



OceanPredict OS-Eval Task Team
The 15th web meeting

(June 23rd, 2022, 21:00 UTC)

★ Agenda

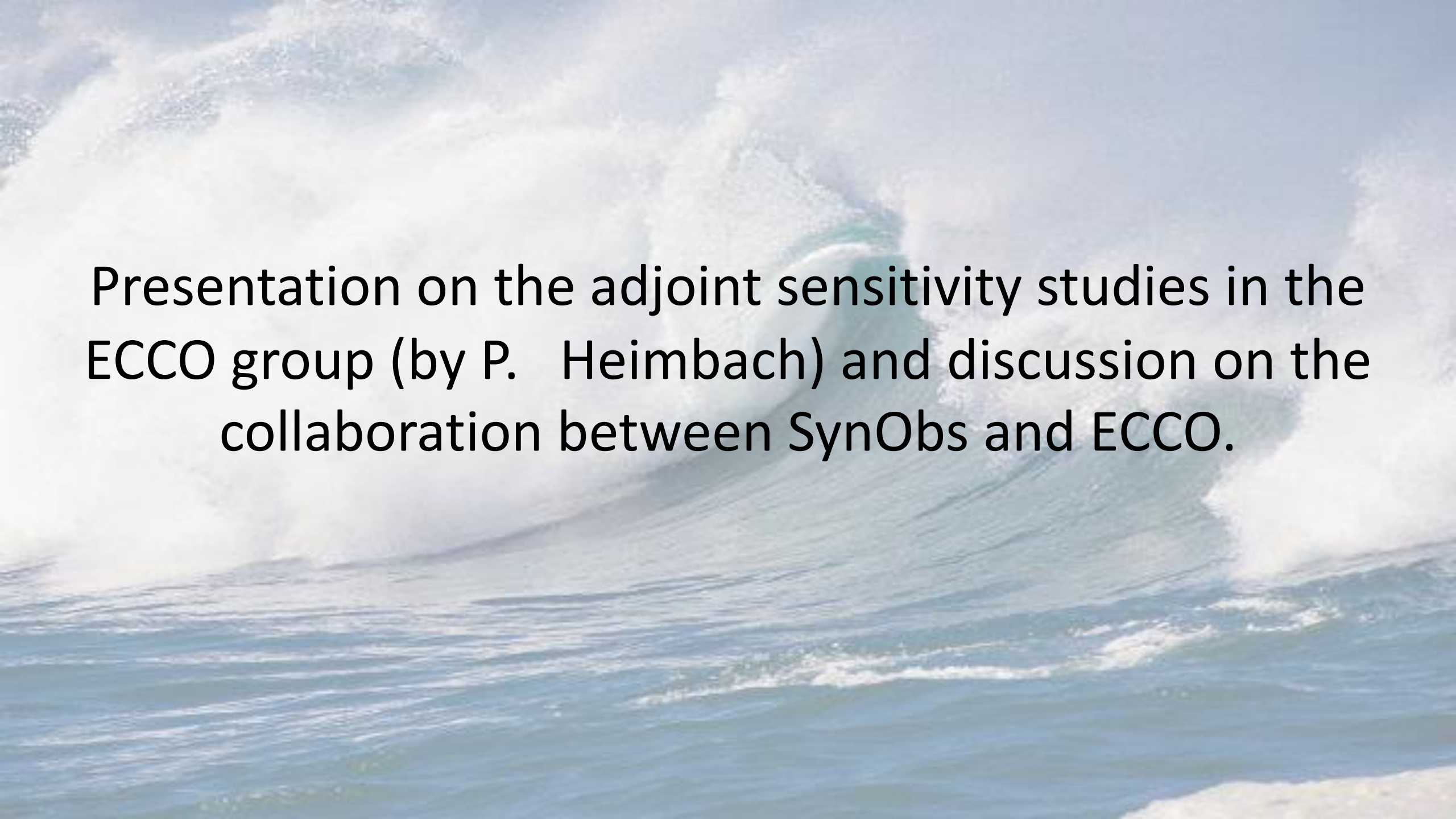
00:00-00:02: Introduction

00:02-00:30: Presentation on the adjoint sensitivity studies in the ECCO group (by P. Heimbach) and discussion on the collaboration between SynObs and ECCO.

