On the nature of upwelling in Barrow Canyon

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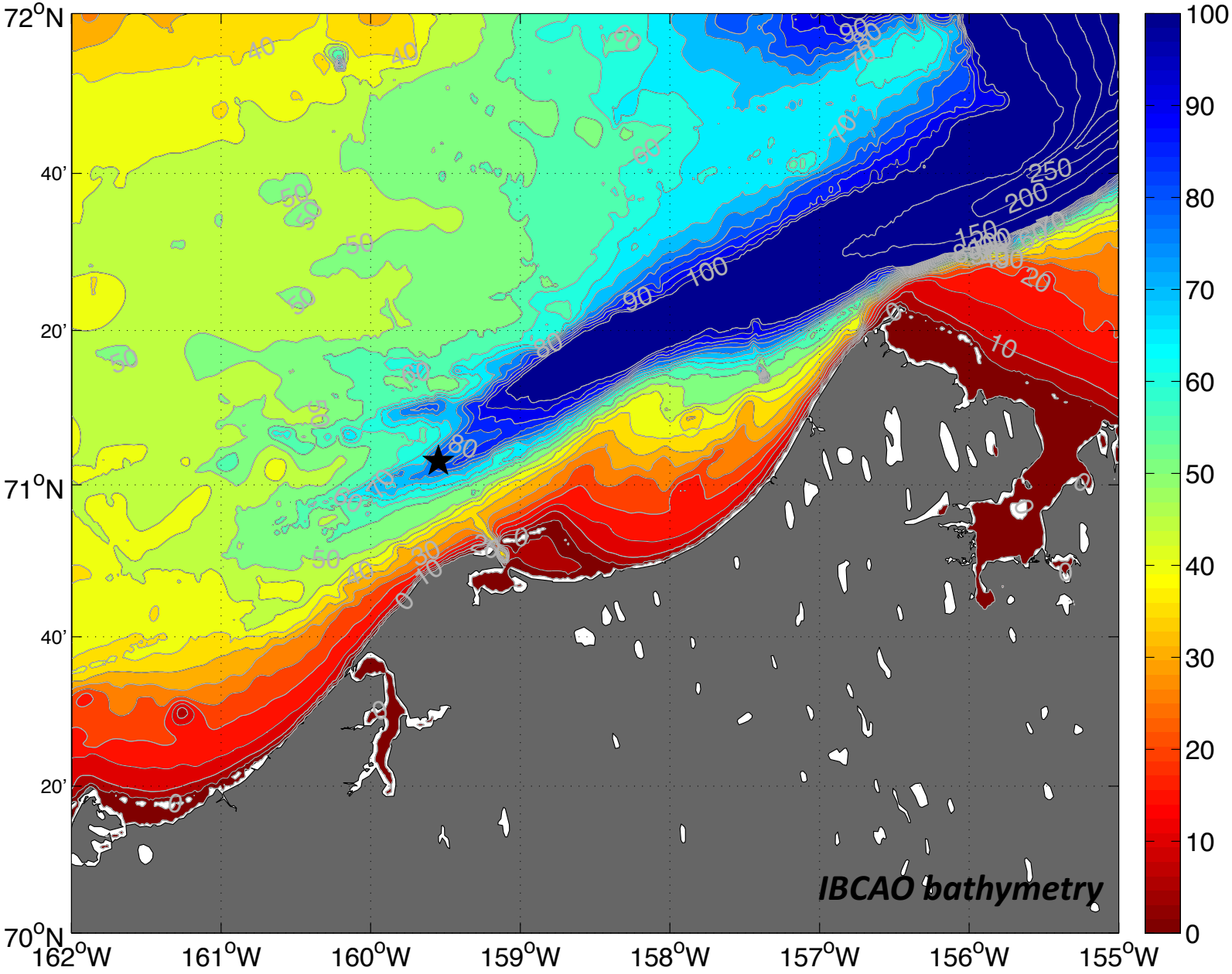
Outline of the study

- Mean state at the head of Barrow Canyon during the study period and seasonal variability (water masses and currents)

