Validating Aquarius Satellite Data with SPURS In Situ Measurements: Preliminary Results

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University of California at Los Angeles

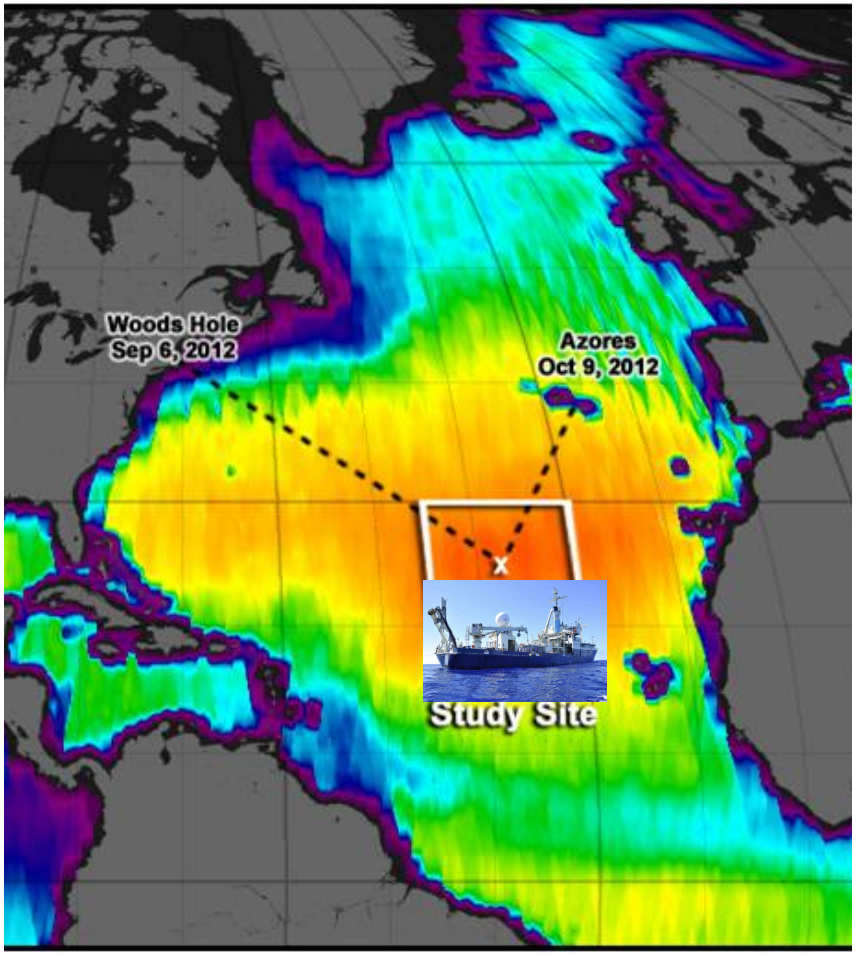
Thanks to the Aquarius Project/Science Teams & SPURS Wet/Dry Teams

SPURS

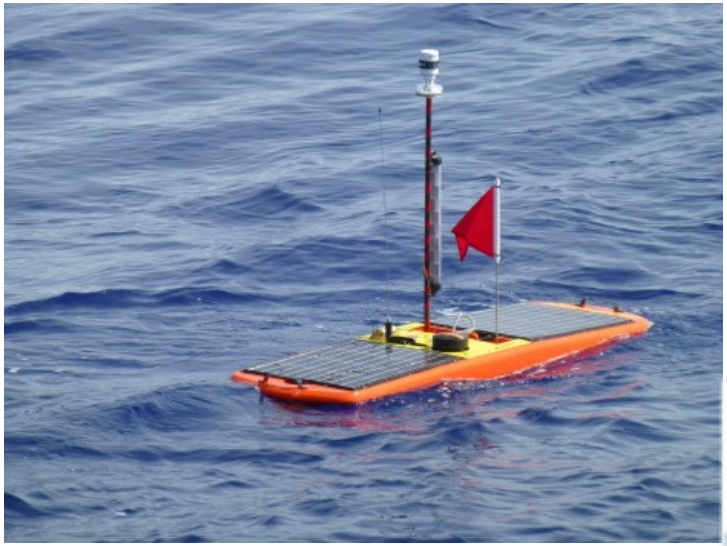
Salinity Processes in the Upper Ocean Regional Study

5 cruises during Sept. 2012 – Sept. 2013

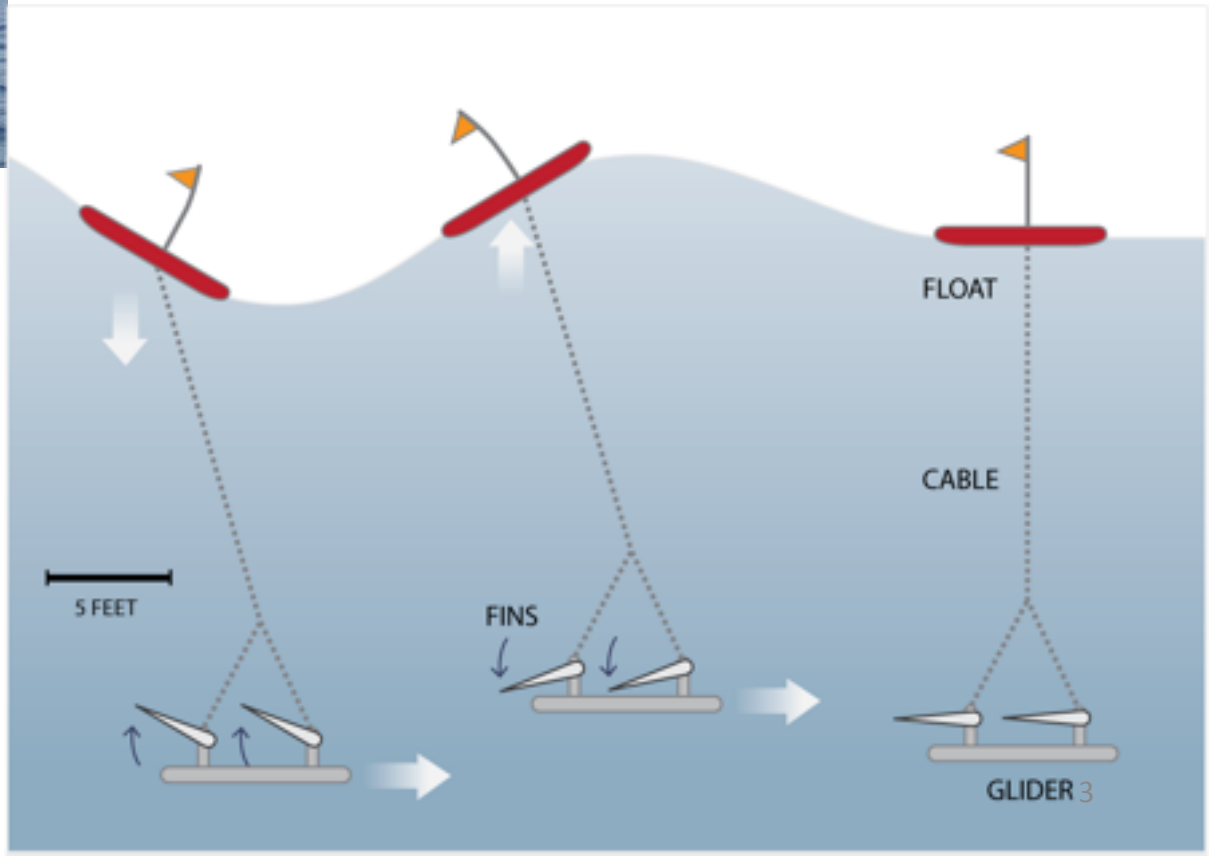
1. Thalassa/France-2012 (8/16 - 9/13)
2. Knorr/US-2012 (9/6 – 10/9)
3. Sarmiento/Spain-2013 (3/14 – 4/20)
4. Endeavour/US-2013 (3/14 – 4/14)
5. US Cruise-2013 (Sept.)



