

UNEP/GRID-Arendal's Marine Programme

**GEBCO Bathymetric Science Day
SHOM, Brest, France
September 29, 2009**

**Yannick Beaudoin
UNEP/GRID-Arendal**

Presentation overview

- What is UNEP/GRID-Arendal?
- What is the UNEP Shelf Programme?
- The UNEP Shelf Programme: Data serving States.
- The UNEP Shelf Programme: Progress to date.
- Integrated Oceans Management

UNEP/GRID-Arendal mission: Environmental Information for Change



UNEP/GRID-Arendal
United Nations Environment Programme

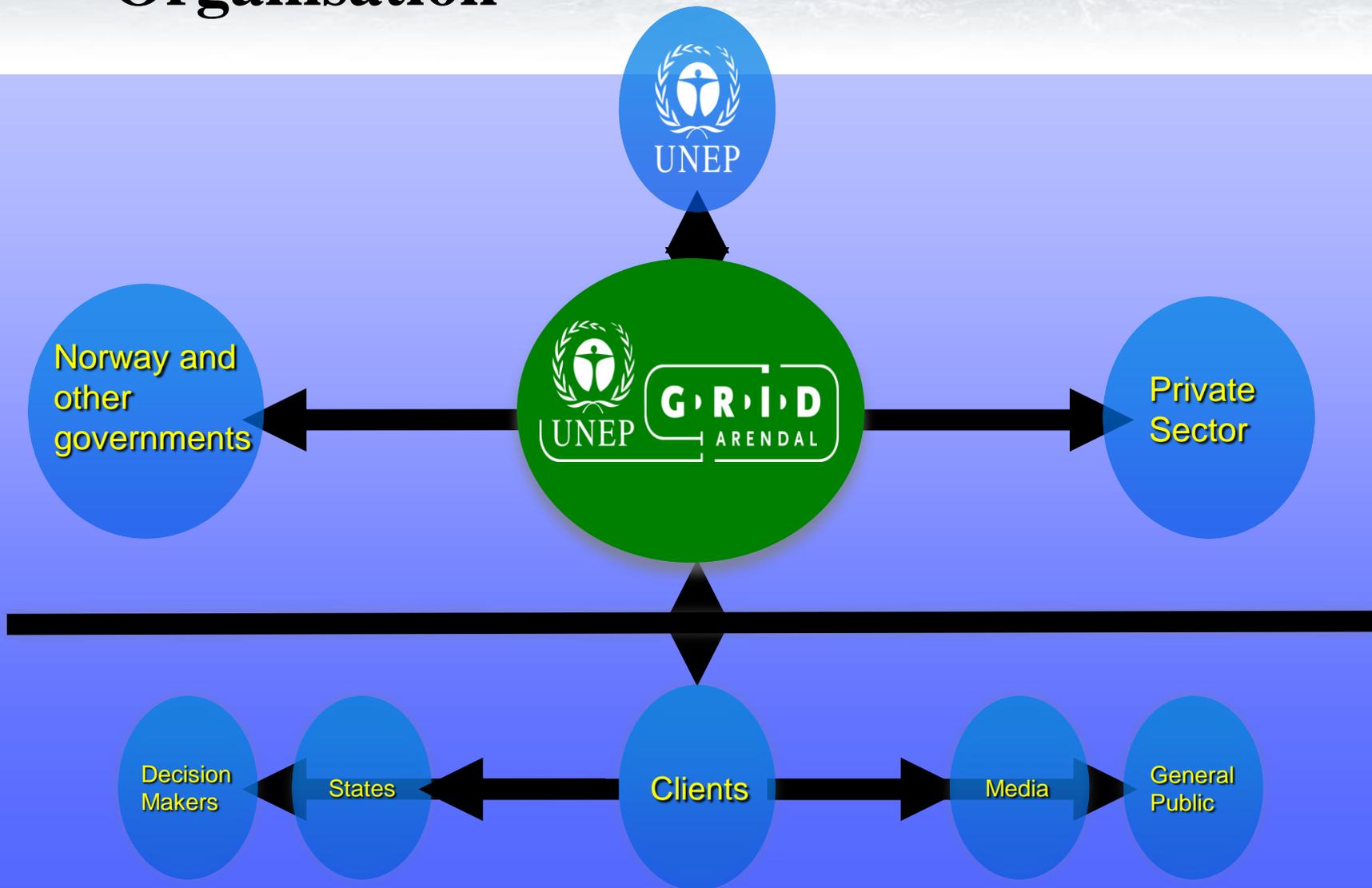


- Dedicated to making a difference, we explore how environmental information impacts on decision-making and the environment.
- Seeking to bridge the gap between science and politics.

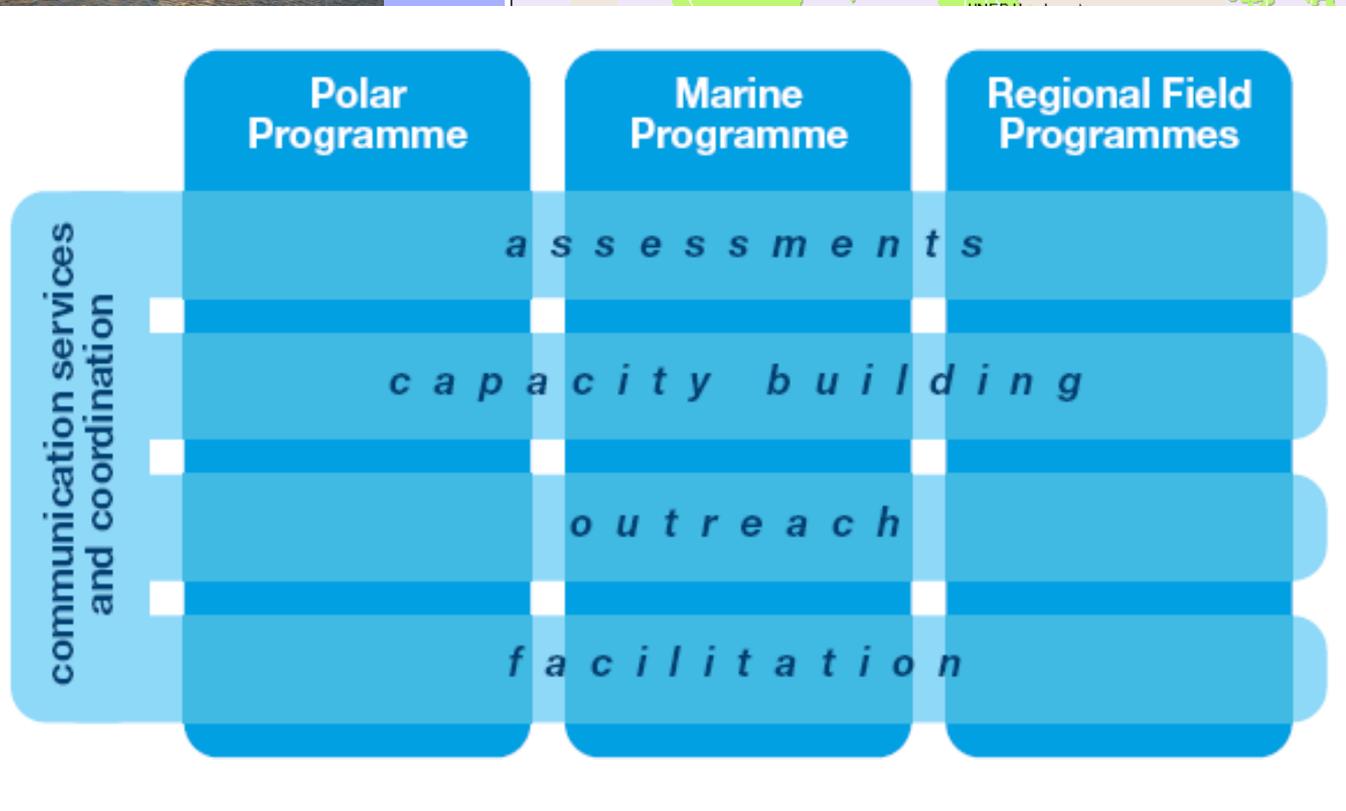
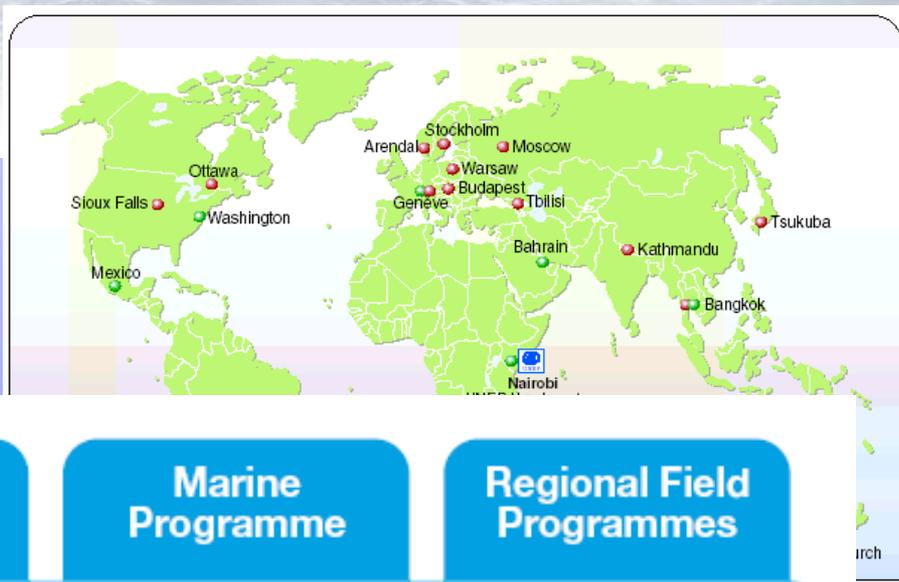
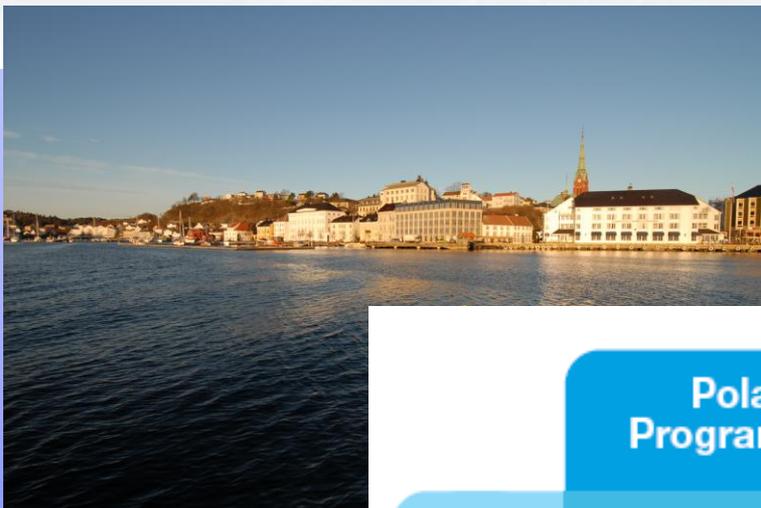
UNEP/GRID-Arendal facts

