ARKTALAS HOAVVA PROJECT

PM-1: MINUTES OF MEETING

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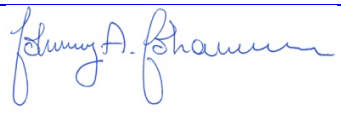
Approved by (NERSC)	Johnny A. Johannessen NERSC Project Manager	
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Revision Change log

Issue	Date	Type	Change description
1.0	13 February 2020	Draft	First version of minutes
2.0	3 July 2020	Final	

ARKTALAS Hoavva Project Meeting 1 (PM-1)
5-6 February 2020
Location: Nansen Center, Thormoehlensgate 47,
Bergen, Norway

The meeting presentation material and deliverables is uploaded and made available for internal use at the project website (https://arktalas.nersc.no).

Meeting participants:

- Bertrand Chapron (BC), Ifremer (bertrand.chapron@ifremer.fr)
- Fabrice Collard (FC), OceanDataLab (dr.fab@oceandatalab.com)
- Craig Donlan (CD), ESA-ESTEC (Craig.Donlon@esa.int)
- Johnny A. Johannessen (JAJ), NERSC (Johnny.Johannessen@uib.no)
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- Angelina Cassianides (visiting PhD student from Univ of Brest) (angelina.cassianides@ifremer.fr)

Excused: Diego Fernandez (ESA), Lasse Pettersson (NERSC), Pierre Rampal (NERSC), Camille Lique (Ifremer)

Day 1 – Wednesday 5 February

Welcome and Introduction

JAJ welcomed everyone to PM-1. The draft agenda was approved (see Annex 1). In a Tour the Table all participants introduced them self. It was noted that the Sami national day was to be celebrated on 6 February.

CD provided a short introduction and hinted to key aspect of the project, notably:

- Synergy of different EO dataset. Merging SAR and AMSR-2 is essential in this context. This is important precursor work with relevance for CIMR and the Copernicus user driven program. The CMR mission requirement document is available at https://esamultimedia.esa.int/docs/EarthObservation/CIMR-MRD-v3.0-20190930_Issued.pdf
- IPCC future views on sea ice area and extent. What do we need? Surface roughness and waves. Fetch, onset of freezing/thawing, upper layer mixing.
- Easy access and visualization of data.
- At the CIMR meeting on 16-17 April the project is expected to provide short presentation on work logic, approach and preliminary findings.
- Polar science workshop in Copenhagen in 16-18 June 2020. Words from Arktalas expected.
- Recall the strong compliance between EC and ESA priorities and strategies targeting the Arctic area.
- There are clear potential for more synergy studies targeting the Arctic Ocean combining scatterometry and SAR and passive microwaves and SAR.

Overall aim and specific objectives of the Arktalas project

JAJ briefly presented the overall goal and corresponding specific objectives (https://arktalas.nersc.no).

Overall goal: Use satellite observations in synergy with in-situ data and modelling tools to characterize and quantify the processes driving changes in the Artic sea ice and Arctic Ocean. In particular, this goal will target the following four major interlinked and cross-disciplinary Arctic Scientific Challenges (ASC):

- ASC-1: Characterize Arctic Amplification and its impact
- ASC-2: Characterize the impact of more persistent and larger area of open water on sea ice dynamics
- ASC-3: Understand, characterize and predict the impact of extreme event storms in sea-ice formation
- ASC-4: Understand, characterize and predict the Arctic ocean spin-up

Specific objectives:

- **OBJ-1:** Define and implement scientific analysis, with a focus on synergy application building on a multi-modal data-driven analyses framework.
- **OBJ-2:** Develop and generate a multi-mission database of satellite, model outputs and in-situ measurements for the Arctic Ocean over a period of at least 10+ year including the 2018/19 season. A data access system and data visualisation and scientific analysis tool will be implemented.
- **OBJ-3:** Implement at least 6 science-based studies addressing the Arktalas Science and Society Challenges. *(The achievements associated with OBJ-2 will be essential for the selection and execution of the science-based studies.)*
- **OBJ-4:** Analyse the impact of planned future missions on the Arktalas Science Challenges and knowledge with a focus on their likely scientific and societal impacts and contribution to synergic application of EO data sets.
- **OBJ-5:** Prepare and submit scientific journal articles reporting the scientific outcomes of the Arktalas study. *(Connected to OBJ-3.)*
- **OBJ-6:** Prepare a Scientific Roadmap of potential future activities and collaborations after 2020. *(Will include identification of priority areas to be addressed in potential future activities (OBJ-4) in the Arctic Ocean.)*
- **OBJ-7:** Promote the Arktalas study and application of ESA satellite missions in the Arctic Ocean (conferences, educational material, high quality plots, training courses, web site, web portal, reports) and via the organisation of an open scientific meeting located in a to be decided Arctic region.

JAJ also eluded to the work plan and explained the delayed start of the project, mostly since key partners of the project were deeply involved in the SKIM mission proposal and user consultation meeting. So, although the kick-off took place on 9 July 2019 the real project work did not begin until September-October. Consequently PM-1 was delayed by approximately 3 months.

Discussion of the four ASCs

Following this the four Arctic Scientific Challenges (ASCs) expressed in the Statement of Work (SOW) were briefly revisited. No particular new views and/or disagreement to these ASCs were raised. For ASC-3 related to extremes there are evidence that local episodic extremes may have far reaching impact, predominantly through fast responses in the atmospheric circulation. Regarding Polar lows that might trigger upwelling in the trailing wake it is expected that the occurrences of this at high latitudes will be different than associated with hurricanes in lower and mid latitudes. The different water mass properties and more barotropic structures, at least during winter are expected to influence this. Moreover, the warm and saline northward flowing Norwegian North Atlantic Current could stimulate more heat loss to the atmosphere during cold air outbreaks. The rather small spatial resolution of Polar lows are also an issue that influences the observation capabilities, at least using passive microwaves. Observations taken during the ongoing MOSAIC drift campaign may also provide interesting data set in support to extreme studies.

Technical Note-1

JAJ presented the content and status of TN-1 document:

- Literature survey and current knowledge of sea-ice-ocean processes that may have an impact on Arctic Ocean regime change in the context of the four ASCs.
- Identify key scientific questions that can be addressed using EO data in synergy with other measurements during the Arktalas project.
- Identify potential journal articles
- Identify the satellite and other data
- Consolidated Data Access Requirements Document (DARD).
- Limitations in the availability and/or quality of data sets
- Plan the development and implementation of the Arktalas data analysis and visualisation system (AVS)
- Other aspect relevant to the Arktalas study
- Agree baseline activities to be implemented during the Arktalas study

A couple of minor updates were agreed and undertaken during the meeting. It was then approved by CD as deliverable D-10: ARKTALAS SCIENTIFIC ANALYSES AND DATA REQUIREMENTS PLAN.

Outline of the status of the six papers

Paper 1: Arctic amplification and its impact (by Igor Esau). Relevant to ASC-1. Arctic amplification is commonly defined as a ratio of the Arctic warming to the hemispheric or global warming. The study will be based on a synthesis approach with specific use of data such as:

- Surface air temp
- Sea ice/snow changes
- Environmental changes (NDVI)
- Albedo, cloudiness, radiation fluxes
- Water vapor

