

SEASONAL TO MESOSCALE VARIABILITY OF WATER MASSES AND ATMOSPHERIC FORCING IN BARROW CANYON, CHUKCHI SEA

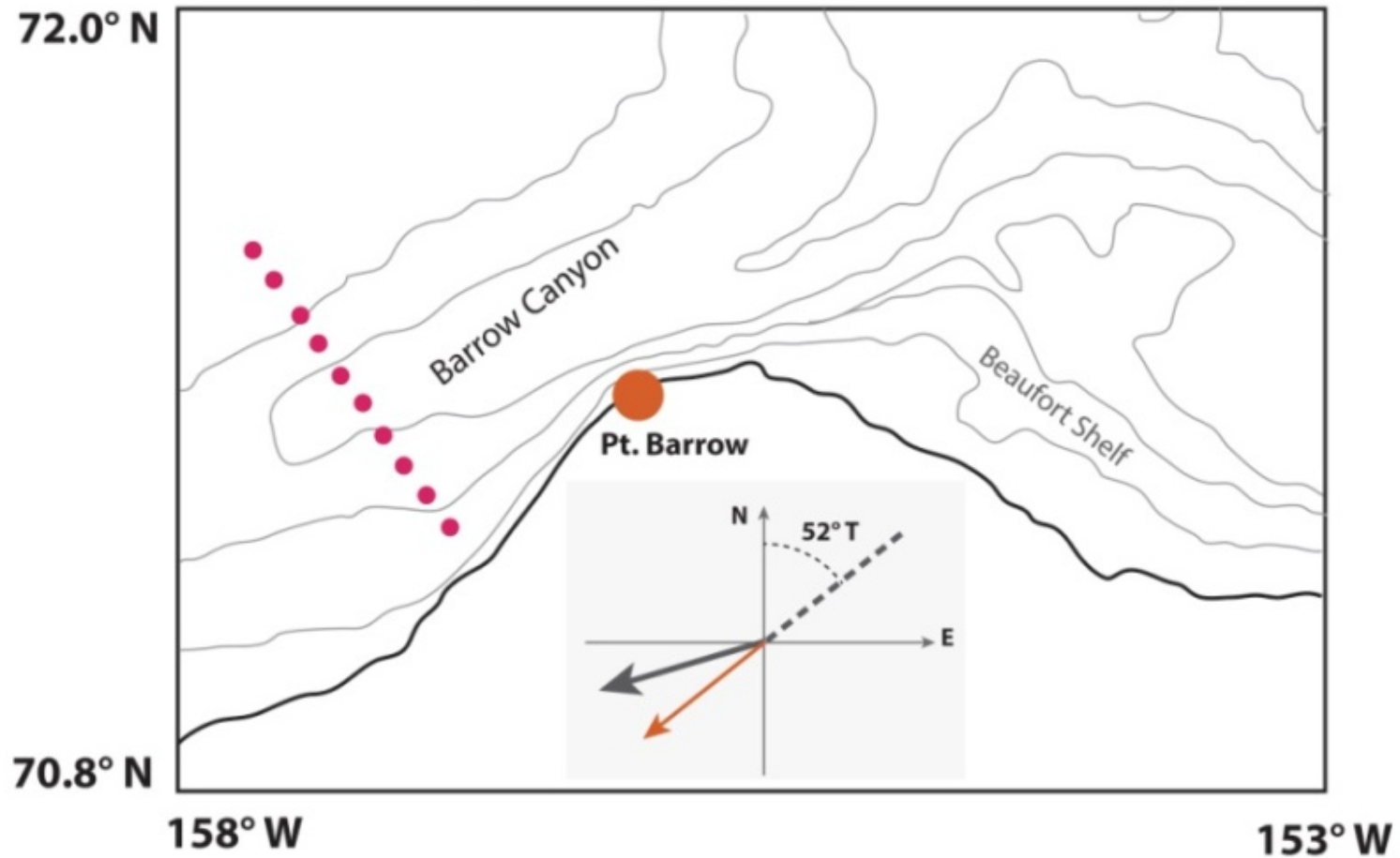
Carolina Nobre, Robert Pickart, Kevin Arrigo,
Carin Ashjian, Catherine Berchok, Lee
Cooper, Jacqueline Grebmeier, Ian Hartwell,
Jiangheng He, Motoyo Itoh, Takashi Kikuchi,
Kent Moore, Phyllis Stabeno, Svein Vagle

Outline

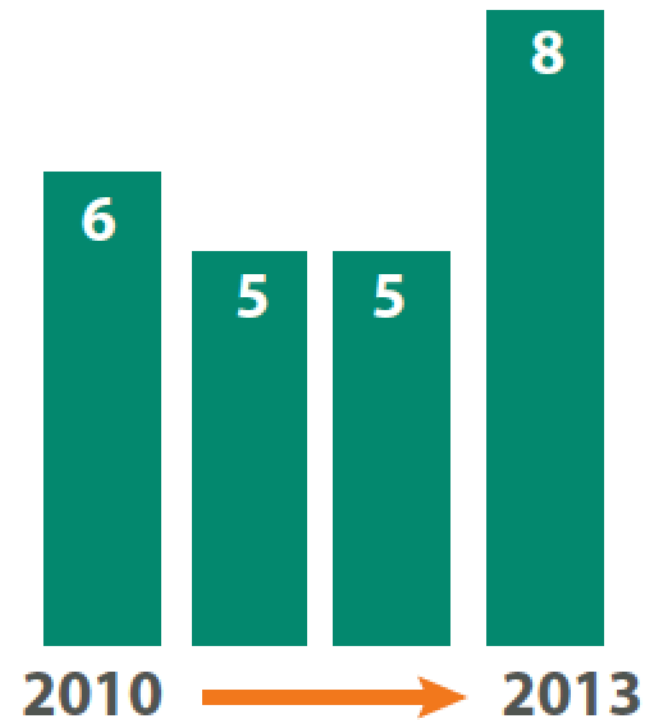
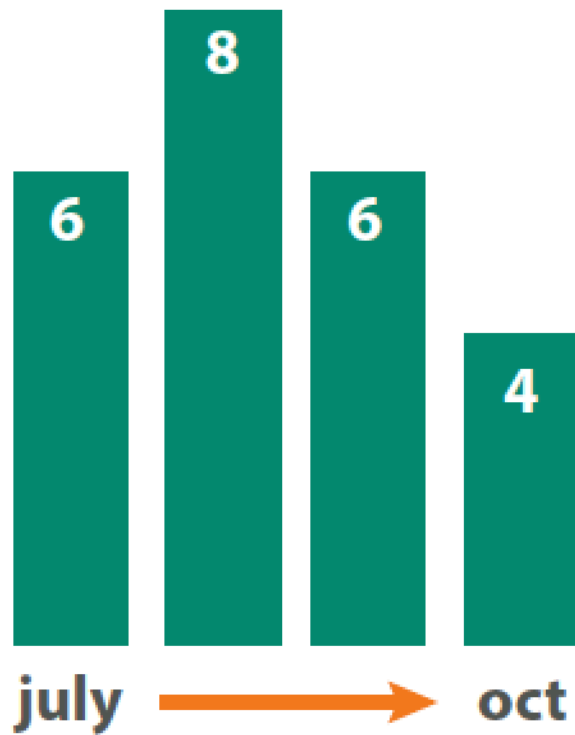
- Introduction and Data Coverage
- Seasonal Evolution of Water Masses
- Upwelling Events
- Atmospheric Forcing

