

Arild Sundfjord, Arctic Ocean Program Leader, Norwegian Polar Institute

International Arctic Science Cooperation Seminar, 07. December 2022



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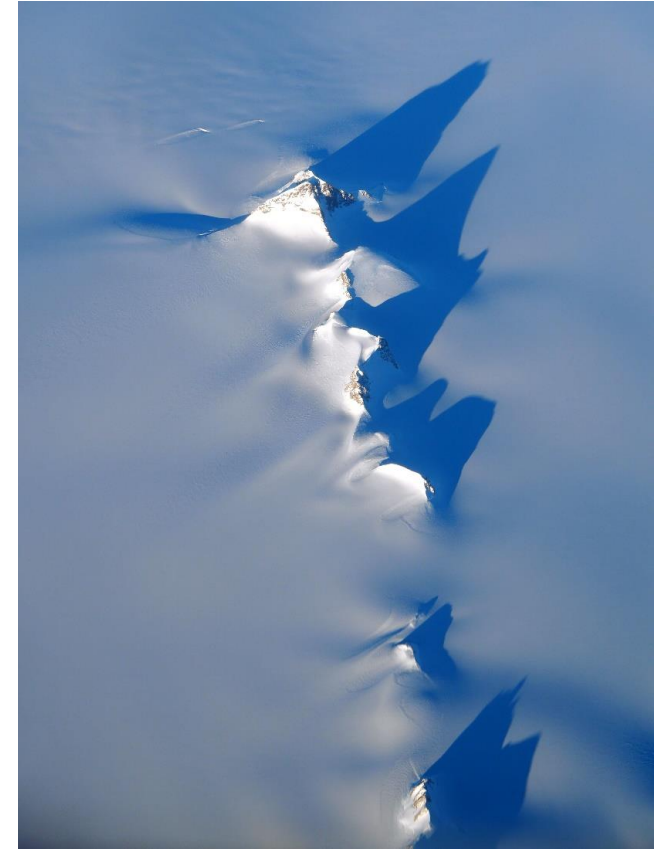
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ARCTIC PASSION

Pan-Arctic Observing
System of Systems:
Implementing Observations
for Societal Needs

- European Commission H2020 Program
- 4 years, 18 countries
- 35 partner organizations and 6 Indigenous Communities
- KOPRI has recently joined as official partner
- July 2021 – June 2025
- Website: www.arcticpassion.eu
- Coordination: Alfred Wegener Institute for Polar and Marine Research



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Overall Project Objectives

- Co-create a **coherent, integrated and sustainable pan-Arctic Observing System of Systems**
- Meaningful collaboration with **Arctic communities, Indigenous Peoples and organisations;**
- Expand monitoring capabilities, also through **broad inclusion of Indigenous Knowledge and Local Knowledge;**
- Improve **data interoperability** and simplify access to 'application-ready' environmental data for the benefit of all users;
- **Improve monitoring to support predictions, risk assessment, inform and guide mitigation and adaptation and sustainable development**

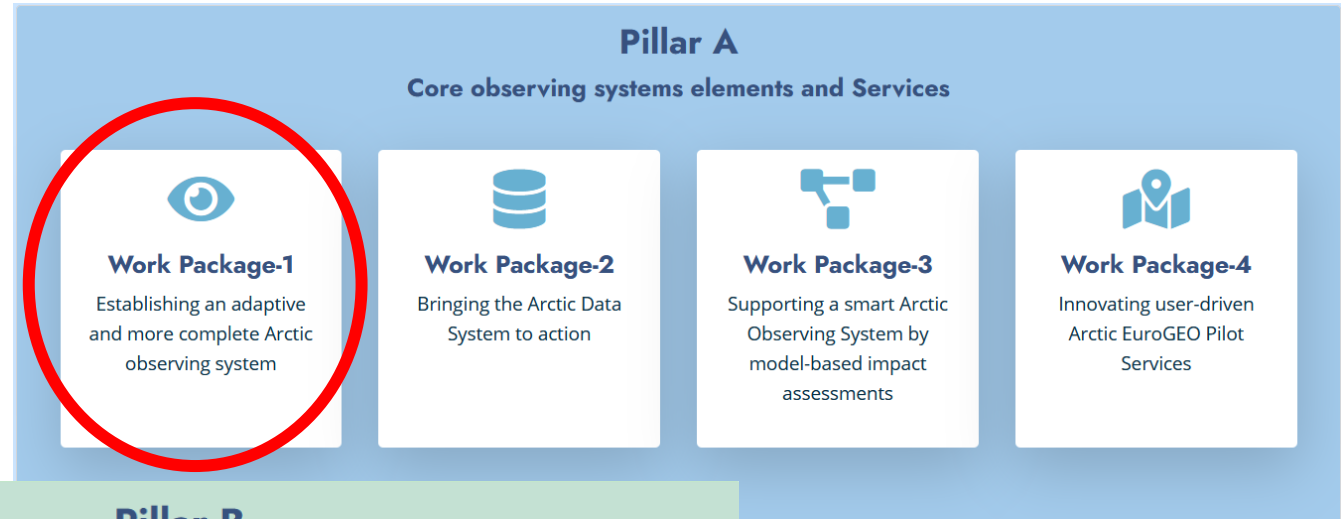
Geographical regions of activity of Arctic PASSION



- PS1 "IK and LK Event Database"**
 C1 – C7 communities
 C1 Unalakleet, Alaska
 C2 Tahtlan and Gwitchin Communities, BC-Yukon, NWT, Canada
 C3 Attu, Greenland
 C4 Näättämö basin, FI/NO
 C5 Ponoï, Russia
 C6 Khanty-Mansia (Ob), Russia
 C7 Lower Kolyma, Russia
- WP1/WP3** Glaciers and Greenland ice sheet
- PS2/WP3 "Permafrost"**
 Permafrost on land
 Sporadic permafrost (10 – 50 % coverage)
 Discontinuous permafrost (50 – 90 % coverage)
 Continuous permafrost (> 90 % coverage)
 Source: Overduin et al. (2019); Obu et al. (2019)
- PS4 "INFRA"**
PS5/WP1 "Aerosol sat-val network"
PS7 "Acoustic monitoring"
PS8 "Lake Ice"
WP1 Drifting buoys
WP1 EONs including moorings
- PS6/WP3 "Shipping safety"**
 Example of Trans-Arctic Vessel traffic
 Example of local Arctic Vessel traffic
- WP1/PS5 INTERACT** stations with specific Arctic PASSION activities

The Work Package structure of Arctic PASSION

Strengthening
core observing
system elements



Decision-making
support



Synthesis and
outreach



Some of the marine activities so far

RV Kronprins Haakon cruise 2022; deploying new long-term moorings, sea ice drifting buoys and establishing a new standard transect for ship-borne observations

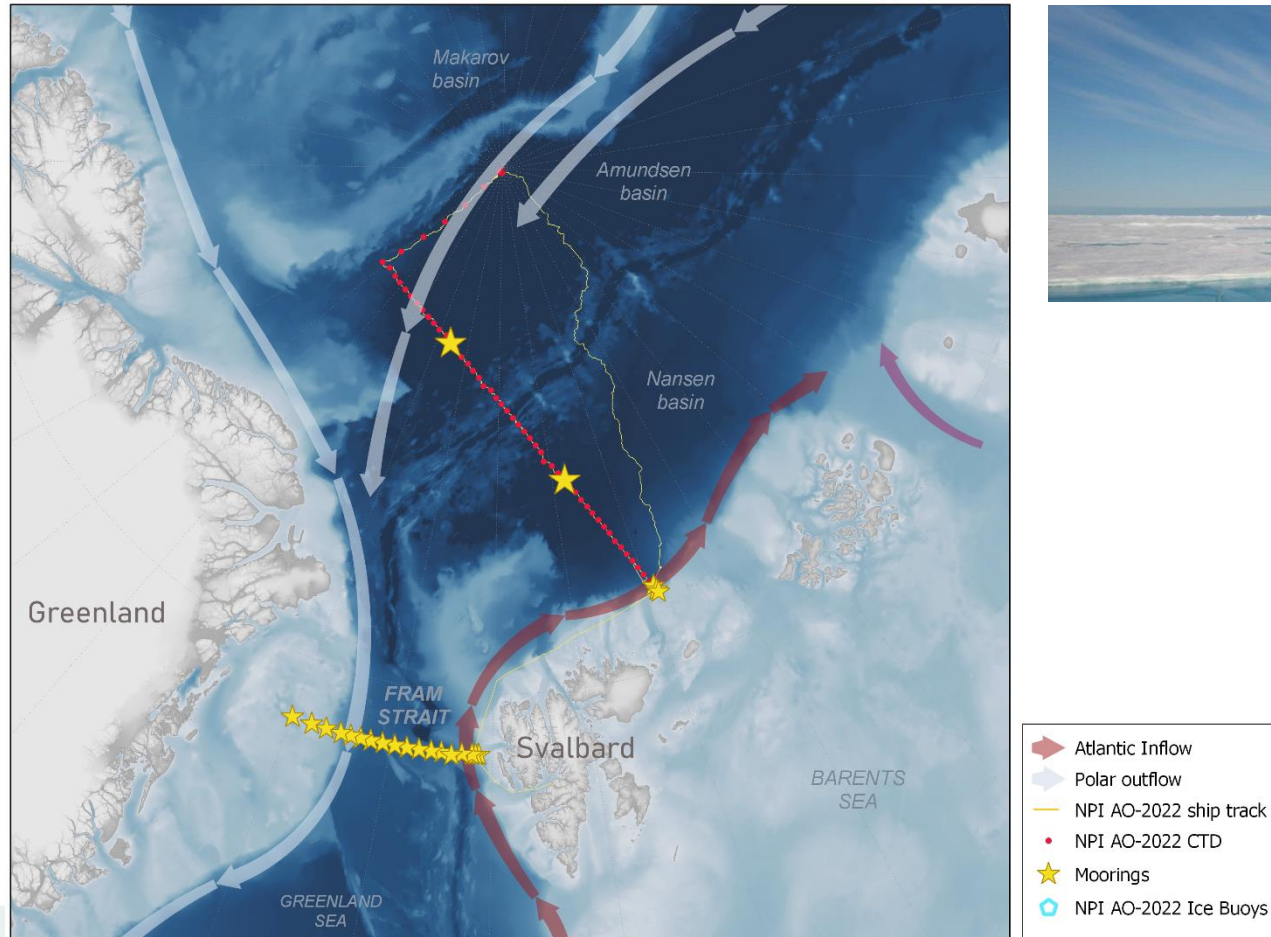


Photo by Trine Lise Sviggum Helgerud /Norwegian Polar Institute

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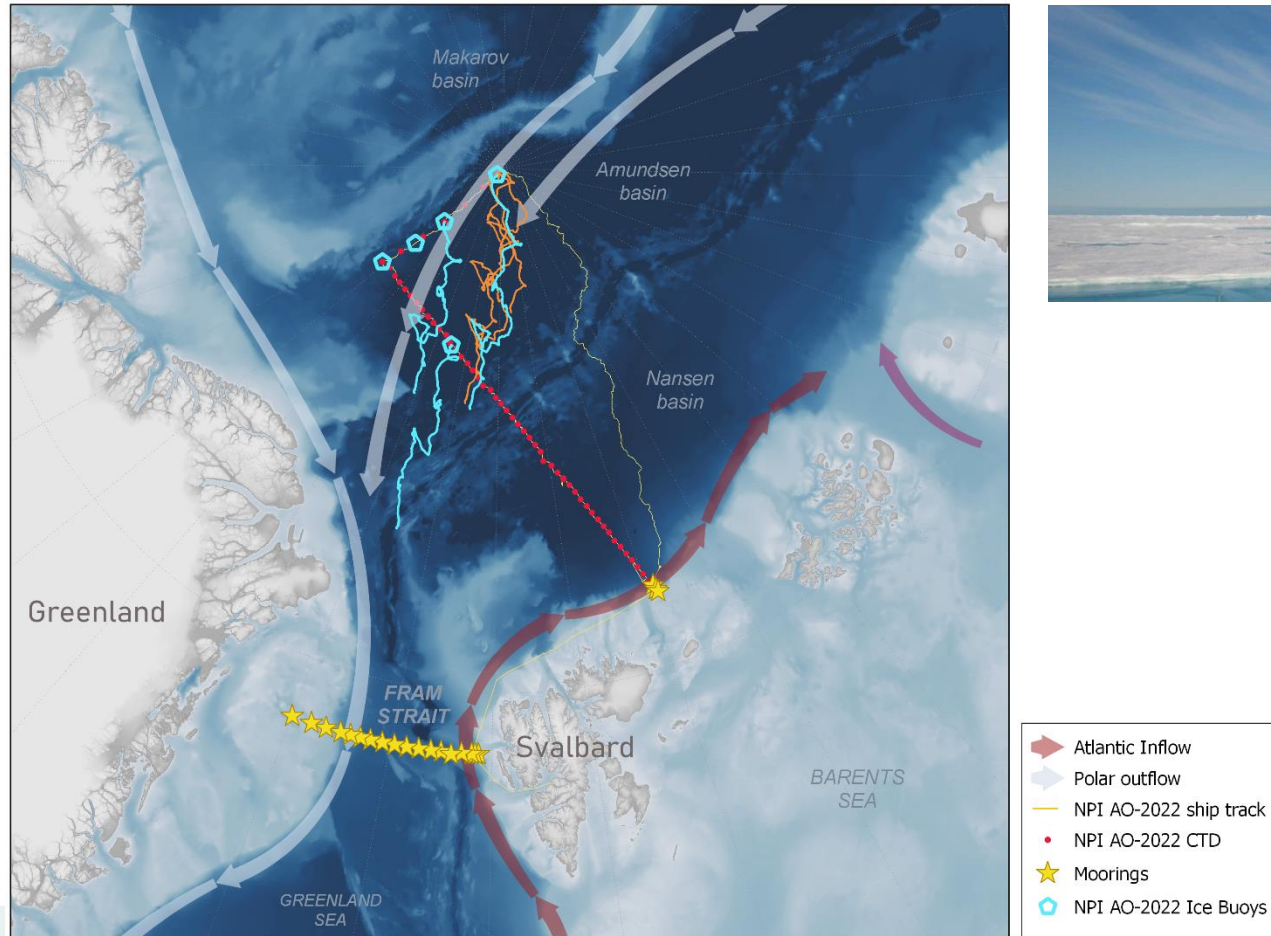


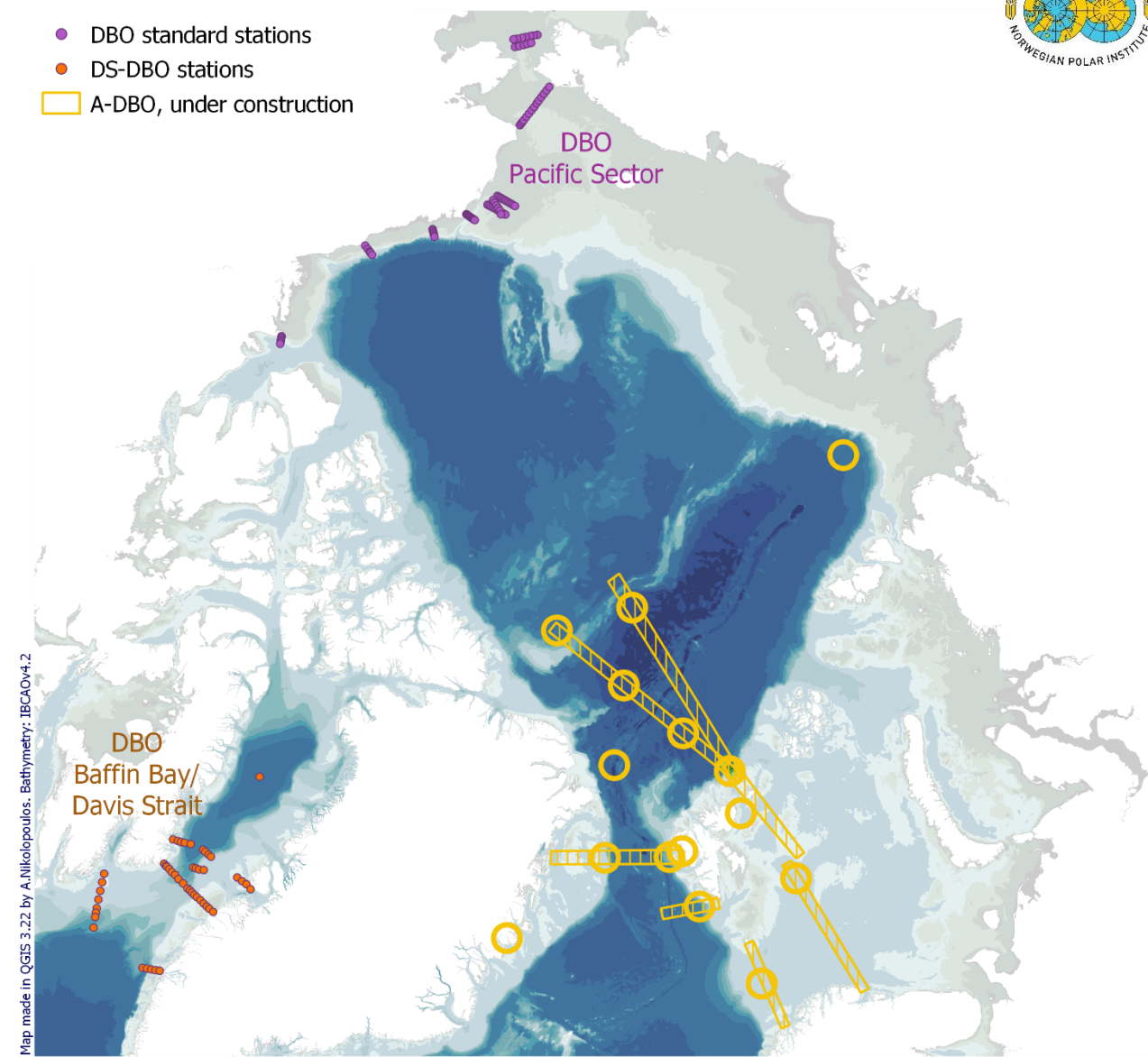
Photo by Trine Lise Sviggum Helgerud /Norwegian Polar Institute

The Atlantic-Arctic Distributed Biological Observatory

- a comprehensive marine observing system for climate and environment

- Identify key locations for collaborative monitoring and research
- Joint and open planning - better use and sharing of infrastructure
- Better and more open sharing of data, common protocols for data processing and handling
- Create win-win situations between institutions with long-term funding and mandates, and those working on project basis with more focused research objectives
- For more information, please visit <https://arcticpassion.eu/adbo/>

- DBO standard stations
- DS-DBO stations
- A-DBO, under construction



Note: preliminary A-DBO map, to be further refined

INTERACT – International Network for Terrestrial Research and Monitoring in the Arctic



<https://eu-interact.org/>

- Infrastructure project encompassing an arctic network of 68 terrestrial field bases
- Covers northern Europe, US, Canada, Greenland, Iceland, the Faroe Islands and Scotland as well as stations in northern alpine areas.
- INTERACT specifically seeks to build capacity for research and monitoring all over the Arctic
- Offers access to numerous research stations through the Transnational Access Program.
- INTERACT participates in Arctic PASSION



INTER \rightleftharpoons ACT

Community Based Observations

Including Indigenous and Local Knowledge

Fieldwork in West Greenland on marine noise pollution



Team from Qaanaaq surveying the ocean under the ice.

Photos: Steffen M. Olsen



Commentary Science Must Embrace Traditional and Indigenous Knowledge to Solve Our Biodiversity Crisis

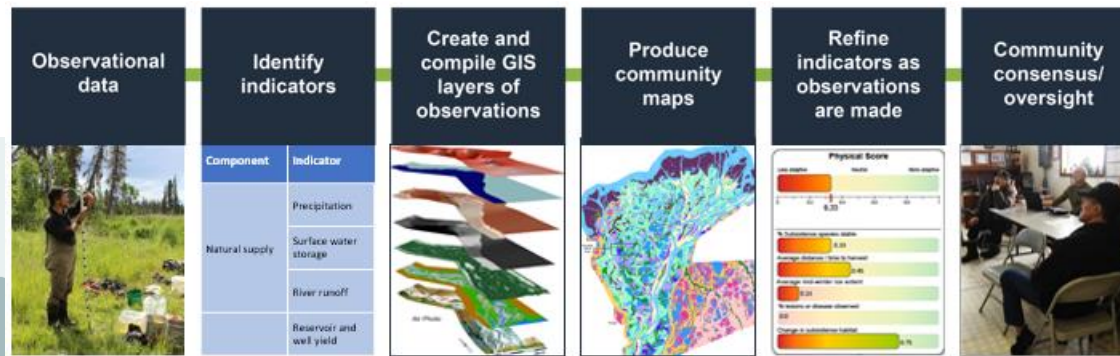
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<https://doi.org/10.1016/j.oneear.2020.07.006>