- Non profit, administratively independent institution, founded in 1989 by the Norwegian Ministry of Environment.
- MoU between UNEP and MoE: Official UNEP Collaborating Center
- UNEP's Polar centre
- 35 staff members based in Arendal, Geneva, Ottawa, Stockholm and Sydney.
- 60% core funding from MoE and MoFA, Norway
- 40% through private sector, public sector and international organizations.
- All projects/activities support UNEP's Program of Work

Organisation



Core focuses



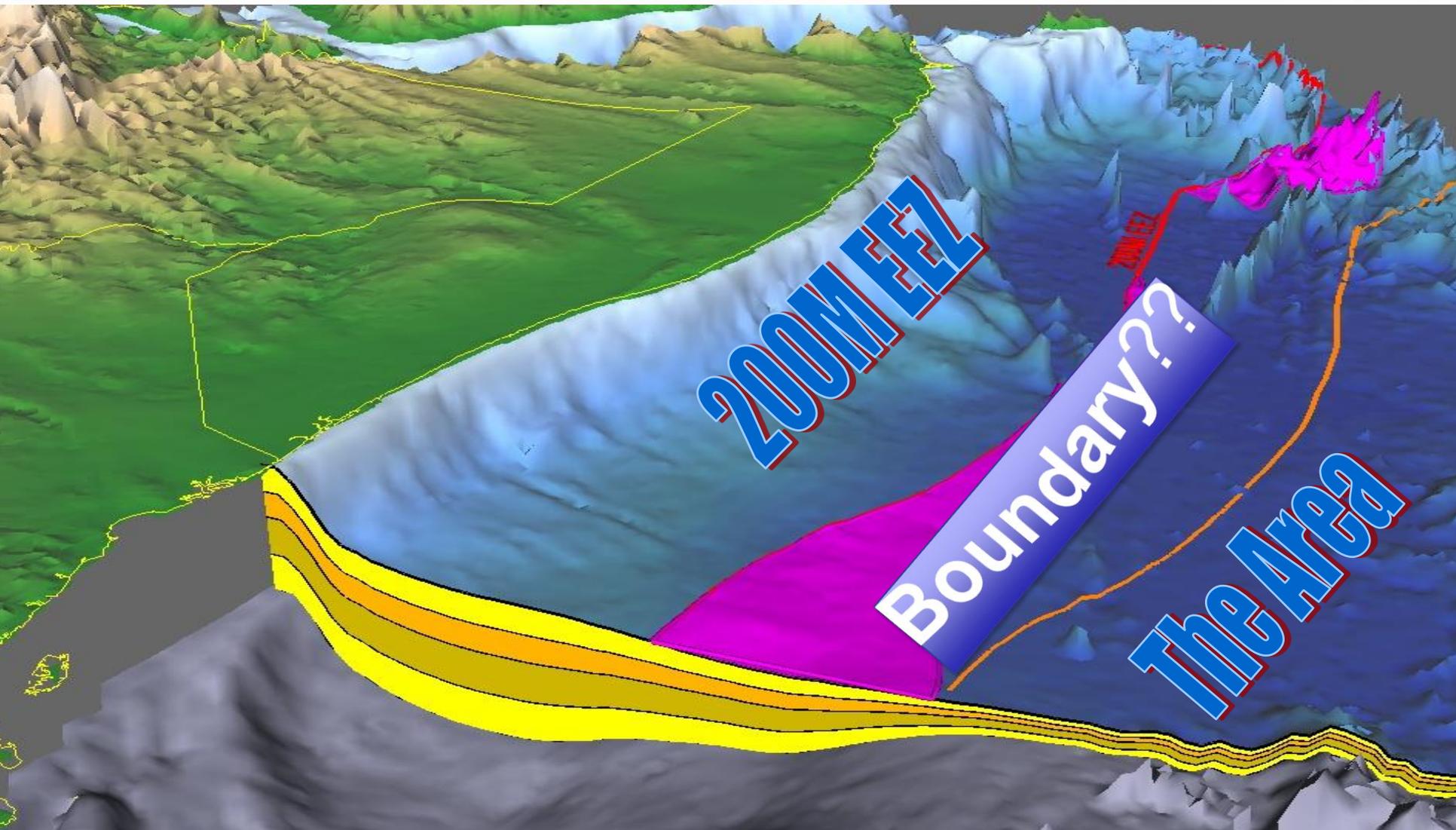
What is the UNEP Shelf Programme?



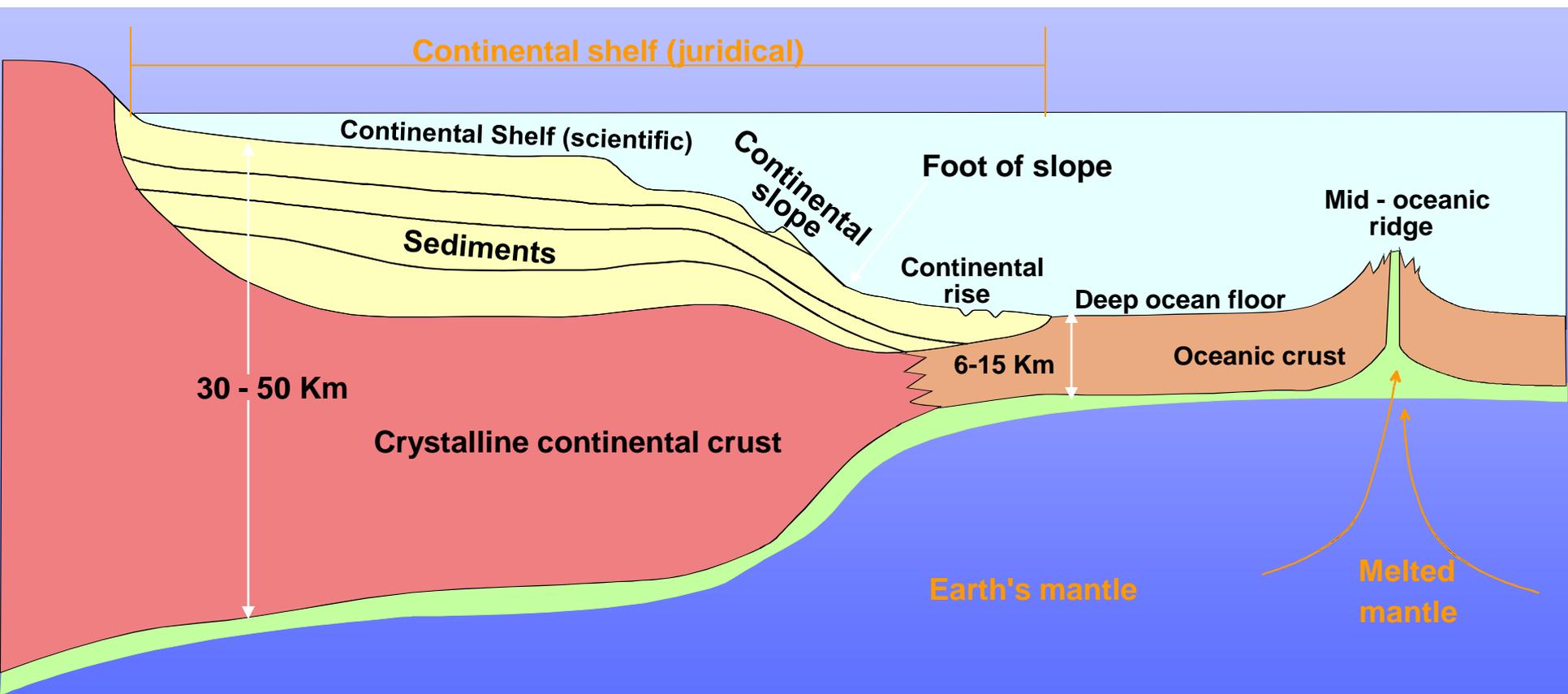
Mandate from UN General Assembly 2002

- “Calls upon the United Nations Environment Programme, working within the Global Resource Information Database (GRID) system for data and information management, to expand on a voluntary basis the capacity of existing GRID centres to **store and handle research** data from the **outer continental margin**, on a basis to be **mutually agreed with the coastal State**, and **complementary to existing regional data centers**, giving due regard to **confidentiality needs** and in accordance with **Part XIII of the Convention**, and making **use of existing data management mechanisms** under the **Intergovernmental Oceanographic Commission** and the **International Hydrographic Organisation**, with a view to serving the needs of **coastal States**, and in particular **developing countries** and **small island developing States**, in their compliance with article 76 of the Convention;”

Article 76

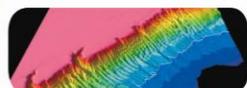
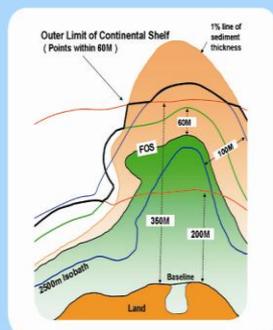


Article 76



Article 76: steps towards a submission

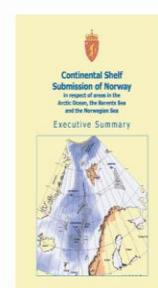
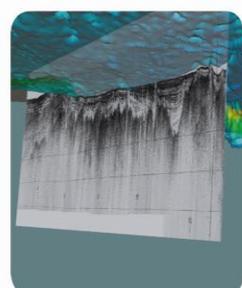
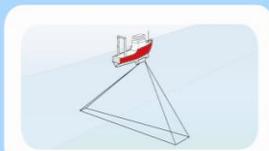
All phases of the delineation project



When area of interest is covered by high quality, high resolution data, new acquisition may not be necessary.



