Research Opportunities through Environmental Sciences Program

GLOBEC in the Gulf of Alaska

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Senior, Environmental Science,

Oceanography Minor

Environmental Sciences Degree

- Baccalaureate Core Courses
  - University-wide requirements
- Basic Science, Humanities & Skills
  - BS degree requirements
- Environmental Sciences & Humanities Core
  - Specific courses and **Specialization**

Specialization Area

- Choose an area of interest
- New advisor
  - More focused coursework
  - Research opportunities (REU)
  - Connections and networking
- Oceanography
  - Jack Barth and Ted Strub

My Summer Research

- **Institute of Marine Sciences**
  - **University of Alaska, Fairbanks (UAF)**
- **Outreach Coordinator for the GLOBEC Cruise**
  - **Daily log at sea**
  - **Research activities on board**
  - **Data organization and processing on land**
  - **Presentations/conferences**

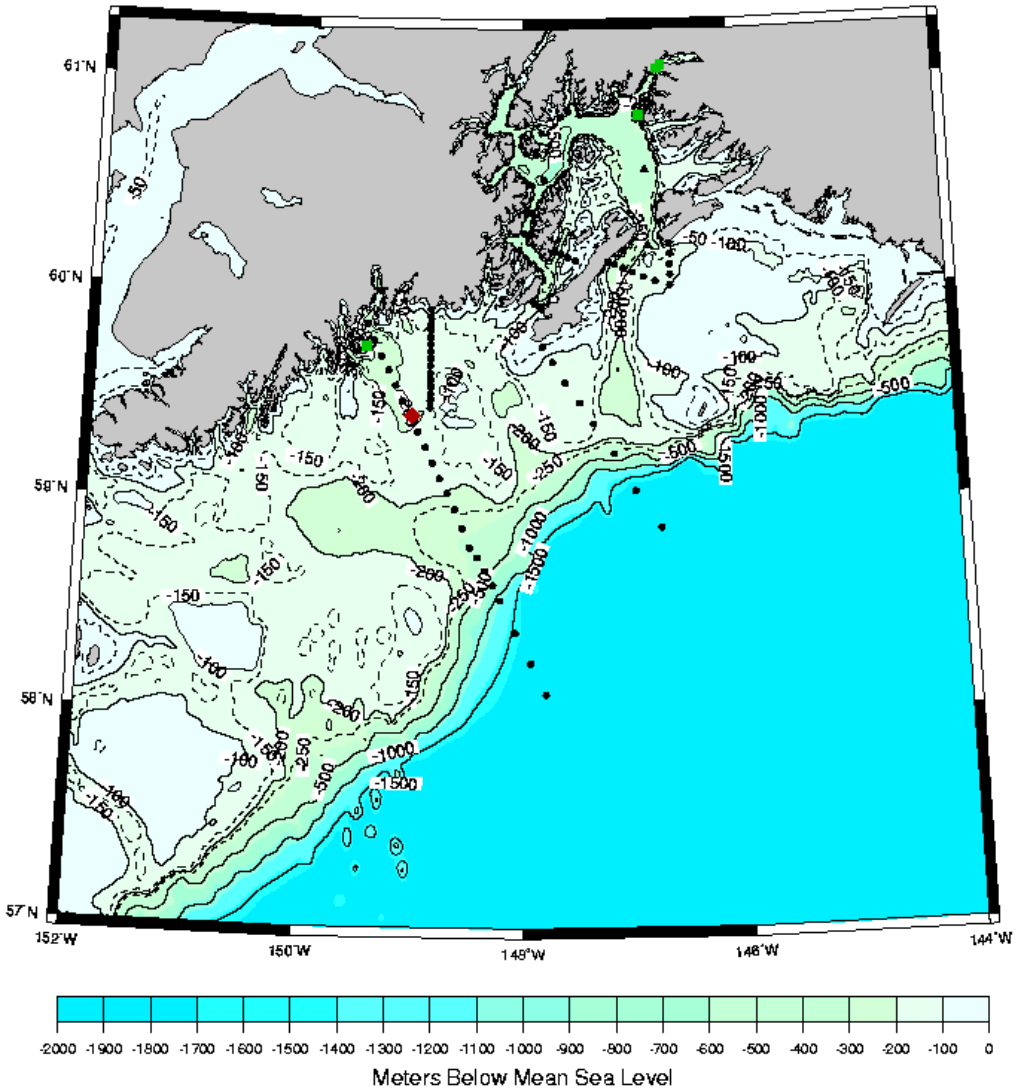
GLOBEC

- NorthEast Pacific Program (NEP)
  - California Current
  - Coastal Gulf of Alaska
    - Important fisheries
    - Climate variability impacts productivity

GOAL: *study the physical and biological oceanographic distributions and processes influencing marine organisms, specifically juvenile salmon*