The following papers were referred to: Comiso and Hall, (2014) - Climate trends in the Arctic as observed from space; Comiso et al (2017) -Variability and trends in sea ice cover: results from different techniques; Reynolds et al, 2008 - Importance of permafrost wrt NDVI. Relationship between satellite derived LST, Arctic vegetation type and NDVI; Hwang et al (2018) - Contribution to Radiation feedbacks; Chernokulsky and Mokhov (2012) - Climatology of Total Cloudiness in the Arctic: An Intercomparison of Observations and Reanalyses, *Advances in Meteorology*, *2012*, 1–15. https://doi.org/10.1155/2012/542093). The recent paper in *IEEE TGRS* by Zabolotskikh, Khvorostovsky and Chapron (2019) (**DOI:** 10.1109/TGRS.2019.2948289) that proposes an advanced algorithm for atmospheric water vapor column (WVC) retrieval from the Advanced Microwave Scanning Radiometer (AMSR) measurements over the Arctic sea ice (SI) and open ocean waters is also relevant for water vapor observations over the Arctic.

A comment was about use of the Russian North Pole station to complement the in-situ data primarily taken from coastal land-based observation stations.
Action: IE will look into this possibility.

Paper 2-Wind-waves and currents across the ice edge: Exploring mechanical effects and feedbacks with models and remote sensing (led by Fabrice Ardhuin). Relevant to ASC-2. Wave propagation inside the sea ice, compare to S-1 and CFOSAT. Process study on parameterization of waves in ice. How can combination of active and passive satellite data be used to assess this? Inertial motion from ITPs and S-1 may also be investigated, as will comparison of sea ice damage and lead fraction from S-1 to passive microwave texture anomalies. Additional papers are expected to emerge from this work.

Paper 3: On the assessment of Arctic storm effects on sea ice dynamics, new sea ice formation and ice-ocean stress (led by TW). Relevant to ASC-3. This will be based on use of the sea ice model neXtSIM developed and run at Nansen Center. Will include comparison and assessment against RGPS.

Potential synergy with passive microwave data to examine surface roughness textures may also be explored. In this respect it is noted that CIMR 37 GHz channel will offer a 4 km resolution in contrast to the AMSR-2 that only offer a 4 km resolution at the 85 GHz channel.

Paper 4: Response of Total and Eddy Kinetic Energy to the recent spin up of the Beaufort Gyre Relevant to ASC-4. The paper by H. Regan, C. Lique, C. Talandier and G. Meneghello is already accepted and published on line in JPO. In contrast to previous findings, the paper conclude that the Beaufort gyre is able to spin up and sustain a higher level of mean kinetic energy that is generally not accompanied by higher levels of EKE. Two explanations are offered for this, notably:

- the presence of the continental slope tends to stabilize the gyre as suggested by Manucharyan and Isachsen (2019), so that the intensification of the mean current there only results in moderate enhanced levels of EKE.
- to the north the gyre is able to expand in response to an increase in Ekman pumping which extends to the north west during and after the spin up, flattening the isohalines and thus limiting the development of baroclinic instabilities.

Paper 5: Observational evidences of eddy-sea ice interactions in the pack-ice and in the MIZ (led by Camille Lique and Angelina) Relevant to ASC-2. This paper will focus on mesoscale eddies observed in ITP data and detected in SAR images. In the period 2004 to 2019 evidence of about 595 eddy features are identified in the ITP data. ITPs report position every hour and collect and transmit data from several profiles in the upper 700 m per day. Collocation with SAR data is ongoing. Reference to the paper by Muckenhuber et al (2016) will be relevant.

Paper 6: Impact of sea-ice friction on tidal modelling in Arctic Ocean (led by M. Cancet, Noveltis). Relevant to ASC-1. Some preliminary results were forwarded. The work is in an early stage, but the findings emphasize the importance of having access to reliable bathymetry in order to properly account for bottom friction in the tidal modelling.

