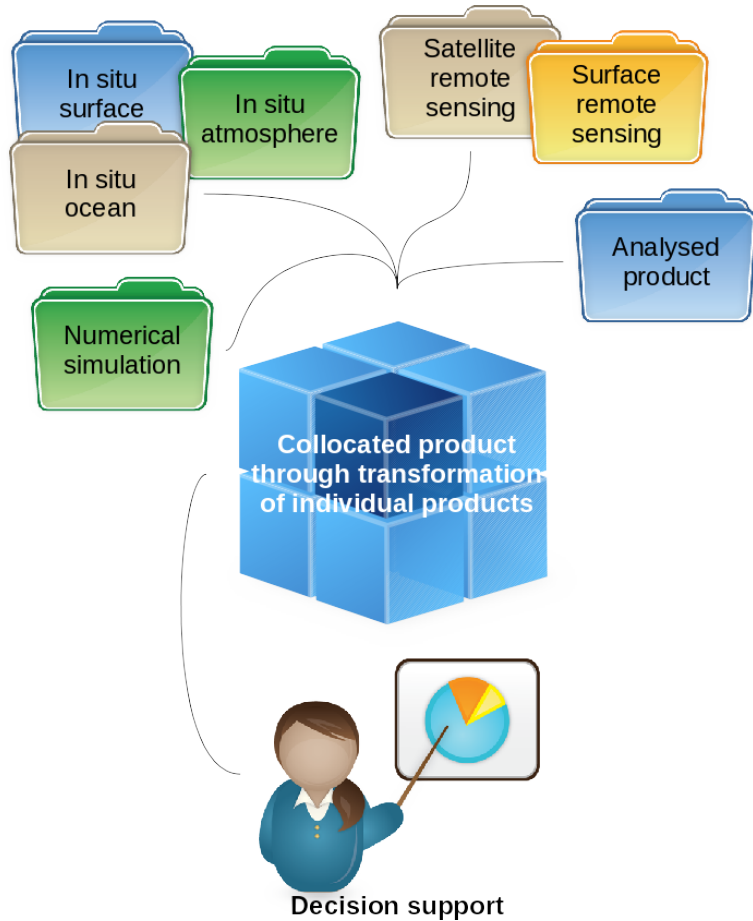


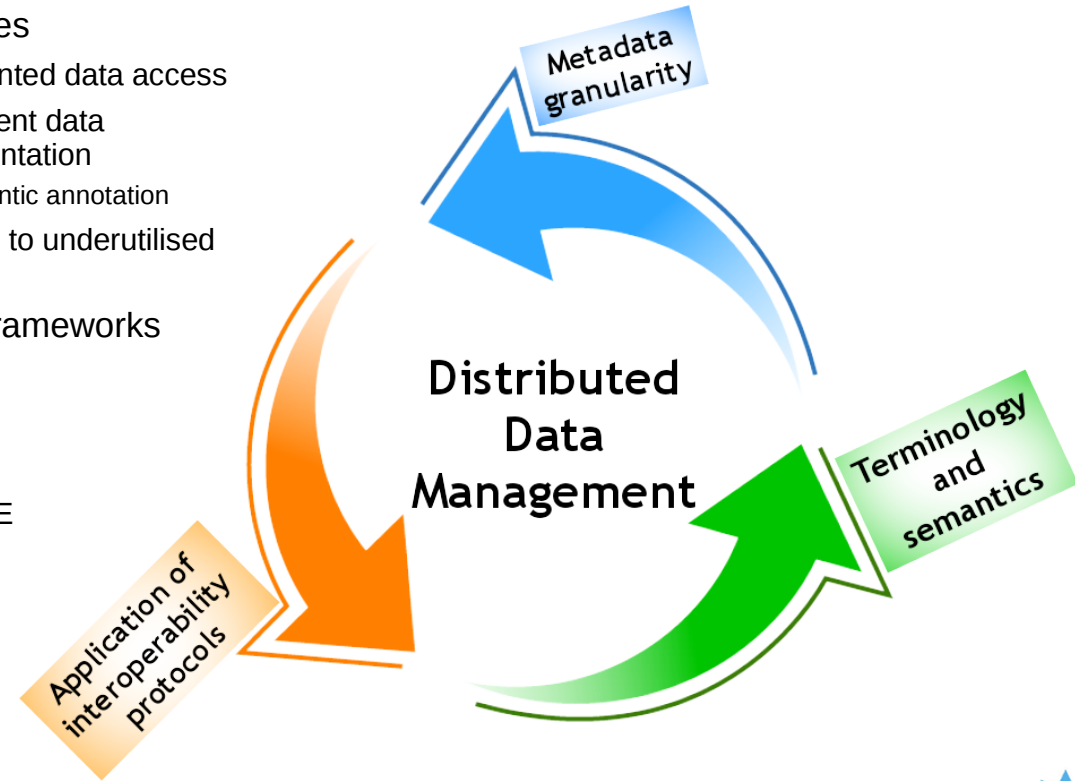
# APPLICATE in the context of SAON/IASC Arctic data management activities

