

## 2015 P16N Cesium Measurements

The cesium water samples were collected on the 2015 GO-SHIP P16N section occupied by the NOAA Ship Ronald Brown and were analyzed by the Buesseler Lab at the Woods Hole Oceanographic Institution.

In the spring of 2015, 395 radionuclide samples were obtained from the CLIVAR/GO-SHIP occupation of the 152°W line known as P16N (Figure below). This sampling was technically considered an ancillary project, however, with support of both the National Science Foundation and the National Oceanic and Atmospheric Administration two extra days of ship time were provided to allow for 20 radionuclide sampling-only casts with 12 samples each going from ~10 m to ~1000 m. With efficient use of water remaining in the Bullister bottles after all other sampling had been completed on regular hydrographic casts, a further 7 profiles were obtained as well as numerous sets of surface/subsurface sample pairs. The profiles and surface/subsurface pairs were obtained on both the 152°W line and the cross-gyre (~55.5°N) survey. Lastly, 15 surface samples were obtained from the underway seawater system as the ship steamed into from the outer boundary of the U.S. Exclusive Economic Zone (EEZ) into Seattle. Of these nearly 400 samples, two were lost due to technical difficulties. The remaining 393 are provided here.

The samples were analyzed onshore at the Woods Hole Oceanographic Institution lab using one of two resin-based methods: ammonium molybdophosphate on an organic polymer polyacrylonitrile (AMP-PAN); or potassium-nickel hexacyanoferrate (II) (KNiFC-Pan) [Šebasta and Štefula, 1990; Kameník et al., 2013; Pike et al., 2013].

Many of these samples are made up of water from multiple Bullister Bottles closed at different pressures. For these instances, the pressures associated with samples is the volume weighted average of pressures of associated Bullister Bottle samples. The CTD temperatures and salinities are those from the CTD record linearly interpolated to the average pressure calculated for cesium sample. In one instance the position of the sample is a distance weighted average of the station positions associated with the Bullister Bottle waters that were combined. The densities are calculated from the listed temperatures, salinities and pressures.

Assuming half-life decay rates for  $^{134}\text{Cs}$  to be 2.06 years and for  $^{137}\text{Cs}$  to be 30.07 years, all the listed cesium estimates are decay corrected to the date of maximum discharge from the Fukushima Dai-ichi Nuclear Power Plants, April 6, 2011.

There is presently a manuscript in preparation describing the data and results (Macdonald et al., 2018).

### References:

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