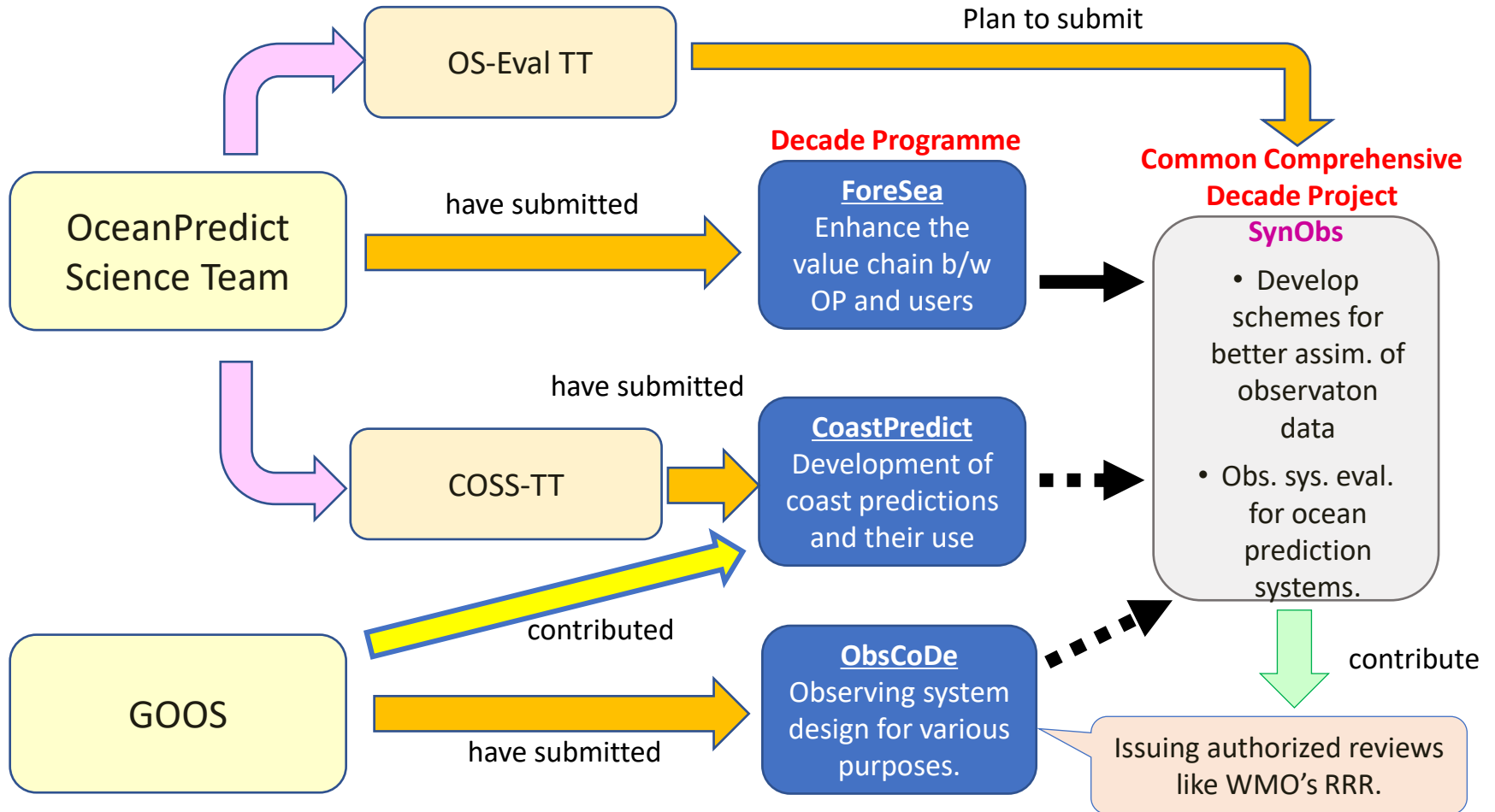


OceanPredict TTs' co-chairs Meeting for SynObs launch

★ OceanPredict contributions to the UN Decade of Ocean Science



Objective and Strategy of SynObs

◆ 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, or between coastal and open ocean platforms, in ocean/coastal predictions.

