Stakeholder Plan

Hanna K. Lappalainen, University of Helsinki; Tuukka Petäjä, University of Helsinki; Ella-Maria Duplissy, University of Helsinki; iCUPE WP leaders

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WP6 Dissemination and strategical development

Task 6.1 - D 6.1.1: Stakeholder engagement plan (UHEL/R/M4)

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1.1 General Framework

The main aim of the Stakeholder Plan is to ensure that the new iCUPE data products are (i) co-designed together with different end users and (ii) increase awareness of the available Arctic data on short-lived air pollutants relevant to Arctic regions. The new iCUPE data products are filling the current observational gap of the key variables of Persisting Organic Pollutants (POPs), Chemicals of Emerging Concern (CECs), Short-Lived Climate Forcers (SLCFs), and other trace gases in the polar context. The new data (products) are foreseen on:

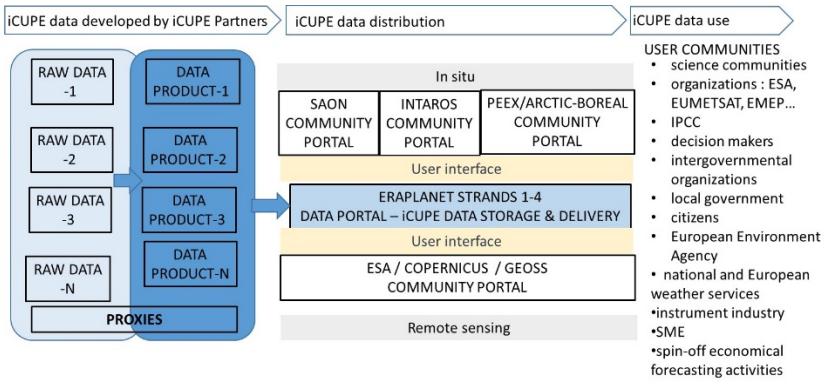
- ice sheet and glacier surface structures
- vegetation biochemical characterization and night light mapping
- atmospheric mercury
- persistent chemicals of Emerging Global Concern in the Arctic and POPs at the global scale

In addition different expert end users general public is one of the stakeholders and information of the Arctic pollutants and their health effects will be distributed during the project lifetime.

iCUPE will deliver data products, metrics and indicators to the stakeholders concerning the environmental status, availability and extraction of natural resources in the polar areas. These data, metrics and indicators will be tailored to identified stakeholders during the stakeholder engagement process. The main categories of the end user groups and their interests on iCUPE end products in general are:

Table 1.

Group Category	Interest focus	Motivation
Research communities, European Environment Agency, geoengineering	improving models, scientific understanding of the Arctic regions	air quality - climate interactions / air quality – pollution / aerosol - clouds incl. weather / quantifying the links to water cycle / natural and anthropogenic hazards in the Arctic context
decision makers, intergovernmental organizations, local government and environmental administration (ministries), citizens	Climate & Air Quality, policy making	continuation of Kyoto protocol process; improved air quality standards; ecosystems; health effects
International in situ observation networks	Monitoring; filling the gap in the Arctic areas	complete Earth Observation data; maintain state of art measurements; development of measurements; future monitoring strategies
National and European weather services	improved weather predictions and risk control in natural hazards /in sea traffic control / in tourism / chemical weather prediction	National and European weather services ; instrument industry; SME ; spin-off economical forecasting activities



1.2 iCUPE Stakeholders

The detailed information of the stakeholder of each main category are provided in Table.2.

