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PU	Public	X
PP	Restricted to other programme participants (including the Commission)	
RE	Restricted to a group specified by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission)	

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SIDARUS CONSORTIUM

Participant no.	Participant organisation name	Short name	Country
1 (Coordinator)	Nansen Environmental and Remote Sensing Center	NERSC	NO
2	Alfred-Wegener-Institut für Polar-und Meeresforschung	AWI	DE
3	Collecte Localisation Satellites SA	CLS	FR
4	University of Bremen, Institute of Environmental Physics	UB	DE
5	The Chancellor, Masters and Scholars of the University of Cambridge	UCAM	UK
6	Norwegian Meteorological Institute, Norwegian Ice Service	Met.no	NO
7	Scientific foundation Nansen International Environmental and Remote Sensing Centre	NIERSC	RU
8	B.I. Stepanov Institute of Physics of the National Academy of Sciences of Belarus	IPNASB	BR

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SUMMARY

A Dissemination and Use plan is a mandatory deliverable in all FP7 RTD projects. This document is an updated version of the dissemination and use plan prepared in year 1, presenting an overview of activities related to publications, presentations at conferences and workshops, interaction with users and international programmes and organisations who are expected to be interested in the results of the project. The results of the work in the project are presented to specified users and will be the basis for establishing downstream services under the GMES/Copernicus programme.

1 Plan for the dissemination and exploitation work

The objectives of the dissemination and exploitation work are to:

1. Make exploitable results of the project widely available to users and institutions during the project and after it has finished;
2. Clarify IPR issues: ownership of results, rights and agreements to use results;
3. Prepare and distribute promotion and dissemination material;
4. Develop and update the exploitation and use plan during the project;
5. Contribute to up-take of GMES recommendations and infrastructure, services and products, both in the provider and user communities.

1.1 Introduction

This introduction is an excerpt from the "Guide to Intellectual Property Rules for FP7 projects" providing rules and recommendations on how results generated in a project should be disseminated and exploited

The Dissemination and Use plan is mandatory. The grant agreement requires the submission to the Commission of a plan for the use and dissemination of foreground (Article II.4.2.b of GA), which must contain information about the expected use of the project results sufficiently detailed to permit the *Commission* to carry out any related audit (Articles II.29.2 and II.23 of GA). Any technical audit which may be initiated at any time and up to five years after the project can assess also the participants' plan for the use and dissemination of foreground.

Foreground: results generated in a project by individual participants or jointly by the consortium, including intellectual property rights related to exploitation of the results. Foreground can be tangible (analyzed data, software, instruments, etc.) or intangible (knowledge, scientific conclusions). Results generated outside or before the project are not included. Valuable foreground should be protected, especially if it is capable of industrial or commercial application. A decision *not* to protect foreground should preferably be made in consultation with the other participants, which may wish to take ownership. If valuable foreground is left unprotected, the Commission may take ownership.

Background: information and knowledge held by the participants before the project started, and intellectual property rights needed to carry out the project or for using foreground. Background includes only information needed to implement the project or to use the foreground.

Dissemination of foreground: Each participant shall ensure that the foreground it owns is disseminated as swiftly as possible. However, any dissemination (including publications or on web-pages) should be delayed until a decision about its possible protection has been made (through IPR or trade secrets). The other participants may object to the dissemination

activity if their legitimate interests in relation to their foreground or background could suffer disproportionately great harm.

Any dissemination activity shall be reported in the *plan for the use and dissemination of foreground*, including sufficient details/references to enable the *Commission* to trace the activity. With regard to scientific publications relating to foreground published before *or after* the final report, such details/references and an abstract of the publication must be provided to the Commission at the latest within two months following publication (Article II.30.4 of GA).

Furthermore, an electronic copy of the published version or the final manuscript accepted forpublication shall also be provided to the Commission for publication purposes (cf. Article II.12.2 of GA) at the same time if this does not infringe any rights of third parties.

Access right: Access rights means **licences and user rights** to foreground or background owned by another participant in the project. The Grant Agreement's provisions relating to access rights to foreground and background constitute "minimal" provisions that, unless otherwise indicated, cannot be set aside or restricted. It should be noted that under the grant agreement **access to another participant's foreground or background** is **only** to be granted if the requesting participant ***needs*** that access in order to carry out the project or to use its own foreground.

Participants can freely define in any manner (for example in a positive or negative way) what is needed for the project (i.e. background available for access by each other). Access rights may be requested by any participant if it needs them for carrying out its own work under the project, until the end of the project.