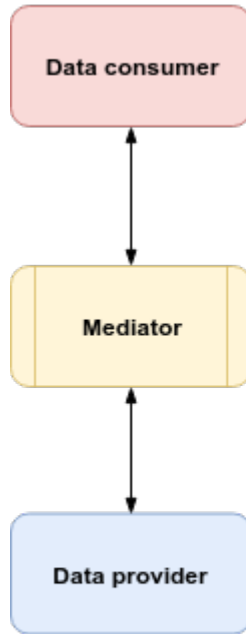
Øystein Godøy

# 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, ...

### Unwilling and skeptical to potential users

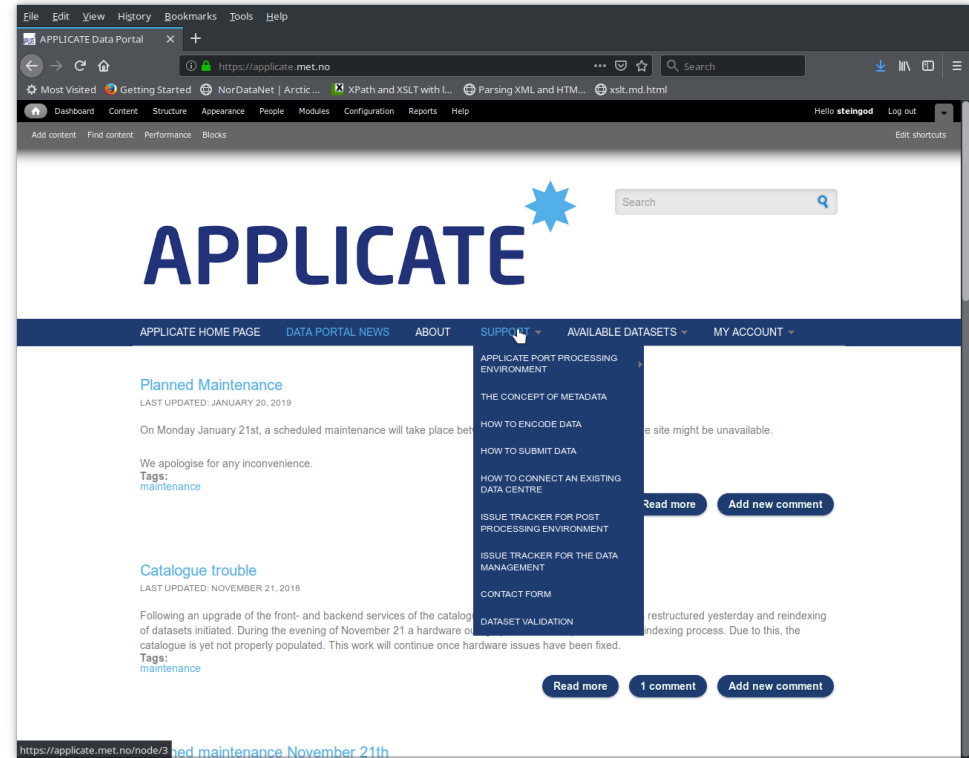
- Do not want to change behaviour, legacy system(s).
- Want to continue as before.
- Understands own requirements (knows the data well).

