



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation
la science et la culture

Organización
de las Naciones Unidas
para la Educación
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования
науки и культуры

• Intergovernmental
Oceanographic
Commission

• Commission
océanographique
intergouvernementale

• Comisión
Oceanográfica
Intergubernamental

• Межправительственная
океанографическая
комиссия

IODE 2012-2013

Peter Pissierssens

Head, IOC Project Office for IODE, Oostende, Belgium

RCN:OceanObs, San Francisco, 2 December 2012

The IOC and its IODE

- IOC: Established in 1960
- IOC: *“to promote international cooperation and to coordinate programmes in marine research, services, observation systems, hazard mitigation and capacity development in order to learn more and to better manage the nature and resources of the ocean and coastal areas”*



Warren Wooster
First Exec Sec IOC

2008-2013

High-Level Objectives and Associated Activities

1. Maintain, strengthen and integrate a **global ocean observing system** for monitoring, assessment and forecasting of the state of the ocean
2. Ensure national **strategies for adapting to climate change** include coastal and ocean components
3. Strengthen capabilities of vulnerable coastal States to **prepare for and respond to natural coastal hazards**
4. Strengthen **ocean knowledge and foster regional cooperation** in marine science with scientific institutions and governments
5. Enhance the **global ocean governance framework** through **shared knowledge base and capacity development**

(IOC/ED/EC-XLV/2 annex 9)



2008-2013

High-Level Objectives and Associated Activities

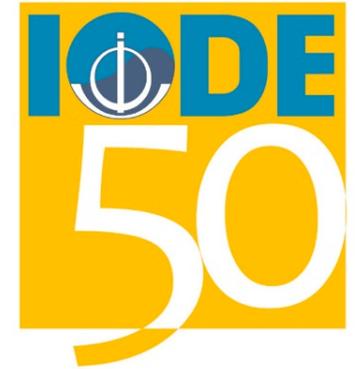
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IODE

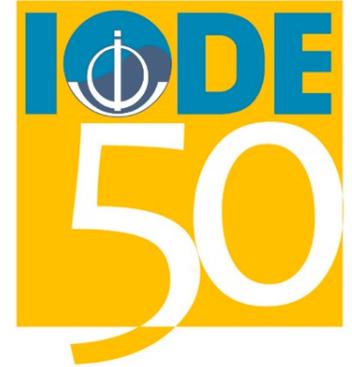


The IOC and its IODE



- 1960: requirement for a structure **to co-ordinate international oceanographic data exchange**
- IOC-I, 1961: Working Group on Exchange of Oceanographic Data established:
 - *the facilitating of exchange of oceanographic data, the standardization of forms for reporting and coding data, the encouragement of the preparation of data catalogues, and the assistance of development of national oceanographic data centres*

IODE Terms of Reference (2005)



- to facilitate and **promote the exchange** of all marine data and information including metadata, products and information in real-time, near real time and delayed mode;
- to ensure the **long term archival, management and services** of all marine data and information;
- to promote the use of **international standards**, and develop or help in the development of standards and **methods** for the global exchange of marine data and information, using the most appropriate information management and information technology;
- *to assist Member States to acquire the necessary **capacity** to manage marine data and information and become partners in the IODE network;* and
- to **support international scientific and operational marine programmes** of IOC and WMO and their sponsor organisations with advice and data management services.

