NOAA PMEL Ecosystems and Fisheries Oceanography Coordinated Investigations program annual presentation to the Lab Director, November 2020

TECHNOLOGY DEVELOPMENT UPDATE

**What are they?**

**Pop-ups are designed to be cheap and easily deployed.**

**We can think of them as half mooring, half drifter.**

They are deployed overboard with an anchor, immediately sink to the bottom and log hourly measurements for up to a full year.

On a pre-programmed release date, the float releases from its anchor and records a single profile before either surfacing or getting trapped under sea ice. Once it makes a successful satellite connection, the logged data gets transmitted back to the lab via an Iridium data service.

**They are modular, and can be outfitted with a fluorometer and camera, or simply measure temperature and pressure.**

**Objectives**

**Measure conditions and productivity levels under sea ice** –

* **The center graphic is a highlight from a deployment in 2018 that returned 2 months of under-ice data, which shows timing of under ice algae blooms from photos and fluorescence signal.**

Acquiring measurements close to the surface during the winter and spring has been notoriously difficult. Over-wintered moorings can’t get near-surface measurements without risking destruction by seasonal sea ice keels, which can reach 20m deep.

**Measure conditions in the Bering Sea to map the cold pool** –

* **Increase spatial coverage, map in upper right shows locations of deployments**
* **Plot on lower right shows bottom temperature measurements from Oct**. **2019 thru Dec 2019, this data is actively being transmitted.**

Look at the extent, thickness and varying light levels of the cold pool through the winter months and how it changes over time.

**Platform for Partnerships, NPRB pcod**

Industry Partnership with C/P Starbound and F/V Westward1 (4) :

*pictured: deployed on 8/14/2020 22:59:00 by  the C/P Starbound near Pervents Canyon. (photograph left to right shows Tylar Lowen, Deck Boss; Walter Miranda, Deckhand; Reynaldo Pio, Deckhand; Caleb Rodriguez, Deckhand)*

Tribal Government Partnership with Aleut Community of St. Paul Island (1)

Partnership with USCGC Fir (2)

**Next steps in tech development are to transition to a plastic free design**