Status of AVS (ODL)

FC presented the status of the Analyses and Visualization System (AVS). The aim of this task is to implement the Arktalas Hoavva Analysis and Visualisation System (AVS) that allows users to browse the data hosted in the Arktalas Data Archiving System (ADAS) and display them on a map at full resolution. This tool will be used during the studies to explore the data sets in order to find interesting cases and compare products with each other to discover possible synergies, but also as a communication support to promote both the data and the studies during workshops and meetings. The design and implementation of AVS is based on the Syntool software and also based on heritage from previous projects (e.g. http://SWARP.oceandatalab.com). The backend offer integration to ADAS. AVS is operated in polar-stereographic projection with -45 degrees as the reference direction. Presently the visualization examples include:

- Waves in sea ice are seen in the NRCS due to velocity bunching;
- CFOSAT wave scatterometer signal of waves in the MIZ;
- S-3 SLSTR near infrared (850 nm) animation of sea ice drift in the Greenland Sea;
- Examples from SEAScope

Status of ADAS (NERSC and Ifremer)

AK presented to current status of the Arktalas Data Archiving System. The aim of this task is to assemble and quality control the Arktalas Data Set and implement an Arktalas Data Archive System (ADAS). ADAS will be realized as a distributed data repository with a centralized data search interface. The data repository will comprise data services provided by the partners and services available from other providers including ESA Scientific Hub, ESA CCI Portal, Collaborative Ground Segments, NSIDC, etc. Several functionalities were emphasized, notably:

- Data shall be available and downloadable both at local (NERSC) and remote (e.g. Ifremer)

repositories;
- Discovery and download of metadata will be possible;
- Connection to AVS will be established and maintained.

The data will cover the pan-Arctic domain including the oceanic regions north of 55N. NERSC will provide search interfaces to access distributed data available via OpeNDAP, FTP or on local file servers at NERSC, IFREMER and ODL. The search interface will be realized as an online web form and as Python API e.g. in Jupyter Notebooks. The search engine will be available in Docker images or virtual machines that can be updated daily on the users' host machines. NERSC will keep the database updated on a central server (available as docker images). As such, the user will always have an updated search interface by provisioning his/her system on a daily basis.

ADAS will offer access to near real time (NRT) data, case-by-case snapshot data and long-time series. During the early phase of the implementation priority will target access and download capabilities of Sentinel-1 SAR, Sentinel-3 RA/visible/IR data together with AMSR-2 and SSMI data.

At the early phase, the combined and interconnected ADAS and AVS work shall agree a so-called ***golden year*** for which the visualization and download capabilities shall priorities. This could, for instance, be connected with Paper 5 in which collocated ITPs and SAR data are in focus for the studies of mesoscale eddies in the sea ice covered Arctic Ocean.

Challenges, Limitations and Risks

This concerns mostly Task 2a – connected with the implementation and operation of ADAS. The team cannot in general offer open and free access to Level 1 data unless we have managed to obtain agreement with the data providers. This is, in particular the case for high resolution SAR data, such as from Radarsat-2 (and eventually Radarsat Constellation). Moreover, the content of native high-resolution Level 1 data will be fragmented and tailored to specific events and research priorities. It will not be possible under the given budget to establish a homogeneous Arctic coverage multiyear database of such Level 1 data at native resolution. In addition, the data quality may be limited due to uncertainties in observation sensitivities, signal analyses from mixed pixels and use of empirical-based retrieval algorithms. Another limitation, that also influence the quality control, is the availability of in-situ data for validation.

Overview of complementary ongoing and planned projects

AK gave a presentation on complementary projects at the Nansen Center, notably:
- TOPVOYS funded by RCN and MarTERA Co-fund
- ESA funded Denoise
- ESA funded MOIRA
- ESA funded CVL
- RCN funded SIOS
- SHOM funded

Discussion and assessment of TN-1 and the six papers

The discussion primarily evolved around dynamics and thermodynamics in the atmospheric boundary layer and its two-way interaction with the sea ice and ocean in the Arctic Ocean and surrounding seas. Among issues at stake were: - limited observations of the wind field over sea ice covered oceans; - drag coefficient for a complex and variable sea ice surface with and without snow cover: - sea ice temperature; - the broad range of interactive quantities with variations at multiple temporal and spatial scales.

