Integrated Arctic Observation System

Research and Innovation Action under H2020
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Project coordinator:
Nansen Environmental and Remote Sensing Center

Deliverable 7.4

Dissemination Material V1

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USED PERSON-MONTHS FOR THIS DELIVERABLE

No	*Beneficiary*	*PM*	*No*	*Beneficiary*	*PM*
1	NERSC	***0.2***	**24**	Terradue	
2	UiB		**25**	GINR	***x***
3	IMR		**26**	UNEXE	
4	MISU		**27**	NIVA	
5	AWI		**28**	CNRS	
6	IOPAN		**29**	U Helsinki	
7	DTU		**30**	GFZ	
8	AU		**31**	ARMINE	
9	GEUS		**32**	IGPAN	
10	FMI		**33**	U SLASKI	
11	UNIS		**34**	BSC	
12	NORDECO	***x***	**35**	DNV GL	
13	SMHI		**36**	RIHMI-WDC	
14	USFD	***x***	**37**	NIERSC	
15	NUIM		**38**	WHOI	
16	IFREMER		**39**	SIO	
17	MPG		**40**	UAF	
18	EUROGOOS		**41**	U Laval	
19	EUROCEAN	***x***	**42**	ONC	
20	UPM		**43**	NMEFC	
21	UB		**44**	RADI	
22	UHAM		**45**	KOPRI	
23	NORUT		**46**	NIPR	
			47	PRIC	

X: Contribution to the deliverable

Dissemination Level		
PU	Public, fully open	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	

EXECUTIVE SUMMARY

This report gives a brief overview of dissemination material for the main target groups of INTAROS: decision-makers in European agencies; decision-makers in Arctic, international bodies and companies; early-career scientists and high-school students and teachers; local communities; and the general public. The material includes project brochures, flyers to specific groups and information packages including videos and written material for students and general public. Material will be developed and updated during the project.

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1. Introduction

This report describes the planned dissemination activities and materials towards 6 target groups. In particular we list the dissemination material produced by month 12. The report will not cover the scientific publications nor the participation of the partners at meetings, scientific conferences and workshops to be performed by the partners. Each target group is addressed in specific Tasks in WP 7 and this is reflected din this report. The report allocates the responsible institution for each activity, but other partners are expected to contribute to the implementation of each activity.

2. Outreach towards target groups

INTAROS has produced some promotion material aimed at all the target groups. This material includes:

- INTAROS film prepared for the kick off meeting
- News stories and blogs published at the Project web-page: http://www.intaros.eu
- An INTAROS brochure has been produced (See Appendix)
- A joint flyer for the Arctic cluster has been produced to promote the EU Arctic research and innovation effort. (See Appendix)

Target group 1. Decision-makers in European agencies

Lead: EurOcean, Contributors: U-Helsinki, NERSC

Objective: Engage the European Agencies in building up of a sustainable integrated Arctic Observing System

Activities:

1. Work together with EU Polarnet and the other projects in the Arctic Cluster to produce dissemination products such as folders and posters. A Communication Task Group has been established with members from all the Arctic Cluster projects, including INTAROS.
2. Produce tailored eNewsletters that will be disseminated to all the relevant decision and policy-makers twice-yearly from year two.

Audience: EU Agencies including European, Environment Agency (EEA), and the European Maritime Safety Agency (EMSA).

Results by month 12:

1. The first INTAROS stakeholder workshop was held in May 2017 and a outcome was used to provide input to the report D1.1 (EuroGOOS). D1.1 will be updated.
2. COP23: Arctic Cluster Session proposal has been submitted by EU-PolarNet (AWI)/APPLICATE (AWI) together with the other Artic Cluster projects.

Target group 2. Decision-makers , international bodies and companies

Lead: EurOcean, Ned Dwyer; Contributor: NERSC

Objective: Inform Decision-makers in Arctic and International Bodies about the INTAROS results and how new and integrated observing systems for the Arctic, including CBMs, can improve the management of the Arctic and Sub-Arctic Seas.