00:30-00:40: Report on the Endorsement of SynObs and the SynObs Kick-off Meeting

00:40-00:57: Discussion on the flagship collaborative OSE in SynObs and possible OSSE collaboration with DITTO, Ocean Prediction DCC etc.

00:55-01:00: Wrap-up



Presentation on the adjoint sensitivity studies in the ECCO group (by P. Heimbach) and discussion on the collaboration between SynObs and ECCO.



2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

Synergistic Observing Network for Ocean Prediction (SynObs)

UN Ocean Decade Project Under ForeSea
(Led by OceanPredict OS-Eval TT)



Officially Endorsed at June 8th

◆ Objective

SynObs will seek the way to extract maximum benefits from the combination among various observation platforms, typically between satellite and in situ observation data, in ocean/coastal predictions.

◆ Strategy

SynObs aims to identify the optimal combination of different ocean observation platforms through observing system design/evaluation, and to develop assimilation methods for maximum synergy among different observations.

◆ Scope

Targets of **SynObs** include open-ocean (global, tropical, mid-latitude, polar areas), coastal, and biogeochemical (BGC) observing systems



★ SynObs Information On the webpage

1. UN Ocean Decade webpage (<https://www.oceandecade.org>)

- Not appear yet.
- We need a photo for SynObs?

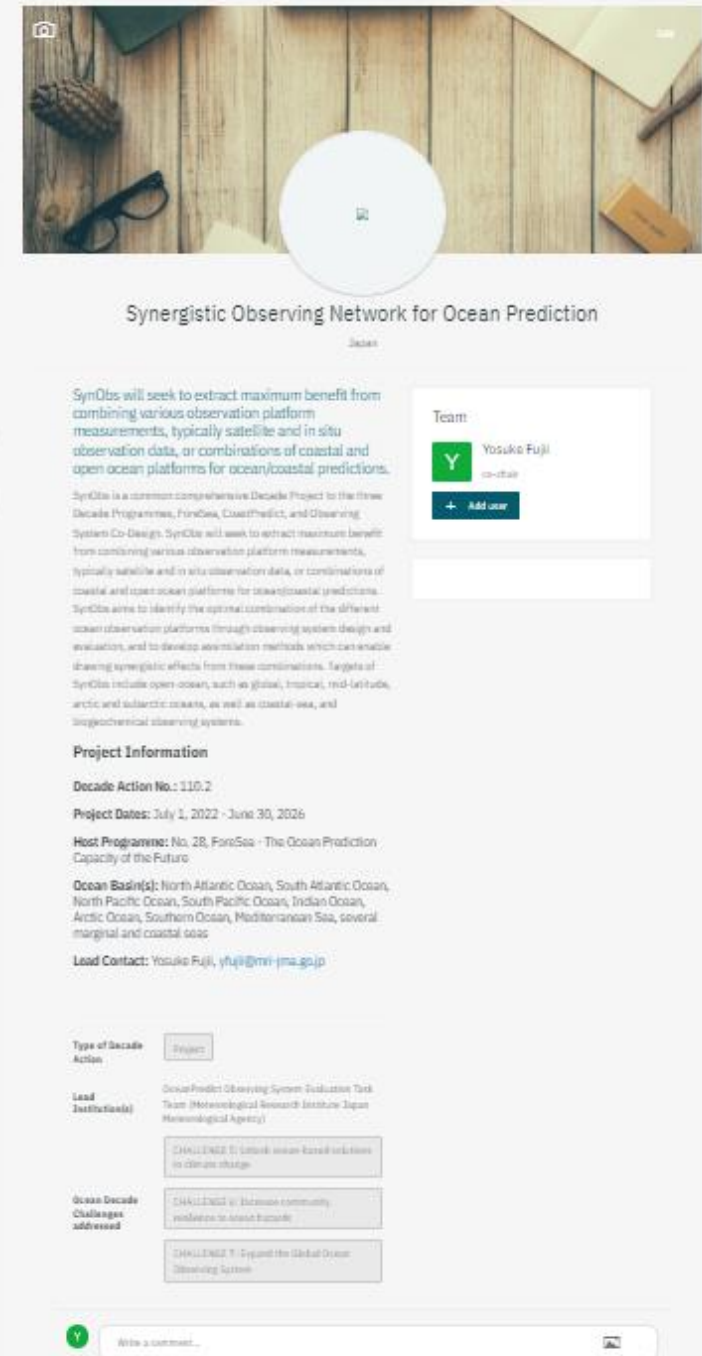
2. Ocean Decade Global Stakeholder Forum