Use of Large Eddy Simulations (LES) should be more systematically explored in combinations with Sentinel-1 SAR derived sea ice deformation and drift. Highly interesting and challenging area with clear potential for a scientific paper.

Day 2 - Thursday 6 February

Review and update of the project planning

The dates for the coming meetings was adjusted and agreed according to the slight delay of the project (see table below) . PM-2 will take place in ESTEC on 1-2 July 2020. Moreover, the science meeting to be held at UNIS – Svalbard is scheduled for 13-15 April 2021. Early announcement will ensure that external participants can block these dates in their calendars.

ID	Date	Meetings	Duration	Venue	Participation
KO	9 July 2019	Kick-off Meeting	0.5 day	WebEx	All
PM-1	5-6 February 2020	Progress Meeting	2 days	NERSC, Bergen	NERSC, Ifremer, ODL
PM-2	1 July 2020	Progress Meeting	1.5 days	ESTEC	NERSC, Ifremer, ODL
PM-3	September 2020	Progress Meeting	0.5 day	WebEx	All
PM-4	Early Nov.2020	Progress Meeting	2 days	Ifremer, Brest	NERSC, Ifremer, ODL
PM-5	Merged with PM-7				
PM-6	KO+18 tbd	Progress Meeting	1.5 day	NERSC, Bergen	All
PM-7	13-15 April 2021	Joint PM-7 & Science Meeting	3 days	UNIS/Longyearbyen	All
FM	September 2021	Final Meeting	1.5 days	ESTEC	All

Planning of the Scientific meeting

The scientific meeting planned at UNIS, Svalbard on 13-15 April 2021 is a major event of the Arktalas project. The aim is to reach about 60 attendants. The appointed external experts to the project including Ron Kwok (NASA-JPL), Vladimir Kudryavtsev (RSHU) and Alexander Komarov (Env. Canada) will be invited to attend. An early announcement of the scientific meeting is also expected to trigger interest at University of Svalbard (UNIS), both among scientists, lecturers and students.

It will be arranged around talks, including the six scientific papers, as well as round table discussions. The major findings of the six scientific papers will be presented in accordance with the four ASCs. An overview of ADAS and AVS will also be provided. Latest achievements and findings from other Arctic related projects and field campaigns such as INTAROS, SIOS, YOPP and MOSAIC will also be invited to be presented at the meeting. The meeting shall also highlight the relevance of the Arktalas project in light of the UN Decade of Ocean Sciences (2021-2030), as well as GCOS and WCRP.

Review and update of project website

The website hosted at NERSC is found at https://arktalas.nersc.no will be updated to include two new content lines, notably Calendar and Document.The former will give a timeline of key project milestones, whereas the latter will be restricted to project partners and contain: - deliverables; minutes of meeting; PPT presentations and scientific papers.

A project logo is under development and should be ready before PM-2. In so doing the cluster logo for Arctic+ projects supported by ESA will be examined, as will the Polarview logo.

Rolling list of Action Item

Action 1: IE will look into this possibility.

Action 2: JAJ (and all) to announce tentative dates of the Scientific Workshop at Svalbard from 13-15

April 2021.
Action 3: AK and JAJ in consultation with Jean Francois Piollé will provide an outline for invoking data and metadata in ADAS. Will be included in D-20.
Action 4: MB will check regulations for distribution of Radarsat 2 data available throught eh bilateral Norway-Canada agreement.
Action 5: JAJ to contact the PI of the MOSAIC field campaign.
Action 6: Ensure clear visibility of the Arktalas project at the EO4Polar Science workshop in Copenhagen on 17-19 June 2020.
Action 7: Proposal for Arktalas logo

