

From the deep sea to the atmosphere

Helmholtz Centre for Ocean Research Kiel

presented by:
Marilena Oltmanns



Helmholtz Centre for Ocean Research Kiel

GEOMAR

- Foundation by public law
- Member of the Helmholtz Association of German Research Centres
- Budget: 65 Mio. Euro, about 42 Mio. institutional funding, 23 Mio. project funding
- Staff: 850, about 450 scientists
- Close relationship to Kiel University:
joint professorships (up to 40), curricula, large research projects:
cluster of excellence „The Future Ocean“, collaborative research
project 754 “Climate-Biogeochemistry Interactions in the Tropical
Ocean”

Marine Research with tradition and innovation



Helmholtz Centre for Ocean Research Kiel

West shore (former IfM)

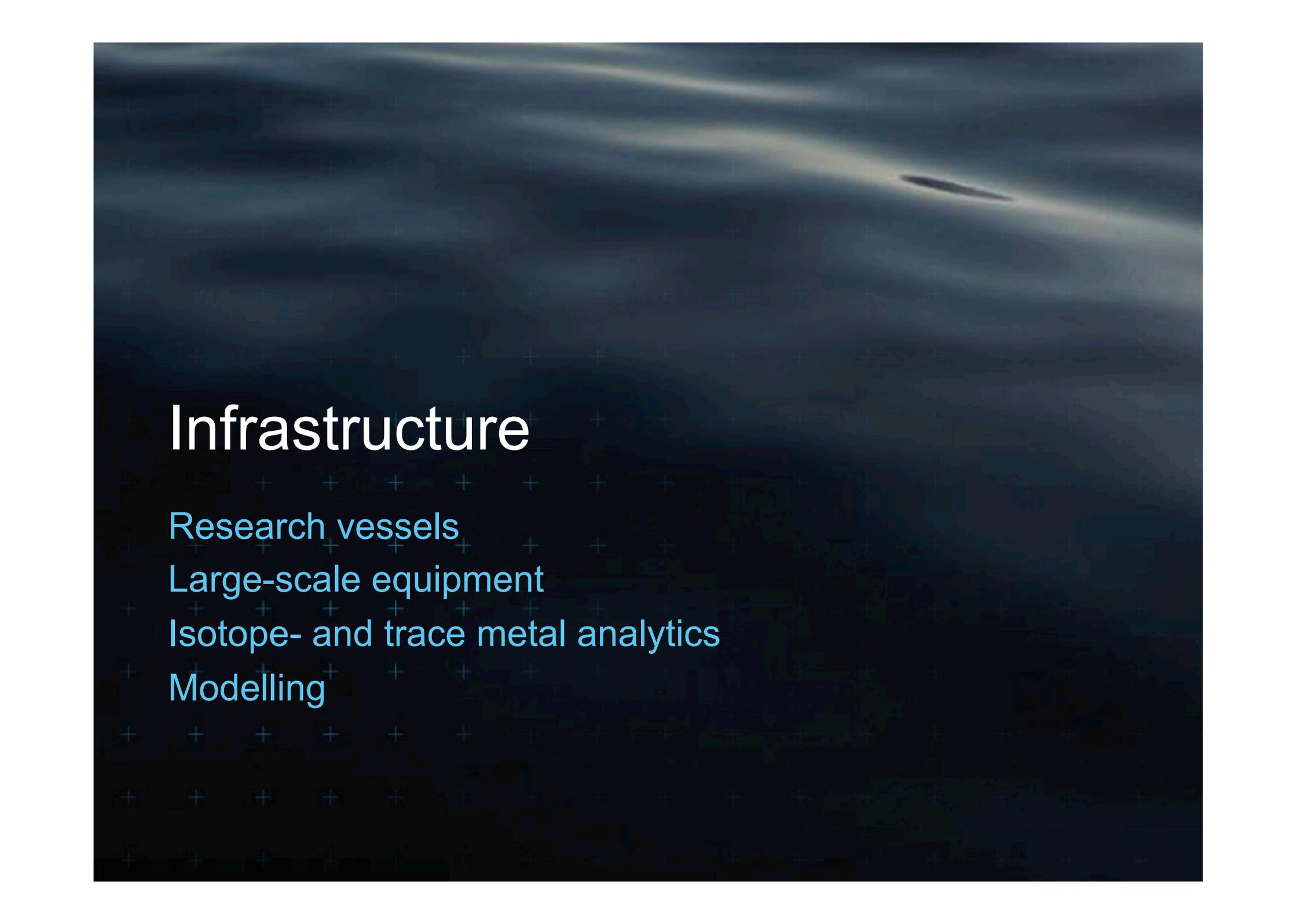
East shore (former Geomar)