Preserving the Knowledge of the Elders

(Gwich'in Tribal Council, 2021)

Process of co-development of a community-centered, regional early warning and response system based on interoperable data from community-based observing networks and systems



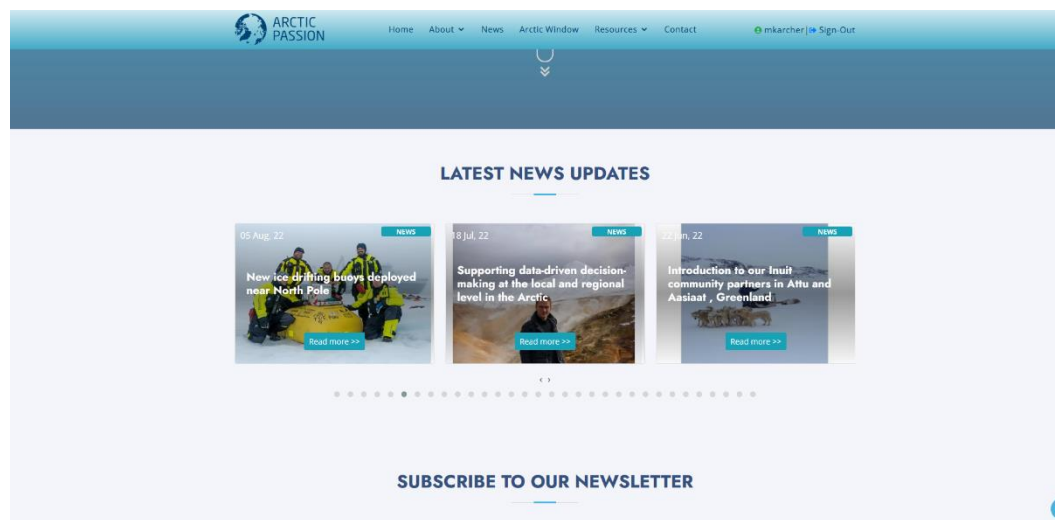
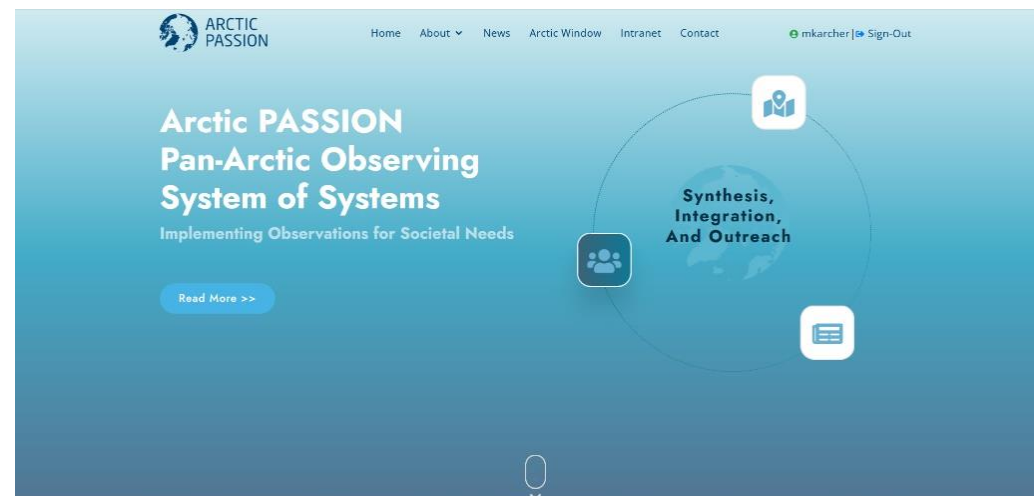
(Alessi et al. 2015)





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