



A co-design lab to synchronize and evolve technology for industry, ocean science, and conservation

What is Synchro?



VISION

Synchro harnesses the power of emerging observation tools with collective user expertise to better understand, manage, and preserve ocean resources.



MISSION

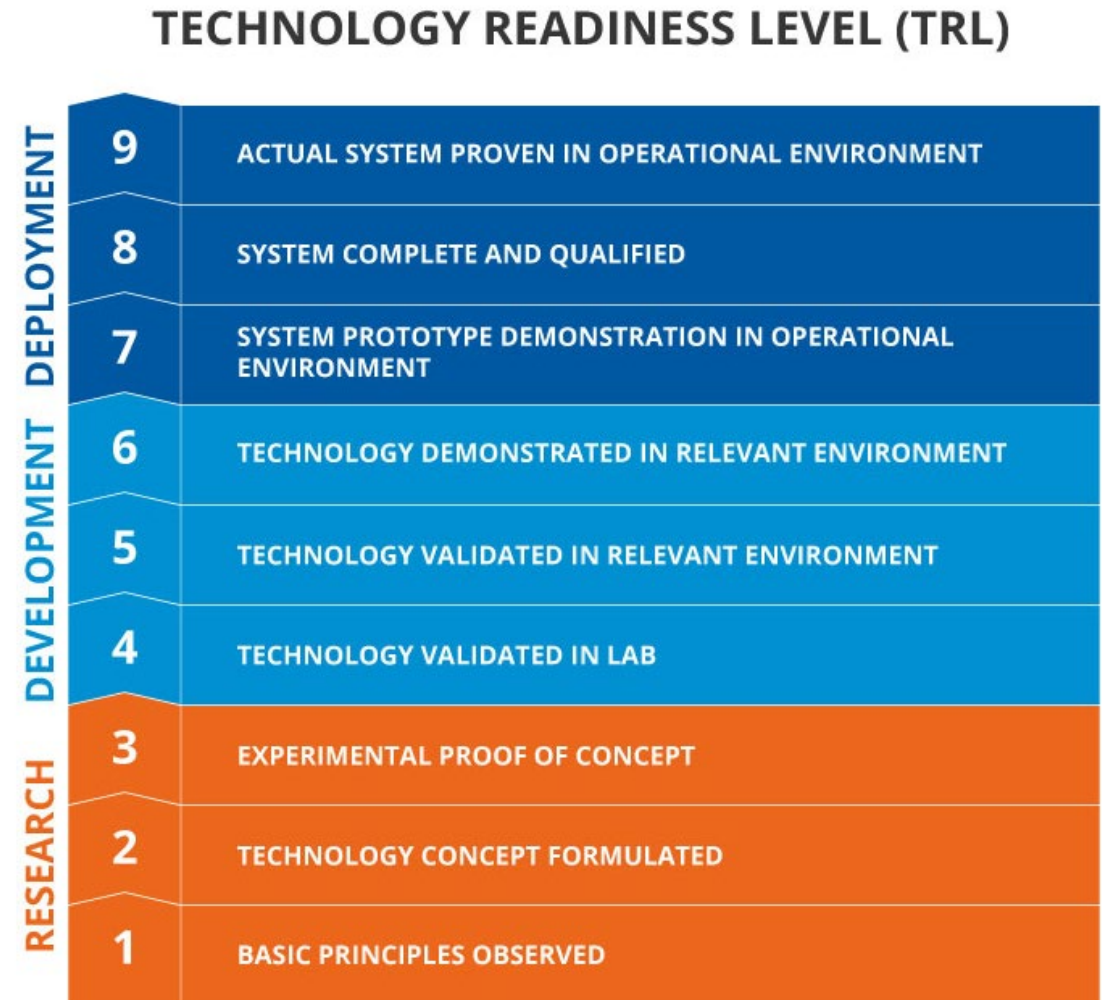
Synchro operates a co-design laboratory and ocean testbed for marine technology developers to test, improve, and evaluate systems in real-world conditions.



