



Demonstrating applications of an Integrated Arctic Observing System towards selected, diverse stakeholder groups

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INTAROS PROVIDES KNOWLEDGE AND APPLICATIONS towards many different uses and stakeholder groups

I will here focus on three specific applications:

- Improved use of hydrological models
- Better marine ecosystem understanding
- Enhanced knowledge and advice on natural hazards in the Arctic









DISKO BAY, W GREENLAND

LONGYEARBYEN, SVALBARD

Hydrological modelling – improved predictions of fresh water flow from river runoff to the Arctic Ocean

WMO Arctic-HYCOS Pan-arctic monitoring of river flow

Arctic-HYPE

Pan-Arctic semi-distributed catchment based multi-basin hydrological model







Hydrological modelling – Pan-arctic INTAROS iAOS use case



Collect Arctic-HYCOS observations from GRDC and national data services: Data for assimilation in Arctic-HYPE User: SMHI

Collect Arctic-HYPE data from SMHI OPeNDAP server: Aggregate river discharge data into coastal grid User: Ocean modeler, for example at IMR





ECOSYSTEM MODEL FOR DISKO BAY, WEST GREENLAND

Copernicus topaz4 large-scale model (12.5 km)



Local fine-scale model

Near-surface Chl a







DISKO BAY ECOSYSTEM MODEL (FlexSem-ERGOM)

Integrates and utilizes a broad range of model output and observations



Improving input to avalanche forecast models in Longyearbyen valley, Svalbard

Avalanche forecast models require input from numerical weather prediction models Complex Svalbard topography hinders precise information on snow in mountain slopes

Improve input to avalanche models by enhancing snow accumulation forecast



Avalanche Dec. 2015. Two people killed and many houses destroyed

Finnish Meteorological Institute and others

Improving input to avalanche forecast models in Longyearbyen valley, Svalbard...

... by statistical method based upon

- In situ snow depth observation from 3 automatic stations (UNIS)
- In situ air temperature and wind (met.no)
- AROME-Arctic model data (precipitation, temperature, wind) -> replaced by CARRA reanalysis



AROME model grid overlying area around Longyearbyen. Focus area shaded in red Improving input to avalanche forecast models in Longyearbyen valley, Svalbard

Challenge

iAOS data

Products

End users

Avalanche hazard In situ snow and meteorological observations. Laser scanner, snowpit data Improved forecasts of extreme precipitation events Authorities Local communities Operators in the Arctic Researchers





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THANKS FOR YOUR ATTENTION!

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