Low resolution data is not adequate for comprehensive evaluation. New data must be acquired for areas with poor or no coverage.



1. Scanning

Understanding Article 76
Accessing publicly available data to determine the extended Continental Shelf
UNEP Shelf Programme's One Stop Data Shop
Working with the Shelf delineation software

2. Desktop

Locating previously collected data from multiple sources
UNEP Shelf Programme's One Stop Data Shop
Interpretation of the data and design of any future work

3. Data acquisition

If data acquisition necessary:
- Survey design
- Tendering and collecting data

4. Data interpretation

Finding the best solutions for defining the extended Continental Shelf

5. Submission

Putting together a submission that satisfies the requirements of the Commission on the Limits of the Continental Shelf

6. Follow-up

Addressing any comments received from the Commission on the Limits of the Continental Shelf

UNEP Shelf Programme: Why?

UNEP Shelf Programme

The benefits of submission Resources of the Continental Shelf



Geothermal energy



Pharmaceuticals
Bio-mining



Gas hydrates



Benthic food sources



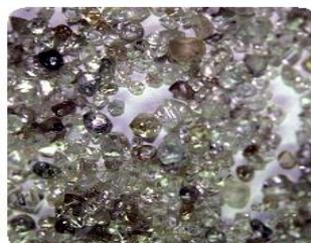
Offshore oil and gas



Marine biodiversity
Marine Protected Areas



Metals (e.g. copper)



Diamonds



Extreme life
Industrial applications



Sand and gravel

And future resources...

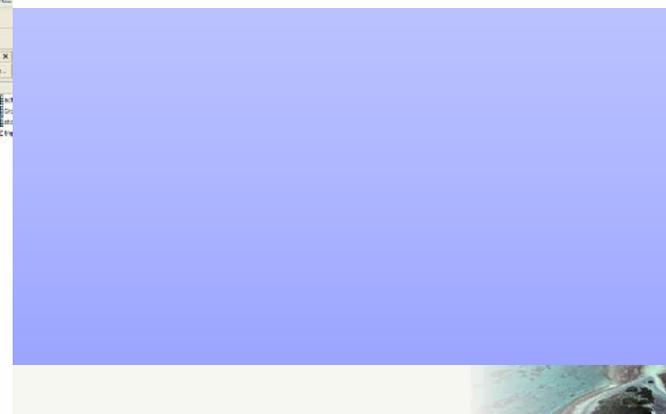
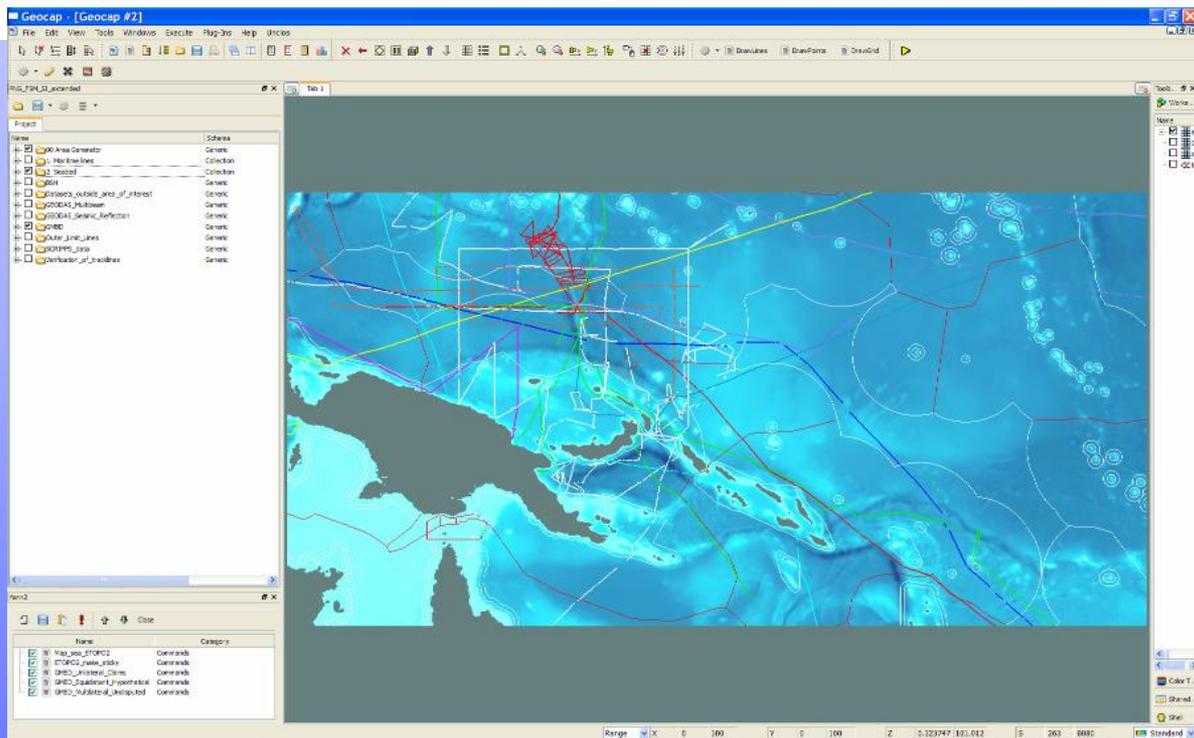
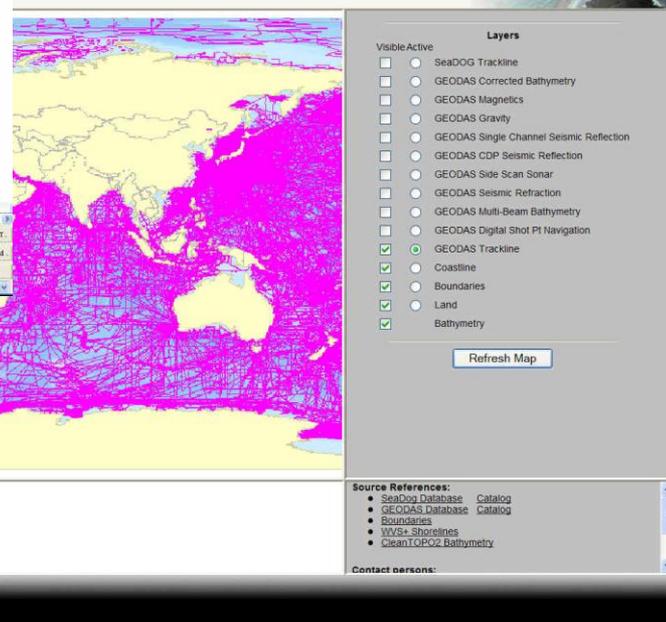
UNEP Shelf Programme: Assisting States



UNEP Shelf Programme: Data serving States

- Data mining and access
 - (IFREMER, IPGS, BGR, BSH, Southampton NOC, NGDC/GEODAS, LDEO, SCRIPPS, WHOI, JAMSTEC, JODC, IODP, USGS)
- Looking to access Russian data
- Through partnerships:
 - Provide training
 - Provide technical and scientific support
 - Provide advice
- Promote the establishment of national/regional marine databanks e.g. SOPAC

One Stop Data Shop

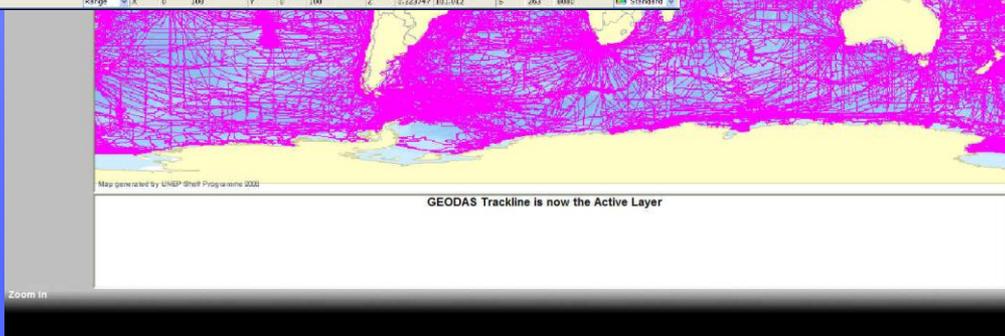
The screenshot shows the Layers panel in Geocap software. The panel lists various data layers and their visibility status. The 'Layers' section includes:

- VisibleActive
- SeaDog Trackline
- GEODAS Corrected Bathymetry
- GEODAS Magnetics
- GEODAS Gravity
- GEODAS Single Channel Seismic Reflection
- GEODAS CDP Seismic Reflection
- GEODAS Side Scan Sonar
- GEODAS Seismic Refraction
- GEODAS Multi-Beam Bathymetry
- GEODAS Digital Shot PI Navigation
- GEODAS Trackline
- Coastline
- Boundaries
- Land
- Bathymetry

