CTD Profiling by Harvesting Energy from a Surface Mooring

.....steps towards next-gen TAO

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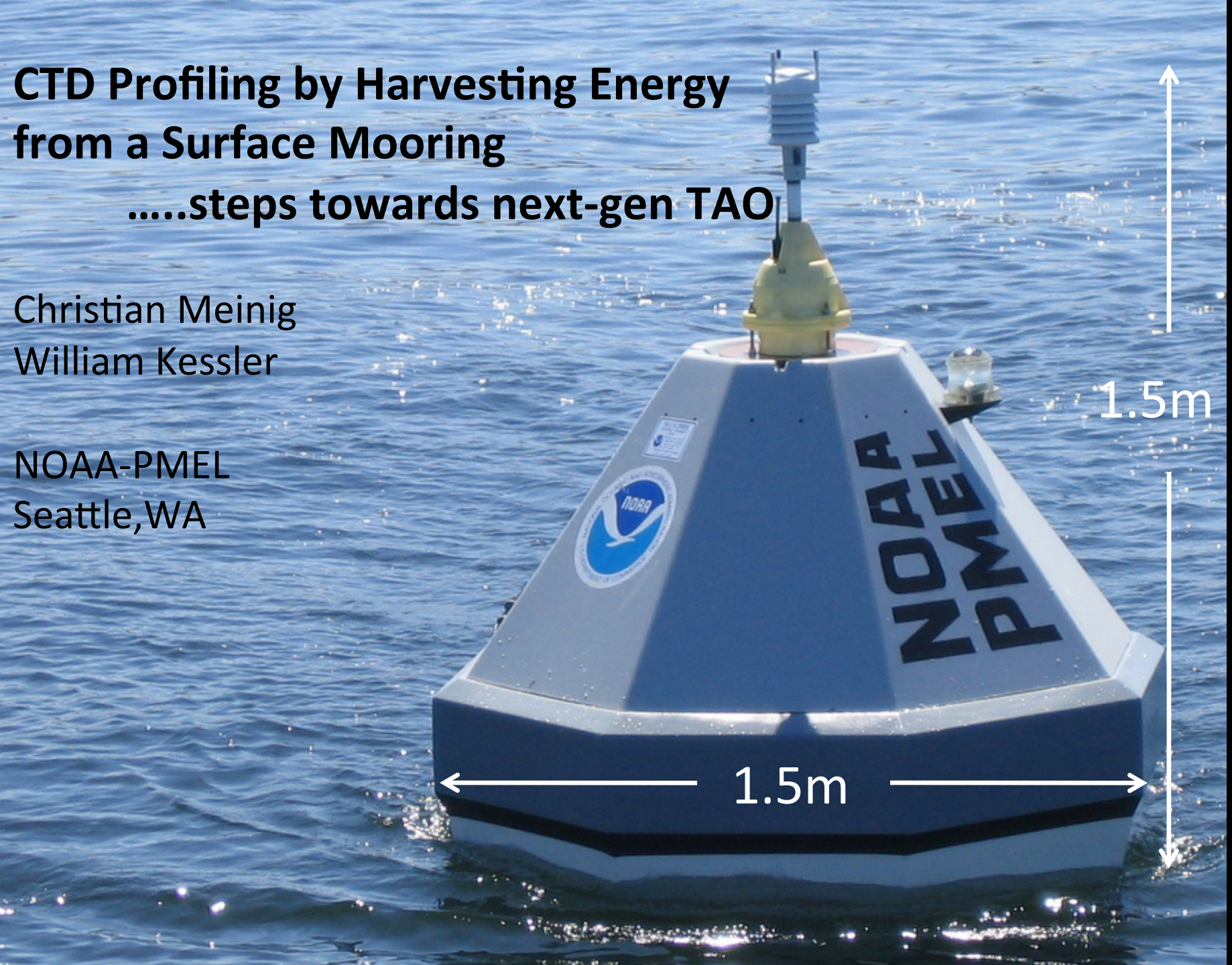
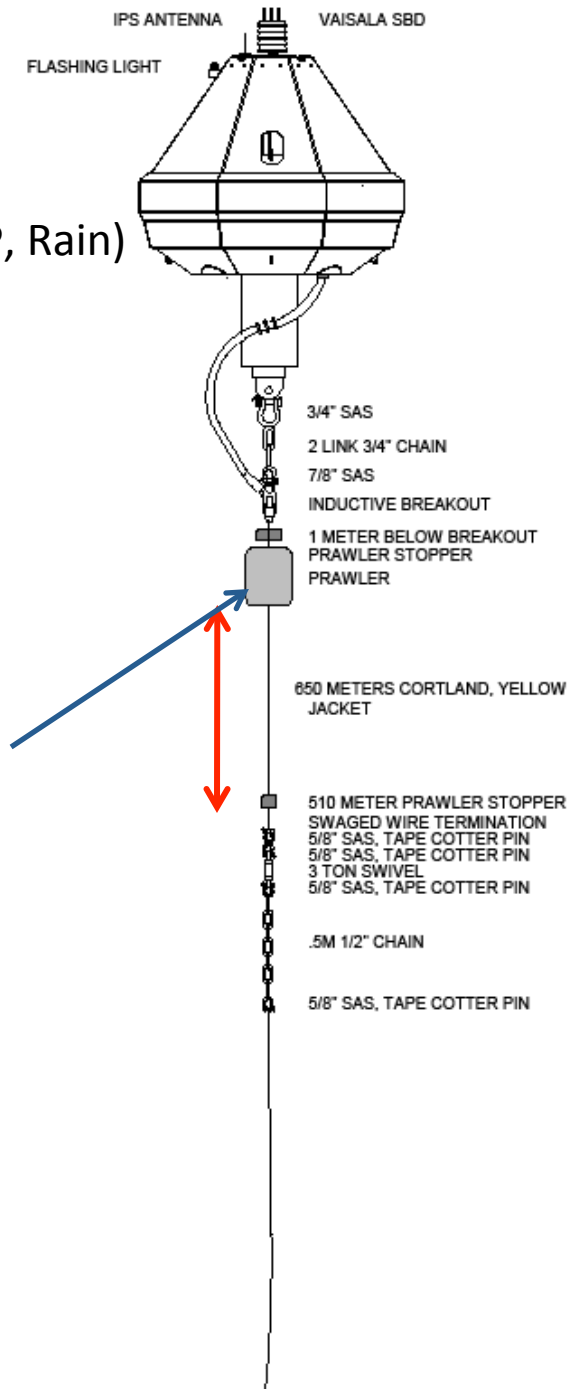


