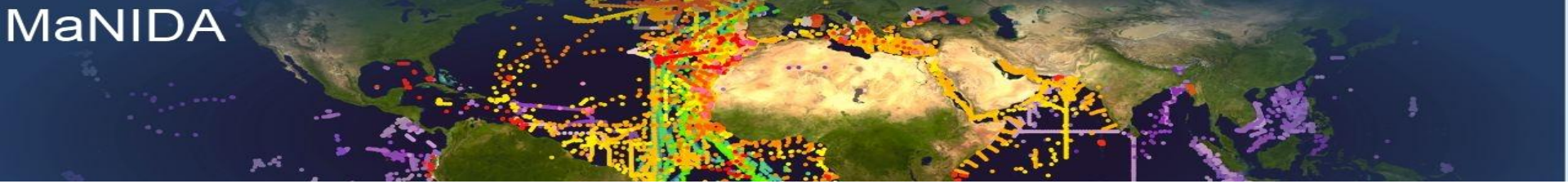
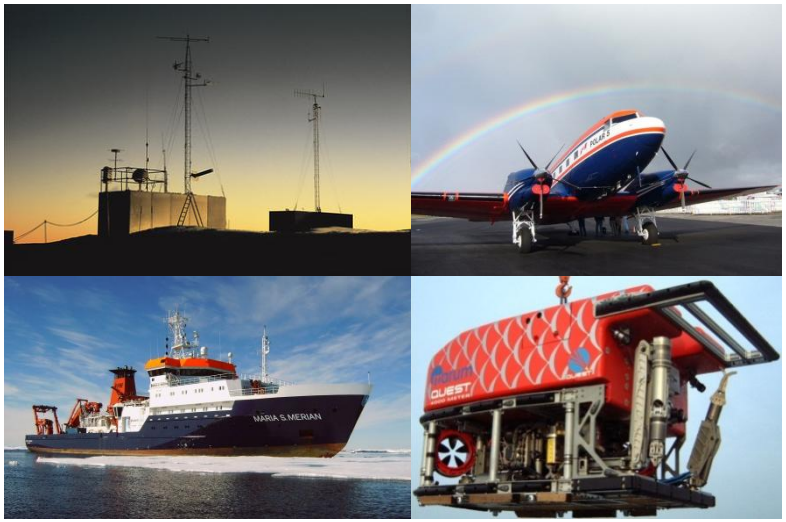


German perspective: Building a Marine Network for Integrated Data Access

MaNIDA

Speaker: Ana Macario
Computing and Data Centre
Alfred Wegener Institute for Polar and Marine Research (AWI)



Data-intensive science

Distinct platforms, devices, sensors

- Shipborne + water column + seafloor devices (AUVs, ROVs, portable drill rigs, “profilers”, camera systems, etc)
- Airborne (and space-borne) instruments
- Sensor networks for long-term monitoring

Distributed archival

- Data Centers: AWI/Marum (PANGAEA), BSH (DOD), HZG (COSYNA), IFM-Geomar (KDM), etc
- Mass storage systems

MaNIDA commits to provide:

Organizational and technical solutions

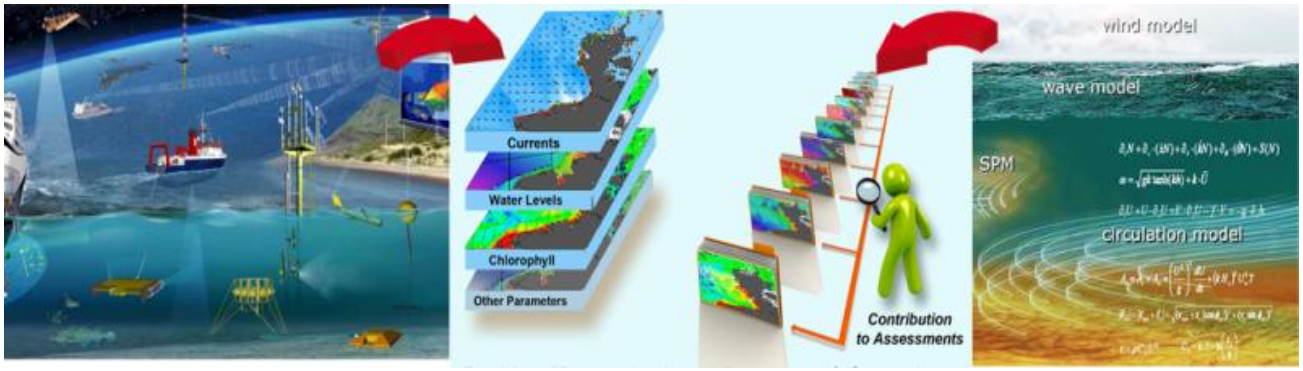
Build a sustainable e-infrastructure at AWI to support discovery and re-use of data from distinct sources

