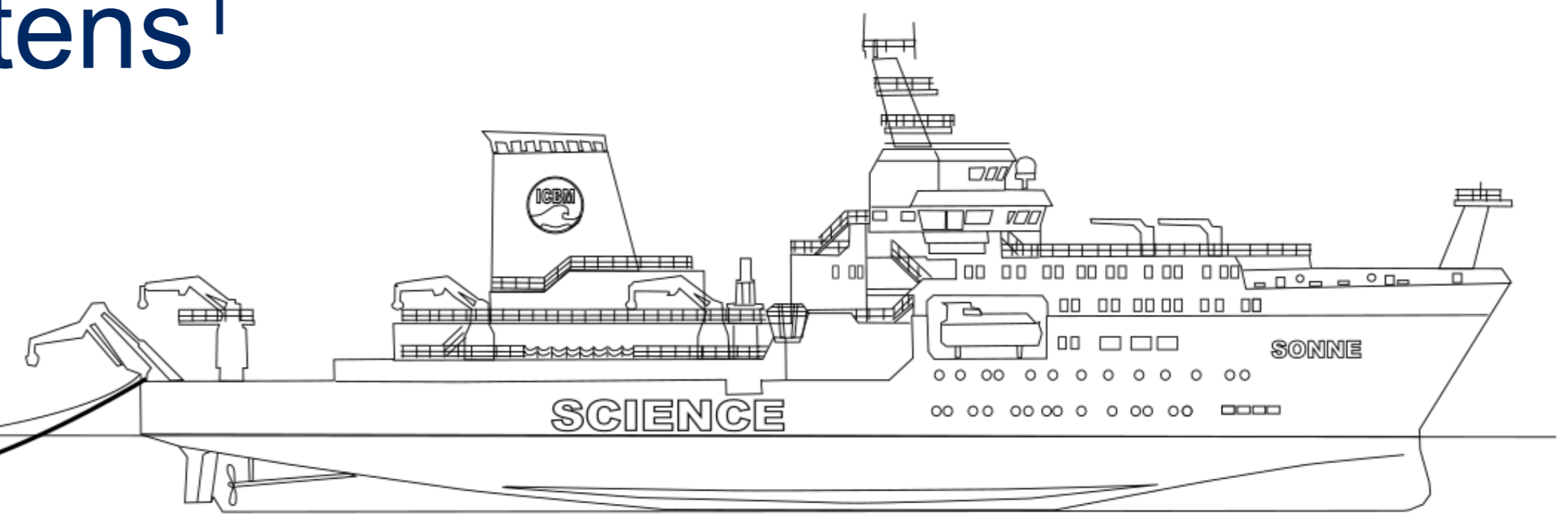


## Enhancing FAIR Principles in German Marine Seismic Data Management

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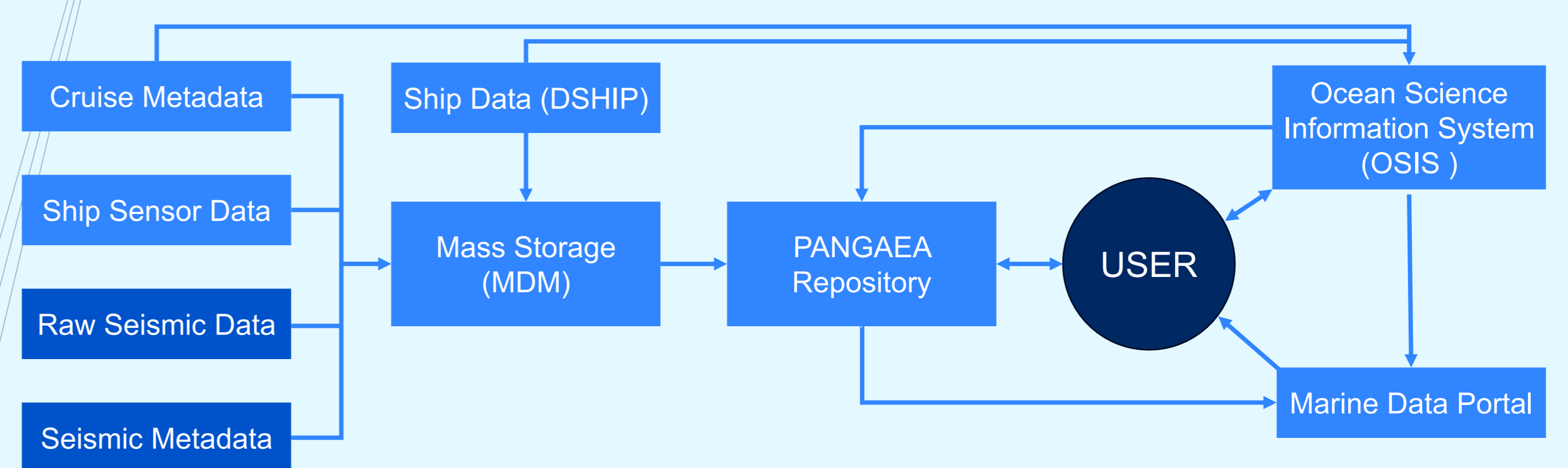
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### Abstract