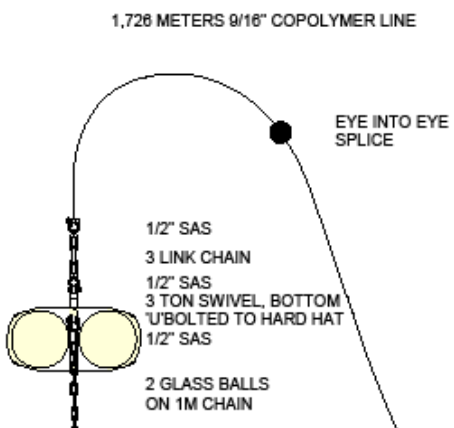
PICO Mooring Diagram

<u>Standard:</u>
-Vaisala WTX-520 (ATRH, Wind,BP, Rain)
-Inductive link
-Iridium coms

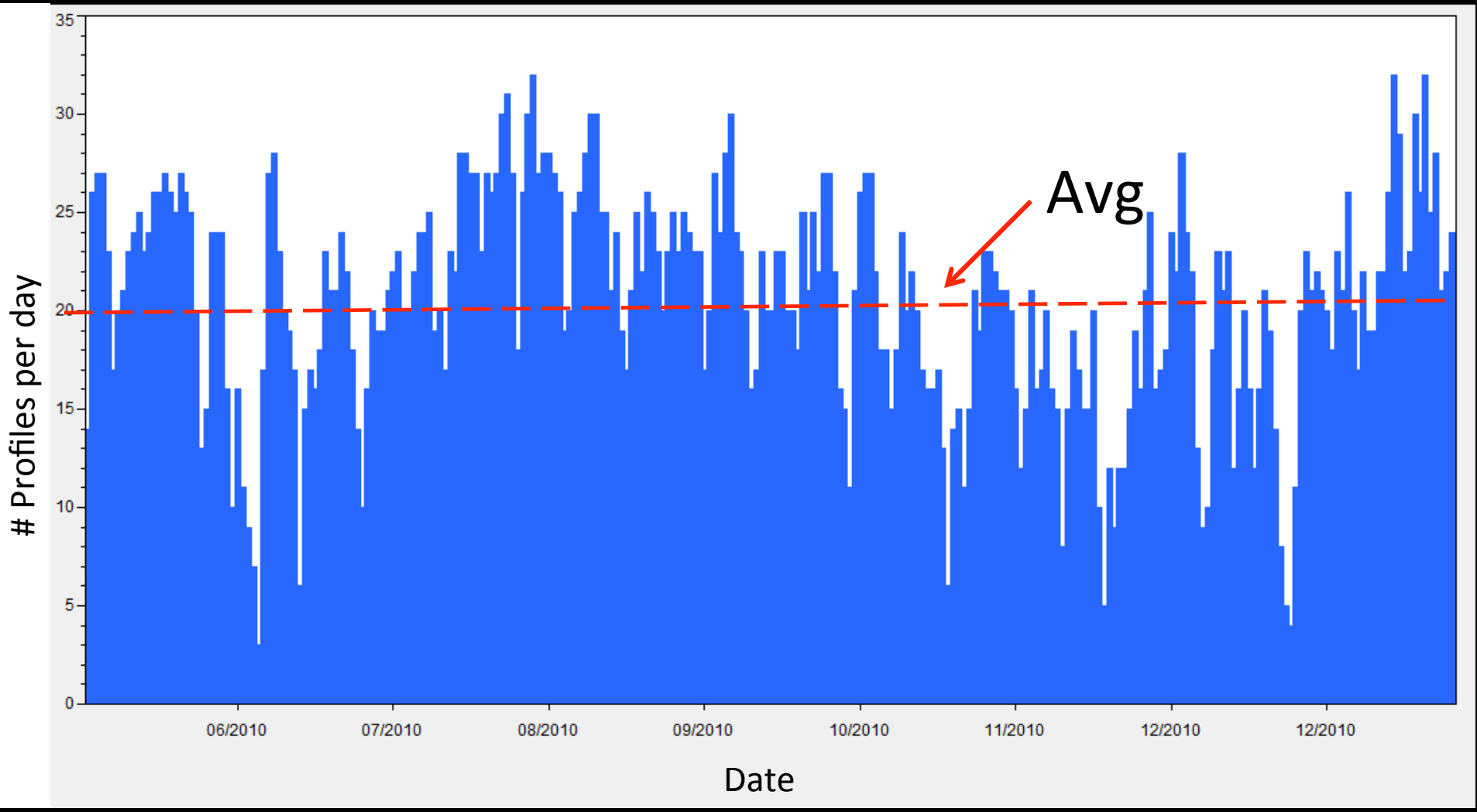
<u>Optional:</u>
-SSTC, others

<u>Prawler(Profiler+Crawler):</u>
-CTD cycle depth ~3-500m
-Realtime command/control
-new SBE pumped CTD

