Annex 1. **List of members and other contact persons**

1.1 Members of the Steering Committee

Chairperson of the Steering Committee
Dr. Cosimo Solidoro OGS

Other members:
1. Dr. Simona Masina for CMCC
2. Prof. Nadia Pinardi for UNIBO DIFA

1.2 BFM Scientific Leader and BFM System Team Coordinator:

The BFM Scientific Leader is: Dr. Paolo Lazzari
The BFM System Team Coordinator is: Prof. Marco Zavatarelli

1.3 Members of the BFM System Team

Name	Institution
Carolina Amadio	UNIBO-DIFA
Emanuela Fiori	UNIBO DIFA
Luca Giacomelli	UNIBO DIFA
Gelsomina Mattia	UNIBO DIFA
Giulia Mussap	UNIBO-DIFA
Nadia Pinardi	UNIBO DIFA
Marco Zavatarelli	UNIBO DIFA
Italo Epicoco	CMCC
Simona Masina	CMCC
Silvia Mocavero	CMCC
Tomas Lovato	CMCC
Giorgio Bolzon	OGS
Alessandro Crise	OGS
Cosimo Solidoro	OGS
Paolo Lazzari	OGS
Gianpiero Cossarini	OGS
Simone Libralato	OGS
Anna Teruzzi	OGS

Annex 2. Components of the BFM System

Components of the BFM System

Name	*Description*
A2.1 BFM Core (STANDALONE)	Zero-dimensional version with biological reactions
A2.2 BFM-POM (BFM_POM1D)	One-dimensional coupling with the Princeton Ocean Model
A2.3 BFM-NEMO (BFM_NEMO)	Three-dimensional coupling with the NEMO ocean model
A2.4 BFM-OGSTM (BFM_OGSTM)	Three-dimensional coupling with the ocean transport model based on OPA 8.1
A2.5 BFM-MITgcm (BFM_MITgcm)	Three-dimensional coupling with the MITgcm ocean model

A2.1 BFM core (STANDALONE)

- Source code of the BFM written in FORTRAN90 including the scripts to generate the model structural files from a specialized meta-language.
- Source codes of the subroutines for time-marching and numerical integration of the STANDALONE configuration
- Technical report describing the structure of the core code and a simple STANDALONE example.

A2.2 Components of the one-dimensional coupled system BFM-POM (BFM_POM1D)

- FORTRAN77 one-dimensional Princeton Ocean Model (POM-1D), with main code modified with built in coupling with BFM (through subroutine calls).
- UNIX/LINUX Makefile and script to compile and execute the model.
- Standard configuration (vertical discretization, initial conditions, monthly varying forcing functions) of the coupled system for a locations in the Adriatic Sea (Gulf of Trieste) under perpetual year forcing functions. These are provided for illustrative purposes enabling one to verify that the code flow is correct.
- Post processing tools built on MATLAB to plot and analyse model output.
- Scientific papers of model coupling applications.

A2.3 components of the coupled system BFM-NEMO (BFM_NEMO)

- Source code of the coupling routines between the BFM and NEMO version 3_4 (and successive versions) FORTRAN90. The code includes new features that are not in the original coupling of NEMO with other biogeochemical models:
    - Routine to read and apply open boundary conditions
    - Routine to initialise the model with analytically prescribed vertical profiles of all the components or from external files.
- Namelists and configuration files to run the coupled model in the idealized double gyres three-dimensional configuration (GYRE).
- Documentation of the technical coupling, modifications to the original NEMO code and description of the subroutines used.

A2.4 components of the coupled system BFM-OGSTM (BFM_OGSTM)

- Source code of the coupling routines between the BFM and the OGSTM written in FORTRAN90;
- Standard configuration (model grid, initial conditions, 1 month varying OGCM forcings). These are provided for illustrative purposes enabling one to verify that the code flow is correct;
- Documentation of the technical coupling, description of the code and set up instructions..

A2.5 components of the coupled system BFM-MITgcm (BFM_MITgcm)

- Source code of the coupling routines between the BFM and MITgcm written in FORTRAN90;
- Standard configuration (model grid, initial conditions, 1 month varying OGCM forcings). These are provided for illustrative purposes enabling one to verify that the code flow is correct;
- Documentation of the technical coupling, description of the coupling code and set up instructions.

Annex 3. Background excluded

CMCC
The global ocean version of the BFM model coupled with OPA8.2 (hereafter referred as PELAGOS), represented the original version of the BFM code. This code and the version that is part of the CMCC Earth System Model is not part of this agreement.

OGS
The Mediterranean Sea version of the BFM model coupled with OPA8.1 (hereafter referred as OPATM-BFM) is part of the OGS Operational System Model and is not part of this agreement.

DIFA
The 1D version of the POM coupled with a preliminary BFM code is not part of this agreement.

Annex 4. Work Plan

The Action topics are divided in maintenance and consolidation of the BFM System components by

a) Code maintenance and distribution

b) Code efficiency and portability

c) Maintenance, upgrade and addition of examples and configurations

and scientific improvements and/or implementation of new features.

The actions are organized in tables, one for each specific objective, containing a priority code, a description of the activity, and a priority code defined as:

0 Urgent: 0-6 months
1 Short-term: 0-12 months
2 Intermediate: 12-24 months
3 Long-term: 24-36 months
4 Continuative 0-36 months

In the framework of the work plan, the following glossary is used for software maintenance:

- *Revision*: Equivalent to version.
- *Version*: Any change in form of the software that is stored in a revision control system. A revision is technically the state at a point in time of the entire tree in the repository.
- *Release*: a version of the software that has met a defined quality level and can be distributed publicly. Software releases are defined as:
    - *Alpha*: initial public release of a partially stable revision that has been tested on a selected set of architectures. It does not require thorough testing with all the examples.
    - *Beta*: public release of a revision that is stable on the designated architectures and tested with the planned examples.

Work plan for 2015-2017

Core Package (STANDALONE) **Duration: 36; Responsible: M. Zavatarelli, P. Lazzari**	
Priority	**Description**
2	Improve the standalone interface to read external forcing data
0	Revise multiple choice biogeochemical parameterizations
0	Revise geochemical processes controlling the pelagic environment
2	Finalise standalone version with full benthic compartment.
1	Inclusion of calcite in the carbonate system module

BFM_POM1D **Duration: 36; Responsible: M. Zavatarelli**	
Priority	**Description**
0	Finalise the release of POM-BFM1D with full documentation
3	Release of BFM_POM1D with full benthic compartment.
3	Preparation of the technical documentation and standard examples

BFM_NEMO **Duration: 36; Responsible: T. Lovato**	
Priority	**Description**
0	Release the coupling interface and documentation
1	Develop the interface to apply three dimensional open boundaries conditions
2	Revise the efficiency of the coupling strategy and test alternative methods
4	Continuous maintenance of the coupling interface and documentation

BFM-OGSTM **Duration: 36; Responsible:P. Lazzari**	
Priority	**Description**
0	Finalise the release of BFM-OGSTM
0	Preparation of the technical documentation and standard examples
4	Continuous maintenance of the codes and documentations

BFM-MITgcm **Duration: 36; Responsible: G. Cossarini**	
Priority	**Description**
1	Release of BFM-MITgcm coupling
1	Preparation of the technical documentation and standard examples

4	Continuous maintenance of the codes and documentations