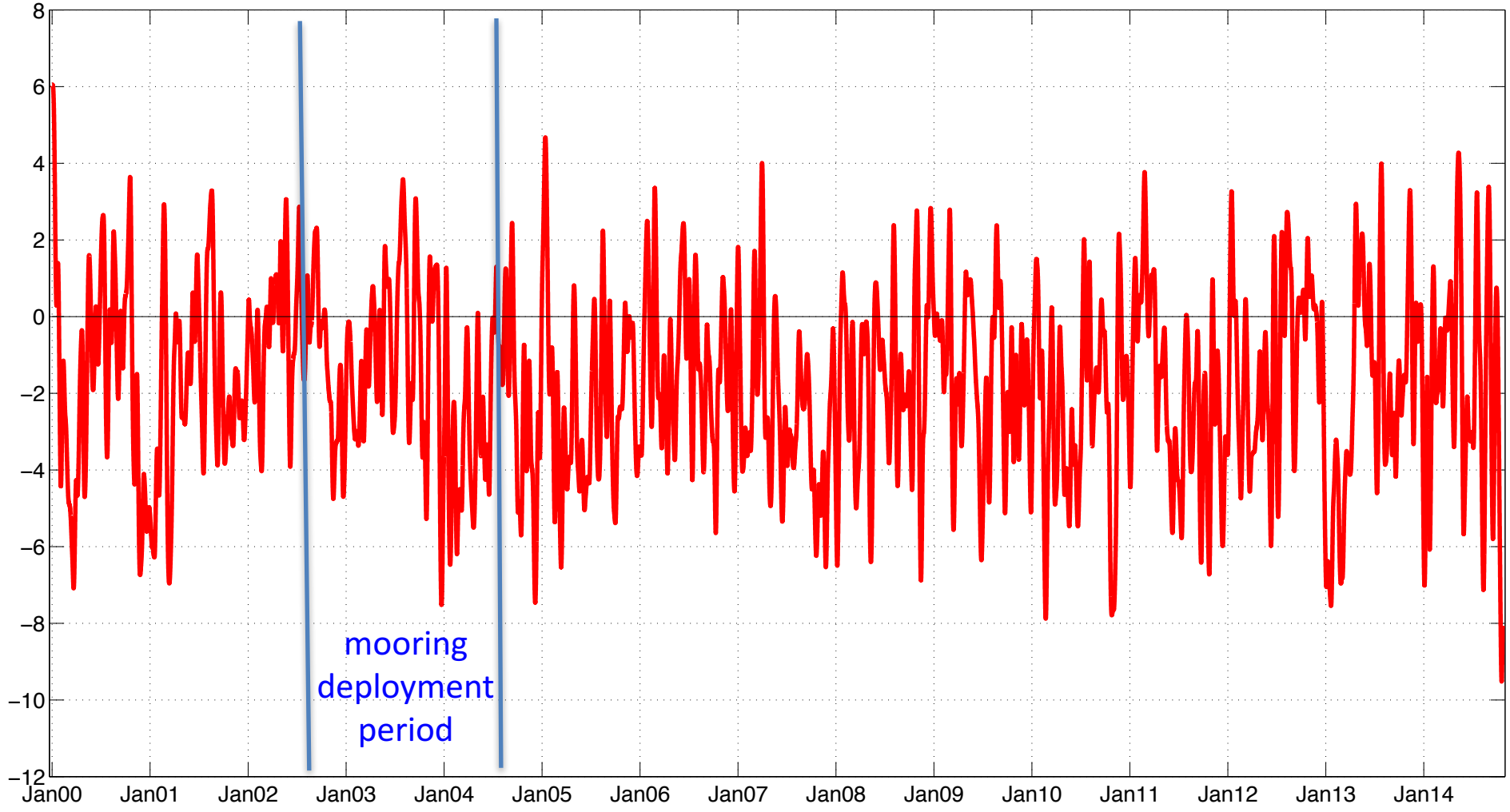
- Characteristics and trends of the upwelling events

- Atmospheric conditions associated with the observed upwelling through the course of the year

