APPLICATE in the context of SAON/IASC Arctic data management activities

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Purpose of data management

- Challenges
  - Fragmented data access
  - Insufficient data documentation
    - Semantic annotation
  - Leading to underutilised data
- Various frameworks
  - WMO
  - GBIF
  - ICES
  - INSPIRE
  - EOSC
  - EWC
  - DIAS
Unwilling

- Do not want to change behaviour, existing tools have worked well.
- Want to continue as before.
- Does not see the benefit of standardisation, until explicitly explained/demonstrated or through new

Willing

- Wants to translate between provider and consumer.
- Still relies on some sort of standardisation in order to be cost effective.
- Must know dimensions, structures, content, missing values, units, aggregation levels, ...
Purpose of APPLICATE DM

- To guide the partners on structured data management, including principles on data documentation, publication and sharing
- To establish a unified data management system allowing partners to archive and share data produced
- To link the project data management to relevant Arctic and stakeholder data management frameworks

- Dataset oriented
  - Metadata driven
    - Discovery and use metadata
    - Identifies services for a dataset through discovery metadata
- Open data space
  - Higher order services offered when the data space can be constrained
- Interdisciplinary
  - Dataset agnostic
APPLIcate DM principles

- Discovery metadata
  - GCMD DIF / ISO 19115
- Discovery metadata access
  - OAI-PMH, (OpenSearch)
- Data encoding
  - NetCDF/CF
- Data access
  - OPeNDAP
- Data visualisation
  - OGC WMS
  - OPeNDAP
<table>
<thead>
<tr>
<th>Dataset name</th>
<th>Institution</th>
<th>Abstract</th>
<th>Collection period</th>
</tr>
</thead>
<tbody>
<tr>
<td>example-data</td>
<td>Norwegian Meteorological Institute</td>
<td>example meteorological measurements</td>
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**Time Series Plot**

**SYNOP data from station GRITU III**

- Temperature
- Pressure
- Wind speed
- Wind direction
- Relative humidity
- Solar radiation

Filter options:
- Time period
- Data format

Example dataset available for download.
Arctic Science Ministerial Joint statement

• …

• We remain committed to advancing our capacity to observe current changes, to project and predict climate and other changes into the future based on shared information.

• …
• Purpose of the Arctic Data Committee
  - The overarching purpose of the ADC is to promote and facilitate international collaboration towards the goal of free, ethically open, sustained and timely access to Arctic data through useful, usable, and interoperable systems.
  - ADC will
    • Advise IASC and SAON on matters related to data management and data sharing where data are defined in the IASC Statement of Principles and Practices for Arctic Data Management (April 16, 2013) (The Statement).
    • Contribute to the understanding of the nature and structure of the Arctic data system in the context of the global data system.
    • Facilitate the adoption, implementation and development (where necessary) of standards that will enable free, open and timely access to data.
    • Facilitate interoperability of data and systems as needed to support the needs of researchers, Arctic residents, decision makers and others.
ADC activities

- Arctic Data Ecosystem
- Discovery metadata
- Data publication
- Interoperability experiment
- Vocabularies and semantics WG
ADC activities moving forwards

- **Polar Data Planning Summit**
  - Boulder, May, 2018
    - Analysing the status
    - Moving forward on recommendations for discovery metadata exchange in support of federated search

- **Polar Data Architecture Workshop**
  - Geneva, November 2018
    - Analysing the status, mapping capabilities of relevant data centres
    - Moving forward on data interoperability and semantics
    - Linking with WIGOS
Mapping status

- Identify core technologies
- Outline a preliminary Polar Data Architecture
- Engage communities
Lessons learned

- Must disconnect from file formats
- Must move towards data models and data streams
- Must increase the awareness of semantics
- Need to establish a common understanding of standards
- There will never be only one standard, but we need to reduce the options data providers, consumers and data centres have to relate to

Coordination is required
But how?