# 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

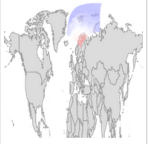


Arctic Data Ecosystem | M. X. | +

https://applicate.met.no/results?page=1

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Dataset name	Institutions	Abstract	Collection period
<p>met-arome-arctic-2p0km-forecast</p> <p>Download data</p> <p>Metadata</p> <p>Transform</p> 	Norwegian Meteorological Institute	Post-processed forecasts are based on the latest run of the AROME-AROME model. Parameters like temperature, cloud cover, precipitation and wind have gone through additional post-processing. Horizontal data resolution is 2.5km. The forecast is updated 4 times per day. For historical runs see http://truedds.met.no/truedds/catalog/aromearctcpc/catalog.html	2013-01-01T12:00:00Z to 2019-01-01T12:00:00Z
<p>SYNOP data from station GROTLI III</p> <p>Metadata</p> <p>Visualize</p> <p>ASCII</p>	Norwegian Meteorological Institute	Synoptic meteorological measurements from GROTLI III extracted from the WMO Global Telecommunication System (GTS). Data are not quality controlled after extraction from GTS.	2013-01-01T12:00:00Z to 2019-01-01T12:00:00Z
<p>SYNOP data from station KEM - PORT</p> <p>Metadata</p> <p>Visualize</p> <p>ASCII</p>	Norwegian Meteorological Institute	Synoptic meteorological measurements from KEM - PORT extracted from the WMO Global Telecommunication System (GTS). Data are not quality controlled after extraction from GTS.	2013-01-01T12:00:00Z to 2019-01-01T12:00:00Z
<p>SYNOP data from station STYKKISHOLMUR</p> <p>Metadata</p> <p>Visualize</p> <p>ASCII</p>	Norwegian Meteorological Institute	Synoptic meteorological measurements from STYKKISHOLMUR extracted from the WMO Global Telecommunication System (GTS). Data are not quality controlled after extraction from GTS.	2013-01-01T12:00:00Z to 2019-01-01T12:00:00Z
<p>SYNOP data from station SKAMDAL</p> <p>Metadata</p>	Norwegian Meteorological Institute	Synoptic meteorological measurements from SKAMDAL extracted from the WMO Global Telecommunication System (GTS). Data are not quality controlled after extraction from GTS.	2013-01-01T12:00:00Z to 2019-01-01T12:00:00Z

Time series plot | APPLICAT... | Arctic Data Ecosystem | M. X. | +

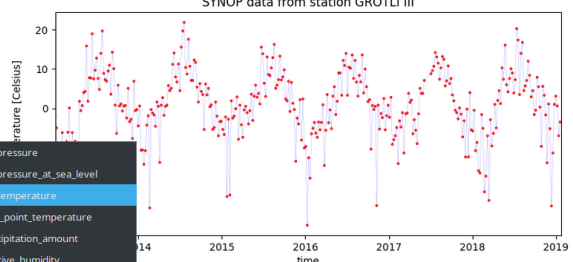
https://applicate.met.no/ts/metadata\_identifier=cd739be3-740b-538f-81c1