Activities:

This activity will produce outreach material towards public and private bodies, including companies, with an interest in Arctic affairs and has the goal of informing them of project activities and the need for building up a sustainable integrated Arctic Observing System. Flyers and brochures and news letters will be distributed at international events such as Arctic Frontiers (Tromsø, Norway), POLAR2018/AOS2018, Arctic Circle (Iceland), Arctic Science Summit Week, and other future events to reach diverse stakeholder groups.

A particular focus will be on working together with Arctic Council secretariat and its working groups, Indigenous People Secretariat, and Permanent Participants, through the Arctic Portal. Also SAON and its committees Arctic Data Committee (ASDC) and Committee on Observations and Networks (CON). The contact and development of dissemination material towards these intergovernmental organizations will be performed in close collaboration with WP 6 and WP 4 and the Arctic Cluster.

Audience: Arctic Council working groups. Specific dissemination material will be developed to target companies working in the Arctic, in particular organization such as Arctic Business Council, Norwegian Shipping Association (the largest shipping organization in the world), Association of Arctic Cruise Operators, World Ocean Council (WOC), and industries. This work will be linked to WP 1 and WP 6.

Results by month 12: A presentation has been held and delivered upon request to the SAON Board.

Target group 3: Early-career scientists

Lead: EurOcean, Ned Dwyer; Contributors: USFD, FMI, NERSC, UH, IMR, GEUS, GINR

Objective: Contribute to capacity building for early-career scientists.

Activities:

Summer school: The summer school will be organized in **year 4** of the project at the University Centre of Svalbard (Norway) in collaboration with NERSC and FMI. The theme will cover observing systems, with a special focus on existing and emerging technologies and solutions for Arctic waters, atmosphere and land, including space-based, in situ and community-based observations. *(Responsible (UNIS, NERSC, FMI))*

Teaching material: The lecture material developed for use at the summer school will be further distributed and utilized as an educational package openly available to schools and universities, interested in observation-based research in the Arctic, e.g. at annual Hyytiälä (Finland) Winter/Summer Schools/Courses organized by UHEL and the courses organized by University of the Arctic. (The lecturers are responsible for developing their contribution. Editors: *UNIS, NERSC, FMI)*

Internships. Short-term scientific exchange and training of 2-6 weeks for PhD students and early-stage researchers will be organized within the consortium. Project partners will provide details of laboratory projects, or ship-based activities where they can offer training and these will be announced widely. Agreements between the partners will be established to improve mobility of young scientists.

(*USFD)*

Contribution to Arctic Affairs specialization program. A specialization program on Arctic Affairs has been established as collaboration between Aarhus University, Greenland Institute of Natural Resources (GINR), University of Manitoba and University of Greenland. This specialization program provides theory and practical lessons in relation to Arctic monitoring and applications. INTAROS will contribute to this program based on the main findings and case studies of WP6. The incorporation of findings and case studies into lectures will progress during the entire INTAROS program period, particularly towards the end when the main findings of the program are formulated *(Responsible: GINR)*

Target group 4: High-school students and teachers.

Lead: GINR, Thomas Juul-Pedersen; Contributions: USFD, UNEXE, IGPAN.

Objective: Contribute to capacity building for high-school students and general public.

The work towards this target group is implemented through a climate change package, linking high schools to community based monitoring initiatives;

Activities:

Development and implementation of modules within Climate Change teaching packages for high school students and teachers in Greenland as part of collaboration with high schools in Greenland, Government of Greenland, Greenland Institute of Natural Resources and Aarhus University. (Responsible: GINR)

Link high schools with ongoing climate monitoring programs and activities and real life data collection, including community-based monitoring initiatives such as the NFR-REGIME, and EU BEST funded PISUNA project. Connections will also be made with the 'Arctic in a Class Room (ARCUS)' programme coordinated by the Arctic Research Consortium of the United States. (Responsible: NORDECO and NERSC)

Two packages of educational materials for teachers and students of lower and upper secondary schools will be prepared to enhance literacy of Arctic Observations among teachers and students. Workshops for teachers will be prepared to learn how to use the educational packages in cooperation with other European projects e.g. Scientix (community for science education in Europe), ERIS (project from ERASMUS+) and EDU-ARCTIC (H2020 project). (IGPAN).