IODE building blocks

STRUCTURAL

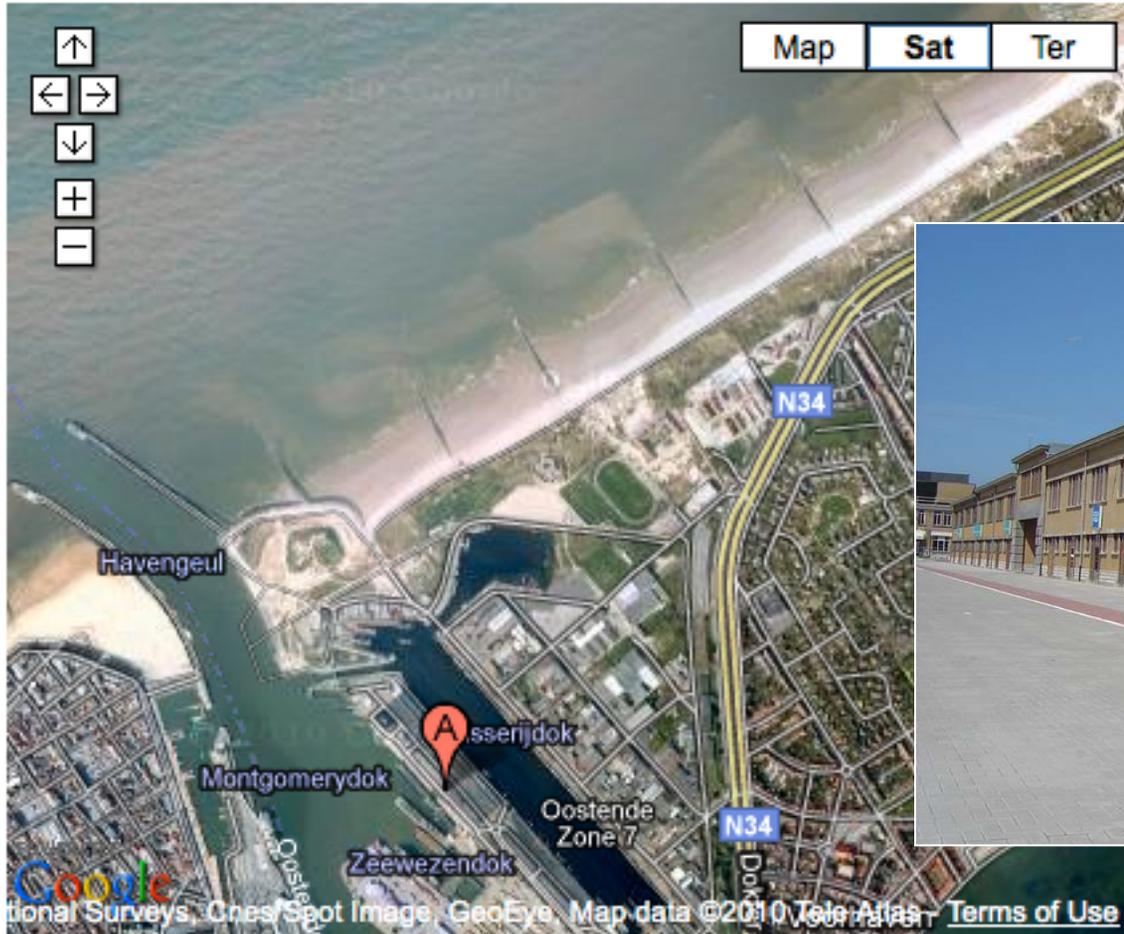
- National Oceanographic Data Centre (NODC)
- Marine Library
- World Data Centre Oceanography (ICSU) until 2010 (now WDS)
- IOC Project Office for IODE (since 2005)
- *Future: SODC, GDACs*