◆ Strategy

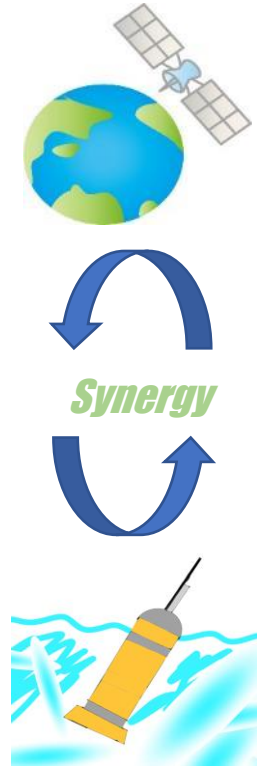
SynObs aims to identify the optimal combination of different ocean observation platforms through observing system design/evaluation, and to develop assimilation methods with which we can draw synergistic effects from the combination.

◆ Scope

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

Draft of the proposal

<https://oceanpredict.org/science/task-team-activities/observing-system-evaluation/#section-projects>



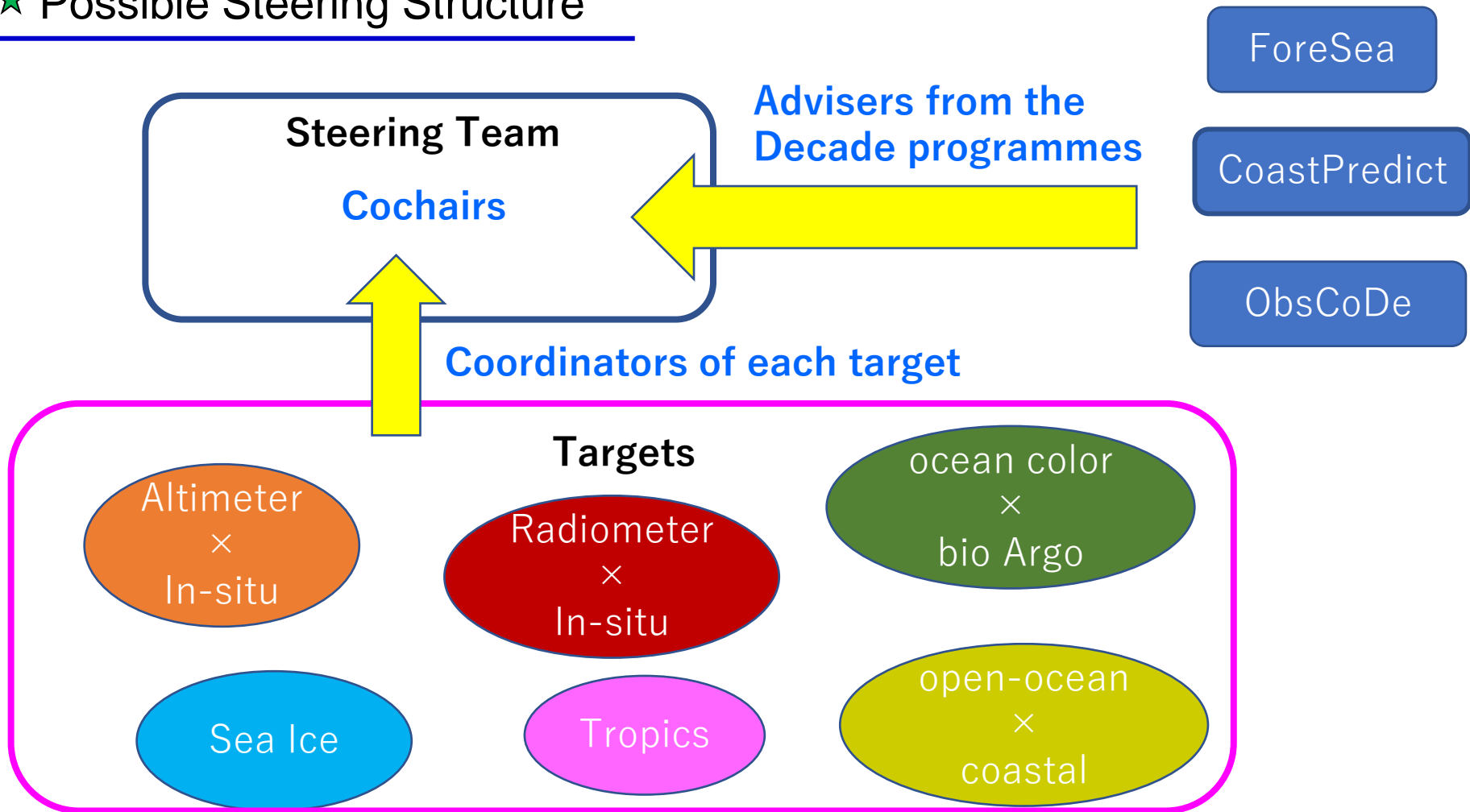
★ Targeted Combination of Observing Systems