Major research topics

From the deep-sea to the atmosphere

- **The role of the ocean in climate change:** temperature and sea level rise, extreme events, CO₂ budget
- **Anthropogenic impact on marine ecosystems:** food webs, ecosystem and climate change, ocean acidification, overfishing, aliens
- **Marine resources:** natural substances from the sea, gas hydrates, mineral resources
- **Plate tectonics and natural hazards:** subduction zones volcanism, and tsunamis



Infrastructure

Research vessels

Large-scale equipment

Isotope- and trace metal analytics

Modelling

Infrastructure: Research vessels



Infrastructure: Large-scale equipment

Research submersible „JAGO“

Pilot, 1 scientist (observer),
400 m max. diving depth



ROV „Kiel 6000“ & „Phoca“

Deep-sea robot („Remotely Operated
Vehicle“) up to 6.000 m



AUV „ABYSS“

Deep-sea robot („Autonomous Underwater
Vehicle“) up to 6.000 m depth funded by
DFG

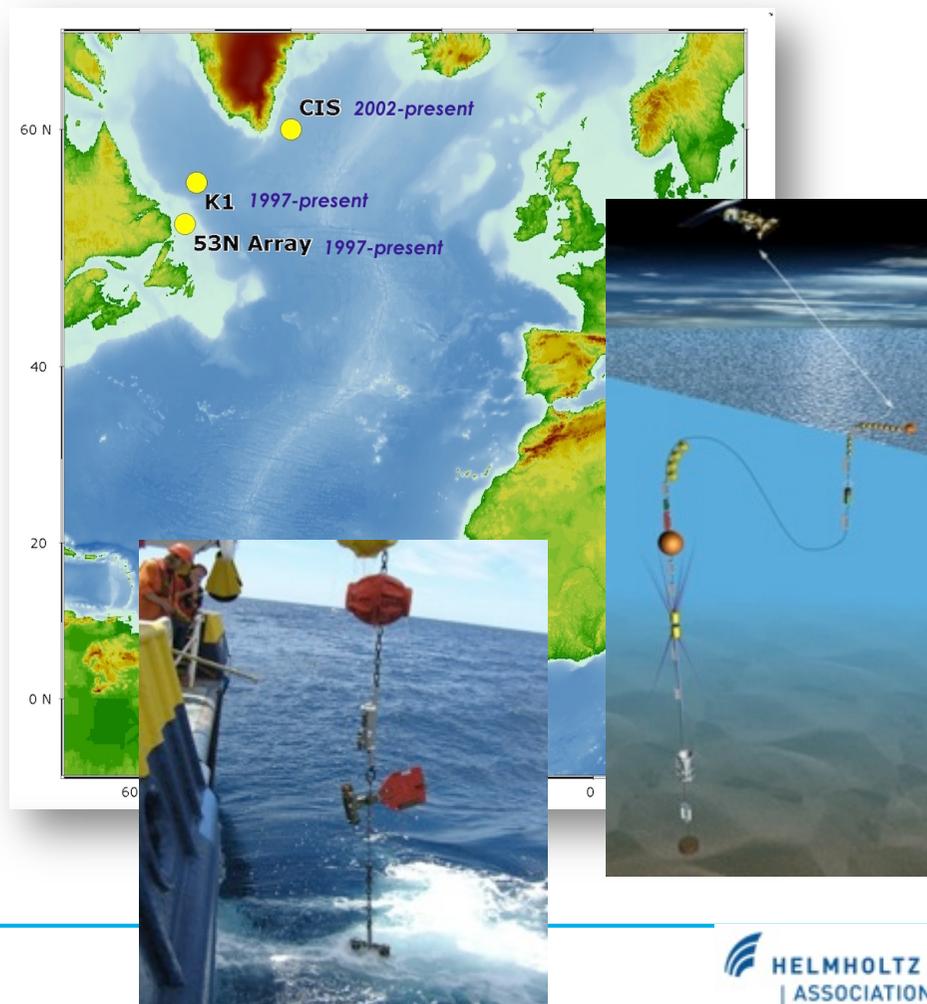


Infrastructure: Ocean Observatories

Underwater Glider

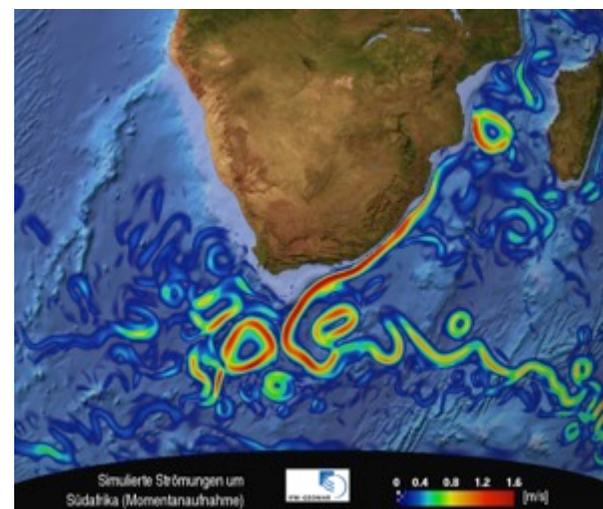
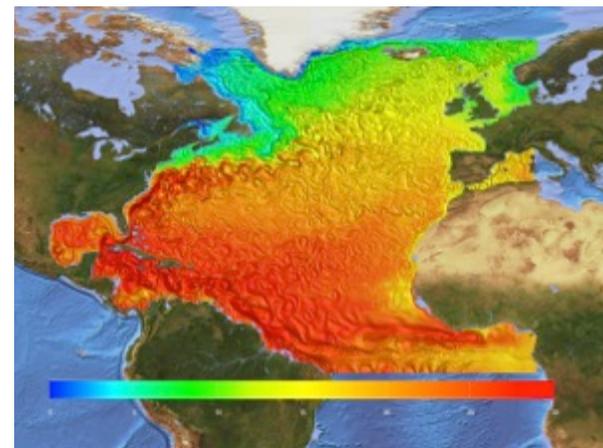


Longterm Ocean Observatories



Modelling

- Eddy-resolving models
- Coupled models with chemical and biological feedback
- Access to high-performance computing centres (Kiel, Hamburg, Stuttgart,..)



GEOMAR Data Management


SIGN IN

GEOMAR
Helmholtz-Zentrum für Ozeanforschung Kiel

HOME
RESEARCH DATA
TUTORIALS
SIGN UP
PROJECTS
CONTACT US

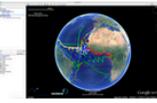
THE DATA MANAGEMENT PORTAL

...provides access to various services for research data collection, archiving and publication of the marine research in Kiel and is provided by the GEOMAR data management team ([contact us](#)). The portal offers document exchange, common or individual blogs and fora and integrates internal and external webservices and -pages. Moreover it provides access to several project's collaboration sites with personal login.