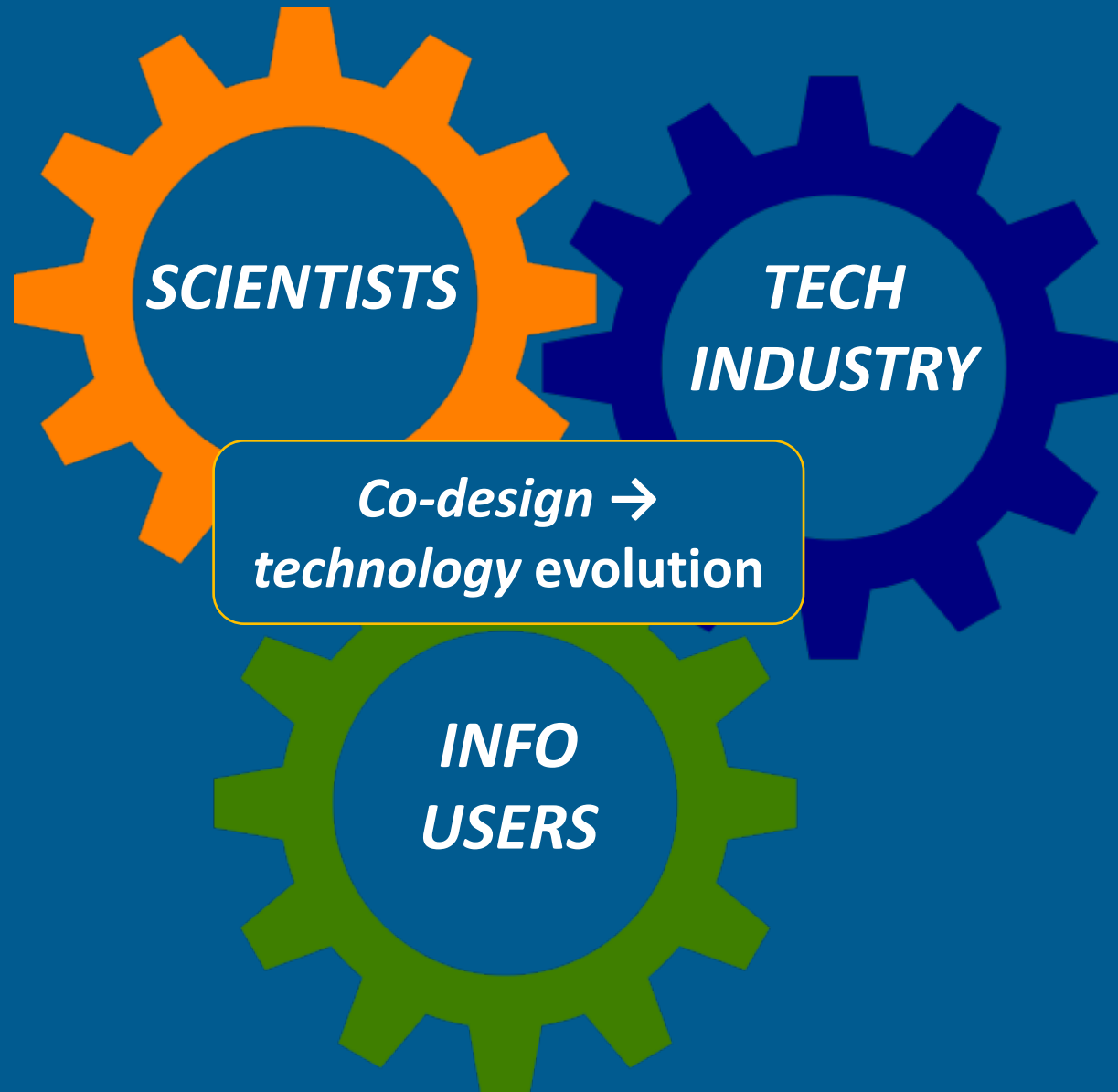
Why? A 'Valley of Death/Opportunity'



