Profiling Floats in SPURS

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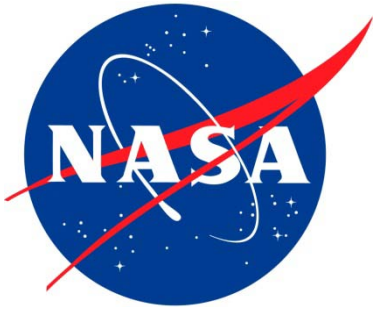
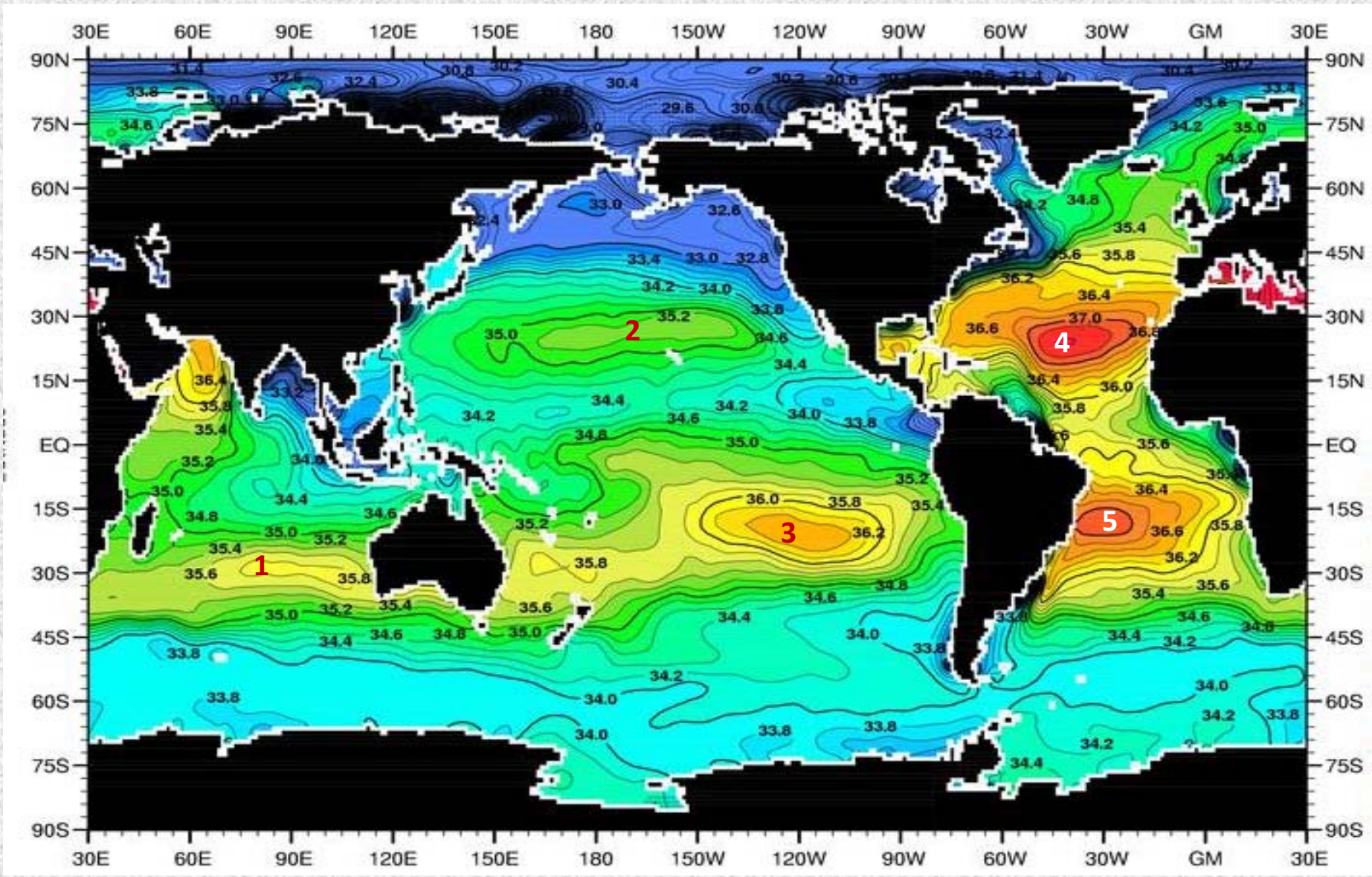
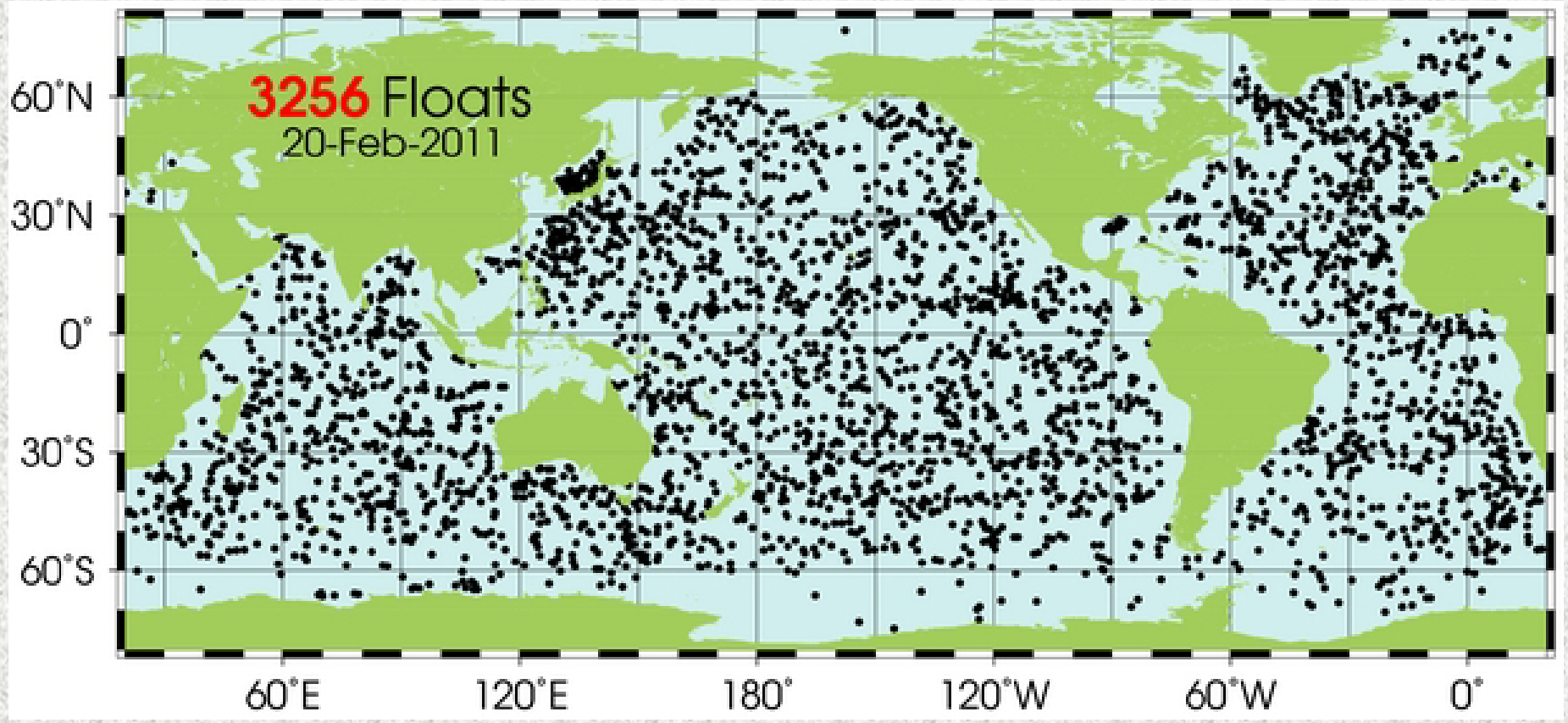
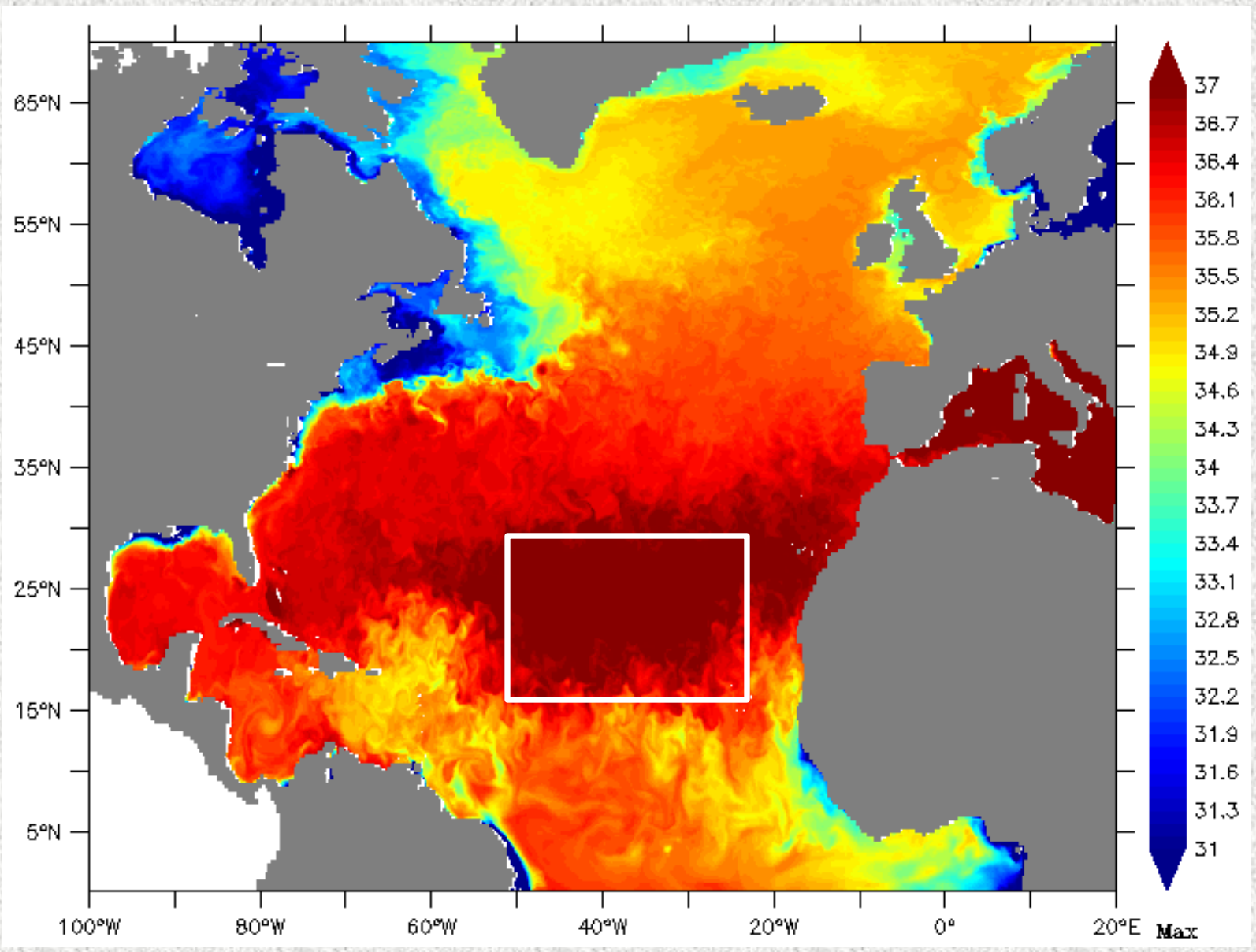