Target group 5: Local communities.

Lead: NORDECO, Finn Danielsen; Contributor: NERSC; Sub-contractors: ELOKA, YRITWC and CSIPN.

Objective: Capacity building for local communities and civil society organizations.

Activities:

Develop capacity and education material connected to workshops and meetings with local communities. The goal of the material is to build further capacity in community-based observing in the Arctic. There will be a particular focus on professional and cross-disciplinary skills and

competences of the youth to help ensure the sustainability of community-based observing into the future.

Results: Report from community based observing workshop in Fairbanks 10 May 2017

Target group 6. General public

Lead: USFD, Donatella Zona; Contributors: UNEXE, DTU, EurOcean

Objective:

Produce dissemination material (e.g. flyers, newsletters, posters, popular science articles, special issues) to promote high-profile topics in the Arctic such as natural hazards in the Arctic, Greenland ice sheet melt, sea level rise, sea-ice reduction, melting of permafrost, pollution problem and community-based and citizen science observing approaches.

Activities:

1. Press pack will be provided for use by the press offices of these institutions to present and discuss project highlights, and foster engagement with the indigenous and local communities and the policy makers.
2. Develop flyers to advertise for the sessions organized by INTAROS e.g. EGU, POLAR 2018, AGU, OceanObs 2019, and during the annual Arctic Science Summit Weeks.
3. Prepare informational package and exhibition material, including photos and videos from field work in the Arctic, for use in Science Centers in EU countries e.g. Arktikum Science Centre in Finland or VilVite in Norway. This activity will also contribute to promote tourism, by highlighting the unique nature and environment of the Arctic regions. (USFD)

3. Appendix: Brochures for INTAROS and EU Arctic Cluster

INTAROS
INTEGRATED ARCTIC OBSERVATION SYSTEM
The Arctic is undergoing the most rapid changes in the climate system worldwide
An Integrated Pan-Arctic Observing System is required to address environmental and climate change challenges
INTAROS will develop an efficient integrated Arctic Observation System by extending, improving and unifying existing and evolving systems in the different regions of the Arctic.
INTAROS will support the implementation of the EU's Arctic Policy. The first ever Arctic science ministerial was held in 2016 and concluded in a Joint statement on increased international collaboration on Arctic science, signed by 25 nations and the European Union.
Find out more
www.intaros.eu
Coordinator: Nansen Environmental and Remote Sensing Center, Norway
Stein.Sandven@nersc.no
INTAROS receives funding from the European Union's Horizon 2020 Research and Innovation Programme under GA No. 727890. The project will run from December 2016 to November 2021

Develop professional skills

A range of research schools, training programmes, scientist exchange visits, and publications will enhance knowledge, expertise and skills of stakeholders working within management, industry, science and education on Arctic issues.

Cross-fertilize local and scientific knowledge

INTAROS will demonstrate 'real world' applications by combining information from both local community based and scientific observation systems to support decision-makers and stakeholders in implementation of sustainable management in the Arctic.

DEMONSTRATE PRACTICAL BENEFITS

1. Enhance climate observations and studies
2. Improve ecosystem understanding and management
3. Generate ice-ocean statistics for risk management
4. Address natural hazards in the Arctic
5. Improve understanding of greenhouse gas cycle
6. Bring together community based and science-driven observations
7. Support marine and maritime industries
8. Inform fisheries and environmental management agencies.

INTAROS will work with other programmes and initiatives to develop a long-term integrated sustainable Arctic Observation System for future generations.