Table 2. List of iCUPE Stakeholders representing international programs, research infrastructure, organizations and networks of the Arctic landscape. *THIS TABLE WILL BE A LIVING DOCUMENT AND BE UPDATED DURING THE STAGEHOLDER ENGAGEMENT PROCESS.*

Main Category	Group Name	Group Acronym	Number of Stakeholders in the Group	Name of the Contact person	Organization of the Contact person	e-mail of the contact person
International in situ observation networks	Integrated Arctic Observation System	INTAROS		Stein Sandven	NERSC, Norway	stein.sandven (a) nersc.no
International in situ observation networks	Aerosols, Clouds and TRace Gases Reseach Infrastructure	ACTRIS		Niku Kivekäs Marjut Kaukjolehto		
International in situ observation networks	Integated Carbon Observation System	ICOS		Jouni Heiskanen Eija Juurola	ICOS-ERIC	jouni.heiskanen (a) icos-ri.eu
International in situ observation networks	Advanced predictions in polar regions and beyond	APPLICATE	Project Partners: 16	Thomas Jung, Luisa Cristini (Project Manager)	Alfred-Wegener-Institut (AWI)	Thomas.Jung (a) awi.de Luisa.Cristini (a) awi.de
International in situ observation networks	Connecting Science with Society	EU-Polarnet	Project Partners: 22	Nicole Biebow, Kristina Baer (Project Manager)	Alfred-Wegener-Institut (AWI) Helmholtz Centre for Polar and Marine Research Bremerhaven , Germany	Nicole.Biebow (a) awi.de, kristina.charlotte.baer (a) awi.de
In situ observations	Arctic Monitoring and Assessment Program	AMAP		Martin Forsius	Finnish Environment Institute Biodiversity Centre	martin.forsius (a) ymparisto.fi
International observation networks	European Plate Observing system	EPOS				

International in situ observation networks		ENVRI +	Paolo Laj Ari Asmi			paolo.laj (a) univ-grenoble-alpes.fr ari.asmi (a) helsinki.fi
International in situ observation networks	Connecting Research Infrastructures	COOPEUS				sanna.sorvari (a) fmi.fi
International in situ observation networks		INTERRACT 2 projects				
International in situ observation networks	Year of Polar Prediction	WMO - YOPP		Michael Williams		Mwilliams (a) wmo.int
International in situ observation networks	International Arctic Systems for Observing the Atmosphere	IASOA		Taneil Uttal		
International in situ observation networks	Multidisciplinary drifting Observatory for the Study of Arctic Climate	MOSAiC expeditions in the Arctic	??? Not defined yet	Markus Rex, Anja Sommerfeld (Project Manager)	Alfred-Wegener-Institut (AWI)	Markus.Rex (a) awi.de anja.sommerfeld (a) awi.de
International in situ observation networks	Pan-Eurasian Experiment	PEEX				hanna.k.lappalainen (a) helsinki.fi
International in situ observation networks	Global Atmosphere Watch	WMO-GAW		Aleksander Baklanov		abaklanov (a) wmo.int
International in situ observation networks	AErosol RObotic NETwork	AERONET				
International in situ observation networks	The European Monitoring and Evaluation Programme	EMEP				amann (a) iiasa.ac.at, kjetil.torseth (a) nilu.no
International in situ observation networks	Convention on Long-range Transboundary Air Pollution	CLRTAP				
Hg monitoring networks		AMnet				
Hg monitoring networks		CAM				
In-situ snow observations in the Arctic		SNOWNET				
In-situ snow observations in the Arctic		PNRA				

