

Precise Navigation and the demand for Coastal Intelligence

NOAA's focus is on providing accurate and timely environmental intelligence to the maritime community and delivering that data to the location where the decisions need to be made.

Precise Navigation

The ability to navigate where sea room is limited in four dimensions (X,Y,Z, and Time), with statistical certainty.



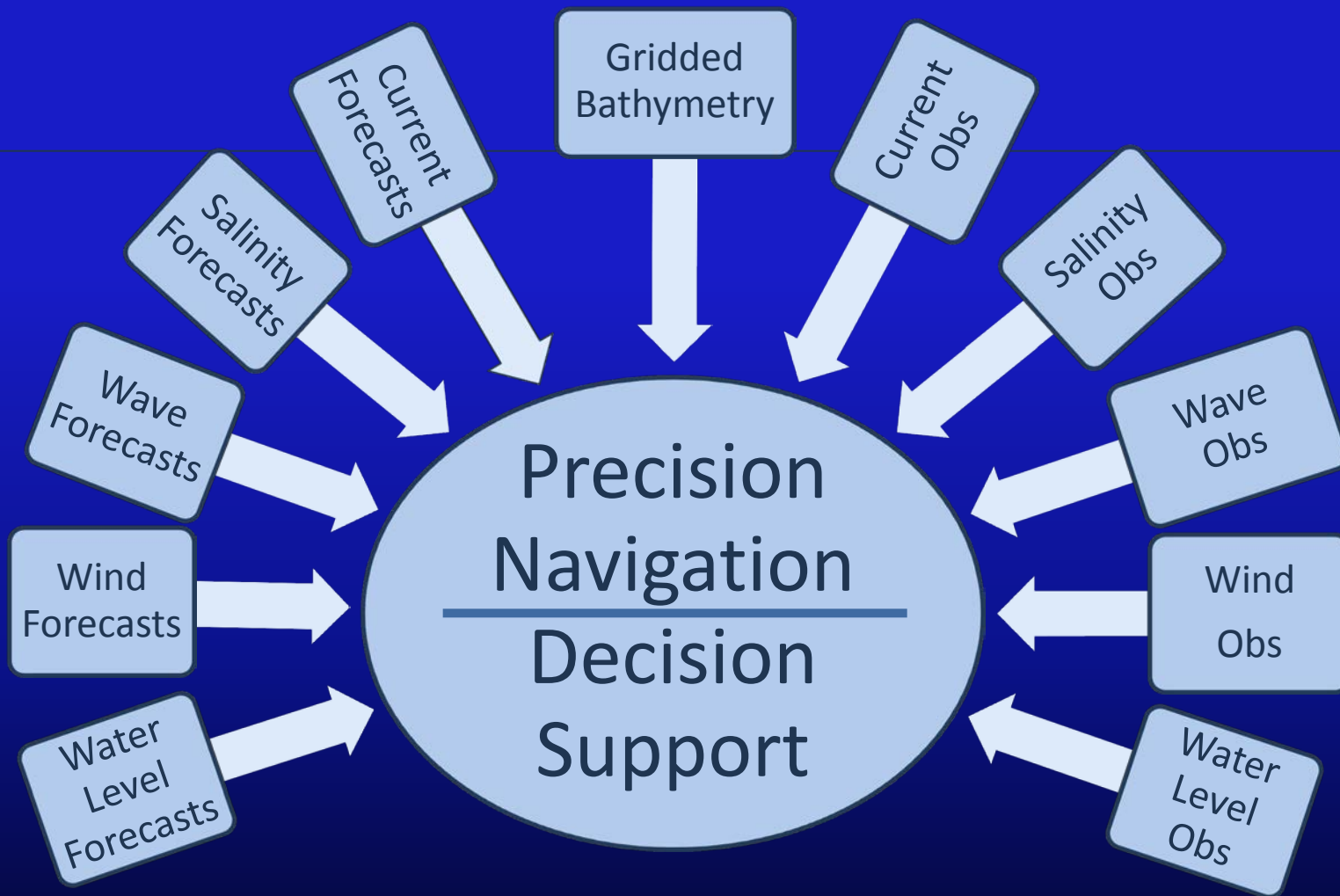


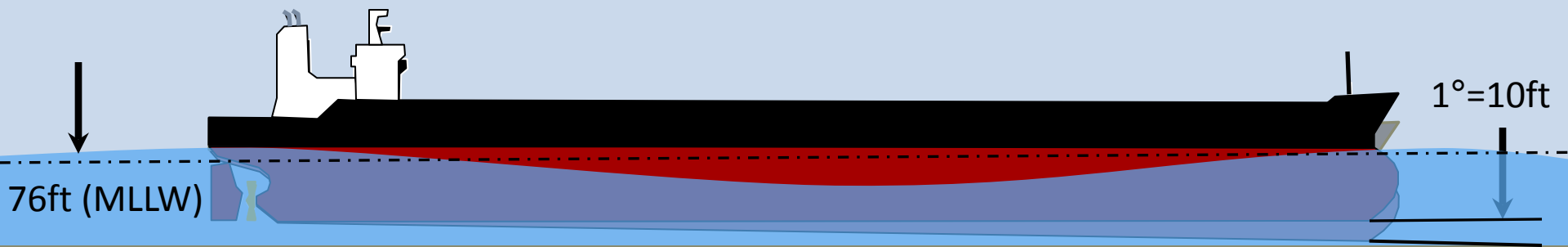


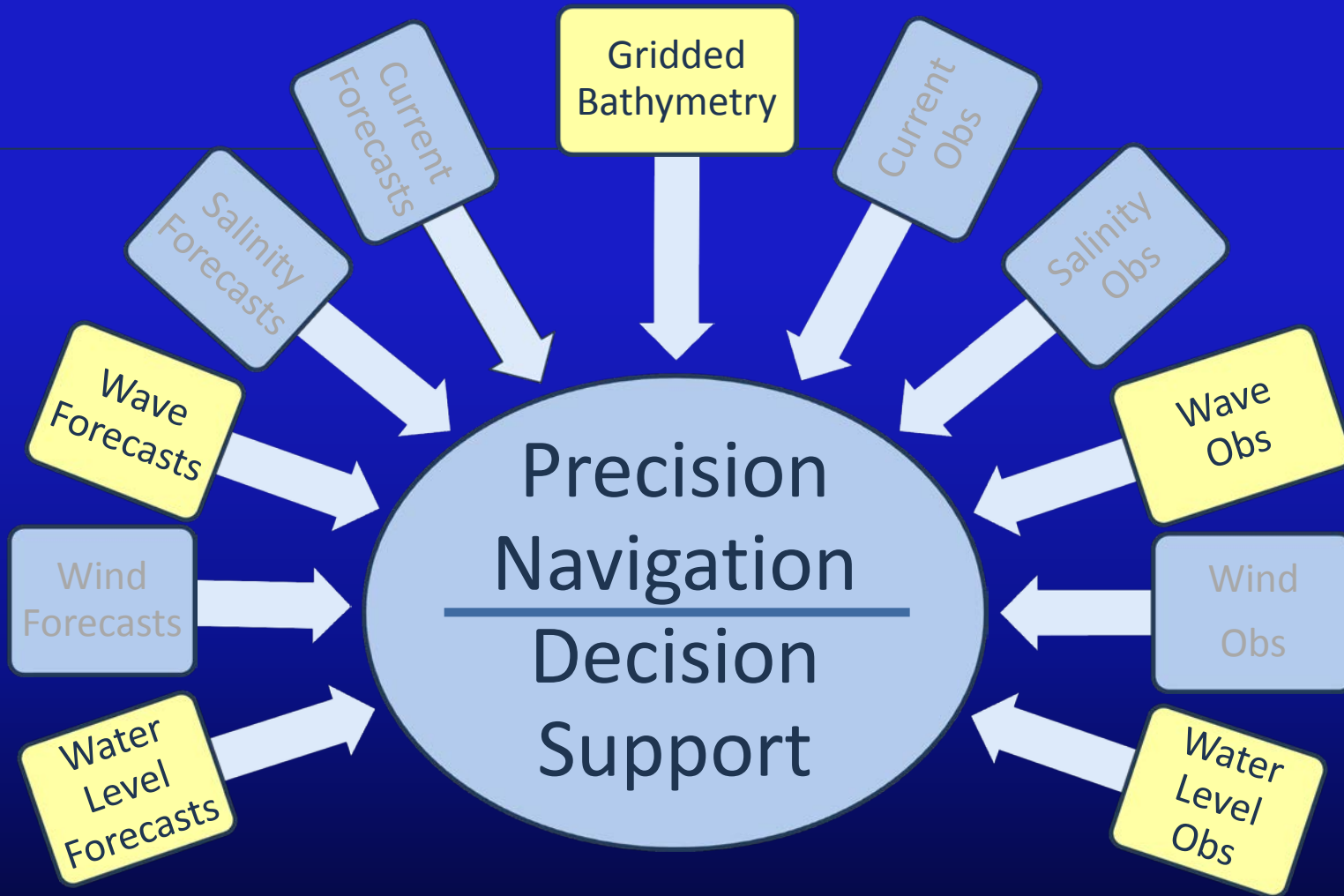


SEMAR VICTORY

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Tanker 006

Advice 15 (Inbound)

Request

Request ID	11
SHIP	Tanker 006 (S / T006)
Ship dimensions l / w / dwt	285 m 49 m 25000 tons
Draft l / m / s	20.46 m 20.46 m 20.46 m
Berth	Harbor entrance (23.16 m / inbound)
Requested time of departure	2014-08-22 00:00
