# RISE 3

## August 2005

Chief Scientist – Ken Bruland

**Summary Daily Cruise Report** (refer to the maps of lines Excel file for locations)

**Aug 4th, 2005**

10:00 am - Departed Newport. Headed for Washington and the Gray's Harbor line. The ship stayed about 5 miles offshore and nutrients were sampled from the ship's intake - this was called Transect #1.

7:00 pm - Deployed and tested the fish sampling system.

12:00 midnight - Arrived in the Gray's Harbor area. Bill Peterson's group sampled stations for zooplankton during the evening.

**Aug 5th, 2005**

6:00 am – Vertical fish cast.

8:00 am - Carried out the Gray's Harbor line (GH) from near-shore GH 1 (7:57 am first CTD) to offshore GH 9.6 (11:20 pm last CTD). A CTD cast and vertical fish were deployed at each station along this line (CTD 1 to 11). Deep samples were taken using Go-Flos from station GH 1 to GH 6. A disposable drifter was deployed at GH 4 and GH 9.6. Upon finishing the Gray's Harbor line, Bill Peterson's group carried out zooplankton sampling all evening.

**Aug 6th, 2005**

8:00 am – Started near-shore on the Gray's Harbor surface transect (Transect 2) with surface fish sampling (upper 2m). Short 'dog-leg' prior to transecting West out along the GH line.

1:00 pm – Kudela CTD at GH 6 followed by optics (CTD 12).

Evening – Peterson sampled zooplankton and we transited to Cape Mears line (CM).

**Aug 7th, 2005**

7:00 am – Carried out the Cape Mears CTD line (CM) from near-shore CM 1 (7:09 first CTD) to offshore CM 9 (10:35 pm last CTD). A CTD cast and vertical fish were deployed at each normal station along this line (CTD 13 to 23). Deep samples were taken using Go-Flos from station CM 2 to CM 4.

Evening – Peterson sampled and transited to near-shore CM stations.

**Aug 8th, 2005**

8:00 am – Started near-shore on the Cape Mears surface transect (Transect 3) with surface fish sampling (upper 2m). Short 'dog-leg' prior to transecting West out along the CM line. Continued along CM line until "blue-water" was reached (~11:00 pm) out past CM stn 9. There was a CTD cast at CM8 (CTD 24).

Evening – Peterson sampled zooplankton and transited to Cape Disappointment.

**Aug 9th, 2005**

7:00 am – Ryan deployed five drifters just west of the mouth of the estuary on a strong ebb tide. We then went to 46° 12′ N, 124° 12′ W and headed due North to find the core of the plume. One CTD cast was taken during this transect within the core of the plume (CTD 25).

9:21 am – Deployed 'iron-fish' at 46° 20′ N, 124° 12′ W and started a surface transect (Transect 4) due South within the near field plume. After crossing the plume we transited northwest towards the Astoria canyon.

11:00 am to 1:00 pm – CTD casts (CTD 26 and 27) and optics (2) taken prior at the start of a surface fish tow due west from 46° 5′ N, 124° 7.8′ W (Transect 5). Evening – Peterson sampled zooplankton and transited to site of time-series.

**Aug 10th, 2005**

7:00 am – Started an 18+ hour time-series at a station outside of the estuary (TSN a to s). Consisted of hourly sampling with the vertical fish and hourly CTD casts (CTD 28 to 46). Time series ended at 1:32 am.

Evening – Peterson sampled zooplankton and transited south.

**Aug 11th, 2005**

Morning – Ryan retrieved drifters.

1:00 pm – Started sampling the aged plume (AP). Several CTD casts (CTD 47, 48, and 49) were made in the "aged" plume water, which was tracked by the drifters, followed by a surface fish transect across this same "aged" plume water along the Haystack Rock (HR) line (Transect 6).

**Aug 12th, 2005**

7:30 am – Deployed the surface fish at 46°20′N, 124°11.7′W. Started the first of a series of four North to South transects across the near-field plume during ebb and flood tide. Transects started at 8:00 am, 11:00 am, 14:00 pm, and 17:00 pm. Each transect was approximately two hours and covered ~10 miles. They were called Transect 7 a,b,c,d.

9:00 pm – Ryan once again deployed his drifters across the mouth of the estuary during a strong ebb tide.

**Aug 13th, 2005**

7:00 am – Started Benthic Boundary Layer (BBL) time-series along the Oregon shelf. Two stations, Haystack Rock (HR) 2.1 and 3.1 were sampled every two hours until 11:00 pm. Sampling consisted of CTD casts, optics, and GO-Flos (CTD 50 to 61).

Evening – recovered drifters

**Aug 14th, 2005**

5:00 am – Crossed the bar into the Columbia River Estuary (E).