Co-ordination and collaboration

INTAROS brings together expertise from 49 organizations in 20 different countries in Europe, North America and Asia. A Pan-Arctic forum will be set up to support formulation of agreements and collaboration across EU Member States, non-EU countries and transnational organizations.

Build on existing systems

Use existing observing systems and databases of atmosphere, ocean, cryosphere, geosphere and terrestrial data as the backbone of the INTAROS Integrated Arctic Observation System (iAOS) portal.

Improvement of observations

INTAROS will install new instrumentation to measure physical, chemical, biological and ecological parameters for the atmosphere, ocean, cryosphere, and terrestrial environment. These measurements will fill information gaps complementing remotely sensed data and improving model predictions.

Make information widely available

INTAROS will combine existing data in distributed repositories with the new observations and provide tools for data discovery, aggregation, analysis and visualization. A cloud-based information platform will facilitate easy access for users and stakeholders for a better understanding of the environmental and climate changes in the Arctic.

The environment in the Arctic region is now changing significantly due to increased air and water temperature, thinning and decrease in the area of sea ice, melting of the Greenland Ice Sheet, thawing permafrost and changes in atmospheric and ocean circulation. Such changes have global and regional implications including extreme weather, sea level change, coastal erosion, natural hazards and changes in the ecosystem. Moreover, these changes impact severely on people's living conditions in the Arctic. Exploitation of living and non-living resources, marine transportation and other human activities are expected to increase with additional impact on the vulnerable environment and communities. In order to ensure sustainable development in the Arctic it is necessary to collect more data to advance the knowledge on its climate and environment.

THE EU ARCTIC CLUSTER
PROVIDING ANSWERS FOR A CHANGING ARCTIC
www.eu-arcticcluster.eu
THE EU ARCTIC CLUSTER
INTAROS
The objective of INTAROS is to develop an integrated Arctic Observation System by extending, improving and unifying existing systems in the different regions of the Arctic. INTAROS has a strong multidisciplinary focus, with tools for integration of data from atmosphere, ocean, cryosphere and terrestrial sciences.
www.intaros.eu
APPLICATE
The objective of APPLICATE is to develop enhanced predictive capacity for weather and climate in the Arctic and beyond, and to determine the influence of Arctic climate change on Northern Hemisphere mid-latitudes, for the benefit of policy makers, businesses and society.
www.applicate.eu
BLUE ACTION
Blue-Action seeks to understand the linkages between the Arctic and the global climate systems to improve weather and climate modelling and prediction, to improve forecasting of hazardous conditions and climate extremes, and to co-design targeted climate services with relevant stakeholders.
www.blue-action.eu
NUNATARYUK
NUNATARYUK will develop quantitative understanding of the fluxes and fates of organic matter released from thawing coastal and subsea permafrost; assess risks posed by thawing coastal permafrost, to infrastructure indigenous and local communities and people's health; use this understanding to estimate the long-term impacts of permafrost thaw on global climate and the economy.
ARICE
Arctic Research Icebreaker Consortium
An international cooperation strategy aiming at improving Europe's Arctic capacities by better coordinating the existing polar research fleet, by offering transnational access to a set of international High Arctic research icebreakers and by collaborating with maritime industry in a "programme of ships and platforms of opportunity".
www.eu-arcticcluster.eu
EU-PolarNet
connecting science with society
A polar research consortium with the ambition to co-design a strategic framework to prioritise science, advise the European Commission on polar issues, optimise the use of polar infrastructure and broker international partnerships.
www.eu-polarnet.eu
INTERACT
INTERACT is a circumarctic network of 82 terrestrial field bases in all Arctic countries and adjacent high alpine and forested areas. INTERACT is building capacity for identifying, understanding, predicting and responding to diverse environmental changes throughout the environmental and land-use envelopes of the Arctic.
www.eu-interact.org
ICE-ARC
Ice, Climate, Economics - Arctic Research on Change
ICE-ARC is a FP7 project that brings together experts in the fields of economics, natural and social sciences, and technology in order to directly assess the environmental, social and economic impact of Arctic sea ice loss. These trans-disciplinary programmes are essential if we are to continue to strengthen the links between science and society.
www.ice-arc.eu
EUROPEAN POLAR BOARD
AFFILIATED PARTNER
The European Polar Board (EPB) is an independent organisation that focuses on major European strategic priorities in both the Arctic and the Antarctic regions. Its members include European research institutes, funding agencies, scientific academies and polar operators.
www.europeanpolarboard.org
www.eu-arcticcluster.eu

