**MINUTES KL: Agenda INTAROS final synthesis report meeting**

20 January 2022, 1000-1700 CET

Online meeting: <https://global.gotomeeting.com/join/151010925>

**1000-1010: Welcome and introduction (S. Sandven)**

The WP-leaders will present a synthesis from each WP addressing the following points:

1. Objective and Tasks (according to the updated work plan,).

2. Main Achievements: Use bullet points addressing each of the achievements

3. Expected Impact - for the WP as a whole

4. Challenges

5. Recommendations

M:

**1010-1040:** **WP1: Requirements and strategy for Pan-Arctic Observing Systems**

**3-5 minutes behind**

E. Buch: Requirements and collaboration – focus on European collaboration (10 min)

S. Sandven: Collaboration with North America, Russia and Asia (10 min)

**1 minute ahead**

Comments and discussion (10 min)

Recommendations:

EB: Have looked at feasibility vs economy & logistics.

Rec: Elaborate on those questions

Rec: The central Arctic should be focus, not only for ocean

Rec: (SS) Collaboration must be separated into various levels (Int.nat., nat., etc (see slide))

FD+Gro vdM: key stakeholders: government agencies (and not just govt projects), and representatives of communities and organizers of CBM programs (and not just CBM programs)

More of resources in the project (future as INT is finished) to govt agencies., slightly less to researchers (in govt projects).

HS: recommendationhow to impove how to communicate with different stakeholders - mediator roles?

* LI: takes time to bild trust. Build on existing resources, projects. Start and maintain dialog continuously, factor in resources for meetings etc.
* EB: Take in people from user community
* MNH: Learning from PolarNet: Involve sth as early as possible.
* -SS: Take in PolarNet recommendations
* HL: Establishing a common language, + trust building takes time (CO19 not good in this regard). On site meetings are key

From chat (after session end):

MKS: Eriks figure and different gaps including gaps in sustainability would be a good way to frame a discussion on stakeholders

HS: At the ROADS meeting they also mention the language and terminology. It is also important that define mutual expectations.

**1040-1120: WP2: Exploitation of existing observing systems**

**4 min behind**

R. Pirazzini: Synthesis of WP2 (20 min)

Comments and discussion (20 min)

HS: When considering the data delivery chain only the observing systems has been assessed, and the data systems were not assessed directly e.g. their services both upstream and down stream. Would it make sense to recommend a detailed assesment of the large number of data systems and how they follow up the FAIR.

* RP: FAIR was not really assedd, more relevant for DATA, not systems.

FN: How is ARCMAP to be supported in the future? You say that it is expected to grow and be more populated in the future. But, how will that be supported (people, funding)? Wouldn’t make it sense to “transfer” this (and other similar developments under INTAROS) to some long-term sustained system such as Copernicus, SIOS…? My main concern is the preservation of legacy of the various tools developed under INTAROS.

* RP: Nothing is stopped.
* TH: The ARCMAP wil continue with internal fudning from NERSC (Ref WP5 presentation)

SQ: none of the recommendations (or gaps) seemed to deal with GHGs. Is this just an omission

* RP: Coverage from land obs, comes from GHG network observers (it IS included). Further automatization of instruments.

MNH+Fanny GA: For ocean data, it was unclear to me whether INTAROS would recommend an approach with Supersites or instead distributed OS.

* RP: We should be more clear on this. There is lack of super sites (in the WP2 synthesis): Need more input from Ocean contributors. Some contradictions prevail in the recommendations. Supersites more for process understanding, as a reference + improve rerival algoritms for RS. But also obs of single vars. Balance needed.
* Keep an eye of the wording of the WP2 recommendations.

After session:

MT: About super sites; for distributed observations, there is a need for high-quality well calibrated reference observations. This is where super sites could play a role, and those will have to be based on either really advanced buoys or ship-based observations.

(5 min techn break)

**1125-1205: WP3: Enhancement of multidisciplinary in situ observing systems**

**10 min behind**

A. Beszczynska-Möller: Synthesis of WP3 (20 min)

Comments and discussion (20 min)

MKS: One conclusion from WP3 is that when activities where linked to sustained monitoring programs, INTAROS funding directly contributed to sustained observations.... so even modestly funded monitioring frameworks is an efficient way to "harvest" project based resources and funnel them into shared, standardized data

* ABM: …

MNH: a keyword for technological challenges, although not addressed directly by WP3 observations,  may also be “sensor miniaturization” (eg for biologging providing multidisciplinary observations).