New Salinity Sensors near the Surface



Wave Gliders (CTD @ 0.2m, 6m)



Profiling Float with STS (Surface Temperature Salinity) sensor

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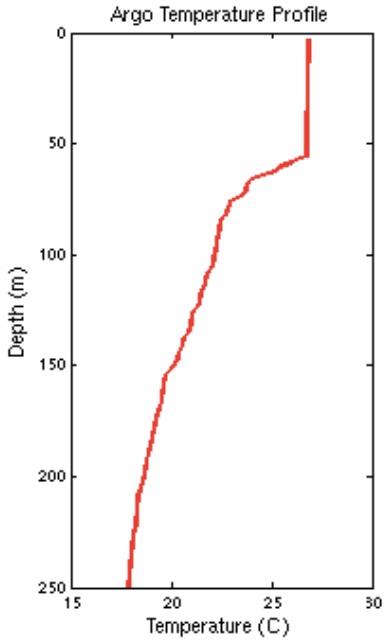
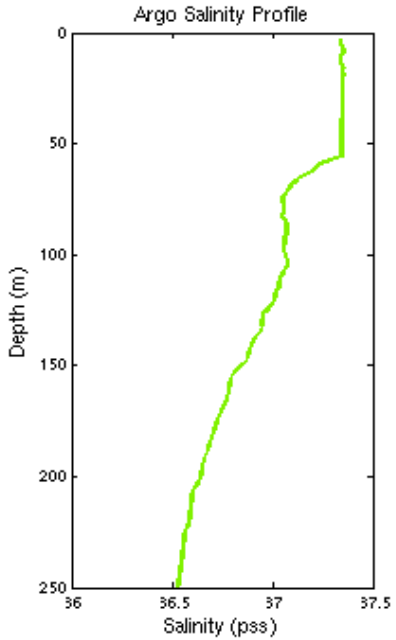
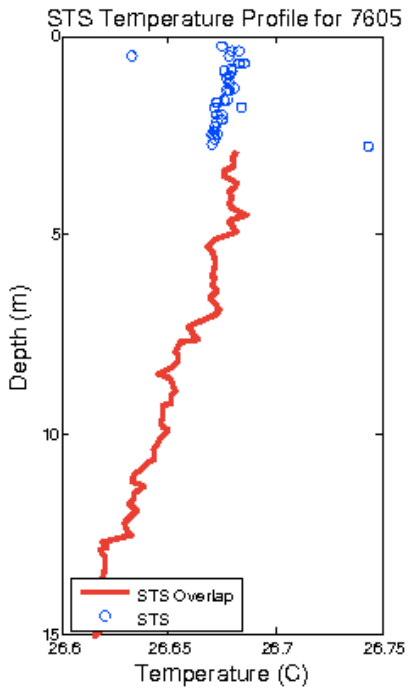
Location: (-43.37, 27.80)

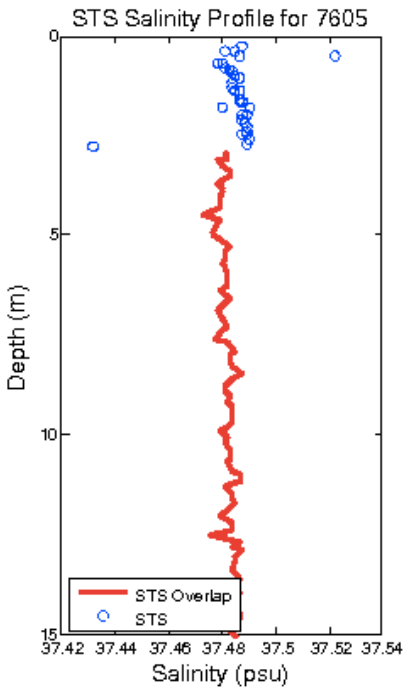


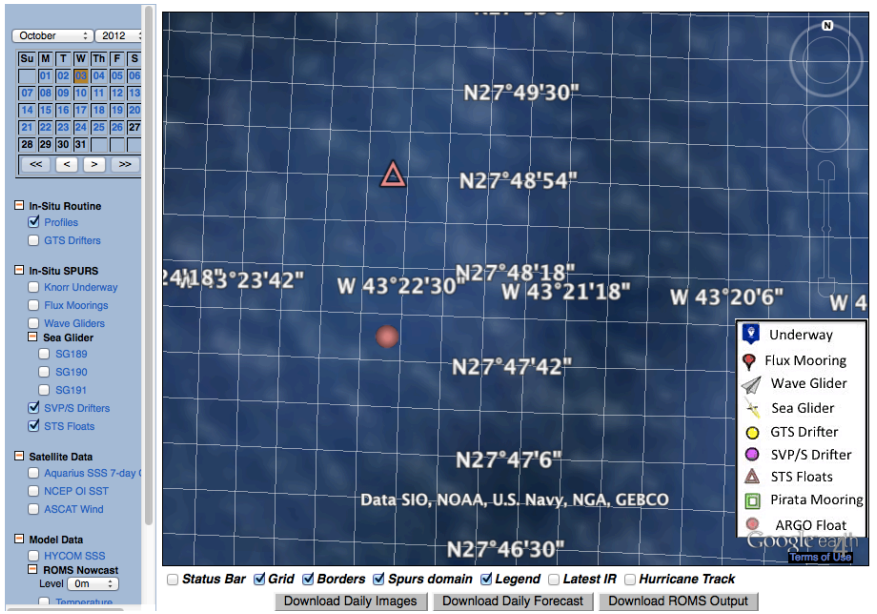


STS Float 7605

Location: (-43.37,27.81)

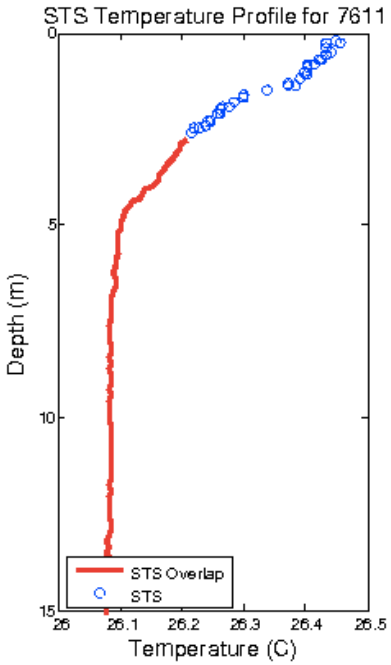


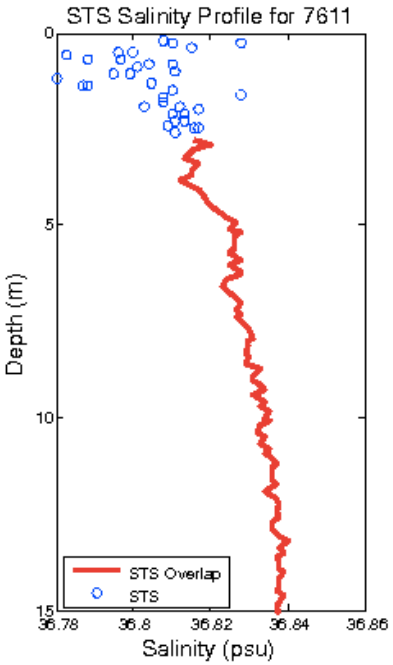




STS Float 7611

Location: (-46.75,30.46)





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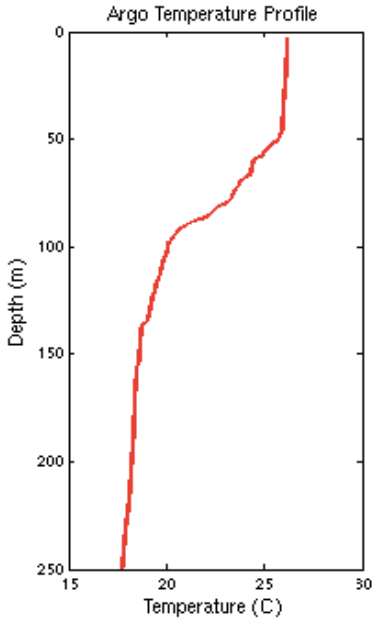
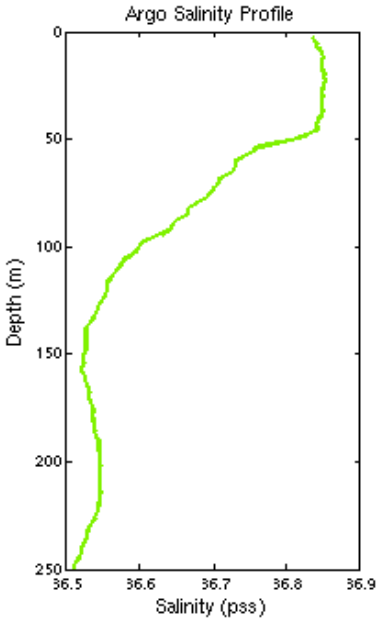
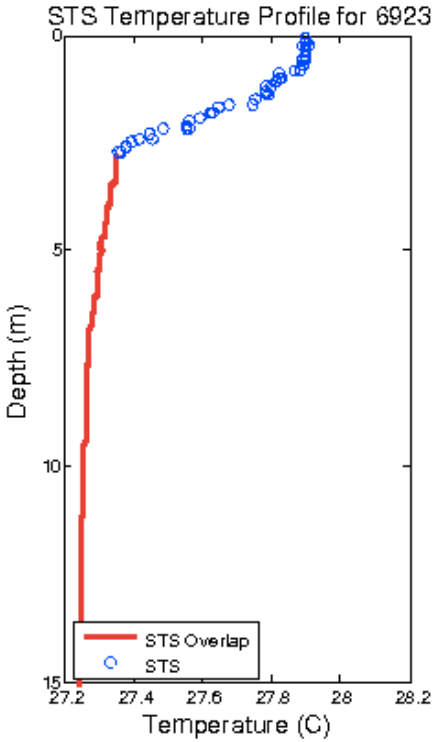
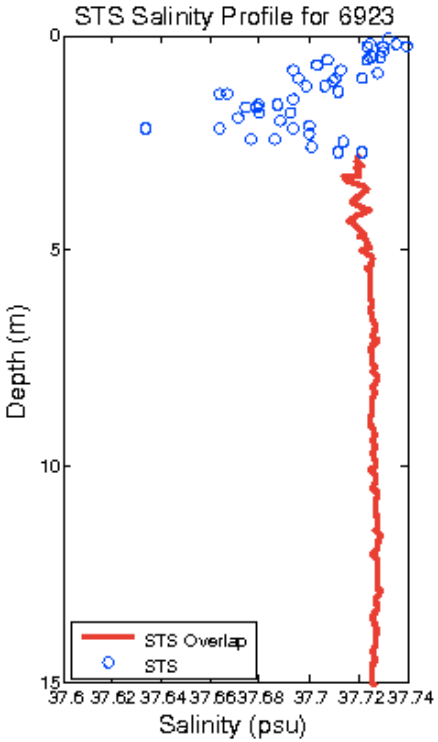