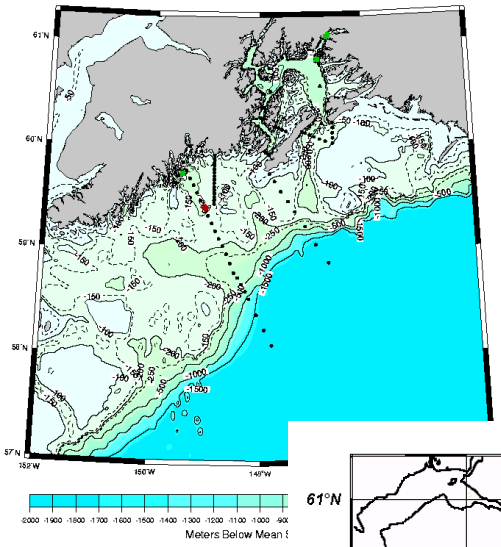
Gulf of Alaska

- **Long-term Observation Program (LTOP)**
  - Nutrient concentration, primary production, zooplankton composition, juvenile salmon abundance
- **Process Study**
  - Grazing and production rates of phytoplankton and zooplankton



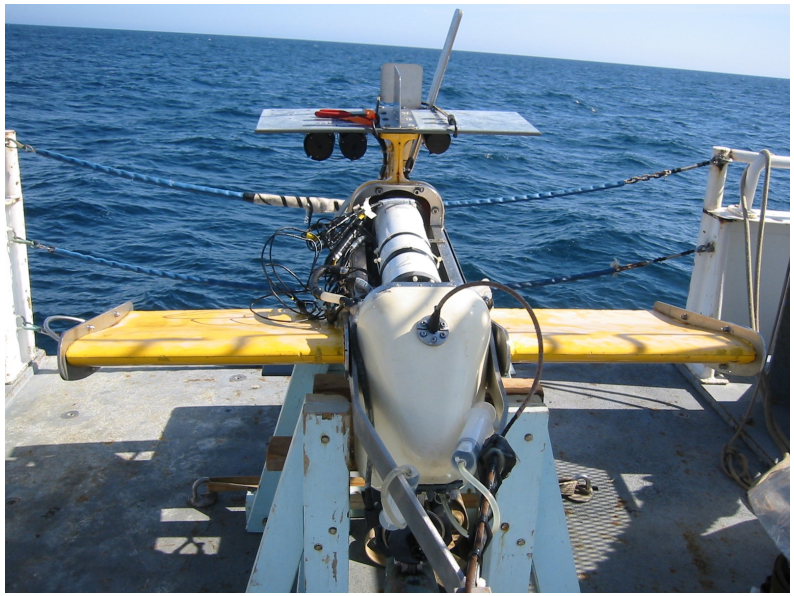
Mesoscale

- Cruises in May and in July/August
- Physical oceanographic data
- Provide spatial context for process studies