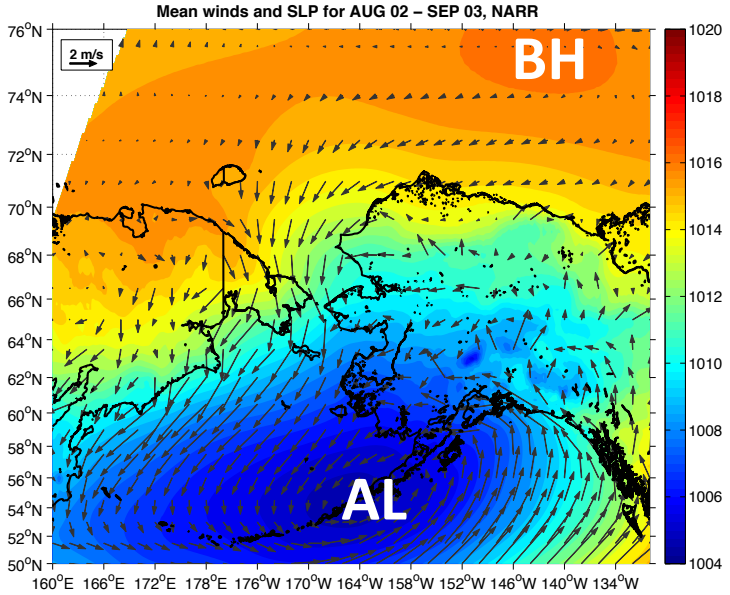
Two years of SBI mooring data (Sep 2002 – Sep 2004) are being used to investigate the nature of the upwelling at the head of Barrow Canyon

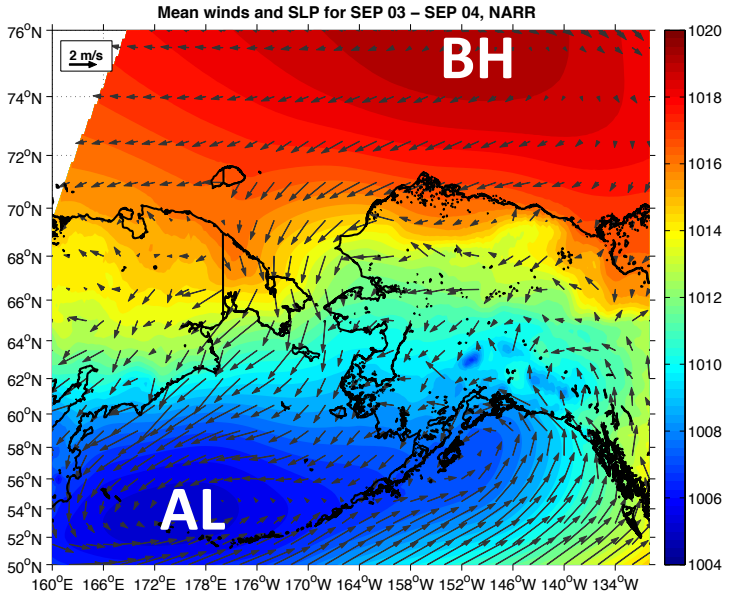


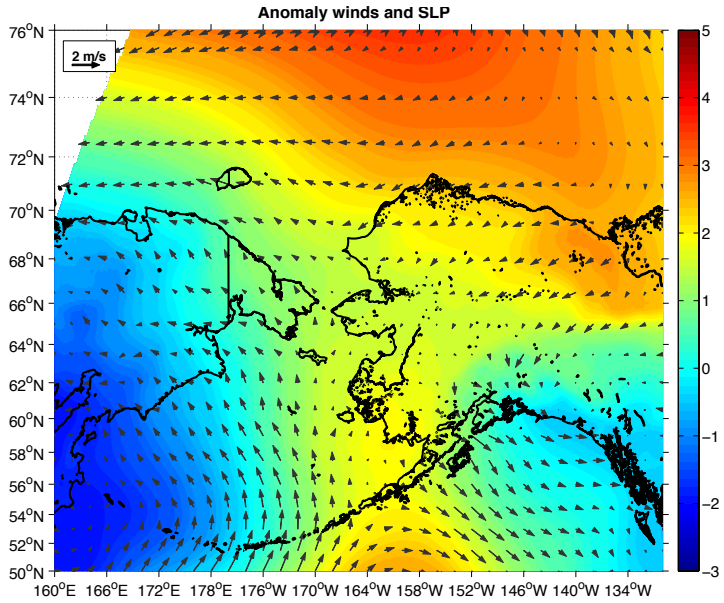
Along-canyon winds at Pt. Barrow for the decade



The atmospheric forcing during two years of mooring deployments differed significantly, which led to year-to-year variability of the water masses at the site, as well as different upwelling characteristics