- Technology Readiness Levels define tech's evolution
- TRL 9 does not mean a wider adoption of tech
- Going beyond 9 is challenging
- Synchro is accelerating testing and evaluation, not funding development *per se*



How? – Co-Design



- Input during Synchro stakeholder meetings
- Include information users in co-design of testing and evaluation
- Demonstrate how new/emerging/evolving tech can meet their needs
- Data lifecycle planning with information users

Who? - Synchro Team



Henry Ruhl



Amy West



Jason Adelaars



Fio Micheli



Jim Leape



Robert Dunbar



Eric Hartge



Fred Bahr



John Ryan



Francisco Chavez



Collin Closek



Lucie Hazen



Katie Jewett



Mary Miller



Tom Connolly



Steve Cunningham



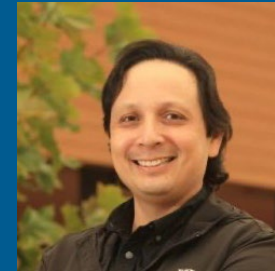
Chris Edwards



Raphe Kudela



Kendra Negrey



Corey Garza



Rob Bochenek

Who? - Growing a Synchro Network



Team



Information Users



Sponsors / Partners



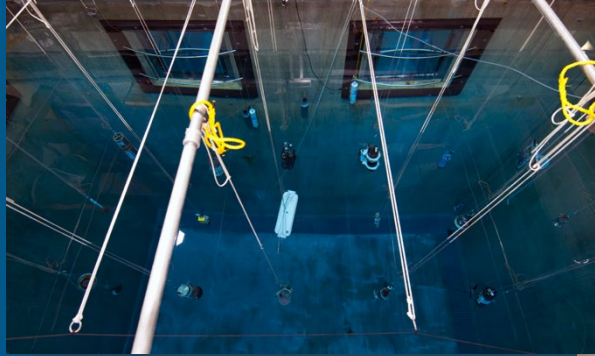
Prospective



Scale to Global Impact



Synchro's Three Pillars of Evaluation

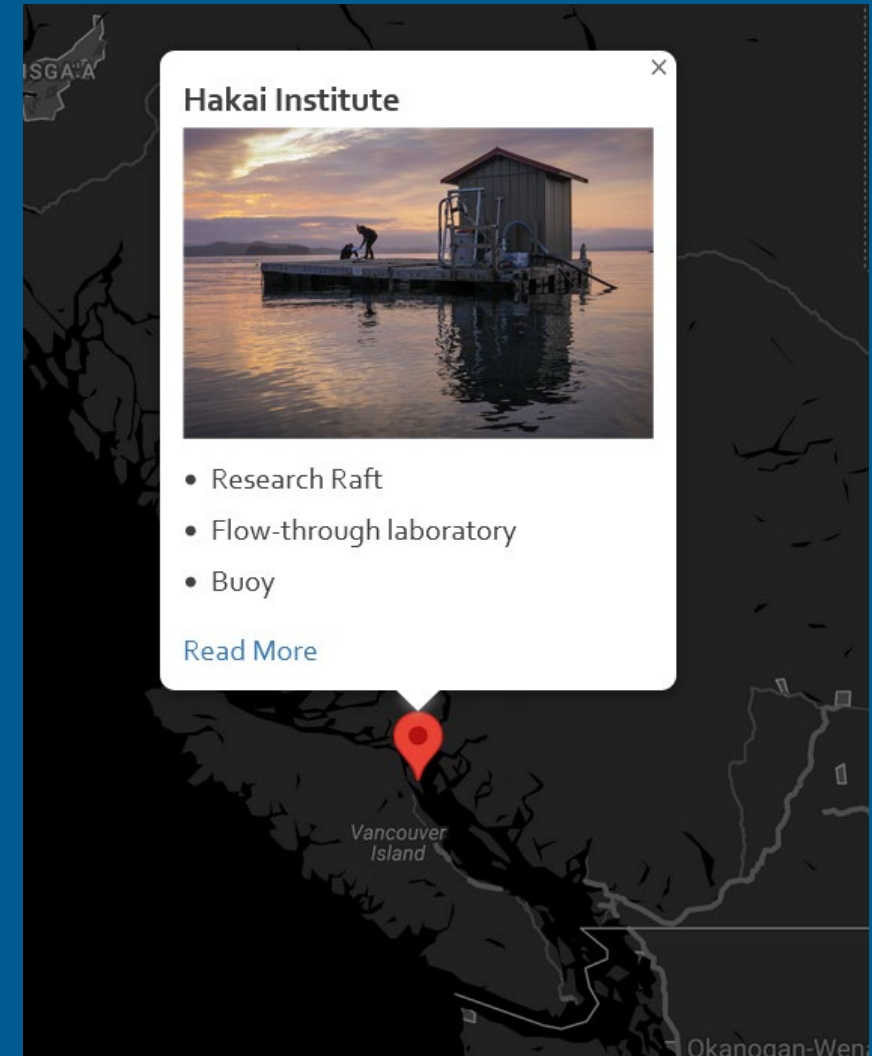
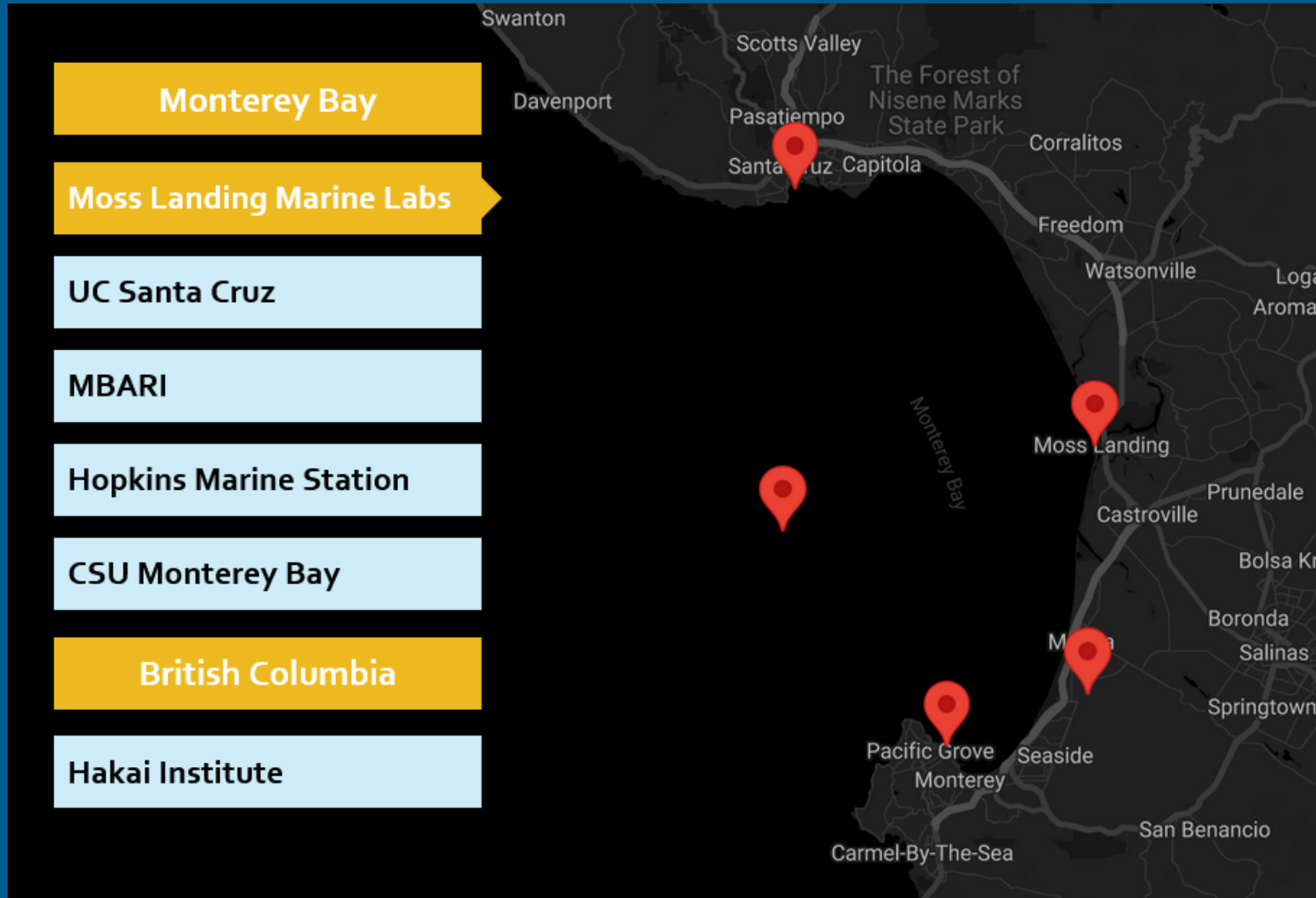