* ABM: A recomm. To low cst / low power sensors

HS: Bottleneck is to get data form stations under the ice. Maybe you mentioned.

1200-1230: Lunch break

**1245-1325: WP4: Community-based observing programmes**

F. Danielsen: Synthesis of work in Greenland, Russia and North America (20 min)

L. Iversen: Synthesis of work in Svalbard (10 min)

Comments and discussion (10 min)

LI: Example a construction proj at LYR was stopped due to lack of local knowledge. (INTAROS approach would have helped if incorporated)

Base future on long term collab with UNIS. A constant flux of people and personnel: Knowledge is ‘fluid’, not well coordinated.

RP: WP2&WP4 results we should perhaps mention also the joint assessment of observation capacity, where, for the first time, we adopted a common frame of assessment topics among scientific and CBM observations. This could be considered a concrete step toward integration

* FD: really good point, thank you, this could probably be listed both for WP2 and for WP4

MKP: Collab NERSC (LI) NORDECO (FD, MKP) has been very fruitful.

FD: Agree. Also to HS & SS & leader group.

PV: Has learnt everything on CBM in INTAROS. Recommend more people to include CBM.

LI: Combination of UN goals will be even more fruitful. Also to attract funding.

HS: I CBM is included also in calls that seems a bit disconnected from the local communities - perhaps recommend to have communities stronger impact on the call fomulations. CBMers shld go in early.

* LI: Smart Citiex proj has some recommendations on this.
* HS: Res Counc Norw has something in their plans for next 5 years. HS will bring INTAROS synthesis to this process.
* HS: PolarNet must use same info vs EU system.
* SS: People from var countries must use their presence in varius EU committees to forward same. E g ESA.

**1325-1405: WP5: Data integration and management**

**(kanskje +4)**

H. Caumont: Synthesis of work by Terradue, ARMINES, etc. (15 min)

T. Hamre: Synthesis of work on data catalogue and iAOS portal (15 min)

Comments and discussion (20 min)

HS: Please make sure that you [**all INTAROS contributors**] register new contributions to exsisiting or new systems. This help to make your work and contribution visible.

Vicente, EuroGoos: Regarding marine data, are you aware of the EMODnet arctic data portal, which was produced by EMODnet together with CMEMS INSTAC and the support of EEA: <https://arctic.emodnet-physics.eu/>

* TH: Yes we are aware.

Further questions to wrap up session (S.S.)

1405-1415?: Break

**1435-1605+: WP6: Applications towards stakeholders**

G. Ottersen and M. Sejr: Synthesis of results from all the contributors to WP6

We allocate 1. 5 hours for presentations and discussion.

DG: Please note that also BSC and NERSC made substantial contributions to the climate initialization case study

FD: Possible elaborate a bit on what you mean by 'need for more societal-kind of indicators'.

* GO: Origins from work on fisheries. E g ‘how far from the coast should one fish’
* Gro vdM: “What is in these data for me”, ask the stakeholders/ users.
* Sth want research community to develop their ecoyst models.
* FD: Fisheries is THE are where one can connect science and sth-s. Use aproaches from CBM / citizen science work in the recommendation.
* GvdM: We need advances expertise to take this further + working with communities / users.

MKS+Fabien O: Most wps focused on lack of data (resolution in space & time): May be these synoptic products in wp6 is more valuable, key challenge is transforming raw data to such products and indicators.

* HS: The work from UHAM is a strong example of this. Acoustic products again based on that product further emphasizes this.
* Processing time is a challenge. E g UHAM reanalysis now ends in 2016. Efficiency of getting data QC checked and recessed must be enhanced.
* Note ‘Ocean Sound’ is a EOV – more focus n observing it.

HS: Essential Arctic Variables are under development in the SAON. Have you looked into those?

* ABM (in SAON): …
* EB: AOS (ASSW): Use what exists of EOV and link them to the Arctic. Use of data: Unlikely that there is data around “nobody cares about”.
* GvdM: How much time is needed to get all these data? (Monitoring vs products: cant have it all… Must be discussed jointly by science and stakeholders)
* MNH: SAON: Data should / will be shared across communities.
* S.S.: Must describe HOW various data are important in making the various products.

MS: If Keeling would have asked the stakeholders we wouldn't have the Mauna Loa observatory and the time series of CO2...