Study Area

Barrow Canyon Station Positions and Wind Data



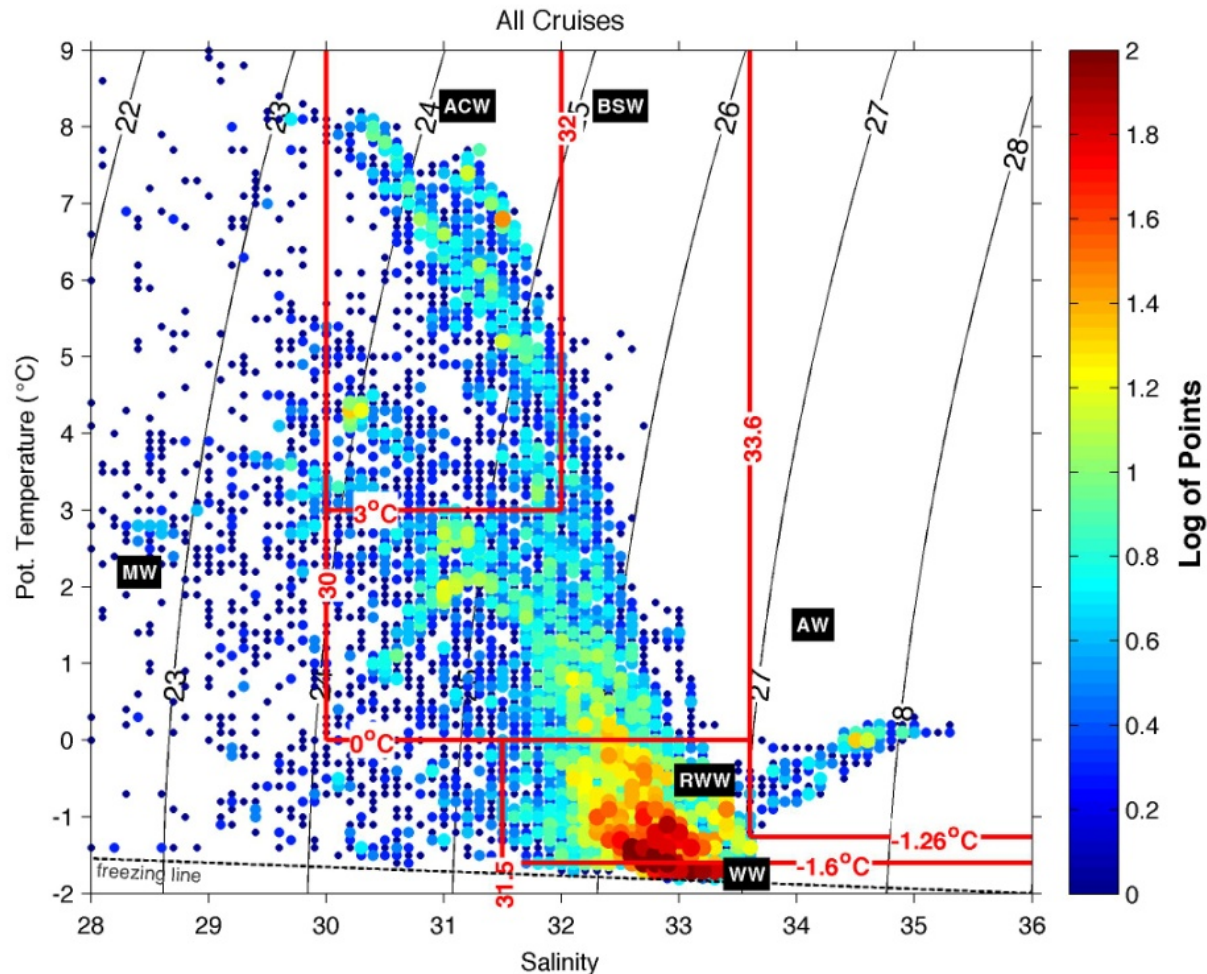
Data Coverage



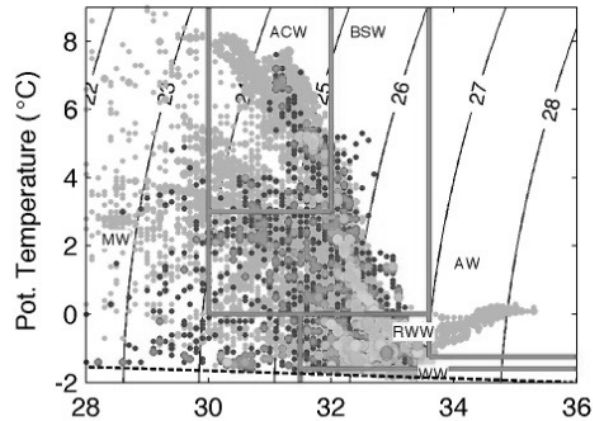
Objectives

- Quantify the seasonal evolution of the water masses
- Determine the nature of the mesoscale variability.
- Investigate atmospheric forcing of upwelling events