OPERATIONAL/FUNCTIONAL

- IOC data policy
- Standards
- Networking
- Training



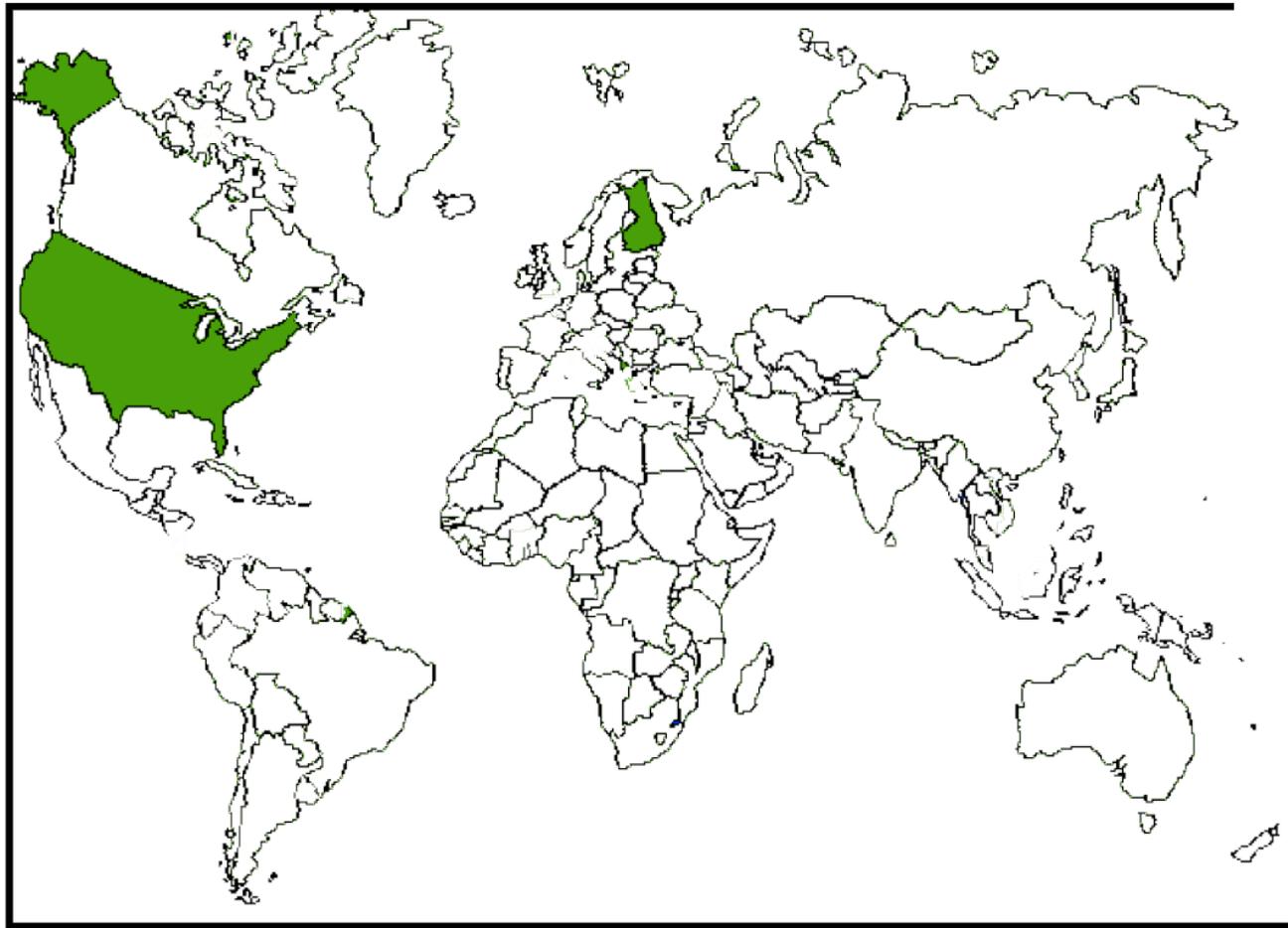
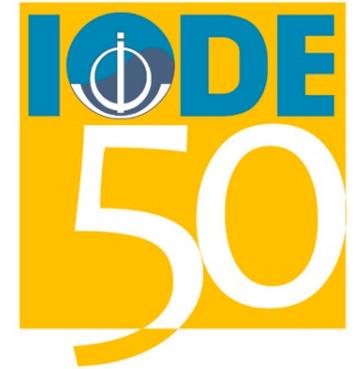
IOC Project Office for IODE



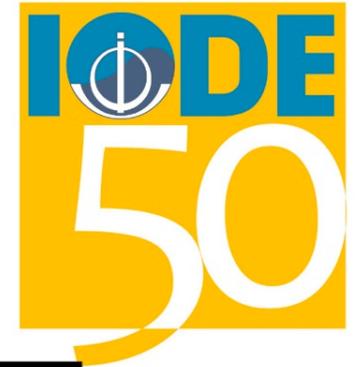
Data Policy

- **Clause 1: Member States shall provide timely, free and unrestricted access to all data, associated metadata and products generated under the auspices of IOC programmes.**

IODE data centres 1961



IODE data centres 2012



Training and Education in data management

- **NO formal academic degrees** or even curricula in oceanographic data management and even marine library management
- data managers start as either (ocean) scientists or information technology specialists
- acquire the knowledge, expertise and experience on the job
- IODE training: visiting experts and internships
- >1980: training courses:
- TECHNICAL TRAINING