STS Float 6923

Location: (-37.43,25.53)





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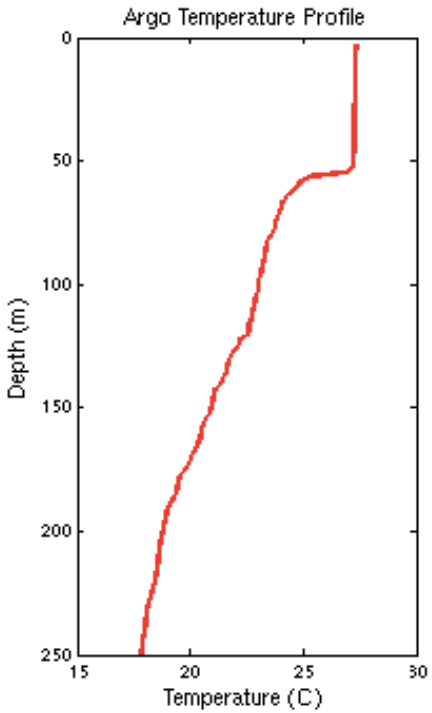
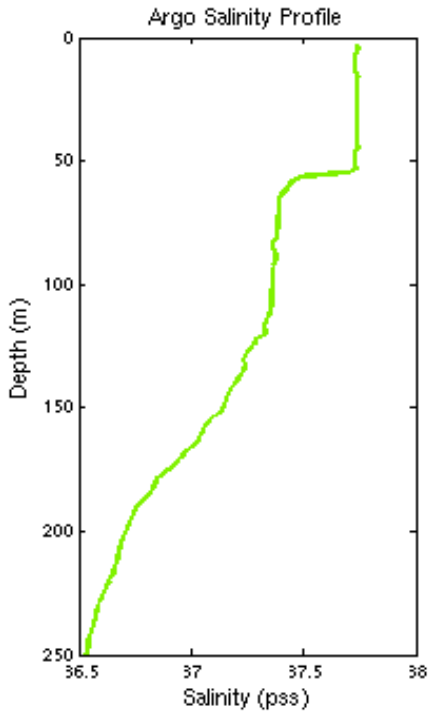
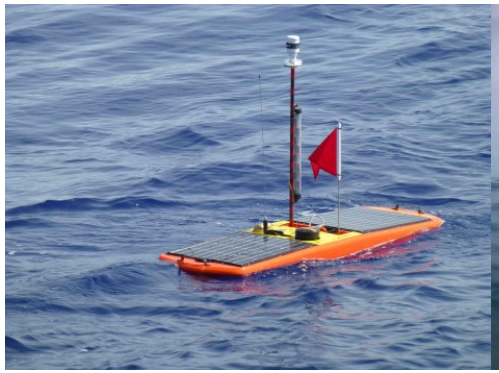
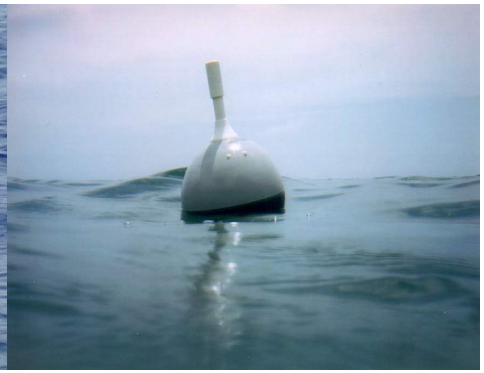
Location: (-37.43, 25.53)

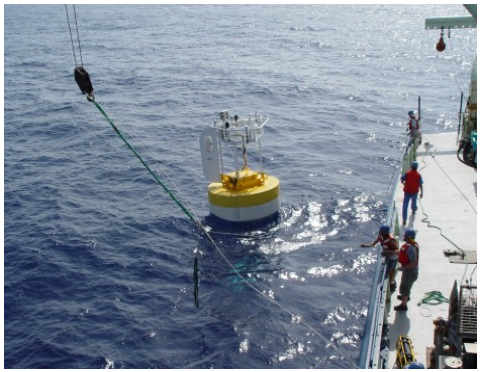
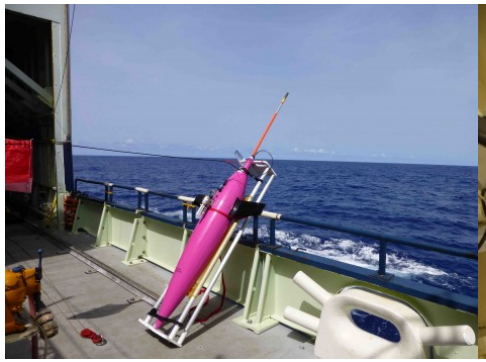




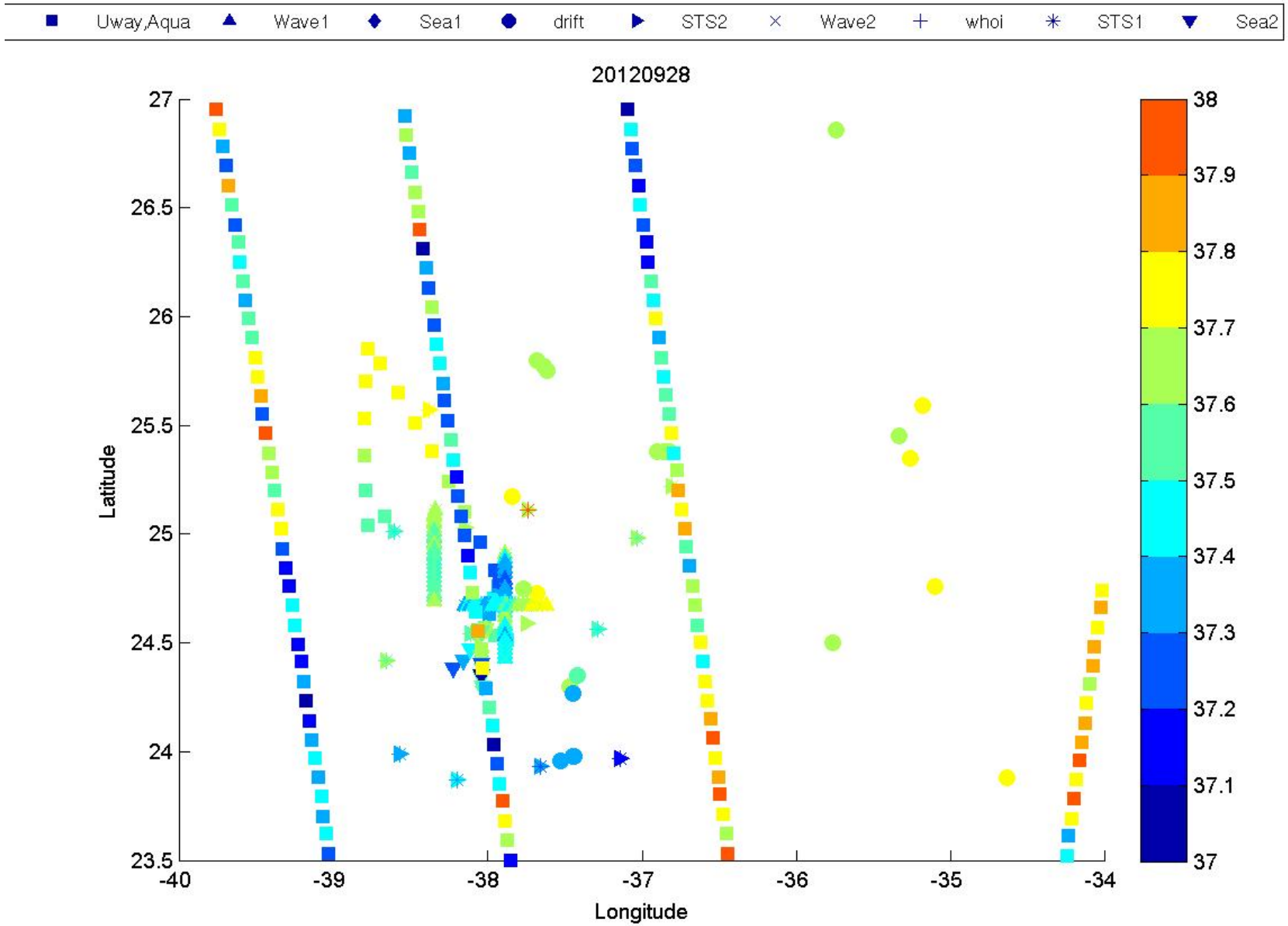
SPURS Salinity Measurements at Depths (in meters)

- Waveglider-1: 0.2
- Drifter: 0.5
- WHOI mooring: 1
- STS Float-1: 0-2
- Seaglider-1: 0-2
- Underway: 5
- Waveglider-2: 6
- STS-2: 2-15
- Seaglider-2: 2-15