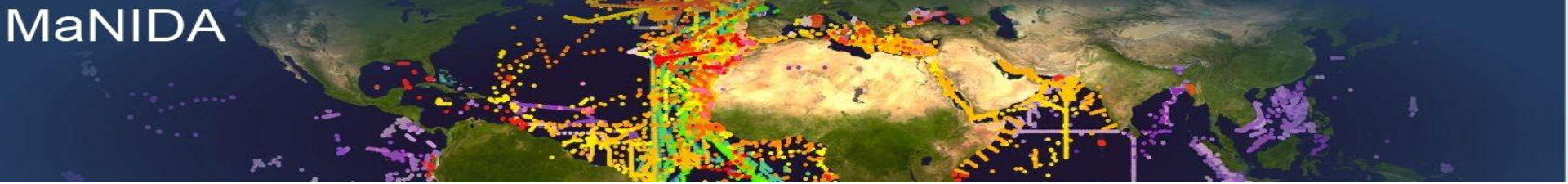
Data lifecycle management

Generic workflows and automated procedures from cruise planning to data archical

Networking and outreach strategies

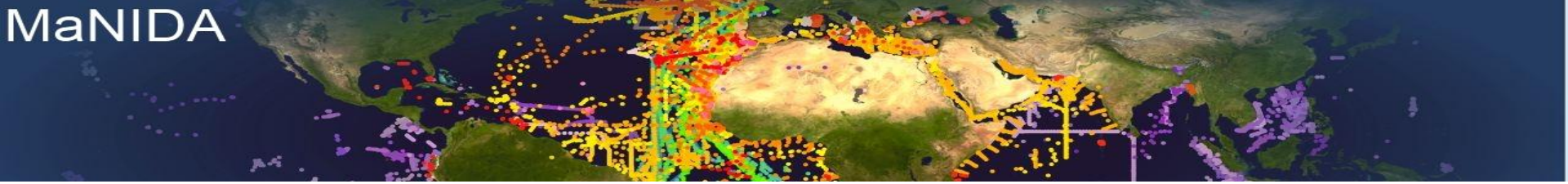
End-user oriented discovery at national and international levels + education efforts





A few facts about MaNIDA

- Funded as “Helmholtz Initiative and Networking Project” (Feb 2012- Aug 2015)
- AWI as leading institution: project co-ordination and portal development; will take over e-Infrastructure after Aug 2015
- Funded partners: AWI, Uni. Bremen/MARUM, BSH, HZG, IFM-Geomar
- Non-funded partners: Uni. Hamburg, Uni. Kiel
- Partner participation in projects:
  - **EU**: SeaDataNet II, EMODNET, EUROFLEET, WISE-Marine, INSPIRE, POGO
  - **Others**: ICSU-World Data System, SEDIS/IODP