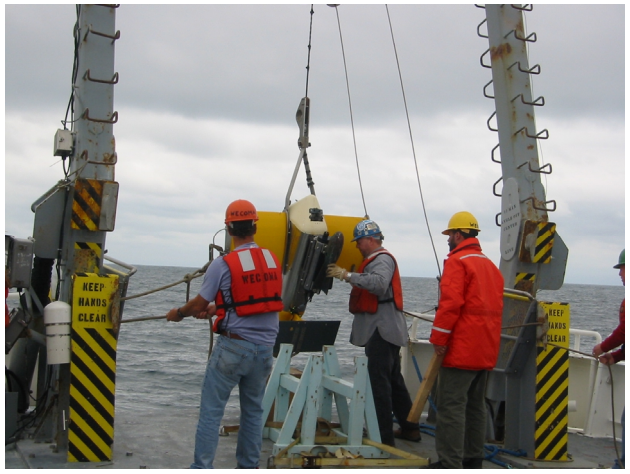


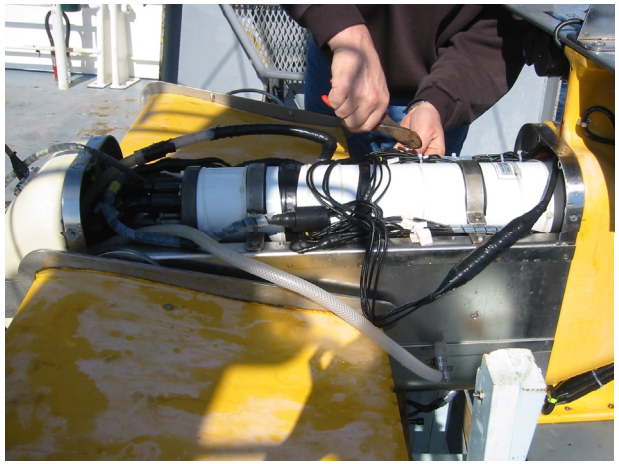
R/V Wecoma

SeaSoar



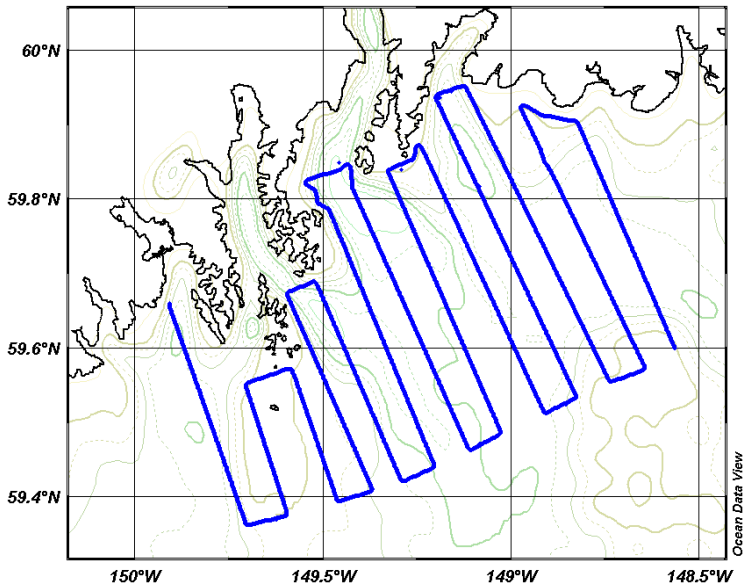
- Nitrate
- Fluorescence
- Chlorophyll
- Conductivity
- Temperature
- Pressure





SeaSoar Data

- Vertical resolution of 24 data points per second
- Horizontal resolution of 2 km per cycle