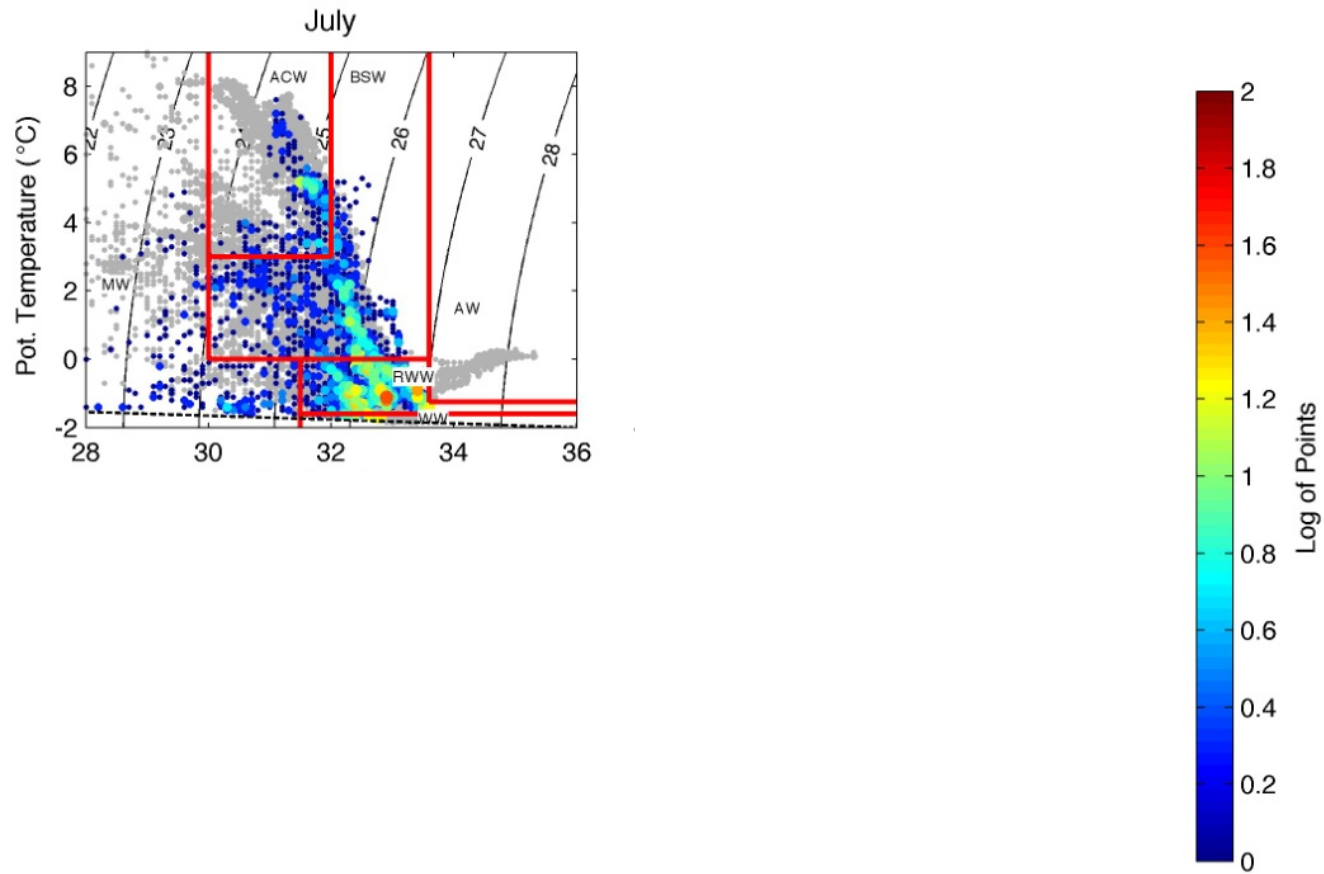
Seasonal Evolution of Water Masses



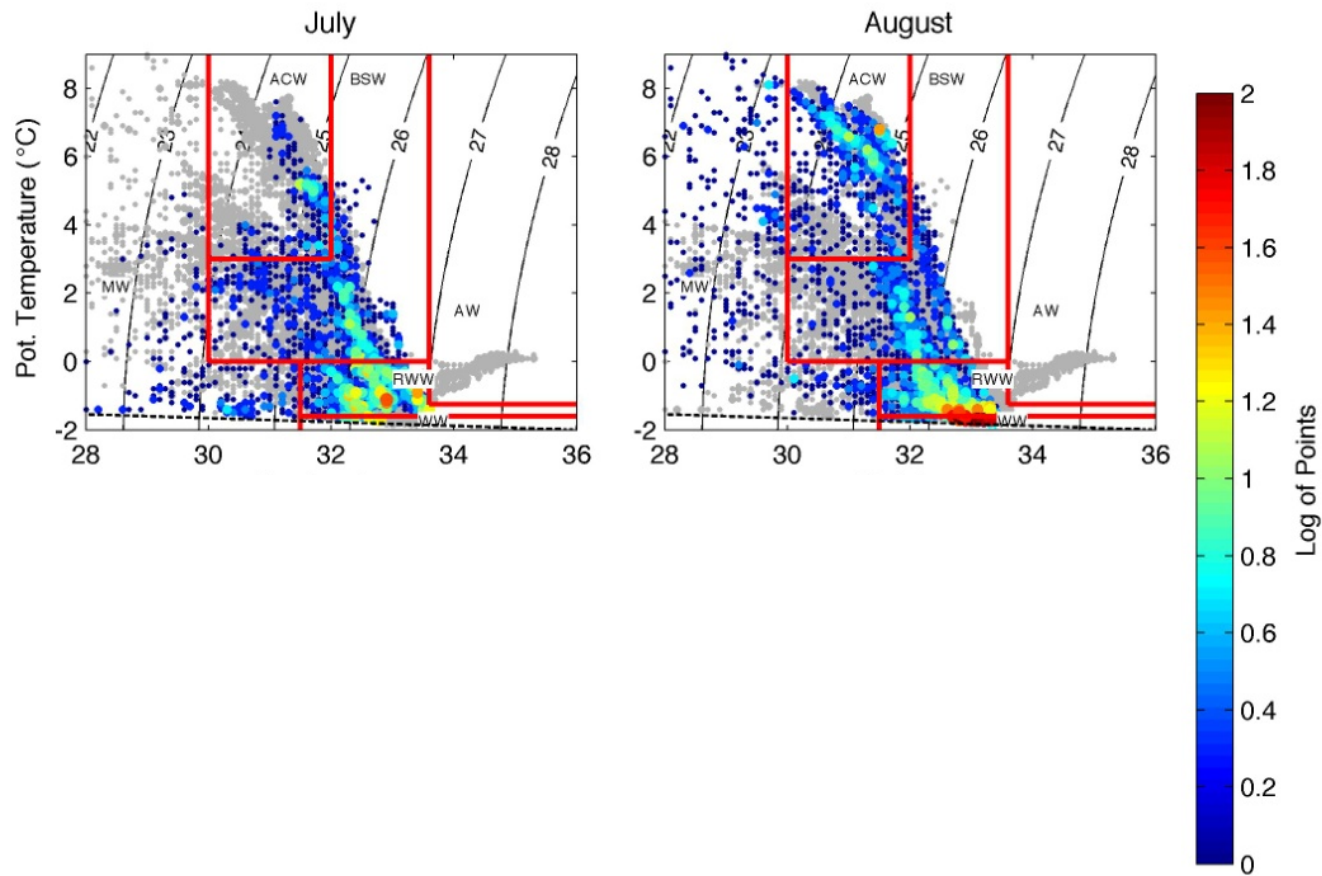
Seasonal Evolution of Water Masses



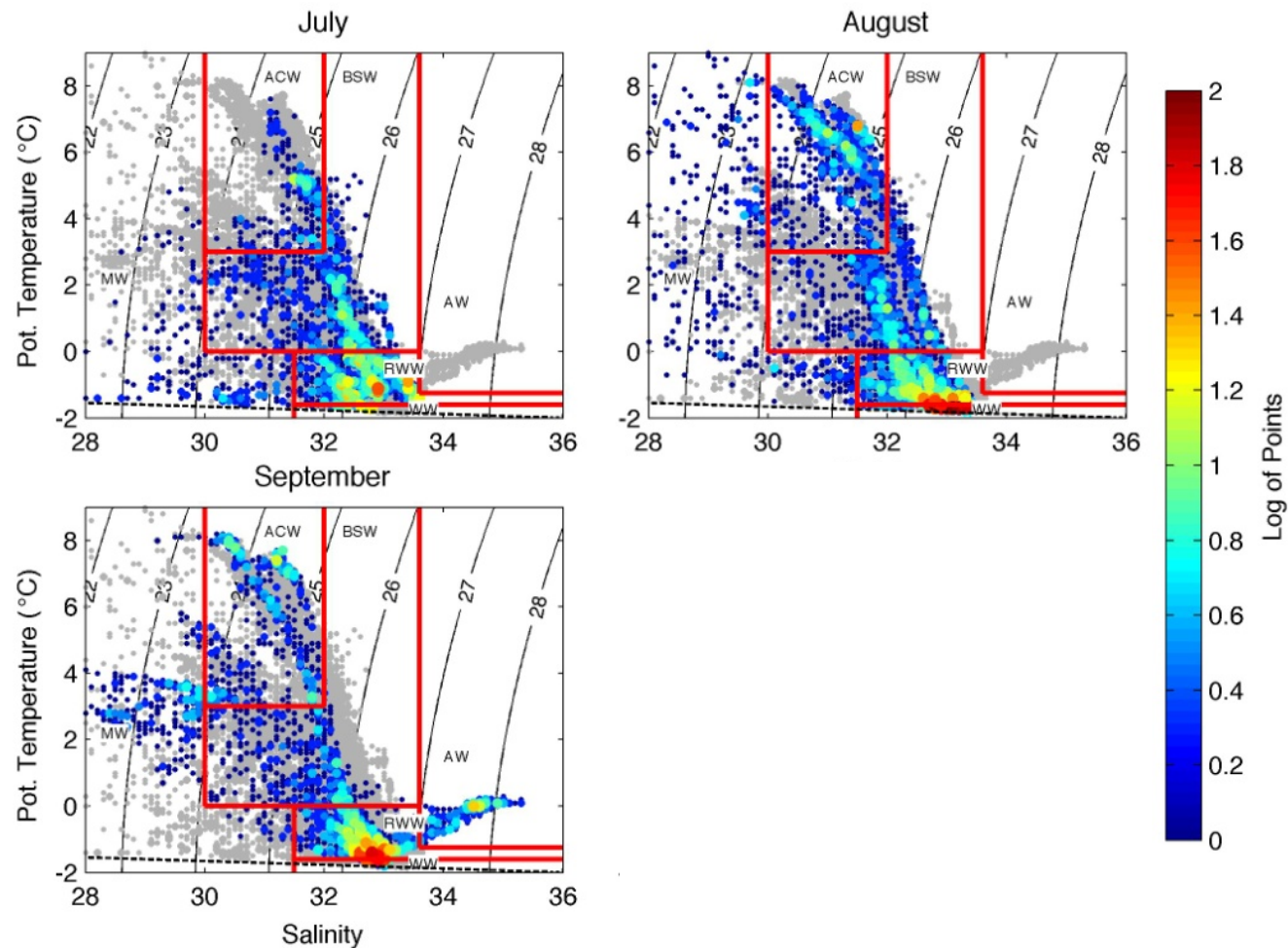
Seasonal Evolution of Water Masses



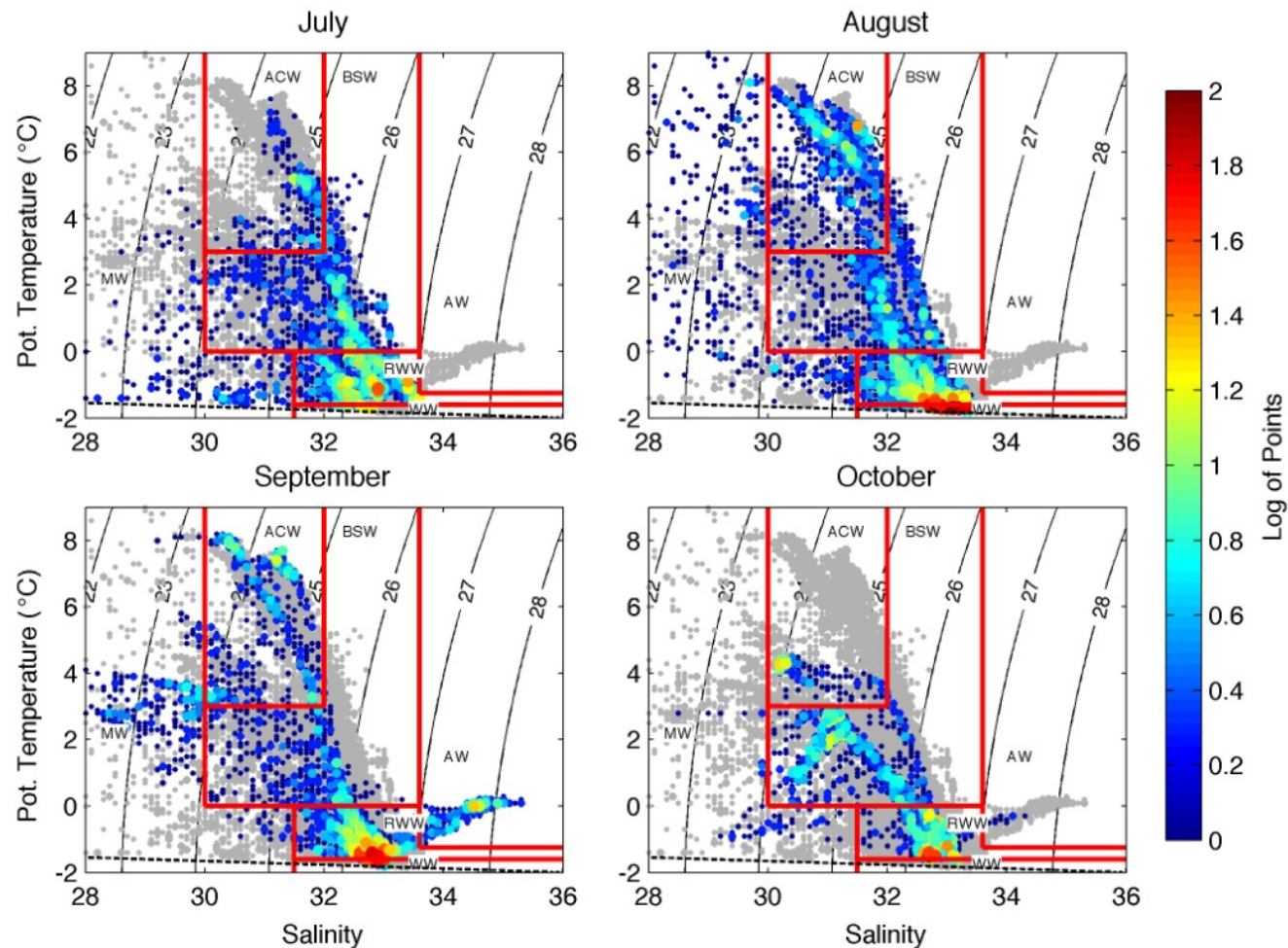
Seasonal Evolution of Water Masses