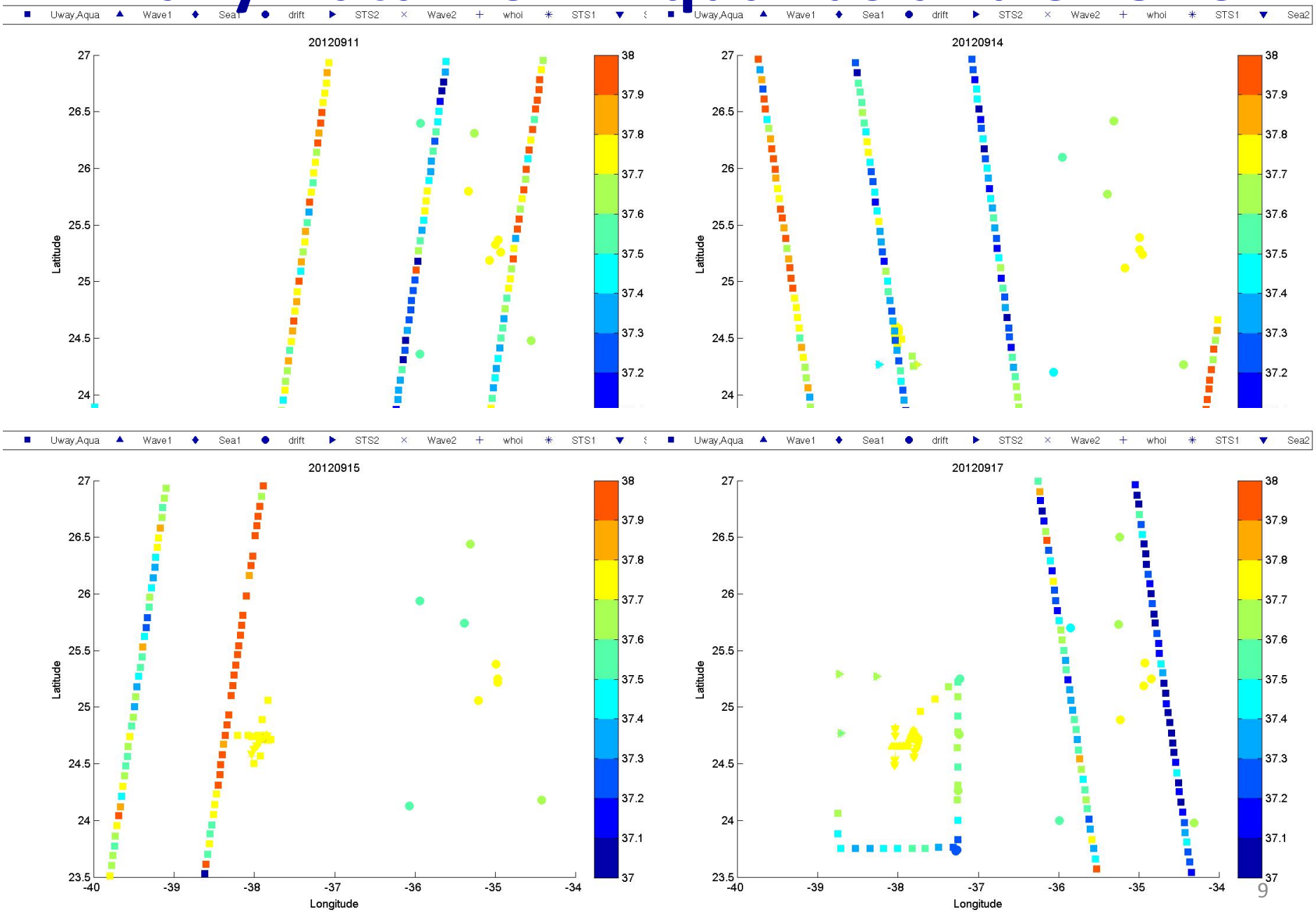



Daily Data from Aquarius and SPURS



Daily Data from Aquarius and SPURS



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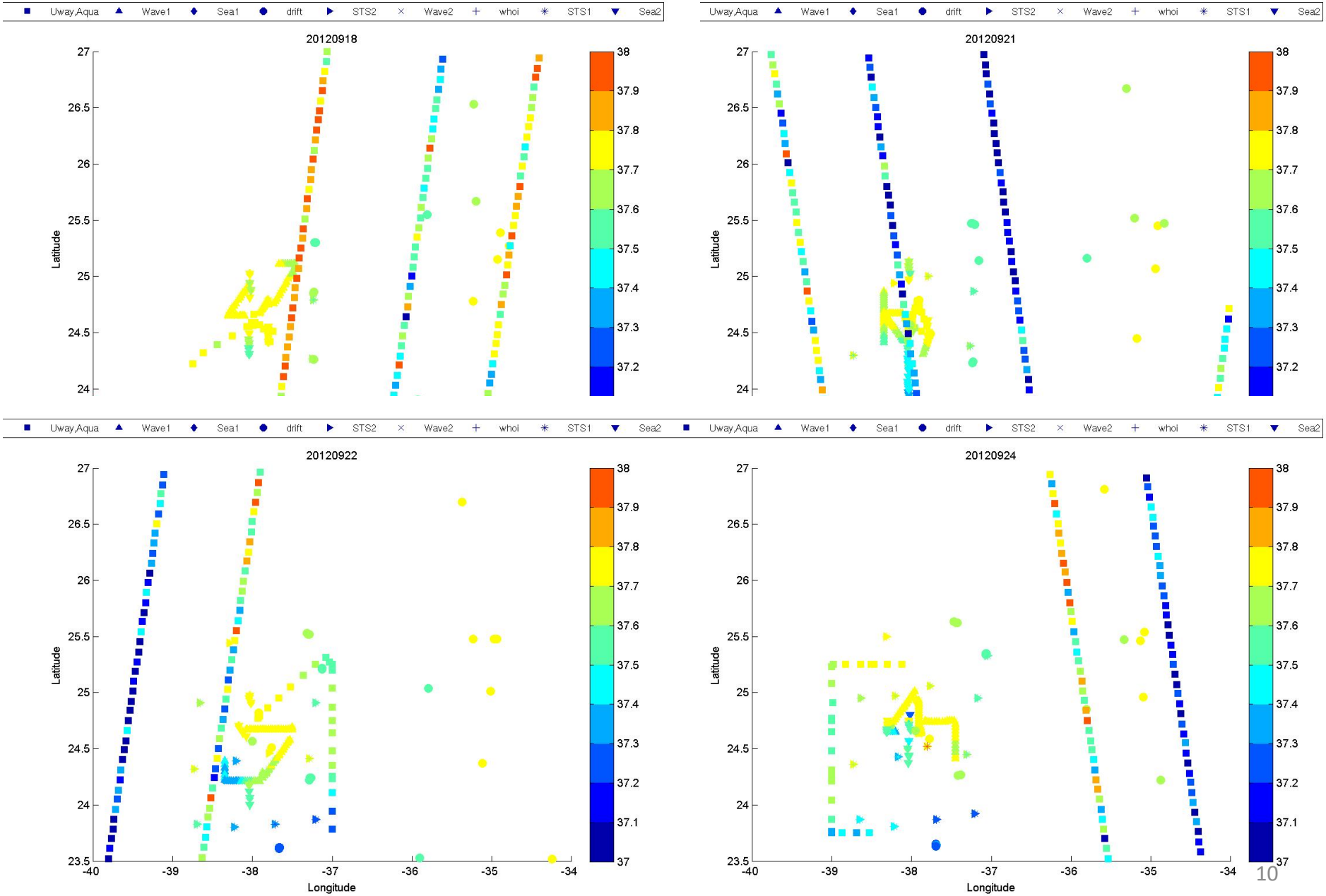
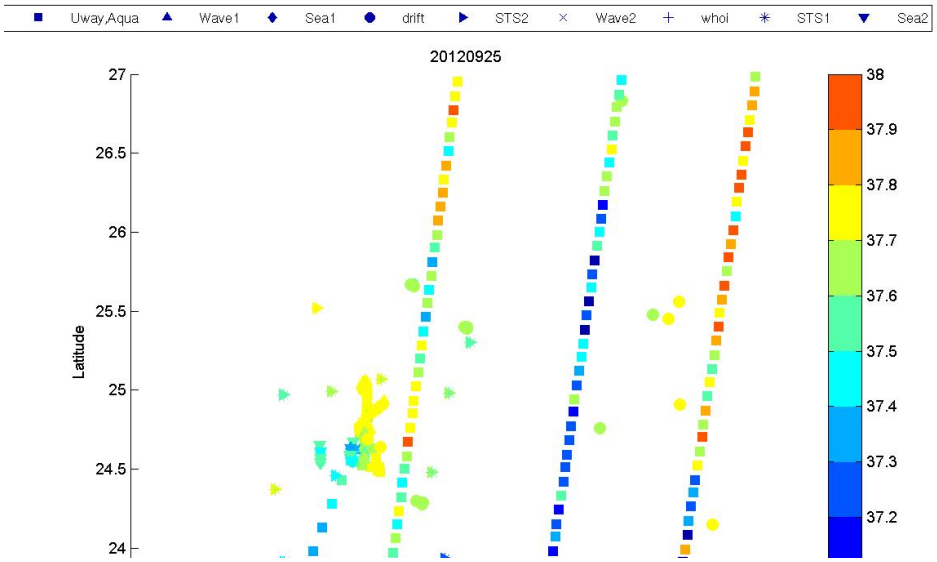
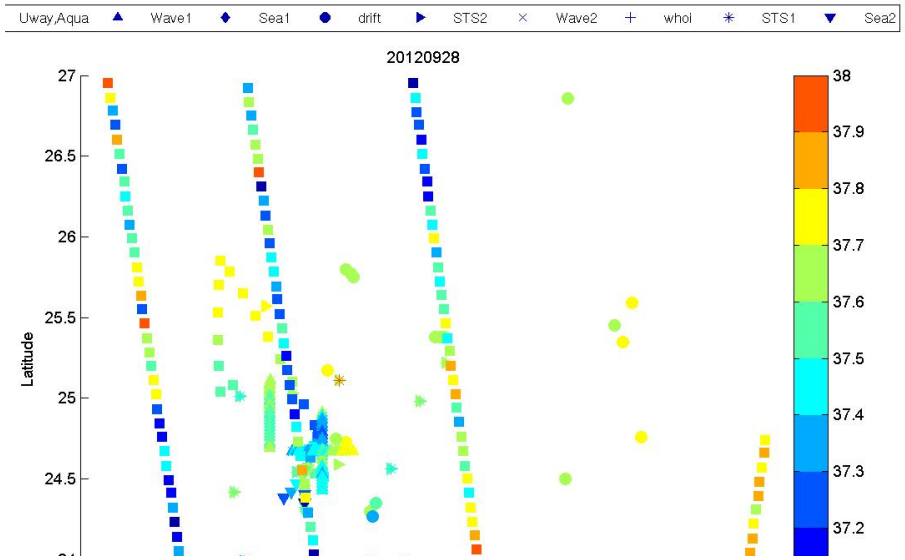
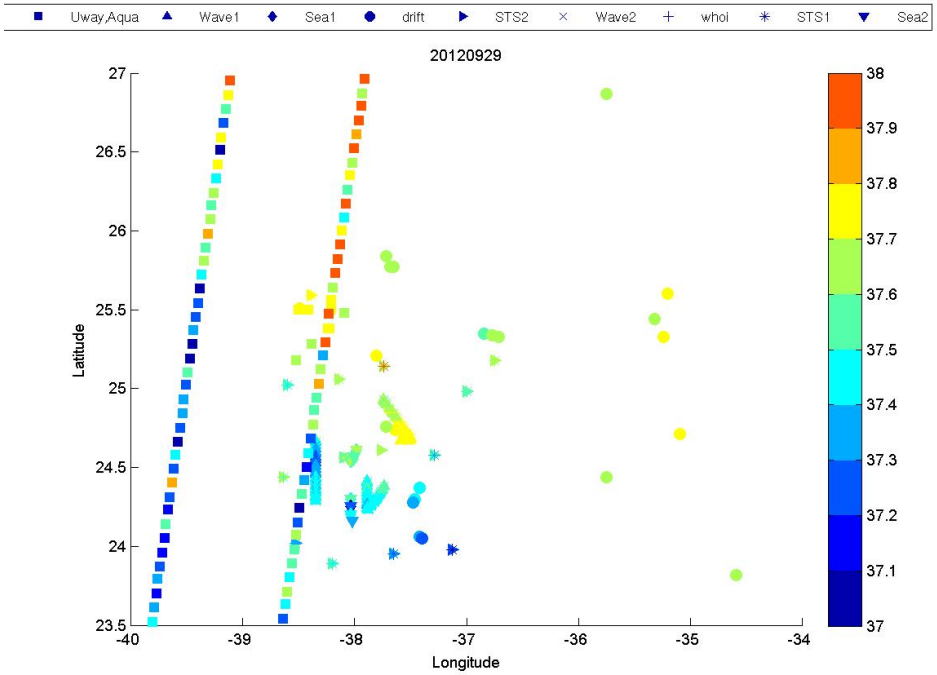
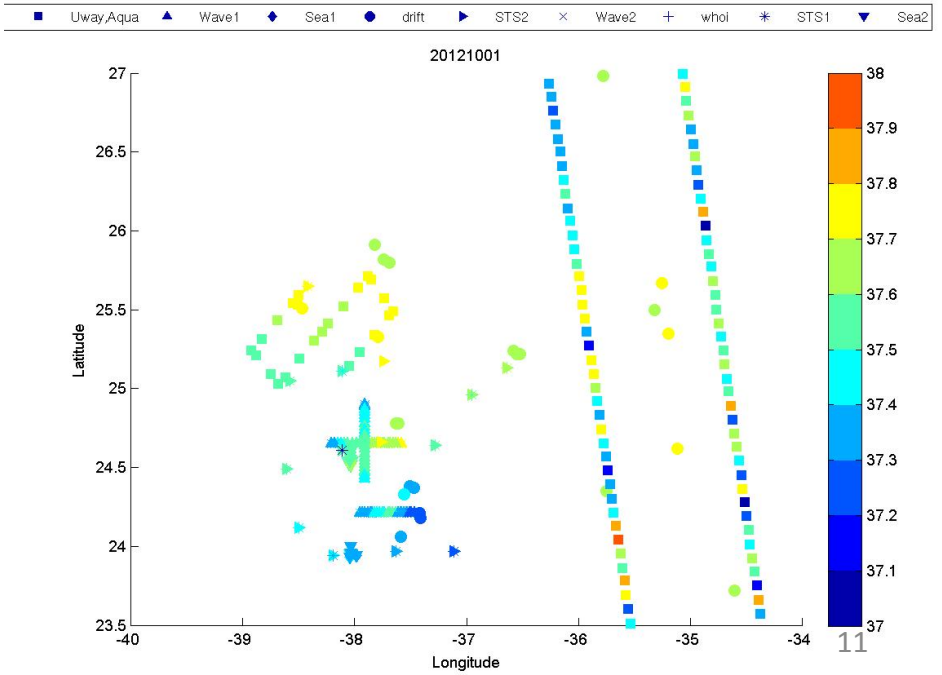


Daily Data from Aquarius and SPURS

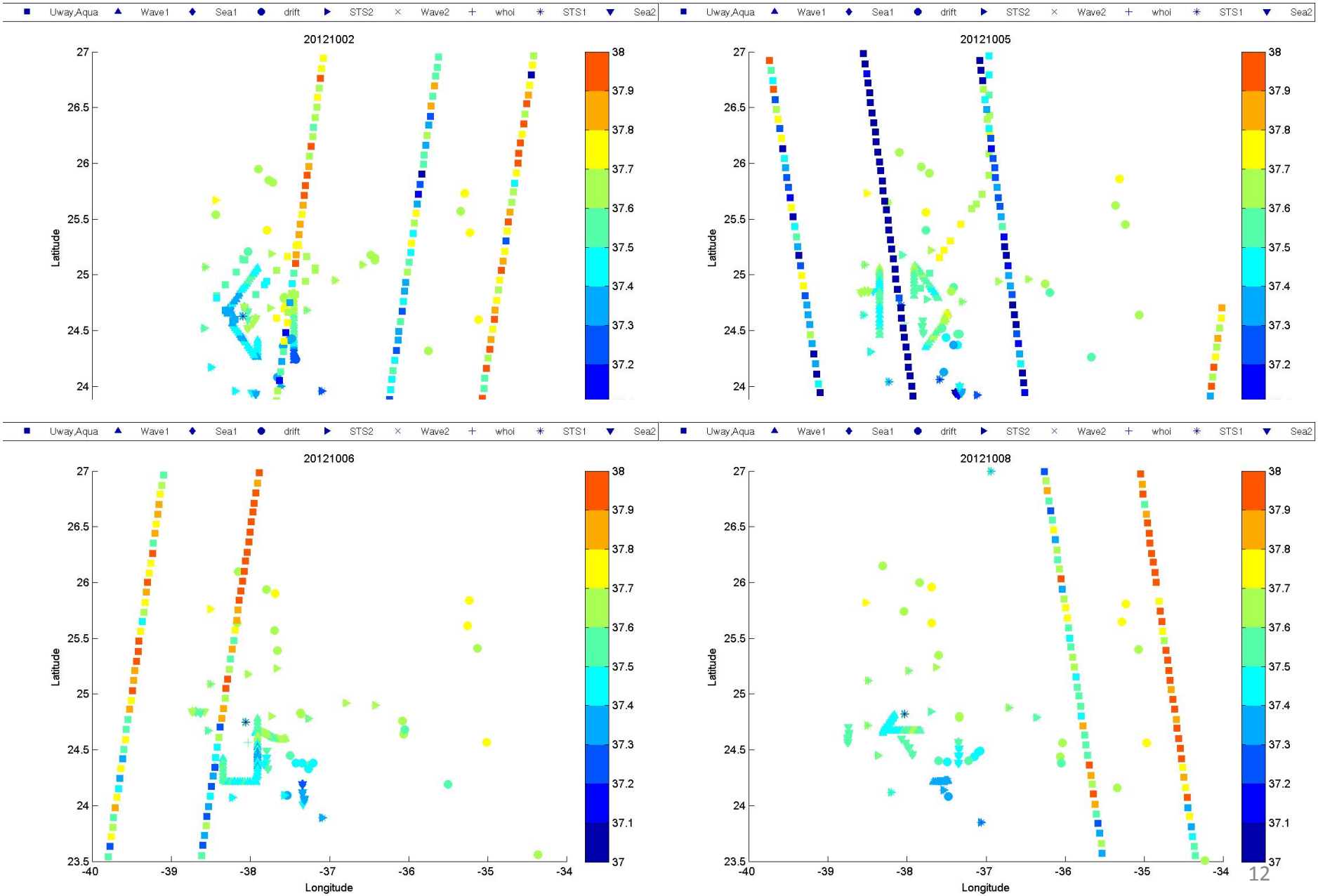


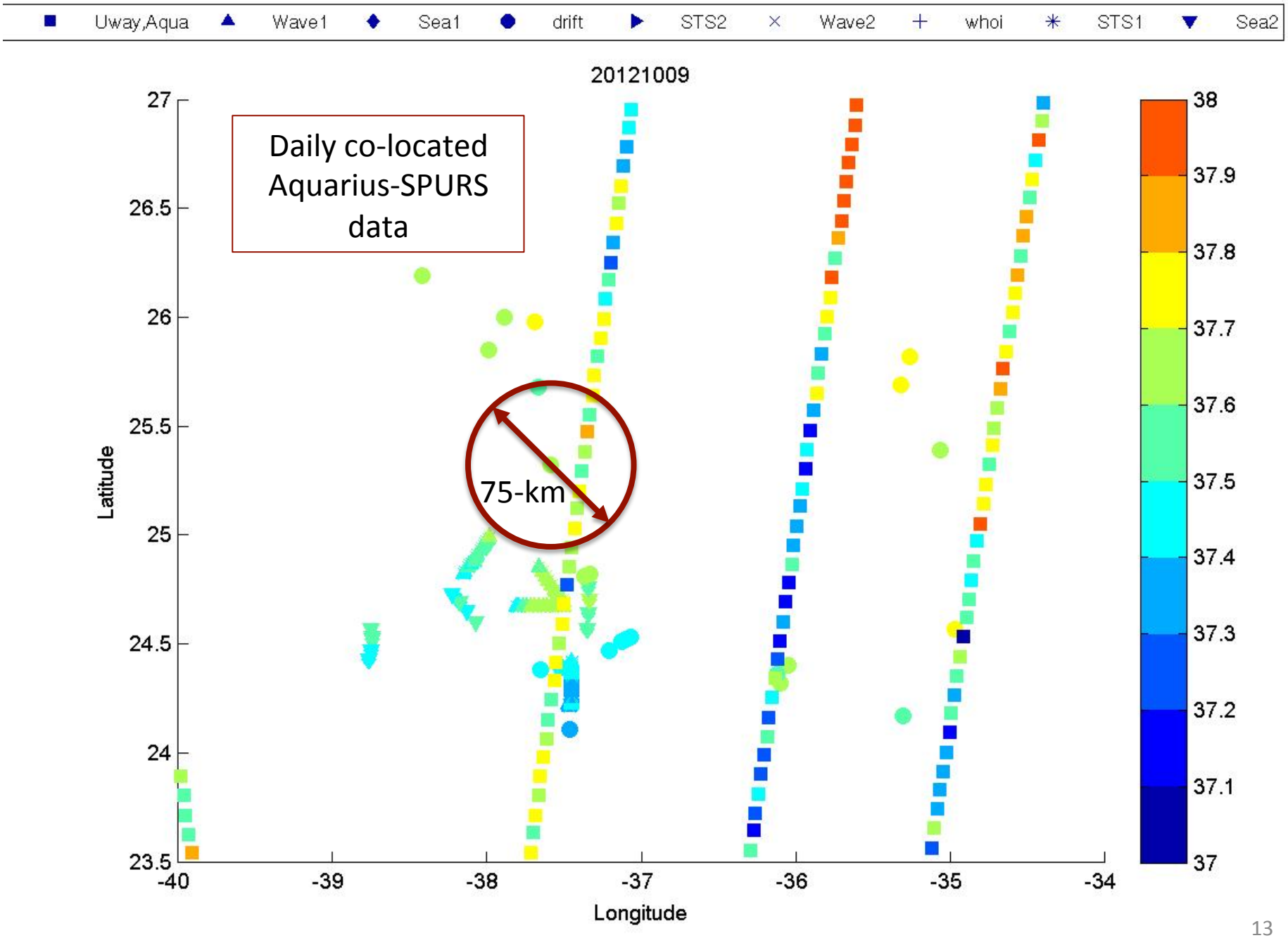


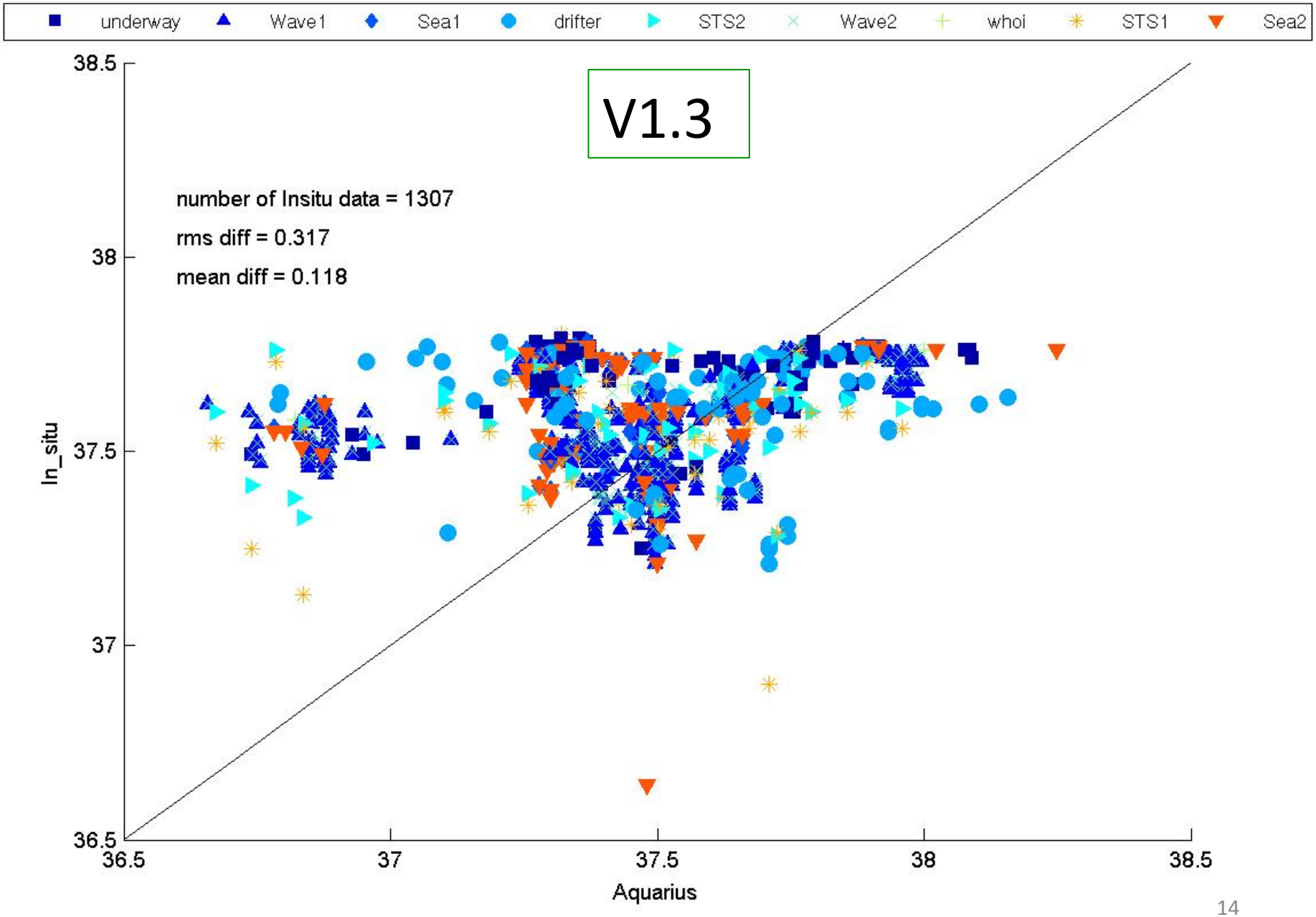




Daily Data from Aquarius and SPURS

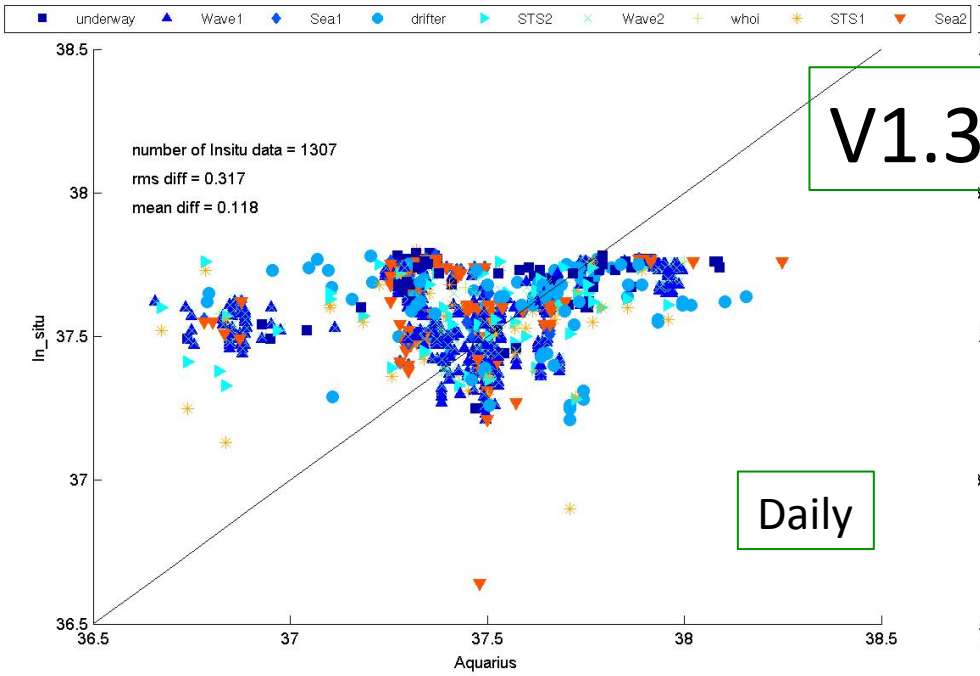


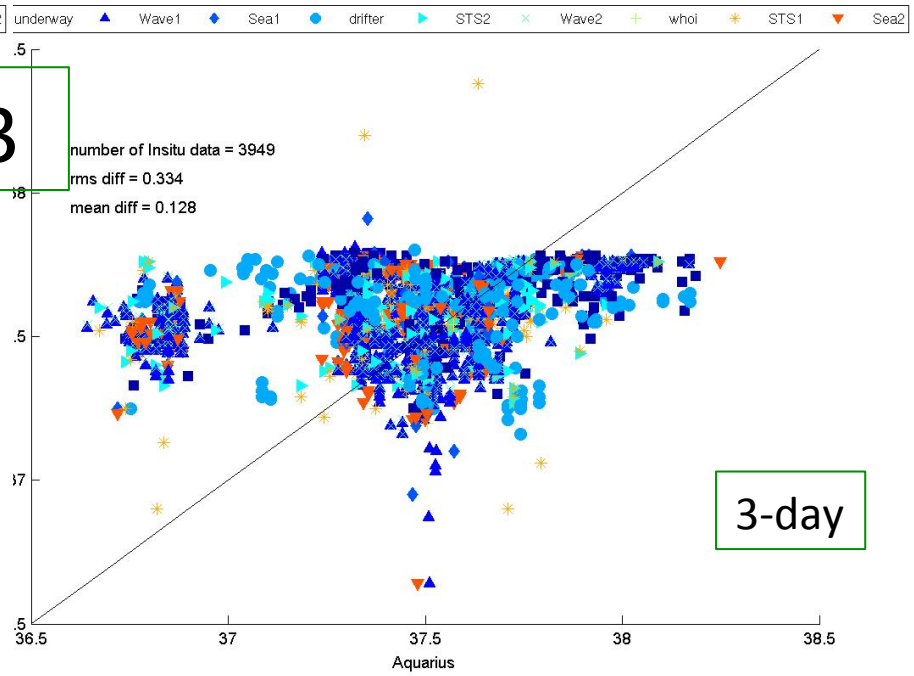

Uway,Aqua
Wave1
Sea1
drift
STS2
Wave2
whoi
STS1
Sea2
20121009
Daily co-located Aquarius-SPURS data
75-km
Latitude
Longitude
27
26.5
26
25.5
25
24.5
24
23.5
-40
-39
-38
-37
-36
-35
-34
38
37.9
37.8
37.7
37.6
37.5
37.4
37.3
37.2
37.1
37

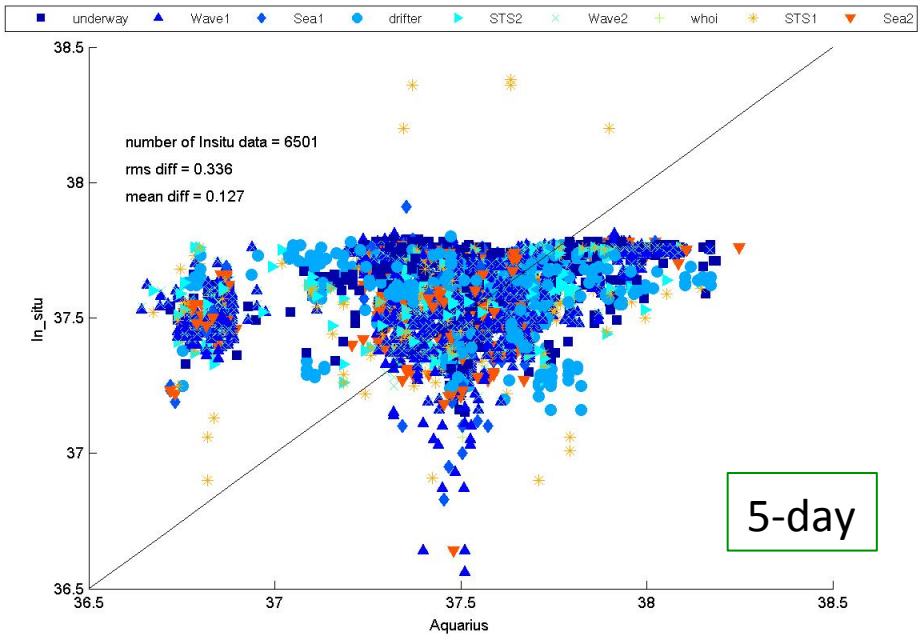

underway
Wave1
Sea1
drifter
STS2
Wave2
whoi
STS1
Sea2
V1.3
number of Insitu data = 1307
rms diff = 0.317
mean diff = 0.118
In_situ
Aquarius
38.5
38
37.5
37
36.5
36.5
37
37.5
38
38.5

Aquarius & SPURS Salinity Bias and RMS

Instrument	Depth (m)	#Point	Bias (psu)	RMS (psu)
• WaveG-1:	0.2	382	0.100	0.315
• Drifter:	0.5	106	0.032	0.308
• Mooring:	1	8	0.198	0.356
• STS-1:	0-2	51	0.071	0.337
• SeaG-1:	0-2	59	0.221	0.314
• Underway:	5	136	0.166	0.307
• WaveG-2:	6	382	0.106	0.316
• SeaG-2:	2-15	127	0.196	0.332
• STS-2:	2-15	56	0.125	0.331


underway
Wave1
Sea1
drifter
STS2
Wave2
whoi
STS1
Sea2
number of Insitu data = 1307
rms diff = 0.317
mean diff = 0.118
V1.3
Daily
In_situ
Aquarius
36.5
37
37.5
38
38.5


underway
Wave1
Sea1
drifter
STS2
Wave2
whoi
STS1
Sea2
number of Insitu data = 3949
rms diff = 0.334
mean diff = 0.128
3-day
Aquarius
36.5
37
37.5
38
38.5


underway
Wave1
Sea1
drifter
STS2
Wave2
whoi
STS1
Sea2
number of Insitu data = 6501
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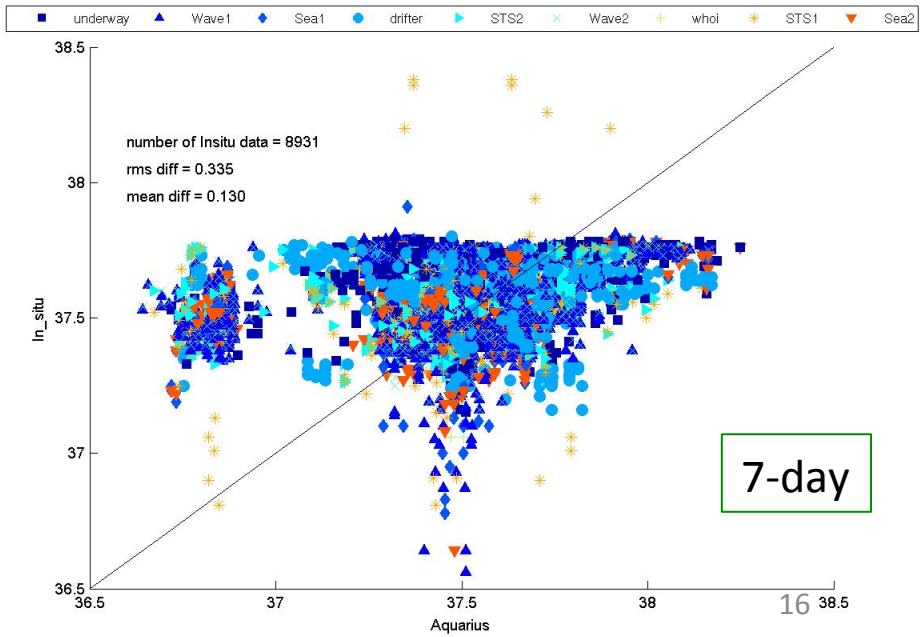
mean diff = 0.127
5-day
In_situ
Aquarius
36.5
37
37.5
38
38.5


underway
Wave1
Sea1
drifter
STS2
Wave2
whoi
STS1
Sea2
number of Insitu data = 8931
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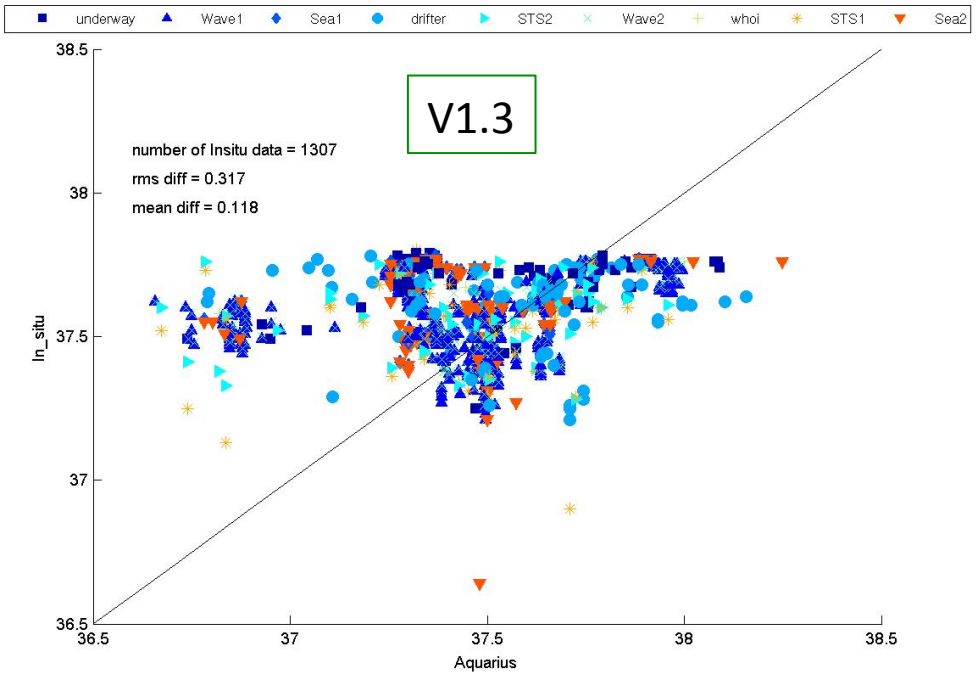
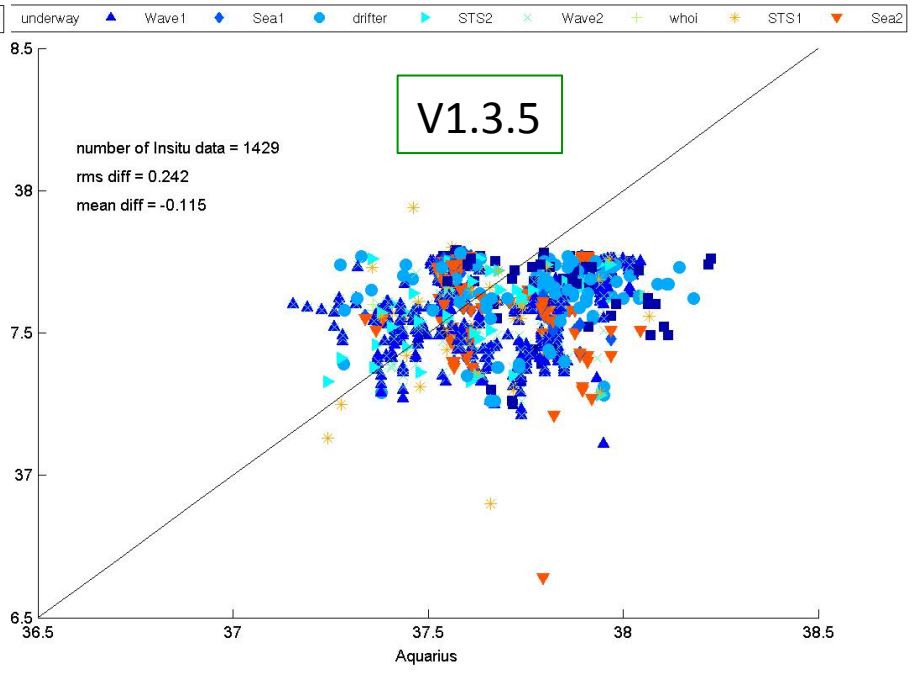
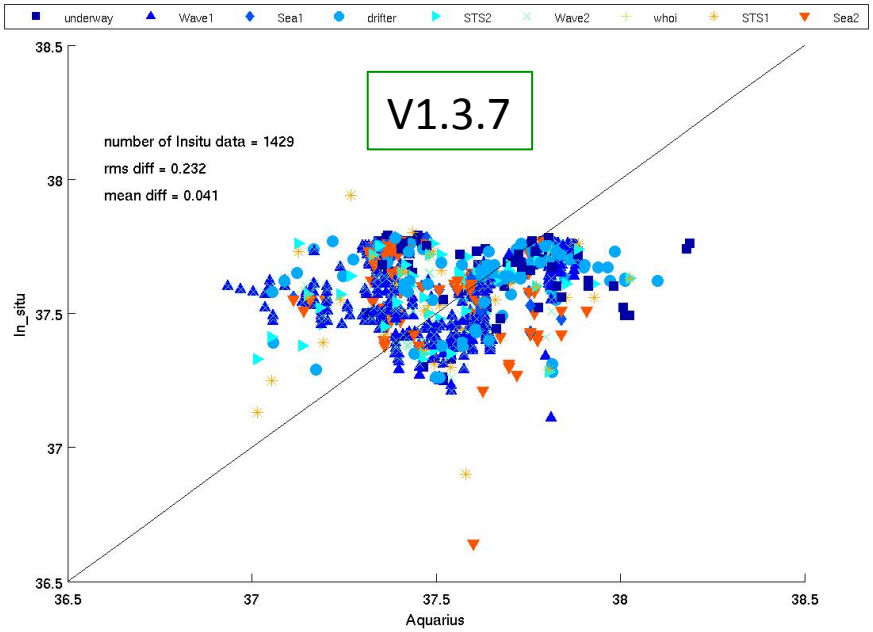
mean diff = 0.130
7-day
In_situ
Aquarius
36.5
37
37.5
38
38.5



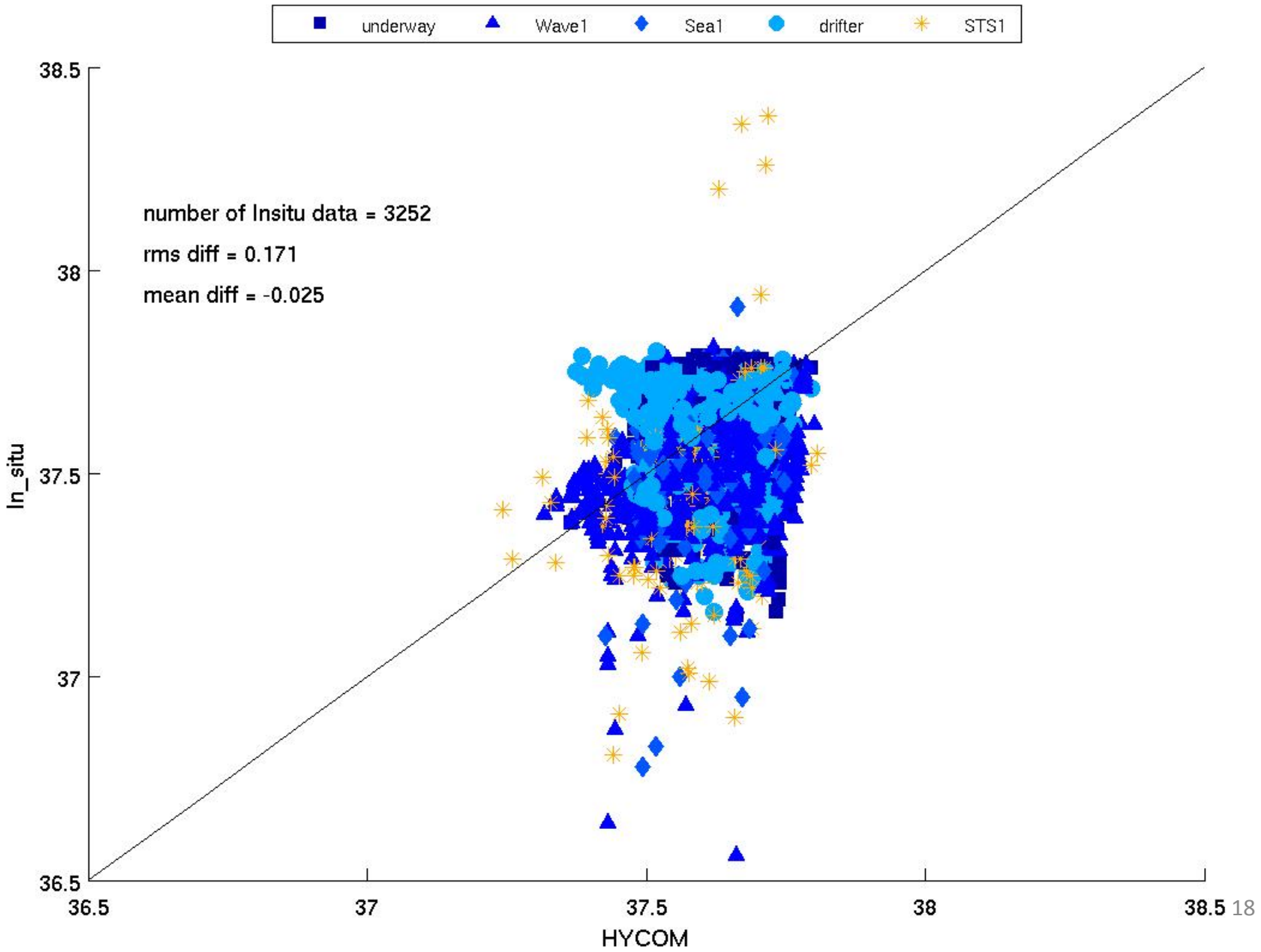




V1.3.8 is now available;

V2.0 to be released soon!

Reference Salinity from HYCOM



QUESTIONS?