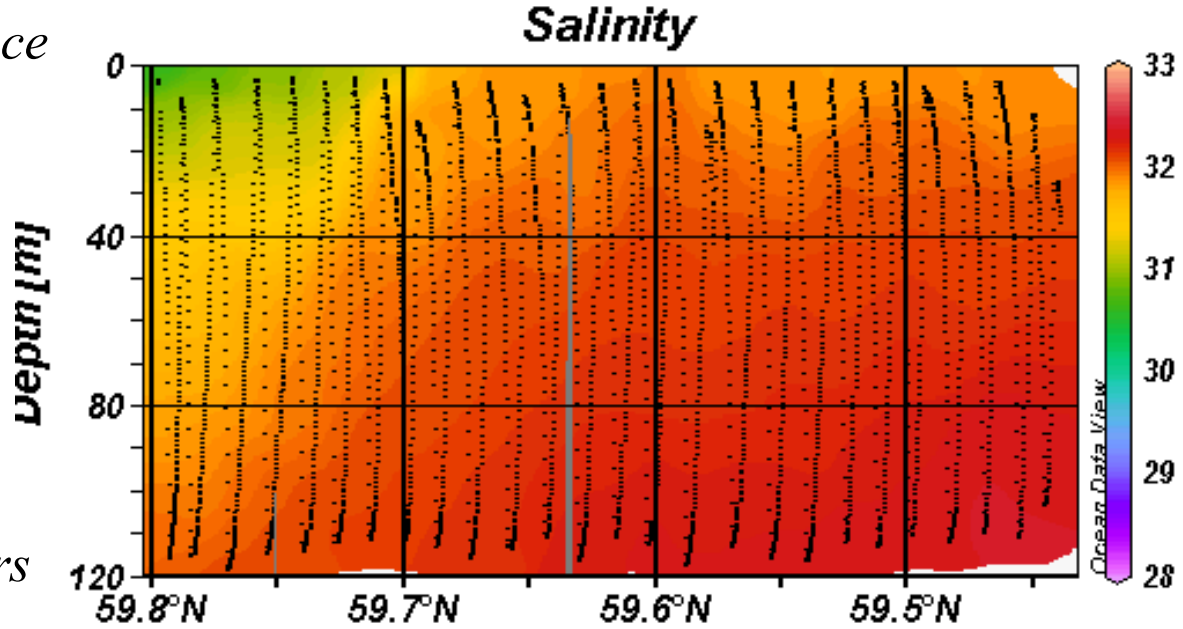


surface

onshore

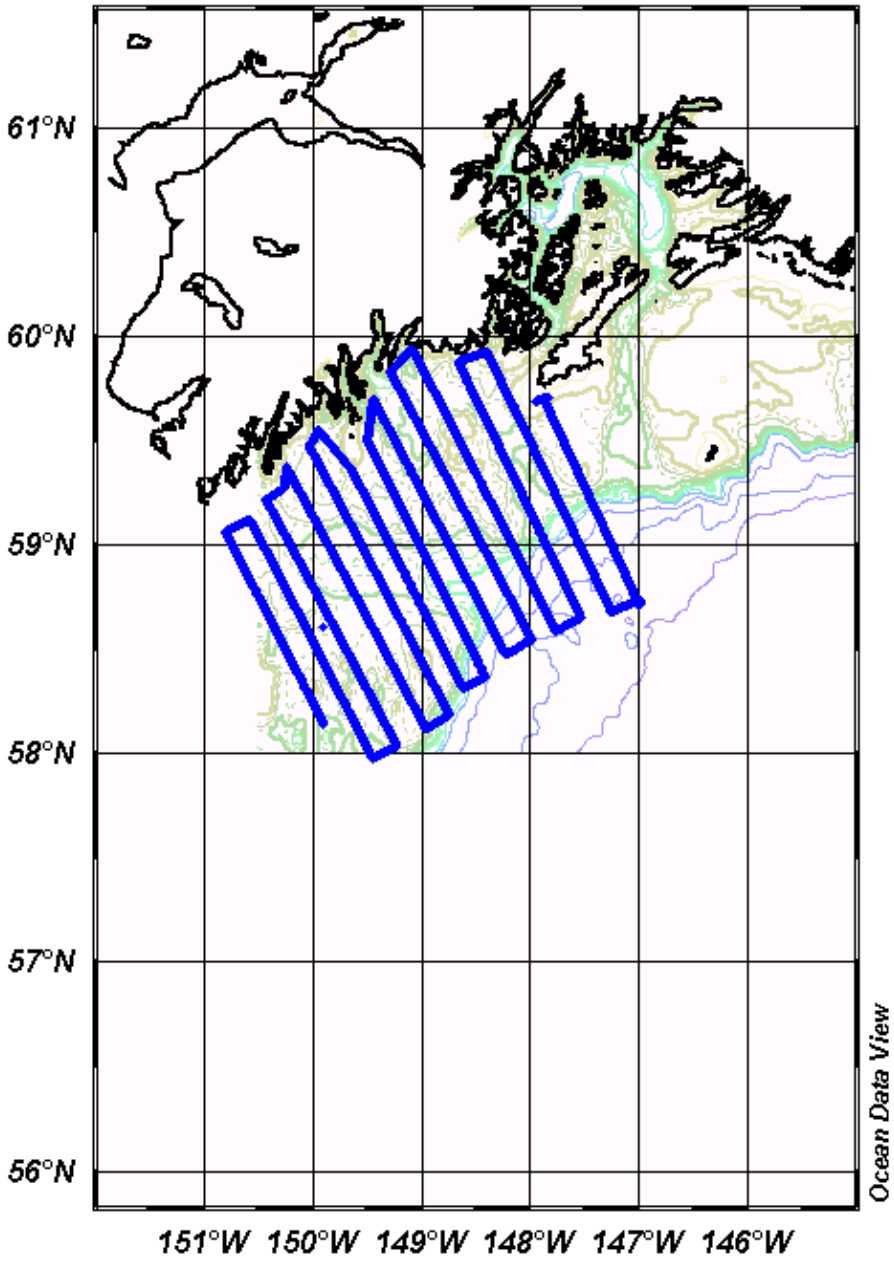
offshore

120 meters

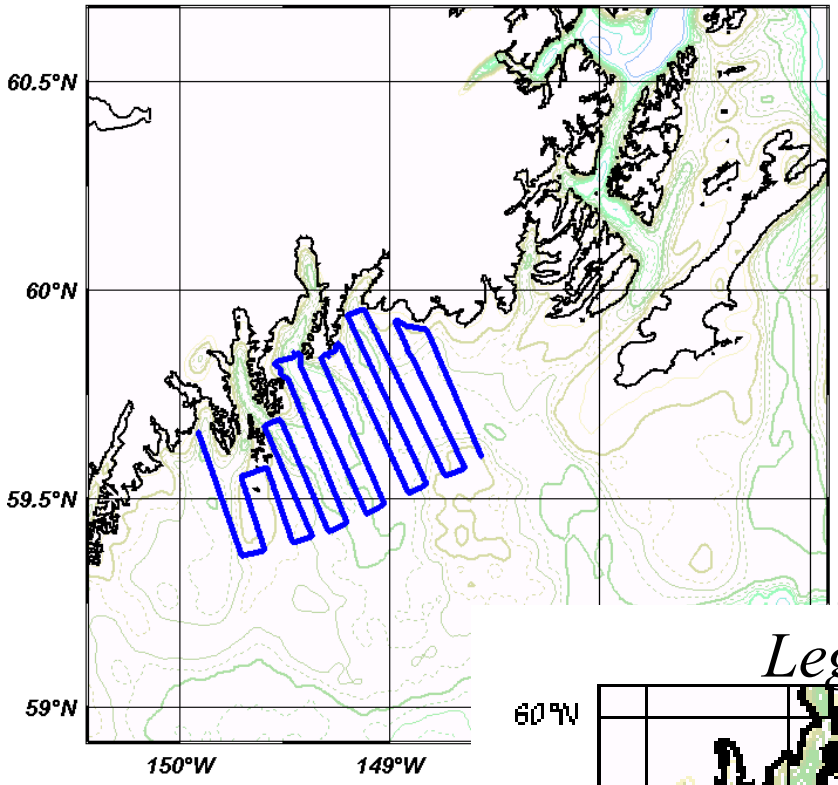


Survey Grids

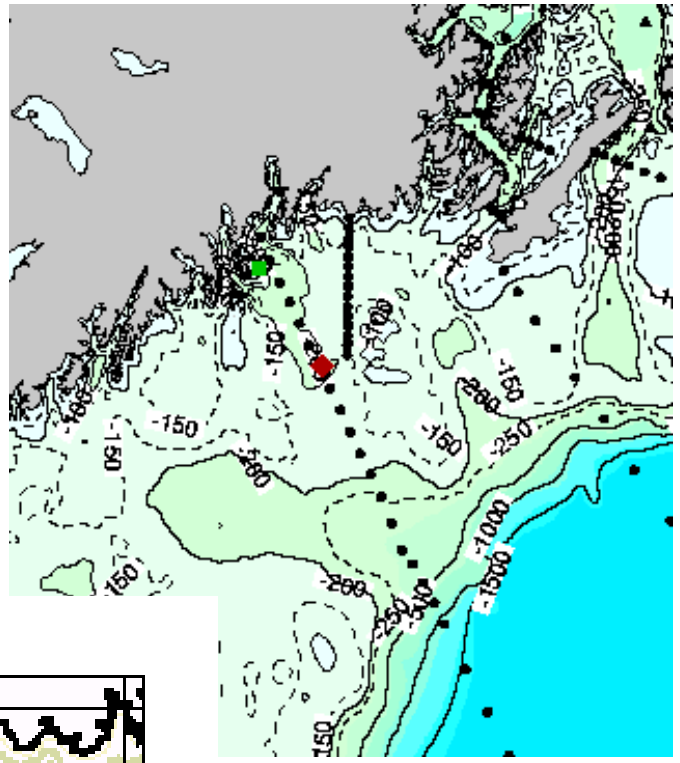
- **Finescale A**
  July 22-23
- **Mesoscale**
  July 24-31
- **Finescale B**
  August 2-3
- **Finescale C**
  August 4-5
- **Eddy**
  August 6-8
- **Finescale AII**
  August 9-11