1.2 Definition of SIDARUS exploitable results

Table 1.1. Overview of exploitable results and involvement of the partners

Exploitable result	NERSC	AWI	CLS	UB	UCAM	Met.no	NIERSC	IPNASB
Sea ice data from previous and new field campaigns (WP2)	X	X			X			
Satellite data for case studies and test areas (WP3)	X	X	X	X		X	X	
Studies of albedo and snow cover, algorihms and processing system (WP4)				X				X
SAR analysis and toolbox for sea ice and icebergs (WP5)	X	X	X			X	X	
Sea ice thickness results (WP6)		X		X	X	X		
Ice forecasting (WP7)	X		X					
Results of data integration and validation (WP8)	X	X	X	X	X	X		
Results of demonstrations (WP9)	X	X	X	X		X		

1.3 Dissemination activities

Project results will be disseminated through a number of different channels, including, among others:

- A public web site where open results from the project are presented (http://sidarus.nersc.no).
- Dissemination to key users in each of the study areas through direct or phone meetings.
- Interaction with GMES (GAC, GPO and other GMES projects).
- Interaction with projects working with ocean observing systems
- Workshops during the project period, held on regional/national level to present results and prototype to a wider group of potential users working in the field of pollution and crisis management, forecasting services and other public administrations.
- Dissemination towards EuroGOOS, the regional EuroGOOS associations and in other fora promoting operational oceanography.
- Dissemination towards service providers, including SMEs, delivering environmental information on coastal and ocean regions.
- The project will be presented at international and national conferences/workshops, in particular those related to pollution of the seas.
- Papers will be submitted for publications in international referee journals.

Table 1.2a Overview of dissemination work carried out in the first year of the project (2011)

Dates	***Type***	***Type of audience***	***Countries addressed***	***Size of audience***	***Partner involved***
February 2011	Public web site: (SIDARUS.nersc.no)	All	All		NERSC
February 2011	SIDARUS summary paper	EU	All		all
1-3 Feb. 2011	Presentation of ice thickness results at ESA CryoSat workshop in ESRIN	Cryosphere remote sensing	All	≈ 100	NERSC, UB, met.no
12-14 April 2011	Arctic Shipping conference in Helsinki, presentation of SIDARUS bochure	Arctic shipping	Arctic countries	≈ 150	Met.no
April-May	Distribution of SIDARUS brochure and questionnaire to the user group	User group of SIDARUS	Arctic countries		Met.no
29 May 2011	Meeting with oil companies working in the Arctic, Houston, USA	Arctic Offshore companies	USA	≈ 20	UCAM
June	Meeting with Total in Stavanger regarding Arctic activities	Offshore industry	Norway, France	≈ 10	NERSC
June	Meetings with Arctic and Antarctic Research Institute in St. Petersburg	Arctic sea ice services	Russia	≈ 20	NIERSC
June	Talks with A. N. Svertsov Inst. Of ecology and evolution in Moscow	Environemental protection	Russia		CLS

3-6 Sept	Attending Northern Research Forum's 6th Open Assembly, Iceland, talking to users of sea ice information	Multi-disciplinary, societal and geopolitical issues related to sea ice	Arctic counties	≈ 50	NERSC
17-21 Oct 2011	International Ice Charting Working Group's annual meeting, presentation of SIDARUS project	Operational ice charting institutions	Northern European , North American, Southern Ocean	≈ 60	NERSC, met.no, UCAM,
4 – 6 Oct 2011	EuroGOOS Conference, SOPOT, Poland, presentation of sea ice monitoring systems	Operational oceanography	Europe	≈ 200	NERSC
28-29 Nov. 2011	CLS presented SIDARUS at a User Workshop organised by IPEE in Moscow	Arctic environmental protection	Russia	≈ 100	CLS

Table 1.3 Overview of dissemination work carried out in the second year of the project (2012)