MaNIDA Workpackages

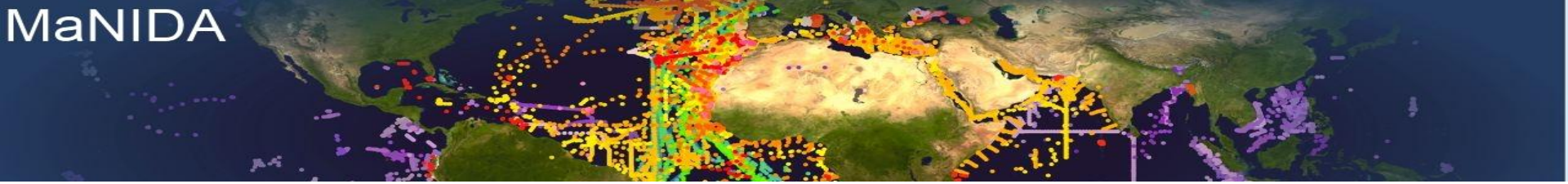
WP1: Management

WP2: Workflows

WP3: Data integration, access and dissemination

WP4: Operation Infrastructure

WP5: Networking and Outreach



Workflows: from vessel to archive

R.V. Metoer, with DSHIP

QA

ONSHORE VERSION

DAVIS SHIP

R.V. Polarstern with DSHIP

ONSHORE VERSION

DAVIS SHIP

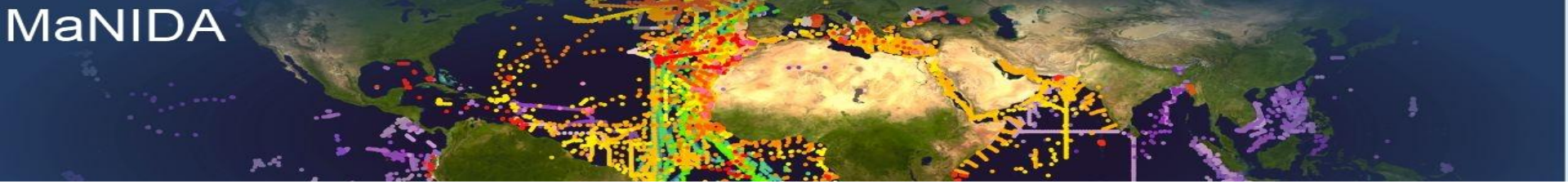
QA

BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

Acquisition with DSHIP: underway data (+ event logs) transferred after cruise ends to a system „DSHIP-land“ onshore

Validation: navigation, oceanography, meteorology and thermosalinograph

Archival: PANGAEA, BSH-DOD; with QA flags



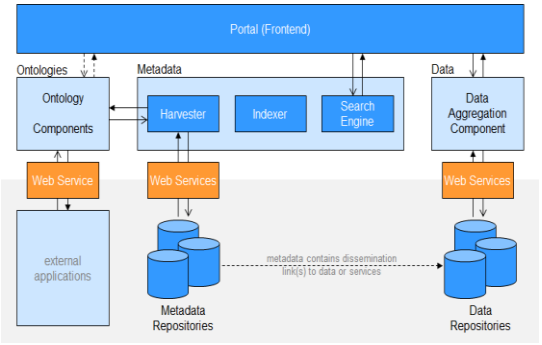
R&D co-operation with ODIP

- Generic **workflow** including role concept, data annotation?
- Common **gazetteer** (beyond IHO?)
- Community-wide automated procedures towards **quality assurance** (validation, calibration/correction, quality flags for individual data points, processing level flags to be inserted in metadata)
- Community-wide **controlled vocabularies** (device type, device names, parameters, etc)

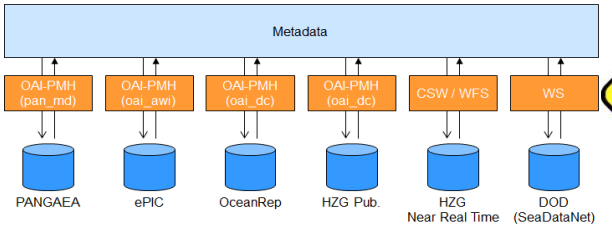
Discovery, Access and Dissemination

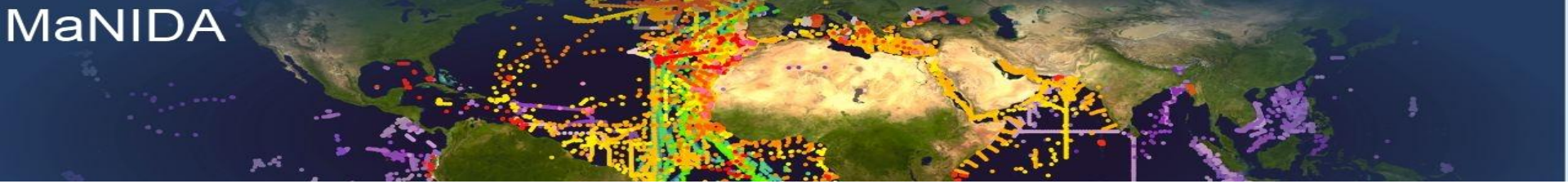
Portal: browse, search(facets, region/time), visualization, download

