

BASIN:
Basin-scale Analysis, Synthesis,
and INtegration
Implementation Plan

A. INTRODUCTION

B. PROGRAM GOALS

C. MAJOR COMPONENTS OF THE BASIN STUDY

Modeling

Synthesis

Observations

Management Applications

Escience

D. BASIN DELIVERABLES AND ACTIVITIES REQUIRED TO ACHIEVING THEM.

E. PROGRAM PHASING

F. RELATED EXISTING PROGRAMS RELEVANT TO BASIN

BASIN DELIVERABLES

- 1. Enhanced basin-scale coupled climate/ocean/ecosystem modeling systems linking basin- and shelf-scale processes and identification of the climate forcing processes that have the greatest influence on ocean and ecosystem variability.**
- 2. Hindcasts of the state and variability of North Atlantic ecosystems for the past 50 years or more and the construction of future scenarios based on the predicted evolution of climate (e.g., IPCC scenarios) as well as the ecosystems themselves.**
- 3. Provision of all model results to the community for further analysis and comparisons.**
- 4. Estimates of the current state, variability, and vulnerability of North Atlantic and associated shelf ecosystems and their services (e.g., fisheries and carbon sequestration) in response to climate change and exploitation patterns.**
- 5. An assessment of the ecosystem and key species spatial connectivity throughout the North Atlantic and associated shelf seas.**
- 6. An assessment of the top-down effects of upper trophic levels and effect of their exploitation on ecosystem structure and carbon cycling.**
- 7. Identification of the key ecosystem and biogeochemical components and processes that modify population dynamics and their feedbacks to marine ecosystems and climate.**
- 8. Estimates of local (shelf) versus remote (deep ocean) natural and anthropogenic impacts on ecosystem dynamics and exploited resources.**
- 9. Improved assessment and management tools for exploited resources such as fish stocks based on basin-scale forcing.**

Activities	201 1	201 2	201 3	201 4	201 5	Contribut es to deliverabl es
Modelling						
Coupling of basin – regional-scale physical models	I	I				1, 4, 8
Hindcasting and skill assessment		II	II			1, 2, 3, 4
Identification of information and data gaps, experimental design (OSSEs)	I	I				1, 2, 9
Integration of biological and physical models	I	I				1, 2, 3, 5, 6
Implementation of data assimilation methods		II	II			1, 2
Forecasting and Skill assessment			III	III	III	1, 4, 9
Development of trophic interaction, population dynamics, species, and biogeochemical models	I	I				1, 6, 7, 8, 9
Design and initial implementation of a basin-scale modeling/observing system			III	III	III	1, 9

Activities	2011	2012	2013	2014	2015	Contributes to deliverables
Synthesis						
Retrospective data synthesis.	I	I				2, 3
Develop management mechanisms and begin implementation, knowledge transfer and outreach.	I	I	I	I	I	8, 9
Identification of mechanisms of variability and assessment of predictability.	II	II	II			1, 2, 4, 9
Time Series						
Moorings	I	I				
Fixed stations	I	I				
Remote Sensing (satellite, CODAR)	I	I				
Floats/drifters (e.g ARGO)	I	I				
Gliders	I	I				

Activities	2011	2012	2013	2014	2015	
Regional and Basin Scale						
Vehicles – AUVs, gliders, floats	II	II	II			
Ship Transects	II	II	II			
Process Studies						
Field – key species and biogeochemistry	II	II	II			
Laboratory – vital rates and biogeochemical rates	I	I				
Technology Development						
Acoustics for small platforms	I	I				
Imaging systems, operational underway and small platforms	I	I				
Nutrients – moorings and small platforms	I	I				
E-Science						
Basin Virtual Observatory (BVO)						
Formation of BVO alliance						
Informatics tools and services						

Next Steps.

- 1) Seek volunteers to complete the IP plan.
- 2) Finish drafting the IP plan.
- 3) Make available to anyone.