Status of Deliverables

ID	Short Name	Deliverable Title	Brief description of content	Due at Mtg.#
D-10	TN-1	Arktalas Science Analysis and Data Requirements Plan	Following the template provided in the SoW this plan will describe the data collection approach and the corresponding scientific analyses targeting, in particular the 4 major Arktalas Scientific Challenges.	TN-1 signed and approved
D-20	TN-2	Design of the Arktalas Data and Archive System (ADAS)	The Arktalas Data Archive System (ADAS) will be distributed and store priority satellite data and other complementary data sets including in-situ data and model fields covering areas north of 50 N as identified in Task 1. It will capitalize on existing data repositories residing among the partners.	PM-2 Delivered 11 May Revised 3 July
D-30	ADAS-UG	ADAS user guide and QC results	This guide will describe the quality control procedures and the corresponding documentation of the quality outcome.	PM-3
D-40	TN-3	Design of the Arktalas Visualization and Analysis system (AVS)	The Analyses and Visualization System (AVS) will be based on the SynTool software, a Web portal developed by ODL for the interactive visualisation of satellite data, in-situ data and numerical simulation results. The SynTool software suite contains processing tools to extract time and space coverage from the raw data files and generate graphical representations for them while preserving their native geometry and resolution.	PM-2 Delivered 11 May Revised 3 July
D-50	TN-4	Verification Report for ADAS and AVS	This will essentially document and confirm the functionality and interoperability of ADAS and AVS.	PM3
D-60	AVS-UG	AVS user guide and QC results	This guide will describe the functionality of the AVS.	PM-3
D-70	Paper 1	Science paper 1	Arctic Amplification: A synthesis of contributions from sea ice and cloudiness *(Relevant to ASC-1).*	Draft at PM-5, final version at FM
D-80	Paper 2	Science paper 2	Wind-waves and currents across the ice edge: Exploring mechanical effects and feedbacks with models and remote sensing (*Relevant to ASC-2).*	Draft at PM-5, final version at FM

ID	Short Name	Deliverable Title	Brief description of content	Due at Mtg.#
D-90	Paper 3	Science paper 3	On the assessment of Arctic storm effects on sea ice dynamics, new sea ice formation and ice-ocean stress *(Relevance to ASC-3)*.	Draft at PM-5, final version at FM
D-100	Paper 4	Science paper 4	Response of Total and Eddy Kinetic Energy to the recent spin up of the Beaufort Gyre (*Relevant ASC-4)*.	Accepted & Published on-line in JPO
D-110	Paper 5	Science paper 5	Observational evidences of eddy-sea ice interactions in the pack-ice and in the MIZ *(Relevance to ASC-2)*.	Draft at PM-5, final version at FM
D-120	Paper 6	Science paper 6	Impact of sea-ice friction on tidal modelling in the Arctic Ocean *(Relevance to ASC-1)*.	Draft at PM-5, final version at FM
D-130	Paper 7	Science paper 7	Impact of future satellite missions on the understanding of changes in the Arctic Ocean	Draft at PM-6, final version at FM
D-140	Web-Stories	Arktalas Web Stories (one every 3 months)	Web-based news stories reflecting the achievements of the project during its implementation.	PM-1,PM-2, PM3, PM-4, PM-5,PM-6, PM-7
D-150	PROC	Scientific Review Proceedings	Based on the main presentations and outcome of the open scientific meeting a Scientific Review Proceedings will be prepared and delivered.	4 weeks prior to FM
D-160	SR	Arktalas Scientific Roadmap	The Arktalas Scientific Roadmap (SR) will summarize the outputs, lessons learned, knowledge, international collaboration, and tools developed by the project. These findings will then be mapped into potentially future activities.	4 weeks prior to FM
D-170	FR	Final Report	A complete self-standing description of the work done in the different Tasks of Arktalas Hoavva covering the whole scope of the project. The FR includes a comprehensive introduction of the context, a description of the programme of work and report on the activities performed and the main results achieved.	4 weeks prior to FM
D-180	TDP	Technical Data Package	The TDP contains of the final version of all approved technical documents.	FM