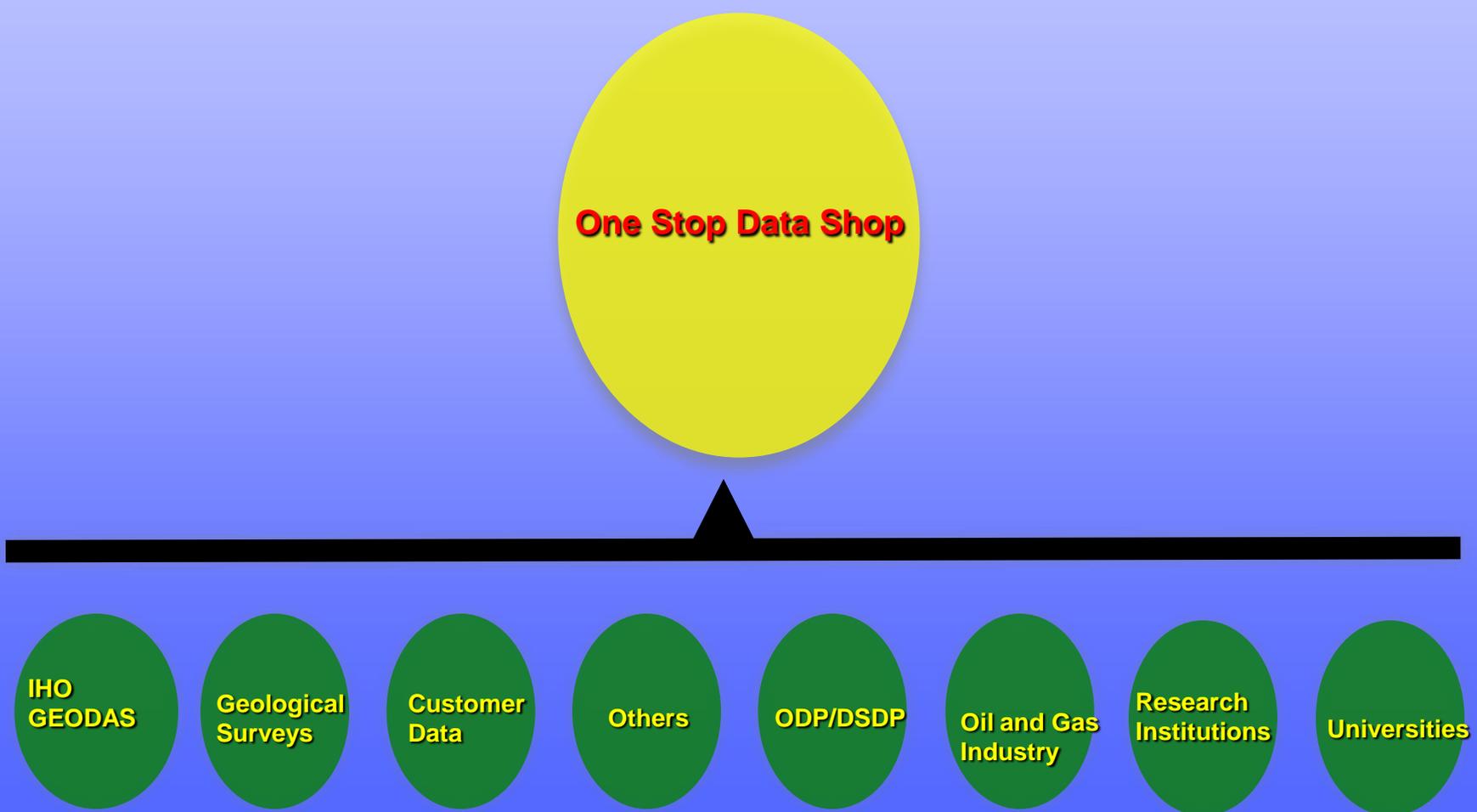
Below the list is a 'Refresh Map' button. At the bottom of the panel, there is a 'Source References' section with links to:

- SeaDog Database Catalog
- GEODAS Database Catalog
- Boundaries
- WWSA Shorelines
- CleanTPOZ Bathymetry

At the very bottom, there is a 'Contact persons:' section.



Data Sources



One Stop Data Shop

**IHO
GEODAS**

**Geological
Surveys**

**Customer
Data**

Others

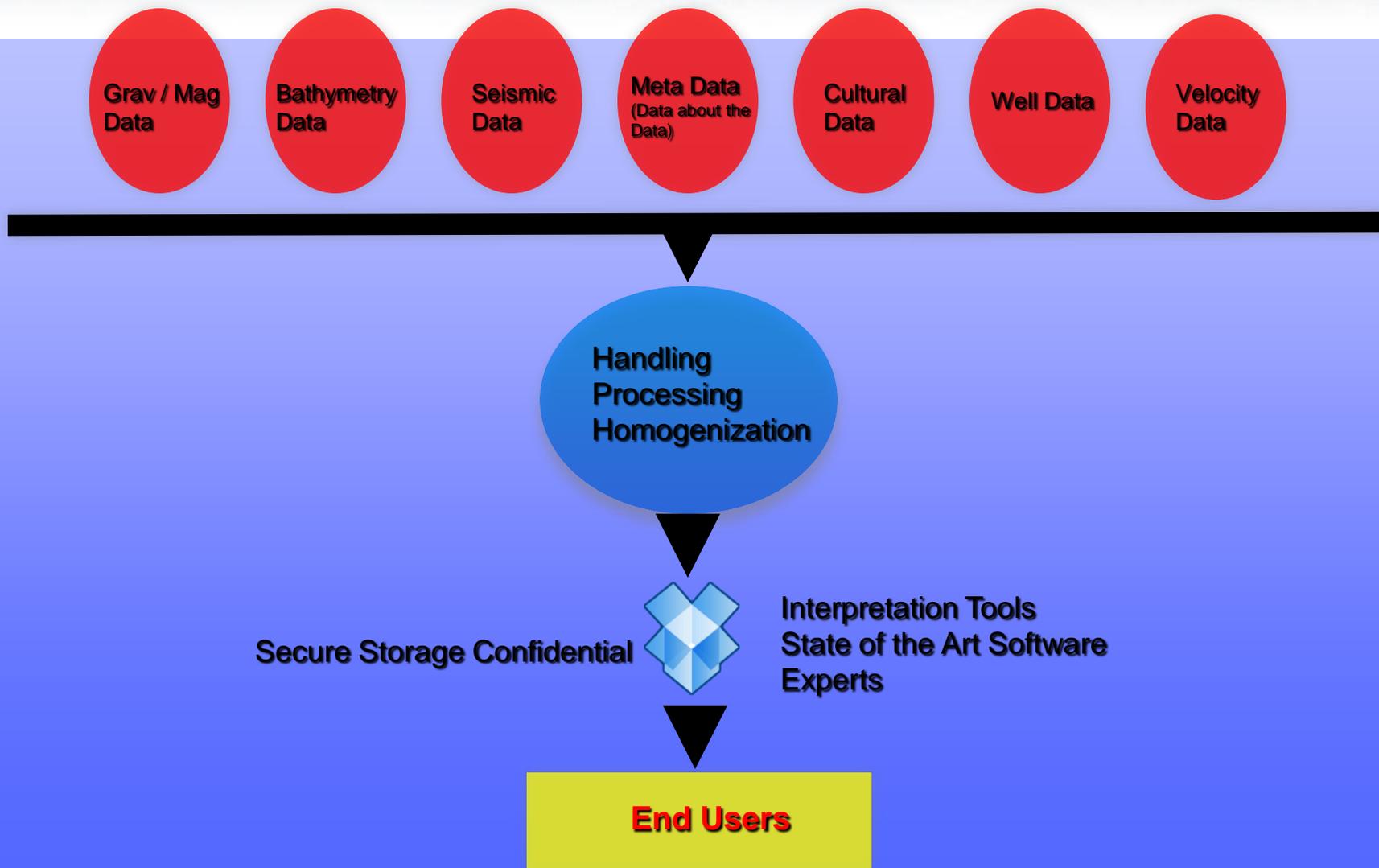
ODP/DSDP

**Oil and Gas
Industry**

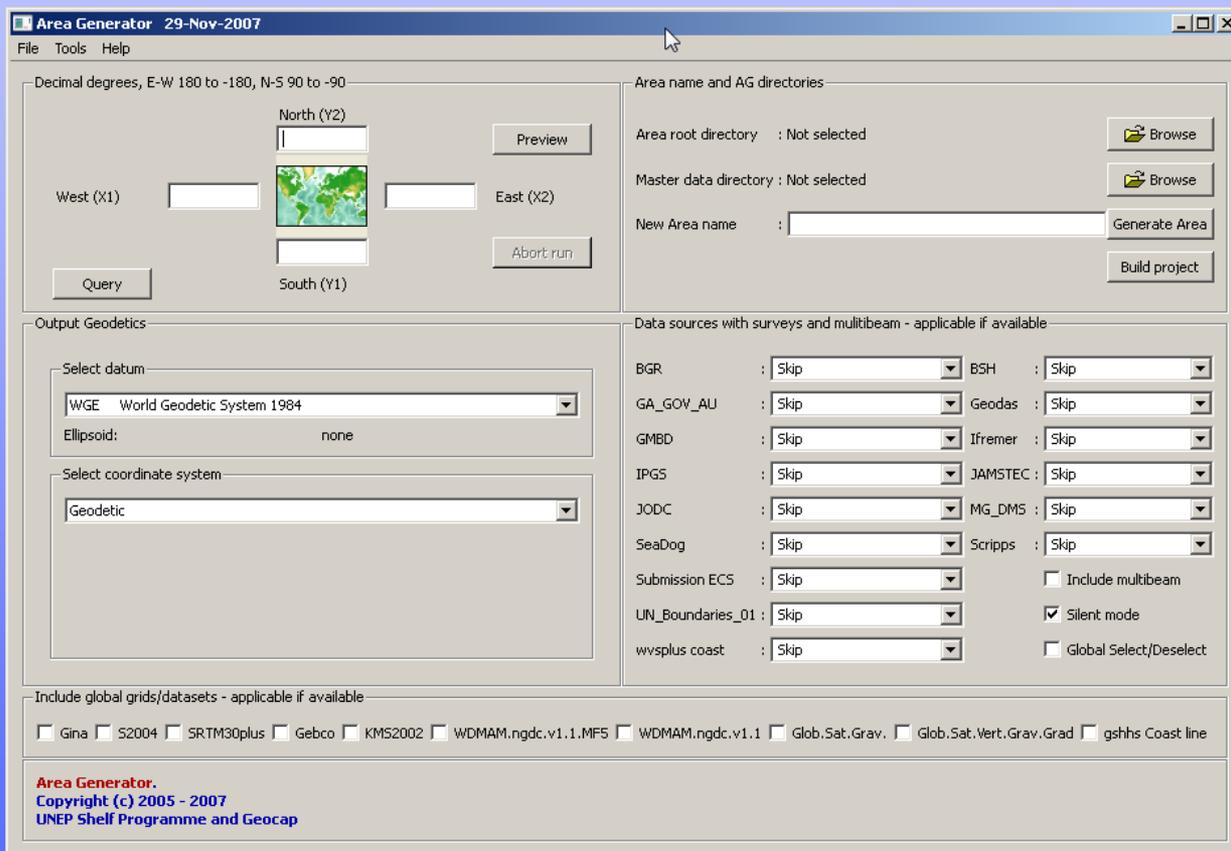
**Research
Institutions**

Universities

One Stop Data Shop: Typical Data Flow



Area Generator



The screenshot shows the 'Area Generator' software interface. The window title is 'Area Generator 29-Nov-2007'. The interface is divided into several sections:

- Decimal degrees, E-W 180 to -180, N-S 90 to -90:** Contains input fields for North (Y2), West (X1), East (X2), and South (Y1). A small world map is visible between the West and East fields. Buttons for 'Preview', 'Query', and 'Abort run' are present.
- Area name and AG directories:** Contains 'Area root directory' and 'Master data directory' (both 'Not selected') with 'Browse' buttons. A 'New Area name' text field and 'Generate Area' button are also present. A 'Build project' button is at the bottom right of this section.
- Output Geodetics:** Contains a 'Select datum' dropdown menu (set to 'WGE World Geodetic System 1984') and an 'Ellipsoid' dropdown menu (set to 'none'). Below it is a 'Select coordinate system' dropdown menu (set to 'Geodetic').
- Data sources with surveys and multibeam - applicable if available:** A grid of dropdown menus for various data sources, all set to 'Skip': BGR, GA_GOV_AU, GMBD, IPGS, JODC, SeaDog, Submission ECS, UN_Boundaries_D1, wvsplus coast, BSH, Geodas, Ifremer, JAMSTEC, MG_DMS, Scripps. There are also checkboxes for 'Include multibeam' (unchecked), 'Silent mode' (checked), and 'Global Select/Deselect' (unchecked).
- Include global grids/datasets - applicable if available:** A row of checkboxes for various datasets: Gina, S2004, SRM30plus, Gebco, KMS2002, WDMAM.ngdc.v1.1.MF5, WDMAM.ngdc.v1.1, Glob.Sat.Grav., Glob.Sat.Vert.Grav.Grad, and gshhs Coast line. All are currently unchecked.

At the bottom left of the window, the following text is displayed:

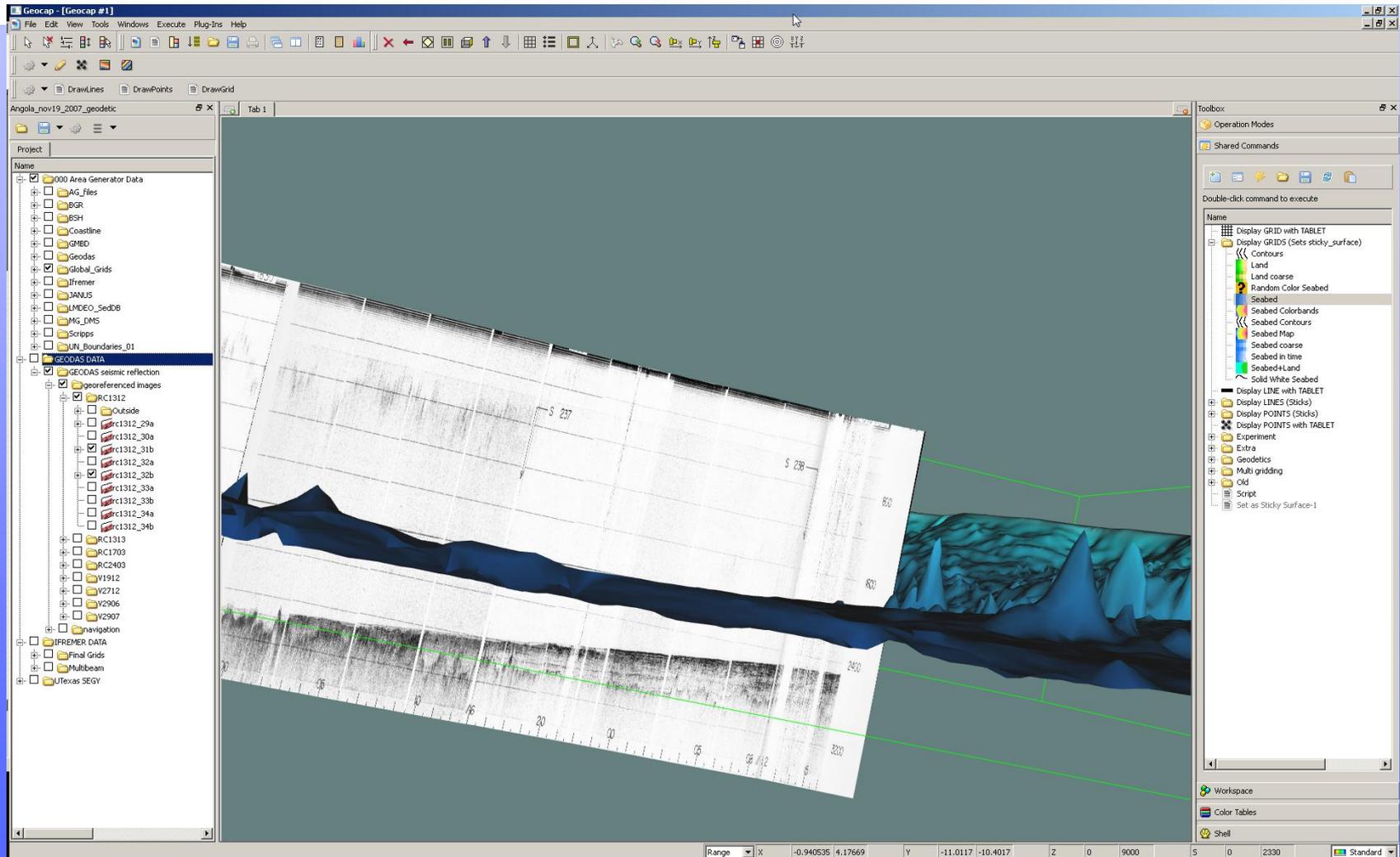
Area Generator.
Copyright (c) 2005 - 2007
UNEP Shelf Programme and Geocap

Generate a "project" anywhere in the world from master data base in chosen projection and datum in a few minutes.

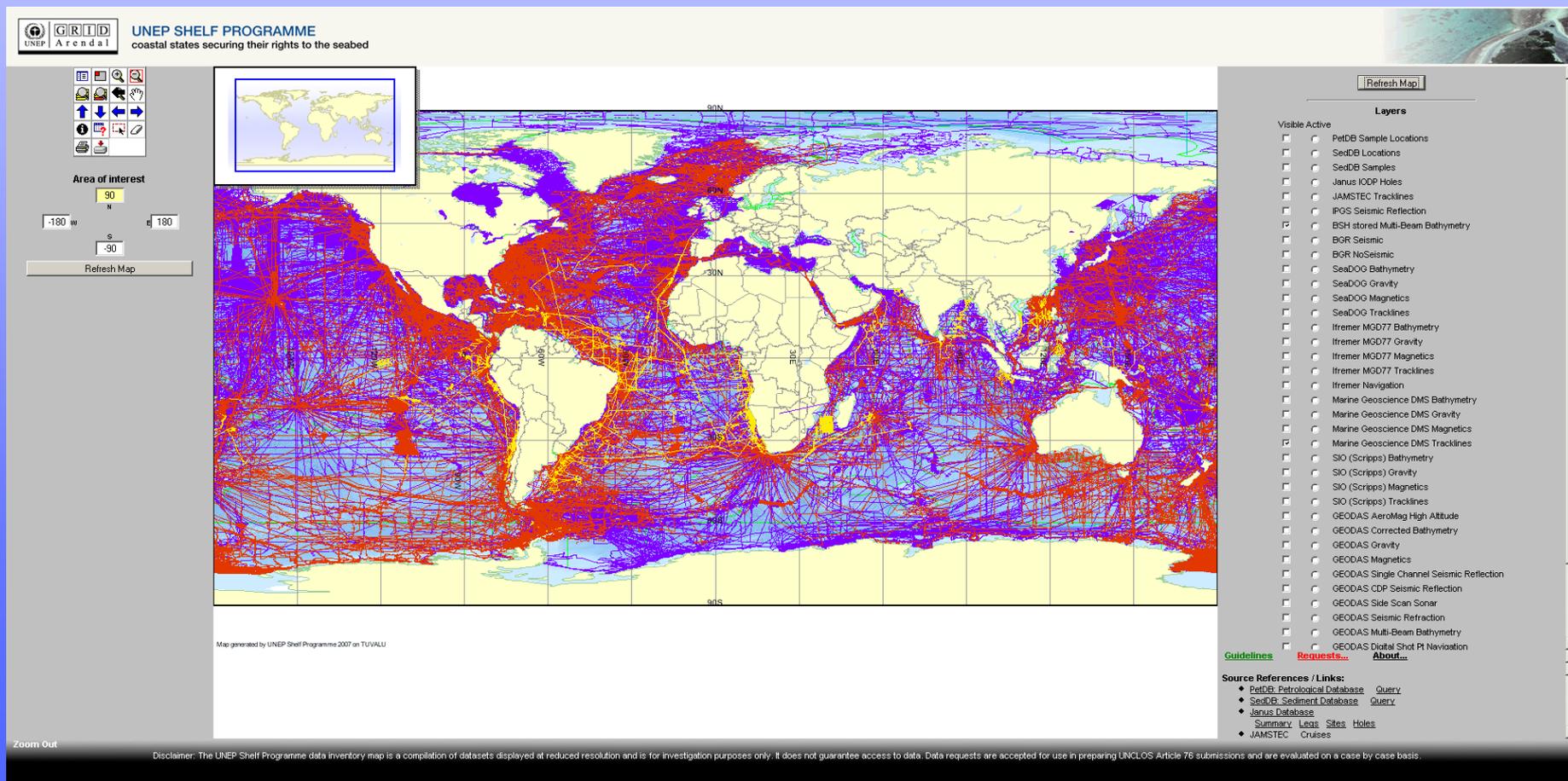
The "project" can be converted by the One Stop Data Shop's filters to the desired format for import into chosen tool.

Data completeness of the "project" will depend on the One Stop Data Shop's ability to get access to and process relevant data.