Middleware: harvesting and transformation services, ontology services, aggregation and visualization services, etc



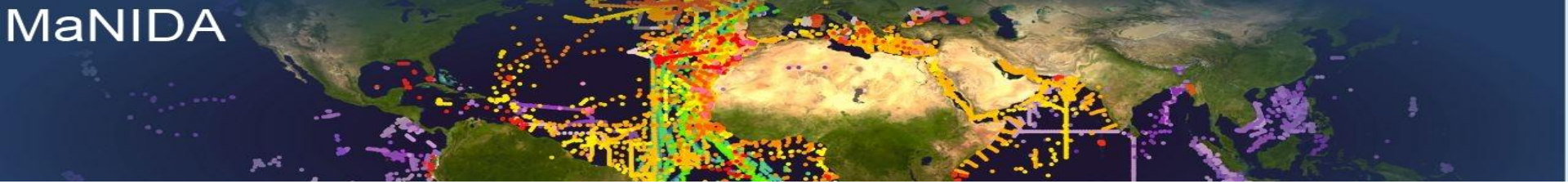
Content: cruise catalogue, archived and near-real-time data, cruise-related reports and publications, etc





R&D co-operation with ODIP

- ISO-based **cruise catalogue**
- Re-use of **tracklines**(„generalized“, common formats)
- Common **aggregation** procedures
- **Permanent identifiers** for people, affiliations, grants
- Development of a community-wide **ontology** (RDF schema) defining a set of common generic relationships useful in marine sciences
- **Intelligent (data) access**: Low resolution „profiles“ (swath sonar data, multi-beam seismic, sed. echosounder) as alternative?



Portal prototype

Current figures

- cruise catalogue with 13 ships, ~1500 cruises
- ~100 cuises annually
- > 2.5 x 10^6 km of Polarstern tracklines
- archived data: PANGAEA (~450000), BSH (~17000)
- near real-time data: HZG (~8000)
- cruise reports , publications: ePIC (~31000), IFM-Geomar (~14500)

Where is „Polarstern“ now?

search

Current expeditions

Expedition: ANT-XXIX/1
Platform: Polarstern
Begin: 2012-10-27 Bremerhaven
End: 2012-11-27 Cape Town
Coordination: Knust, R., nullKnust, R., null
Chief scientist: Schnack-Schiel S, nullAuel, H., nullAuel, H., null

Expedition: HE391
Platform: Heincke
Begin: 2012-10-30
End: 2012-11-11
Coordination:
Chief scientist: Röttgers R, null

Expedition: M90
Platform: Meteor (1986)
Begin: 2012-10-28
End: 2012-11-28

Browse cruise catalogue

Expeditions

Platform: Polarstern

download as pdf

Temporal coverage From To Search

Platform	Expedition	Optional Name	Begin	End
Polarstern	ARK-XXVIII/3	PS82	2014-07-30 - Tromsø	2014-10-07 - Bremerhaven
Polarstern	ARK-XXVIII/2	PS82	2014-06-25 - Longyearbyen	2014-07-28 - Tromsø
Polarstern	ARK-XXVIII/1	PS82	2014-05-08 - Bremerhaven	2014-06-23 - Longyearbyen
Polarstern	ANT-XXIX/10	PS81	2014-03-08 - Cape Town	2014-04-08 - Bremerhaven