Water displacement	234294 tons
GM	7.78 m
GG'	0.4 m
Roll period	13.71 s
Estimation method used	Yes
Submitted by	Take Roes (2014-08-27 09:29)

Calculation

Settings	Long Beach 0.017% probability
Vertical motion calculation method	Amarcon - 2d spectrum
Earliest route start time	-
Speed regime	Average
Use manual predictions	No
Use channel bottom elevations	No
Calculated by	Take Roes (2014-08-27 09:29)

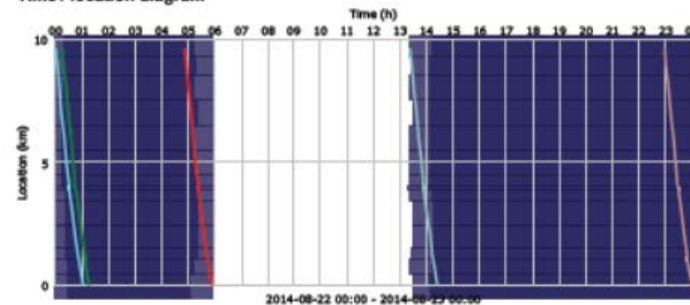
Advice

Location	Km	Open	Reference	Close
Outside breakwater	9.65	2014-08-22 00:00	2014-08-22 00:15	2014-08-22 04:52
Breakwater entrance	4.06	2014-08-22 00:30	2014-08-22 00:45	2014-08-22 05:22
Breakwater entrance	3.89	2014-08-22 00:31	2014-08-22 00:46	2014-08-22 05:23
Inside breakwater	1.17	2014-08-22 00:50	2014-08-22 01:05	2014-08-22 05:43
Harbor entrance	0	2014-08-22 01:01	2014-08-22 01:16	2014-08-22 05:53