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### time series plot

View Edit Track



SYNOP data from station GROTLI III

air\_temperature

air\_pressure

air\_pressure\_at\_sea\_level

dew\_point\_temperature

precipitation\_amount

relative\_humidity

sea\_surface\_temperature

thickness\_of\_snowfall\_amount

time

wind\_from\_direction

wind\_speed

wind\_speed\_of\_gust

Plot every Nth data point

150

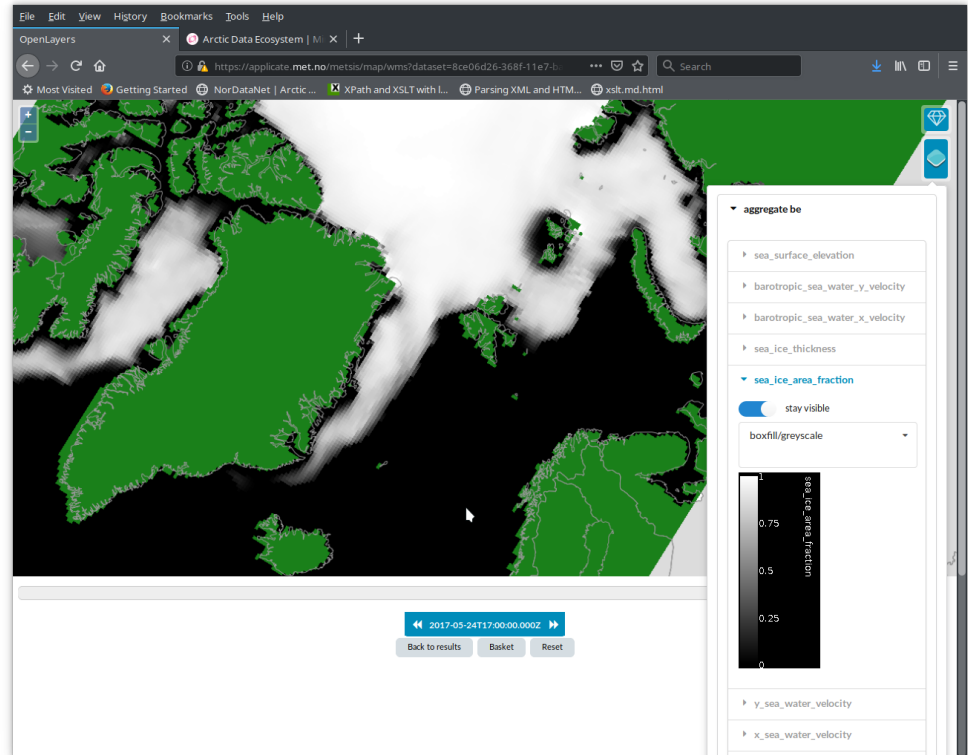
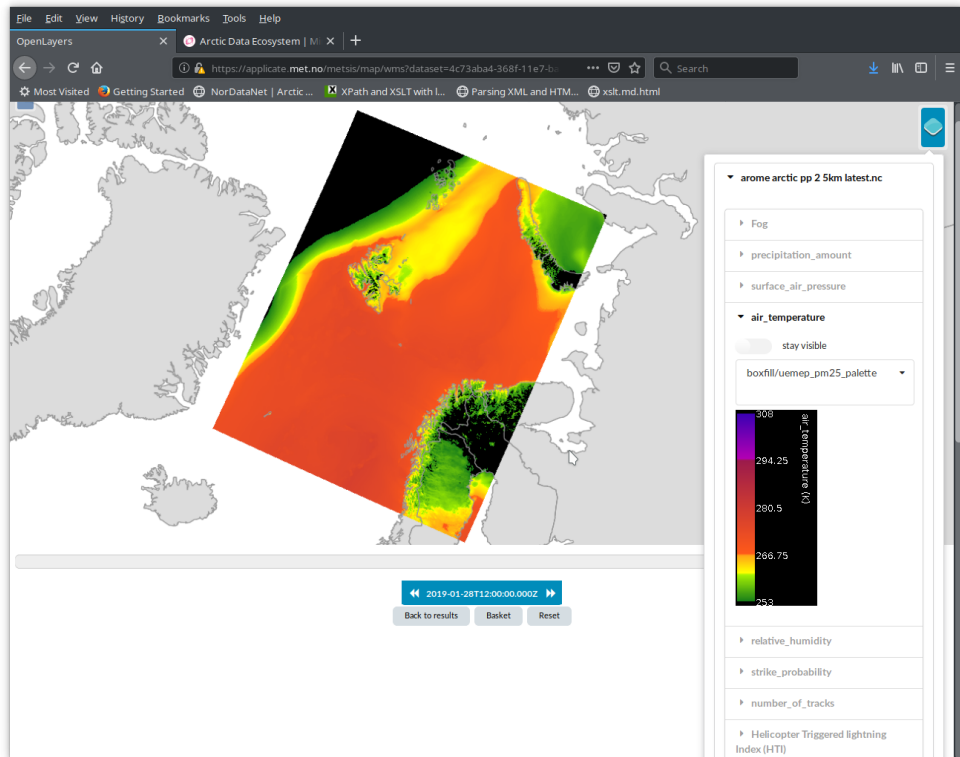
Output file format