Seismic Data (continued): scanned imagery



Web interface: How to access the One Stop Data Shop



UNEP SHELF PROGRAMME
coastal states securing their rights to the seabed

Layers

Visible Active

- PetDB Sample Locations
- SedDB Locations
- SedDB Samples
- Janus IODP Holes
- JAMSTEC Tracklines
- IPGS Seismic Reflection
- BSH stored Multi-Beam Bathymetry
- BGR Seismic
- BGR NoSeismic
- SeaDOG Bathymetry
- SeaDOG Gravity
- SeaDOG Magnetics
- SeaDOG Tracklines
- Ifremer MGD77 Bathymetry
- Ifremer MGD77 Gravity
- Ifremer MGD77 Magnetics
- Ifremer MGD77 Tracklines
- Ifremer Navigation
- Marine Geoscience DMS Bathymetry
- Marine Geoscience DMS Gravity
- Marine Geoscience DMS Magnetics
- Marine Geoscience DMS Tracklines
- SIO (Scripps) Bathymetry
- SIO (Scripps) Gravity
- SIO (Scripps) Magnetics
- SIO (Scripps) Tracklines
- GEODAS AeroMag High Altitude
- GEODAS Corrected Bathymetry
- GEODAS Gravity
- GEODAS Magnetics
- GEODAS Single Channel Seismic Reflection
- GEODAS CDP Seismic Reflection
- GEODAS Side Scan Sonar
- GEODAS Seismic Refraction
- GEODAS Multi-Beam Bathymetry
- GEODAS Digital Shot Pt Navigation

[Guidelines](#) [Requests...](#) [About...](#)

Source References / Links:

- [PetDB: Petrological Database](#) [Query](#)
- [SedDB: Sediment Database](#) [Query](#)
- [Janus Database](#)
- [Summary](#) [Legs](#) [Sites](#) [Holes](#)
- [JAMSTEC](#) [Cruises](#)

Map generated by UNEP Shelf Programme 2007 on TUVALU

Zoom Out

Disclaimer: The UNEP Shelf Programme data inventory map is a compilation of datasets displayed at reduced resolution and is for investigation purposes only. It does not guarantee access to data. Data requests are accepted for use in preparing UNCLOS Article 76 submissions and are evaluated on a case by case basis.

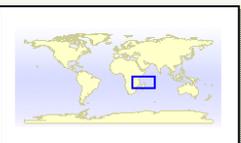
How to Access the One Stop Data Shop (cont)



UNEP SHELF PROGRAMME
coastal states securing their rights to the seabed



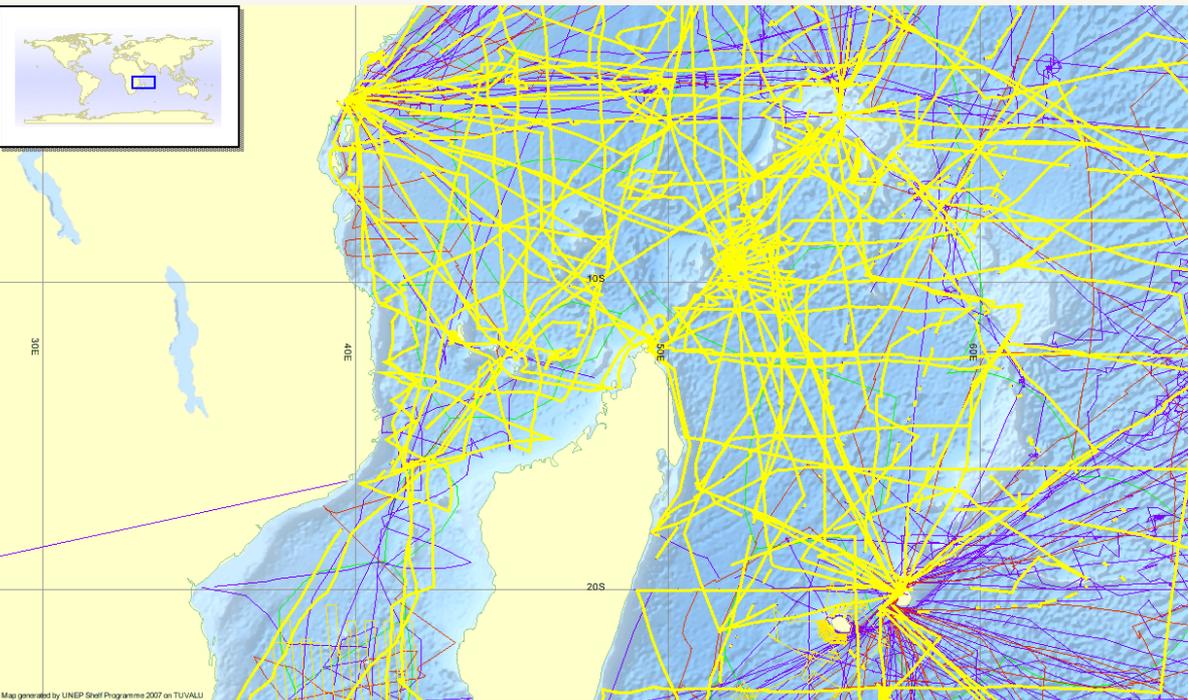




Area of interest

90 N
180 W 180 E
0
90 S

Refresh Map



Map generated by UNEP Shelf Programme 2007 on TUVALL

GEODAS Tracklines

Rec	SURVEY_ID	PLATFORM	INSTITUTION	COUNTRY	DEPARTURE	ARRIVAL	WEST/EAST	NORTH/SOUTH
1	19910034	Ph Jeanne D'Arc	United Kingdom Hydrographic Office	France	19851229	19880118	+039 / +051	+07 / -19
2	19920149	Hms Norfolk	United Kingdom Hydrographic Office	United Kingdom	19920816	19920818	+052 / +058	-10 / -20
3	A2015L03	Atlantis II	Woods Hole Oceanographic Institution	Usa	19950412	19950921	+031 / +080	+07 / -30
4	A2092L07	Atlantis II	Woods Hole Oceanographic Institution	Usa	19780408	19780508	+039 / +058	+05 / -21

Refresh Map

Layers

Visible Active

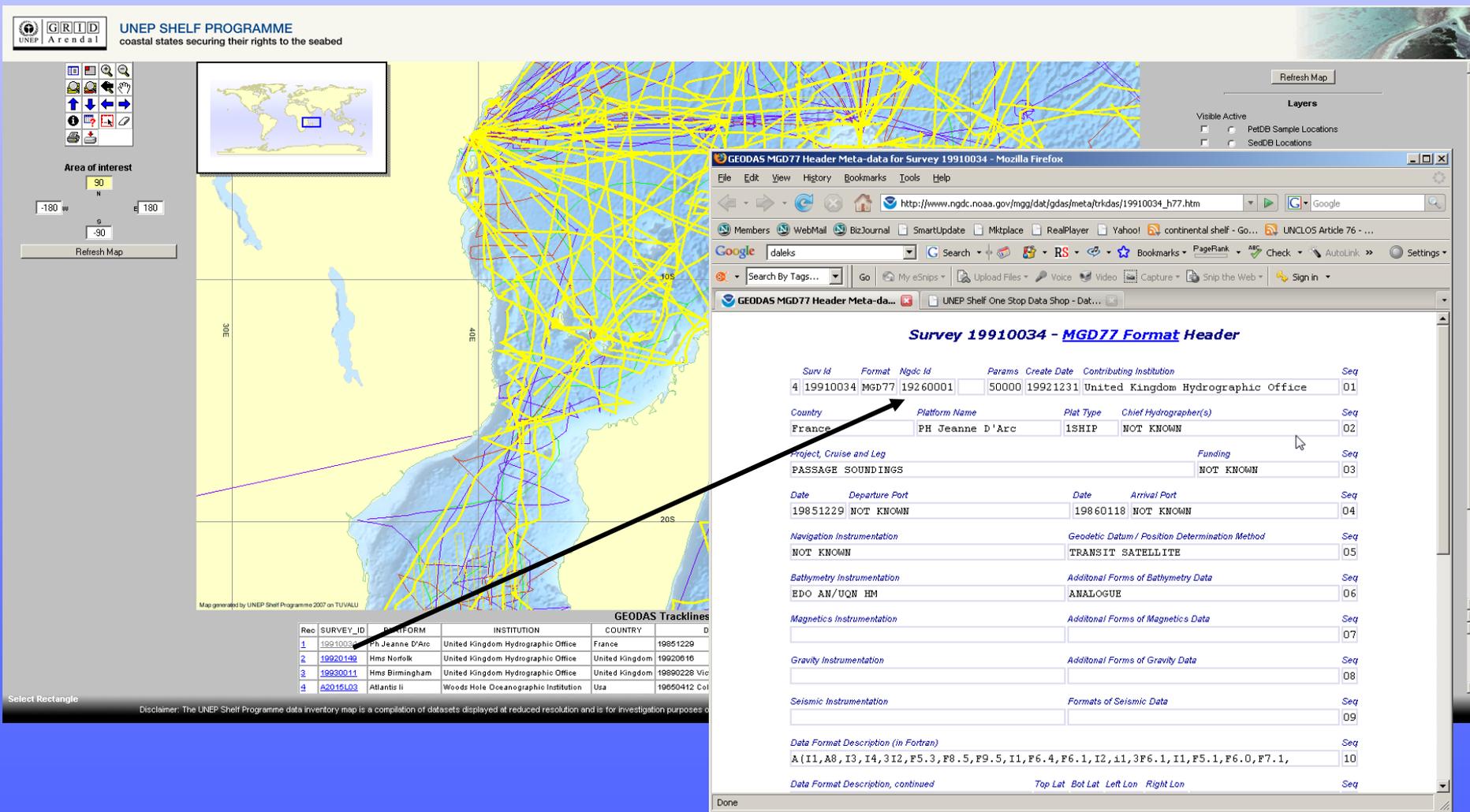
- PetDB Sample Locations
- SedDB Locations
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- JAMSTEC Tracklines
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- SeaDOG Gravity
- SeaDOG Magnetics
- SeaDOG Tracklines
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- Itremer Navigation
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- [Janus Database](#)
- [Summary](#) [Legs](#) [Sites](#) [Holes](#)
- [JAMSTEC](#) Cruises

How to Access the One Stop Data Shop (cont)