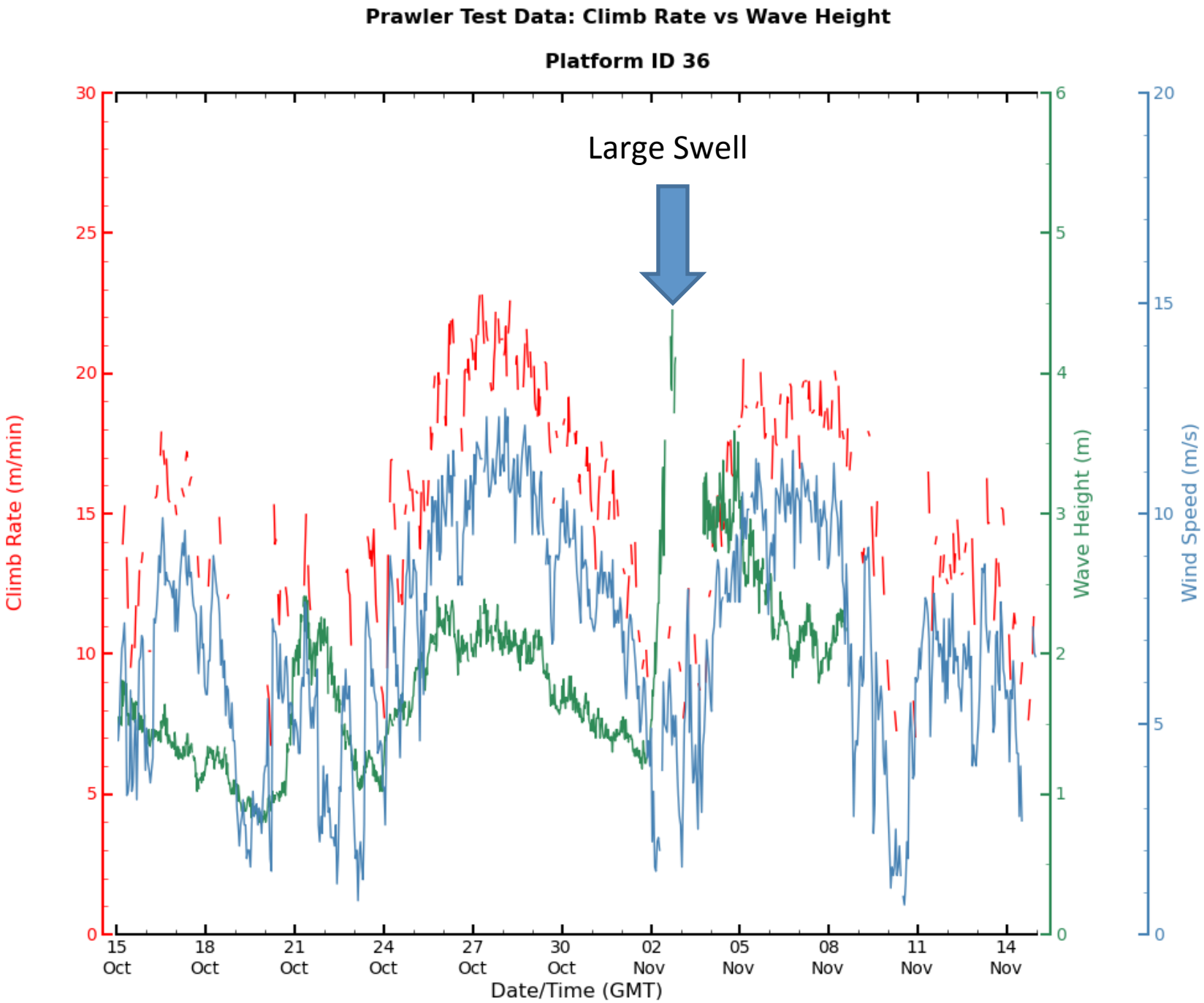