- <https://forum.oceandecade.org/ventures/89131>
- Brief explanation of the project (can be modified)
- We need a Logo?

3. SynObs page on the OceanPredict web page

- <https://oceanpredict.org/foresea/synobs/#section-overview>
- should be updated?
- List of (official) partner institutes?
- List of contributors?

If you want to provide any photo and logo, please inform me.



The screenshot shows the project page for SynObs on the OceanPredict website. At the top, there is a header image of a wooden desk with a white circular logo in the center. Below the image, the text reads "Synergistic Observing Network for Ocean Prediction" and "Japan".

The main content area includes a description of the project: "SynObs will seek to extract maximum benefit from combining various observation platform measurements, typically satellite and in situ observation data, or combinations of coastal and open ocean platforms for ocean/coastal predictions." It also mentions that SynObs is a common comprehensive Decade Project for the three Decade Programmes, ForeSea, CoastPredict, and Observing System Co-Design.

On the right side, there is a "Team" section with a profile card for Yosuke Fujii, co-lead, with a green "Y" icon and an "Add user" button.

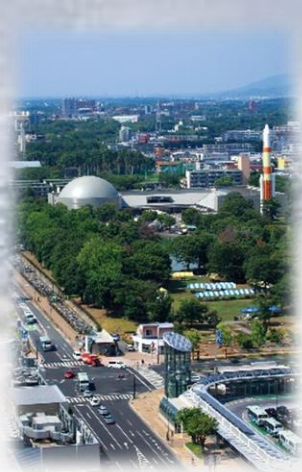
Below the description, there is a "Project Information" section with the following details:

- Decade Action No.: 110.2
- Project Dates: July 1, 2022 - June 30, 2026
- Host Programme: No. 28, ForeSea - The Ocean Prediction Capacity of the Future
- Ocean Basin(s): North Atlantic Ocean, South Atlantic Ocean, North Pacific Ocean, South Pacific Ocean, Indian Ocean, Arctic Ocean, Southern Ocean, Mediterranean Sea, several marginal and coastal seas
- Lead Contact: Yosuke Fujii, yfujii@mri-jma.go.jp

At the bottom, there is a "Type of Decade Action" dropdown menu set to "Project", a "Lead Institution(s)" field with "OceanPredict Observing System Evaluation Task Team (Meteorological Research Institute Japan Meteorological Agency)", and a section for "Ocean Decade Challenges addressed" with three challenge cards: "CHALLENGE 1: Enhance ocean-based solutions to climate change", "CHALLENGE 2: Increase community resilience to ocean hazards", and "CHALLENGE 3: Expand the Global Ocean Observing System".

