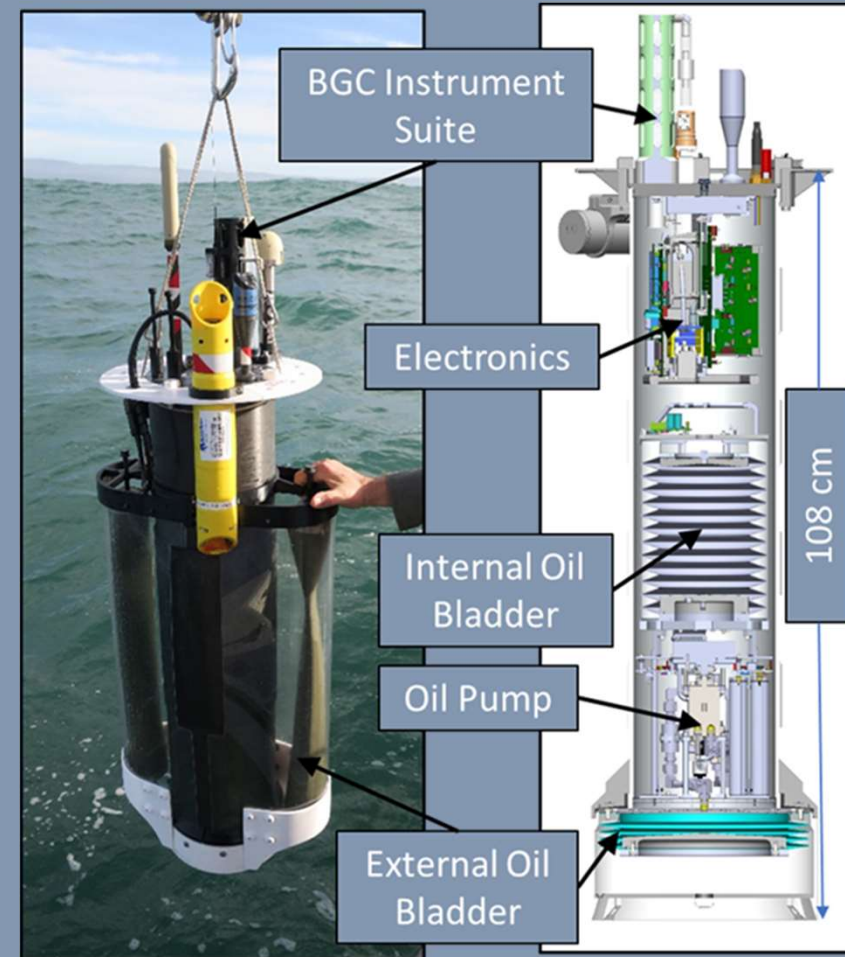


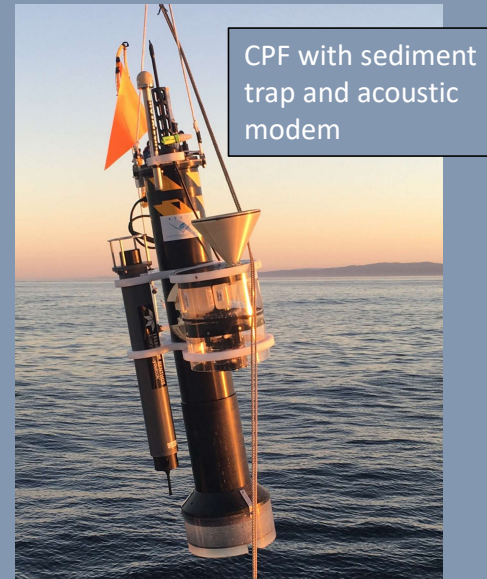
The MBARI Coastal Profiling Float

- Target science missions: Sustainable, long term, ecosystem wide observing systems
 - Understanding the health of the ocean
 - Fisheries management
 - Oxygen dead zone monitoring
 - HAB research and monitoring ...
- BGC instrument suite: CTD, dissolved oxygen, pH, Nitrate, 4 channel optical radiometer, fluorescence and backscatter
- Optimized for coastal zones
 - Can (and does) park on the bottom to minimize drift
 - Can park at a user specific depth to drift back into measurement volume using serendipitous subsurface currents

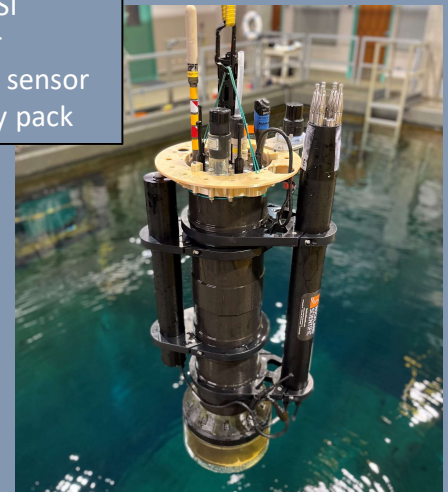


Strengths

- Full Argo-BGC instrument suite
 - Data will get processed, QC'ed and made available through Argo-BGC data centers
 - 3 available instrument channels
 - Relatively straight forward to integrate new instruments
- 3.5 liters of volume change (5-10X most profiling floats)
 - Allows anchoring on the bottom
 - Can profile through 0-35+ psu pycnocline
 - Excess buoyancy to deal with biofouling
 - Minimizes ballasting headaches
 - Allows for some sample retrieval
- Closed loop buoyancy control
 - Accurate platform velocity and depth control: important for working in shallow water
- Mission life goal: 200 profiles spread over 1 year



CPF with RSI
MicroRider
turbulence sensor
and battery pack



• Current Work

- Increase mission life
 - On-going MBARI science missions
- Add RUDICS satellite comms
Robustify

• Future Work

- Develop an economical, sustainable source for CPFs
 - Commercial vendor or “managed” open source
- Move CPF ecosystem outside MBARI
- A moored, winched, shallow water CPF
- Single point BGC instrument platform (no profiling)
- Robustify

• One Vision of The Pot of Gold

- An array of robust CPFs in the California current
- Quality controlled data freely available at Argo-BGC data centers
- QC'ed data ingested by BGC models generating data products informing science based fisheries management (NOAA Future Seas)

Cheap and Deep?

- Deep?

- The current science target is not deep <350 meters
- 2000 meter pressure housing is very practical
- Answer: No for now, yes if there's a need

- Cheap?

- Up-front capital costs
 - ~\$30k platform cost (with CTD) + ~\$40K for BGC instrument suite
- Overall life cycle cost = cost per data point
 - Arrays of profiling floats are arguably the lowest cost per data point for long-term, ecosystem scale observing systems
 - Argo (3500+ floats world wide), SOCCOM (200 floats Southern Ocean, GO-BGC (500 floats world wide)
- Answer: Yes for certain applications relative to other current solutions

Thanks

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<https://www.mbari.org/news/new-coastal-profiling-floats-for-diagnosing-ocean-health/>