Cruise catalogue + tracklines

Home | Expedition | Search | Submit | Explore | Map

Explore

Platforms

Platform
- ☐ Meteor (1986)
- ☐ Polarfuchs
- ☑ Polarstern

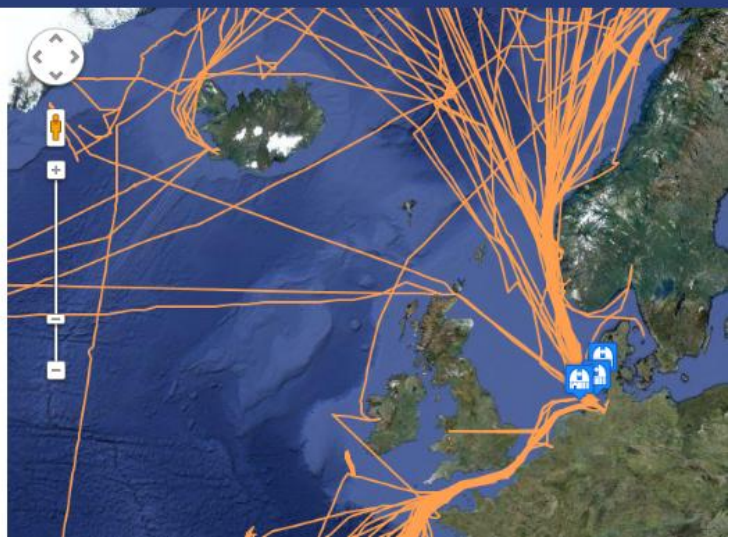
select all | deselect all

Temporal coverage

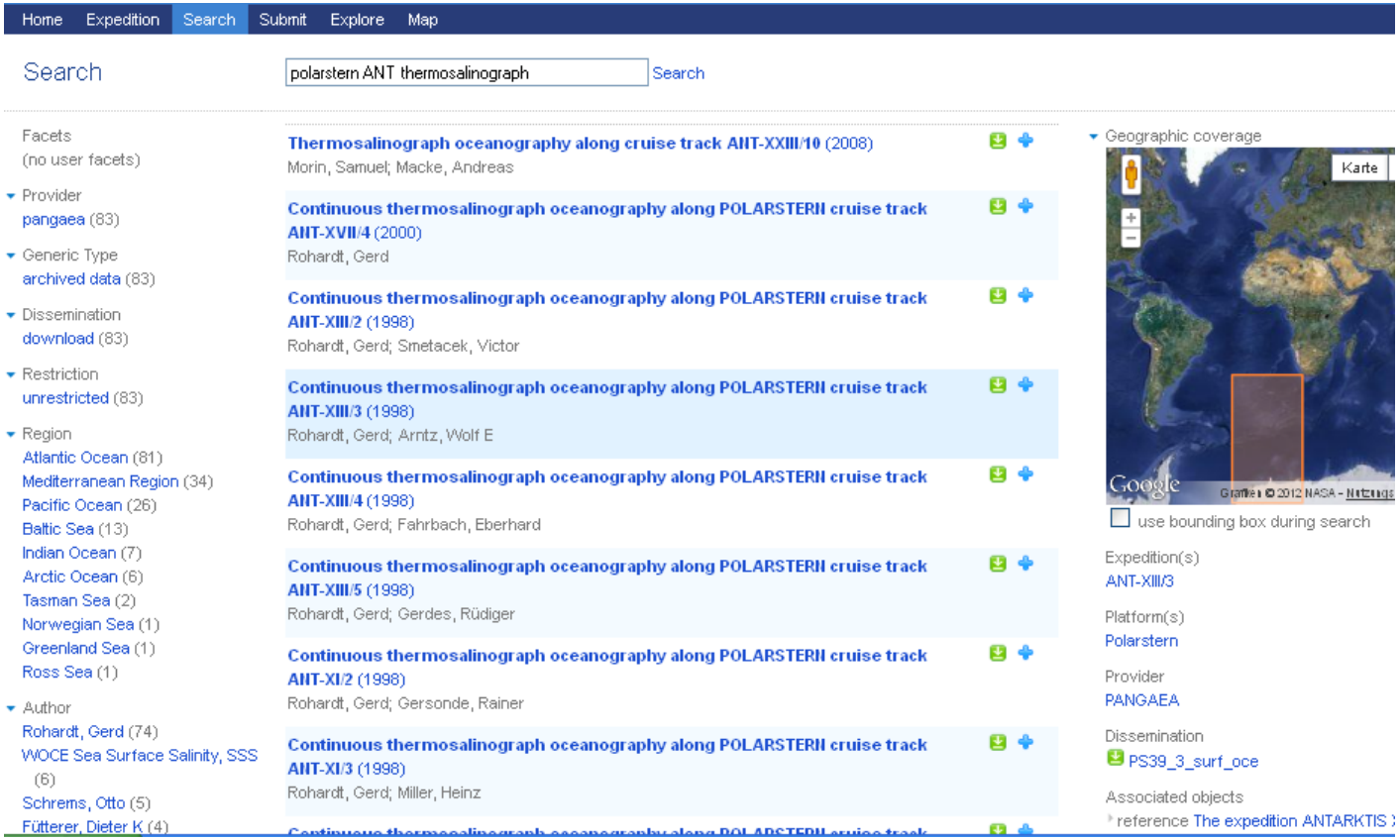
From To Search

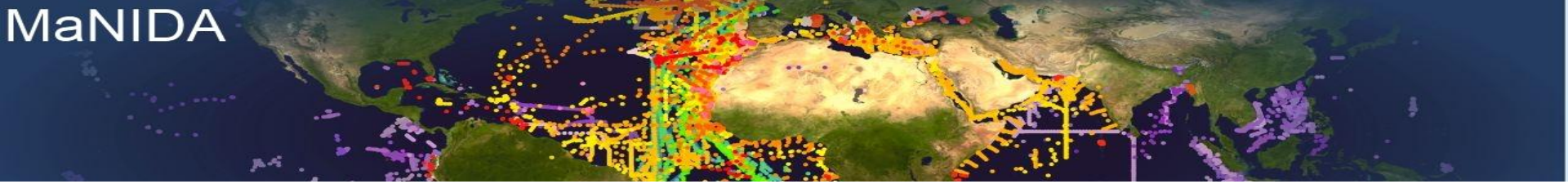
Expeditions

Expedition	From	To	Platform
☑ ANT-XXIX/1	2012-10-27	2012-11-27	Polarstern
☑ ANT-XXVIII/5	2012-04-11	2012-05-15	Polarstern



Faceted search, spatial + temporal





Linked reports and data

The expedition ANTARKTIS XIII/3 (EASIZ I) of "Polarstern" to the eastern Weddell Sea in

Author(s)	Arntz, Wolf; Gutt, Julian
Date	1997
Type	Cruise Report
Expedition(s)	ANT-XIII/3
Platform(s)	Polarstern
Provider	ePIC

Abstract

no abstract available

Associated objects

reference	Continuous thermosalinograph oceanography along POLARSTERN cruise track ANT-XIII/3
reference	Meteorological observations during POLARSTERN cruise ANT-XIII/3
reference	Physical oceanography during POLARSTERN cruise ANT-XIII/3
reference	Sea-bed photographs (benthos) along profile PS39/005-10
reference	Sea-bed photographs (benthos) along profile PS39/006-1
reference	Sea-bed photographs (benthos) along profile PS39/007-1
reference	Sea-bed photographs (benthos) along profile PS39/008-11
reference	Sea-bed photographs (benthos) along profile PS39/009-3
reference	Sea-bed photographs (benthos) along profile PS39/025-15
reference	Sea-floor images from ROV transects during POLARSTERN cruise ANT-XIII/3 to the Weddell Sea, Antarctica