Seasonal Evolution of Water Masses

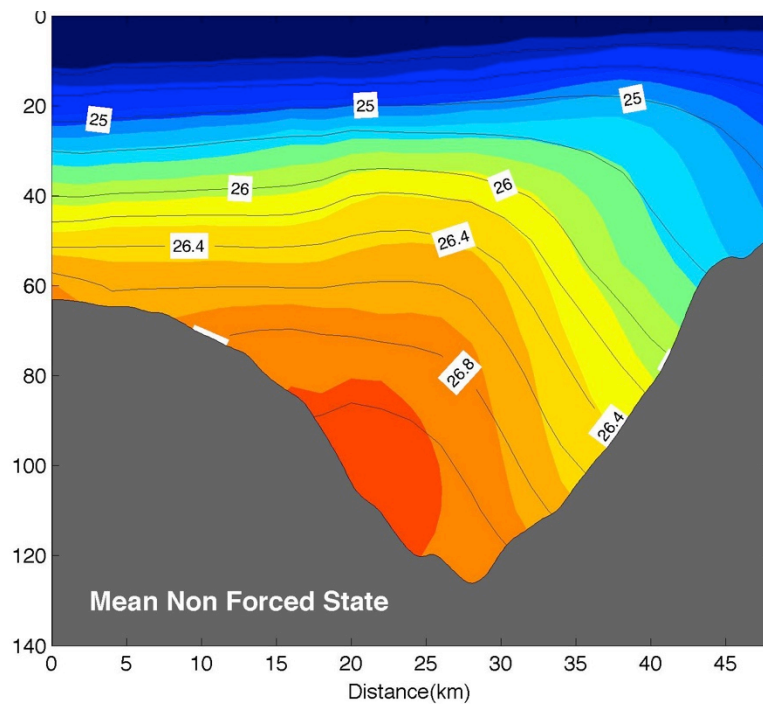


Seasonal Evolution of Water Masses



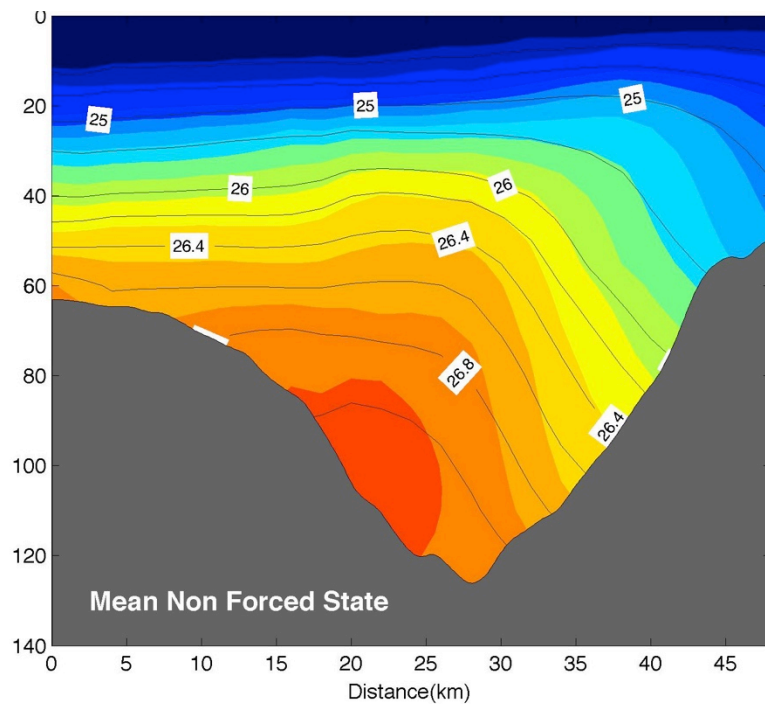
Upwelling Events

Mean unforced salinity

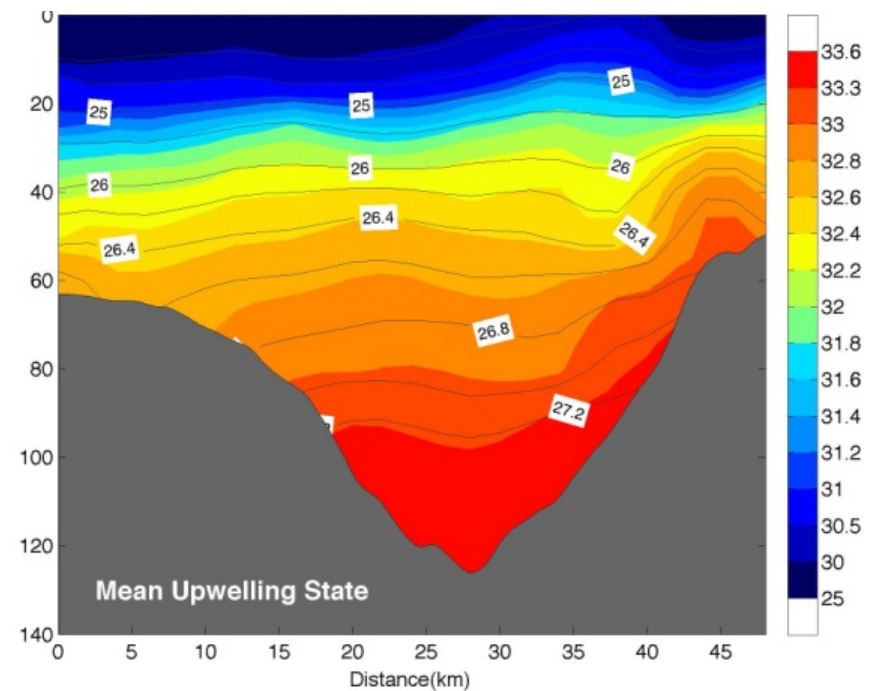


Upwelling Events

