SynObs
UN Ocean Decade Project

SynObs Web Meeting 4

Agenda

1. Information on the OS-Eval showcase activity

2. Summary of the SynObs flagship OSEs

3. Discussion on the point location data at 10 mooring sites.

4. Discussion on the data format for the SynObs flagship OSE common database

★ Current Status of the SynObs Flagship OSEs/OSSEs

- **Three Collaborative Experiments**

  - ◆ **Ocean Prediction (OP) OSEs** ⇒ **Now, we ask participants to start the calculation.**
    - Data Assimilation Period: Jan. 2020 - Dec.2020 (- Dec. 2022 if possible)
    - Ocean Predictions: 10-days, started form the initial dates of every pentad.

  - ◆ **Subseasonal-to-seasonal (S2S) OSEs** ⇒ **Now, we ask participants to start the calculation.**
    - Data Assimilation Period: 2003-2022
    - Subseasonal coupled Predictions: 5-week (35-day) predictions from the beginning of every month
    - Seasonal coupled predictions: 4-month (18-week) predictions from the beginning of May and November.

  - ◆ **Ocean Prediction (OP) OSSEs** ⇒ **Detailed Setting of OSSEs have not been defined yet.**
    - Use the GEOS/NASA coupled simulation as the Nature Run (about 1-year period)
    - Ocean Predictions: 10-days, started form the initial dates of every pentad

- **Target date for completing calculation**
  - Assimilation Run (OP and S2S OSEs): Dec. 2023
  - Prediction Run (OP and S2S OSEs): Apr. 2024

- **The results will be analyzed and presented** in the WMO Observing Impact Workshop (May 2024), WMO Reanalysis Symposium (Fall, 2024), OceanPredict (Nov 2024), and the SynObs special issue.

★ Participating Systems and planned OSEs

Name	Region	Res.	Ocean Prediction (OP) OSE										OP OSSE	S2S OSE
			CNTL	NoAlt	NoArgo	NoMoor	NoSST	NoInsitu	SSTonly	Free	HalfArgo	Oper		
FOAM	G	1/12	Yes	Yes	Yes	Pyes	Pyes	Pyes	Ifpos	Ifpos	Ifpos	Ifpos		
RTOFS-DA	G	0.08	Yes	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Ifpos	No		
ORAS5/6	G	1/4	Yes	Yes	Yes	Yes	Yes	Yes	Pyes	Yes	Pyes	Yes		Yes
GEO-S2S V3	G	1/4	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Ifpos	Ifpos	Pyes	Yes		Yes
MOVE-G3F	G	1/4	Yes	Pyes	Yes	Yes	Pyes	IfPos	Yes	Yes	Pyes	Ifpos	Yes	Yes
GIOPS	G	1/4	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Pyes	Yes	Yes
GLORe	G	1	Yes	No	ifpos	Ifpos	Ifpos	Yes	Ifpos	Yes	Pno	No		Yes
QUOSAP (MOM6)	G	?	Yes	Ifpos	Ifpos	Ifpos	Ifpos	Ifpos	Ifpos	No	No	Pyes	Yes	
JCOPE-FGO	Semi-G	0.1x0.1	Yes	Pyes	Pyes	Pyes	Pyes	Pyes	Ifpos	Ifpos	Ifpos	Ifpos	Yes	
MOVE-NP	NP	1/10x1/11	Yes	Pyes	Pyes	Ifpos	Ifpos	IfPos	Yes	Yes	Pyes	No	Yes	
KOOS-OPEM	WNP	1/24	Yes	Yes	Yes	Ifpos	Yes	IfPos	Yes	Yes	Pyes	Ifpos	Yes	
HYCOM-RODAS	SA	1/12	Yes	Yes	Yes	Pyes	Yes	No	Yes	Yes	Yes	No		
Moana Forecast	SP	1/24	Pno	Pno	Pno	No	Pno	Pno	Pno	Yes	No	Yes	Yes	
Yes + Pyes			12	10	10	8	9	7	7	9	7	5	7	5