■ Three Pillars

- I. Testing/evaluation access for emerging technologies
- II. Low-cost tech procurement & evaluation
- III. Case study for monitoring offshore wind impacts

Synchro aims to bridge the gap between R&D innovation and widespread adoption of ocean technology

How?- I. Testing & Evaluation Access



How?- I. Testing & Evaluation Access



- **Directed Access** will include dedicated and ready access through team support.
- **Facilitated Access** may be possible to more longer-lead time and complex facilities.

Moss Landing Marine Laboratories:

R/V John H. Martin
Monterey Wharf
Aquaculture Facility

UW & CSUMB:

NOAA Center for Coastal and Marine
Ecosystems - REUs
Aerial drone platforms
Coastal watercraft

Stanford University:

R/Vs Blue Serengeti and Dauphine,
17-foot whaler and several skiffs,
Kelp forest

University of California, Santa Cruz

Santa Cruz Municipal Wharf

Monterey Bay Aquarium Research Institute:

Test (mini)mooring in Monterey Bay
High-pressure test system
Large seawater test tank with gantry

Hakai Institute, British Columbia

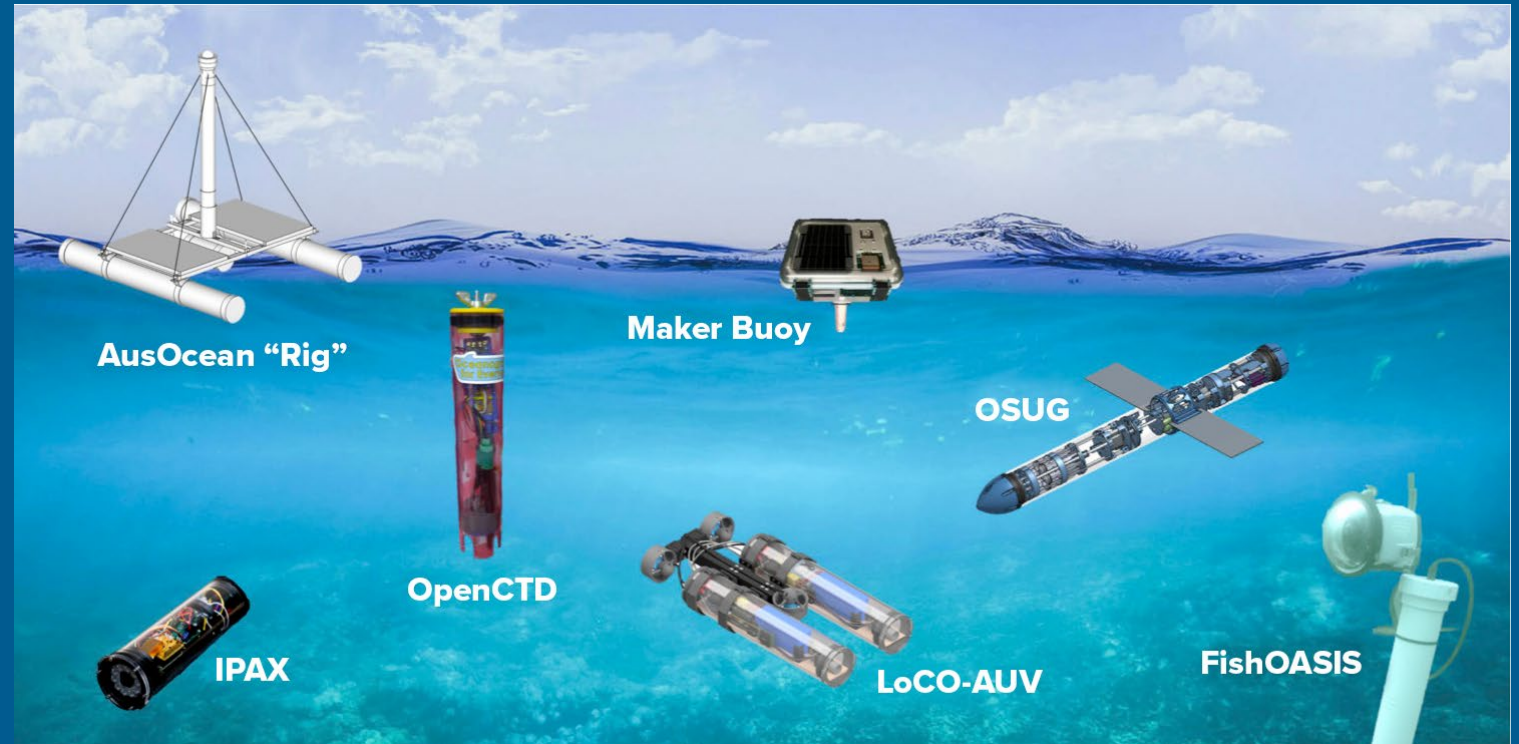
Raft, seawater lab, and buoy



How?- II. Low-Cost Tech



- ~\$500k low cost tech procurement in autumn
- Affordability (feasibility) is essential
- Open to all tech with focus on ecology and biology
- Co-design workshop late summer for final scoping
- Testing at existing Synchro facilities, or means for broader engagement through high volume procurement and dissemination
- Can also contribute to offshore wind case study where impactful/feasible