ID	Short Name	Deliverable Title	Brief description of content	Due at Mtg.#
D-190	MR	Executive monthly progress report and actions database (part of the MR)	Monthly progress report on current activities including: • Action items completed during the reporting period; • Description of progress: actual vs. schedule, milestones and events accomplished; • Reasons for slippages and/or problem areas, if any, and corrective actions planned and/or taken, with revised completion date per activity; • Events anticipated during the next reporting period (e.g. milestones reached); • Milestone payment status, • Any other aspect considered important to report to the Agency.	Monthly, for the full duration of the contract due on the 1st working day of each calendar month
D-200	CCD	Contract Closure Documentation	CCD document conforming with the layout as provided in Annex A to the SoW.	End contract

Presentation of nextSIM

EO gave an interesting presentation of the sea ice modelling activity at Nansen Center connected with neXtSIM, which applies an advanced Maxwell elasto-brittle sea ice rheology and is forced with ECMWF fields. Currently, it is a stand-alone sea ice model with a slab-ocean constrained by TOPAZ. The model uses a Lagrangian finite-element (triangular mesh) grid and ensures both forward and backward simulations. Work is ongoing to couple neXtSIM with both the HYCOM and NEMO ocean models.

The presentation triggered an interesting discussion on the combined use of the Sentinel-1 SAR data and neXtSIM. Taking benefit of the rich acquisitions in the Fram Strait one might explore and compare a data driven and model driven approach for studies of sea ice deformation and drift. This could, for instance, allow the value of the drag coefficient in the model to be assessed. Additional complementary use of LES could further strengthen such a study, for instance, by comparing the impact of a heterogenous Cd (e.g. from a surface area with (1-f)*ice + f*water; f fraction area) to advance the definition and assessment of Cd as function of the fractional area (f).

Annex 1:
ARKTALAS Hoavva Project Meeting 1 (PM-1), 5-6 February 2020
Location: Nansen Center, Thormoehlensgate 47,
Bergen, Norway

Draft Meeting agenda

Day 1 – Wednesday 5 February

09:00-09:15 Welcome, approval of agenda and logistics
09:15-09:30 Tour the Table
09:30-10:00 Words from ESA (C. Donlon/D. Fernandez)
10:00-10:30 Aims & Objectives of the Arktalas project (J.A. Johannessen)
10:30-11:00 The four ASCs: Comments around the table

11:00-11:20 Coffee and tea break

11:20-12:00 Presentation of TN-1 (J.A. Johannessen and B. Chapron)
12:00-13:00 Outline of the status of the six papers (lead authors)

13:00-14:00 Lunch

14:00-14:45 Status of AVS (ODL)
14:45-15:30 Status of ADAS (NERSC and Ifremer)
15:30-1600 Challenges, Limitations and Risks

16:00-16:20 Coffee and tea break

16:20-17:00 Overview of complementary ongoing and planned projects
17:00-17:45 Discussion and assessment of TN-1 and the six papers (all)

18:00-19:30 Welcome cocktail at Nansen Center

Day 2 - Thursday 6 February

09:00-10:00 Review of the project planning and deliverables (J.A. Johannessen)
10:00-10:30 Planning of the Scientific meeting (all)

10:30-10:50 Coffee and tea break

10:50-11:15 Review and update of project website
11:15-11:25 Project logo
11:25-11:30 Summary and Review of Action Item
11:30-12:00 Presentation of nextSIM

12:00-13:00 Lunch

13:00 Adjourn

Annex 2: Project Partners

	Johnny A. Johannessen, Lasse H. Pettersson, Anton Korosov, Tim Williams, Pierre Rampal and Igor Esau **Nansen Environmental and Remote Sensing Center**, Norway
	Bertrand Chapron, Camille Lique, Fabrice Ardhuin, Jean-Francois Piollé **IFREMER**, France
	Fabrice Collard, Sylvain Herlédan, Lucile Gaultier, Gilles Guitton **OceanDataLab**, France
	Eric Jeansou, Mathilde Cancet. **NOVELTIS**, France