UNEP SHELF PROGRAMME
coastal states securing their rights to the seabed

Area of interest
90 N
-180 W 180 E
0 90
Refresh Map

Layers
Visible Active
 PetDB Sample Locations
 SedDB Locations

Survey 19910034 - MGD77 Format Header

Surv Id	Format	Ngdc Id	Params	Create Date	Contributing Institution	Seq	
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Country	Platform Name	Plat Type	Chief Hydrographer(s)	Seq			
France	PH Jeanne D'Arc	1SHIP	NOT KNOWN	02			
Project, Cruise and Leg	Funding	Seq					
PASSAGE SOUNDINGS	NOT KNOWN	03					
Date	Departure Port	Date	Arrival Port	Seq			
19851229	NOT KNOWN	19860118	NOT KNOWN	04			
Navigation Instrumentation	Geodetic Datum / Position Determination Method	Seq					
NOT KNOWN	TRANSIT SATELLITE	05					
Bathymetry Instrumentation	Additional Forms of Bathymetry Data	Seq					
EDO AN/UQN HM	ANALOGUE	06					
Magnetics Instrumentation	Additional Forms of Magnetics Data	Seq					
		07					
Gravity Instrumentation	Additional Forms of Gravity Data	Seq					
		08					
Seismic Instrumentation	Formats of Seismic Data	Seq					
		09					
Data Format Description (in Fortran)	Seq						
A(I1,A8,I3,I4,3I2,F5.3,F8.5,F9.5,I1,P6.4,P6.1,I2,I1,3F6.1,I1,F5.1,P6.0,F7.1,	10						
Data Format Description, continued	Top Lat Bot Lat Left Lon Right Lon	Seq					

GEODAS Tracklines

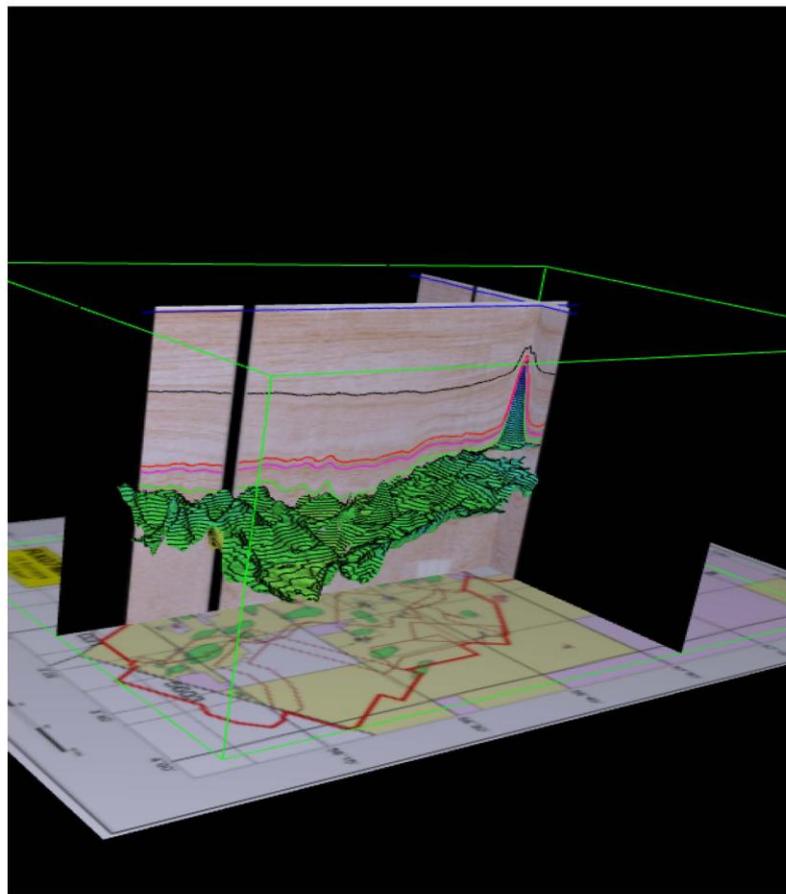
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1	19910034	PH Jeanne D'Arc	United Kingdom Hydrographic Office	France	19851229
2	19920149	Hms Norfolk	United Kingdom Hydrographic Office	United Kingdom	19920616
3	19930011	Hms Birmingham	United Kingdom Hydrographic Office	United Kingdom	19890228
4	A2015L03	Atlantis II	Woods Hole Oceanographic Institution	Usa	19650412

Map generated by UNEP Shelf Programme 2007 on TUVUUL

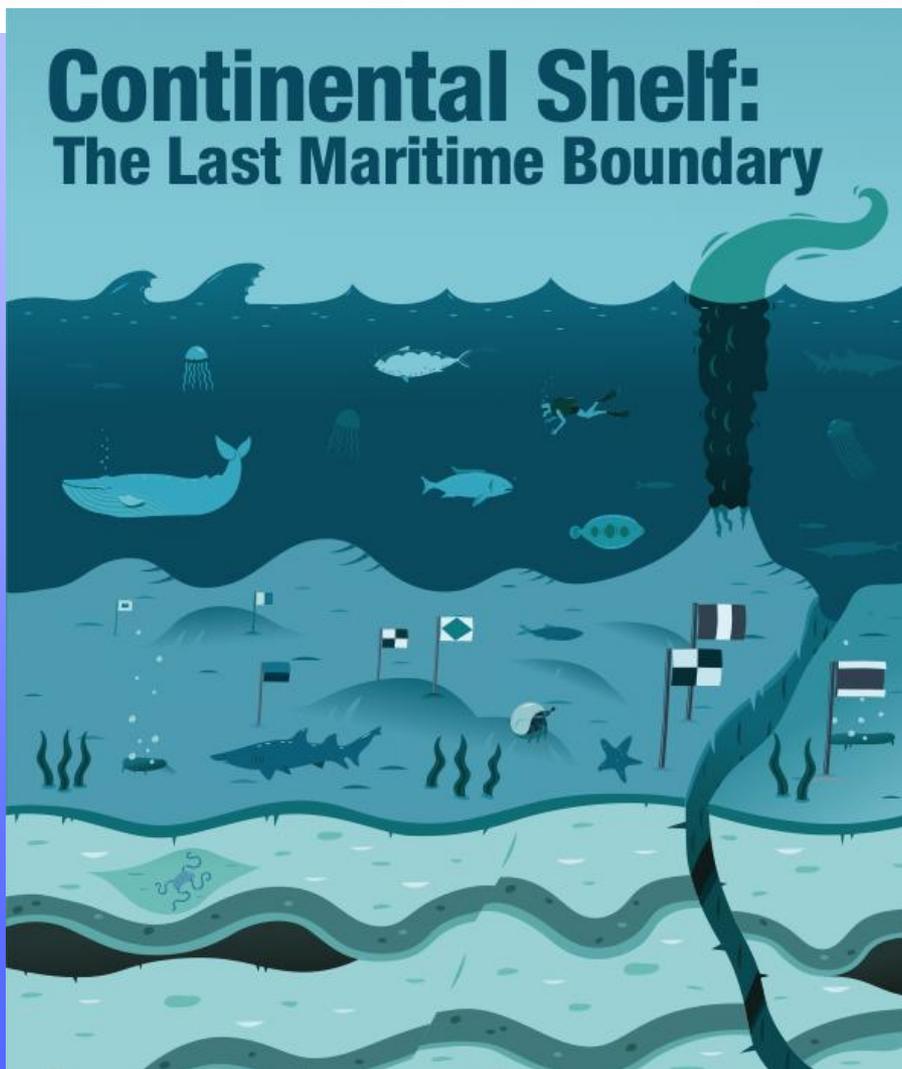
Select Rectangle

Disclaimer: The UNEP Shelf Programme data inventory map is a compilation of datasets displayed at reduced resolution and is for investigation purposes only.

Data presentation output: 3D pdf creation



UNEP Shelf Programme: progress to date



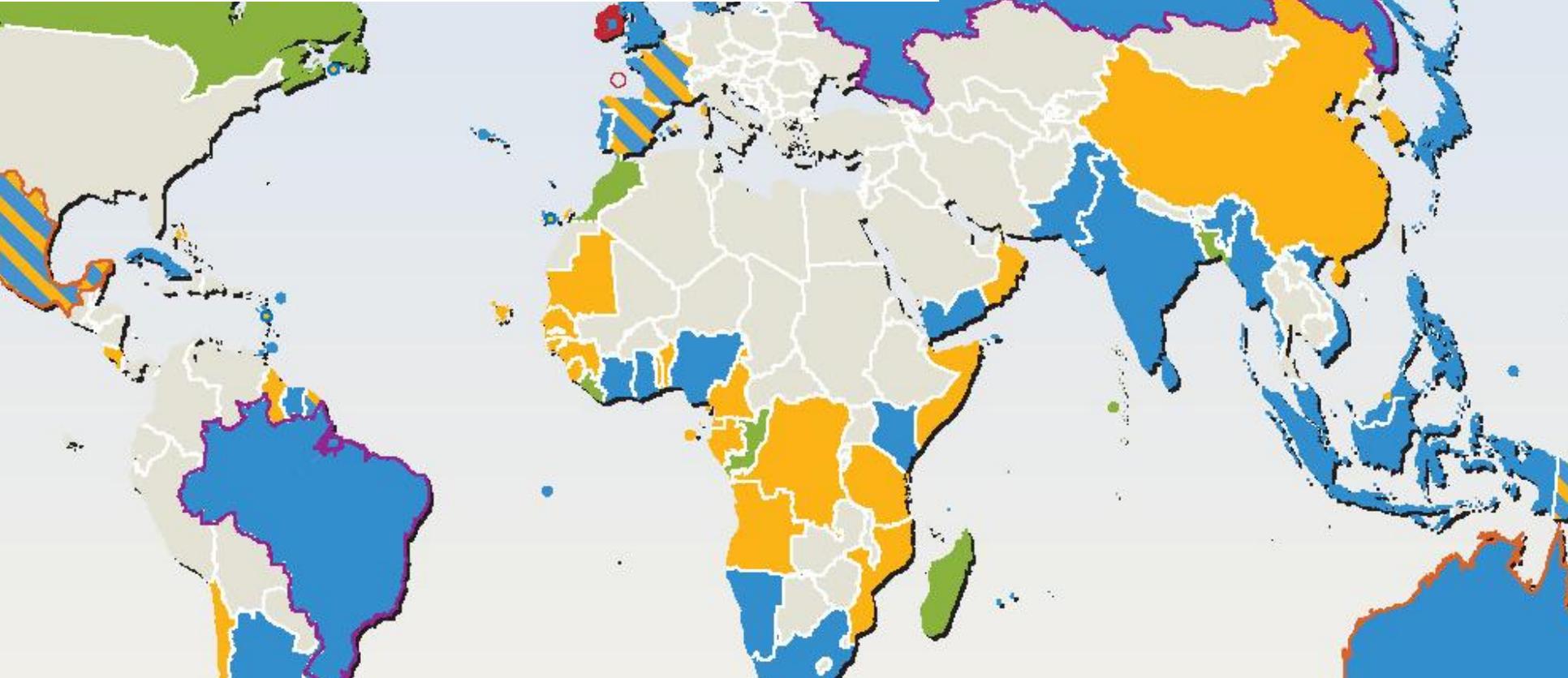
On your
bookshelf
soon...