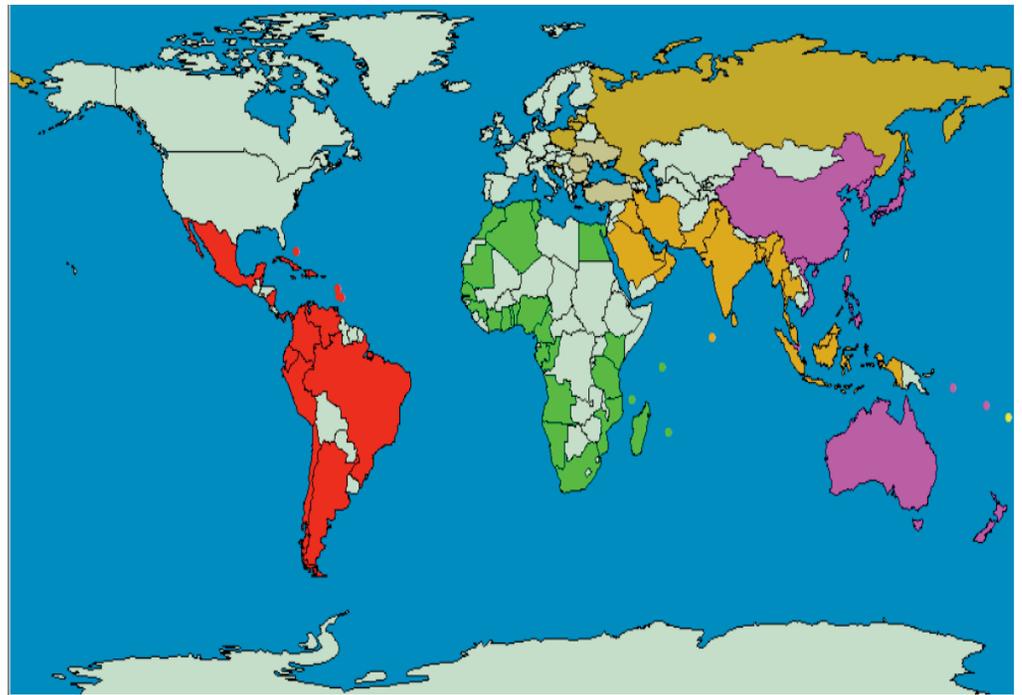
ODIN Model

- 1. Linking training, equipment, operational support:** provide not only equipment but also training as well as some financial support to operate the equipment and develop products + secondments/internships + support to participate in conferences;
- 2. Regional context:** focus on national requirements but also identify similar needs across a region and develop regional products and services that serve all participating countries in a region;
- 3. Product and service oriented:** do not develop data centres as isolated facilities but ensure these centres provide services and products that are needed by users; and
- 4. Multi-stakeholder approach:** ensure that the project is driven by stakeholders as representatives of users and involve these stakeholders as much as possible in the governance of the project.

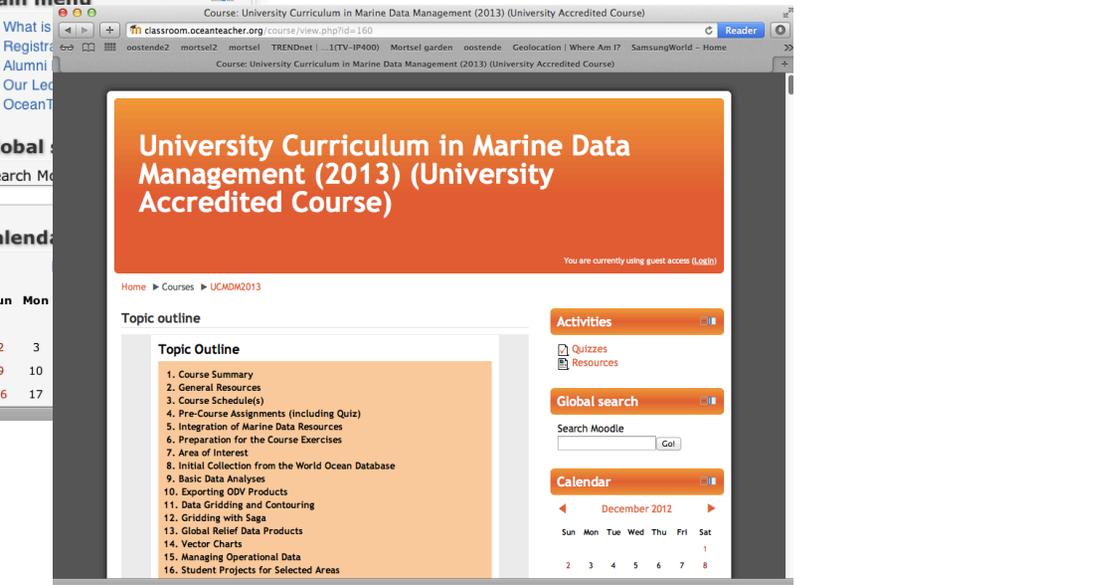
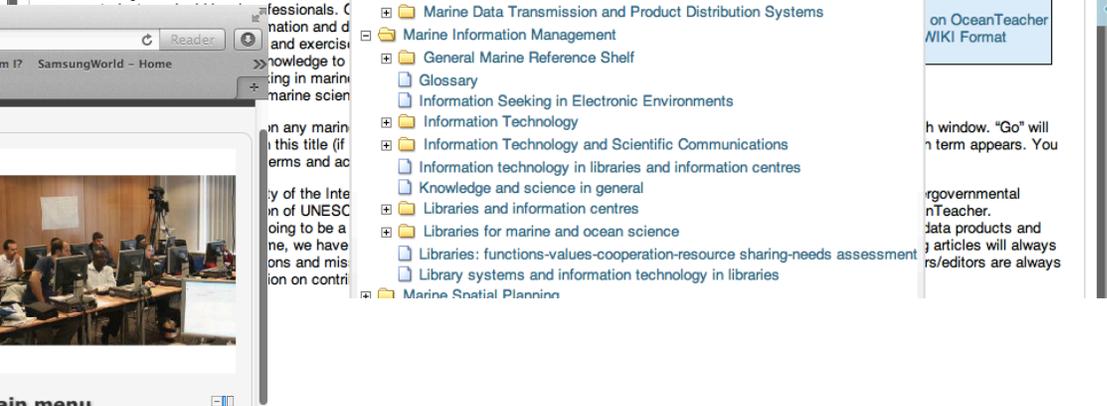
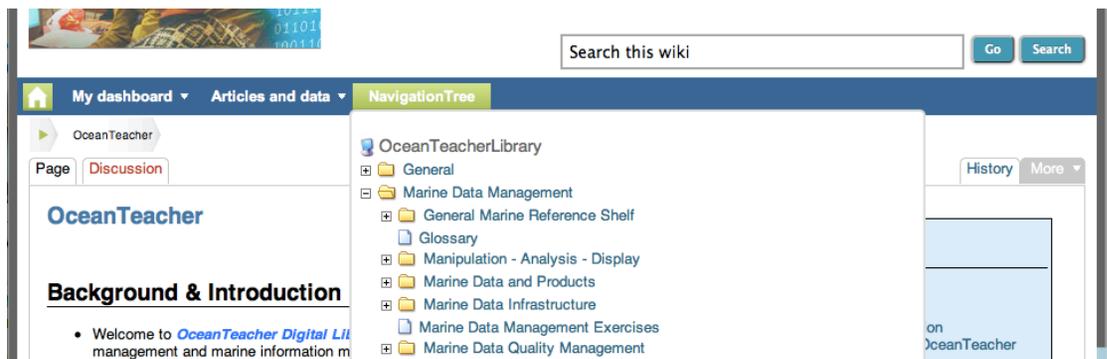