toggle size

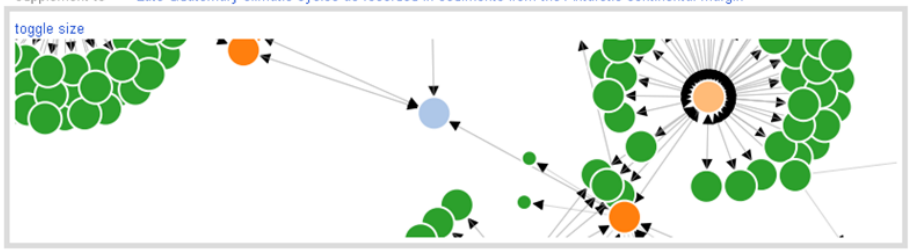
Linked data and publication

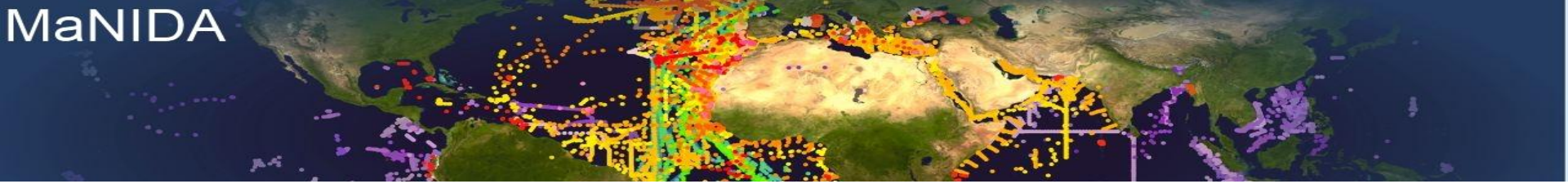
shelves, the retreat of sea-ice and the recommenced feeding of warm North Atlantic Deep Water (NADW) to the Circumpolar Deep Water (CDW). interglacial periods (at isotope events 7.5, 7.3, 5.5., and 1.1), the CDW promotes warmer surface waters and thus the retreat of sea-ice which in t availability of light in surface waters. At distinct climatic thresholds local insolation might also influence sea-ice distribution. Primary productivity a increase, the CCD rises and carbonate dissolution occurs in slope sediments also in shallow depth. Ice shelves and coastal polynyas favour the f and saline Ice Shelf Water (ISW) which contributes to bottom water formation. During the transition from a peak warm time to a glacial (isotope st 5.4-5.0) the superimposition of both intense ice-rafting and reduced bottom currents produces a typical facies which occurs with a distinct lag in t of specific sedimentary processes to climatic change. With the onset of a glacial (at isotope events 7.0 and 5.0) the Antarctic ice sheet expands sea-level with the extensive glaciations in the northern Hemisphere. Gravitational sediment transport becomes the most active process, and sedir deep sea is provided by turbidity currents through canyon systems. During Antarctic glacial maxima (isotope stages between 7.0-6.0, and 5.0-2.0 reduced input of NADW into the Southern Ocean favours further advances of the ice shelves far beyond the shelf break and the continous formatic ice shelves and/or closed sea ice coverage contourites are deposited on the slope.

Associated objects

reference	Fazielle Gliederung glazialmariner Sedimente in der Antarktis
supplement to	Late Quaternary climatic cycles as recorded in sediments from the Antarctic continental margin

toggle size





Dowload data (+ metadata)

Sea-bed photographs (benthos) along profile PS39/005-10

Archived data

Author(s) Gutt, Julian
Date 2005
Type
Expedition(s) ANT-XIII/3
Platform(s) Polarstern
Provider PANGAEA

Abstract

no abstract available

Associated objects

reference The expedition ANTARKTIS XIII/3 (EASIZ I) of "Polarstern" to the eastern Weddell Sea in 1996

toggle size

Dissemination

	Type	Description	Restriction
	download	(no description available)	unrestricted

Provider Metadata

download metadata

HF Radar start 2012-10-29 00:00

Near real-time

Author(s) Seemann, Jörg
Date
Type
Expedition(s)
Platform(s) HF Radar
Provider Helmholtz-Zentrum Geesthacht