The German marine seismic community has developed a metadata standard for raw 2D marine multichannel seismic reflection data to align with the FAIR principles. This standard is now being implemented across large German research vessels. Additionally, a streamlined data transfer process has been established, enabling the transfer of raw underway data from vessels to the PANGAEA data repository in collaboration with the German Marine Alliance (DAM) – a process that is transparent to the user and supports scientists in fulfilling their data management duties. The metadata are directly transferred to data access platforms such as GEOMAR's Ocean Science Information System (OSIS). Currently, we are also expanding this approach to other types of seismic data as part of the HMC project MetaSeis (Metadata concept for OBS (Ocean Bottom Seismometer) and 3D Seismic Data for the German Community).

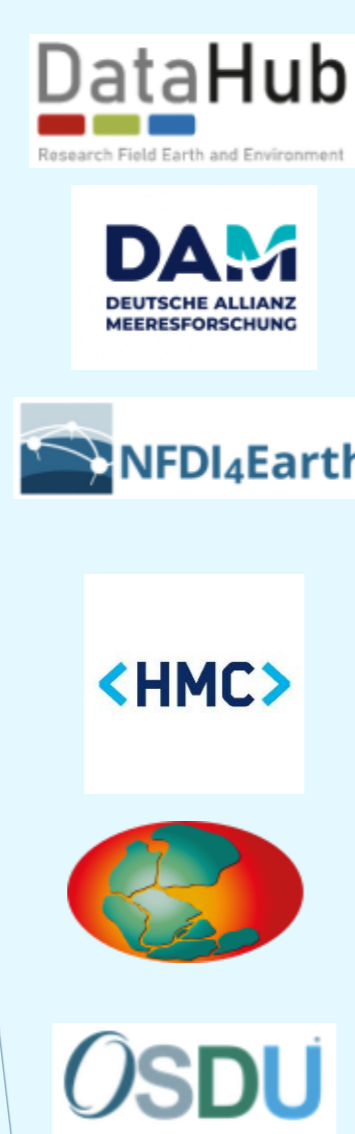
### Data flow & Metadata standard



- ✓ Archiving raw seismic data with new metadata standard at PANGAEA
- ✓ Complete description of raw seismic data, including geometry, source and receiver configuration
- ✓ PANGAEA vocabulary in alignment with NERC, SeaDataNet, and MGDS
- ✓ Designed to be expandable for future, more complicated setups
- ✓ Developed in collaboration with the German marine geophysical community

### Data management initiatives & actors

- ✓ Integration and funding through the Helmholtz DataHUB
- ✓ Close collaboration with the German Marine Research Alliance (DAM)
- ✓ Pilot study funded through Nationale Forschungsdaten Infrastruktur (NFDI<sub>4</sub>Earth) initiative
- ✓ Development for metadata for OBS and 3D reflection seismic data within the HMC (MetaSeis)
- ✓ Publication through the world data centre PANGAEA
- ✓ Industry integration through participation in the Open Subsurface Data Universe initiative (OSDU) of the Open Group

