High-Resolution ROMS Simulations

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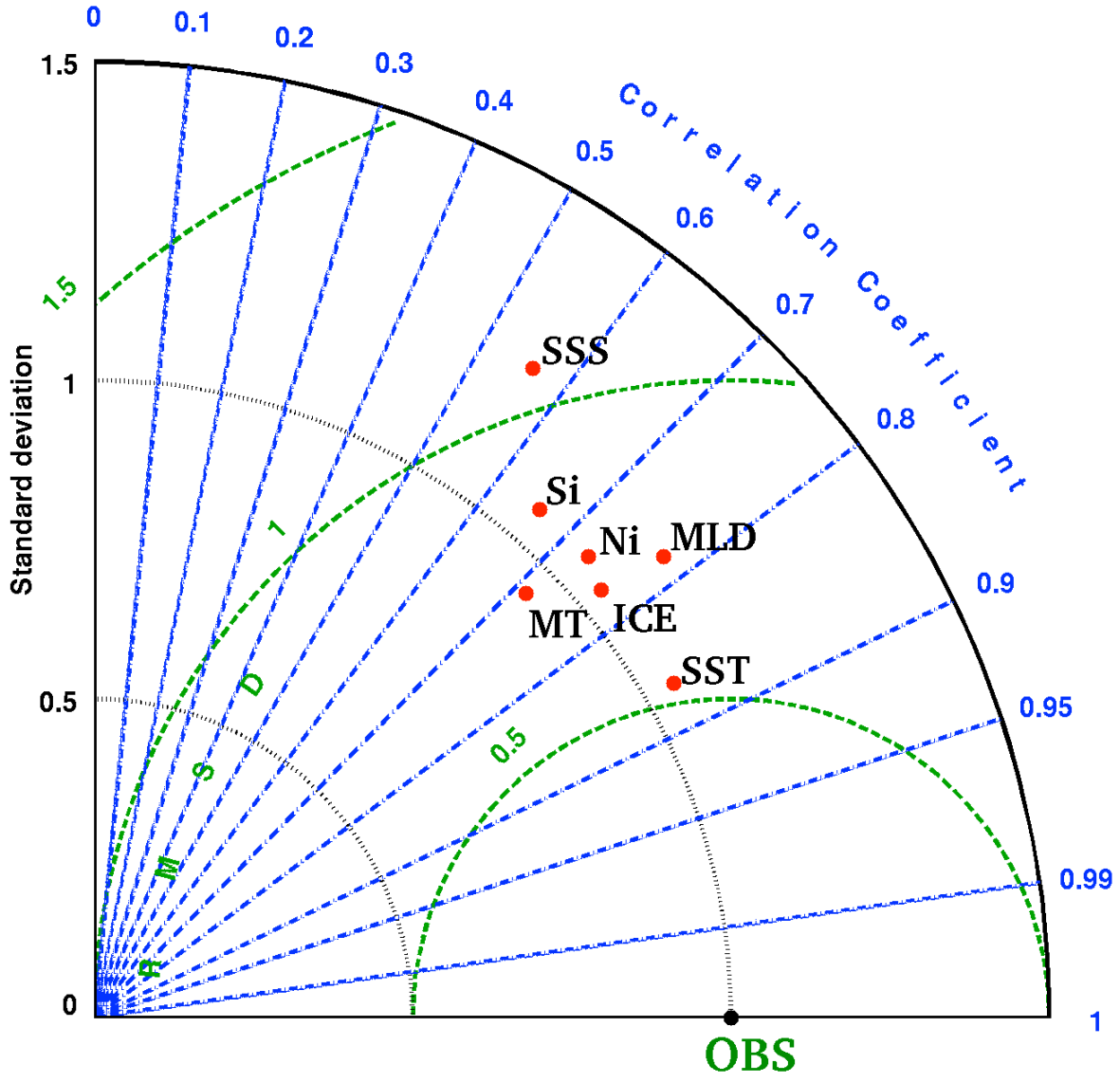
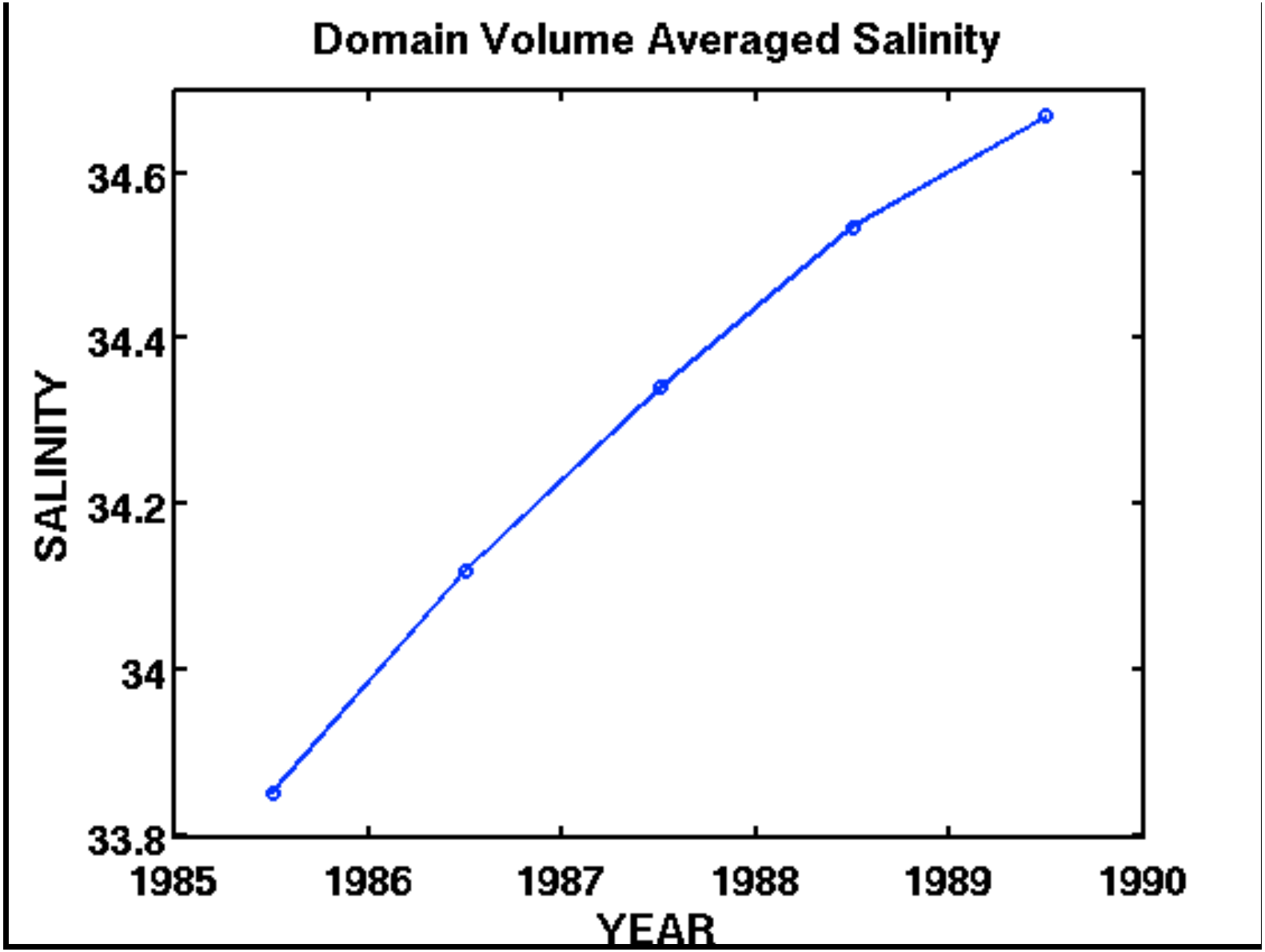
A Brief Summary

- Six years of physical run (1985-1991)
- Three years of biophysical run (1985, 1986, and 1989) are now completed
- A noticeable increasing trend of the modeled salinity in the upper 200-1500m

Taylor diagram presentation of the HRW model climatology compared against WOA climatology



Volume averaged salinity drift from the seven-year of simulation



Sub-domains and sections (1, 2 and 3) for investigating the hydrological cycle

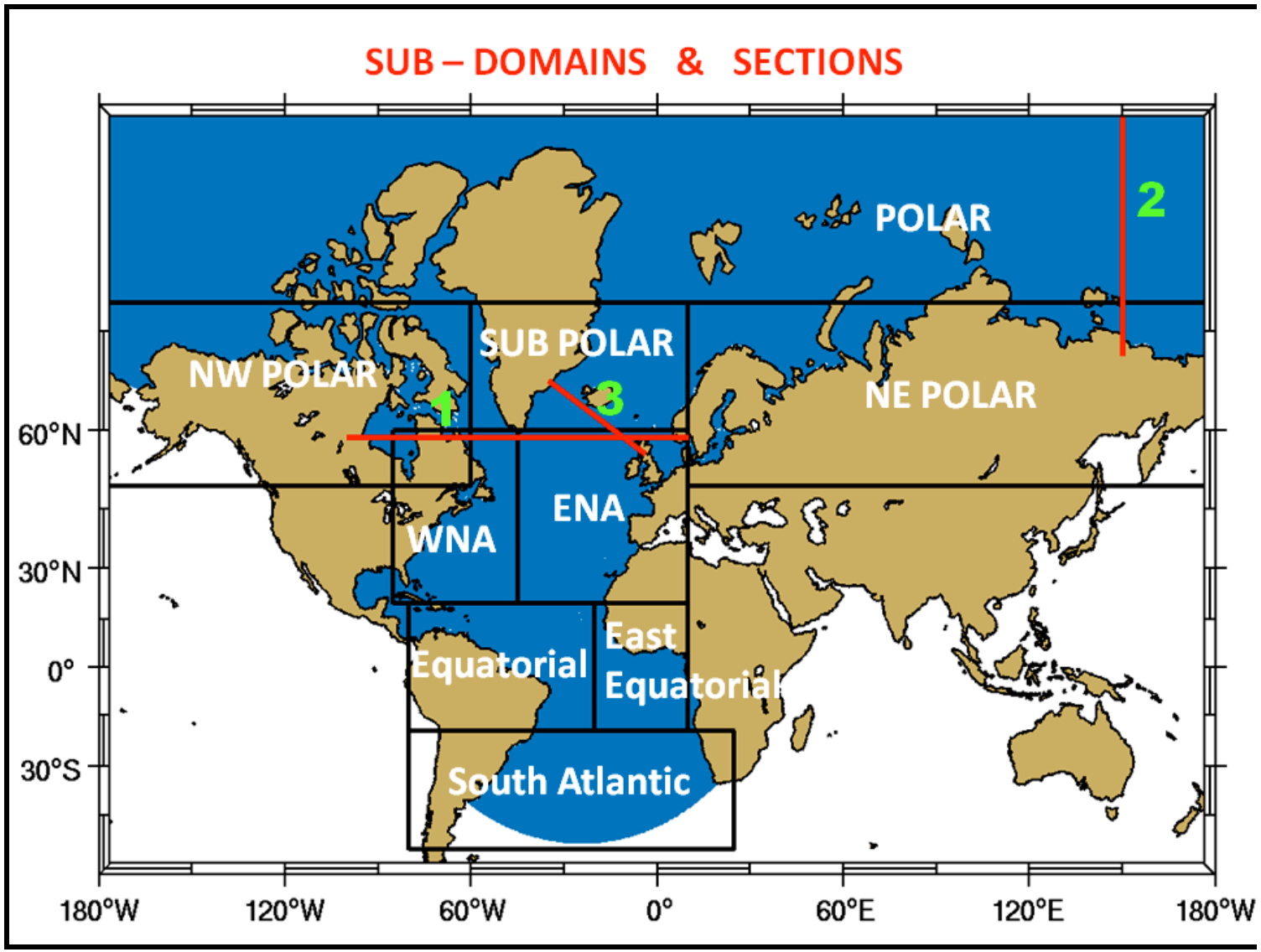
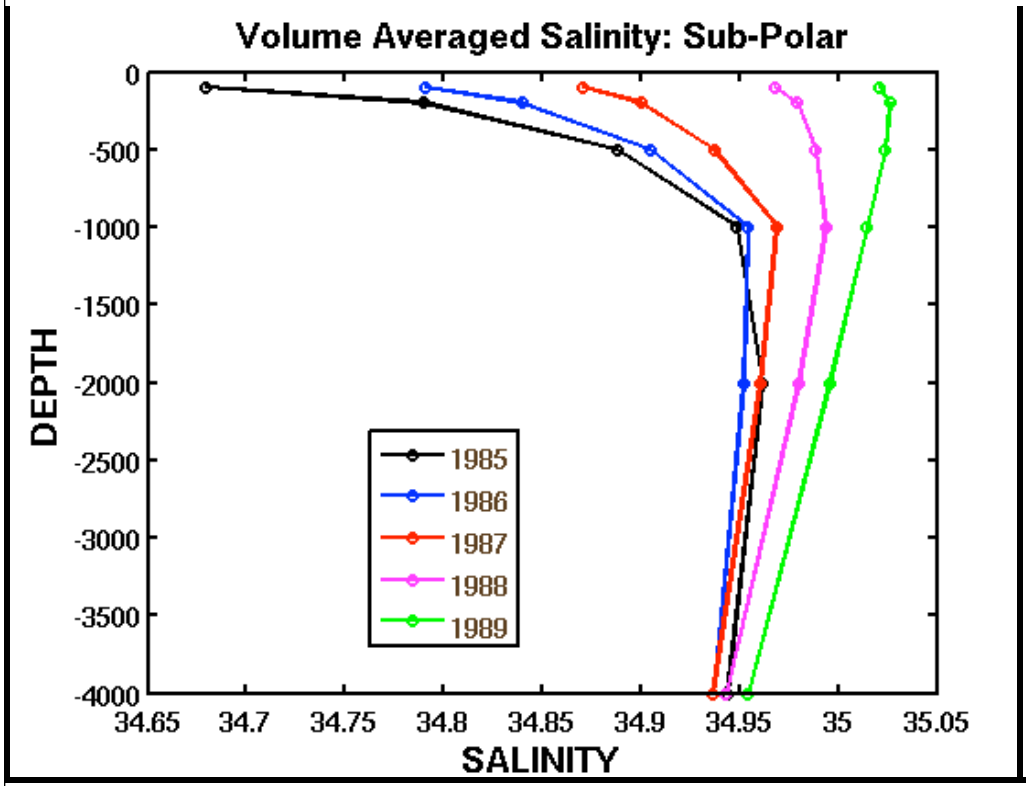
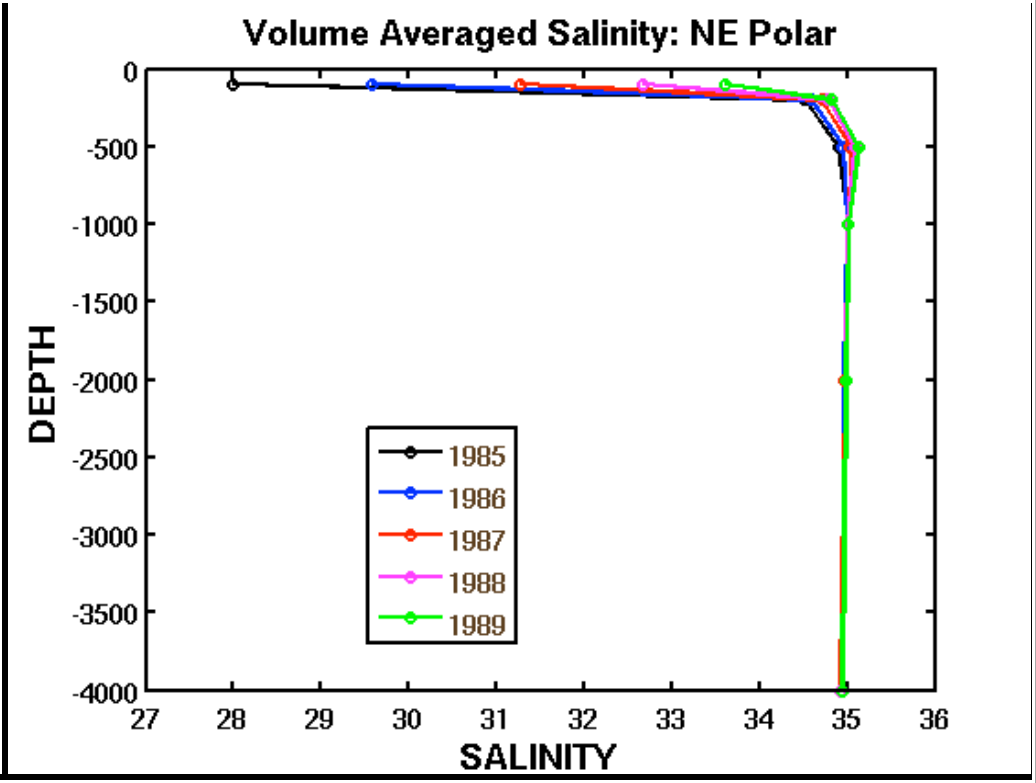


Table 1. Region-wise salinity drifts.

	1985	**1986**	**1987**	**1988**	**1989**	**Drift** (psu/year)
South Atlantic	34.6747	34.7488	34.7991	34.8193	34.8434	0.0422
Equatorial	35.0197	35.0138	35.0179	35.0186	35.0160	-0.0009
E_Equatorial	34.8896	34.8843	34.8808	34.8799	34.8790	-0.0027
WNA	34.5500	34.6399	34.6749	34.7188	34.7852	0.0588
ENA	34.9462	35.0029	35.0090	35.0229	35.0268	0.0202
NW_Polar	32.6846	33.0035	33.3384	33.6806	34.0578	0.3433
Sub_Polar	34.7640	34.8461	34.9014	34.9659	35.0090	0.0612
NE_Polar	28.0569	29.6220	31.3091	32.7014	33.6437	1.3967
Polar	34.3070	34.4754	34.5920	34.6912	34.7555	0.1121
Whole_Domain	33.8528	34.1200	34.3406	34.5347	34.6676	0.2037

Depth-binned salinity of the sub-domains





Potential causes of salinity drift

- The initial ice field
- Opening the Bering Sea
- Inclusion of Med outflow condition
- Better parameterization of vertical mixing
- Inclusion of inter-annual variability of rivers
- Slow restoration of salinity (with a temporal decay scale of 360 days).

The ROMS-CoSiNE Simulations