Abstract

Metadata form netcdf

Associated objects

no associated objects

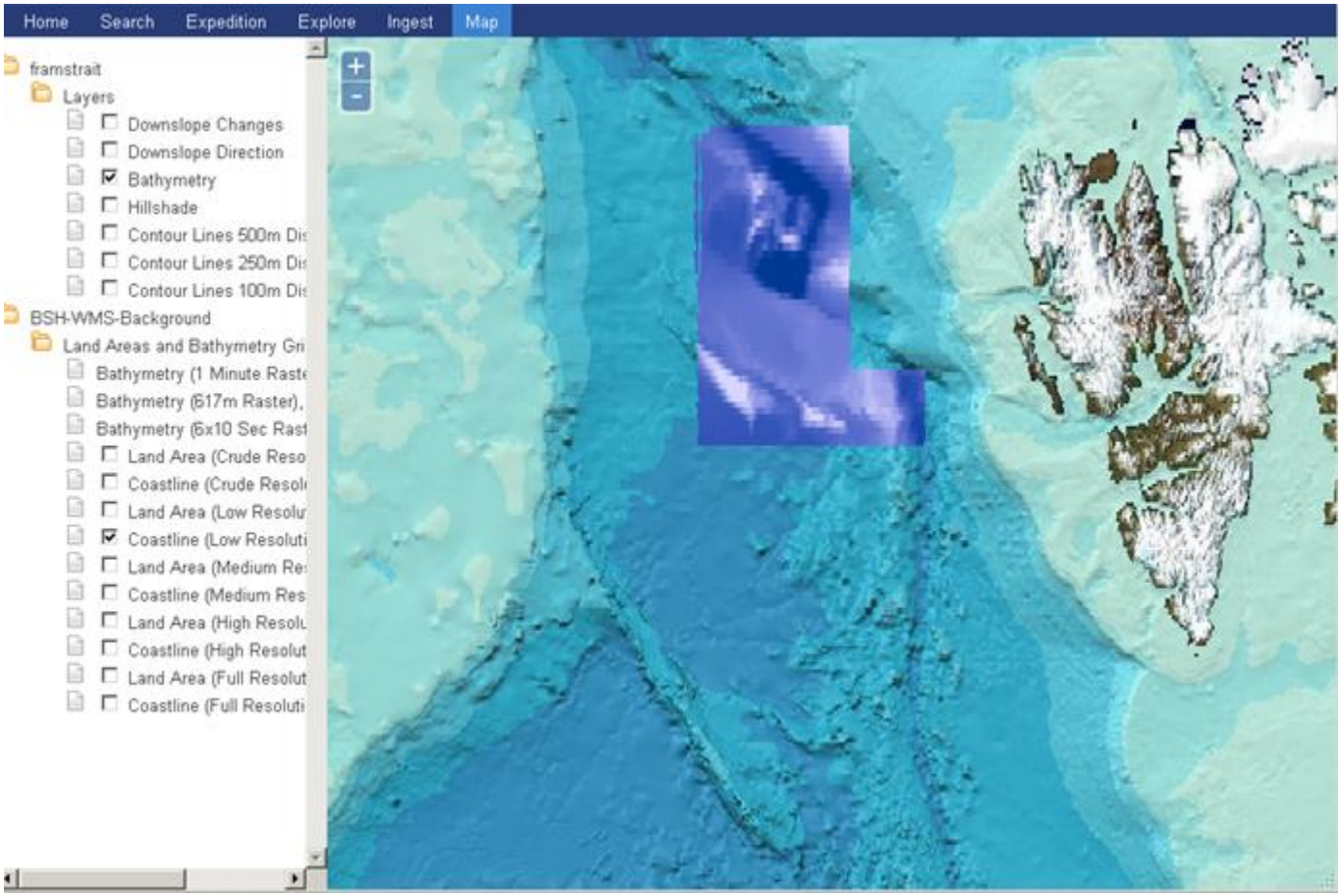
Dissemination

	Type	Description	Restriction	
	sos	surface_eastward_sea_water_velocity	unrestricted	
	sos	surface_northward_sea_water_velocity	unrestricted	
	sos	surface_sea_water_velocity	unrestricted	
	wms	surface_eastward_sea_water_velocity	unrestricted	add to map
	wms	surface_northward_sea_water_velocity	unrestricted	add to map
	wms	surface_sea_water_velocity	unrestricted	add to map

Provider Metadata

download metadata

Add layers, WMS



Comming soon:

Project: http://www.manida.org

Portal: http://manida.awi.de

MaNIDA co-ordination:

Angela.Schaefer@awi.de

Thanks for your attention!