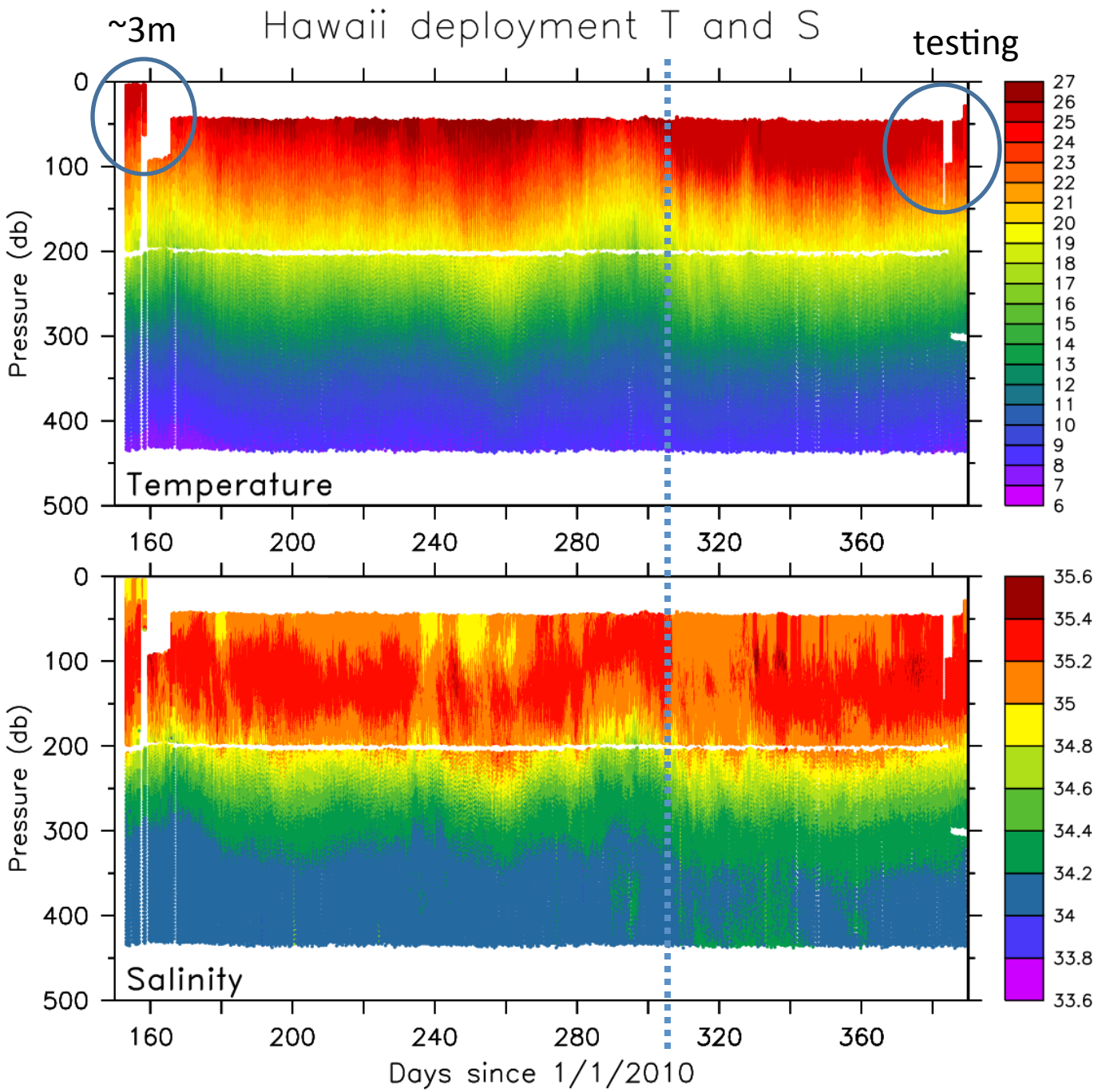


Prawler Stats (off Hawaii)