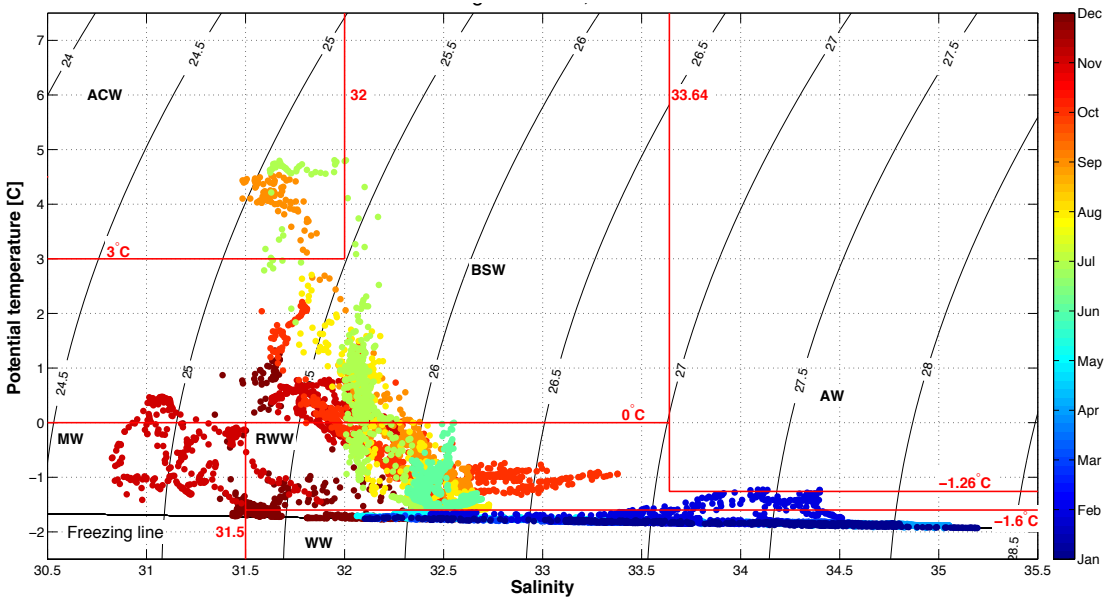




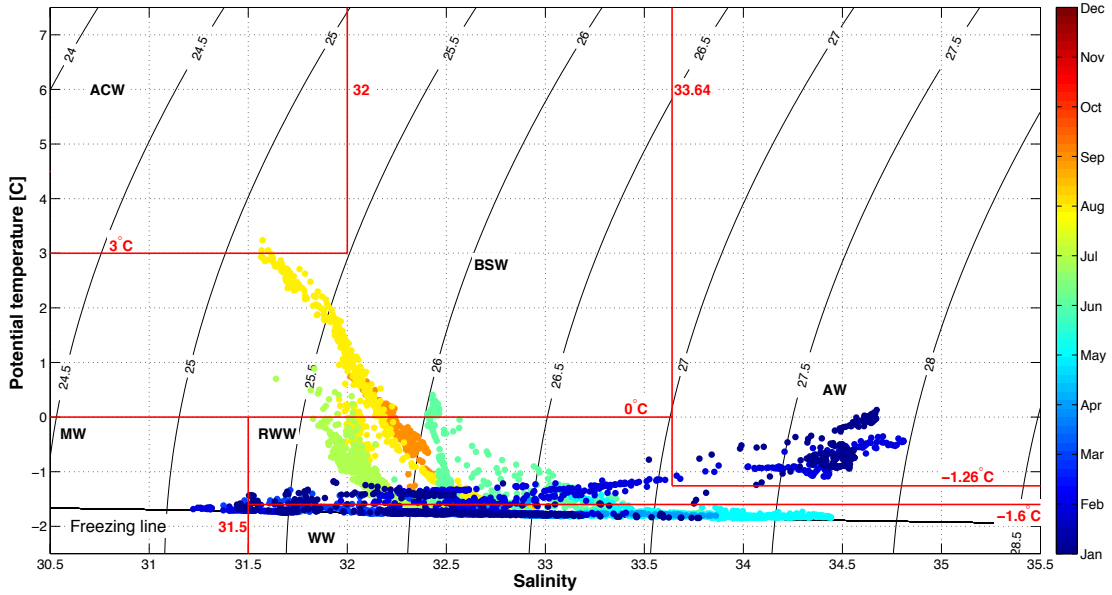


Year-to-year variability of