6:10 am – Sampled station E3 with CTD and vertical fish (CTD 62).

7:58 am – Sampled station E2 with CTD and vertical fish (CTD 63).

8:52 am – Sampled station E1 with CTD and vertical fish (CTD 64).

11:00 am – Docked in Astoria. Ana and Atma board Wecoma. Bill Peterson, Tracy, Natalie, and Neal off-load. Depart dock at 1:00 pm.

1:45 pm – Sampled station E1 with vertical fish

2:50 pm – Sampled station E2 with vertical fish

3:54 pm – Sampled station E3 with CTD and vertical fish (CTD 65).

5:00 pm – Depart Estuary

**Aug 15th, 2005**

7:00 am – Started Benthic Boundary Layer (BBL) time-series along the Washington Shelf. Two stations, Washington Shelf (WS) 1 and 2 were sampled every two hours until 10:00 pm. Sampling consisted of optics, CTD, and go-flos (CTD 65 to 77). Ryan launched a drifter.

Evening – Raphe and Sherry conducted a large-scale survey.

**Aug 16th, 2005**

0700 hrs we started a CTD, optics, vertical fish transect along the Long Beach (LB) line. Started at station LB-1 and ended at LB-5 (CTD 78 to 83). A CTD cast, optics, and vertical fish were deployed at each normal station along the line.

1800 hrs - Entered the Columbia River estuary to prepare for Ryan's drifter deployment.

**Aug 17th, 2005**

Ryan released drifters within the estuary at 46 deg. 15.08 min. N and 124 deg. 0.50 min. W at 0100, 0130, 0200, 0230 and 0300 hrs.

0700 hrs we began a time series of CTD's and vertical fish casts at the E-3 station within

the estuary (CTD 84 to 95). Coordinated with the RV Pt. Sur. We departed the estuary at 1900 hrs for Raphe and Sherry to carry out a large scale survey.

**Aug 18th, 2005**

Entered Columbia River estuary at ~0800 hrs and headed 30+ miles up river to our river station R-1 that we sampled with the vertical fish. Came back down river to near the 20+ mile marker adjacent to Rice Island for our river station R-2. Then on to estuary stations E-1 and E-2 which we sampled with both the CTD and vertical fish (CTD 96 and 97). Then we sent Ryan and Daryl ashore to drive to Ilwaco and pick up two drifters. Exited the estuary at 2000 hrs, recovered Ryan's last drifter and Raphe and Sherry carried out a large scale survey.

**Aug 19th, 2005**

0500 hrs – Ryan launched 6 drifters across the mouth of the estuary at the peak of a strong spring ebb tide.
0630 hrs – we carried out a north/south transect across the plume (Transect 8a).
1000 hrs – CTD's, optics and vertical fish out where the plume stalls before heading south (CTD 98 and 99).
1300 hrs – a second North/South surface fish transect across the plume (Transect 8b).
1500 hrs – an East/West transect across the South flowing plume. Double back for a CTD (CTD 100 and 101).
1700 hrs – track down and recover all of Ryan's drifters since the wind had changed and they appeared to be heading for shore.
Followed by a large scale survey.

**Aug 20th, 2005**

0200 hrs – Initiated an 18 hour time series (TSS – a through s) at the Time Series station during a strong Spring tide series (CTD 102 to 121). Consisted of a CTD and vertical fish every hour. The RV Pt. Sur carried out a complementary study.

**Aug. 21st, 2005**

0800 hrs – carried out the Stanley Lake (SL) line along 46 deg 0.5 min N. CTD/Vertical Fish/Optics plus GO-Flo samples (CTD 122 to 129). This is the Oregon coast equivalent to the Washington coastline LB that was sampled previously.
2100 hrs – Maeve Lohan (ML) near bottom samples at four locations outside of the estuary (CTD 130 to 133)

**Aug. 22nd, 2005**

0730 hrs – carried out a surface fish transect during an ebb tide across the mouth of Grays Harbor to characterize the water coming from the Grays Harbor estuary.
1054 hrs – Elizabeth CTD (CTD 134).
1900 hrs – carried out a surface fish transect during an ebb tide across the mouth of Willapa Bay to characterize the water coming from Willapa Bay.
An evening survey.

**Aug 23rd, 2005**

0700 hrs – start the Grays Harbor line at station 1 with CTDS/Vertical fish and GO-Flos (CTD 135 to 144).
Carried out an evening survey.

**Aug 24th, 2005**

0730 hrs – start the Queets River line to characterize the water entering the Washington area from the north (CTD 145 to ___.
Evening head for the Cape Meares Line.

**Aug 25th, 2005**

0600 hrs – Start the Cape Meares Line with a CTD at station 1.