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
High-Level Objectives and Associated Activities

- Prevention and reduction of the impacts of natural hazards
- Mitigation of the impacts and adaptation to climate change and variability
- Safeguarding the health of ocean ecosystems
- Management procedures and policies leading to the sustainability of coastal and ocean environment and resources

(Resolution EC-XXXIX.1)

IOC Sections & Programmes

- **Ocean Science**: WCRP, IOCCP, OOPC, HAB, GLOBEC, ICAM
- **Ocean Observations and Services**: GOOS, JCOMM, IODE
- **Tsunami coordination Unit**
- **Capacity development**
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
• Designated National Agency
• Responsible NODC (RNODC): ABOLISHED
• World Data Centre Oceanography (ICSU) until 2010
• IOC Project Office for IODE (since 2005)

OPERATIONAL
• 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 1961-2010
Training and Education in data management

- NO formal academic degrees or even curricula in oceanographic data management and even 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.

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**Regional Networks development**

- 1989-1996: RECOSCIX-WIO
- 2000-…: ODINAFRICA
- 2005: ODINCARSA
- ODINCINDIO
- ODINECET
- 2009: ODINWESTPAC
- 2009: ODIN-PIMRIS
Towards a Distributed training network

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

The Technology shift

- 1977: Commodore PET
- 1977: Apple II
- 1981: IBM 5150
The Technology shift: The Internet

- 1957: ARPANET (The Advanced Research Projects Agency Network)
  - RAND (military) + NPL (UK)
  - Cyclades (France)

- 1980s: Oceanography: SCIENEnet

- 1990: Internet

- 1993: WWW

Data Centres and the Technology Shift

- Pre-1980: exchange and deliver data by magnetic tape
- 1980-1990: floppy disk
- >1990: send files over the Internet - ftp
The Digital Divide

- NODC Adaptation
- Developing Countries
- Poor infrastructure + Costly
- Widening gap between people with effective access to digital and information technology

IODE data types

1961-2000
- Physical oceanography
- Delayed mode

>2000
- Establishment of JCOMM: close link with IODE through joint IODE/JCOMM ETDMP (2000)
- GE-BICH (>2000): chemical and biological data
- OBIS: 2011
**IODE OceanDataPortal**

- 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 in
IODE future

• Distributed network of data centres
  – Distributed at national level: specialized data units
  – Distributed at international level

• Greater emphasis on biological data and marine biodiversity (OBIS)

• Data and Information services for applications (MSP)

• Data sharing and access through IODE OceanDataPortal
  – Directly
  – Indirectly through regional or other specialized networks (SDP, EMODNET, WIS/WIGOS…): interoperability

• Standards, guidelines & best practices

• Training & Education (incl CPD)