* HS: Again, this reflects the different (contradictory ) needs of basic monitoring vs products.
* FD: Keeling probably had some ideas about what was happening from talking with local communities about what was going on, isnt that right? Anyhow we often see that new theories and ideas emerge from Local Knowledge, see eg Late Lessons from Early Warnings. I think the picture is more mixed and that it is not an either or...
* - KL: Agree
* MT: “Keeling was just curious; he really didn't do his first measurements for any particular purpose; certainly not anything to do with climate. “

After online session:

HS: Curious driven research are  extremely important for driving our knowledge forward. Stakeholder research or monitoirng are equally important for developing the sustainable society.  Sometimes we can combine it and sometimes it is difficult. Therefore, there must be different calls for different directions, but in the end we can benefit from both approaches if we follow FAIR. Here the interoperability between the Data systems comes into play, and good and respectful communication between research communities, local communities and data managers. Clarify expectations taking into account differences in culture, language and terminology.

1545+-1555+ Break

**1555-1615: WP7: Dissemination and outreach**

R. Higgins and D. Zona: Synthesis from WP7 (20 min)

Comments and discussion (10 min)

FD: In terms of a long-term Arctic educational hub, It might be useful to think of connecting with UArctic for this purpose.

* HS: @Torill: It could perhaps also be part of the iAOS portal.
* - TH: Yes, we could include educationsl ateiroanl in the portal .
* RH: @hanne @torill great!
* TH: For instance we could link to educational material under tools and resource pages: <https://portal-intaros.nersc.no/pages/tools.> Competence building has been a key activity in INTAROS, and should be sustained after the proejct ends.
* RH: @Finn, agree strongly

**1655-1700/1725: Wrap-up and structure of the Final Synthesis report (**deliverable D1.11). Erik has suggested the following structure:

*List of contents*

1. Introduction
2. Where have INTAROS brougt us since 2016
   1. Sociatal needs and requirements
   2. Observing system evaluation and gap analysis
   3. Advances in existing observation networks, sensors and platform technology
   4. Citizen science
   5. Data management
3. How to exploit INTAROS towards an Arctic Observing System
   1. Optimised design of observing systems
   2. International and European initiatives
   3. Future governance
4. Recommendation for immediate actions

FD: What is expected from WPleaders (and others) ? What will the report be used for?

* S.S. It is up to us. Must agree on the writing style. (Have structure and # of pages per wp).

FD: Recommendation needs: Who are they for? When will they get them (how are the recommendations targeted also in \_time\_)?

* HS: Isnt this the roadmap?

FD: Must write something that has an impact! In a digestible manner (for EU, policymakers obviously: they need to have something to act on)

S.S. Material is in place more or less already (FD, WP4 in web-page; D3.16; D6.19 if reorganized more thematically)

APA: Target groups must be clarified. Avoid differentiation along WPs/Tasks. Rearranging for target groups can be time consuming. INTAROS is “all ovwr the place” (by its nature). Clarity is the key word for synthesis.

RP: WP2 & WP5 has overlaps: the joint results must be presented to get attention. The wp2 recommendations are quite general. In WP1 and 5 they are more specified (developed).

* KL: WP2 is mostly an intermediate, project internal wp.

ABM: Recommendation is easy as one not includes who should do it and when.

ABM: Heterogenic obs systems. Does not promote going into too technical detail in the recommendations. +: Must avoid repetitions. But for initial writing, just add ore than less. Editors will homogenize/ synthesise.

GO: Recomm. Must come out of INTAROS as a whole. (E g req of resolution comes into all wps, must not be duplicated ad nauseam). Task leads: recommendations -> WP-leaders -> Stein and writing group reduces/ synthesizes.

HS: Isnt D6.19 sufficent :

- GO: WPlead is no expert on all. Recommendation must be detailed by task leaders.

FD: I think the guidance is pretty clear but the no of points or space allowed per heading perhaps need to be specified

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Time schedule:

Ready for 3rd week Feb ( = for ExB meeting)

Work flow / template:

Stein will remake the template for input, with inputs for suggestions from others and from this meeting (se above).

INFO: All presentations of this meeting will be available to all.

ALL WPleads: Please send all to Stein now!

Policy doc: Input will be extracted from the Roadmap work / synth rep work.

Turnout day 1

Eija Asmi, FMI

Hanne

Stein

Kjetil

Torill

Lisbeth

Andreas

Andrew

Anne S GEUS

Arnfinn

Bin Cheng, FMI

Chr Herbaut

Claudie Marec

David G

Delphine Mathias

Erik B

Fabien

Fanny

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GN-0489 (Piotr?)

Hanna Lappalainen, UH

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Martijn Pallandt (UB/MPG?)

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Mathilde BS, UiB-GEO

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