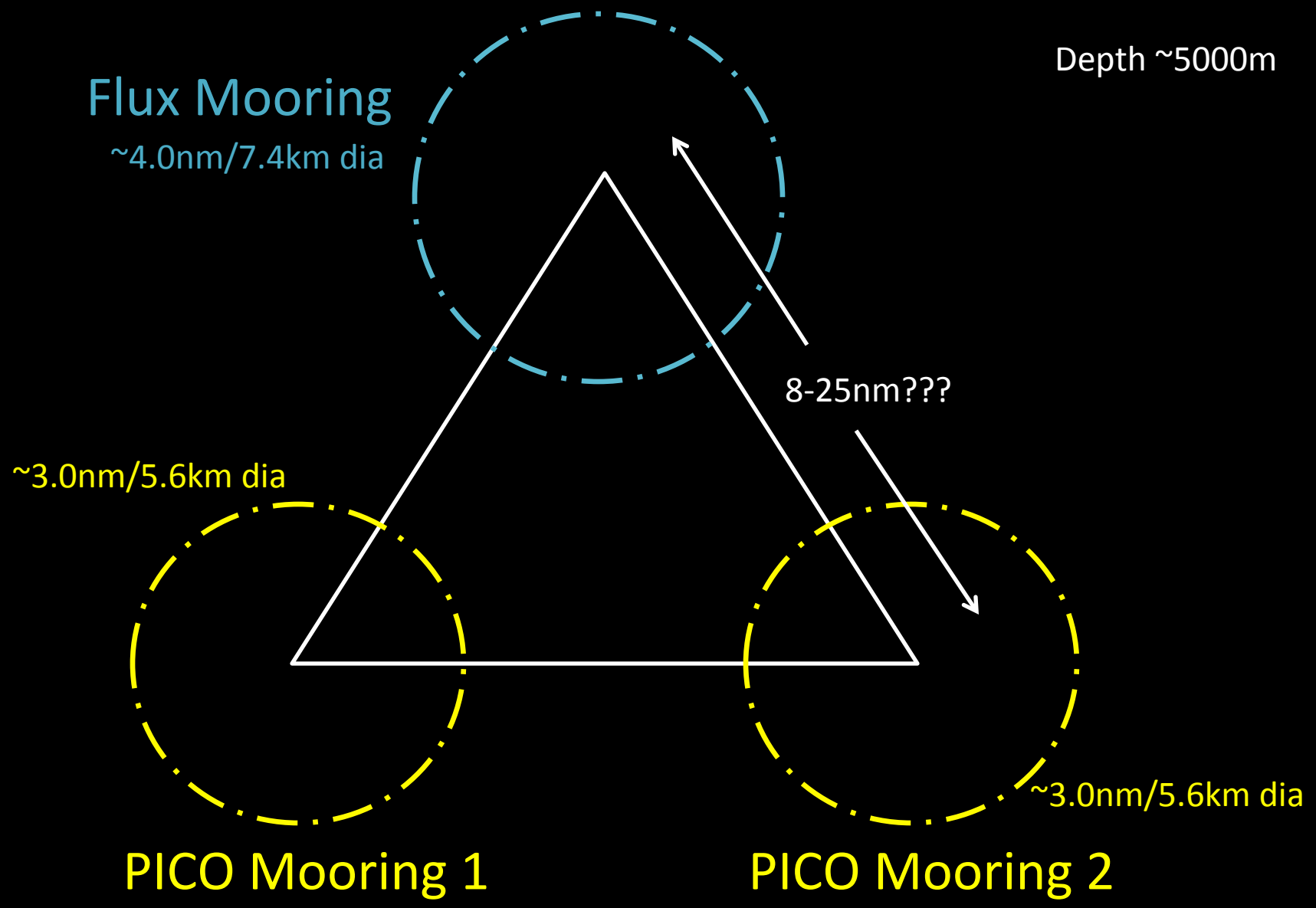


Total distance traveled= 4390km in 264 days


Prawler Test Data: Climb Rate vs Wave Height
Platform ID 36
Large Swell
Climb Rate (m/min)
Wave Height (m)
Wind Speed (m/s)
Date/Time (GMT)
15 Oct
18 Oct
21 Oct
24 Oct
27 Oct
30 Oct
02 Nov
05 Nov
08 Nov
11 Nov
14 Nov


~3m
Hawaii deployment T and S
testing
Pressure (db)
Temperature
Salinity
Days since 1/1/2010
0
100
200
300
400
500
160
200
240
280
320
360
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
35.6
35.4
35.2
35
34.8
34.6
34.4
34.2
34
33.8
33.6

SPURS Mooring Configs?