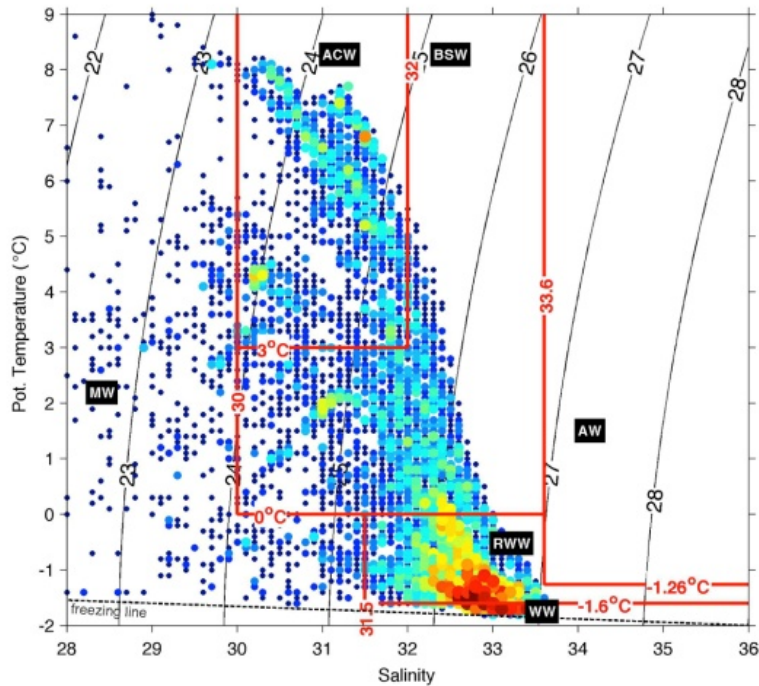
Mean unforced salinity



Mean upwelling salinity

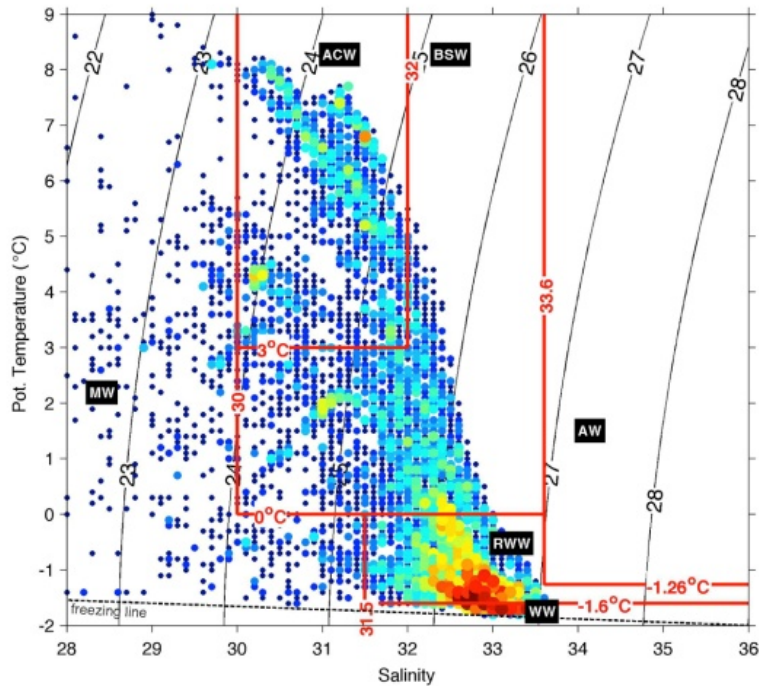


Upwelling Events

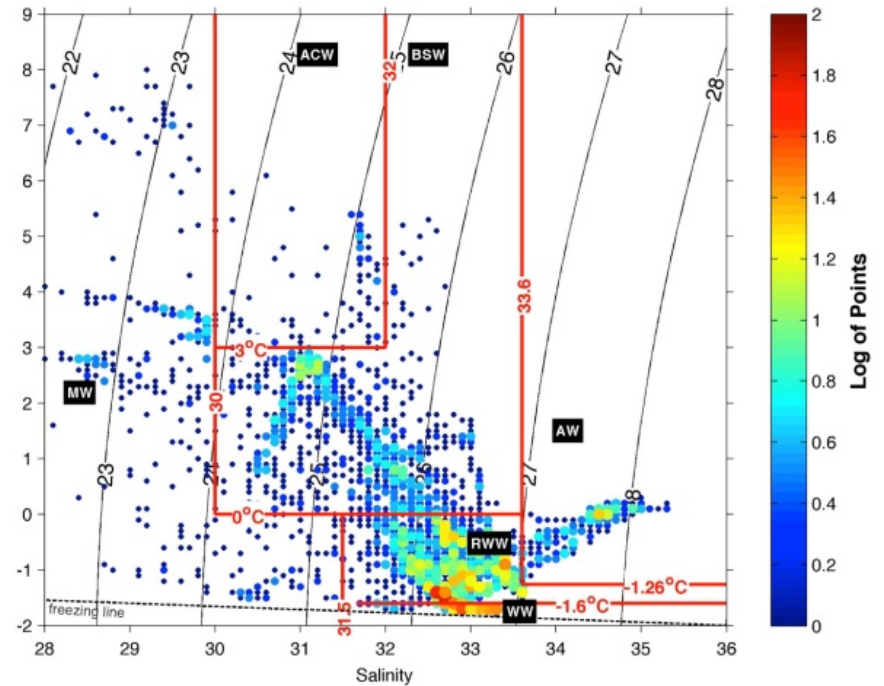


Non Forced Sections

Upwelling Events

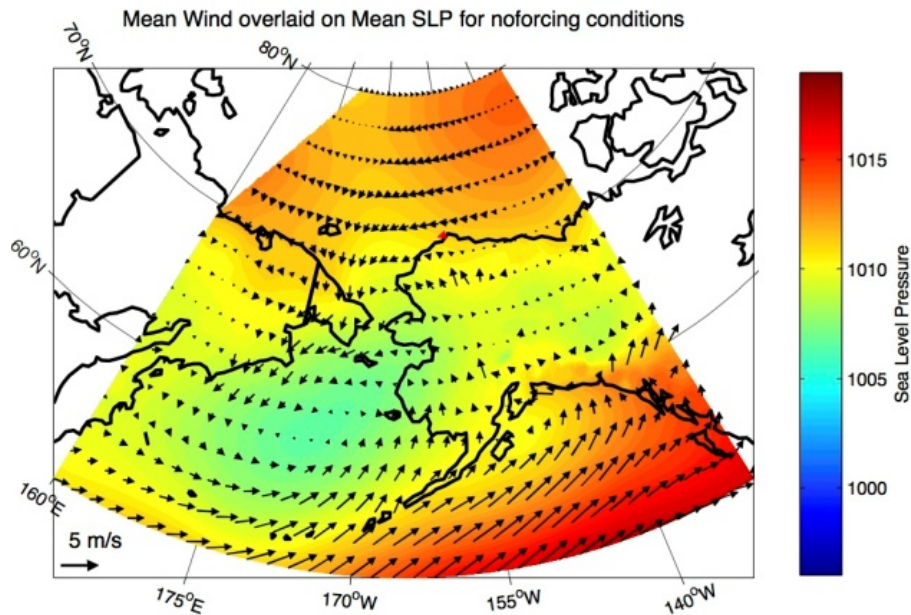


Non Forced Sections