PNG

Submit

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APPLICATE



APPLICATE

# 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.**
- ...



## Joint Statement of Ministers

On the occasion of the  
Second Arctic Science Ministerial

26 October 2018

Berlin  
Federal Republic of Germany



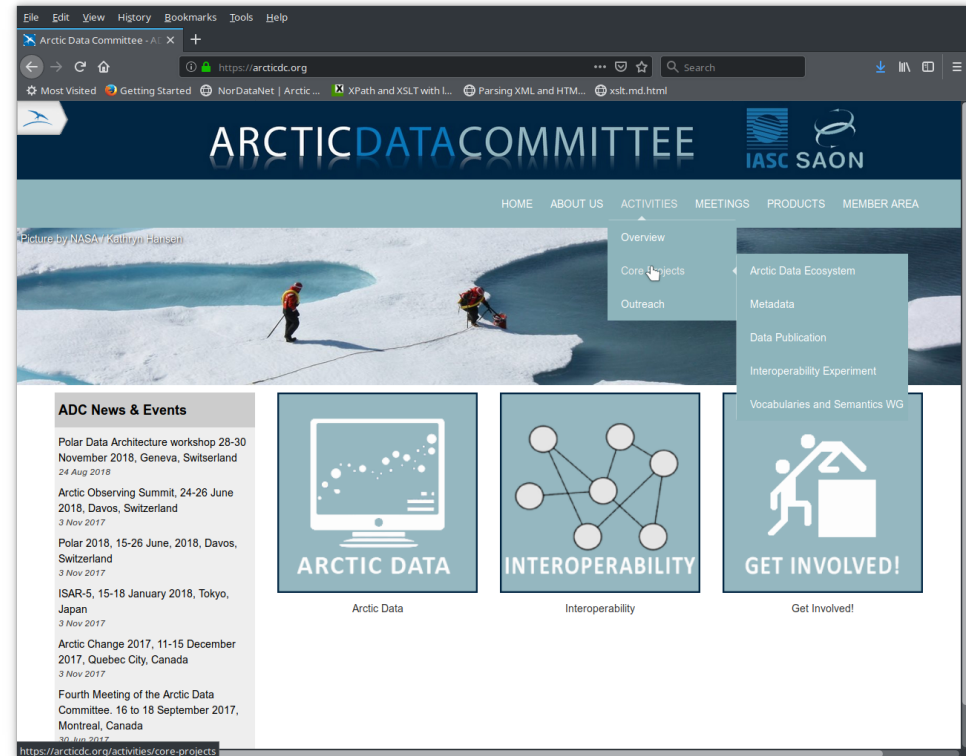
**APPLICATE**





# SAON/IASC Arctic Data Committee

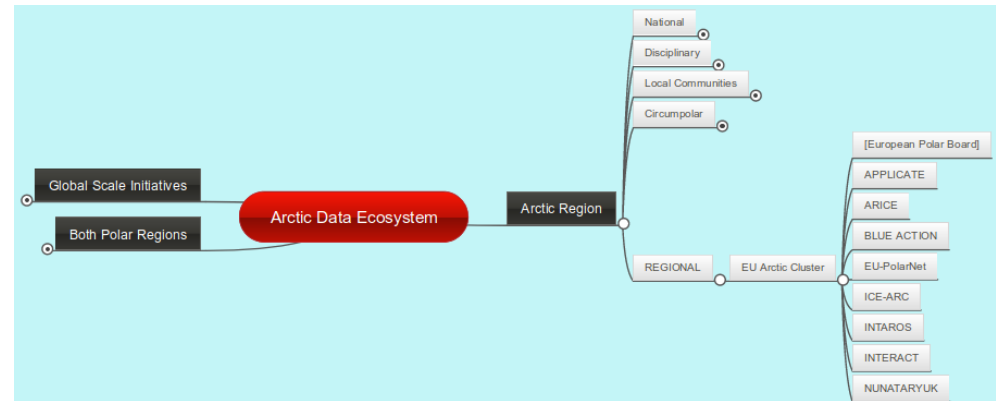
- Purpose of the Arctic Data Committee
  - **The overarching purpose of the ADC is to promote and facilitate international collaboration towards the goal of free, ethically open, sustained and timely access to Arctic data through useful, usable, and interoperable systems.**
  - ADC will
    - Advise 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.**



APPLICATE

# ADC activities

- Arctic Data Ecosystem
- Discovery metadata
- Data publication
- Interoperability experiment
- Vocabularies and semantics WG

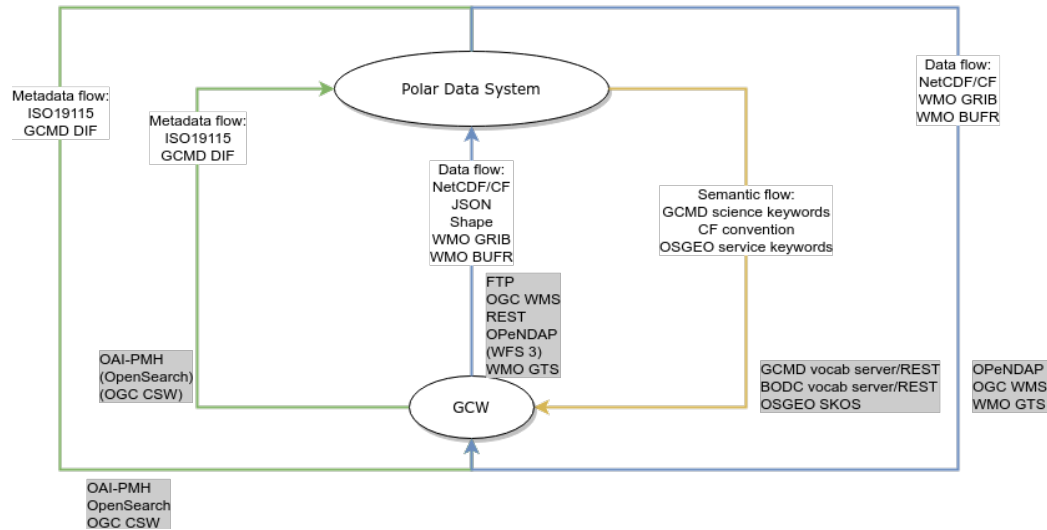


# ADC activities moving forwards

- 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?**