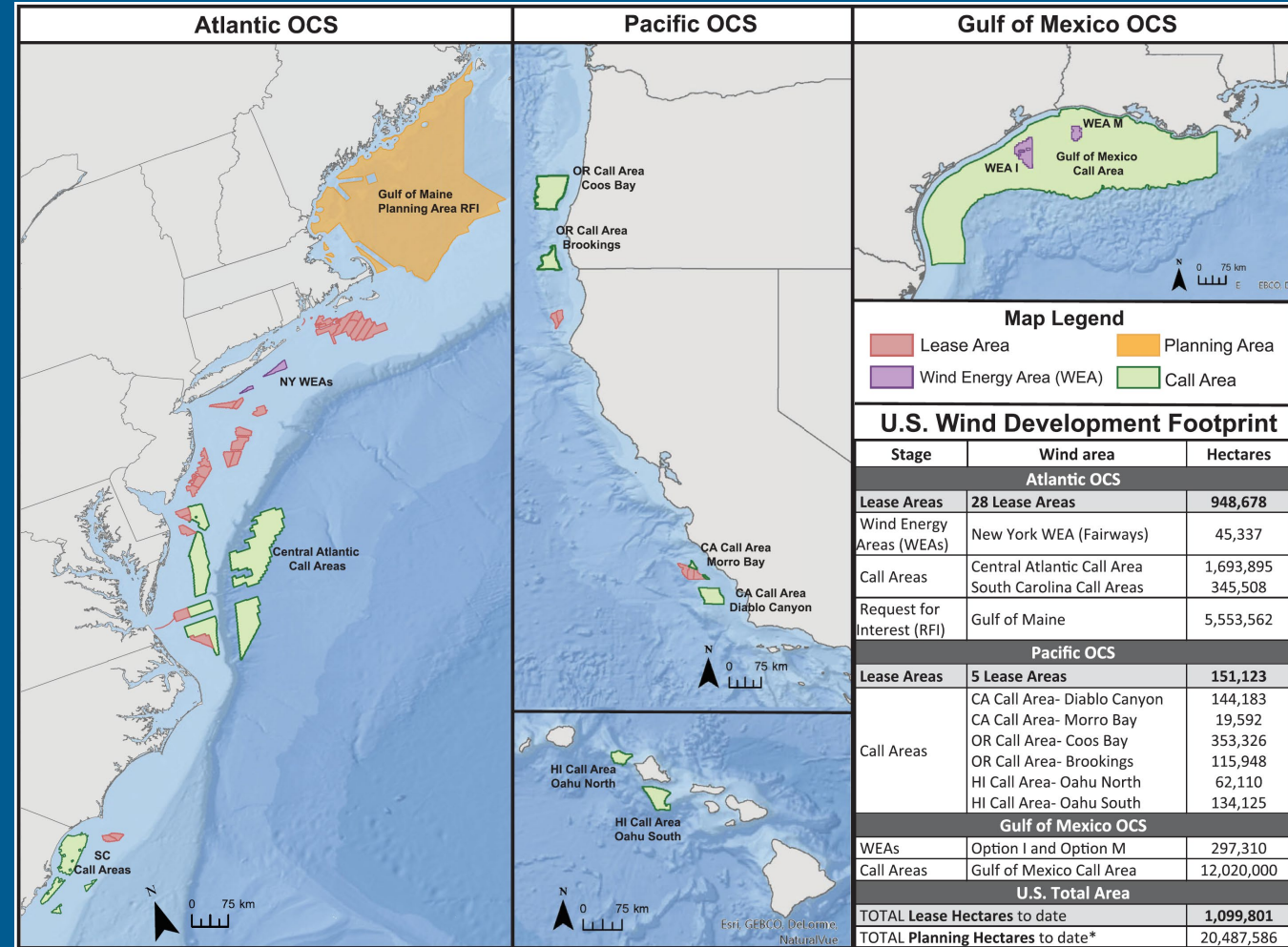


Butler, J., and C.M.L.S. Pagniello. 2021. Emerging, low-cost ocean observing technologies to democratize access to the ocean. *Oceanography* 34(4), <https://doi.org/10.5670/oceanog.2021.supplement.02-35>.

How?- III. Offshore Wind Case Study



- \$1.25 M, 2 years field work beginning ~March 2024
- Tech-focused, but tensioned against emerging info priorities/questions
- Building on progress of CA Marine Protected Areas, Natl. Marine Sanctuaries Condition Reports, East Coast wind projects
- Offshore wind baseline and impact assessment; focus on upwelling and its ecological implications
- Monterey Bay focus but scalable knowledge
- Co-designed w/ information users