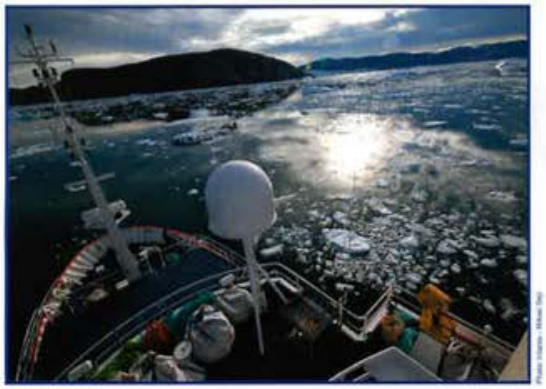
THE EU ARCTIC CLUSTER

PROVIDING ANSWERS FOR A CHANGING ARCTIC

The Arctic is warming at almost twice the global average rate. This has dramatic environmental, economic, and societal implications, which are likely to extend beyond the high latitudes with profound global consequences and risks. Mitigation and adaptation strategies in the Arctic are thus an integral part of the European Union's wider efforts to combat climate change and to implement the Paris Agreement.

Furthermore, with its commitment to implementing the United Nations (UN) 2030 Agenda for Sustainable Development, several EU activities taking place in and relating to the Arctic region contribute to the achievement of the UN Sustainable Development Goals (SDGs).

In order to elaborate appropriate policies, including those relating to climate change, sustainable development and innovation, the EU emphasises the need for better understanding of the challenges the high North is facing. For this reason, the EU continues to be a major contributor to Arctic research, investing around €200 million in Arctic-related research over the past decade and maintaining its current funding level under the Horizon 2020 Programme for Research and Innovation (2014-2020).



www.eu-arcticcluster.eu

EU ARCTIC PROJECT CLUSTER

EU-PolarNet
Coordination action
Duration: 03/2015-02/2020
EU contribution: €2.2M

APPLICATE
Modelling - forecasting
Duration: 11/2016-10/2020
EU contribution: €8M

INTAROS
Observing systems
Duration: 12/2016-11/2021
EU contribution: €15M

BLUE ACTION
Modelling - forecasting
Duration: 12/2016-02/2021
EU contribution: €8M

NUNATARYUK
Permafrost & social impact
Duration: 11/2017-10/2022
EU contribution: €11.5M

ARICE
Knowledge - infrastructure
Duration: 01/2018-12/2021
EU contribution: €6M

INTERACT
Research networking
Duration: 10/2016-09/2020
EU contribution: €10M

ICE-ARC
Observations - forecasting
Duration: 01/2014-12/2017
EU contribution: €8.9M

The EU Arctic Cluster projects have received funding from the European Union's Horizon 2020 research and innovation programme or the European Union's Framework 7 Programme respectively. Please visit our website for the specific grant numbers.

THE EU ARCTIC CLUSTER

Together, the currently funded Horizon 2020 Arctic projects build the EU Arctic Cluster – a network, which merges the most up-to-date findings on Arctic change and its global implications. Its objective is to provide guidance and policy-relevant information and to support the EU in advancing international cooperation, in responding to the impacts of climate change on the Arctic's fragile environment, and on promoting and contributing to sustainable development. In doing so, the EU Arctic Cluster cooperates closely with policy makers, indigenous peoples, local Arctic communities, business representatives and the European civil society.

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INTAROS

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Project partners: