the global ocean to an equivalent accuracy and precision as that presently achieved by ENVISAT Radar Altimeter-2 (RA-2).
- Enhanced surface topography measurements in the coastal zone, sea ice regions and over inland rivers, their tributaries and lakes.
- Sea surface temperature (SST) determined for oceanic and coastal waters globally to an equivalent accuracy and precision as that presently achieved by the ENVISAT Advanced Along Track Scanning Radiometer (AATSR) over the ocean (i.e. <0.3 K), at a spatial resolution of 1 km.
- Visible, Near Infrared, Short-Wave Infrared, and Thermal Infrared radiances for oceanic, inland and coastal waters, land surfaces including sea ice and ice sheets determined to an equivalent level of accuracy and precision as ENVISAT Medium Resolution Imaging Spectrometer (MERIS), AATSR and SPOT Vegetation data with complete ocean coverage in 2-3 days, complete land coverage in 1-2 days, a spatial resolution of ≤0.3 km and simultaneously and co-registered with SST measurements.

The Copernicus Sentinel-3 mission addresses these requirements by implementing and operating the following components:

- A Synthetic Aperture Radar Altimeter (SRAL) instrument, a passive microwave radiometer (MWR), a GPS receiver and laser

7. Subpage “Partners”



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Partners

- > [Collecte Localisation Satellites](#)
- > [DHI](#)
- > [DTU Space](#)
- > [Starlab Barcelona](#)

Participant 1. Danmarks Tekniske Universitet (*Technical University of Denmark*) (DTU)

The Technical University of Denmark (DTU) is the largest technical university in Denmark with a scientific staff of about 1000, 6000 students preparing for Bachelor or Masters degrees, and 700 Ph.D. students. The research done at the DTU forms the basis for a variety of services and products which are offered to Danish industry, authorities and educational institutions - e.g. technology transfer, advice on space-related matters and supervision of Ph.D students.


Two institutes will contribute to this project. Those are:

1. DTU Space – National Space Institute and
2. DTU Environment – Department of Environmental Engineering.

DTU Space

The DTU Space, the National Space Institute at DTU is the national institute for space-related activities in Denmark. The DTU conducts research in astrophysics, solar system physics, geodesy, remote sensing and space technology. DTU Space has significant activities within the areas of Earth Observation. Main application areas are sea level, sea ice, land ice, geodesy, and oceanography. DTU operate permanent GPS-stations and tide gauges in Greenland. DTU has participated in several EU projects and ESA projects on the developments of services for Copernicus and are currently contributing to the MyOcean and MONARCH-A projects on the enhancement of satellite based sea level data and compilation and analysis of climate sea level records in the Arctic region. DTU participated in the ESA project SAMOSA (Development of SAR Altimetry Mode Studies and Applications over Ocean, Coastal Zones and Inland Waters). DTU Space is also participating in the ESA Sea Level Climate Change Initiative project.

8. Subpage “List of work packages”



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LOTUS > **Work packages**

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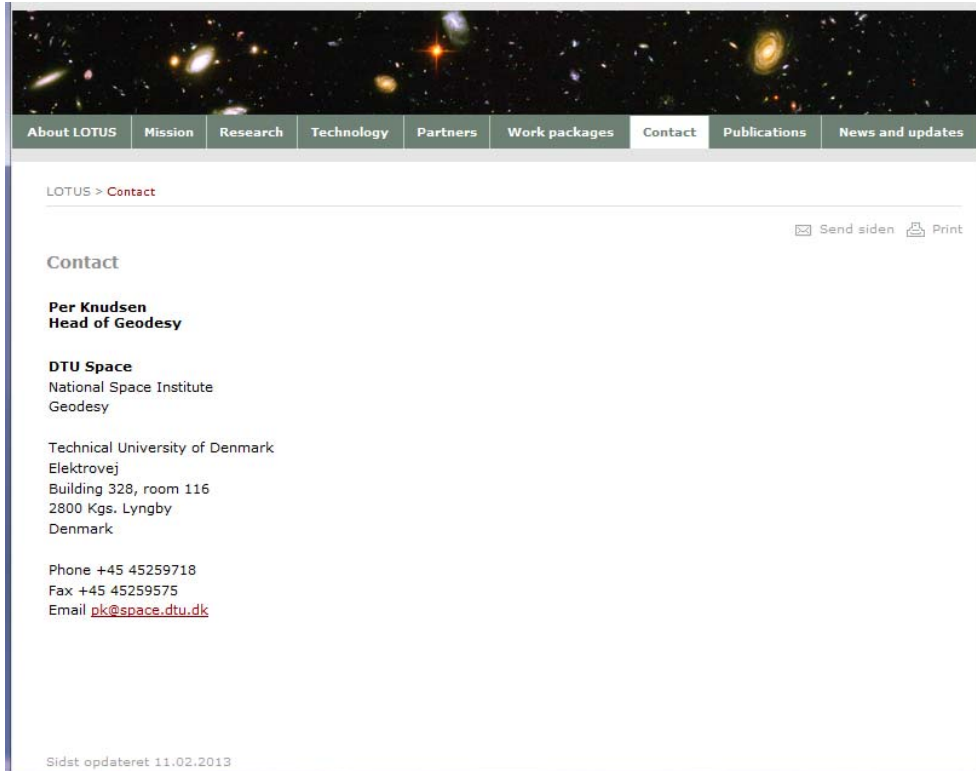
Work packages