Status of submissions for outer continental shelf

- States that lodged a submission to the CLCS
- States that submitted Preliminary information to the Secretary-General of the United Nations
- Coastal States that can make submissions after May 2009
- States that lodged both submission and Preliminary Information
- States for which recommendations have been issued and adopted
- States for which recommendations have been issued but not adopted
- Limit of the Antarctic Treaty Area



Sources: Division of Ocean Affairs and the Law of the Sea; Commission on Limit of the Continental Shelf.



Global distribution of outer continental shelf

-  States that lodged a submission to the CLCS
-  States that submitted Preliminary Information but did not disclose the extent of the area
-  Exclusive Economic Zone
-  Area of outer continental shelf according to the Executive Summaries of the submissions
-  Area of outer continental shelf according to the Preliminary Information Documents



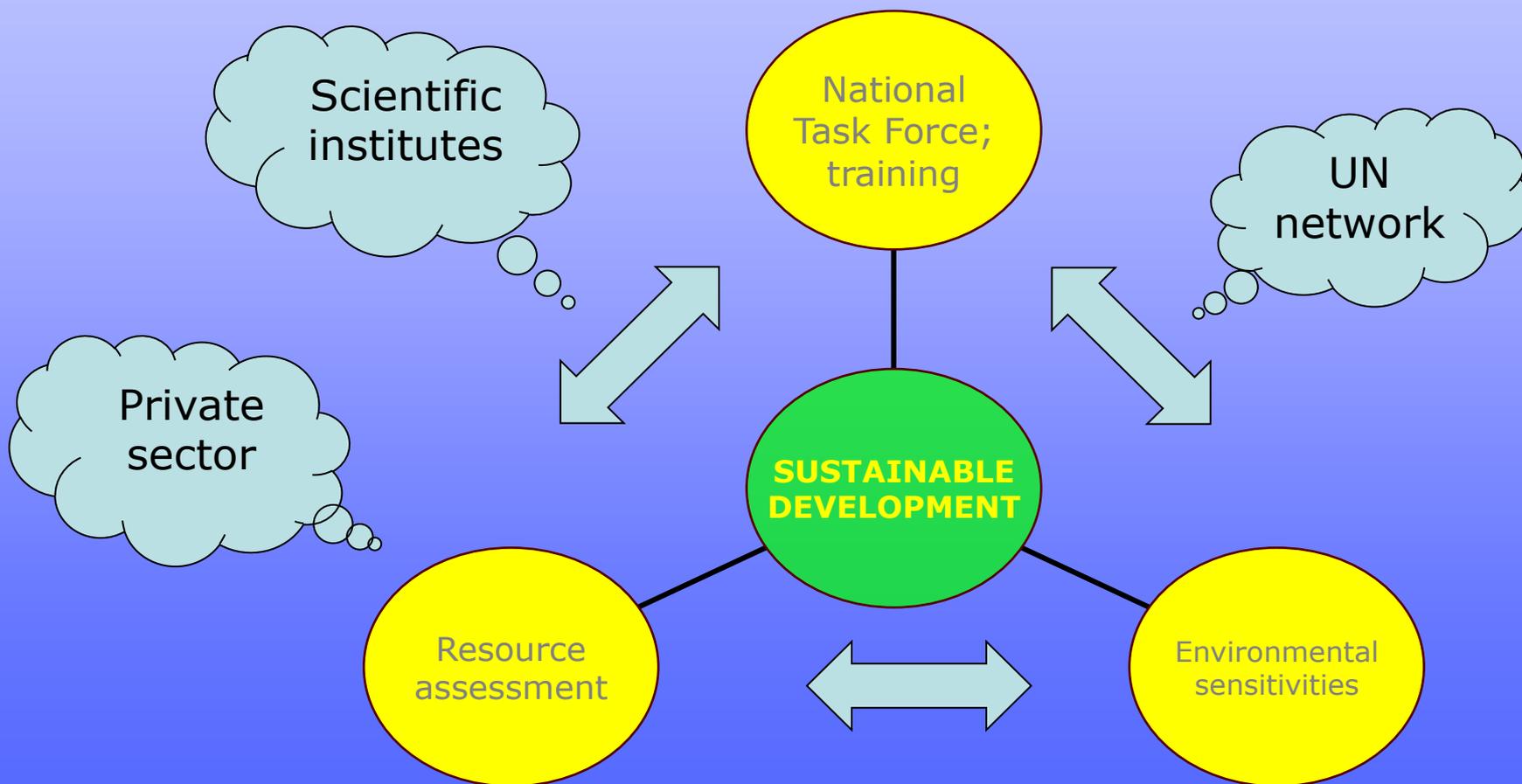
Sources: Division of Ocean Affairs and the Law of the Sea; Commission on Limit of the Continental Shelf.

Integrated Oceans Management



Oceans of possibilities

Integrated Oceans Management



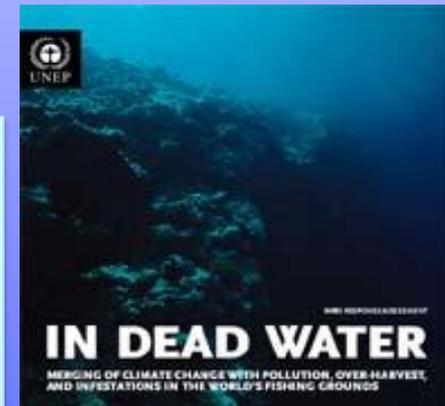
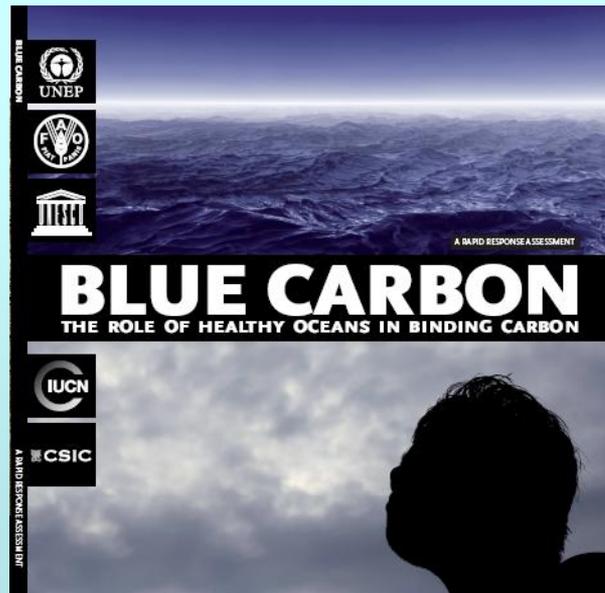
Marine and coastal sustainable development

Support in the development of:

- the UN regular process on **Marine assessment**
 - “Global Outlook on Benthic Habitats“
 - Regional rapid response assessments



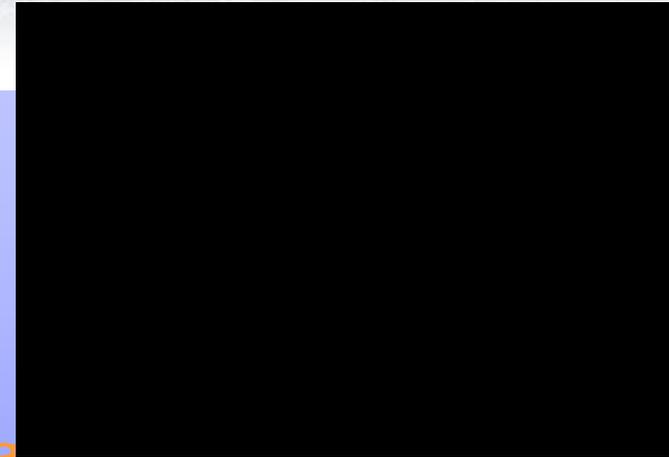
**LAUNCHING
SOON:**



Marine and coastal sustainable development

Assist UNEP in:

- developing its **climate change adaptation programme** through **capacity building on integrated planning and preparedness to sea level rise** with the aim of integration into national integrated Coastal Zone Management policies and plans
- reviewing **ocean acidification** impacts and implications of **CO₂ sequestration in deep geological reservoirs** (participation in scientific discussion forums and prepare funding proposal for oil companies implementing deep CO₂ storage)



From Greenpeace



Capacity Building in Integrated Oceans Management

Promote rationale **management of coastal and marine resources** for both conservation and sustainable development through **building capacity within coastal states** in order to integrate the marine environment into national development planning

- develop and deliver training packages in cooperation with:
 - partners, including Norwegian Institute for Marine Research and other Norwegian and International marine institutions
 - developing states (providing guidance and receiving the trainings)



Capacity Building in Integrated Oceans Management

Support international organizations with environmental knowledge leading to **sustainable management of marine resources in areas beyond national jurisdiction**



White Chimneys at Champagne Vent Site
1,607 meters (5,272 feet 1 mile deep)

From PMEL

How can you reach us?

- **UNEP Shelf Programme**

UNEP/GRID-Arendal
P.O. Box 183
N-4802 Arendal
Norway

- **Visiting address:**

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Morten Sørensen (Program Manager)
+47 911 24 700
Fax: +47 3703 5050
E-mail:
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