The infrastructure covers the period from data acquisition to publication, or 10 years (DFG-Richtlinie), respectively. The longterm archiving of research data will be achieved by publication in suitable world data centers, allowing the synthesis with external data.

DATA MANAGEMENT SERVICES

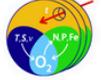
"Open Access" to Research Data

	<ul style="list-style-type: none"> ■ OSIS- Kiel (Ocean Science Information System): Allows data exchange and description for expeditions, numeric models and experiments. Expeditions are linked to KML-files (Google-Earth compatible), allowing a visualization of all stations of a cruise/expedition. <ul style="list-style-type: none"> ■ How To - OSIS Manual (PDF) ■ How To - Integrate your Data (GEOMAR and research projects only) ■ Go to OSIS ■ Contact: Data Management Team
	<ul style="list-style-type: none"> ■ KDMI Geo-Search: Search cruise tracks, print publications, sampling locations, glider tracks, sample descriptions and detailed cruise information as georeferenced information in GoogleEarth. <ul style="list-style-type: none"> ■ Go to KDMI GEO-Search ■ Contact: Data Management Team
	<ul style="list-style-type: none"> ■ GEOMAR OPeNDAP (THREDDS): The OPeNDAP server allows access to published data of model experiments. The data sets are interlinked in OceanRep and OSIS.

RESEARCH PROJECTS



future ocean
KIEL MARINE SCIENCES



SFB 754



Biological Impacts of Ocean-ACIDification



BOKNISTECK
Coastal Time Series
Since 1957 / GEOMAR Kiel



MEMENTO
Marine CH₄-NO database



BASE-LINE Earth



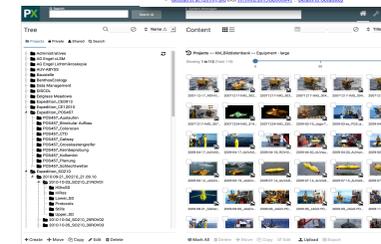
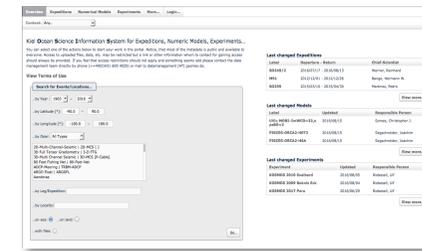
BIO-C3

