An Overview of the IGOS Ocean Theme
Joint CEOP/IGWCO Meeting

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Ocean Theme Co-Chairs:

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Ocean Theme: Background/Previous Work

- The Ocean Theme was the *first* of the IGOS Themes (2001) and served as a pathfinder for the IGOS Theme Process.

- Previous Ocean Theme Chairs were Eric Lindstrom and Colin Summerhayes.

- *Objective*: The overall goal of the Ocean Theme is to develop a strategy for an observing system for the oceans that serves the research and operational oceanographic communities and a wide range of users of marine data and information (e.g., policy makers, industry, general public).

- For existing report see: http://ioc.unesco.org/igospartners/ocean.htm

Ocean Theme: Background/Previous Work (cont.)

- Motivation for Ocean Theme:
  - The human need for global ocean observations is well established;
  - The economic importance of oceans;
  - The capability to observe the ocean and to deliver useful ocean data products is well established;
  - The policy imperative for a global ocean observing system is well established;
  - Improved knowledge of the ocean is essential to further development of a global ocean observing system.

Ocean Theme: Background/Previous Work (cont.)

- Approach of Ocean Theme, where the Theme Team analyzed:
  - The variety of needs for global ocean observations and the scientific and observational challenges for understanding and predicting the behavior of the ocean and climate.
  - The existing and planned observing systems, including both *in situ* and space-based observation programmes.
  - The necessary co-ordination between the various observing system components to meet the needs of the user community and to avoid both duplication of efforts or gaps in the system.
  - The planning commitments required to ensure long-term continuity of the observations.

Ocean Theme: Background/Previous Work (cont.)

- Challenges in observations were identified, broken into:
  - Continuity Challenges
  - Knowledge Challenges

Ocean Theme: Background/Previous Work (cont.)

- Challenges in Observations:

  - Continuity Challenges:

    1. Ocean Surface Topography
    2. Ocean Vector Winds
    3. Ocean Biology and the Surface Carbon Flux
    4. Sea Surface Temperature (SST)
    5. Sea Ice Concentration, Extent and Drift
    6. Salinity

Ocean Theme: Background/Previous Work (cont.)

- Challenges in Observations:

  - Knowledge Challenges:

    1. Salinity
    2. Precision Gravity Field or Geoid
    3. Sea Surface Temperature
    4. Ocean Biology and the Surface Carbon Flux
    5. Sea Ice Drift and Thickness
    6. Sea-State and Atmospheric Pressure

Ocean Theme: Background/Previous Work (cont.)

- Data Services, Models, Products, and Applications
  - Infrastructure needs
  - Data assimilation: GODAE et al.
  - Operational needs
  - Archives
  - Quality control
  - Interaction with users
- International Awareness
  - Facilitate coordinated development of ocean observing
  - Need to inform public of activities/benefits

Ocean Theme: Background/Previous Work (cont.)

- Benefits and Applications:

  - Operational marine coastal and ocean short-range;
  - forecasting and analysis;
  - Seasonal-to-international climate prediction;
  - Numerical weather prediction;
  - High-quality products for climate study;
  - Biodiversity and habitats;
  - Natural and man-made hazards;
  - Environmental indices;
  - Fishery productivity.
  - Others….

Ocean Theme: Present Status and Future Directions

- Five years have elapsed since initial theme report.
- We are now in the process of spinning up the Ocean Theme Rolling Review Process.
- Small review team composed of data provider & user representatives is presently being established; team meeting to be held in next few months towards revising and updating the report.
- Key organizations to include CEOS member agencies, GOOS, GCOS, Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology(JCOMM) et al.

Ocean Theme: Present Status and Future Directions (cont.)

- Anticipated priorities include supporting both user-needs (e.g., operations) and research (e.g., climate data records).

- In particular, there is a need to provide routine and continuous, yet high quality, global ocean observations (e.g., SST, sea surface height, sea spectral reflectance, ocean vector winds), as well as identify new measurements (e.g., ocean currents, mixed layer depth).

- Existing global ocean pilot projects (e.g., GODAE, GHRSST) need to be transitioned to an operational basis.

Ocean Theme: Present Status and Future Directions (cont.)

- Further, the Ocean Theme will need to include the requirements for developing an operational real time 24/7 'global ocean hazard warning system' including, but not limited to, some kind of expansion of the ITSU system for tsunamis outside the Pacific.

- Assessment and context vis-à-vis GEOSS will also take place, e.g., weather, climate et al. thrusts.