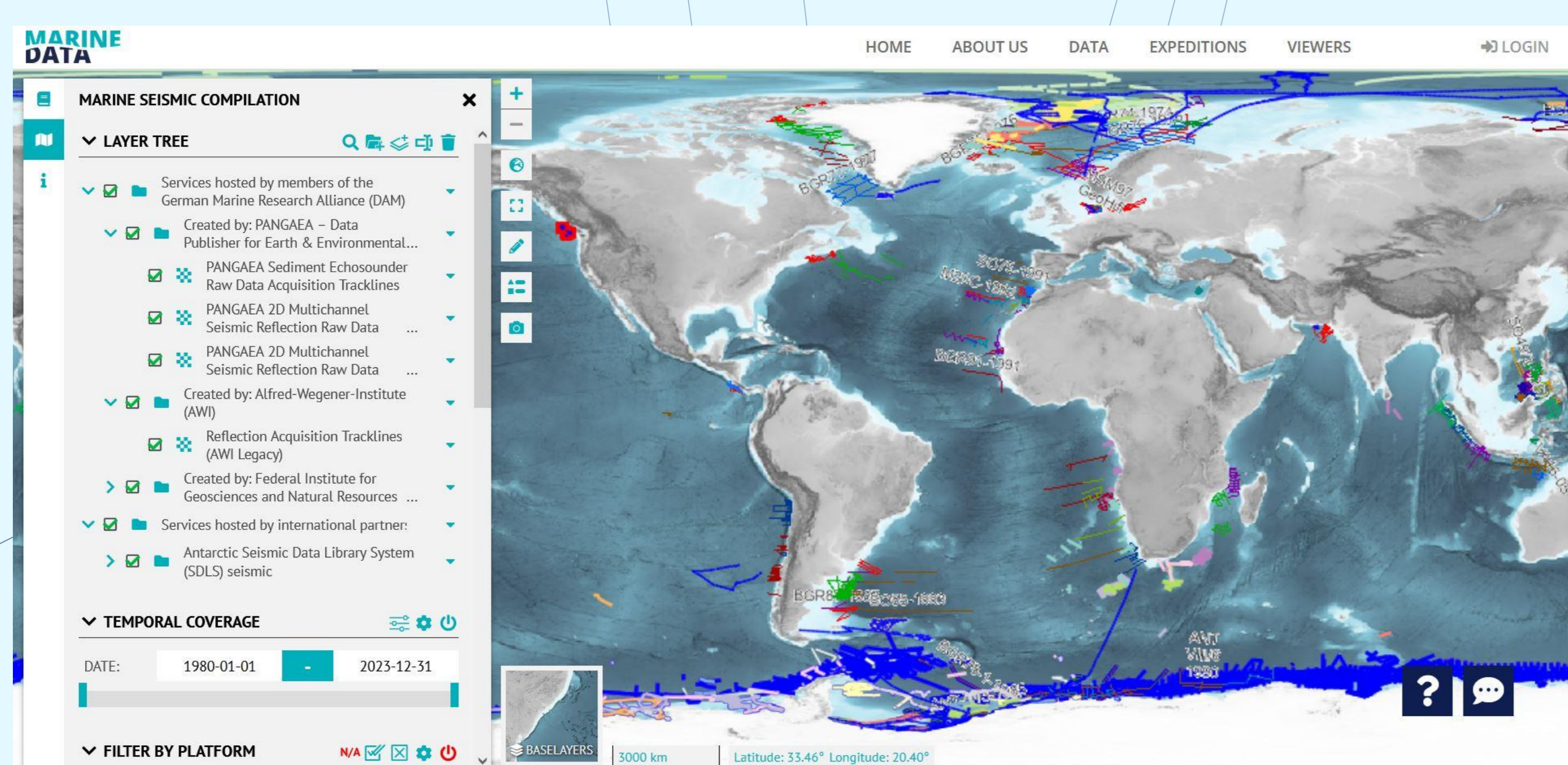


## New Metadata Standard for Marine Reflection Seismic Data

### Outlook

- Expanding of Metadata Standards to include:
  - Raw 3D reflection seismic data (P-cable)
  - Raw active source ocean bottom seismic data (OBS)
  - Raw ultra-high resolution sub-bottom profiler data (Parasound)
- Introduction of Data Flows for different seismic data following test trials (e.g., MetaSeis – SO310) to support scientists in data management and ensure FAIR data practices
- Metadata Standardization of processed seismic data in collaboration with Open Subsurface Data Universe (OSDU), The Open Group
- Integration with international academic and industry marine seismic community
- Developing of APIs for loading different raw data formats (e.g., SEG-Y vs. SEG-D)

### Visualization of marine seismic metadata



(First Draft for the Marine Seismic Viewer)

### SO294 Example

Dataset published via MDM and DAM at PANGAEA and metadata visualized in the Marine Data Portal (Draft)