Towards a Distributed training network

- REGIONAL: ODINs + regional training centres
- Cooperation with other organizations:
 - POGO
 - EUMETSAT
 - JCOMM
 - WMO
 - NOAA
 - EU
 - IOI
 - SeaDataNet
 - CPPS
 - ...



OceanTeacher free online and used in class



Welcome to the **OceanTeacher OpenCourseWare site**.

OceanTeacher is a comprehensive web-based training system that supports **Classroom training (face-to-face)**, **Blended training (combining classroom and distance learning)**, **online tutoring and online self-learning**.

OceanTeacher has been developed as a training system for ocean data managers (working in ocean data centres), marine information managers (marine librarians) as well as for marine researchers who wish to acquire knowledge on data and/or information management. In addition OceanTeacher is being used for training in other related disciplines.

OceanTeacher has two main components: the **OceanTeacher Digital Library** (a collection of knowledge and resources) and the **OceanTeacher OpenCourseWare** - the site you are visiting now - (a collection of course outlines and courseware).

When the Digital Library and OpenCourseWare are used together for a training event this is called an **OceanTeacher Classroom**. The collection of all training instances constitutes the **OceanTeacher Academy**.

All OceanTeacher content is **freely and openly available** and access does not require registration. OceanTeacher content is licensed under a **Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License**.

If you wish to participate in training events you will need to **formally apply** and, provided you are accepted for a course, you will also need to **register online** (to create your online account). In order to start preparing for the course (pre-course assignments) you will need to **enrol** for the course.

Classroom courses are organized either at the **IOC Project Office for IODE** (Oostende, Belgium) or other training facilities.



Who know their NODC and why do we need it?