Dates	***Type***	***Type of audience***	***Countries addressed***	***Size of audience***	***Partner involved***
25 Jan 2012	Sea ice user workshop in Tromsø, organised by met.no, jointly with ICEMAR project	Sea ice monitoring community	Europe, North America	≈ 30	Met.no, NERSC
17 Feb 2012	Workshop on SMOS ice thickness retrieval, University of Hamburg,	Sea ice research community	Europe	≈ 40	UB, NERSC
12-13 March 2012	Attending the Arctic New Frontier conference in Copenhagen, talking to users	Arctic Offshore community	Europe, Russia, North America	≈ 60	NERSC
14-16 May 2012	ESA CCI CMUG workshop, Toulouse, presentation of sea ice research for climate users	Climate research, sea ice research	Europe	≈ 50	NERSC
May-October	Several meetings with Total E&P to discuss the development of sea ice modeling and observing systems	Arctic Offshore Industry	Europe	≈ 10	NERSC
6 – 7 June 2012	IICWG 1st DC Workshop 2012 on Ridging (Ice Pressure), University of Iceland, Reykjavik, Iceland, presentation of SIDARUS work	Sea ice monitoring and modelling community	Europe, North America	≈ 30	AWI,
18-22 June	ESA SEASAR conference, Tromsø.	Remote sensing	Europe, North	≈ 100	NERSC, NIERC, CLS,

2012		community	America,		met.no
22-27 July	IGARSS 12, Munich. Presentation of sea ice research including ice drift from SIDARUS	Sea ice remote sensing community	Global	≈ 50	NERSC
15-19 Oct 2012	International Ice Charting Working Group annual meeting,Tromsø, Norway. Presentation of SIDARUS work by AWI	Sea ice monitoring and modelling community	Europe, North America,	≈ 60	AWI
19-21 Nov 2012	MyOcean Science Days, , Geesthacht, Hamburg. Poster presentation of SIDARUS by AWI	Operational oceanography community	Europe	≈ 100	AWI
22-23 Nov 2012	EuroGOOS Annual meeting, Hamburg. Presentation of sea monitoring and forecasting systems	Operational oceanography community	Europe	≈ 80	NERSC, met.no
Nov 2012	"Operations in the Arctic" workshop arranged by Troms Offshore Supply in Tromsø, Presentation of sea ice services and products by met.no	Arctic shipping community	Mainly Norway	≈ 30	Met.no

1.3.1 Peer Reviewed publication

Zakhvatkina, N, V. Alexandrov, O. M. Johannessen, S. Sandven, I. Frolov. Classification of sea ice types in ENVISAT Synthetic Aperture radar images. IEEE Trans. Geosc. Rem. Sens, 2012, doi 10.1109/TGRS.2012.2212445

Hollands, T., Haid, V., Dierking, W., Timmermann, R., Ebner L. (2012) *Sea ice motion at the Ronne Polynia, Antarctica: SAR observations vs. model results* J. Geophys. Res., accepted for publication

Hollands, T., Linow, S., Dierking, W. (2012) *Reliability measures for sea ice motion retrieval from synthetic aperture radar images,* Submitted to IEEE Journal of Selected Topics in Applied Earth Observations And Remote Sensing

Dierking, W., Wesche, C. (2012) *C-band radar polarimetry – useful for detection of icebergs in sea ice?* Accepted for publication in IEEE Trans. Geosc. Rem. Sensing

Contribution to article: Lindsay, R.; Haas, C.; Hendricks, S.; Hunkeler, P.; Kurtz, N.; Paden, J.; Panzer, B.; Sonntag, J.; Yungel, J. & Zhang, J. (2012),Seasonal forecasts of Arctic sea ice initialized with observations of ice thickness, Geophysical Research Letters, 39

1.4 User groups

The main user groups for the SIDARUS results are:

1.4.1.1 Climate research and modelling

This user group consists of key climate research institutes working with climate modeling and climate data analysis. Many of these institutes are members of the IPCC that produces climate reports every 5 years. One of the most significant aspects of climate change is the enhanced warming and the reduction of the sea ice cover in the Arctic. Improved sea ice data for both Arctic and Antarctic are required to validate and improve the climate model predictions for the high latitudes. The sea ice services developed in SIDARUS, albedo and meltpond fraction, and thin ice thickness, will provide for long-term observations needed for climate studies. Also ice thickness data from airborne and in situ systems will be important for validation of the satellite retrieved ice thickness data.

1.4.1.2 Marine environmental monitoring

This user group consists of the national and European agencies (e.g. European Environment Agency (EEA), Changes in the ocean environment to due climate change, resource exploitation, transport, tourism can have severe impact on a vulnerable environment. There is a growing interest for combined information on sea ice mapping and animal tracking provided, for example for polar bears. User organisations working with protection of sea ice habitats includes: The Institute of Evolution and Ecology Problems (Russian Academy of Sciences); Alberta University, Canada, Department of Biological Sciences, and Greenland Institute of Natural Resources.