Finescale A Survey

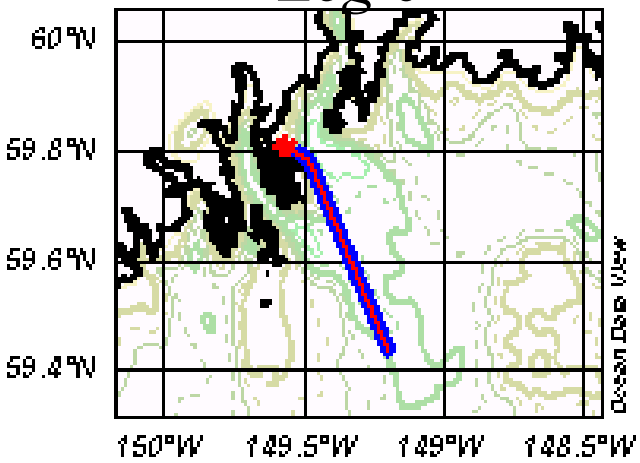


Finescale A: inner shelf



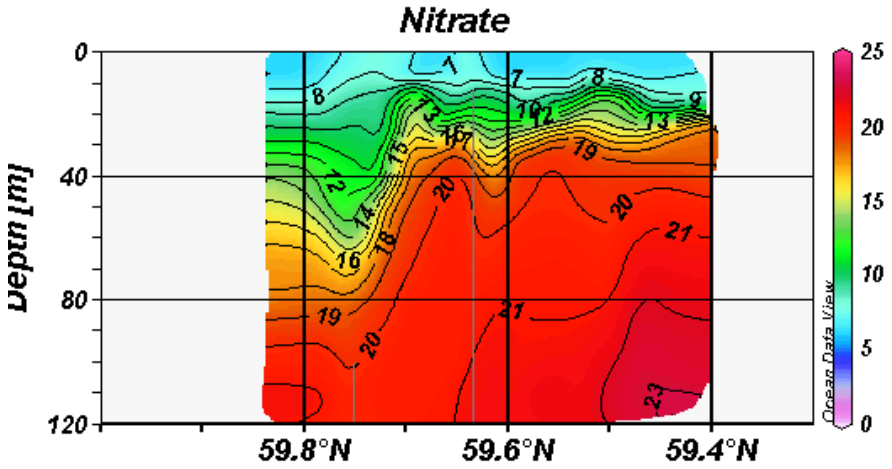
Seward Line: LTOP

Leg 6

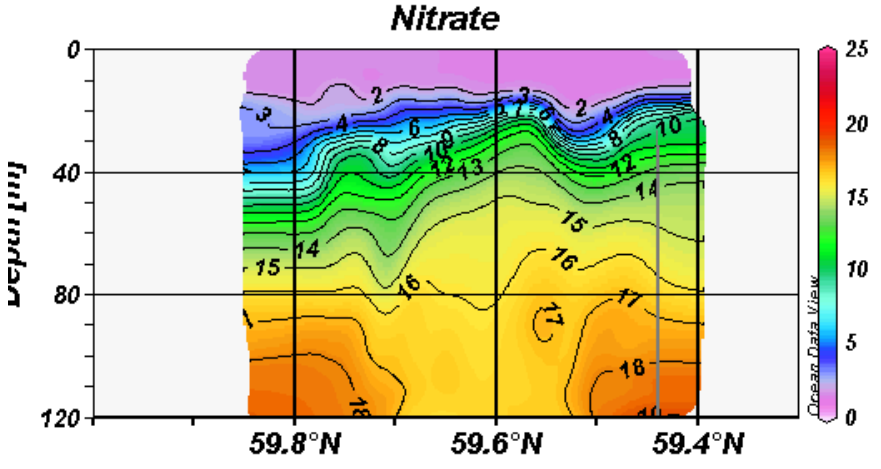


Finescale A: Inner Shelf

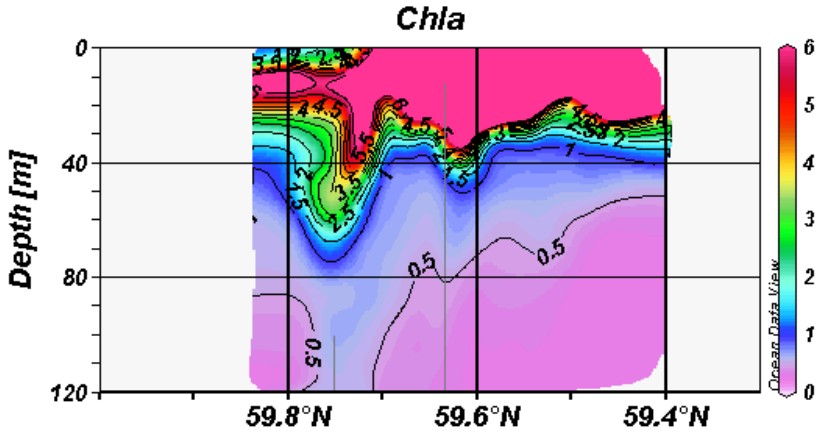
May 3, 2003



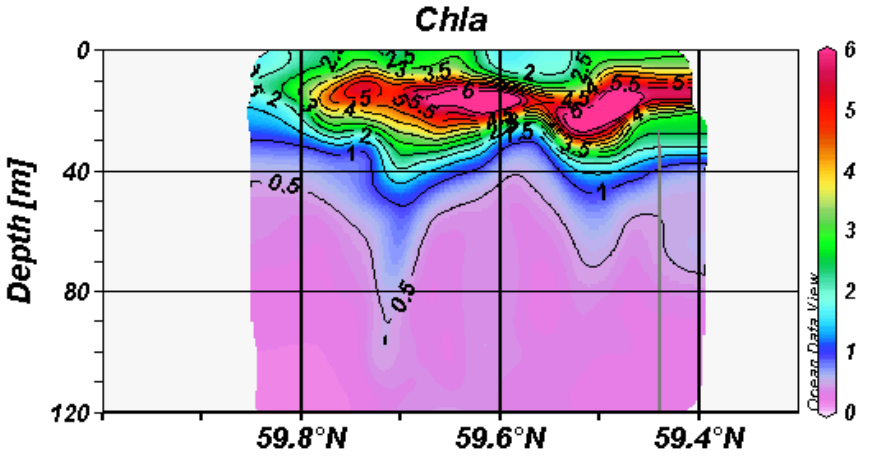