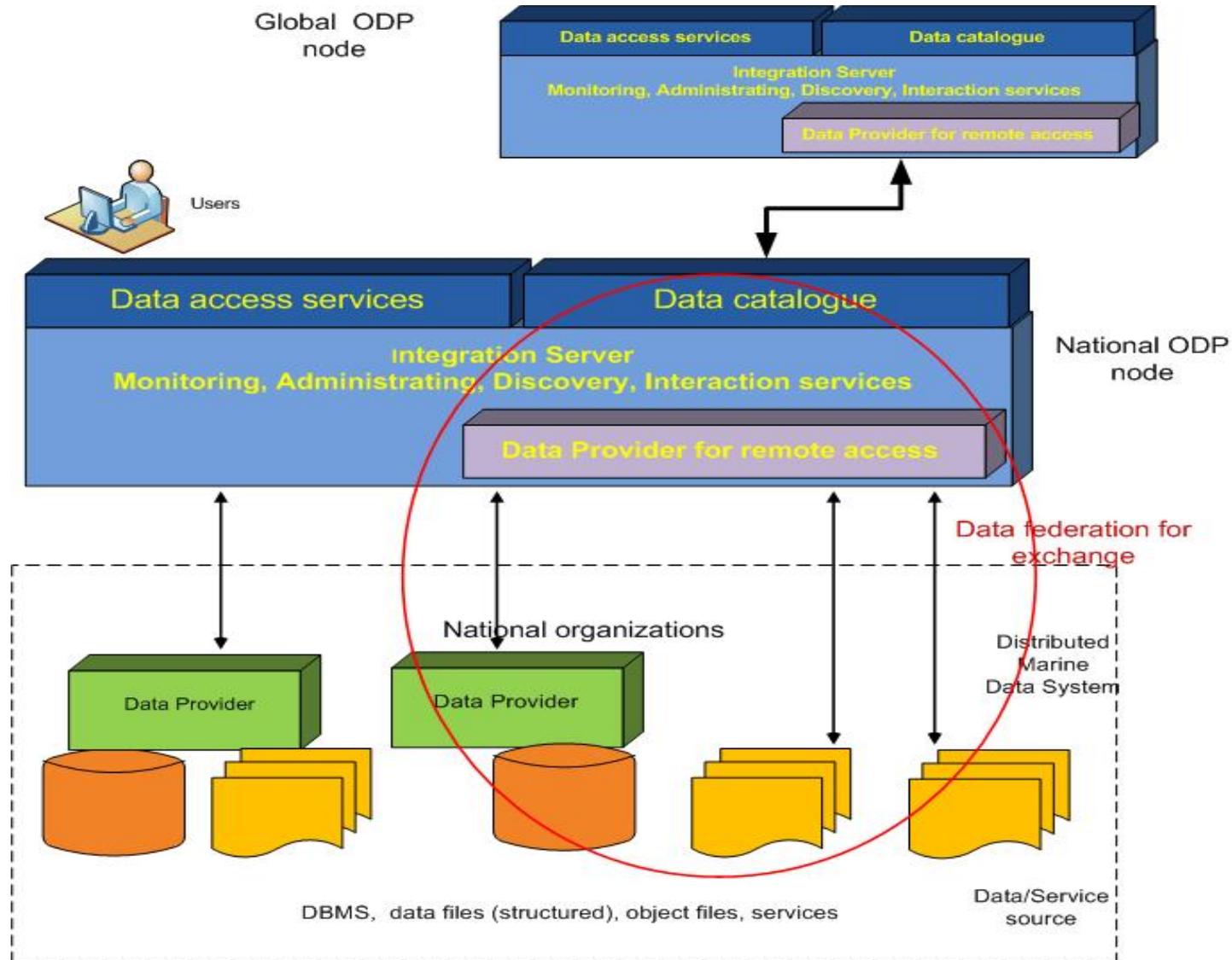
- 1970s technology shift
- Requirements for computing have changed
- Data types have grown
- Data volume grows and grows...
- Data centre in my handbag
- I can set up my own data centre
- Proliferation of ocean observation projects, groups etc
- Who archives and curates these data?
- Who takes care of quality management?
- NODCs are slow, don't give me what I need, ask to much from me as a scientist