Assets

LRAUV / Planktivore = 

Glider / PAM = 

Ship / CTD = 

MARS hydrophone = 

UAV = 


Synchro shore station = 

Synchro mooring = 

Scale = 10 nm

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Ship / CTD / eDNA sampling

~Upwelling max (movable) = 

~Upwelling min (movable) = 

Cross validation (@vehicle) = 

Transect end point = 

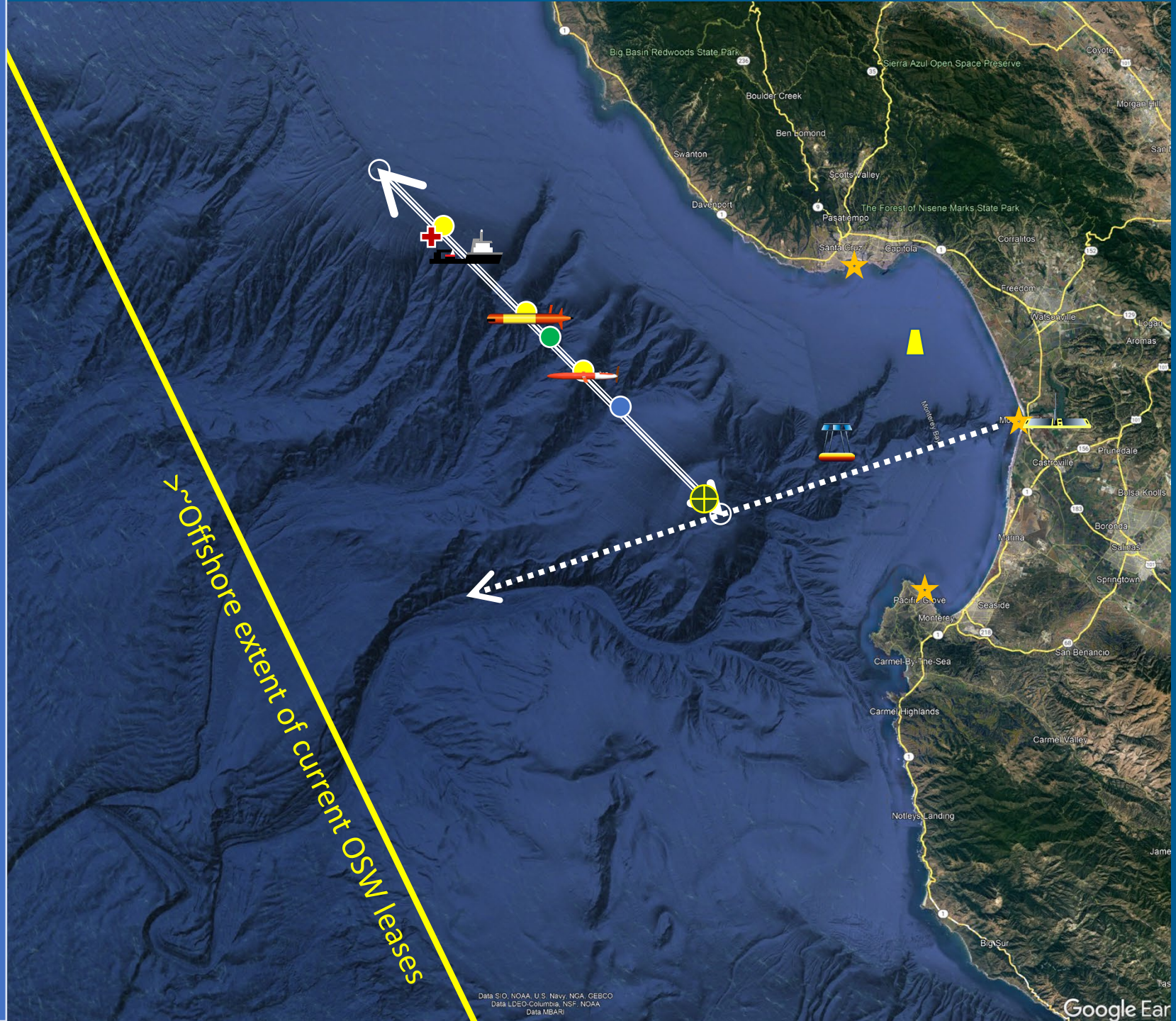
Other assets

M1 mooring = 

CeNCOOS glider line =

Wire walker?

Wave glider? 



Timeline Elements



Testing & evaluation access

Offshore wind case study

Synchro Start

*Website & testing app. launch
Synchro Network build-out*

Prelim OSW Case Study plan

Case Study Detail Planning

Low-cost sensor procurement

Synchro wind-up?