water masses found at the head of Barrow Canyon

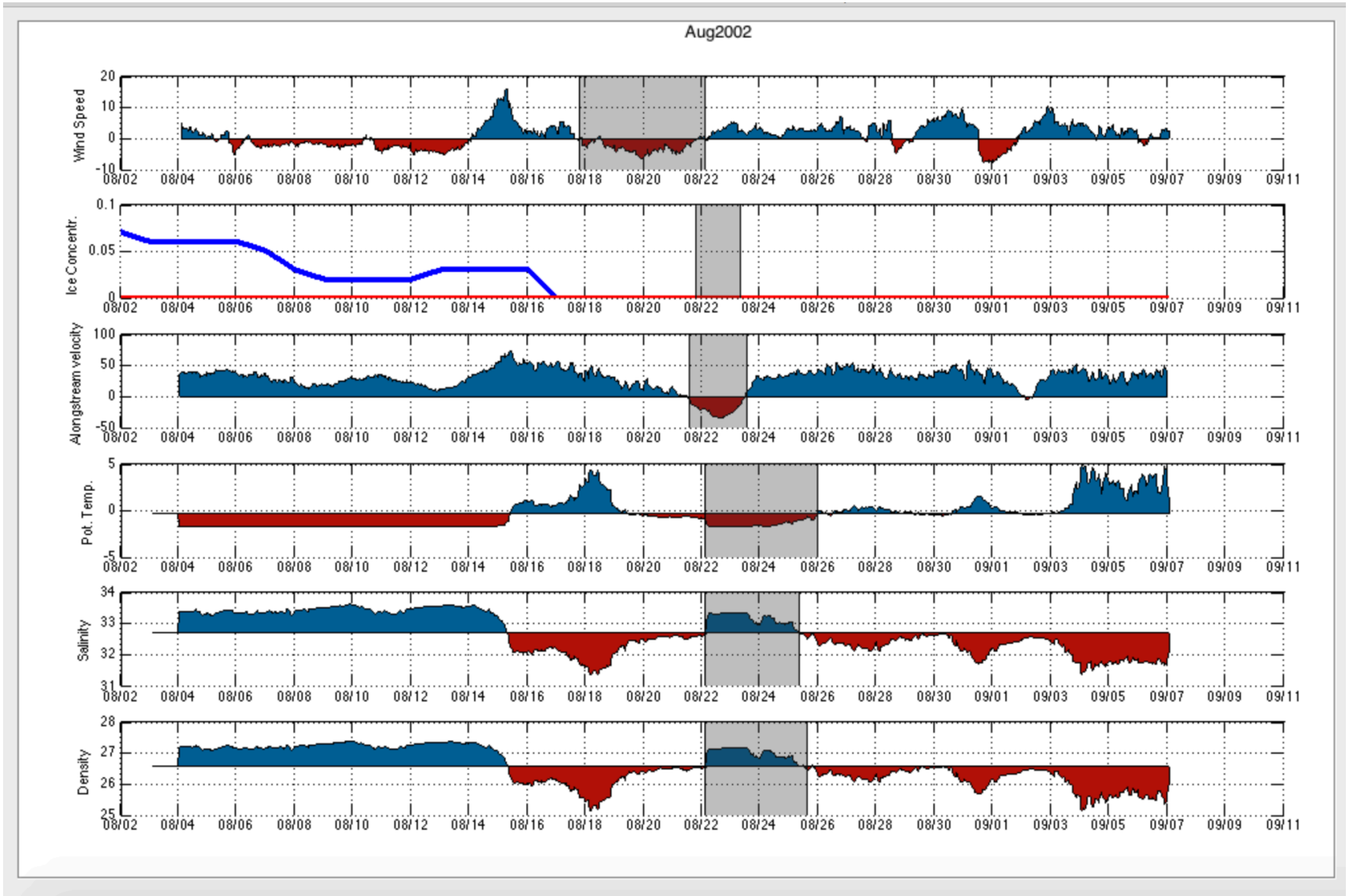
2003



2004
(ending in Sep)