July 22, 2003



HIGH

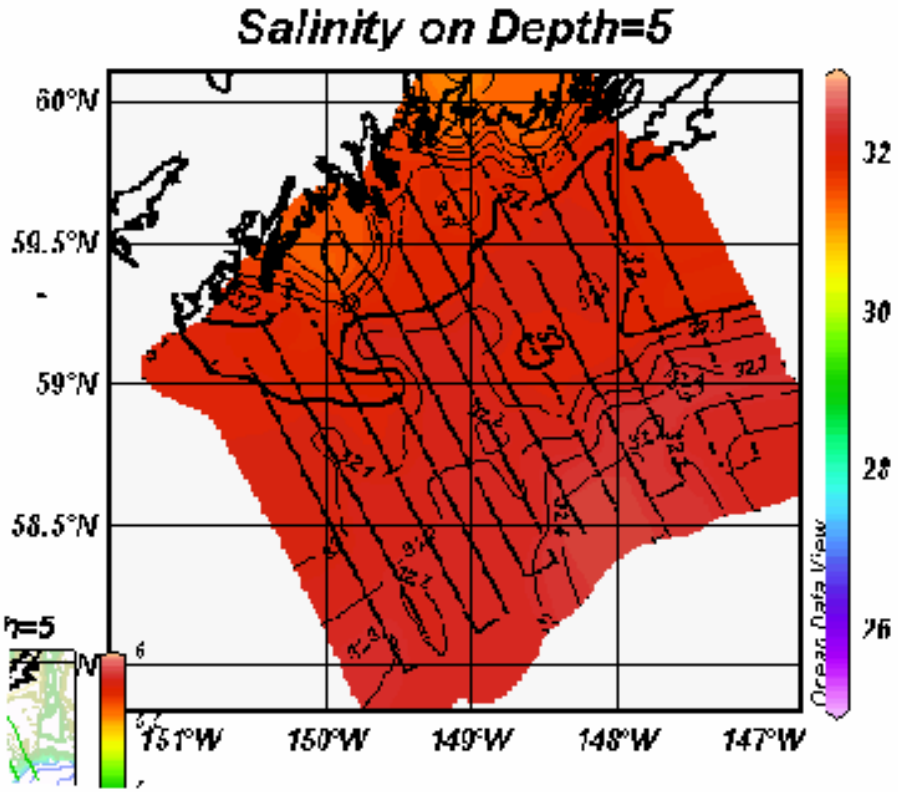


LOW



Mesoscale: Entire Shelf

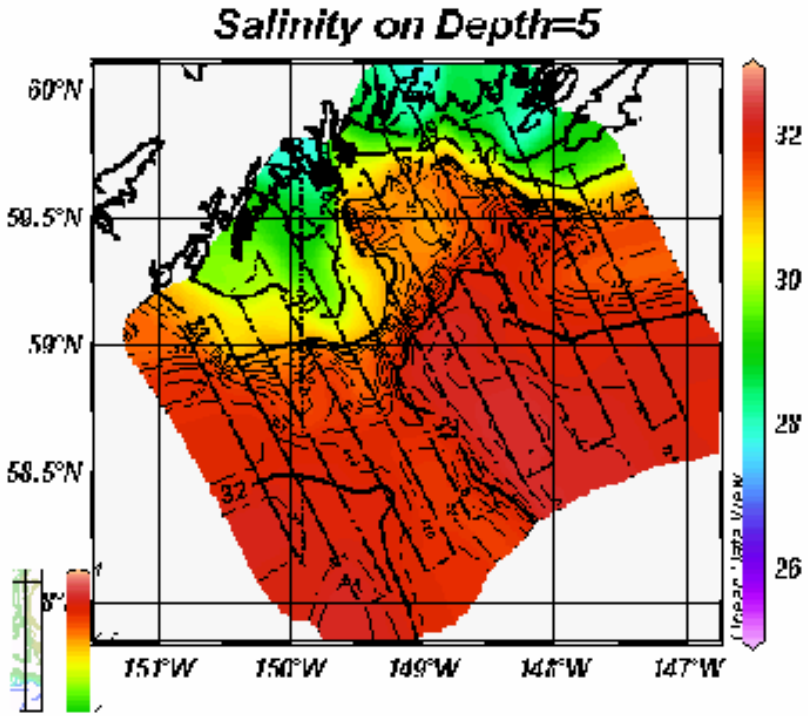
May



Why lower salinity in July?

Freshwater runoff from snowmelt

July

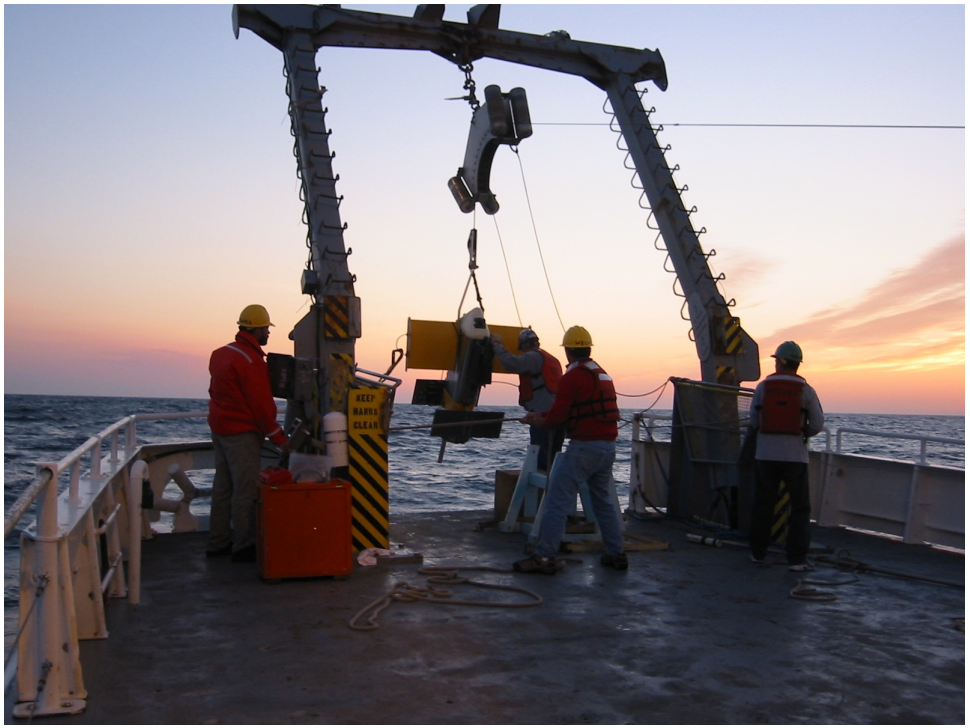


What does the pattern show?