In-situ snow observations in the Arctic	Operational Oceanography for Sustainable Blue Growth EuroGOOS					
National Satellite EO Data Centres		FMI-Sodankylä Svalvard(?)				jyri.heilimo (a) fmi.fi
Satellite Cal/Val						
Satellite EO		COPERNICUS				??? National Coordinators Germany: http://www.d-copernicus.de/programm/n onale-fachkoordinatoren/
Satellite EO		GEOSS Cold regions		Yubao Qiu	RADI, China	qiuyb (a) radi.ac.cn
In-situ and vertical observations, satellite EO data services	Svalbard Integrated Observing System , Data system, Knowledge Centre	SIOS / SIOS-KC				information (a) sios-svalba
International modelling communities		EU Blue Growth project (?)				
Atmospheric Hg speciation, modeling		GMOS and AERIS				
intergovernmental organizations	Sustaining Arctic Observing Networks.	Arctic Council / SAON		Jan René Larsen Peter L. Pulsifer		jan.rene.larsen (a) amap.no pulsifer (a) nsidc.org
intergovernmental organizations		Arctic Council /AMAP EG				
intergovernmental organizations		IGAC/IASC				
intergovernmental organizations		IGAC/PACES				S.Arnold (a) leeds.ac.uk kathy.law (a) latmos.ipsl.fr charles.a.brock (a) noaa.g
intergovernmental organizations		Cryosphere and Atmospheric Chemistry (CATCH) IGAC/CATCH		Jennie Thom latmos.ips Thorsten Bartels-Rausch		jennie.thomas (a) latmos.ip fr maey (a) bas.ac.uk thorsten.bartels-rausch (a)
Research communities		Cryosphere-atmosphere interactions in				michael.boy (a) markku.kulmala (a) helsink

		a changing Arctic climate CRAICC				
Research communities		PEEX, IASC-ISIRA				
Ocean Monitoring and forecasting services		Copernicus Marine environment monitoring service CMEMS		Stefano Nativi		
decision makers, intergovernmental		Arctic Council				
decision makers, intergovernmental		IPCC				
Decesion makers on national level, local levels, such as city and regional administration		Greenland(Disko) Svalbard(Longyearbyen), Canada (ELOKA), Alaska/Yukon (YRITWC), Russia (CSIPN).				

To confirm the Stakeholder Identification and Analysis process is accurate and complete, the project team and the Project Manager, will help facilitate a series of reviews with the CIO and others. In addition, optional qualitative interviews may be performed for the Stakeholder Groups identified as most influential or most impacted by the project to validate that their issues and concerns have been captured accurately.

2. Stakeholder engagement process

2.1 Roles of stakeholders to different stages of the project lifetime & after the project

The figure 2. introduces the timeline of the main activities during the 3 year of iCUPE. The stakeholder engagement starts at the end of 1st year after the project preparatory phase. The collaboration with the EO and modelling stakeholders of iCUPE will lead to substantial improvement in integration of in-situ and satellite EO and modeling.

Table 3 shows time table of the different activities of iCUPE.

3. Methods for the engagement

List of Methods for the engagement

- iCUPE briefings
- results from face-to-face meetings
- presentations and interactions with the stakeholders
- workhops, meetings
- questionaries and interview
- commentary rounds for iCUPU data products via webpage tool

(iii) Communication and stakeholder engagement activities

An open and interactive communication and stakeholder engagements is required to maximize the effect of iCUPE research and data service development. The communication is divided into three categories: (i) internal within the project, (ii) horizontal communication between ERAPLANET Strand activities, and (iii) external interactions with other activities within GEO and Copernicus, European environmental research infrastructures, end-users of the data products and general public.

Internal communication between project partners

The internal dissemination aims are:

- to monitor the successful progress of the project and the delivery of the project outcomes as scheduled
- to ensure information flows and contributions between work packages

The internal dissemination of knowledge within iCUPE will be boosted via internal project meetings (face-to-face meetings, teleconferences, connect-pro/ WebEx/Skype), web-pages and iCUPE mailing list. The project delivery reports and meeting minutes will be available from the project intranet. The project partners will promote and disseminate project results on appropriate platforms under their normal process. The iCUPE consortium will

organize annual project reviews in a connection of the workshops and ERAPLANET annual meetings throughout the project three year period. A large part of intra-project communication and during-the-project dissemination will be handled by website and mailing lists, which will be managed by the iCUPE Project Office.