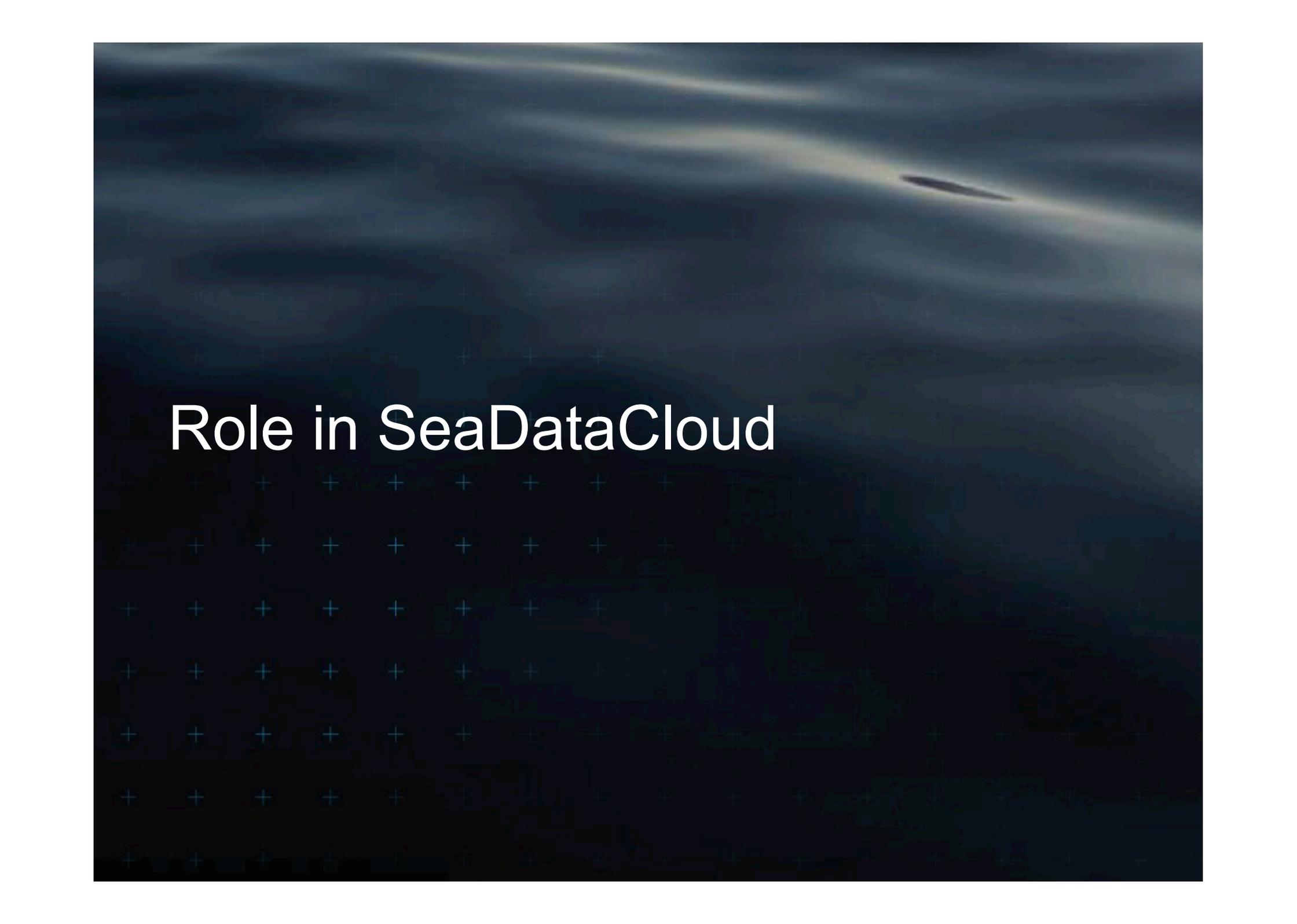


Data Management Portal for Marine Sciences



- Kiel **O**cean **S**cience **I**nformation **S**ystem (OSIS) manage data from Expeditions, Numeric Models, Experiments, ... **storage, access, metadata**
- OceanRep assembles research output from scientists (journal articles, conference papers, thesis, ...) **linked with expeditions and projects** for reference
- GEOMAR OPeNDAP (THREDDS) server holds model experiment data, is a mirror for certain open access data (MODIS subvariables)
- Media database & Image and Video annotation
- Geo-Search Search cruise tracks, glider tracks, cruise information... Georeferenced in GoogleEarth





Role in SeaDataCloud

- Participant in:

- *WP2 Project network coordination*
- *WP3 Training of data providers: as trainee*
- *WP5 Expansion and governance of metadata & data content*
- *WP7 Tuning of requirements and overall integration*
- *WP11 Development, update and publication of products*

- Member of Scientific Committee

*Johannes Karstensen representing AtlantOS project
(coordinated by GEOMAR), and
GOOS components (OceanSITES, OceanGliders)*

- Regional groups:

Arctic, North, Atlantic