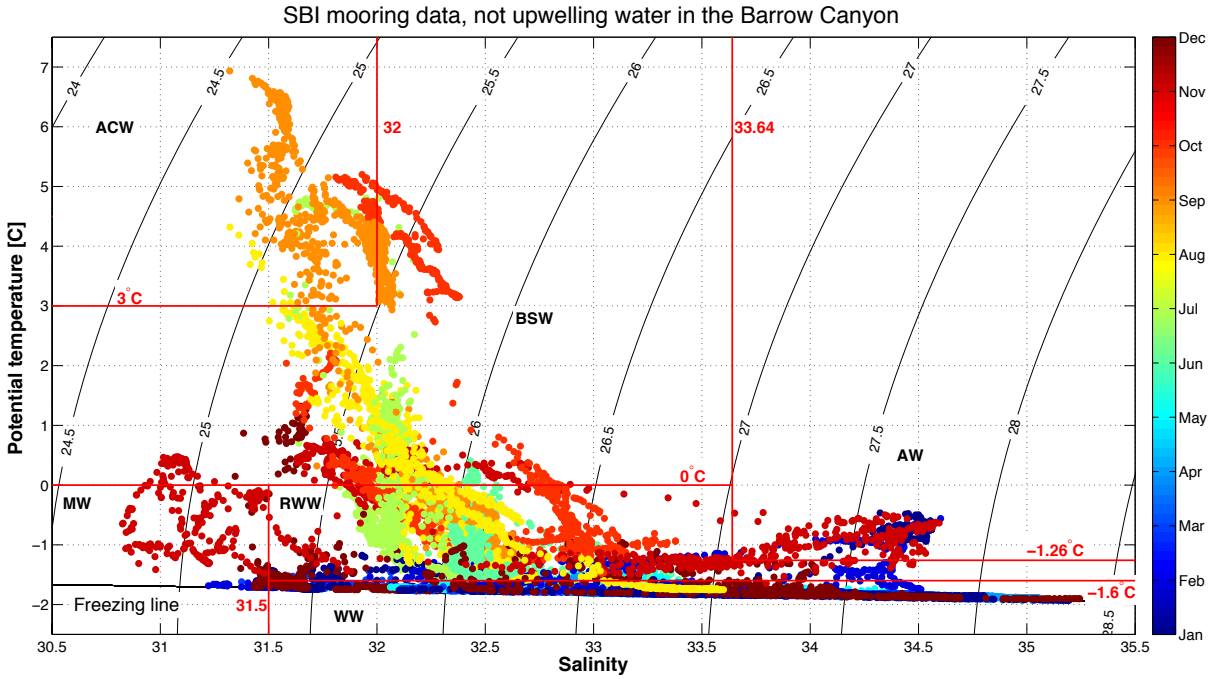


27 wind-driven upwelling events were identified based on northerly winds, flow reversal and density anomaly

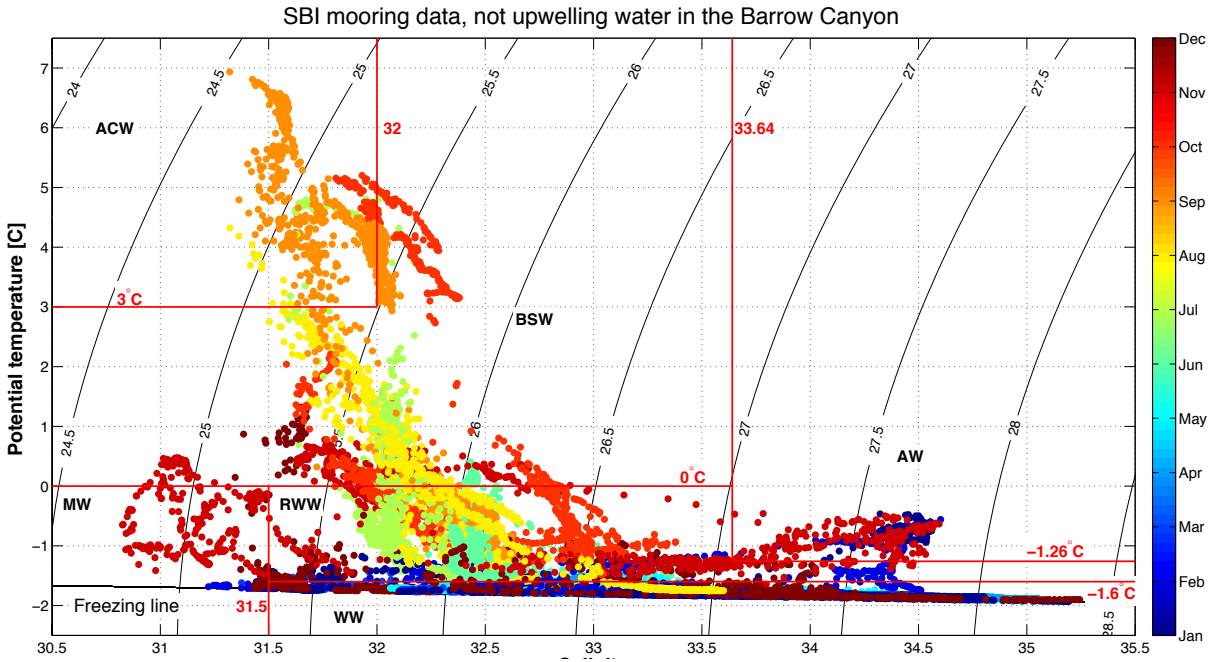


Mean duration of an upwelling event – 2 days

Non-forced TS

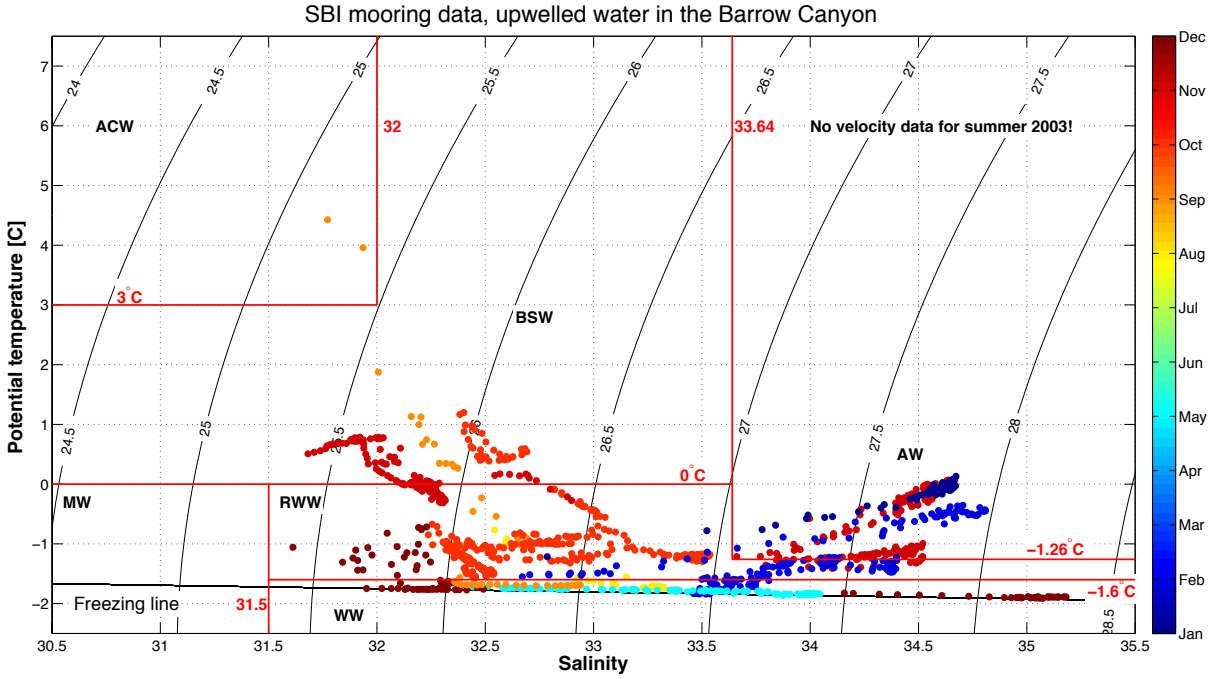


Non-forced TS



Upwelling TS

AW: 9
BSW: 2
RWW: 8
WW: 6
HS: 2



Potential additional topics

- different types of upwelling at the head of Barrow Canyon
- ice concentration at mooring position and polynya region to the south
- track different water masses by sea surface temperature over the period
- Hydrographic sections in the region during the study period
- storm tracking