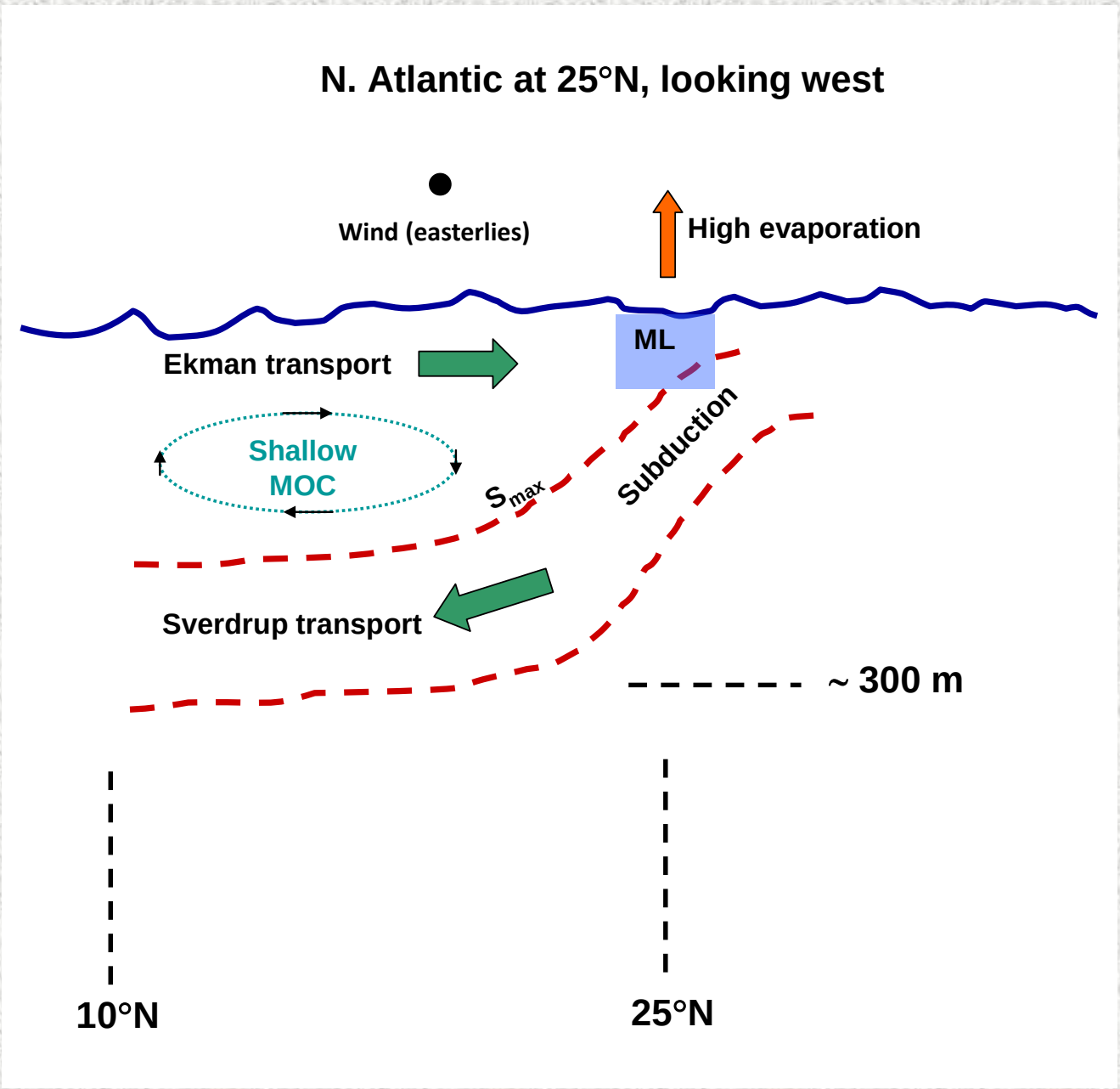
The climatological mean surface salinity of the world ocean



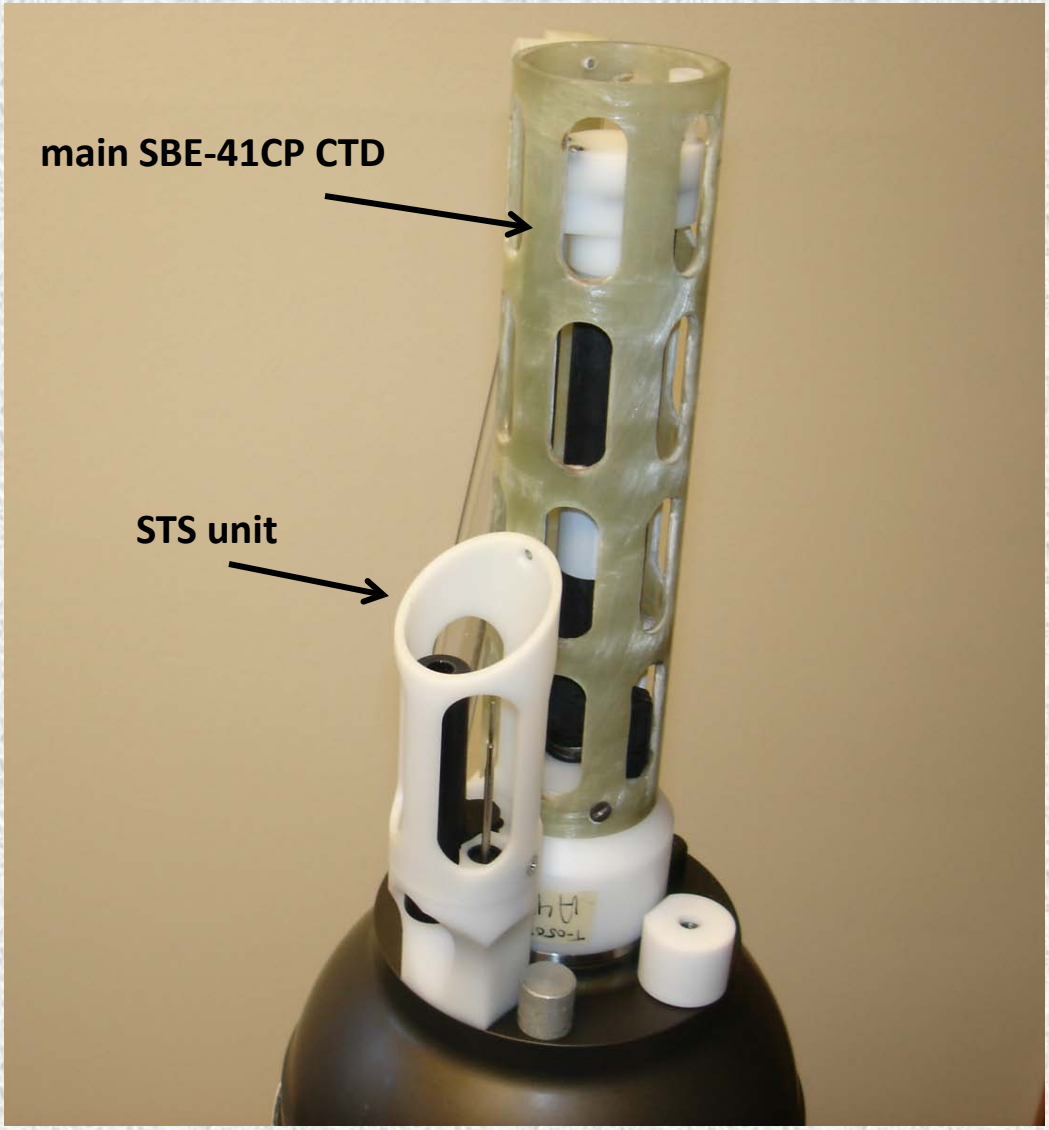
The present status of the Argo profiling float array



Surface salinity for the N. Atlantic (December) from the 1/12° HYCOM model, showing the approximate boundaries of the SPURS region

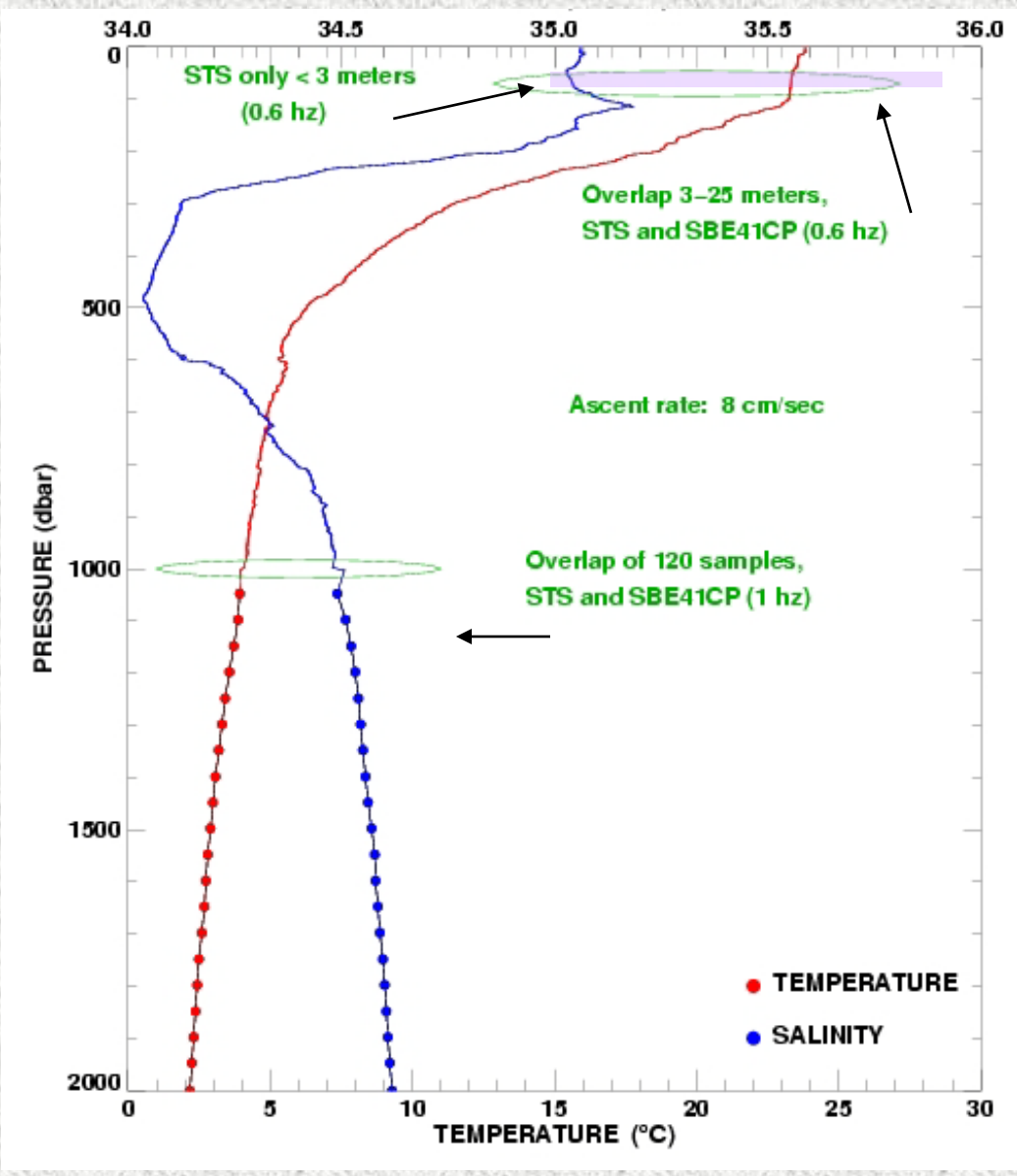


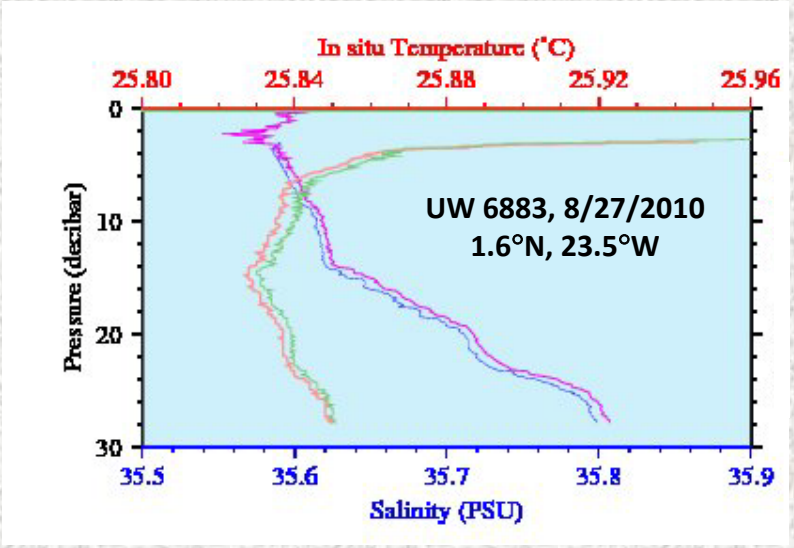
A schematic diagram of near-surface processes in the SPURS region



SeaBird surface temperature/salinity sensor (STS)

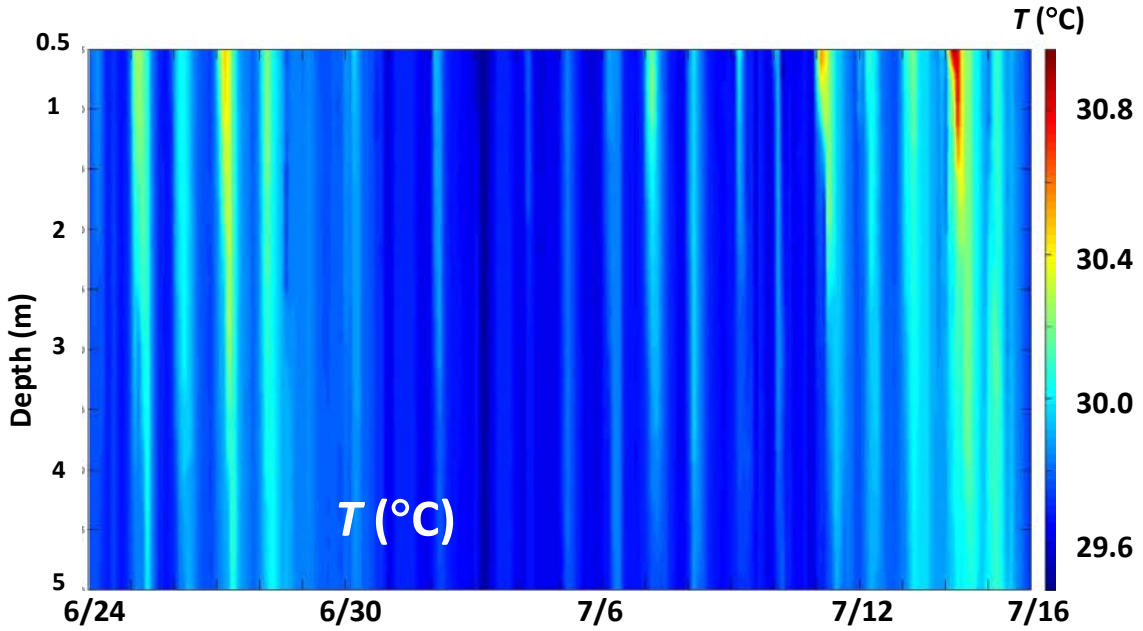
[T ~ 0.005 °C; S ~ 0.05 PSU]

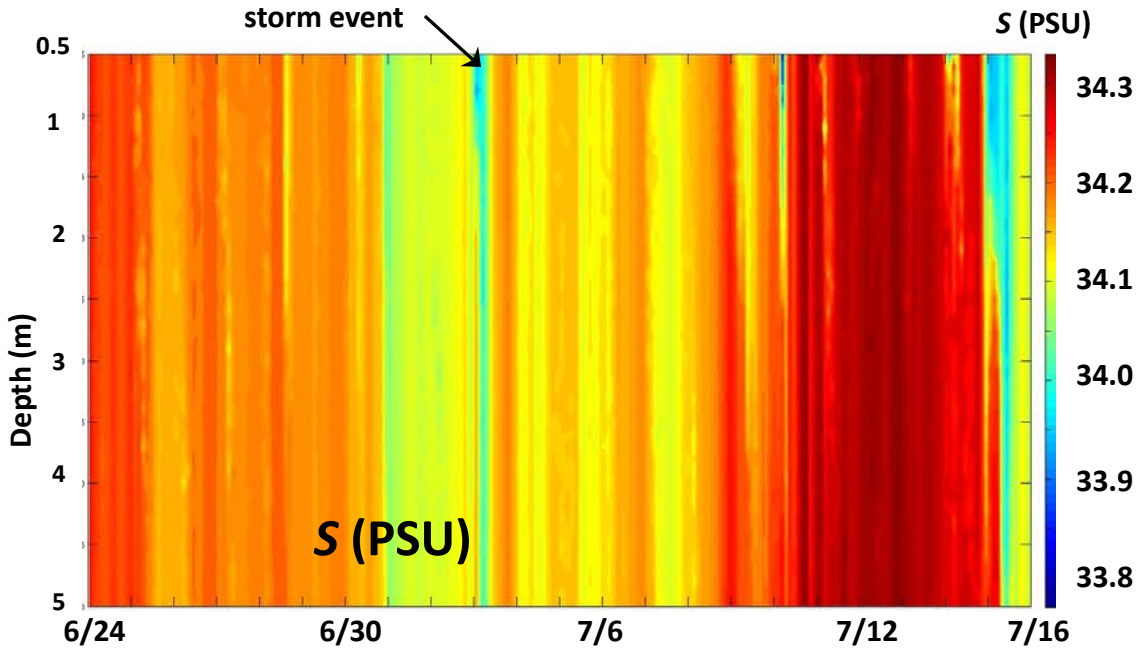




Near surface sampling: 0.6 hz
This provides *T/S* samples at intervals of 3-6 cm

Temperature and salinity in depth and time at 2 hour intervals, for the upper 5 m, from UW float 6117 in mid-2009

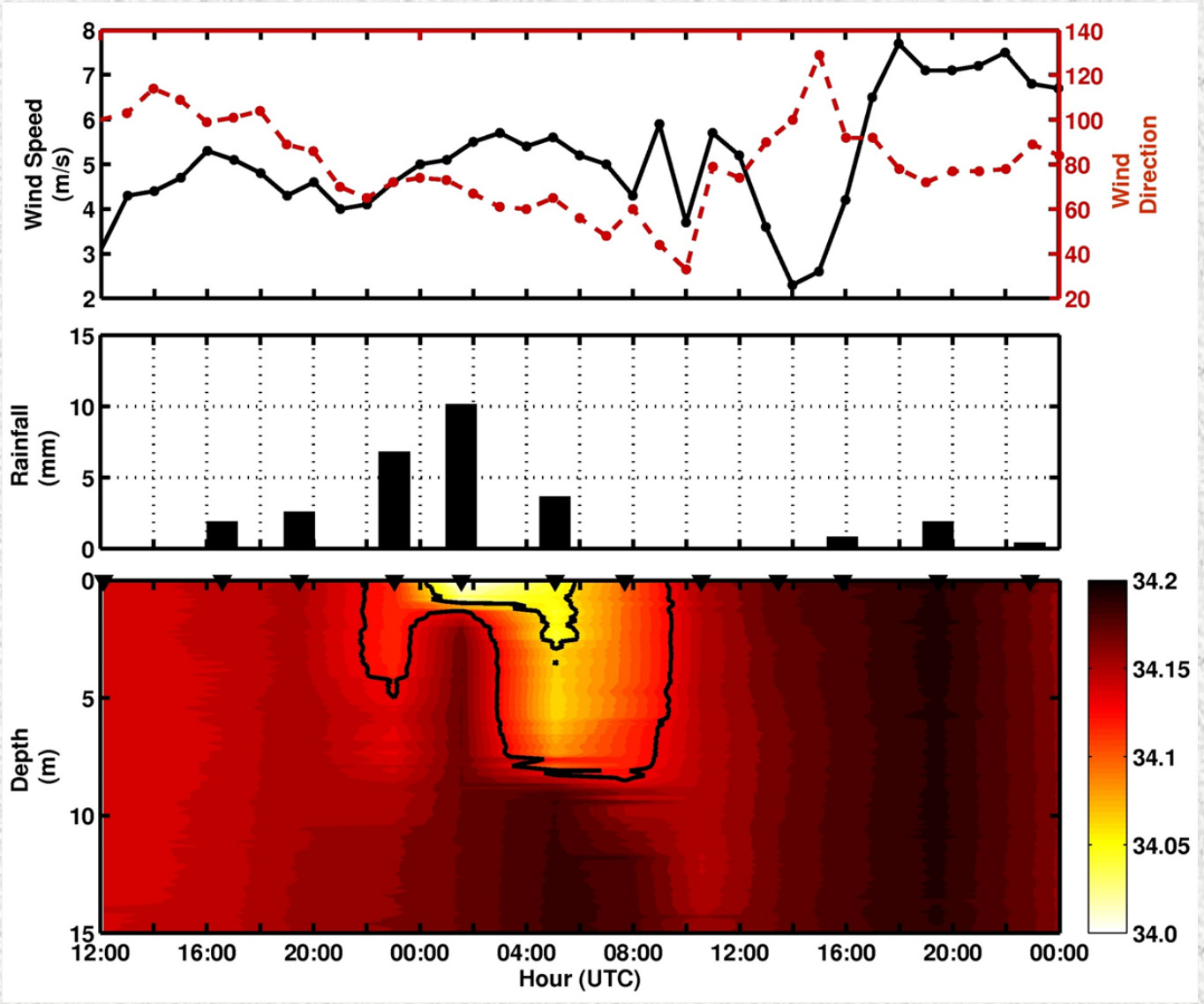


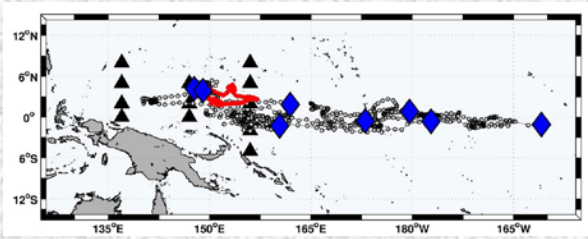


wind speed and direction from a nearby TAO mooring

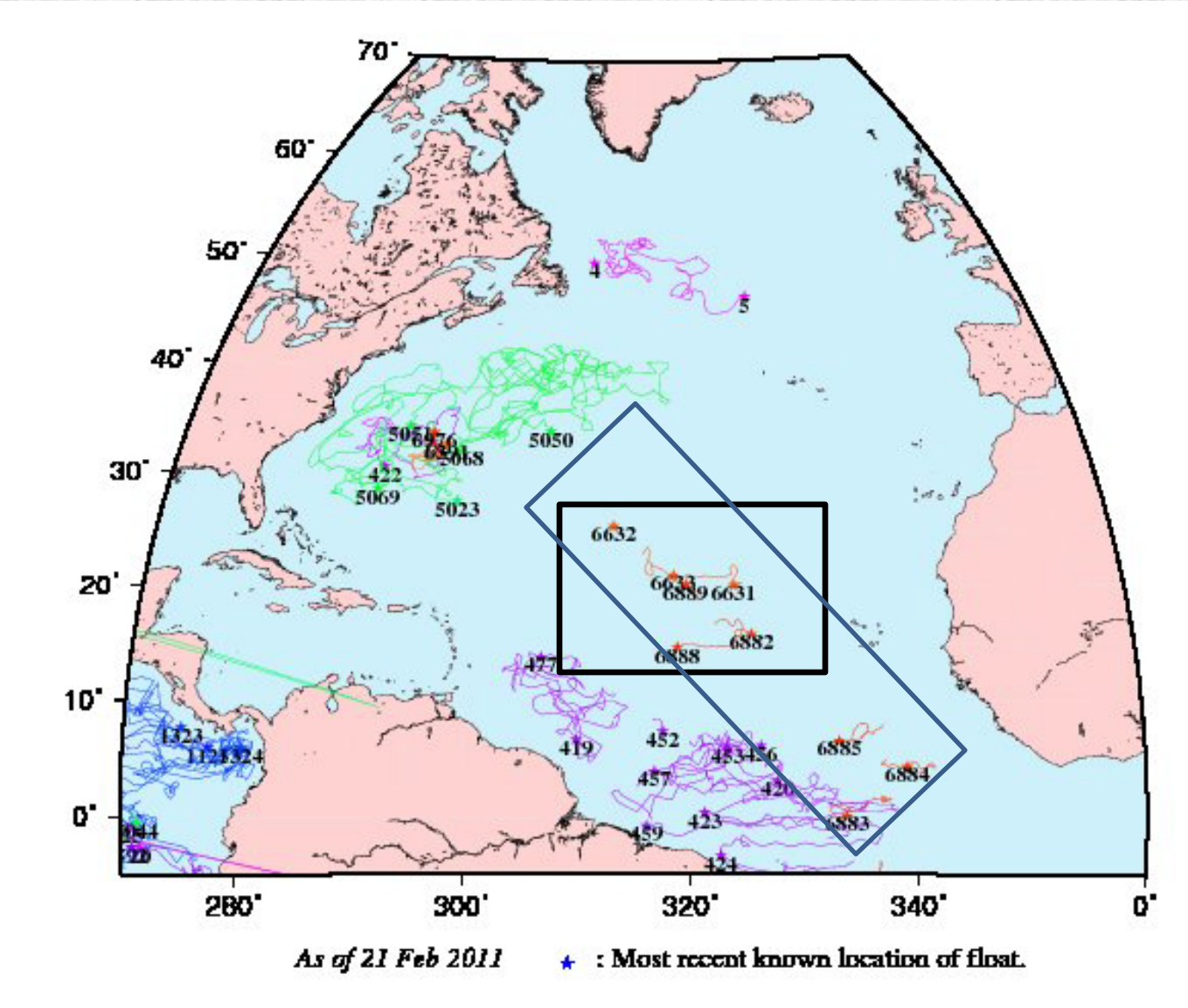
rainfall from TRMM

near-surface STS salinity vs time and depth

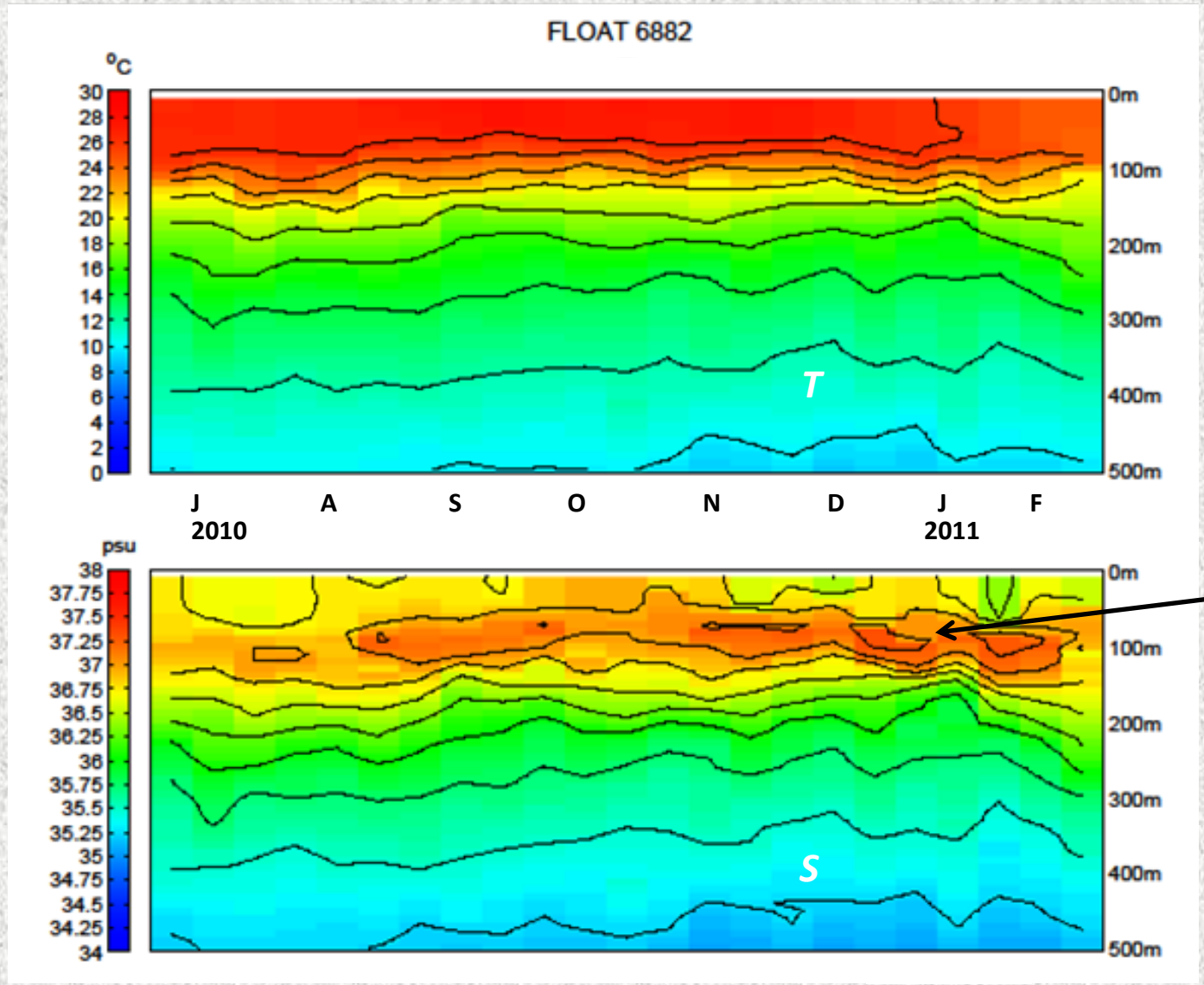


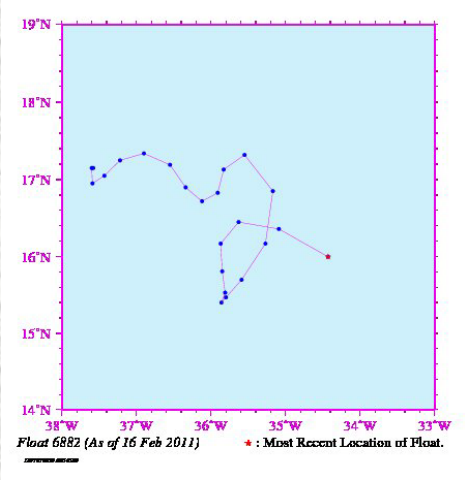


(from J. Anderson)



Recent deployments of UW STS-equipped floats



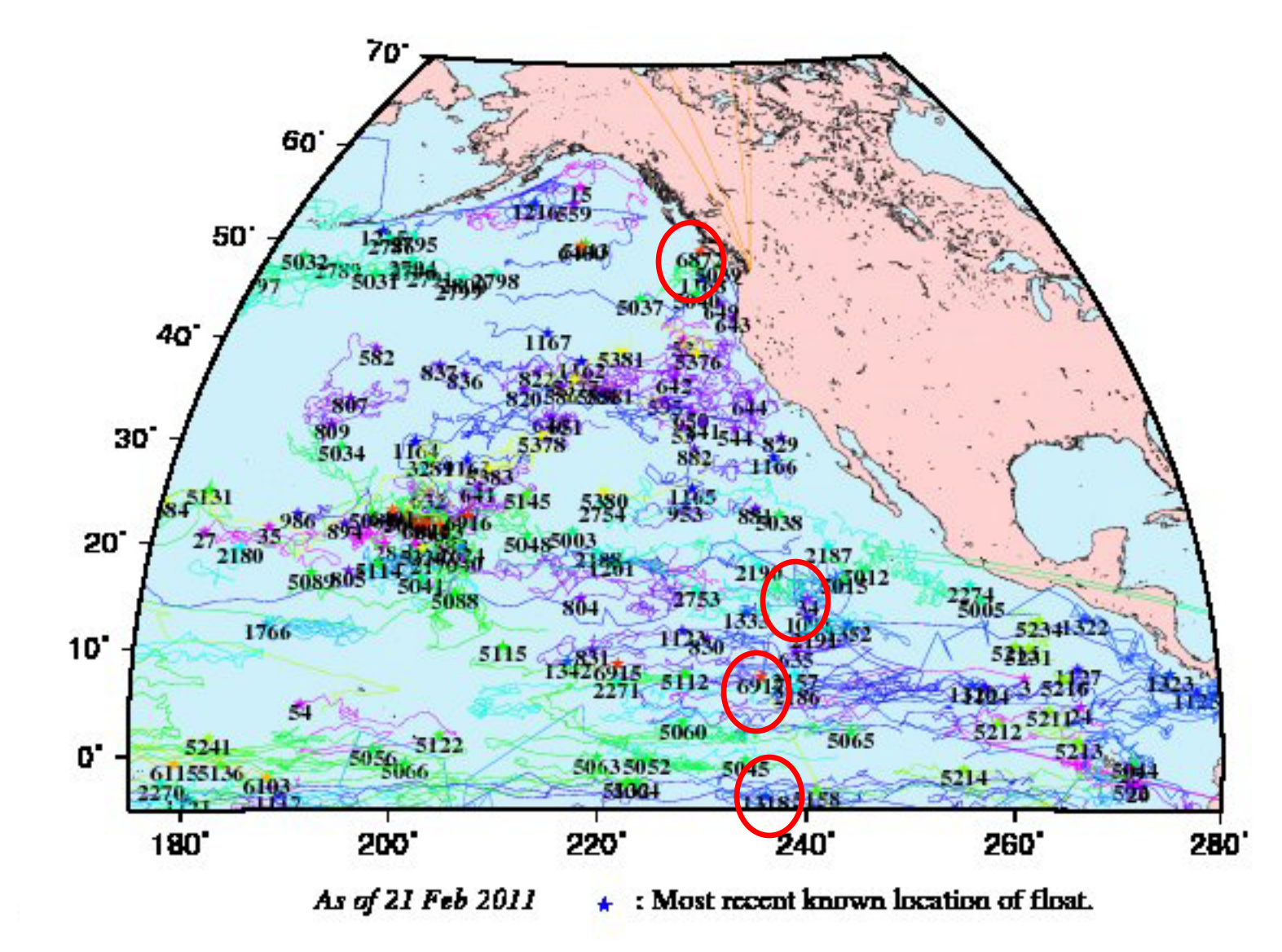


S_{max} layer

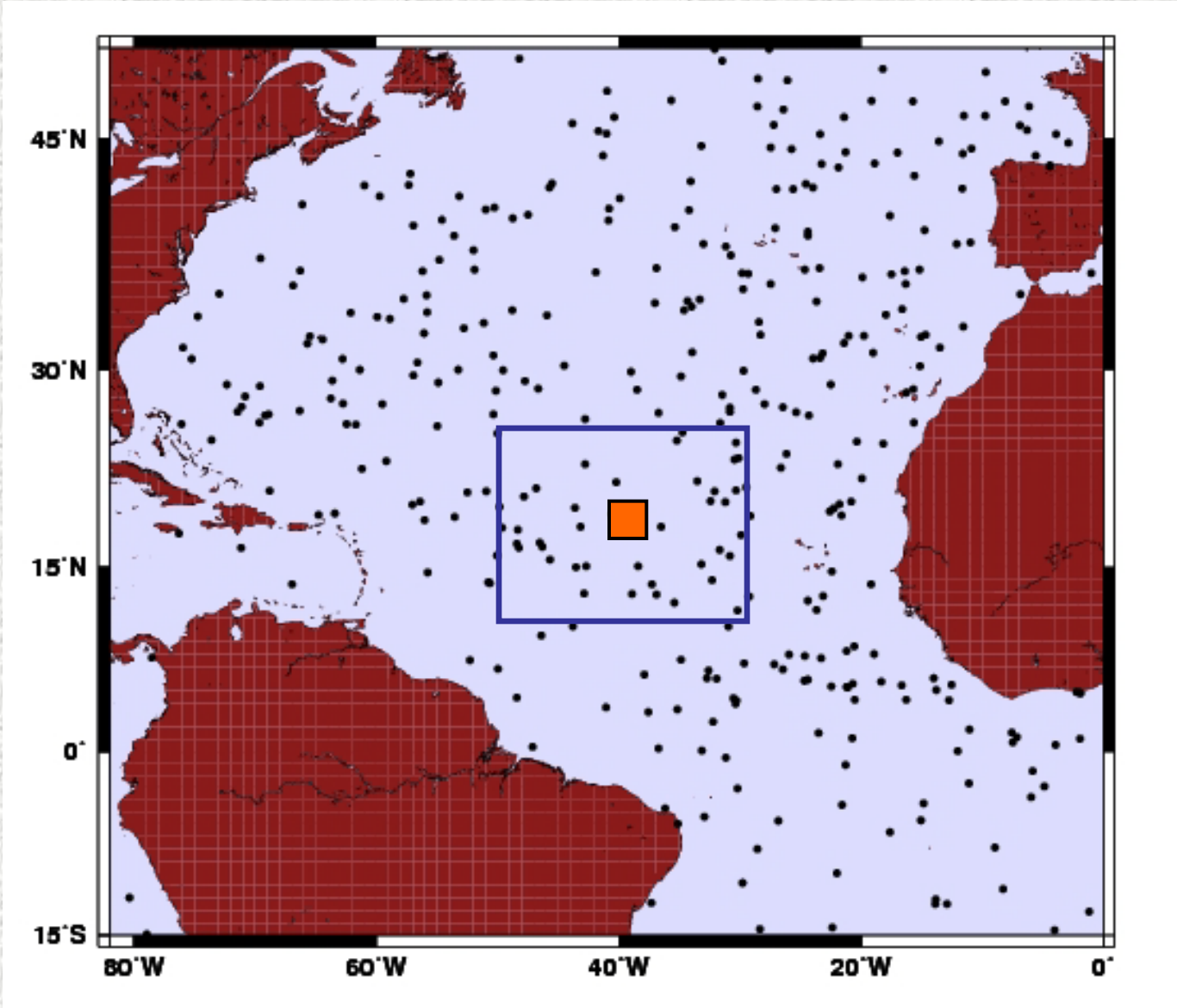
***T* and *S* data from UW float 6882, deployed in the SPURS region in 2010**

A profiling float with both STS and wind/rainfall (PAL) sensors

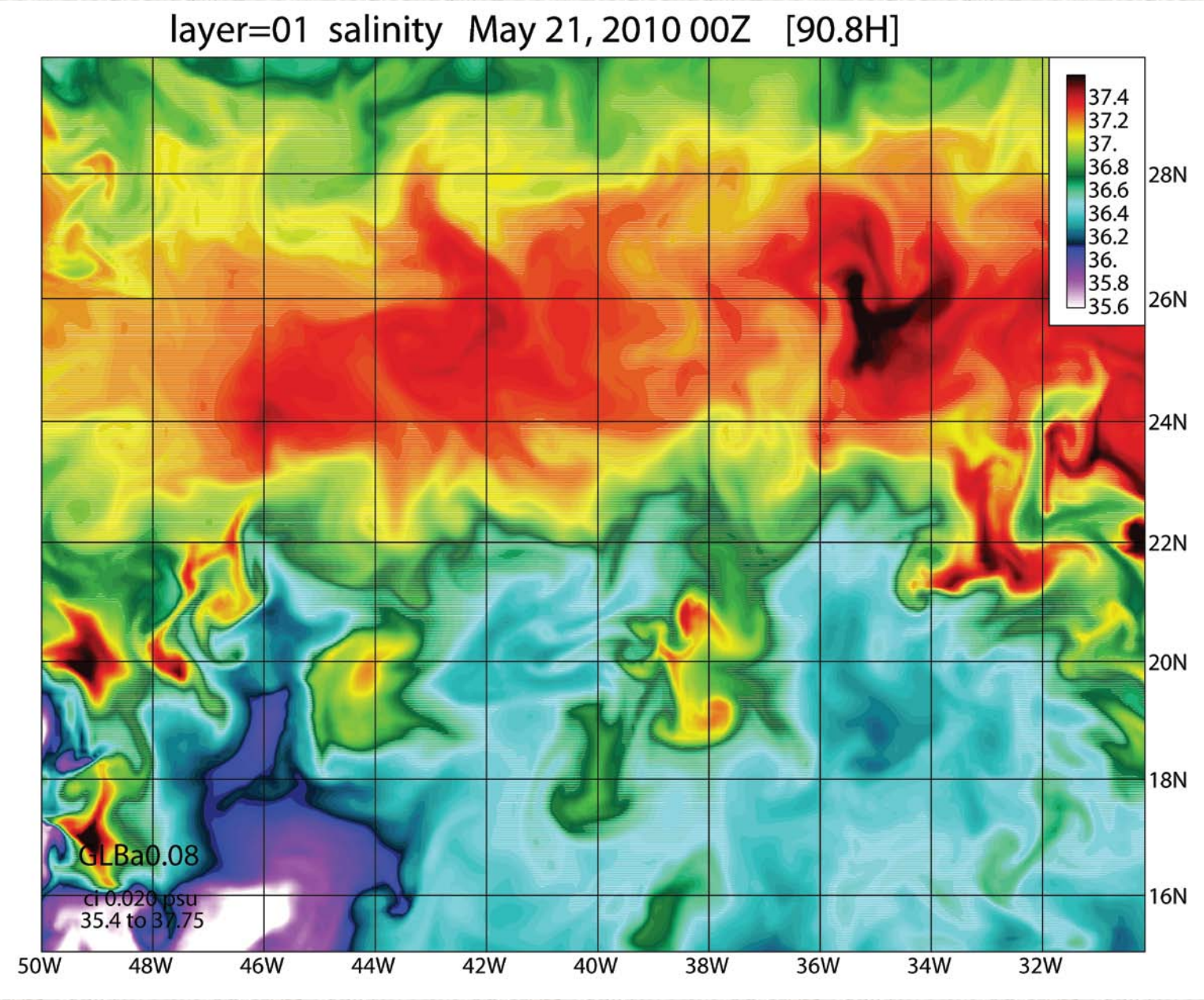
[see Riser, Nystuen, and Rogers (2008)]



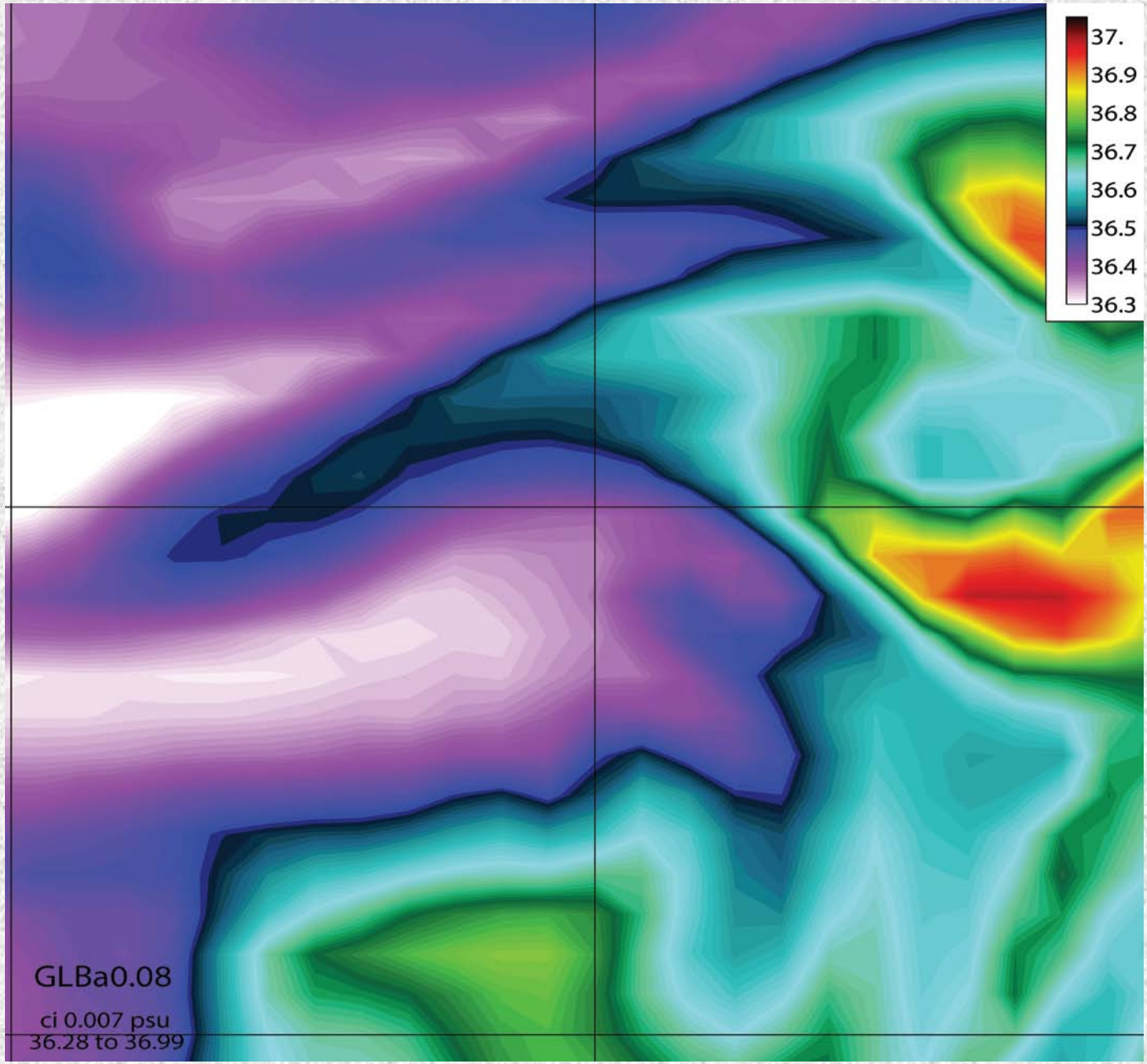
Recent deployments of UW floats equipped with STS/PAL sensors (funded through NASA Salinity Science Team)



Present Argo coverage in the N. Atlantic and SPURS region



Surface salinity in the SPURS region from the 1/12° HYCOM model
(~ 20 floats STS/PAL floats available for enhanced coverage)



Surface salinity in a 200 km × 200 km box in the SPURS region from the 1/12° HYCOM model (~ 25 STS/PAL floats available)

geostrophic

??

$$h\frac{\partial S}{\partial t} = -\langle \underset{\sim}{u} \rangle h \cdot \nabla \langle S \rangle - \nabla \cdot \int_{-h}^{0} \underset{\sim}{u} S \, dz - \left(\langle S \rangle - S_{-h} \right) \left(\frac{\partial h}{\partial t} + \underset{\sim}{u}_{-h} \cdot \nabla h + w_{-h} \right) + \left(E - P \right) S_o + SSM$$

1 2 3 4 5 6

The salinity evolution equation, from the SPURS meeting report (2010)

Floats with STS and PAL can help to estimate many of the terms.

Use of models and data assimilation will be necessary for best estimates.

Summary of funded deployments:

- **20 profiling floats equipped with STS/PAL sensors, for enhanced coverage in the subtropical N. Atlantic around the SPURS region (funded through NASA Salinity Science Team)**

- **25 profiling floats equipped with STS/PAL sensors, for detailed coverage of the SPURS region (funded through SPURS)**

Participant responsibilities:

- **S. Riser (PI; coordination; float construction; STS)**
- **J. Nystuen (co-PI; PAL construction and interpretation)**
- **N. Maximenko (co-PI; modeling; data interpretation)**
- **postdoc (data QC; global interpretation)**