Horizontal communication within ERAPLANET strands

The horizontal dissemination aims are:

- to ensure information flows and contributions between ERA-Planet strands with the special focus on the data interoperability
- to increase the visibility of the iCUPE data products and research outcome in the ERA-PLANET community
- to enhance the stakeholder engagement of the ERA-Planet mission level stakeholders

The horizontal dissemination within ERA-PLANET is performed in close collaboration with other Strand projects and their Project Offices under the guidance of ERA-PLANET coordination office. This ensures a quick mobilization of novel and innovative service development and internal expertise sharing between the Strands. The horizontal work enables harmonization of ERA-PLANET work and outcomes. It facilitates a common voice for the ERA-PLANET to maximize the impacts within European research and development landscape via planning of joint dissemination work to the external audiences.

External dissemination and stakeholder engagement

External dissemination aims are:

- to improve the way scientific knowledge can stimulate the research communities and general public interested and concerned in the polar regions
- to increase the usage of the in situ and satellite based data of the polar regions
- to increase the access to polar field stations and their data usage
- to prove science based new information guiding the policy making of the global challenges and related development of polar regions.

iCUPE recognizes that in order to maximize the impact of the research, it is crucial to understand the views of the stakeholders. During the annual face-to-face meetings with the stakeholders, their needs for the contents and formats of the produced data, data products and impact metrics will be discussed. The gathered information will be utilized in preparation of the data.

(iv) Methods & tools for dissemination

The iCUPE will use traditional methods of communication and modern tools like social media. The traditional methods include scientific papers, science based assessments, e-News, press releases, articles in popular science magazines and in domestic and international newspapers. A special attention will be paid to the distribution of information about the iCUPE activities to the broader society in an understandable way. Furthermore, the dissemination of results will also take place via press-releases, brochures, peer-reviewed publications, presentations in international conferences like GEO workshops, EGU, EAC, AGU, iLEAPS, SOLAS and IGAC. The Advisory Board of iCUPE will ensure that the most urgent knowledge is immediately transferred to relevant users, regardless of whether they are end-users like policy makers or the public in general.

Dissemination of integrated results and data products will be optimized via a iCUPE network website / infra. The website will be constructed at the beginning of the project and it will be continuously updated and

maintained during the project. The iCUPE site / infrastructure will also serve as a public information source for the iCUPE, where iCUPE stakeholders can share materials and ultimately serve as an archive of the activities and impact of the iCUPE for reporting. The iCUPE site will provide summarized information on the latest results and access to scientific publications including archives of research results (papers and other documents including scientific animations).

iCUPE will collaborate with the ERAPLANET Project Office and Arctic-boreal hub / PEEX-HQ coordinated by UHEL. iCUPE will deliver information to Arctic-Boreal Hub/ PEEX e-News. Via PEEX e-news to information is distribute also the Russian and Chinese research communities at large scales. iCUPE will find synergy with the social media tools of the A-B Hub / PEEX and may, for example, visualize the iCUPE science and infrastructures. Through a A-B Hub map, the collaborating iCUPE infrastructures (stations, institutes, etc) can be mapped and documented (eg. what type of instruments/research is carried out where).

The main avenue for stakeholder engagement is through joint ERAPLANET Annual meetings organized as a horizontal activity. Exploitation of results will target different stakeholder groups involved during the project.

Furthermore, we strength involvement of decision-makers on national and international levels, and include also connections to local levels, such as city and regional administration. Feedback of these people including the public will assist in better designing, elaboration and development of the data and data services envisioned in iCUPE. This task also provides the avenue to disseminate and interact with end-users from different levels in regards to pollution impact assessments developed in WP 4. This activity will lead to a report summarizing iCUPE briefings, results from face-to-face meetings, presentations and interactions with the stakeholders.

