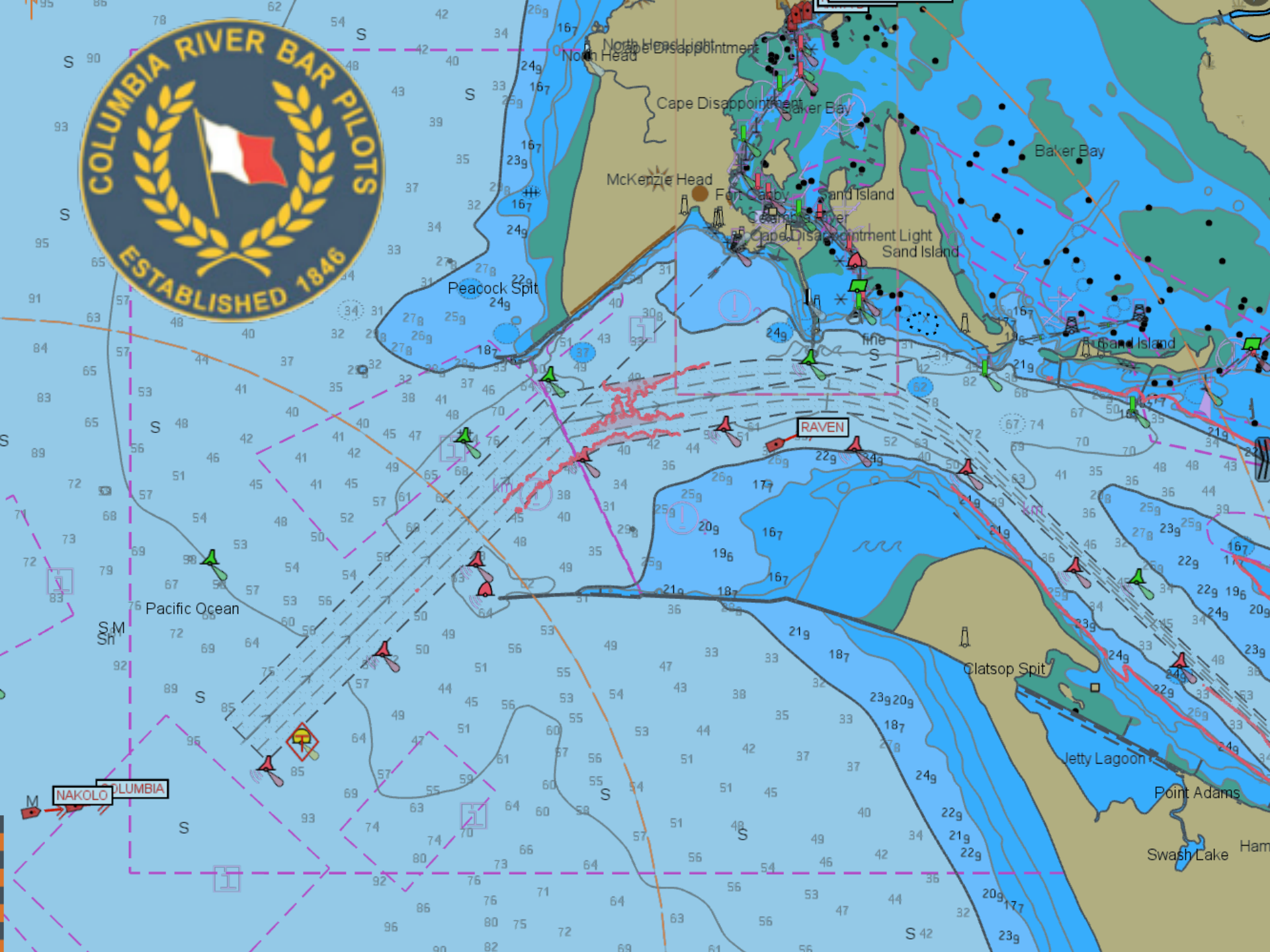
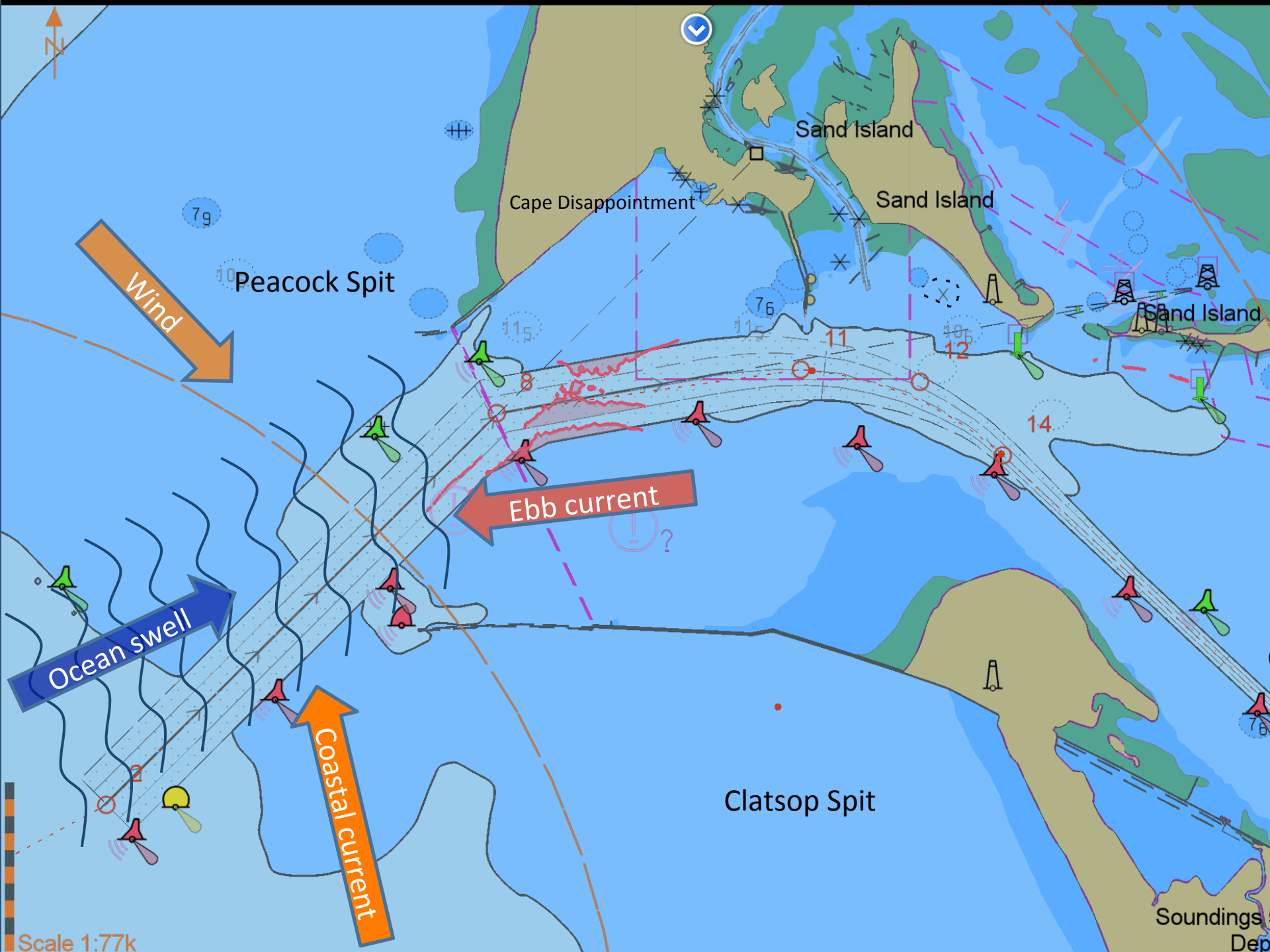
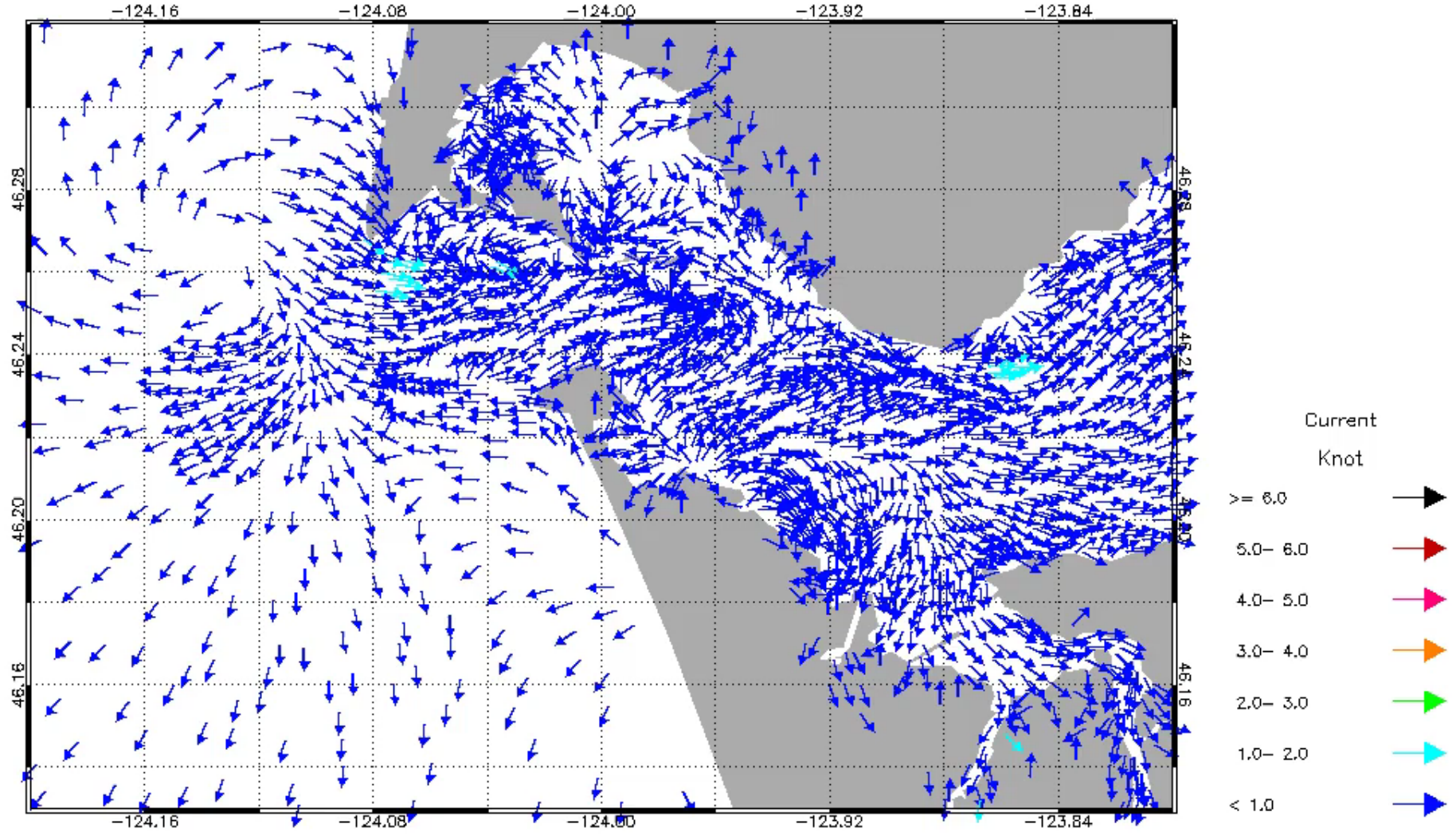
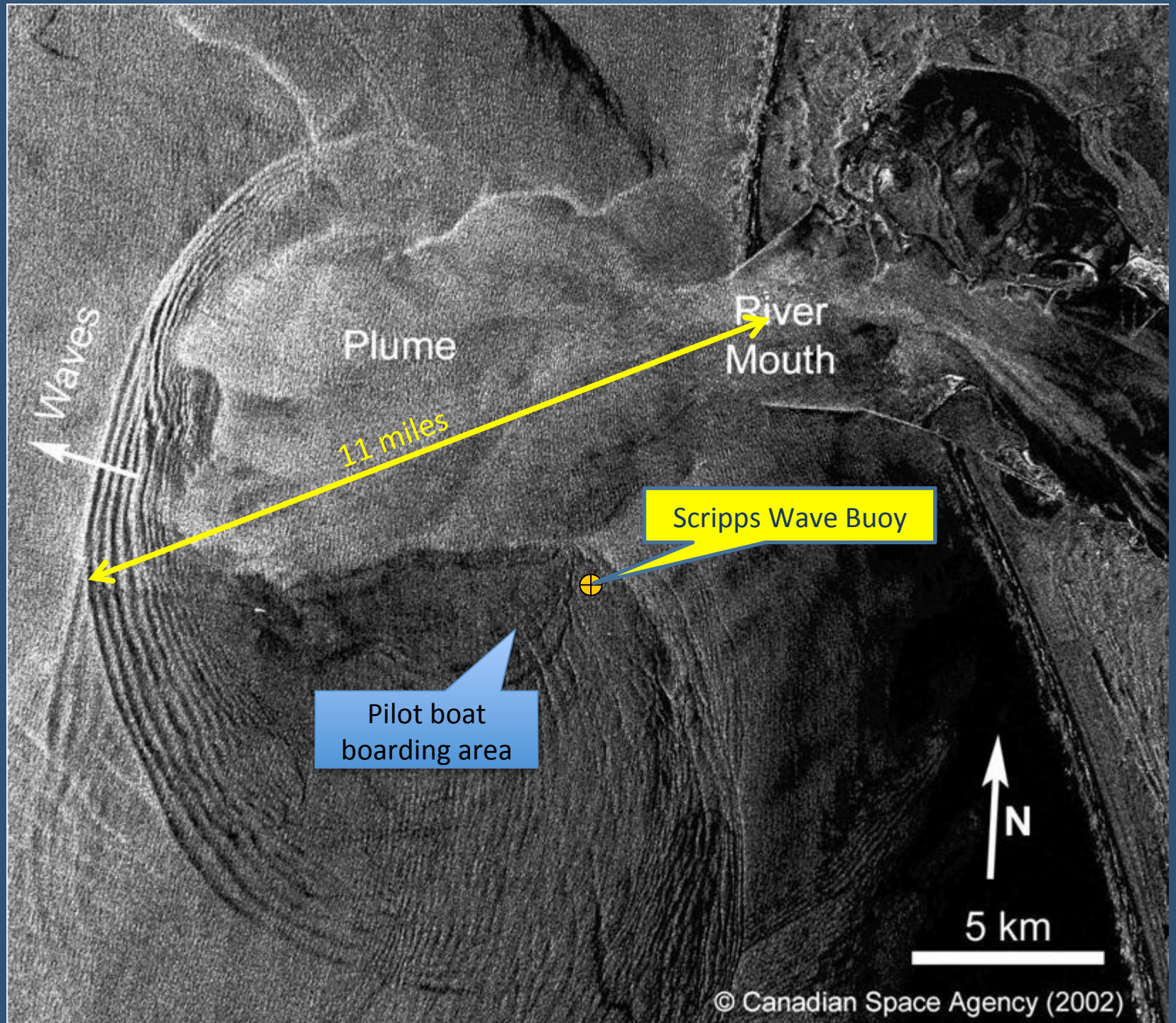