1. Satellite altimeters (including conventional and wide-swath altimeters), satellite ocean current observations (SKIM) and Argo floats ⇒ Mid-lat? ocean currents?
2. Satellite radiometers (for SST observations), near surface in situ observations (from Mooring buoys and Argo floats, etc.), and sea surface atmospheric parameters ⇒ CP-TT, coupled DA
3. Satellite Sea Surface Salinity (SSS) observations and near surface in situ observations (+ runoff data) ⇒ CP-TT, DA-TT, and COSS-TT
4. Satellite ocean color observations and in-situ (Argo) observation ⇒ MEAP-TT
5. Observations of sea ice concentrations and sea ice thickness ⇒ Polar Regions?
6. Coastal ocean radars and sensors, gliders, drones, satellite remote sensing, and Argo floats ⇒ COSS-TT
7. Combination of tropical buoys, Argo, and other platforms to monitor tropical ocean dynamics ⇒ CP-TT, TPOS2020

★ Expected Activity in SynObs

1. Make the showcase for effective use of observing systems and their evaluation
2. Multi-system evaluation (Multi-System OSE, OSSE, other methods).
3. Development of data assimilation schemes for synergy \Rightarrow DA-TT
 - ✓ Assimilating low-level processed satellite data (direct assimilation)
 - ✓ incorporate background error covariance between atmospheric and oceanic elements in coupled data assimilation systems
3. Collocated satellite-in situ observation campaigns (e.g., Argo and InfraRed satellite) \Rightarrow CP-TT
4. Development of best-practices for evaluating the performance of ocean observing networks composed of various observing platforms
5. Construction of a real-time ocean observation impact monitoring framework
6. Contribute to the authorized report of ocean observation designs by ObsCoDe.

★ Possible Steering Structure



★ Discussion Points

1. Are the current purpose, strategy, and scope appropriate?
 - Are Interests of OP TTs adequately included?
 - The current scope of SynObs is very wide. It may promote collaboration of wide-range communities, but the efforts may be dispersed.
2. How will your TT contribute to SynObs? Will you participate in the steering group, or support from outside?
 - We would like to ask a couple of people to participate in the steering team as coordinators who lead some specific targets of SynObs.
 - Is it suitable for OS-Eval TT co-chairs to be SynObs co-chairs? Or should we share the role with people from other TTs or other groups?
3. How can we collaborate as the SynObs team with OceanPredict, ForeSea, and other decade projects which will be proposed for ForeSea?

BackUp

★ How can we collaborate for coastal predictions in SynObs?

1. Make a big voice to appeal necessity of the development and maintenance of coastal observing systems as a part of the global ocean observing network
 - ✓ **Showcase** of coastal observation impacts
 - ✓ Collaboration for **multi-system evaluation** of widely-used observation platforms, such as, ocean gliders, HF radars, etc.
 - ✓ **Appeal importance** of coastal observations to international communities under the collaboration in OceanPredict family.
 - ⇒ Contribute to the **authorized observation requirement report by ObsCode**

★ How can we collaborate for coastal predictions in SynObs? (continue)

2. Exploit open-ocean and BGC observing systems effectively

- ✓ **Open-ocean platforms**, such as satellite altimeters and Argo floats, can also contribute to coastal predictions. **BGC observations** are also essential for predictions of coastal marine ecosystems.
- ✓ Develop DA methods to **get synergy** from those observations in coastal predictions
- ✓ **Reflect** the requirements for coastal predictions **on the designs** of open-ocean and BGC observing systems.
- ◆ The collaboration also brings benefits to open-ocean communities
 - Coastal observations can have impacts on open ocean.
 - High-frequency phenome related to tides and sea level pressure forcing is already treated in a DA framework in costal systems. Those knowledge can be used for further development of global systems.

★ How can we collaborate for coastal predictions in SynObs? (continue)

3. Establish a best practice strategy of observing system evaluation for coastal seas

- ✓ Exchange the knowledge on observing system evaluation methodologies among coastal and open-ocean communities, and find feasible and practical ways for various ocean prediction systems
- ✓ Make it possible to conduct **fair and reliable evaluation promptly** to support developments of coastal observing systems
- ✓ Make it **easy to train new scientists** who can conduct the evaluation.