Circulation pattern of
Alaska Coastal Current

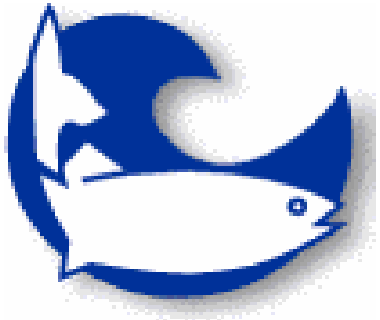
In Conclusion…

- **Seasonal progression of Mesoscale field**
  - **Alaska Coastal Current**
  - **Salinity**
  - **Nitrate**
  - **Chlorophyll**
- **Finescale shows higher resolution**
  - **Downwelling**



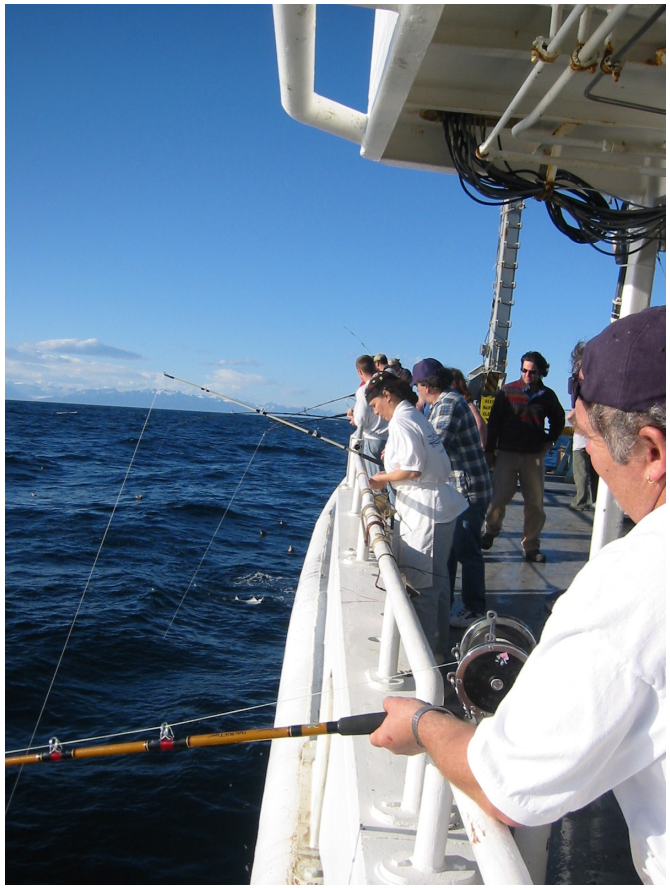
Thanks to…

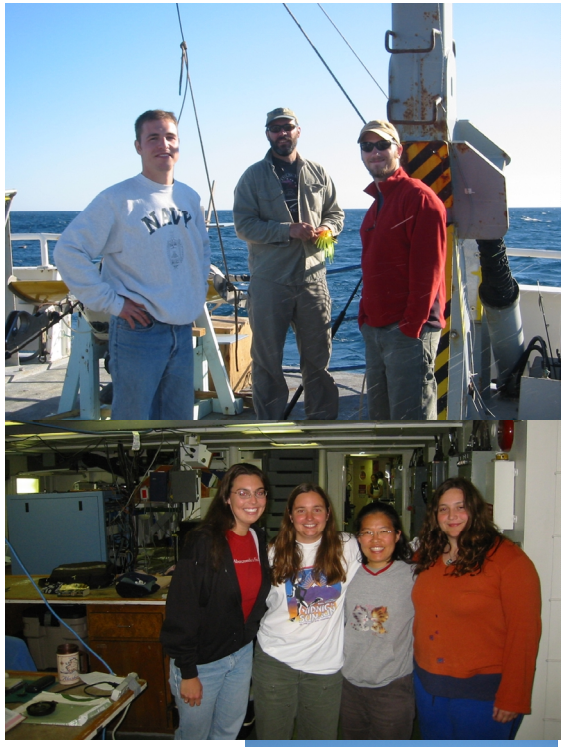
U.S. GLOBEC



And of course…

R/V Wecoma Crew





Science party

Take home message:

- Look around to find an area of interest
- Talk to your advisors!
- Ask about research opportunities
- Try new things!

- http://globec.oce.orst.edu/groups/nep/
- http://salmonproject.org