PICO concept: Easy to Deploy TAO
(under development)

Design:

-reduce costs

~3yr endurance

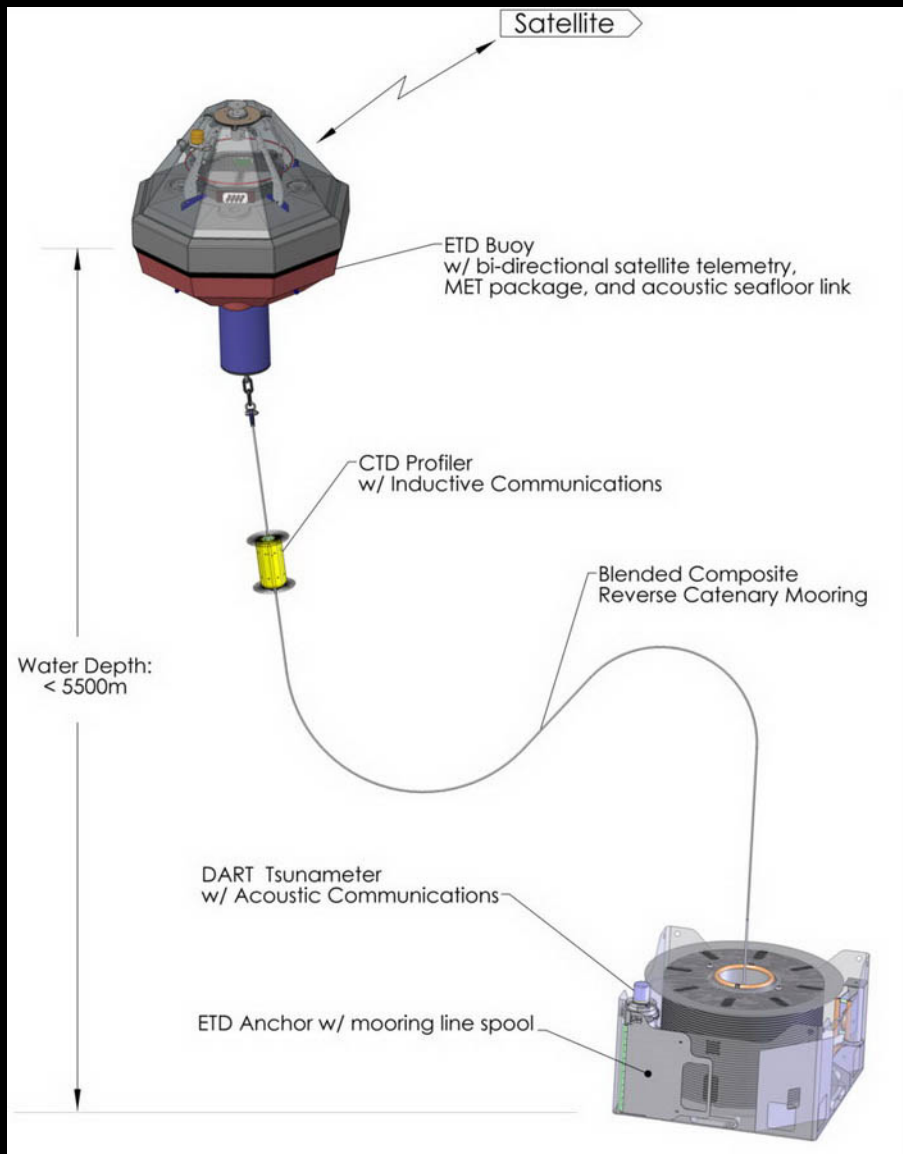
-small (by necessity)

-micro power

Sampling:

-flexible, realtime

-on-demand or scheduled

-typ 5-8 CTD profiles/day

-other sensors as needed