COLUMBIA RIVER BAR PILOTS
ESTABLISHED 1846
North Head Light
North Head
Cape Disappointment
Cape Disappointment
Baker Bay
Baker Bay
McKenzie Head
Fort Canby
Sand Island
Columbia River
Cape Disappointment Light
Sand Island
Peacock Spit
Sand Island
RAVEN
Pacific Ocean
Clatsop Spit
Jetty Lagoon
Point Adams
Swash Lake
NAKOLO
COLUMBIA

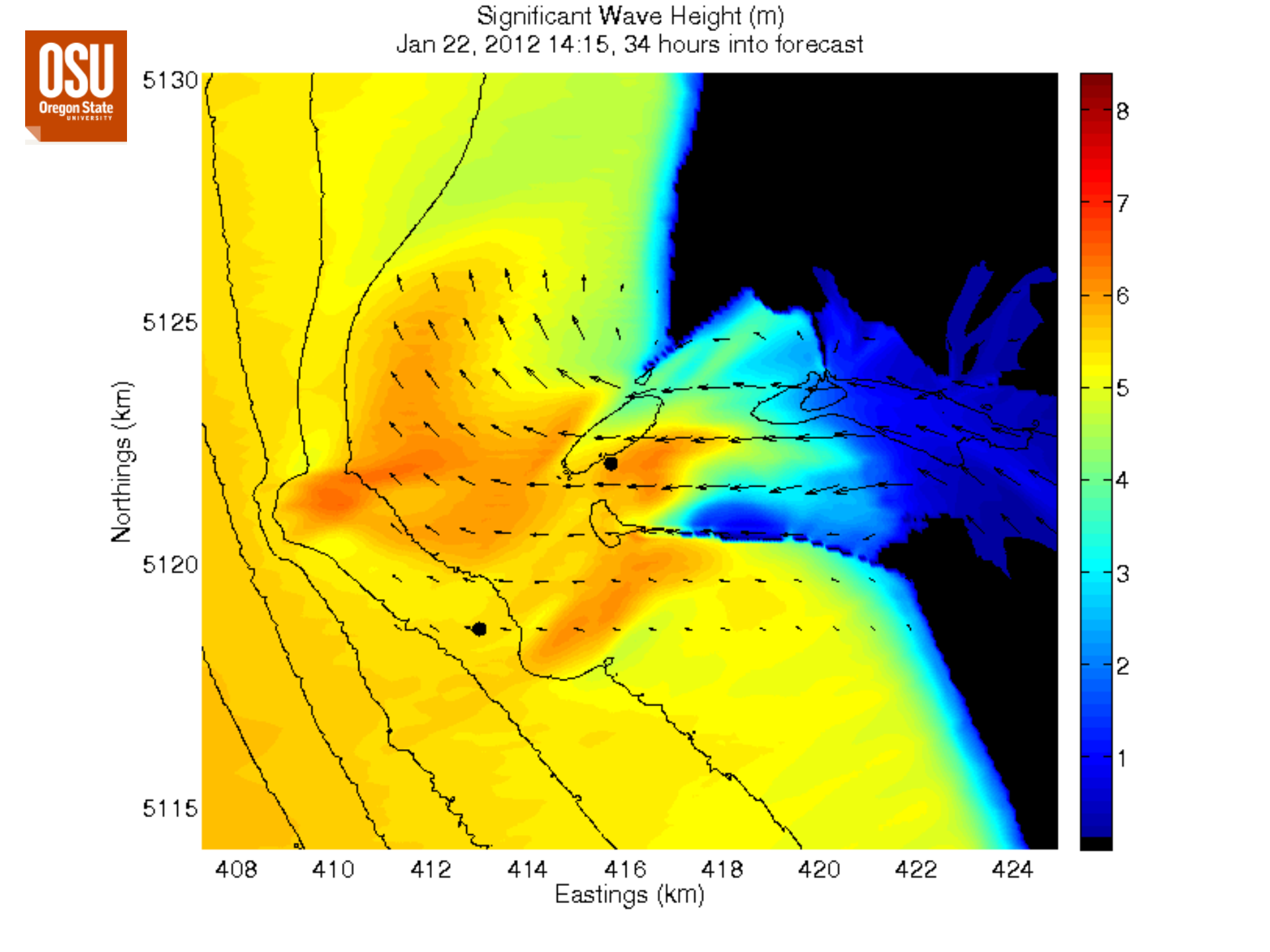
Pilot Boarding


Sand Island
Cape Disappointment
Sand Island
Peacock Spit
Wind
Sand Island
Ebb current
Ocean swell
Coastal current
Clatsop Spit
Soundings
Scale 1:77k

Columbia River Estuary Operational Forecast (CREOFS)

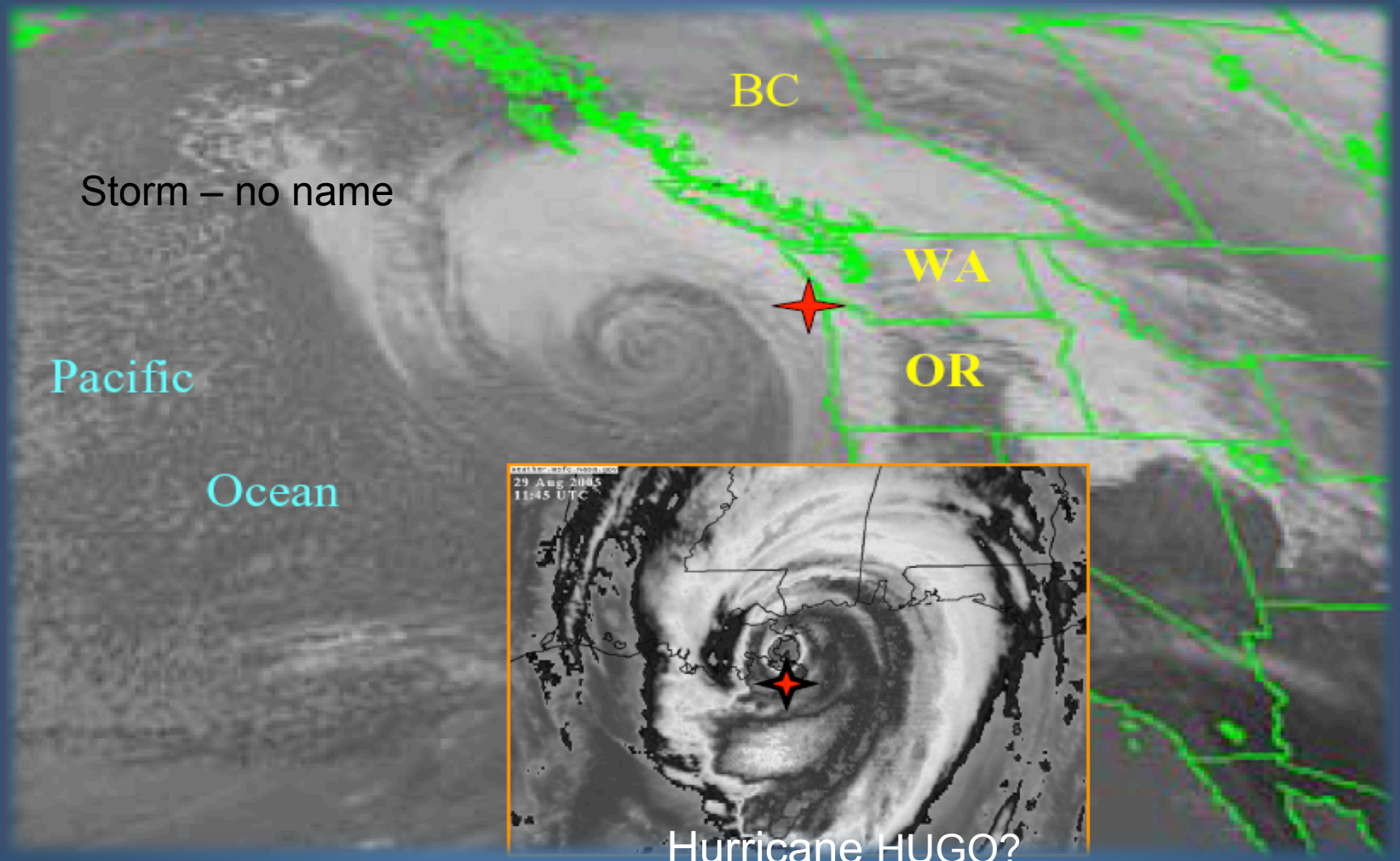


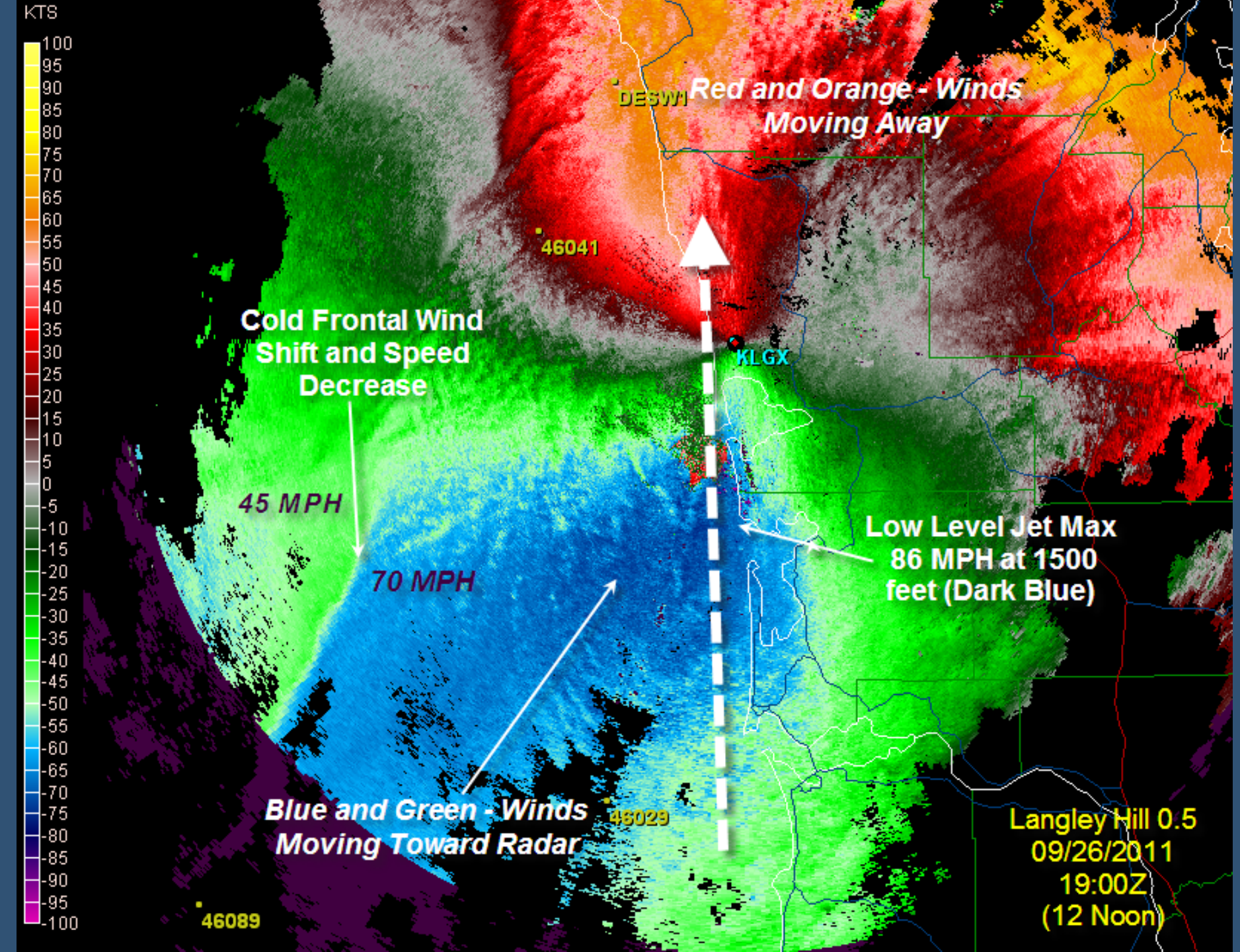

Waves
Plume
River Mouth
11 miles
Scripps Wave Buoy
Pilot boat boarding area
N
5 km
© Canadian Space Agency (2002)

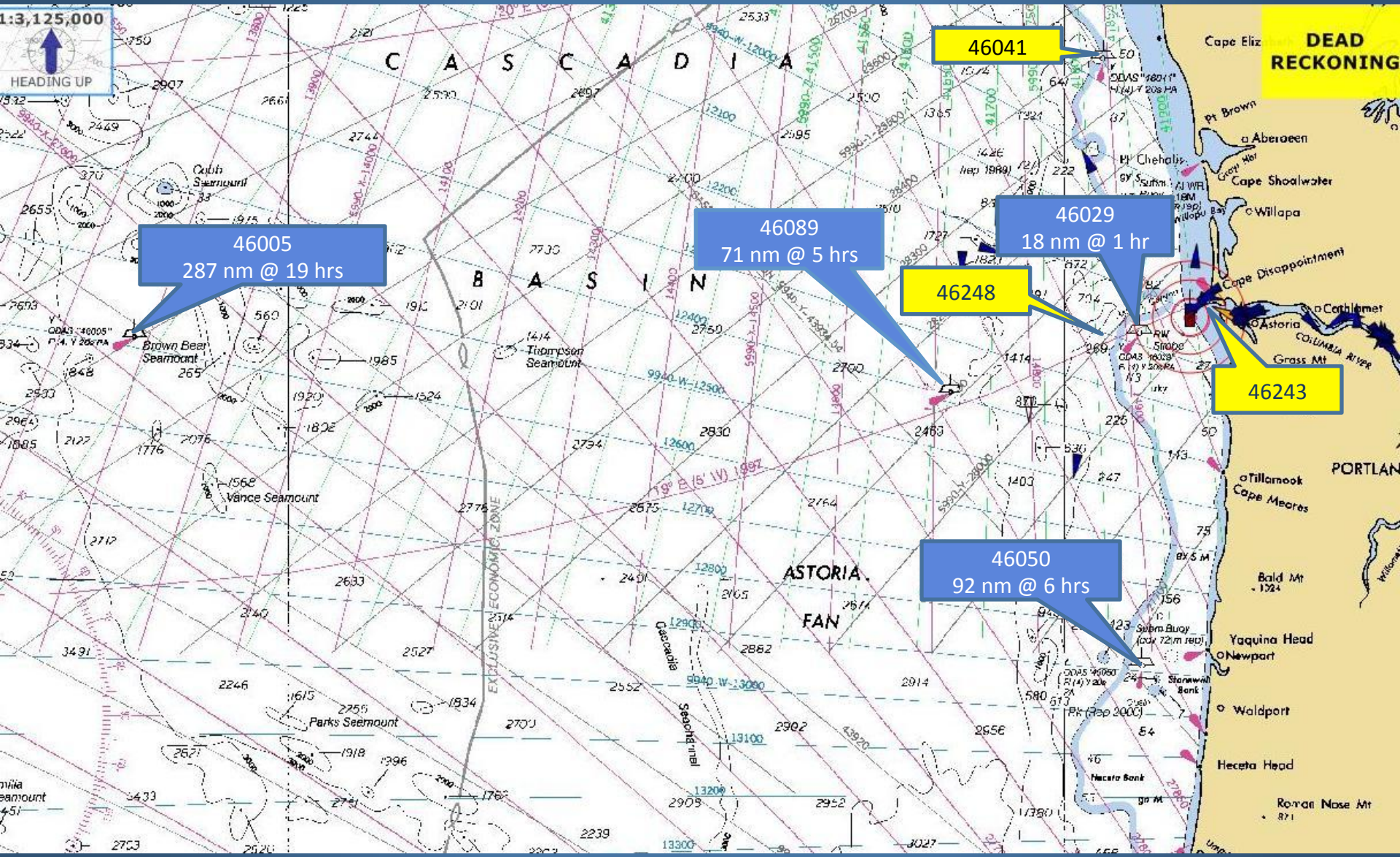

Significant Wave Height (m)
Jan 22, 2012 14:15, 34 hours into forecast
5130
5125
5120
5115
Northings (km)
408
410
412
414
416
418
420
422
424
Eastings (km)
8
7
6
5
4
3
2
1

Asian typhoons and Atlantic hurricanes are all named.

Pacific NW storms can have the same intensity, but get little recognition

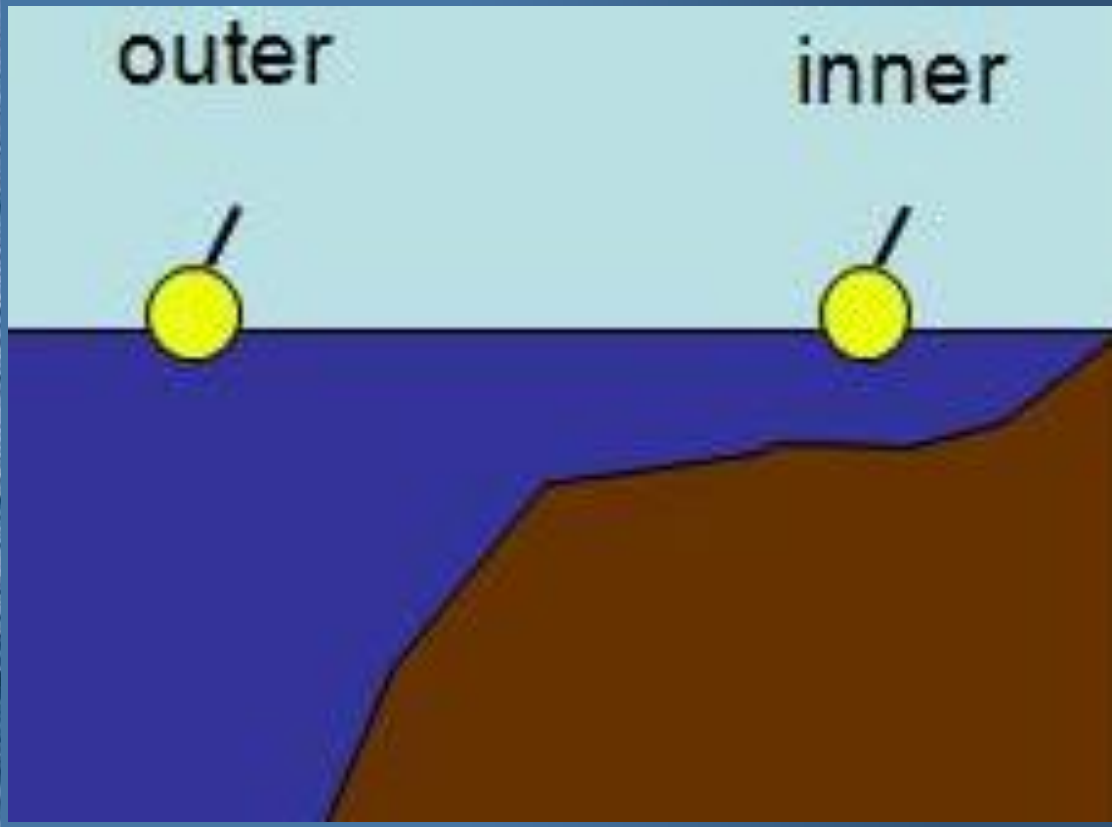



KTS
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
DESW1
Red and Orange - Winds Moving Away
46041
KLGX
Cold Frontal Wind Shift and Speed Decrease
45 MPH
70 MPH
Low Level Jet Max 86 MPH at 1500 feet (Dark Blue)
Blue and Green - Winds Moving Toward Radar
46029
46089
Langley Hill 0.5
09/26/2011
19:00Z
(12 Noon)

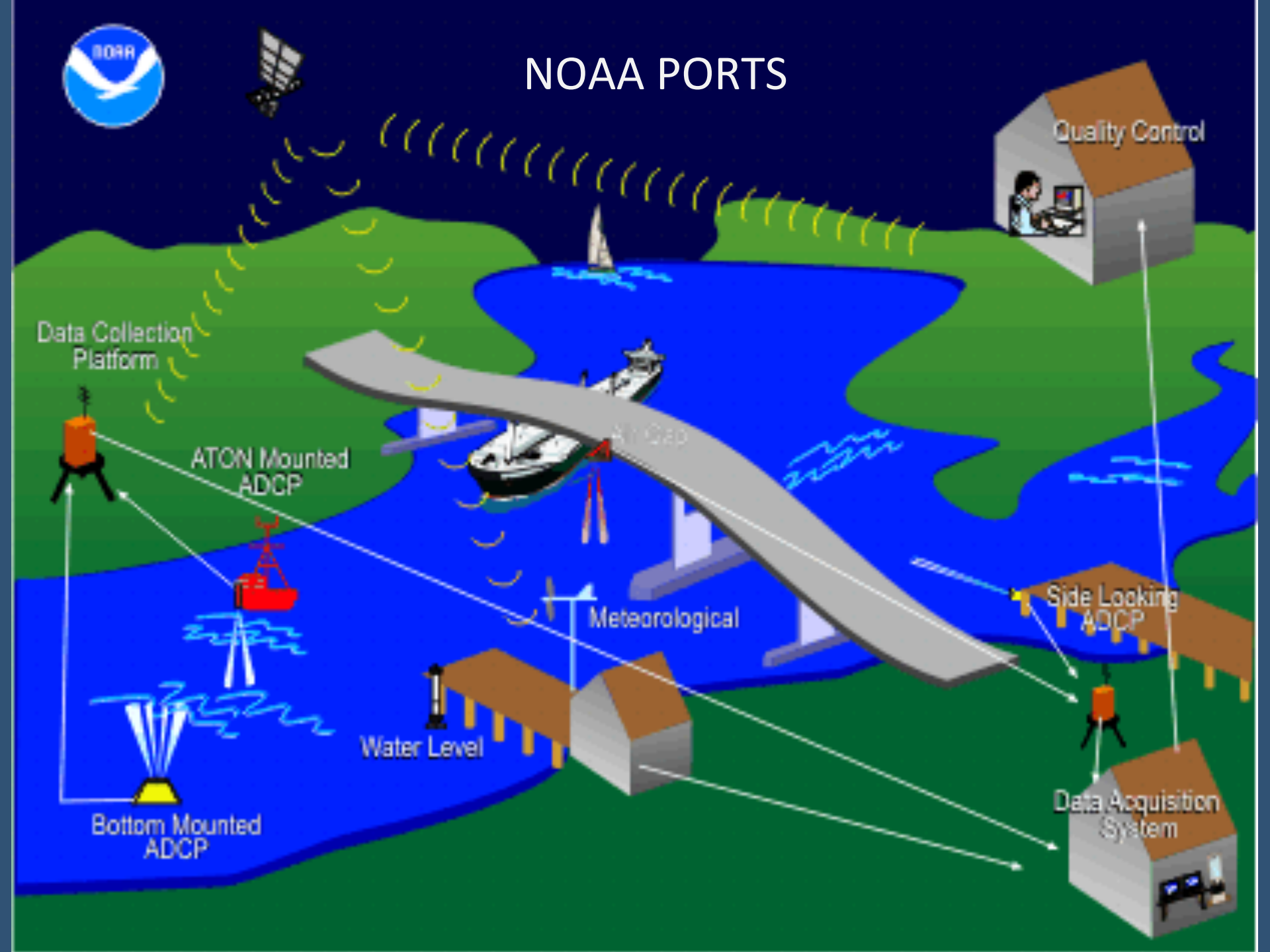

1:3,125,000
HEADING UP
DEAD RECKONING
46041
46005
287 nm @ 19 hrs
46089
71 nm @ 5 hrs
46029
18 nm @ 1 hr
46248
46243
46050
92 nm @ 6 hrs
CASCADIA
BASIN
ASTORIA FAN
Brown Bear Seamount
Vance Seamount
Thompson Seamount
Parks Seamount
Cobb Seamount
EXCLUSIVE ECONOMIC ZONE
Cape Elizabeth
Pt Brown
Aberdeen
Cape Shoalwater
Willapa
Cape Disappointment
Astoria
Grass Mt
Tillamook
Cape Meares
Bald Mt
Yaquina Head
Newport
Waldport
Heceta Head
Roman Nose Mt
PORTLAND

NDBC Buoy 46029

CDIP Waverider Buoy



NOAA PORTS


Quality Control
Data Collection Platform
ATON Mounted ADCP
Meteorological
Side Looking ADCP
Water Level
Bottom Mounted ADCP
Data Acquisition System

NOAA/NOS/CO-OPS

Lower Columbia River PORTS, NOAA/NOS 2016-10-10 11:32 PDT®

Data Types

Water Levels

Winds

Air/Water Temp

Barometric Pressure

Waves

Real-Time Text Summary

Water Levels (above CRD)

Cape Disapp..-MLLW	4.9 ft Falling
Astoria-MLLW	5.6 ft Falling
Skamokawa	5.5 ft Falling
Wauna	5.7 ft Falling
Longview	4.9 ft Rising
Saint Helens	2.9 ft Rising
Vancouver	1.6 ft Rising

Go to top

Winds

Name	Wind from	Gusts to
Astoria-MLLW	5 kn N	7

Go to top

Air/Water Temp

Name	Air Temp	Water Temp
Astoria-MLLW	53 °F	60 °F
Longview		62 °F
Clatsop Spit		57 °F

Go to top

Barometric Pressure

Astoria-MLLW	1018 mb	Rising
Longview	1018 mb	Rising

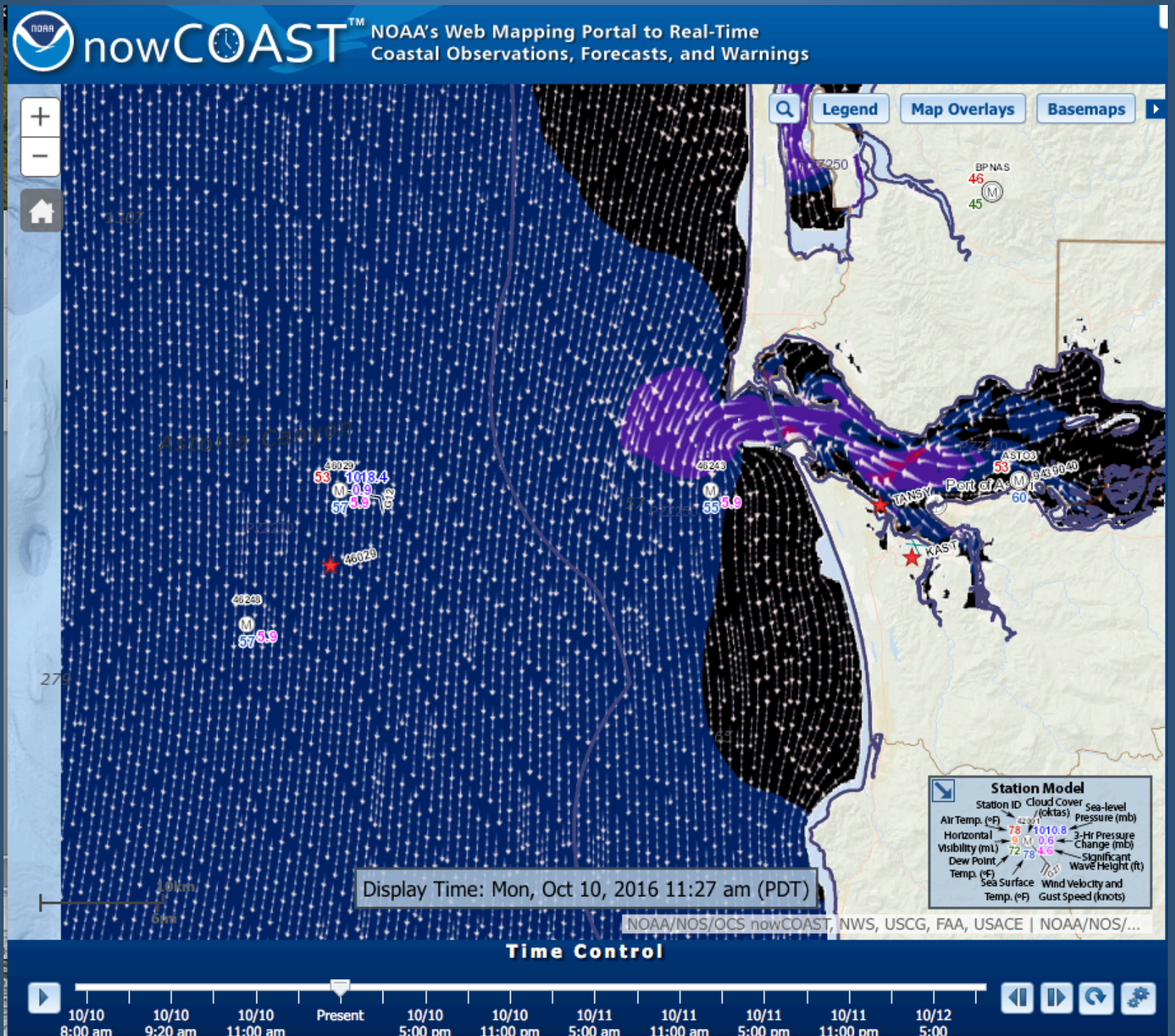
Go to top

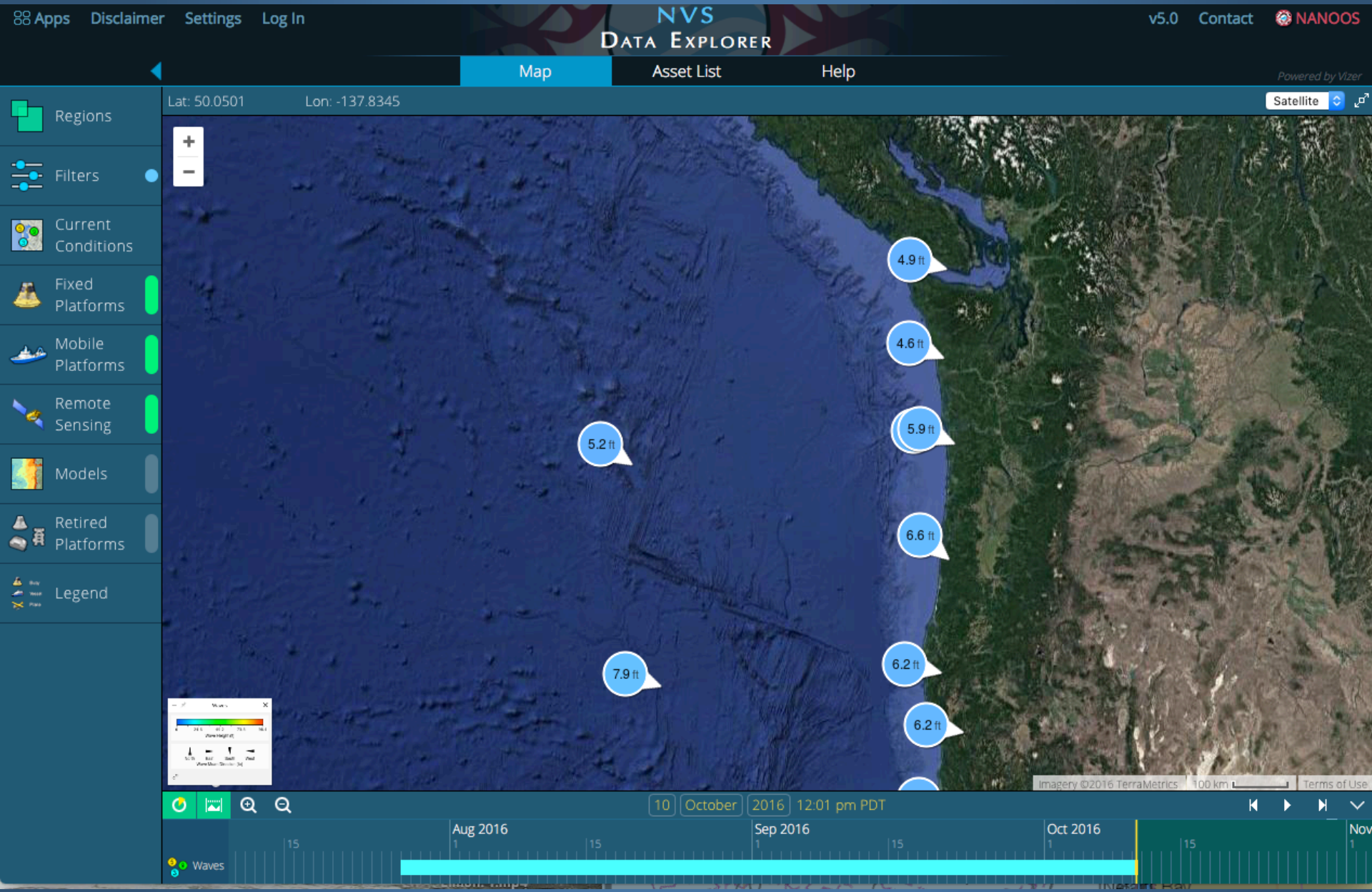
Waves

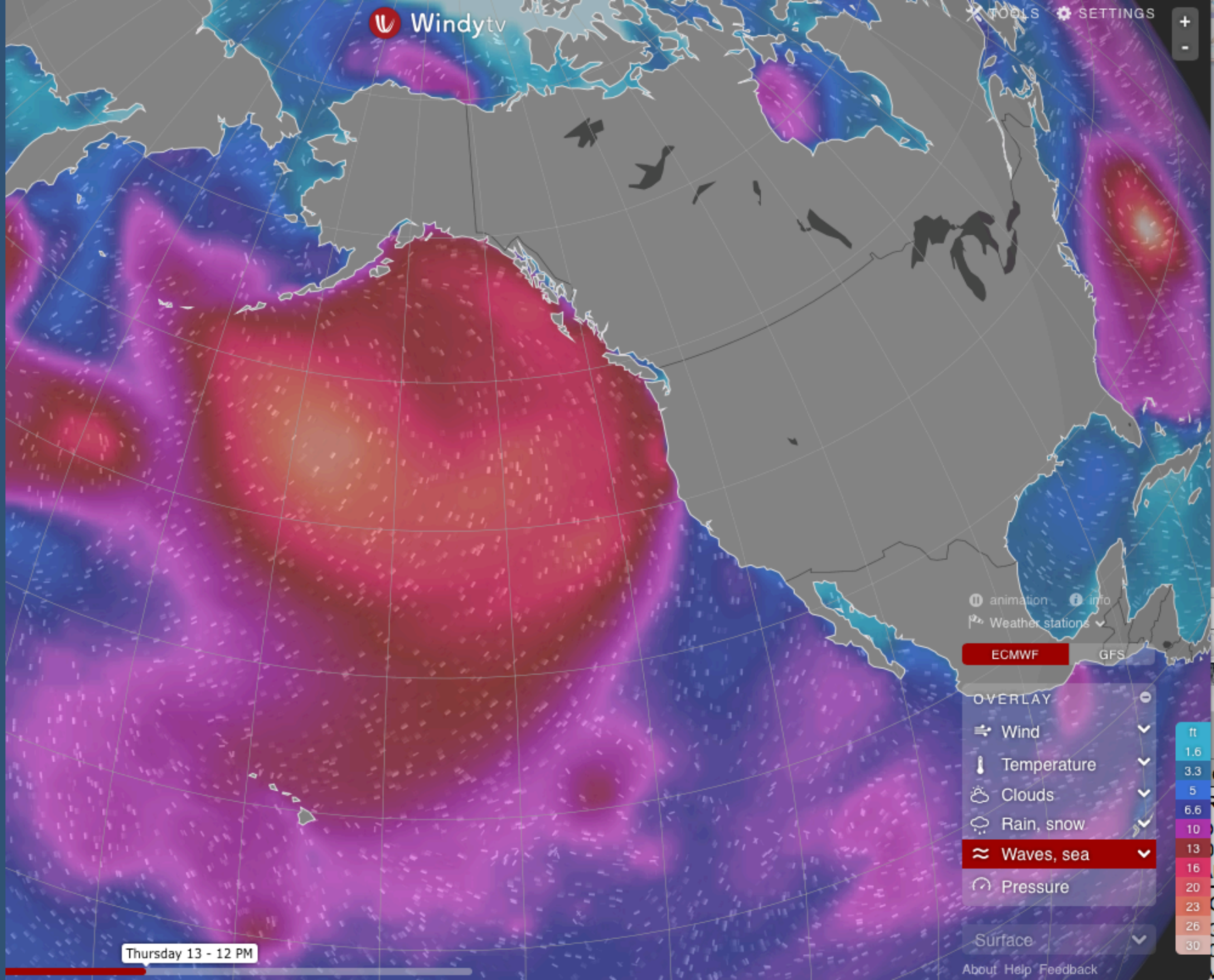
Station	SigHt	PkDir	PkPer
Clatsop Spit	4.9 ft	270°T	14 s

Go to top

Real-Time Text Summary


nowCOAST™ NOAA's Web Mapping Portal to Real-Time Coastal Observations, Forecasts, and Warnings
Legend
Map Overlays
Basemaps
Astoria Canyon
46029
46248
BP NAS
ASTO3
TANSY
KAST
Port of A
Station Model
Station ID
Cloud Cover (oktas)
Sea-level Pressure (mb)
Air Temp. (°F)
Horizontal Visibility (mi)
3-Hr Pressure Change (mb)
Dew Point Temp. (°F)
Significant Wave Height (ft)
Sea Surface Temp. (°F)
Wind Velocity and Gust Speed (knots)
Display Time: Mon, Oct 10, 2016 11:27 am (PDT)
10km
6mi
NOAA/NOS/OCS nowCOAST, NWS, USCG, FAA, USACE | NOAA/NOS/...
Time Control
10/10 8:00 am
10/10 9:20 am
10/10 11:00 am
Present
10/10 5:00 pm
10/10 11:00 pm
10/11 5:00 am
10/11 11:00 am
10/11 5:00 pm
10/11 11:00 pm
10/12 5:00


Apps
Disclaimer
Settings
Log In
NVS
DATA EXPLORER
v5.0
Contact
NANOOS
Map
Asset List
Help
Powered by Vizer
Regions
Filters
Current Conditions
Fixed Platforms
Mobile Platforms
Remote Sensing
Models
Retired Platforms
Legend
Lat: 50.0501
Lon: -137.8345
Satellite
4.9 ft
4.6 ft
5.9 ft
5.2 ft
6.6 ft
7.9 ft
6.2 ft
6.2 ft
Imagery ©2016 TerraMetrics
100 km
Terms of Use
10
October
2016
12:01 pm PDT
Aug 2016
Sep 2016
Oct 2016
Nov
Waves


Windytv
TOOLS
SETTINGS
+
-
animation
info
Weather stations
ECMWF
GFS
OVERLAY
Wind
Temperature
Clouds
Rain, snow
Waves, sea
Pressure
Surface
ft
1.6
3.3
5
6.6
10
13
16
20
23
26
30
Thursday 13 - 12 PM
About
Help
Feedback

Storm Special! View the latest observations near Atlantic TROPICAL STORM NICOLE as of ADVISORY NUMBER 26 @ 1100 AM AST MON OCT 10 2016.

Station 46029 (LLNR 688) - COLUMBIA RIVER BAR - 20NM West of Columbia River Mouth

Owned and maintained by National Data Buoy Center
3-meter discus buoy
AMPS payload
46.159 N 124.514 W (46°9'32" N 124°30'52" W)

Site elevation: sea level
Air temp height: 4 m above site elevation
Anemometer height: 5 m above site elevation
Barometer elevation: sea level
Sea temp depth: 0.6 m below water line
Water depth: 144.8 m
Watch circle radius: 243 yards

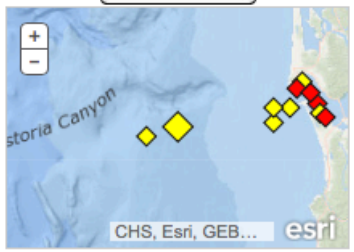
Latest NWS Marine Forecast

Important Notice to Mariners

Search And Rescue (SAR) Data

Meteorological Observations from Nearby Stations and Ships

Oceans



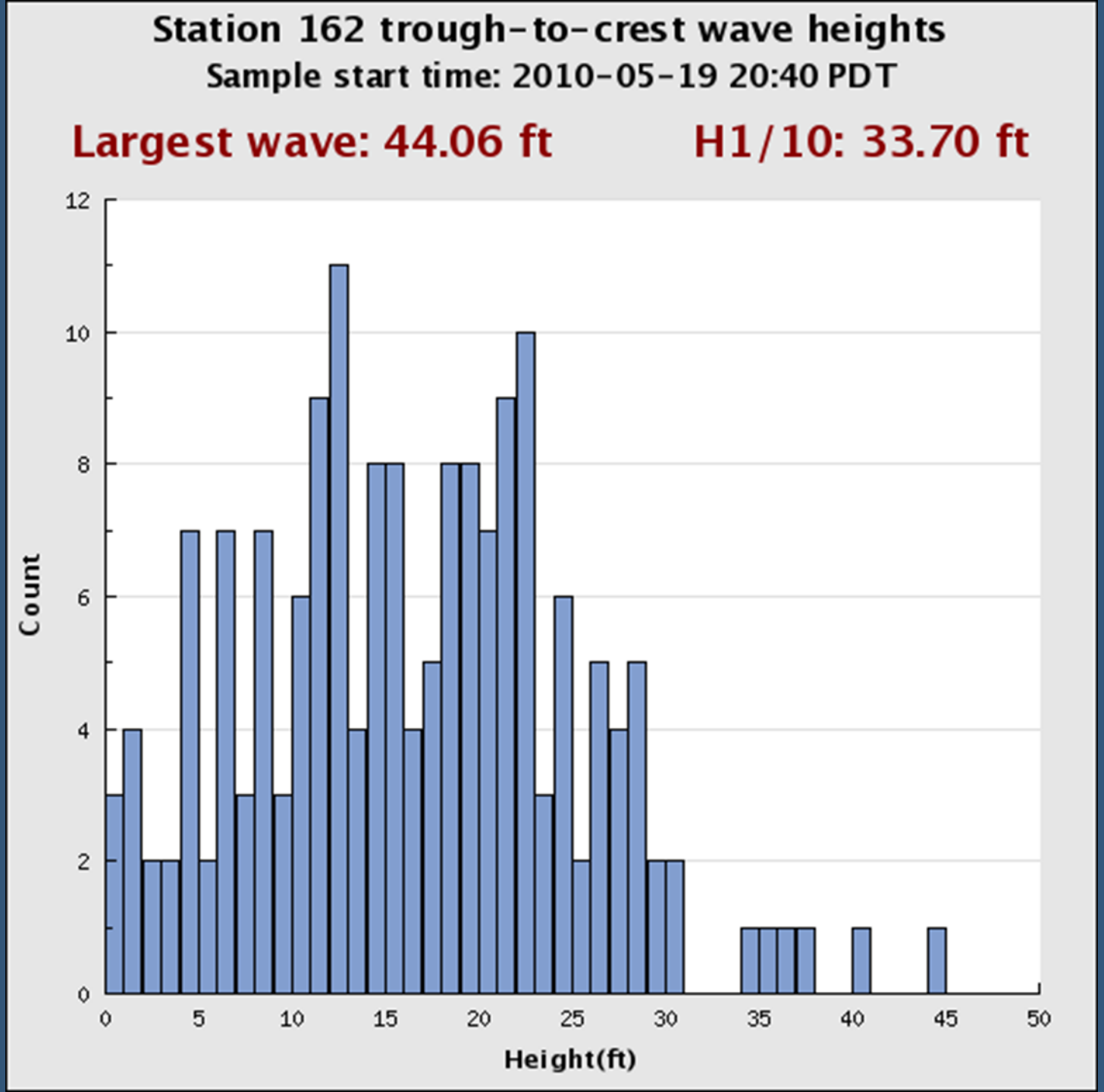
Large icon indicates selected station. Disclaimer
Stations with recent data
Stations with no data in last 8 hours
(24 hours for tsunami stations)

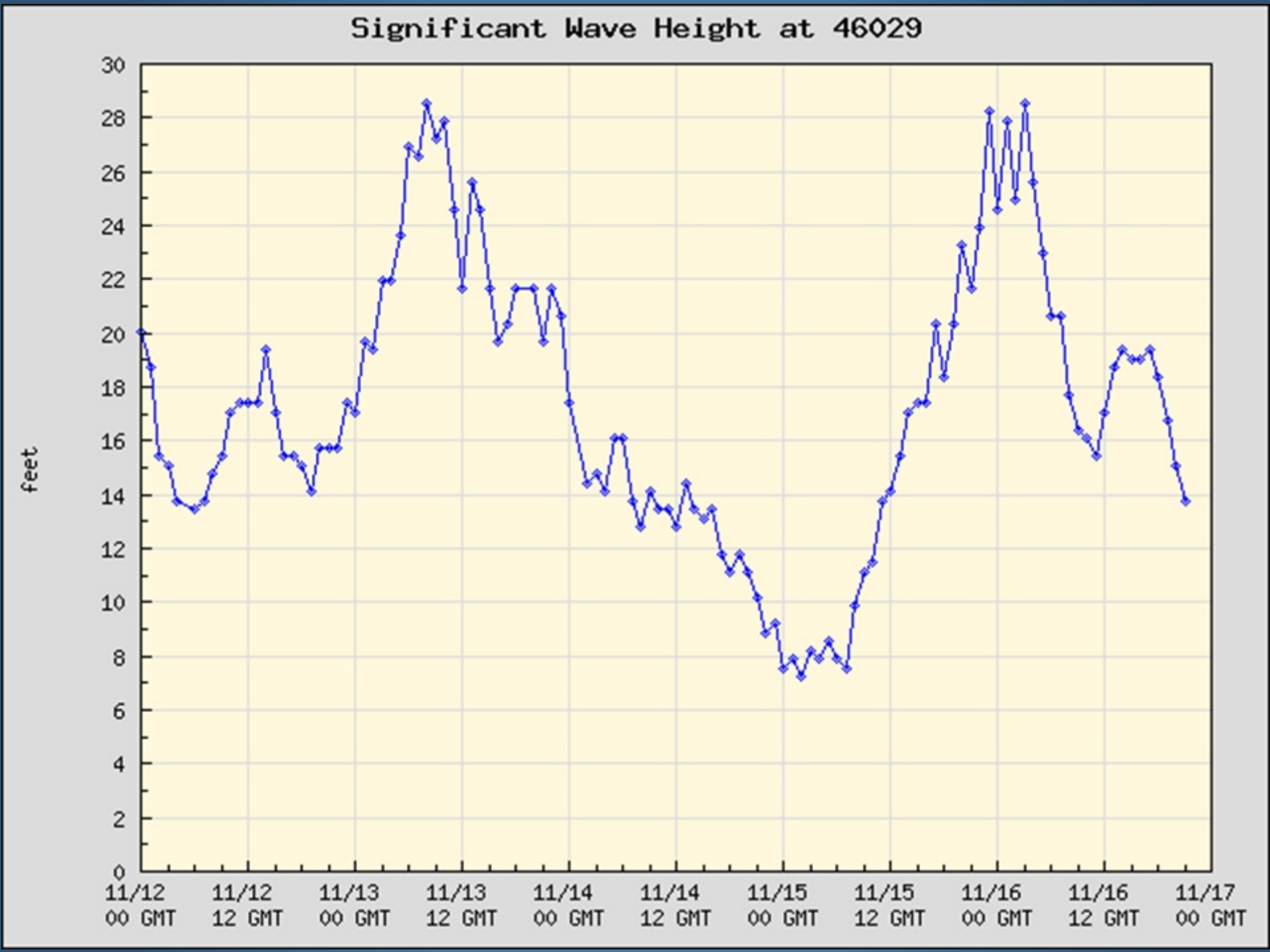
Conditions at 46029 as of (11:50 am PDT) 1850 GMT on 10/10/2016:

Unit of Measure: English Time Zone: Station Local Time Select

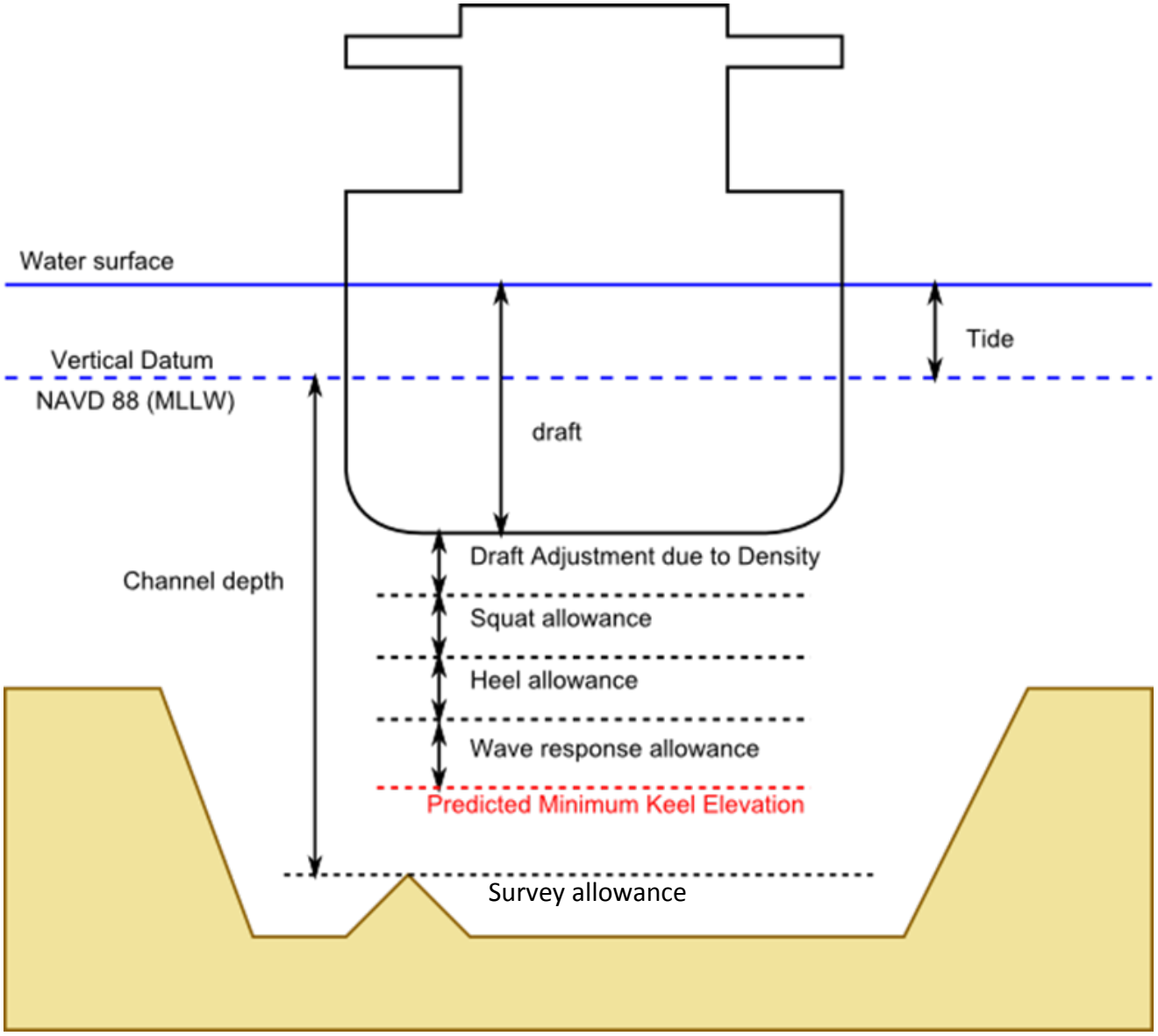
Click on the graph icon in the table below to see a time series plot of the last five days of that observation.

Wind Direction (WDIR):	ENE (70 deg true)
Wind Speed (WSPD):	5.8 kts
Wind Gust (GST):	7.8 kts
Wave Height (WVHT):	6.2 ft
Dominant Wave Period (DPD):	14 sec
Average Period (APD):	8.7 sec
Mean Wave Direction (MWD):	NW (305 deg true)
Atmospheric Pressure (PRES):	30.07 in
Pressure Tendency (PTDY):	+0.01 in (Rising)
Air Temperature (ATMP):	52.9 °F
Water Temperature (WTMP):	57.0 °F
Wind Chill (CHILL):	50.7 °F
Wind Speed at 10 meters (WSPD10M):	5.8 kts
Wind Speed at 20 meters (WSPD20M):	5.8 kts

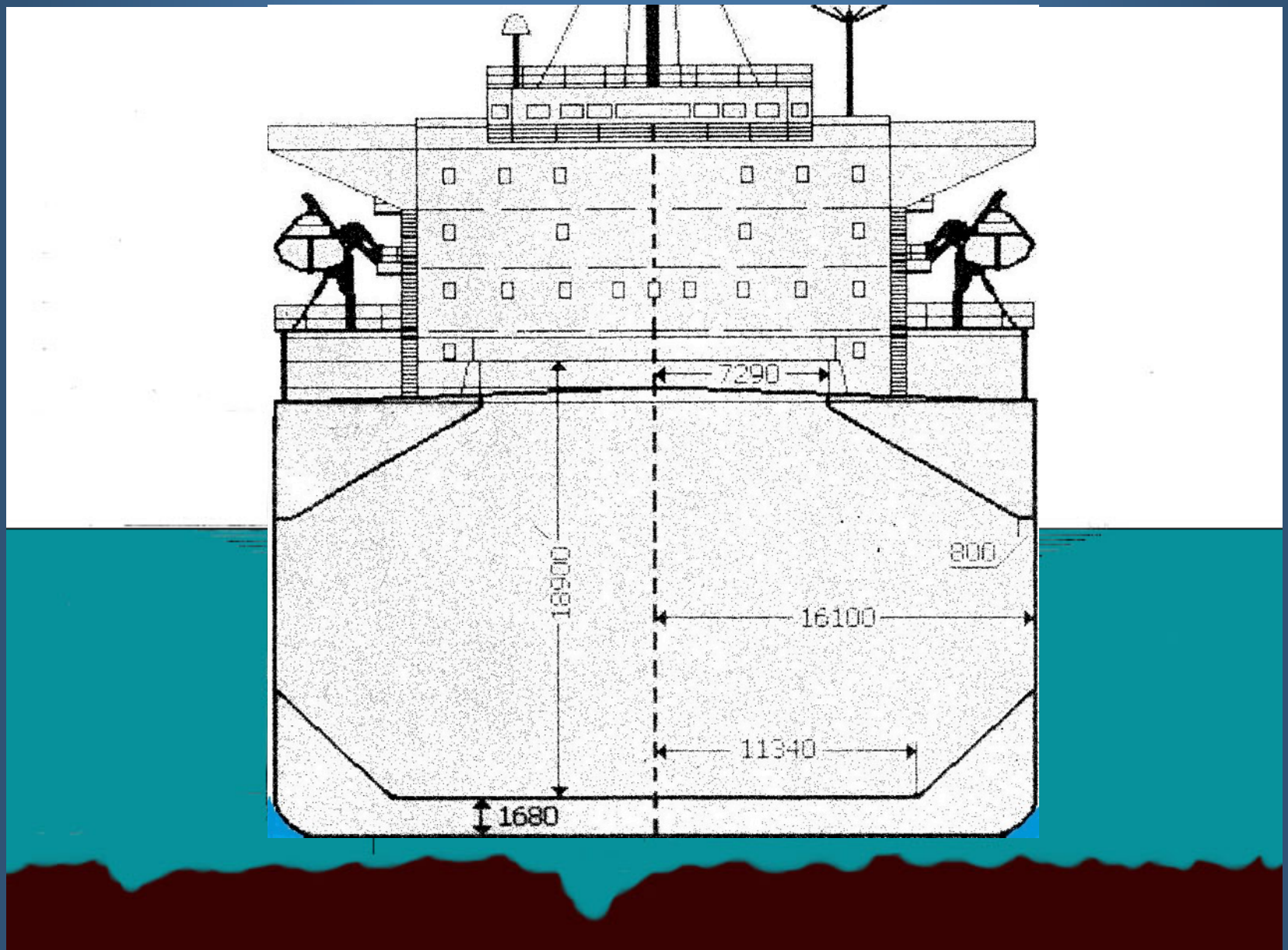

Station 162 trough-to-crest wave heights
Sample start time: 2010-05-19 20:40 PDT
Largest wave: 44.06 ft
H1/10: 33.70 ft
Count
Height(ft)
0
2
4
6
8
10
12
0
5
10
15
20
25
30
35
40
45
50


Significant Wave Height at 46029
feet
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
11/12 00 GMT
11/12 12 GMT
11/13 00 GMT
11/13 12 GMT
11/14 00 GMT
11/14 12 GMT
11/15 00 GMT
11/15 12 GMT
11/16 00 GMT
11/16 12 GMT
11/17 00 GMT

Components of Under Keel Clearance



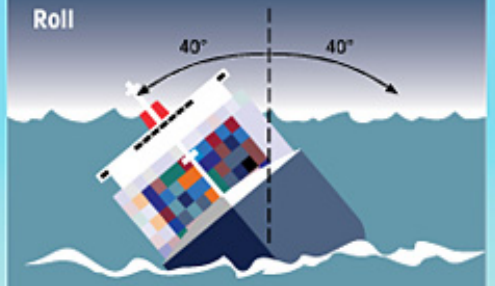
Real Scale in Calm Water



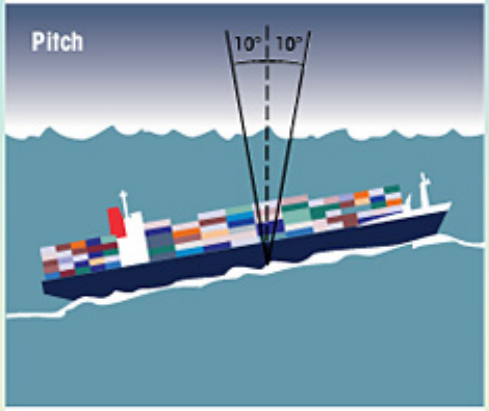
Ship Motions in a Heavy Seaway

Rotational

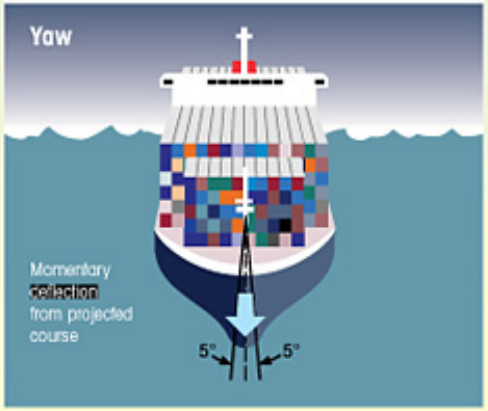
Roll



Pitch



Yaw

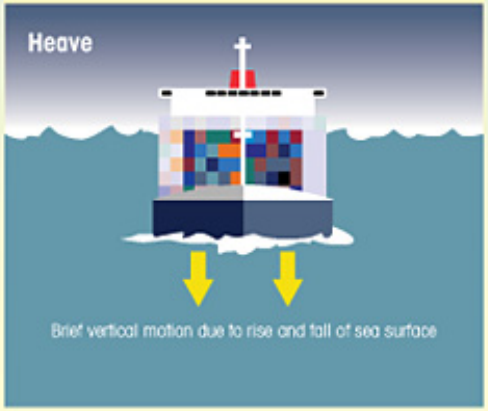


Linear

Sway

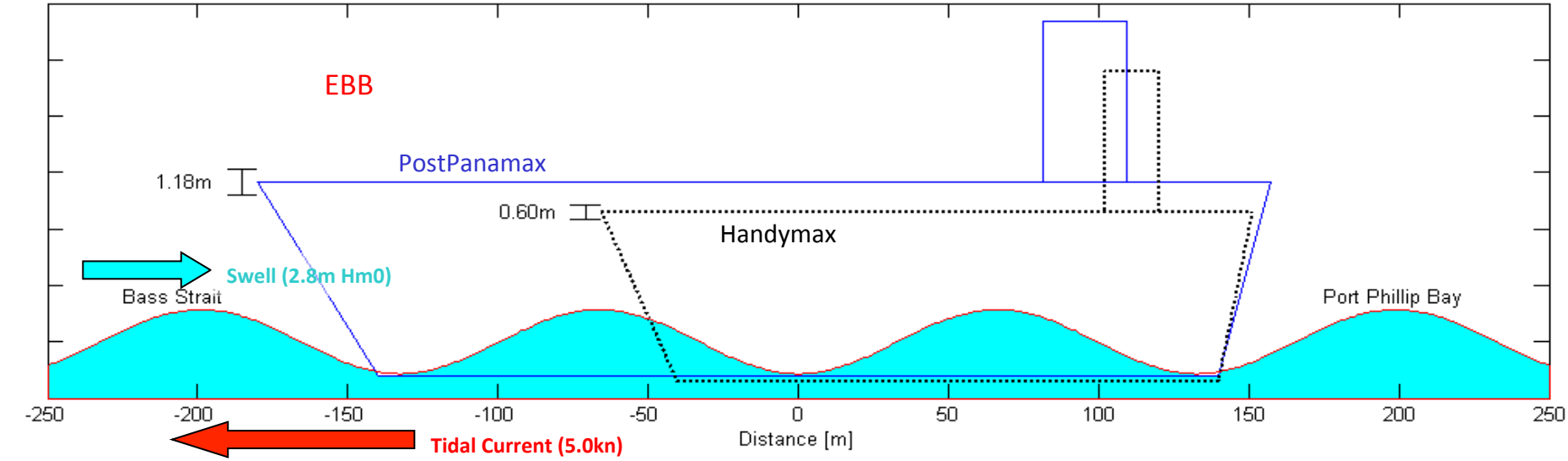
Surge

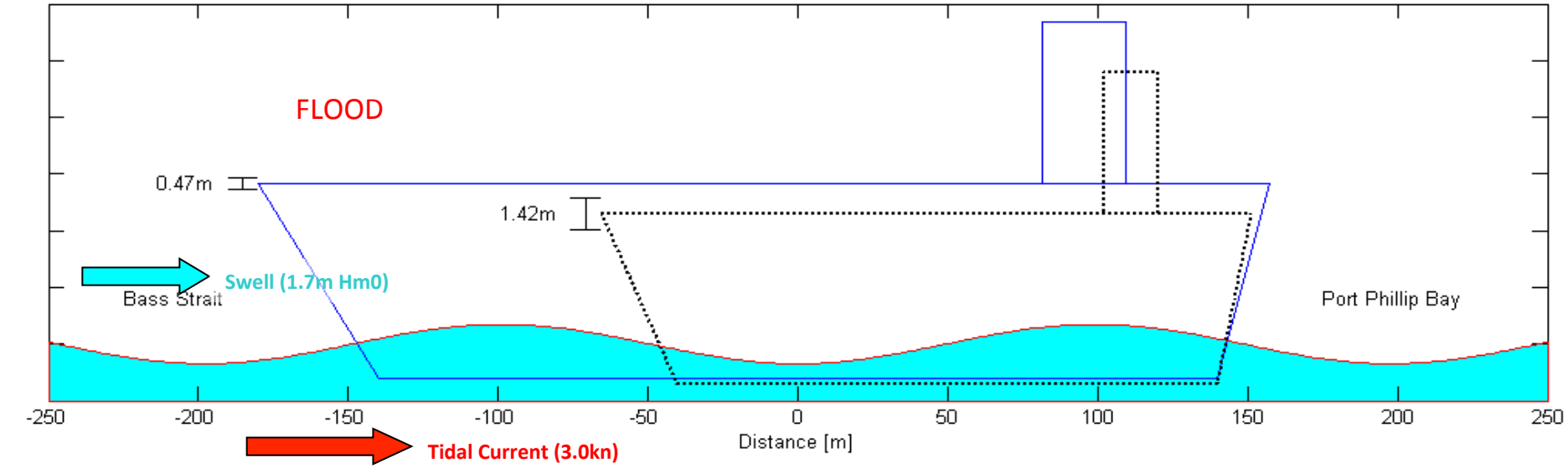
Heave



Wave Response

Offshore Swell height = 2m, period = 14 seconds





Full Scale Vessel Motion Analysis

- Three onboard DGPS units
  - Port & Stbd bridge wings
  - Bow
- One aboard a survey boat
- On-shore DGPS unit:
  - Provide differential signal

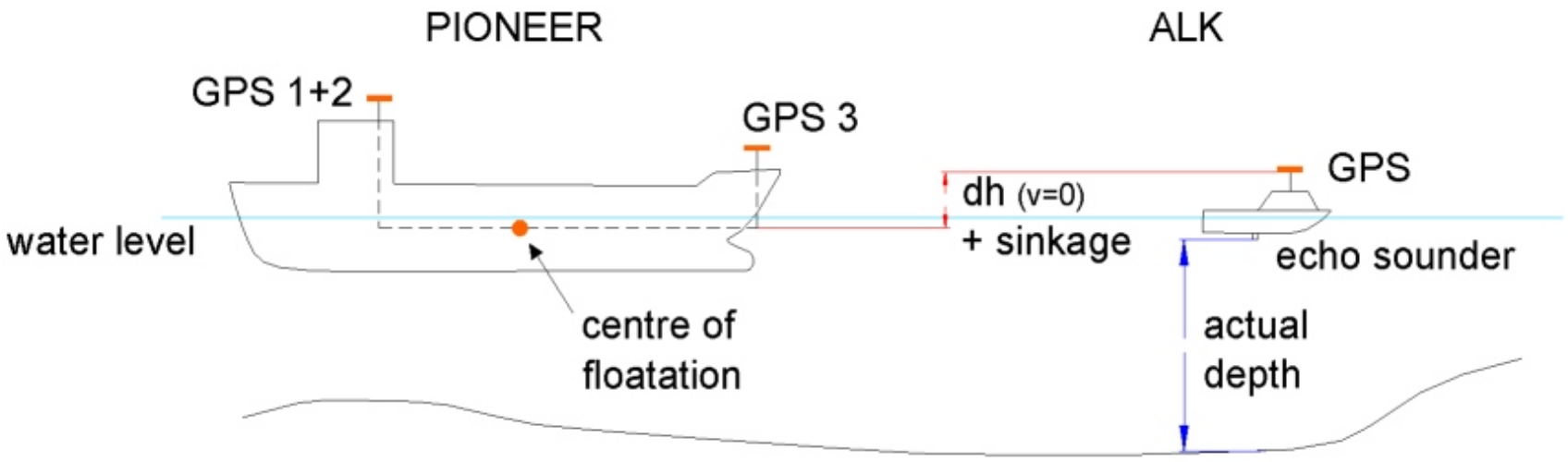
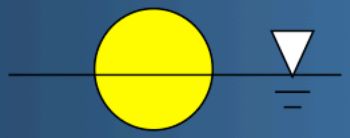


Fig. 1: Simplified geometry: Alk escorting Pioneer

DUKC® Methodology

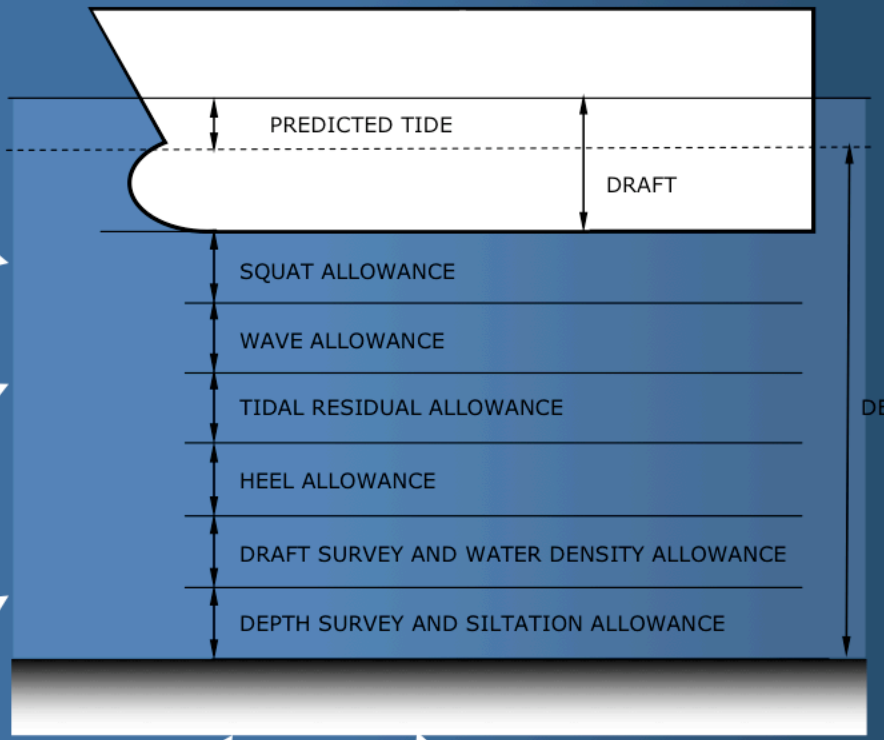


Wave measurements and models

Tide and current measurements and models

Latest depth surveys

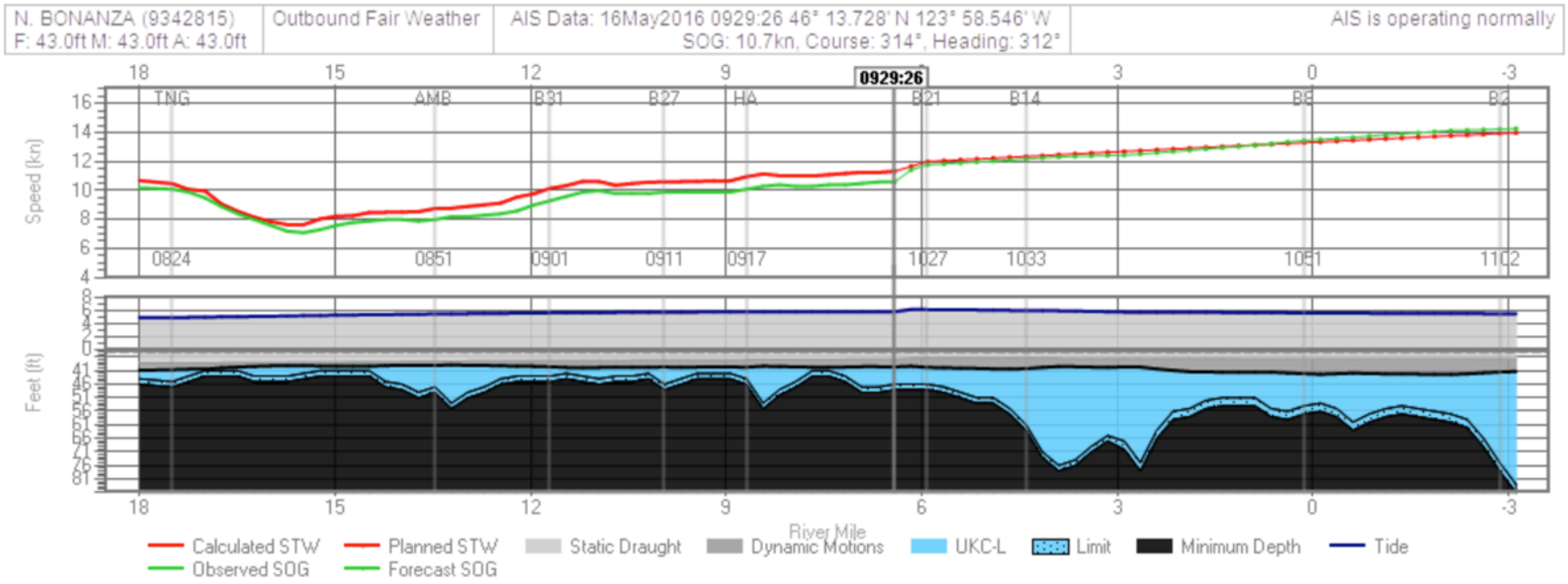
Ship's loaded conditions and modelled motions



ship speed profiles

Edit Speeds

	STW (kn)	ETA (PST/PDT)	Squat (ft)	Heel (ft)	Tide (ft)	WR (ft)	UKC (ft)	UKC-L (ft)
B21	12.0	16/1027	3.23	0.00	6.15	0.25	8.20	6.19
Min UKC	12.0	16/1027	3.23	0.00	6.15	0.25	8.20	6.19
B14	12.4	16/1033	2.58	0.08	6.00	1.22	22.74	20.73
B8	13.3	16/1051	2.64	0.14	5.63	2.71	14.91	11.91
B2	13.9	16/1102	2.28	0.00	5.50	2.54	36.48	33.48

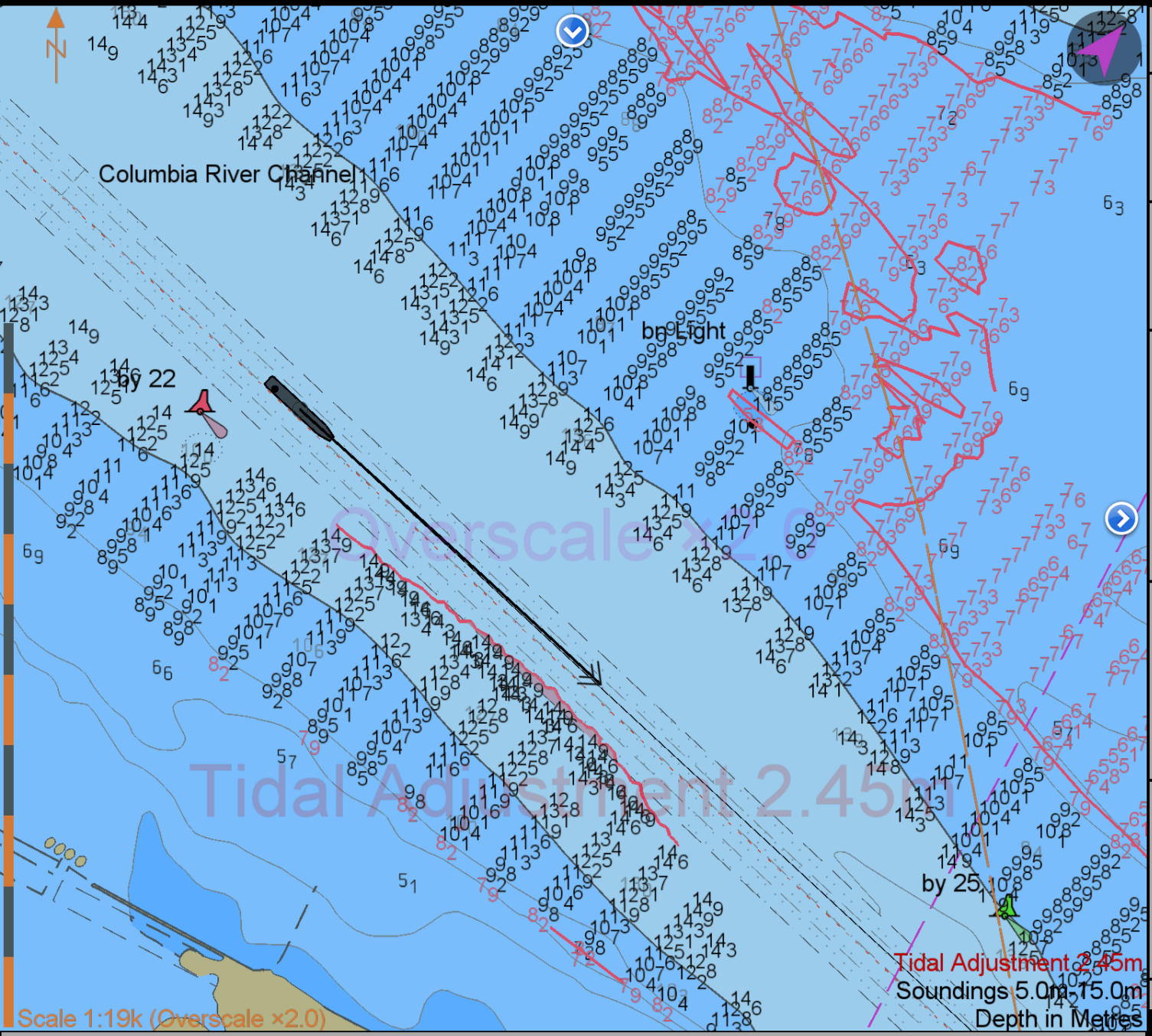


Follow N. BONANZA

Not for navigation


Verizon LTE
3:56 PM
95%
Sand Island
Sand Island
Sand Island
TRUSTN TRADER 1
F/V EXCALIBUR
Soundings 5.0m-15.0m
Depth in Metres
Scale 1:73k
41%
Brightness
Navigate
Routes
AIS
Settings
Quick
Charts
CAT ROT
MARIMATECH


Verizon LTE
5:26 PM
75%
Source
NavDyn(AIS)
HDG
ROT
309° ◂ 0°
True
Port °/m
COG
SOG
315° 11.7
True
Knots
Waypoint
14
BTW
DTW
TTG
305° 695 35
True
Feet
Seconds
ETA
NLC
17:26 08/23 312°
True
Waypoint (Monitor)
CR Buoy
ETA:18:11
DTG
TTG
8.81 00:45
NM
Hours
Own-Ship Water Level
Prev
Own-Ship
Next
STN ASTORIA-MLLW Interpolate CAPE DISAPP..-
RNG -11.4NM 0.00NM 1.54NM
Time 17:06 17:06 17:06
LVL 8.17↥ 7.62↥ 7.55↥
Ref MLLW MLLW MLLW
BAT 91.0%
Status
Routes
AIS
216
Settings
Quick
Charts
by 11
bn 1
Columbia River Channel
11
12
by 12
14
by 14
IOS
Statute m
Tidal Adjustment 7.38ft
Tidal Adjustment 7.38ft
Soundings 16.4ft-49ft
Depth in Feet
Scale 1:26k (Overscale ×1.5)
Brightness
54%



Source
CAT ROT(AIS)

HDG	ROT
133°	0°
True	Stbd °/m

COG	SOG
132°	11.6
True	Knots

Waypoint
27

BTW	DTW	TTG
133°	2.87	00:15
True	NM	Hours

ETA	NLC
15:24 09/17	107°
	True

Waypoint (Monitor)
Astoria Bridge
ETA:15:39

DTG	TTG
5.81	00:30
NM	Hours

Own-Ship Water Level

	Prev	Own-Ship	Next
STN	CAPE DISAPP...	Interpolate	ASTORIA-MLLW
RNG	-3.67NM	0.00NM	9.29NM
Time	14:54	14:54	14:54
LVL	2.39↓	2.49	2.76↑
Ref	MLLW	MLLW	MLLW

Marimatech

Brightness 72%

Status Routes AIS 168 Settings Quick Charts


Safe Ports
don’t happen by accident