Joint Workshop of the OS-Eval TT and CP-TT and SynObs Kick-off

*15-18 Nov 2022,
Tsukuba, Japan and Online*



- ◆ **Registration and Abstract Submission is now open. The deadline is 15 July 2022.**
- ◆ Having presentations on the OS-Eval showcase, DA development, and earth system predictions, and discussion on the SynObs activity plan.
- ◆ Please register and submit your abstract at their earliest convenience.
- ◆ Everyone without a Japanese passport will need a Japanese business visa to enter Japan. We will provide on-site participants from foreign countries with an invitation letter, which is necessary for the visa application. Please keep it in mind that you need to communicate with the host in August to submit information on your air carrier, trip dates, etc. which is required for issuing the invitation letter.

★ Expected Activities in SynObs

1. OS-Eval showcase and reporting

- Collect OS-Eval examples and introduce them (Showcase)
- Generate a report on observation requirements and design

2. Collaboration for evaluation and design

- **Flagship (Core) multi-system OSE**
- **Several Extensions (S2S OSE, OSSE, etc.) of the flagship OSE**
- Facilitating communication for OS-Eval collaborations

3. Providing information from ocean prediction systems on regular basis

- Regular reporting on information of QC, innovations, increments, etc.
- Explore the methods to evaluate observing system status in real-time operation

4. Supporting DA scheme development

- Support DA-TT seminar series
- Discussion on required development of DA technology and models
- Observation campaigns for the development

★ Expectations/Requests of OSE/OSSE to SynObs

◆ SynObs proposal defined 7 targeted combinations

- Sat Alti SKIM, and Argo ▪ Tropical buoy array, Argo, and Sat Alti
- Sat SSS and in-situ ▪ Sat SST-obs radiometers and near surface observations
- Sat ocean color and BGC Argos ▪ Sea ice concentration and thickness
- Coastal ocean and Open Ocean Observations

(But it is not feasible to conduct collaborative OSE for all targets.)

◆ SWOT will be launched in this November.

◆ Ocean Observing Co-Design expects SynObs to conduct OSE/OSSEs for some of their exemplars (Marine Heatwaves, Boundary Currents, Tropical Cyclones, Storm Surge, Carbon Cycle, Biodiversity).

◆ TPOS-SAC requested OSE/OSSE for new TPOS, and ECMWF, NCEP, and JMA started to discuss on a collaborative OSE for S2S forecasts.

◆ Argo Science Team aims to enhance the communication with modeling communities.

- Multi-system OSE for salinity drifts are currently on-going (Suggested by P. Oke.)

★ Image of collaborative OSE activities in SynObs

Flagship (Core) multi-system OSEs

System: **Reanalysis** and
Ocean Prediction Systems

Targeted Observations:

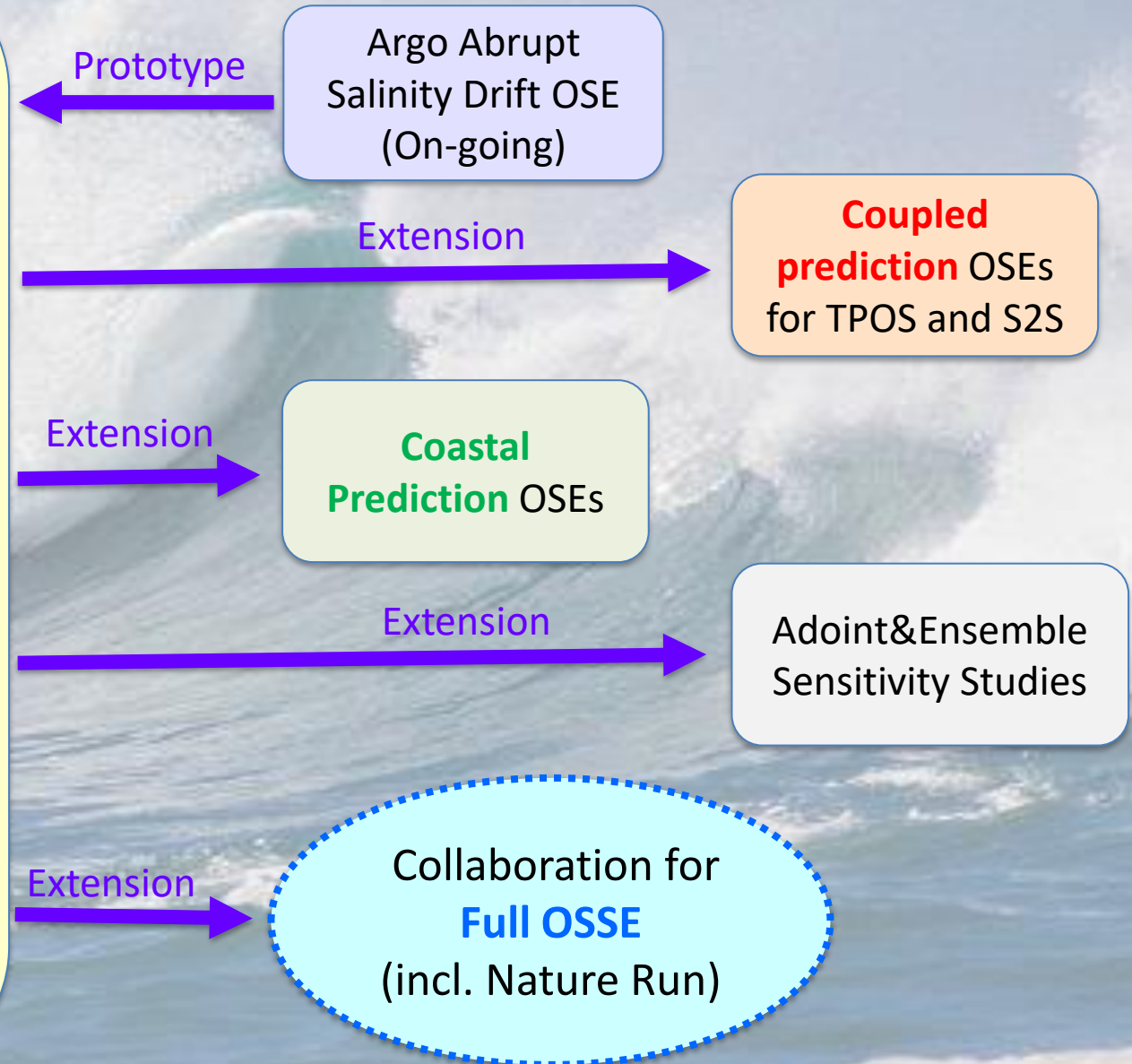
- ✓ SSH (Nadir+SWOT)
- ✓ In-situ (Argo, Trop. Buoys, etc.)
- ✓ consider their Synergy

Prediction Targets:

- ✓ 0-100m Temp. (MHWs)
- ✓ Near-surface currents (WBCs)
- ✓ Etc.