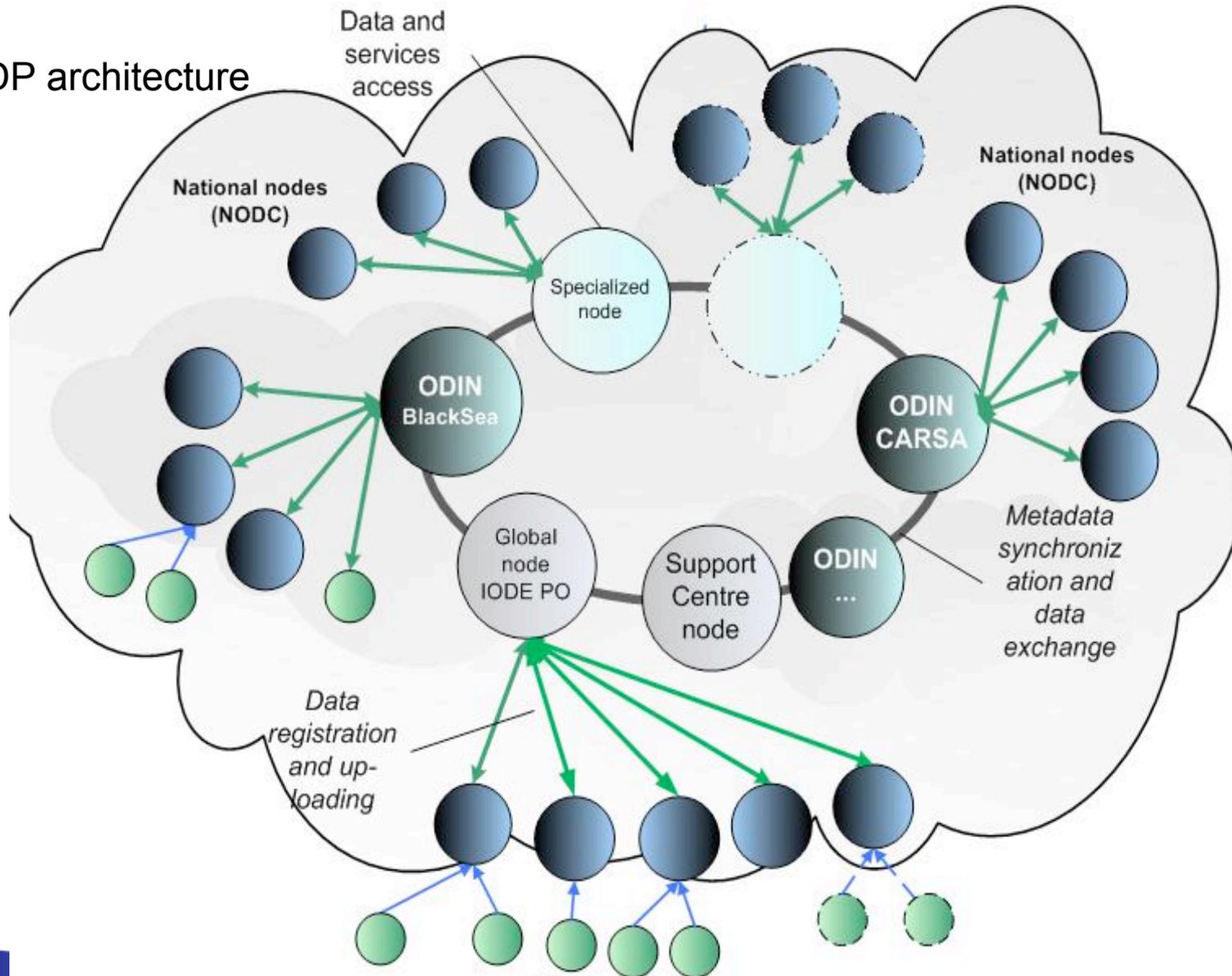
NODC response: Discovering and delivering data faster: data portals

- IODE global: OceanDataPortal
- Regional: SeaDataNet, IMOS, ...
- Providing seamless access to collections and inventories of marine data
- Web-oriented information technologies to access non-homogeneous geographically distributed marine data and information
- Host the software yourself or use the ODP central server
- BUT also federating mechanism between systems





ODP architecture



IODE role is evolving...

National/regional

- Europe: SeaDataNet, EMODnet, ODIP
- Australia: IMOS, AODCJF,...
- USA: US-NODC, IOOS, DMAC, MMI,...
- ...

International

- WIS
- ICSU WDS
- GEO/GEOSS
- ...

Everyone talks about linking, portals and interoperability - duplication, competition, waste, ...?





IODE future

- **Distributed network** of data centres
 - *Distributed at national level: specialized data units*
 - *Distributed at international level*
- Linking to the **ocean observation and research community** through establishment of Specialized Ocean Data Centres (SODC) (observation and research organizations, groups,...) + GDACs (MCDS)
 - *Data publication: promote mobilizing data!*
 - *Clearing house service: best practices, standards*
 - *Technical training for practitioners*

