



AXBT Observation of Upper-Ocean Temperature During CalWater2

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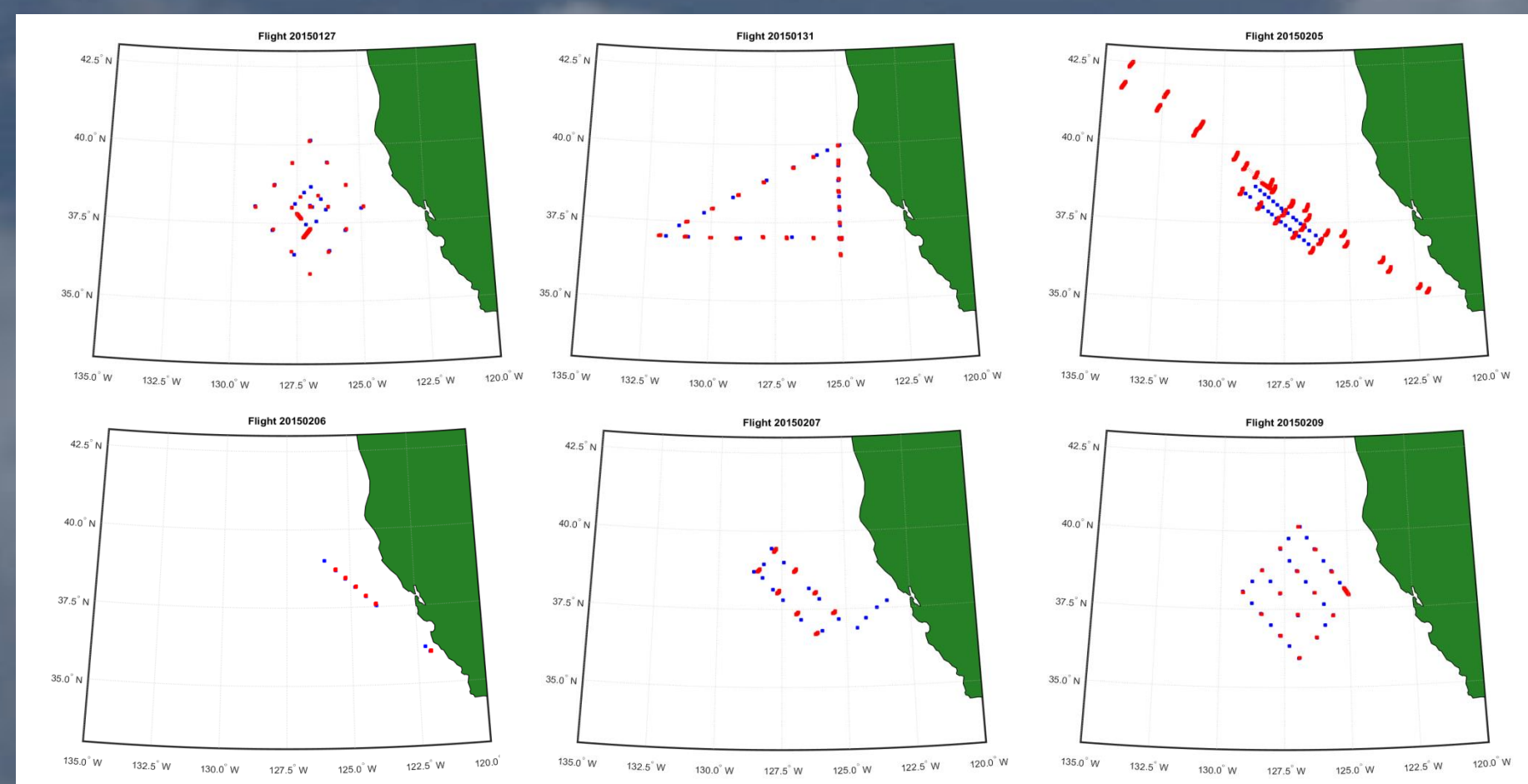
INTRODUCTION

- The CalWater2 (<http://cw3e.ucsd.edu/>) is a multi-agencies (NOAA, NASA, DOE, and USGA, ONR) supported field campaign to be conducted in January-March 2015 over the Northern California coast
- The goal of CalWater2 field campaign is to examine water supply variability and extreme precipitation events that can lead to flooding
- NRL deployed the 148 AXBT during the CalWater2 field campaign from NOAA and conducted realtime COAMPS moist adjoint forecasts in conjunction of coupled COAMPS forecast by FNMOC
- The combination of AXBT-dropsonde provides a co-located atmospheric and ocean temperature observations

OBJECTIVE

Study the air-sea fluxes exchange and upper-ocean evolution before, during, and after the Atmospheric Rivers (AR) events off the West Coast and investigate the sensitivity of pre-storm sea surface temperature and atmospheric moisture

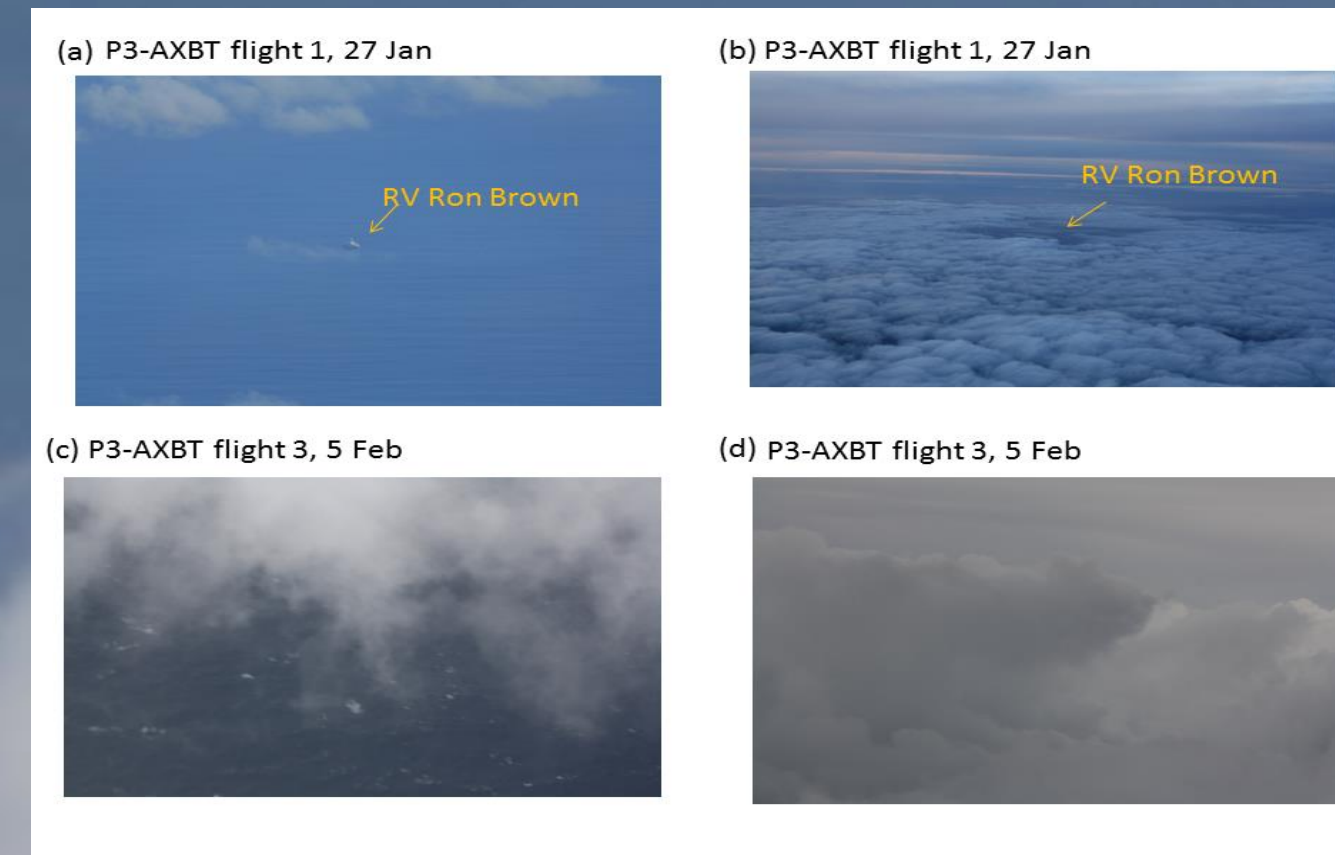
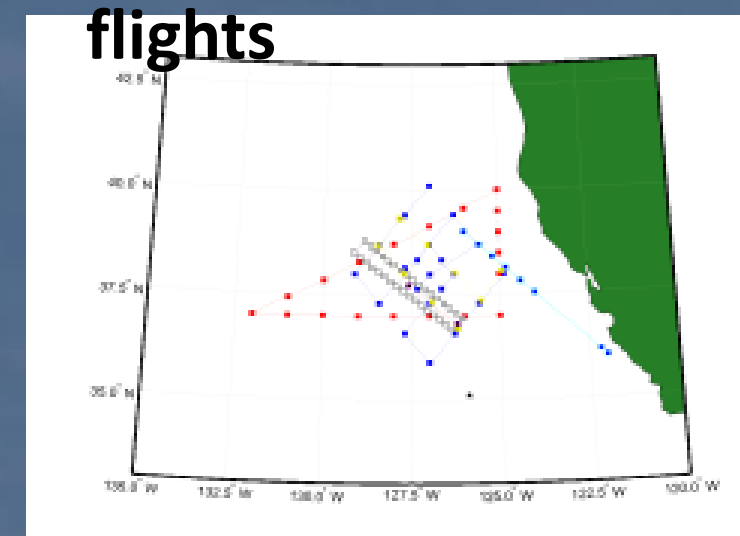
P3 DEPLOYMENT



Combo AXBT-Dropsonde

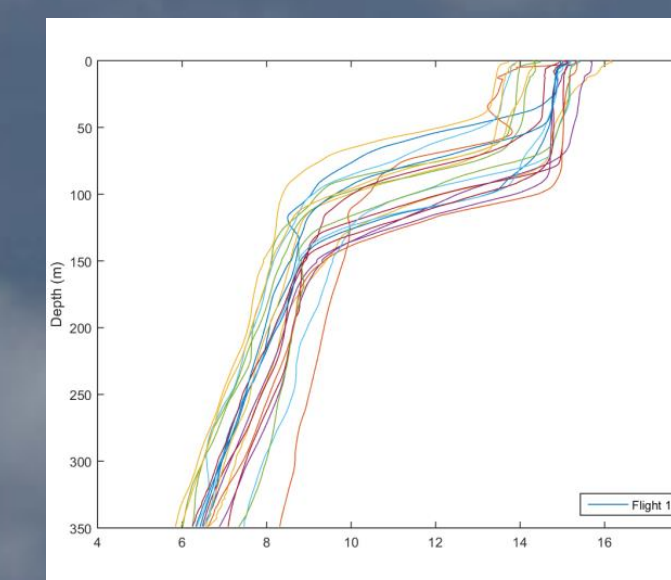
Date	27 Jan (Pre-AR)	31 Jan (Pre-AR)	5 Feb (AR)	6 Feb (AR)	7 Feb (AR)	8 Feb (AR landfall)	9 Feb (Post-AR)	Total
P-3 Flight No.	1	2	3	4	5	6	7	7
No. of AXBT	25	22	35	8	18	9	31	148

AXBT from all 7 flights

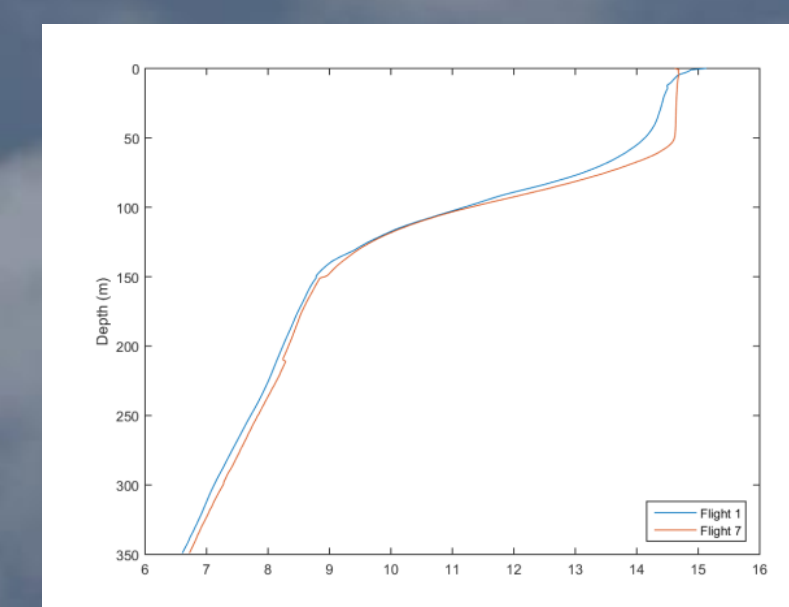


AXBT TEMPERATURE PROFILES

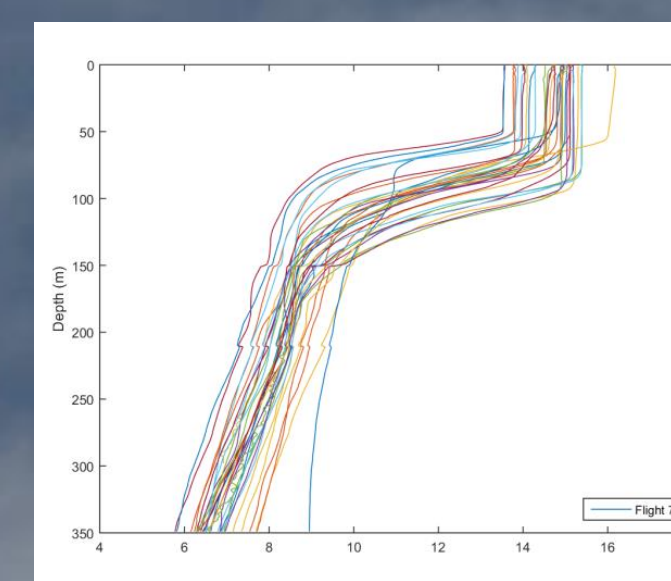
Flight 1: Pre-AR temperature profiles



Mean profiles

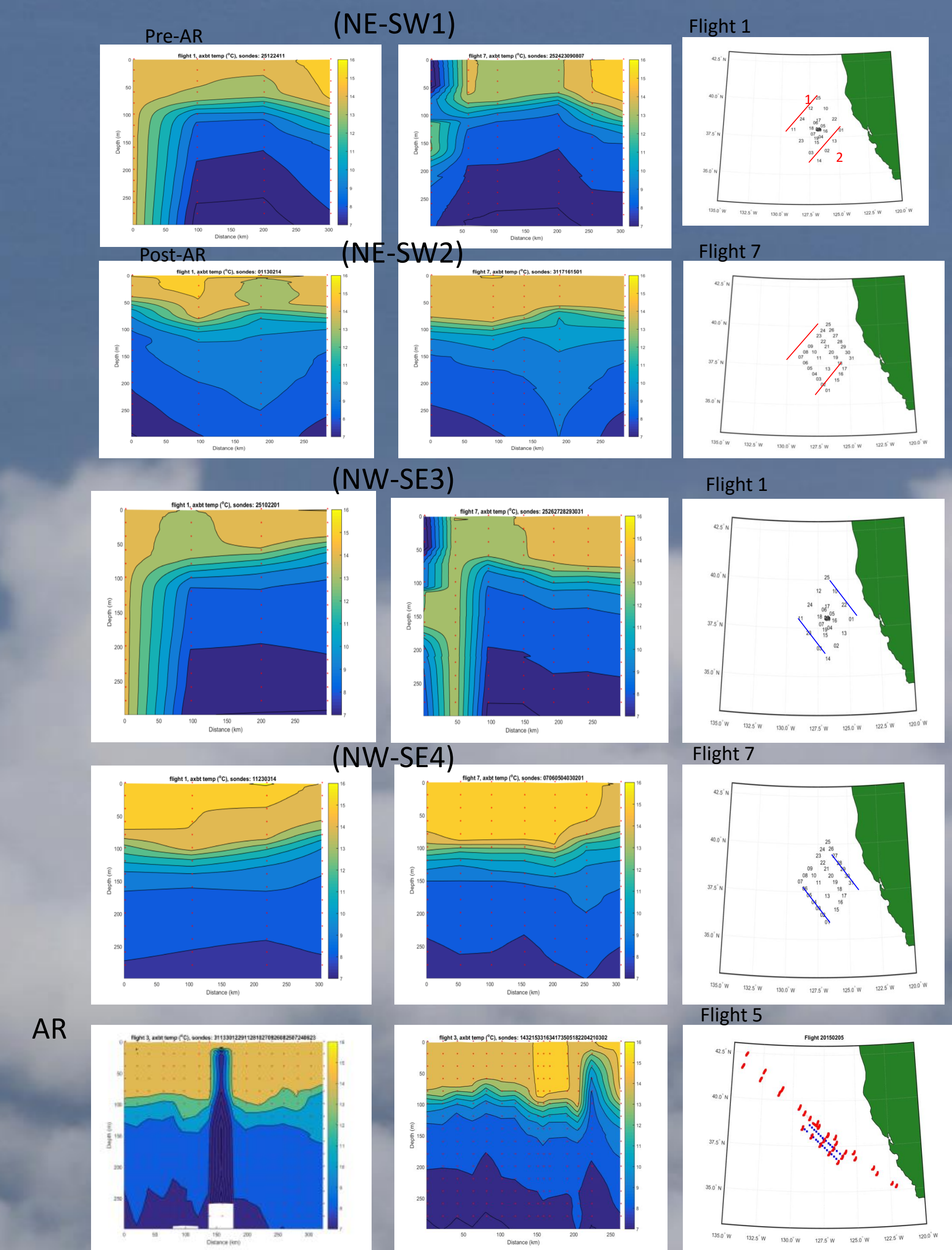


Flight 7: Post-AR temperature profiles



Post-AR:

- Cooler SST ~ 0.5 °C
- Deeper and warmer thermocline
- Reduced upper-ocean variability



Summary

Post-AR, NE cross sections:

- Cooler and deeper T offshore

NW-SE cross section:

- Near shore: Reverse of the N-S T gradient near thermocline
- Off shore: deeper and warmer mixed layer post-AR

AR

- A strong upwelling about 12 °C in the upper 100 m is evident
- The upwelling does not reach the ocean surface
- The maximum horizontal ocean temperature gradient across this upwelling region is in the order of 5-6 °C

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