1.4.1.3 Safety of marine operations (shipping, oil and gas industry)

With decreased sea ice cover in the Arctic, new sailing routes for trans-Arctic shipping will open up. The sailing distance from Europe to Japan is much shorter via the Arctic, using the Northern Sea Route, compared to the route via Suez Canal and the Indian Ocean. Also the sailing route from Europe to the west coast of North America will be shorter if a trans-Arctic sailing route is used. The ongoing Arctic Marine Shipping Assessment project, implemented by the Arctic Council's working group PAME (Protection of the Arctic Marine Environment) is studying the consequences of reduced sea ice and perspective for future Arctic shipping. Ocean temperature in the Arctic is a key factor determining the sea ice extent and thickness. It is of high priority for Arctic Shipping to have improved monitoring and forecasting systems for ocean temperature and sea ice.

Offshore industry involved in planning of Arctic drilling and exploration activities need all the available data from operational oceanography, climate monitoring and modelling as well as from environmental monitoring. In addition, the offshore industry need specific information to establish design criteria for offshore construction, vessels and for operations during harsh winter conditions. Important parameters for the offshore industry are air and sea temperature, wind, waves, sea ice, icebergs, sea level, visibility and icing on vessels. In addition to being a user of available data, the offshore industry is also actively supporting technology development in the Arctic which is important for their planned operations. NERSC is working with several oil companies (Statoil, Hydro, Shell, Total) to study Arctic climate and sea ice conditions of importance for planning offshore operations at high latitudes.

1.5 Dissemination activities in year 3

The main dissemination activities will be to carry user demonstration towards specified users as shown in Table 1.4. These demonstrations started in year 2 and will continue in year 3. The demonstrations are used as a preparation of services that will continue after the end of SIFARUS. In addition, results of the SODARUS work will be presented at conferences, workshops and user meetings, and scientific articles will be prepared and published in peer-reviewed journals.

Table 1.4 User demonstrations in year 3

Product	Description	Provider	Update frequency	Area coverage	Users
Sea ice drift and deformation	Sea ice displacement based on satellite data time series	AWI	1- and 3-days period	Fram strait, Antarctica	Statoil ASA, met.no
Sea Ice albedo	Sea ice albedo and melt pond fraction	UB IPNASB	Daily	Field survey areas 2005-2011	Université Louvain la Neuve
SAR sea ice analysis	Validation of SAR-analysis in Buffin Bay	CLS	Twice pr month	Baffin Bay	Vagabond
SAR sea ice classification	Automated ice-water discrimination from SAR data	NERSC	Twice pr week	Fram strait and north of Svalbard	Norwegian cost guard, met.no
SAR Iceberg detection and drift	Iceberg detection and drift in Arctic	CLS	Images from Envisat and Radarsat	Barents sea	TOTAL E&P
SAR iceberg detection	Iceberg detection in Antarctic	CLS	Images from Envisat and Radarsat	Indian-South Pacific Ocean	Vendée Globe race
Sea ice thickness data	Cryosat ice thickness validation	UCAM	When submarine data are available	Arctic	ESA CCI Sea ice project
Thickness retrieval for thin ice	Thin ice < 0.5 meter based on 1.4 GHz passive microwave	UB	Validate with air campaigns	Arctic	TOPAZ system (NERSC)
Iceberg forecasting	Implement an iceberg forecast model in Antarctic area	CLS	Forecasting of icebergs detected by SAR	Indian and South Pacific Ocean	Vendée Globe race
Sea ice forecasts	Implement a sea ice forecast model of the Barents and Kara seas	NERSC	Daily forecasting	Barents sea and Kara sea	TOTAL E&P
Argos tracking	Combining ARGOS data with sea ice data.	CLS	Validation based on in-situ or airborne data	Bering and Okhotsk Sea	A. N. Svertsov Inst. Of ecology and evolution

1.6 Preparation of downstream services

A main objective of SIDARUS is to develop GMES Downstream services, based on the present marine core services provided by MyOcean. GMES will be transferred to its opertional phase from 2014 under the name Copernicus. Many European institutions working with operational oceanography will contribute to the Copernicus Marine Service system, including several of the SIDARUS partners. The services will provide a number of global and regional scale, marine environmental information products (based on observations and predictions) to a broad range of institutional, national, European, intergovernmental and public users, commercial service providers and the general public. A European Centre for Ocean Monitoring and Forecasting (ECOMF) is planned to be established to coordinate and provide these services. The services develoepd in SIDARUS are described more specifically in D10.41.

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