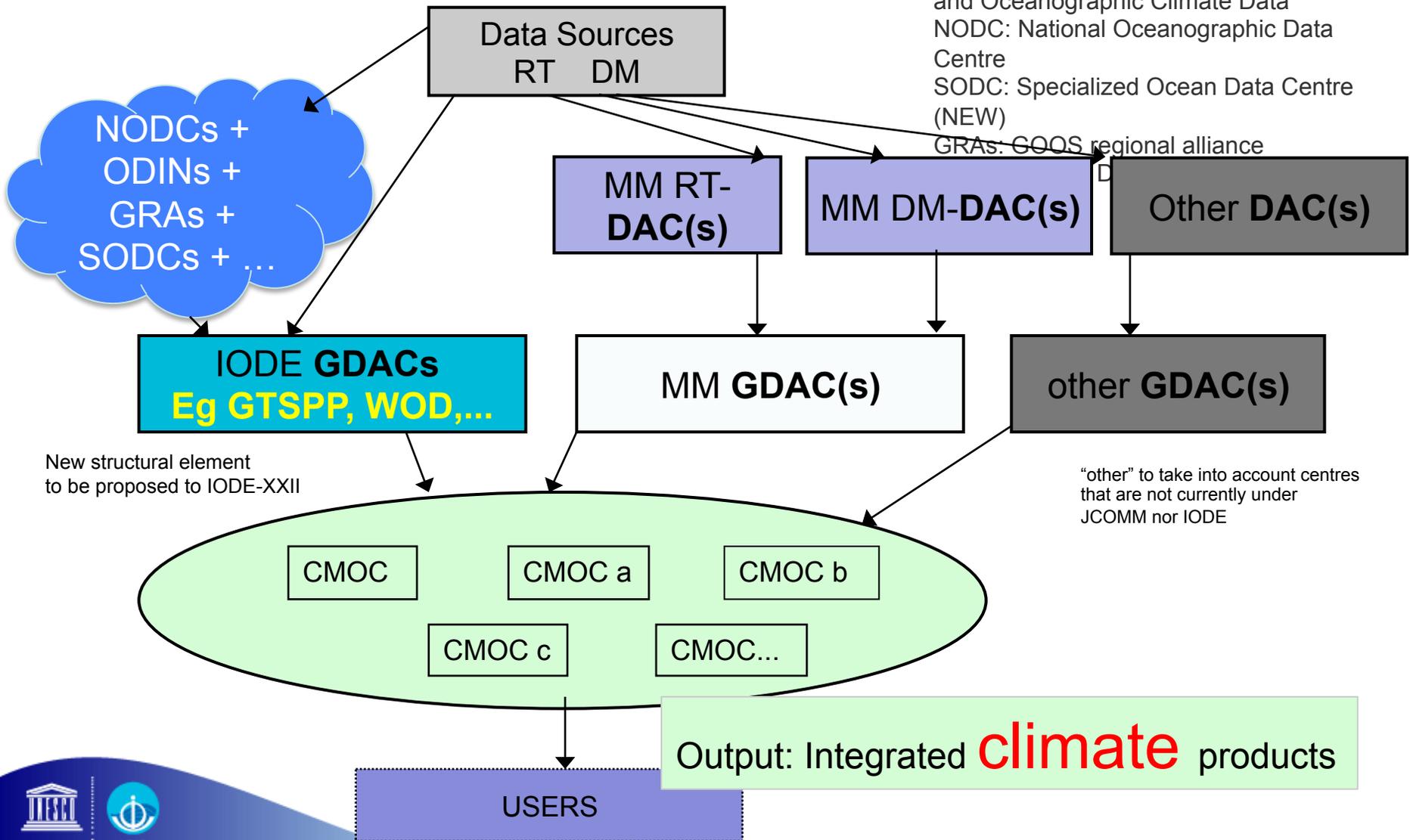


MCDS

MCDS Data Flow

Rev 2

MM = Marine-Meteorological
RT = Real-time
DM = Delayed-mode
DAC = Data Acquisition Centre
GDAC = Global Data Assembly Centre
CMOC = Centre for Marine-Meteorological and Oceanographic Climate Data
NODC: National Oceanographic Data Centre
SODC: Specialized Ocean Data Centre (NEW)
GRAs: GOOS regional alliance



IODE Future

- **Standards**, guidelines & best practices/ **Interoperability**
 - Quality management framework
 - Cooperation with ODIP (EU, USA, AU)
- Greater emphasis on **biological data and marine biodiversity** (OBIS)
- Data and Information **services for applications** (MSP, Marine Atlasas : ICAN)
- **Data sharing and access** : IODE OceanDataPortal
 - Directly
 - Indirectly through regional or other specialized networks (SDP, EMODNET, WIS/WIGOS...): interoperability
 - Cooperation with ODIP
- **Training & Education** (incl CPD)
 - Mainstreaming D&IM expertise in university education
 - Technical training for practitioners



Questions?

Thank you



IOC