★ Output Data

- **OP OSE Assimilation Run**
  - [OP Group 1]1/4 deg res. pentad data: 3D T, S, U, V, SSH, SIC, SIT, Surface Flux, Analysis Incrementw
  - [OP Group 2] 1/4 deg res. Daily data: 1m TSUV, SSH, MLD0.05, Z20, Z26, TCHP, 15mUV, 0-50m T
  - [OP Group 2H] 1/10 deg res. Daily data: Same as [OP Group 2]
  - [OP Group 3] Point Location data: Reference Argo (TS), 10 Mooring sites. (TSUV, hourly)
- **OP OSE Prediction Run**
  - [OP-F Group 1] 1/4 deg res., Pentad 1, 2: 3D T, S, U, V, SSH, SIC, SIT, Surface Flux, Analysis Increment
  - [OP-F Group 2] 1/4 deg res., Day 1, 3, 7: 1m TSUV, SSH, MLD0.05, Z20, Z26, TCHP, 15mUV, 0-50m T
  - [OP-F Group 2H] 1/10 deg res., Day 1, 3, 7: Same as [OP Group 2]
  - [OP-F Group 3] Point Location data: Reference Argo (TS), 10 Mooring sites (TSUV, hourly)
- **S2S OSE Assimilation Run**
  - [S2S Group 1-1] 1deg daily: 1m TSUV, SSH, SIC, SIT, 0-300m TS, Z17, Z20, Z26, Z28, MLD0,01, MLD0.05, ILD0.5, TCHP, 0-50m T, Net and SW Heat Flux
  - [S2S Group 1-2] Point Location data: Reference Argo (TS), 10 Mooring sites. (TSUV, Daily)
  - [S2S Group 2] 1 deg monthly 3D TSUV
- **S2S OSE Prediction Run**
  - [S2S-F Group 1-1D] 1deg daily (-Day35): SST, SSH, SIC, MLD001, ILD05, net HF, OLR, U200, U850
  - [S2S-F Group 1-1W] 1-deg weekly (-Week 18): All data in [S2S Group 1-1], and atmospheric data (3D-TUVZQ, T2m, U10m, V10m, Surface Fluxes, SLP, Total Cloud Cover, OLR)
  - [S2S-F Group 1-1M] Monthly (-Month 4): Same as [S2S-F Group 1-1W]
  - [S2S-F Group 1-2] Point Location data: Reference Argo (TS), 10 Mooring sites. (TSUV, Daily)
  - [S2S-F Group 2] 1 deg monthly (-Month 4): 3D TSUV

★ Output data for OP and S2S OSEs

- The output data are shared from the JAMSTEC-APL sever as netCDF files. Details of output data (Definition of variables, resolutions, sampling frequencies, etc.) are now described in the flagship OSE Guideline (Section 5).
  https://docs.google.com/document/d/1Py7QY1tI6hlaqeQ079ndB3u2w8UAh98uPjPxOcKbrfw/edit?usp=sharing

- Sample netCDF files are currently being created (by S. Kido for OP OSE, by JMA/MRI for S2S OSE)

- Although the vertical levels are defined for the netCDF data which will be stored in the JAMSTEC server, we strongly recommend that model centers keep the native grid data by their own.

- If there are any concerns on the description of the guideline and configuration of the netCDF files, please inform me (yfujii@mri-jma.go.jp).

★ Potential Volunteer Analysis Groups

- People who answered to the questionnaire.
  - ◆ B. Dewitte (CEZA)
    - vertical mode decomposition of equatorial Pacific variability (estimate of Kelvin/Rossby wave contribution to SSH)
    - Predictive skill (S2S) for SSH along the coast of Peru/Chile
    - Predictive skill (seasonal) for ENSO indices and regional indices.
  - ◆ Greg Smith (ECCC)
    - Impact of Argo on Heat budget and surface flux imbalances
  - ◆ C. Tanajura (UFBA-REMO)
    - Calculation of the Brazil Current volume transport in few latitudes
    - Evaluation of SST, SSH and T/S structure in the Brazil Current Regin
  - ◆ Y. Fujii (JMA/MRI)
    - Evaluation through comparing Argo profiles (Class 4 Metrix)?
    - Current fields (e.g., the Kuroshio Path) in the western North Pacific?
    - Marine Heatwaves monitoring and prediction skills in the western North Pacific?
    - TBC

★ Other potential analysis groups and analysis target

- MLD and BLT in the tropical regions ⇒ A. Subramanian?

- Heat and salt budget in some specific area ⇒ E. DeBoisson?

- Transports through some specific straits ⇒ M. Mayer?

- Path of several boundary current ⇒ BC Exemplar?

- Comparison with drifters ⇒ BC Exemplar?

- TCHP and impacts on the TC ⇒ TC Exemplar?

- Monitoring and prediction skills of MHWs ⇒ MHW Exemplar?

- Comparison with Mooring buoy data ⇒ TPOS group?

- Global heat and salt content and steric height ⇒ Argo group?

- Sea Surface Height?

- Meso-scale eddies?

- Any other target and potential groups?

- It would be nice if you take on one of the analysis targets.

- I am going to send an email to the potential people to request the analysis of the flagship OSE. If anyone is willing to help to make the requests, please let me know.

★ Communications

◆ **Science Session in Ocean Science Meeting 2024**

◆ **Special Issue of Frontiers in Marine Science**

◆ **Submission for WMO Observation impacts workshop (Deadline: Dec. 2023)**

- Probably, it is difficult to introduce the detailed results of the flagship OSEs. So, I or someone else introduce the outline of the activity.

◆ **Next Meeting** ⇒ Probably, in September

- We need to decide the setting on the OP OSSEs.

◆ **Something else?**