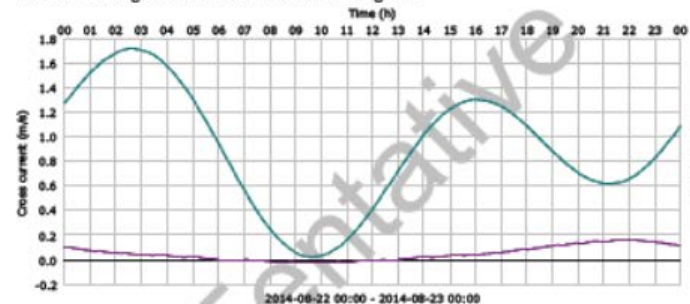
Statistics

Maximum bottom touch probability (upper bound of reliability)	7.7E-05
Mean under keel clearance	4.15 m
Mean under keel clearance with squat reduction	3.97 m
Wait time	00:15
Down time	31.51%

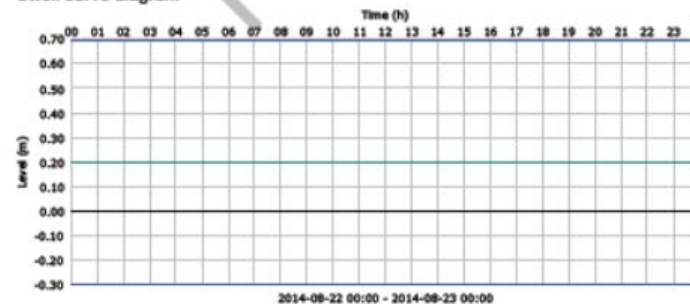
Time / location diagram



Tide curve diagram / Cross current curve diagram



Swell curve diagram



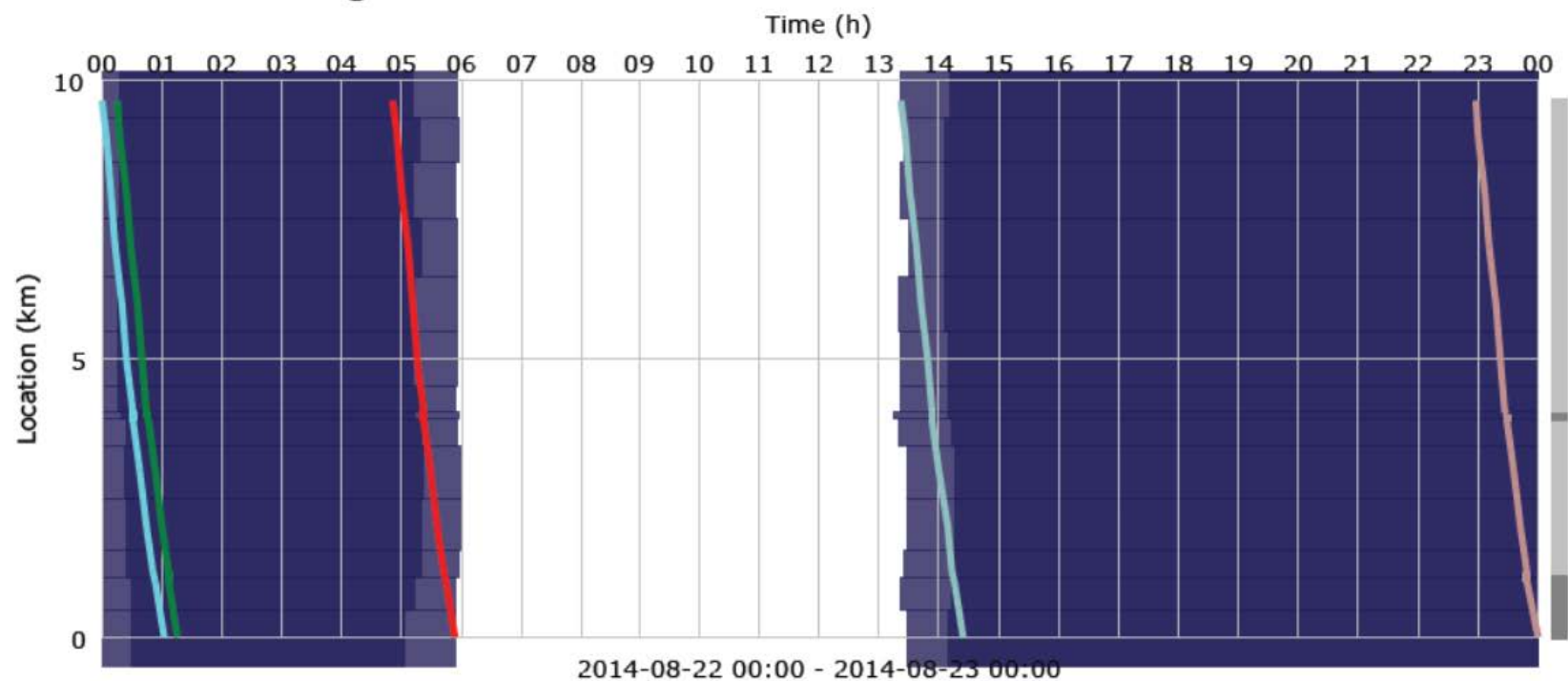
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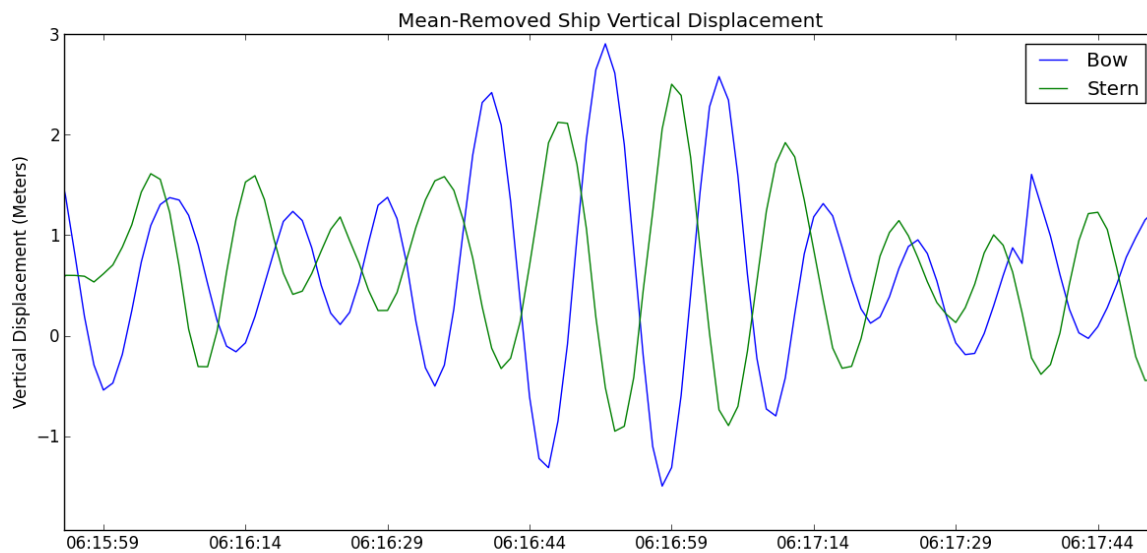
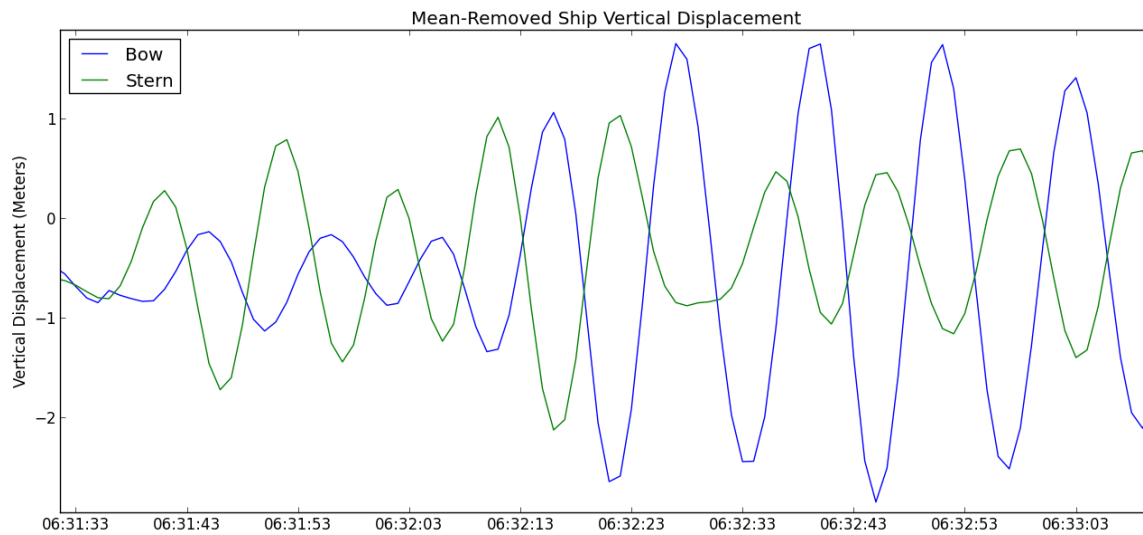
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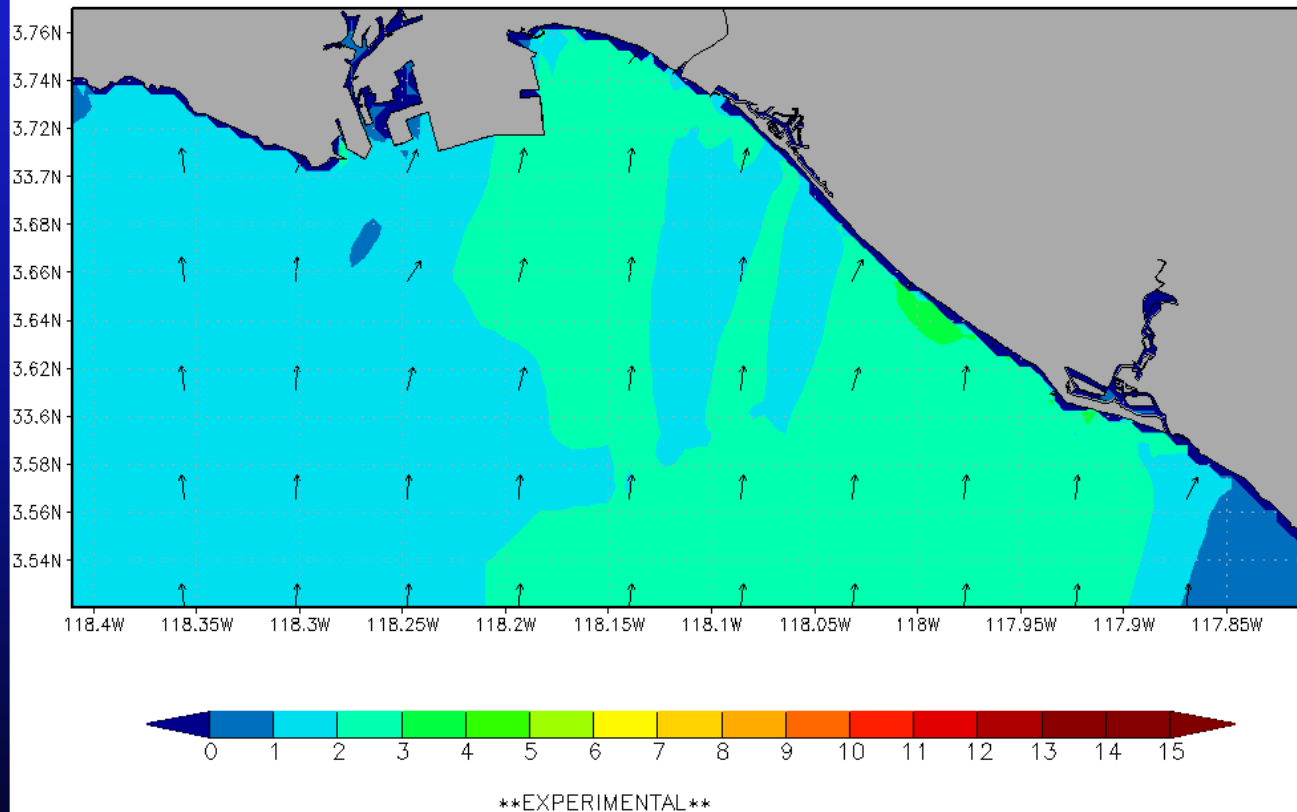
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Time / location diagram





NWPS Significant Wave Height (ft) and Peak Wave Direction
Hour 3 (09Z04MAR2015)

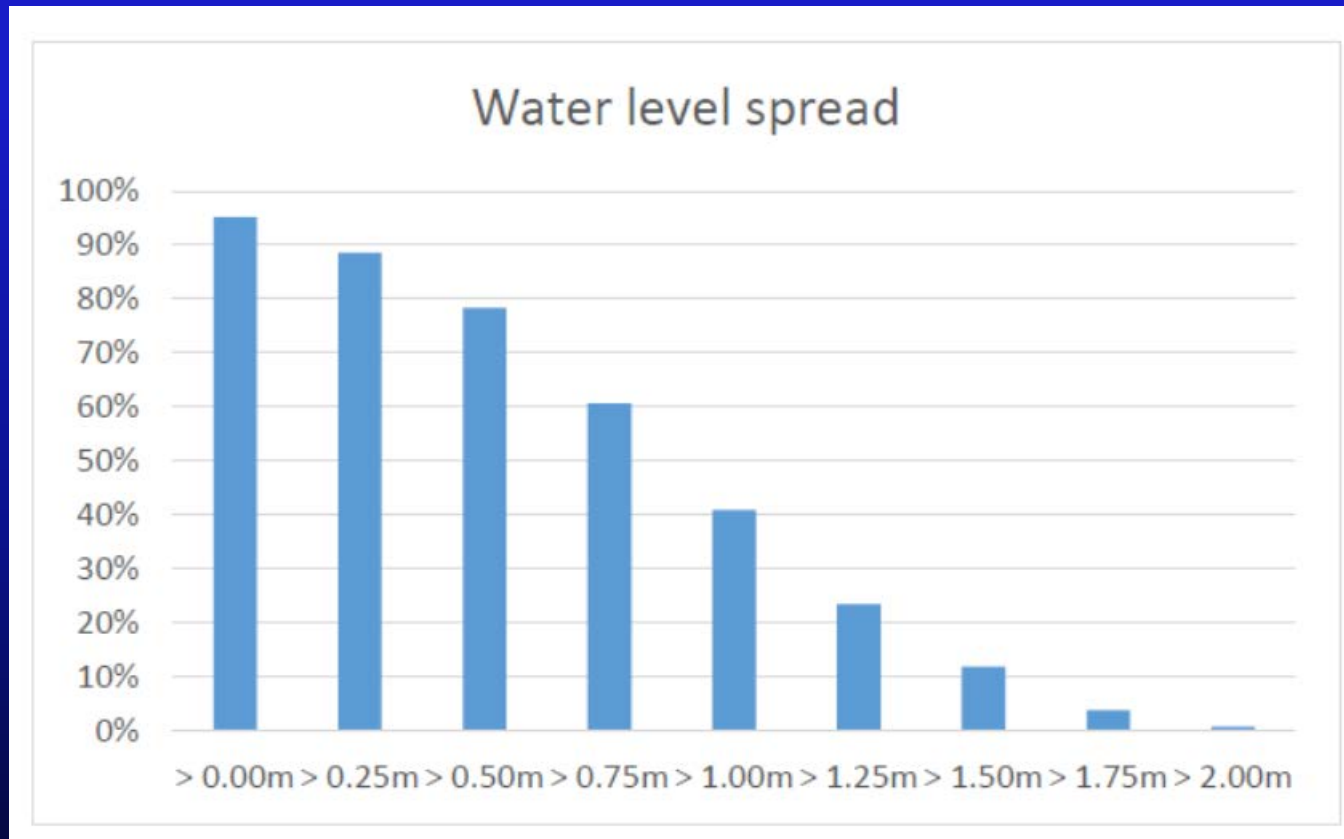