WP Number	WP Title	Lead beneficiary
1.	Processing of SRAL SAR mode waveforms over ocean. (RTD)	Starlab
2.	Processing of SRAL SAR mode waveforms over land (RTD)	DTU
3.	Definition of new data products and processing chains (RTD)	CLS
4.	Production of demo data and assessment (DEMO)	DTU
5.	Applications of new Copernicus data in value-adding ocean services (RTD)	DHI
6.	Applications of new Copernicus data in value-adding land services (RTD)	Starlab
7.	Dissemination and exploitation (OTHER)	DTU
8.	Management (MGT)	DTU

Sidst opdateret 07.03.2013

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9. Subpage “Contact”



The screenshot shows the 'Contact' subpage of the LOTUS website. At the top is a navigation menu with items: About LOTUS, Mission, Research, Technology, Partners, Work packages, Contact (highlighted), Publications, and News and updates. Below the menu is a header image of a galaxy field. The page content includes a breadcrumb 'LOTUS > Contact', utility links for 'Send siden' and 'Print', and the following text:

Contact

Per Knudsen
Head of Geodesy

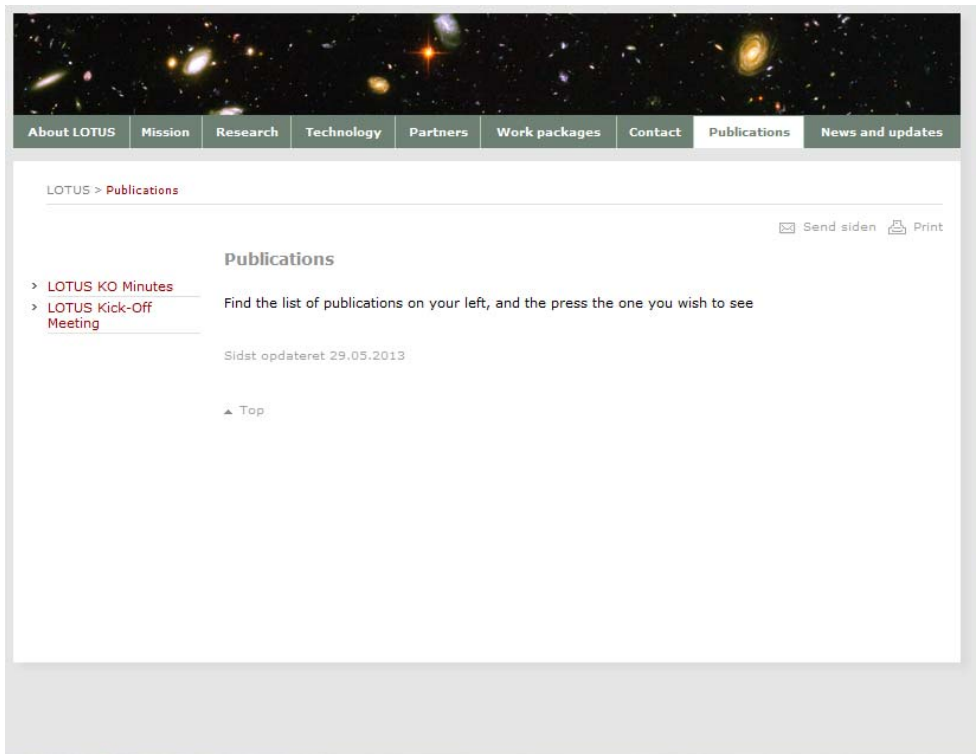
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National Space Institute
Geodesy

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Sidst opdateret 11.02.2013

10. Subpage “Publications”



The screenshot shows the 'Publications' subpage of the LOTUS website. At the top is a navigation menu with items: About LOTUS, Mission, Research, Technology, Partners, Work packages, Contact, Publications (highlighted), and News and updates. Below the menu is a header image of a galaxy field. The page content includes a breadcrumb 'LOTUS > Publications', utility links for 'Send siden' and 'Print', and the following text:

Publications


> [LOTUS KO Minutes](#)
> [LOTUS Kick-Off Meeting](#)

Find the list of publications on your left, and the press the one you wish to see

Sidst opdateret 29.05.2013



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11. Subpage “News and updates”



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News and updates

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Sidst opdateret 07.03.2013

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