

Guidance for Product–Driven Working Groups
First Annual IOOS Implementation Conference
31 August – 2 September 2004

The product categories below are to be used to guide conferees in the formulation of prioritized, phased implementation plans for the IOOS over the FY 2005-2014 term.

Product Category	Major Societal Goal Addressed	Examples of Potential Benefit Areas
Water Level and Surface Current and Wave Fields	Climate Change Natural Hazards Marine Operations National Security Public Health Risks Healthy Marine Ecosystems Sustaining living marine resources	<ul style="list-style-type: none"> • Search and rescue • Ship traffic and routing • Coastal erosion • Beach swimming safety forecasts • Beach renourishment planning • Coastal storm surge flooding • Fisheries habitat management • Aquaculture siting/permitting
Sea Ice Distribution, Volume and Age	Climate Change Marine Operations National Security Healthy Marine Ecosystems Sustaining living marine resources	<ul style="list-style-type: none"> • Maritime hazards forecasts • Search and rescue • Coastal erosion • Sustainable fisheries • Marine mammal survival
3-D fields of dissolved N, Chl, O ₂ , and pCO ₂	Climate Change Public Health Risks Healthy Marine Ecosystems Sustaining living marine resources	<ul style="list-style-type: none"> • Global carbon budgets • Beach closures • Harmful algal blooms • Hypoxia/anoxia • Biodiversity • Sustainable fisheries • Aquaculture siting & operations
Spatial Extent and Condition of Essential Habitats for Living Marine Resources	Climate Change Marine Operations Public Health Risks Healthy Marine Ecosystems Sustaining living marine resources	<ul style="list-style-type: none"> • Critical habitat mapping • Biodiversity • Exposure to marine toxins • Recruitment • Sustainable fisheries

These areas were chosen because they:

- (1) Are important to one or more of the seven societal goals of the IOOS;
- (2) Can be improved in both the near-term, through more effective integration of existing observing subsystem assets, and the long-term, through the incorporation

- of additional existing operational capabilities and/or through research and pilot projects;
- (3) Require both regional and global scale observations;
 - (4) Are high priorities in the preliminary draft of the *First Annual IOOS Development Plan*; and
 - (5) Encompass a broad spectrum of observing capabilities that will be needed to achieve all seven goals. These could be viewed as the seeds that will grow into the fully integrated system over time.

For each category, recommendations should address development of all three subsystems (observations and data telemetry, data management and communications, and modeling) through incorporation of existing operational assets and/or through research and development to improve operational capabilities.

Products for each category may include early warnings of risk (alerts); hindcasts (e.g., climatologies), nowcasts, or forecasts of state, status or condition, etc. For each product (one or more, depending on time), formulate recommendations as follows:

Near Term (FY 05-06) Implementation

- (1) Given existing observing subsystem assets, what are the priorities for data integration and analysis that will lead to improved products or permit the development of new products?

Recommend a step-wise procedure or “action plan” for achieving desired levels of integration and analysis over the next two years. This may include workshops, the establishment of committees, recommendations to specific agencies or groups of agencies (e.g., NOPP) to support pilot projects, recommendations to incorporate new technologies or knowledge into an operational mode, etc.

Longer Term (FY07-14) Enhancements

- (2) How should the operational capabilities of this initial system be improved or enhanced (from sensors to DMAC and models) through the incorporation of additional operational elements or programs that are currently available (e.g., increase spatial resolution of *in situ* sampling, development of new algorithms for remote sensing)?
- (3) What are the priorities for research and pilot projects (from sensors to DMAC and models) needed to improve or enhance operational capabilities of the initial system?

Here the group may decide to focus on the original product categories or expand into other related areas. As for the near-term, the goal is to recommend a phased plan for implementing research and pilot projects and for incorporation of new or existing operational capabilities.

Worksheets will be provided to each WG. These are to be completed by the rapporteur of each WG during the breakout session. For both near- and long-term recommendations, the worksheets will have the format below:

Product Category _____ Subsystem¹ _____

Development Stage	Recommendations	Priority ²	Infrastructure ³ Requirements	Expert Assessment Needed ⁴	Lead Agency ⁵
Research	1.... 2.... etc				
Pilot Project	1.... 2.... etc.				
Pre-Operational	1.... 2.... etc.				
Operational	1... 2... etc.				

FOOTNOTES

¹For the observing subsystem, recommendations should focus on measurement techniques or programs that are currently pre-operational or operational and should be incorporated into the initial operational system to improve an existing product or serve a new product. Identify current or planned (within the FY 05-06 time frame) research and pilot projects that are likely to improve operational capabilities.

²High (H), Moderate (M), or Low (L)

³Ships, fixed moorings, gliders, aircraft, satellites, band width for data telemetry, computing power, personnel, etc.

⁴Is there a need for a study (e.g., by an ad hoc group of experts) or a workshop to specify requirements (sampling and or measurement requirements, standards and protocols for models, etc.)? If so, make the recommendation.

⁵Of the federal agencies that have mandated responsibilities for ocean observing, some are responsible primarily for basic ocean research. Others run operational observing programs, some are primary users of the data and information generated by the IOOS, and some are active in two or more of these areas. Responsibilities for implementing and developing the IOOS are distributed among participating agencies with leadership assigned based on respective missions and goals. In this context, Part II of the preliminary IOOS Development Plan makes the recommendations summarized in the following table:

EXCOM Sub-Committees of participating federal agencies responsible for developing a coordinated budget strategy and for implementing, operating, and improving elements of the IOOS (C = Chair, CC = Co-Chair, P=Partnering agency).

Sub-Committee	NOA A	NS F	NAV Y	NAS A	USG S	MM S	USAC E
Administration	C	P	P	P	P	P	P
System Integration/DMAC	CC	P	CC	P	P	P	P
Research	P	CC	P	CC	P	P	P
Global Component: Pilot-to-Ops	CC	P	CC	P	P	P	
Coastal Component: Pilot-to-Ops	CC	P	P	P	CC	P	P
Education/Training/Communication	CC	CC	P	P	P	P	P
Assessment	CC	P	P	P	P	CC	P