Office of Coast Survey



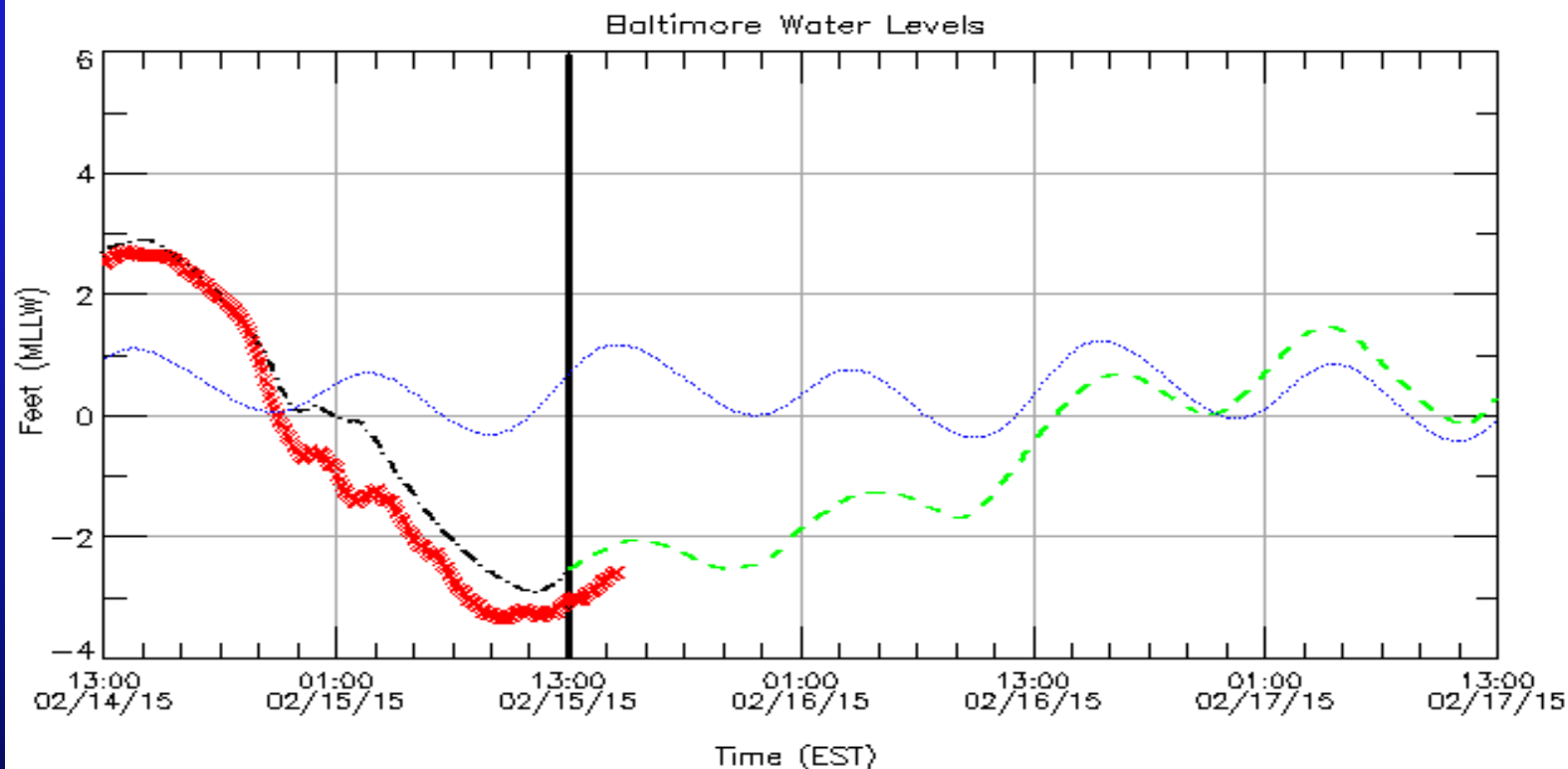
41% of Water Levels in LA/LB are greater than 1 meter.