3. Activities that will occur in the stakeholder management process.

(i) Data products commenting via platform

Different stakeholder are able to see and comment data products via the iCUPE website. iCUPE will provide a virtual platform that will distribute information on the data products during the process. The data is harmonized within ERA-PLANET in virtual platform. This enables interoperability between Strands. Testbeds, pilots and data

iCUPE will pursue cross-thematic interoperability and contribute effectively to GEOSS approach. iCUPE is integrating in-situ and satellite remote sensing data and contributes together with end-users to the definition of key and society-relevant indicators. This promotes the use of EO Essential Variables and their generation for monitoring processes related to the environment monitoring (Task 6.1). Furthermore, iCUPE will implement the set of interoperability principles and Key Enabling Technologies promoted by ERAPLANET as part of the Work Package tasks such as GCI brokering approach and its principles (GEOSS Data Management and Data Sharing Principles; GEO Discovery and Access Broker -technology, assure shared data/service quality, include re(use) metadata for shared data/services and will contribute produces data/services to GEOSS via the Common Infrastructure.

Together with the other ERA-PLANET projects, YOPP, APPLICATE and INTAROS iCUPE implements a set of best practices. It will also give recommendations to improve interoperability among the existing and emerging data infrastructures in order to contribute to GEOSS via the GCI. iCUPE will address several GEO tasks, such as IN-02:

Earth Data Sets, IN-05: GEOSS Design and Interoperability, SB-01: Oceans and Society, SB-05: Impact Assessment of Human Activities, HE-02: Tracking Pollutants.

All final data products and proxies, such as advanced aerosol data products based on the joint operation of in-situ observations and satellite-derived products or different proxies for gaseous precursors and oxidants (Task 4.4). This will be developed within ERAPLANET strand projects to keep in mind interoperability and data sharing principles endorsed by GEOSS. We explore possibilities to maximize the use of new data products and advertising these to larger communities, such as in several community portals such as SAON Arctic Observation System and Arctic Portal and PEEX Program- the Arctic-Boreal Hub Portal. The SAON portal expands the visibility of the iCUPE data to US and Canadian and PEEX to Russian and Chinese research and other end-user communities. For selected topical data sets, some will be included in the University of Helsinki smart-SMEAR platform and disseminated via metadata catalogs to a wider audience. The data curation, metadata addition and data description are under the responsibility of the WP leaders and necessary resources for this are included in the project plan. The work in iCUPE will utilize the KETs endorsed within ERAPLANET. This is facilitated with horizontal data tasks in WP 5.

iCUPE will be participating to the Open Research Data in Horizon 2020. It's data policy follows the general guidelines of "Science Europe Principles on Open Access to Research Publications and implements also the GEO Data Sharing Principles (DSP). This will pave the way towards interoperability between the systems and digital infrastructures. E.g. subsequent work with the iCUPE data will enable e.g. analysis of a longitudinal transect, where coordinated observations will be implemented for columnar aerosol and snow spectral characteristics. The open access to new non-protected iCUPE data will be provided free of charge to all end-users.

(ii) Outreach and general public

Key results targeted for the science community will be published in high-impact journals, such as Nature and Nature family journals, Science, PNAS, The Cryosphere, Global Change Biology or Atmospheric Chemistry and Physics e.g. in PEEX Special Issue. The scientific results will contribute to the 1st PEEX Scientific Assessment (drafted in 2018). iCUPE will be actively introduced in annual conference proceedings, such as at EGU, AGU.

The research results will be categorized by the iCUPE Steering Group as either (i) openly disseminated or (ii) protected. The disseminated materials can be publications, software or research data. For the scientific publications the "gold model" open access is preferred and the article is immediately provided in open access mode as published.

4. Methods for monitoring and evaluation of the engagement.

the Communications Plan and the Risk Management Plan, the iCUPE Project will have mechanisms to receive ongoing direct feedback from key stakeholders. Individual stakeholders will be encouraged to participate and to voice questions and concerns, with the most serious issues and concerns that are raised addressed in a formal, rigorous process through the Issues and Risk logs.

As described in the Scope Management Plan, the project will solicit broad participation in the collection and validation of requirements, which will uncover issues and concerns early on so they can be addressed.

Stakeholders are critical to the project's success. The project team has planned for and will work to involve, engage and listen to all key stakeholders throughout the project lifecycle