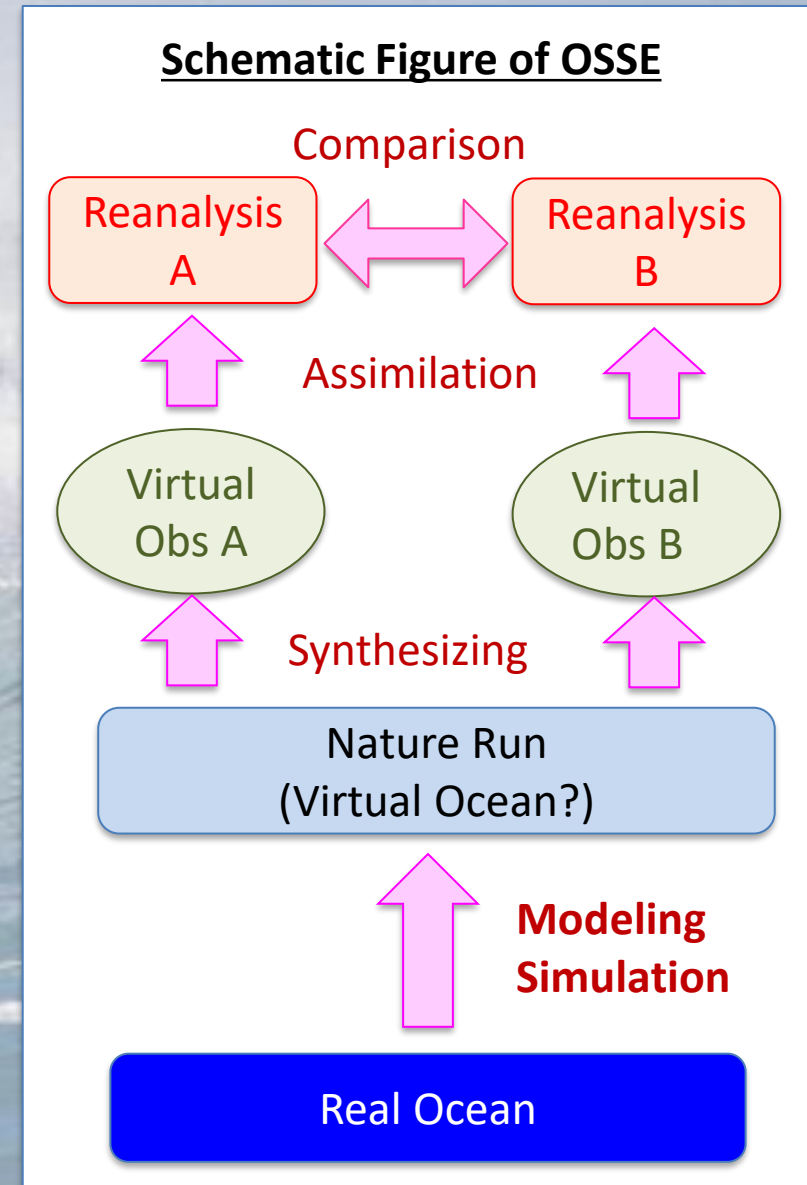
Period: 2015-2025?

- A protocol should be drafted in the near future.



★ Possible collaboration for Nature Runs and multi-system OSSEs

- ◆ A high-quality Nature Runs is essential to make reliable evaluation with Dthrough OSSE.
- ◆ But there are no sufficient resource and motivation to generate Nature Run by SynObs alone
- ◆ Providing a list of model simulation data which are available for a Nature Run ⇒ A tentative action
- ◆ In OPST-6, we discuss a possibility to collaborate with Digital Twin Ocean (DITTO) and Ocean Prediction Decade Collaboration Center (DCC) for provision of Nature Runs and multi-system OSSEs.
- ◆ OSSE is actually the most familiar application of the concept of the digital twin ocean, and a good tool for promote the collaboration among ocean modelers, DA scientists, application engineers.
- ◆ What kind of Nature Runs? Global Ocean? Coastal? BGC? Coupled?
- ◆ Funding?
- ◆ How do we establish this collaboration?
 - ✓ Meeting with DITTO, DCC, ForeSea, CoastPredict, etc.
 - ✓ Probably, strong leadership is required.



★ ➤ Communications

◆ Table on the use of observations in OceanPredict System?

◆ OSE collaboration on the Argo fast salinity drift (on going):

https://docs.google.com/document/d/11a7Srmw8AcWNP_XyPq1Rgd3PtX0vklYdChWHvMik9T8/edit

If you can join, please contact to Yosuke Fujii by E-mail.