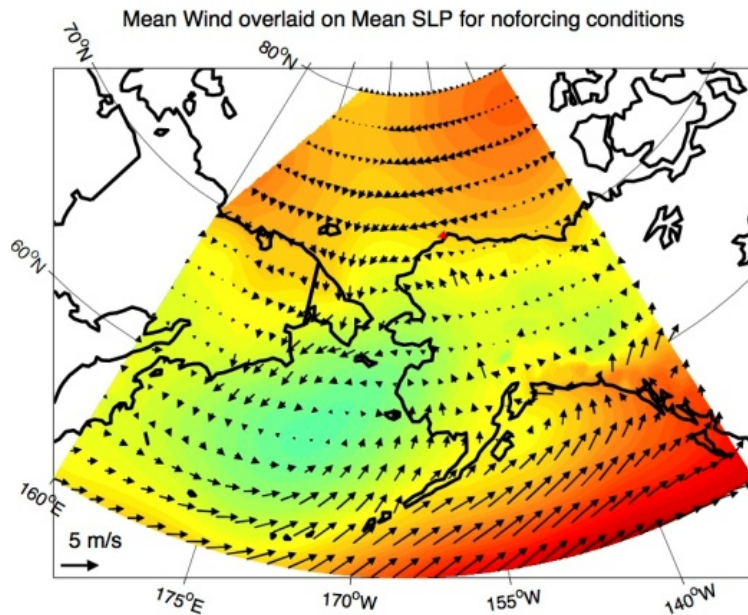
Upwelling Sections

Atmospheric Forcing

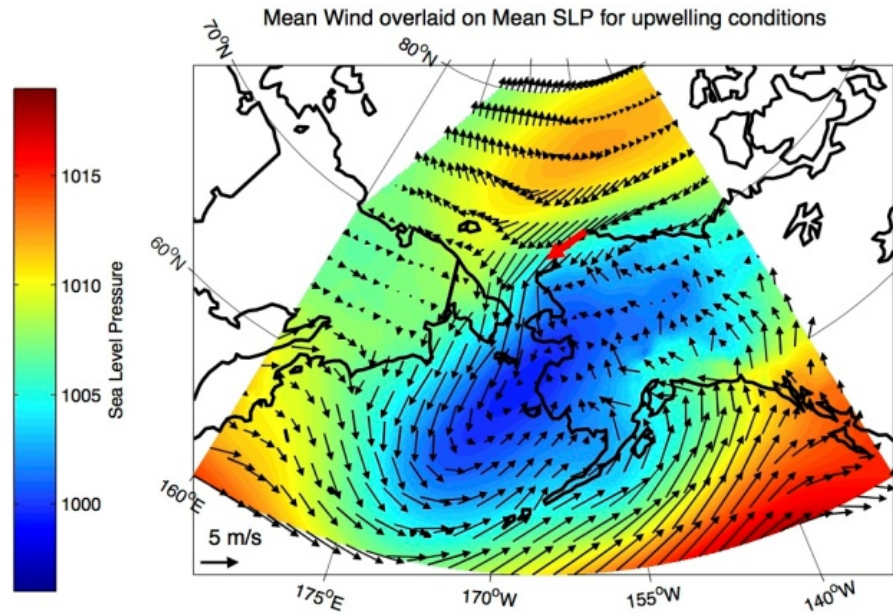


Non Forced Sections

Atmospheric Forcing

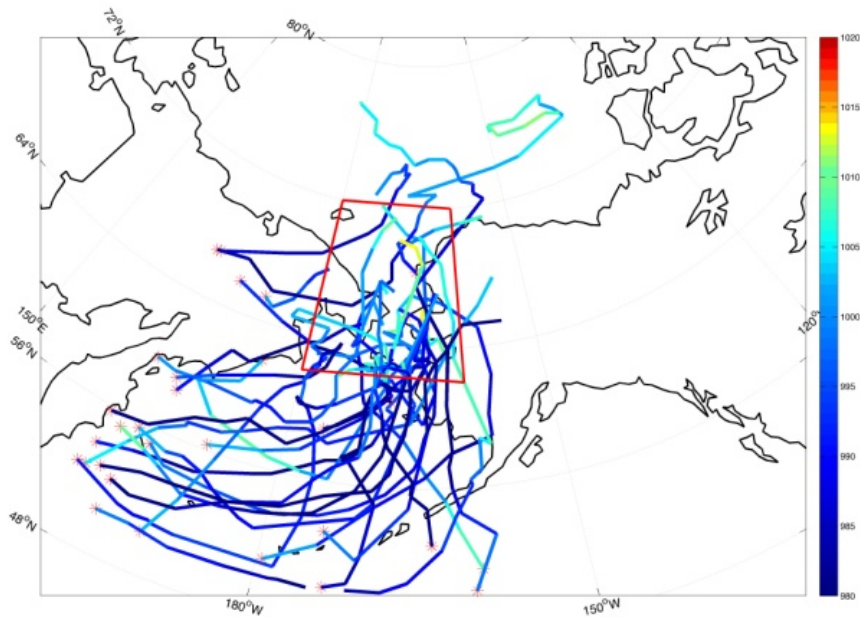


Non Forced Sections

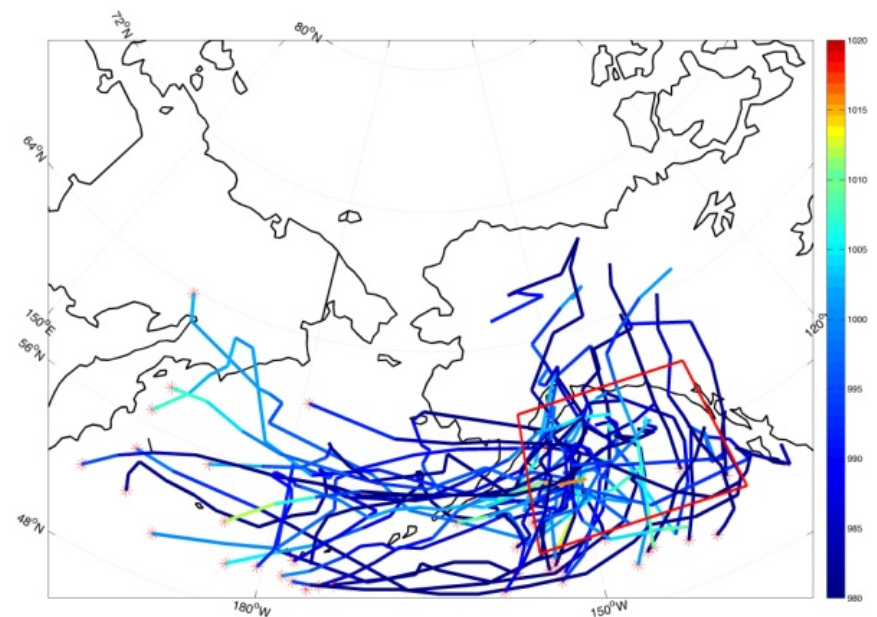


Upwelling Sections

Storm Tracking



Mode 1



Mode 2

Conclusions

- There is pronounced seasonal variability in the water masses passing through Barrow Canyon, with Pacific Winter Water being the most prevalent water mass throughout the summer.
- All upwelling events were characterized by the presence of Atlantic water in the deep part of the canyon and decreased amounts of Alaskan Coastal water.
- The strongest upwelling events occurred in September.
- Upwelling is associated with a deepened Aleutian Low that extends farther to the northeast, likely associated with a preferred storm track that progresses into the Bering Sea.