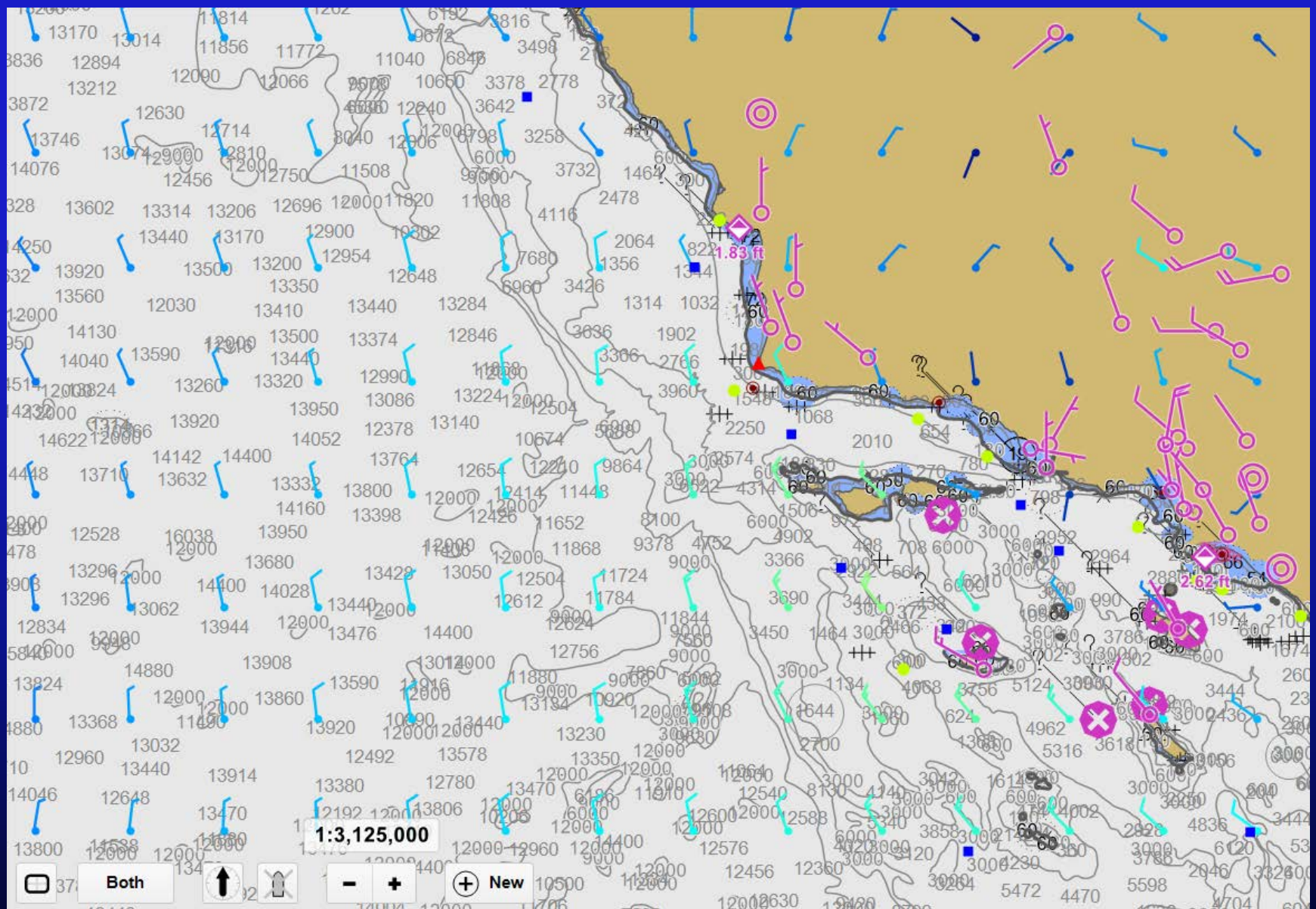


NOAA/National Ocean Service
Chesapeake Bay Operational
Forecast System (CBOFS2)

Observation:
Tidal Prediction:
Nowcast:
Forecast Guidance:

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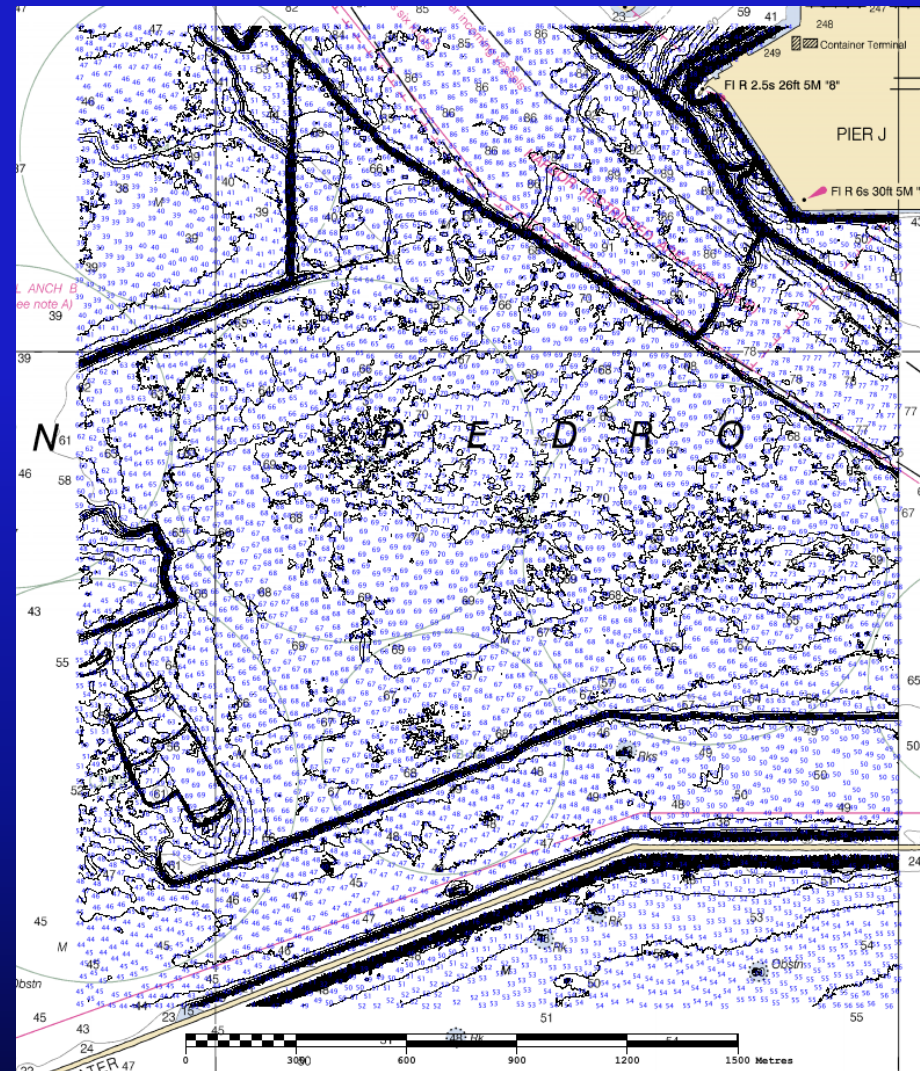
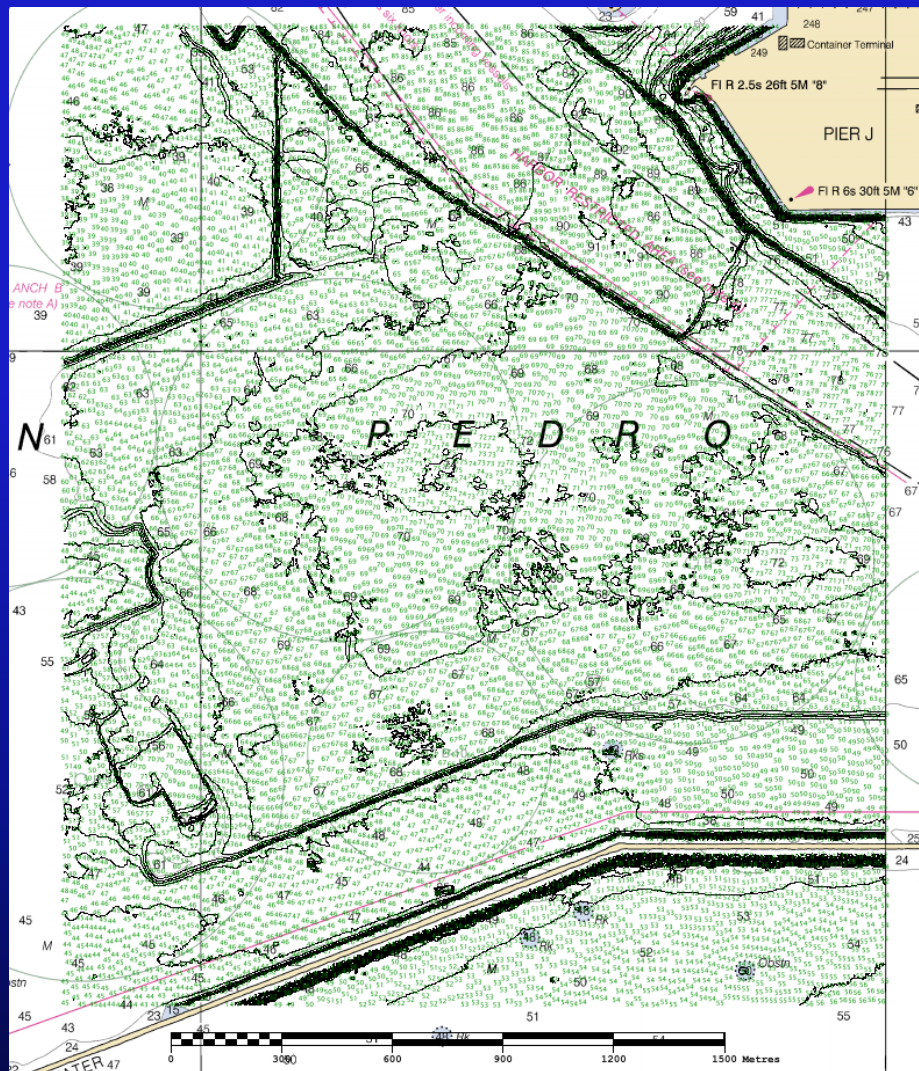




Office of Coast Survey

NOAA's commitment:

- Create 500 meter resolution Nearshore Wave Prediction System (NWPS).
- Operationalize high-resolution bathymetry database for 5 years.
- Provide prototype high-resolution navigational products to pilots for evaluation.
- Provide prototype visualization tools to assist port in decision support.



Precision Navigation Tool Demo

Intended Outcomes:

- Gain operational experience maintaining a gridded bathymetry database and producing products from it.
- Opportunity to educate mariners on the benefits of high resolution data and its fusion with meteorological and oceanographic data.
- Encourage the use of the S-100 standards and gain practical experience creating products in this standard.

Begin with the end in mind...

- How will high accuracy GPS positioning change maritime navigation particularly with respect to vertical positioning?
- Data ➡ Information ➡ Knowledge ➡ Wisdom.
- How do we support 24/7 operations in our ports?
- How do we support deeper drafts and reduced UKC.
- How must products change to support the demand for precision?