◆ **Next Meeting**

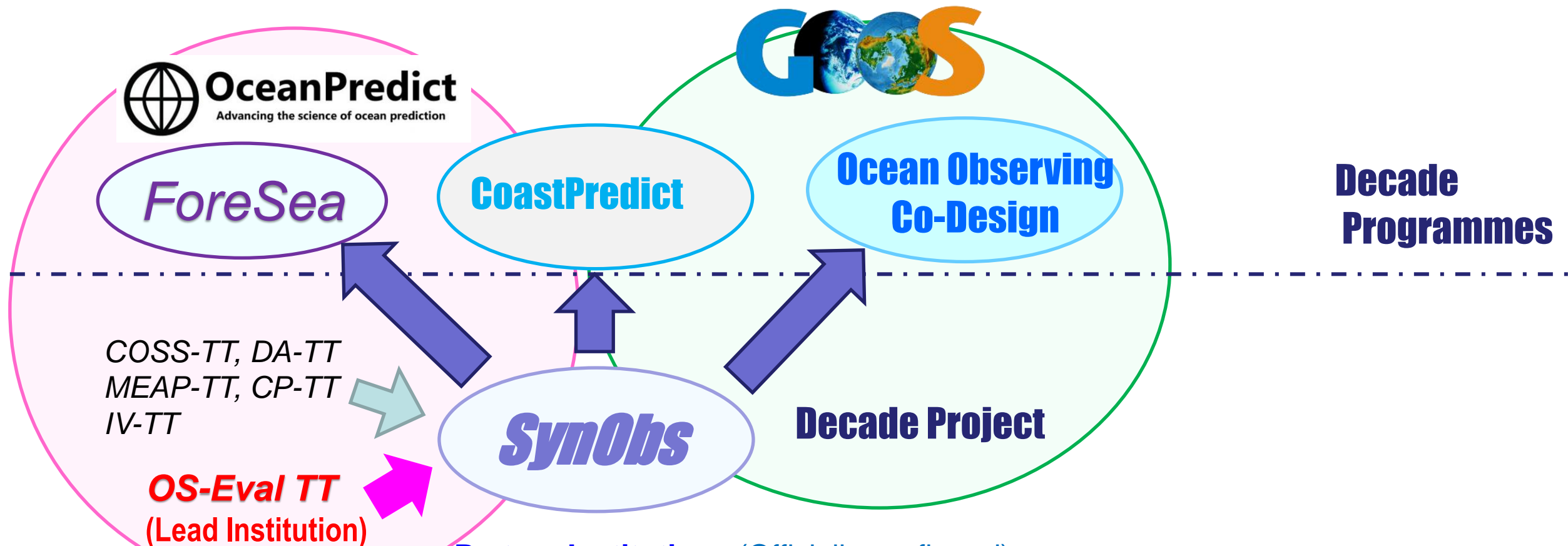
➤ In September (or October)

➤ We may have a presentation on Southern Ocean Observing System.

A large, powerful ocean wave is shown crashing, with a massive wall of white foam and spray rising from the base of the wave. The water is a deep blue-green color. The word "Backup" is overlaid in the center of the image.

Backup

SynObs: A common comprehensive project



Partner Institutions (Officially confirmed):

JMA/MRI (contact point, Japan), Mercator Ocean International (France)
 Met Office (UK), NOAA Quantative Observing System Assessment Program (USA)
 ECMWF, CNR ISMAT (Italy), NERSC (Norway), Ocean Data Network (Denmark)
 CNRS (France), UFBA (Brazil)

★ OS-Eval Showcase and reporting

OS-Eval Showcase

- Collect OS-Eval examples and introduce them to the broad communities (particularly to observational communities) to show the potential of OS-Eval,
- Generally any studies which evaluate the ocean observing systems will be included.
- A possible plan: We will set up the showcase activity at the **Tsukuba Symposium this November**, and organize a **special issue of some academic Journal in 2023**.
- We may also make the web page on the showcase.

OS-Eval Report

- Issue a report on the observation requirements and design based on various OS-Eval studies as the concluding achievement of SynObs. (**The activity will start at 2024?**)
- The report is generated for the sustaining and developing ocean observing networks. So it will be hopefully distribute to broad observational communities.
- Maybe we need to adjust the schedule and targets considering the timeline and exemplers of Ocean Observing Co-Design.