# Description of Technology

The expendable pop-up floats are moored at the sub-surface in the fall and sequentially released during the winter and spring to track ocean conditions during ice melt. The floats collect data while moored along the bottom, during ascent through the water column, and while floating freely underneath the ice after ascent. Once free from the ice, all data from the float is telemetered to shore.

# Objectives of Test/Operation

The expendable pop-up floats will be deployed from the Healy in July to track ocean conditions during ice melt. The floats serve as a test bed for evaluating innovative sensors and techniques for increasing the NOAA’s observational capabilities in the arctic. Primary areas of focus are the spring bloom.

# Preferred Operating Environment

- Deployment location: Approximately 30-60 nm North of Icy Cape, AK in 40-45m of water, where sea ice is present along ship track. The exact deployment location will depend on the extent of the sea ice during the cruise. The extent of sea ice may also limit when the buoy can be deployed during the cruise, i.e. end of cruise vs. beginning.

- Needs to be deployed in ice as close to full coverage as possible and as far from ice edge as possible. Needs to be deployed off aft deck where ice has been cleared by the vessel.

- We would prefer to conduct the deployment during daylight.

- The only weather limitations are conditions which will make moving heavy objects around on deck, and operating equipment over the side unsafe.

# Equipment Information

- Load equipment on Healy in Seattle in June OR ship equipment to Seward/crew pickup location. Indoor storage / staging bay during transit to the Arctic for the fully assembled buoys (3 buoys each ~ 1’W x 1’H x 3’ L plus ~2’x2’ of deck space for 3 anchors.

- Only alkaline batteries in instrumentation. No HAZMAT.

# Lab Space/Mission Execution Area

- Lab bench or open deck space for instrument preparation.

- Covered area for assembled buoys and anchors during transit from Seattle to Arctic with access to the aft working deck, preferably the port garage.

- The buoys and anchors will be shipped on a pallet, and will be able to be moved around the deck with a pallet jack.

- Staging area on day of deployment to assemble the buoy and mooring, and flake out the mooring prior to deployment. Deployment requires the use of a crane or an a-frame.

# Launch and Recovery

- The deployment for this operation can be done in a single pick with a crane or a-frame. The entire setup will be approximately 10 feet long, and weigh a maximum of 100 lbs. Once the equipment is rigged for deployment, a slip line will be looped around the top orange float and connected to a quick release. The equipment should be lowered into the water as far as possible before being released. Since the floats are expendable, no recovery is necessary for this operation.

- Once staged, deployment operations should take ~ 10 minutes per float.

- NOAA-PMEL will send 2 people on the deployment; during the deployment we will require an open deck.

# Weather Contingencies

- Our primary objective is to deploy the pop-up floats in sea ice that is as close to full coverage as possible and as far from the ice edge as possible.

- We can be flexible with the timing of the pop-up float deployment to work with operational weather windows and sea ice conditions.

- The buoy has bi-directional satellite communications via Iridium. The buoys use RockBLOCK Mk2 Iridium modems, they transmit at 1616 to 1626.5 MHz at up to 2W peak transmit power.