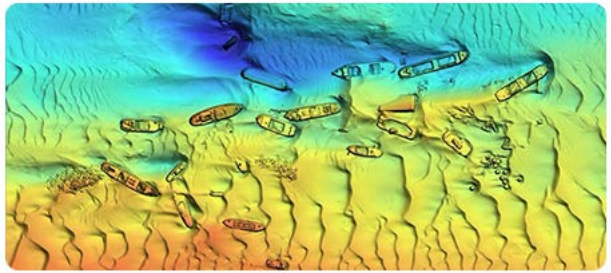
RBR

Welcome, the RBR Webinar will begin shortly…

Future Webinars



Tidal measurements to support hydrographic operations in Queensland

Giles Stimson (Port of Brisbane Ltd)

September 3, 2020 at 11AM AEST (GMT+10)

Chronicling seasonality in Beaufort Sea Lagoons

Christina Bonsell (University of Texas)

September 9, 2020 at 12PM EST (GMT-4)

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Compact Loggers: Overview and Calibration

Daniel Nelson

Technical Sales Manager

North America, West

Loggers

OEM

Sensors

Systems

RBR


RBRcervello
RBRduet
RBRsolo
RBRvirtuoso
RBRduo
RBRconc
RBRfermata
RBRfermette
RBRssm
RBRcoda
RBRquartz
RBRmaestro
RBRconcerto
RBR

RBR*duet*³ T.D

Compact depth and temperature logger (self contained memory + battery)

Range: 0 to 20, 50, 100, 200, 500, 750, 1000 dbar (2000, 4000, 6000, 10 000 dbar in titanium)

Pressure accuracy: ±0.05% FS, <0.001% resolution

Temperature accuracy: ±0.002°C

Over 20M measurements

RBR*duet*³ T.D|fast16 and RBR*duet*³ T.D|fast32 available – wave and tide variations

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RBR*solo*³ Tu

Light source	880nm
Time Constant	0.1s
Linearity	<2% deviation 0-1250 FTU
Depth rating (OSP)	1700m
Depth rating (Titanium)	6000m
Storage	Up to 65k readings

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Photos from the Nature Trust of British Columbia

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Calibration of Compact Loggers

Calibrated at RBR	Calibrated at RBR or user's lab
Temperature	Dissolved Oxygen
Pressure	Turbidity
*Conductivity	Fluorometers
	PAR

- Calibration services take 4 weeks
- Includes assessment of the logger, basic cleaning, fresh battery, and replacement of O-rings
- Calibration vouchers are available for C, T, and D sensors at the time of a new instrument purchase – discounted price, includes round-trip shipping, valid for 2 years
- support@rbr-global.com

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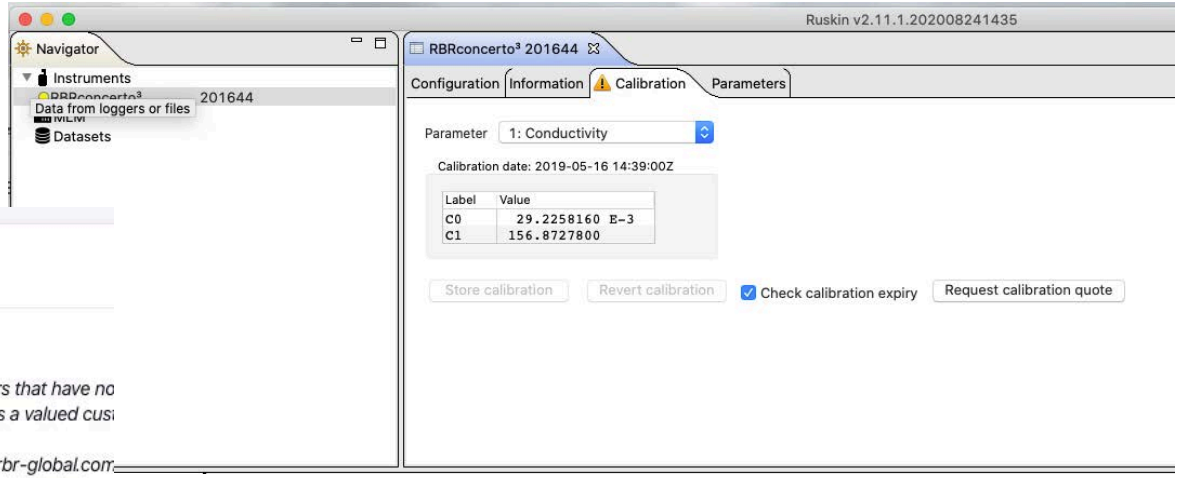
Calibration Notifications



RS **RBR Support** <support@rbr-global.com>
To: msoresca@nps.edu

Dear Mara Orescanin,

Our records show that you have one or more RBR Conductivity sensors that have no
from the high accuracy and performance that RBR is known for, and as a valued cust
***conductivity sensors**.*
To schedule the instrument calibrations, just send a note at support@rbr-global.com
This offer is only being made to a select group of researchers and is valid for instrum

Please let us know if you have any questions or comments about this incentive by sir

Best regards,
Dean Morgan P.Eng
Technical Support Manager, RBR

Reply Reply all

RBR

Thank You

Contact Us

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www.rbr-global.com
info@rbr-global.com
+1 613 599 8900

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Observing Beach Breaching in Carmel, CA

Prof. Mara Orescanin

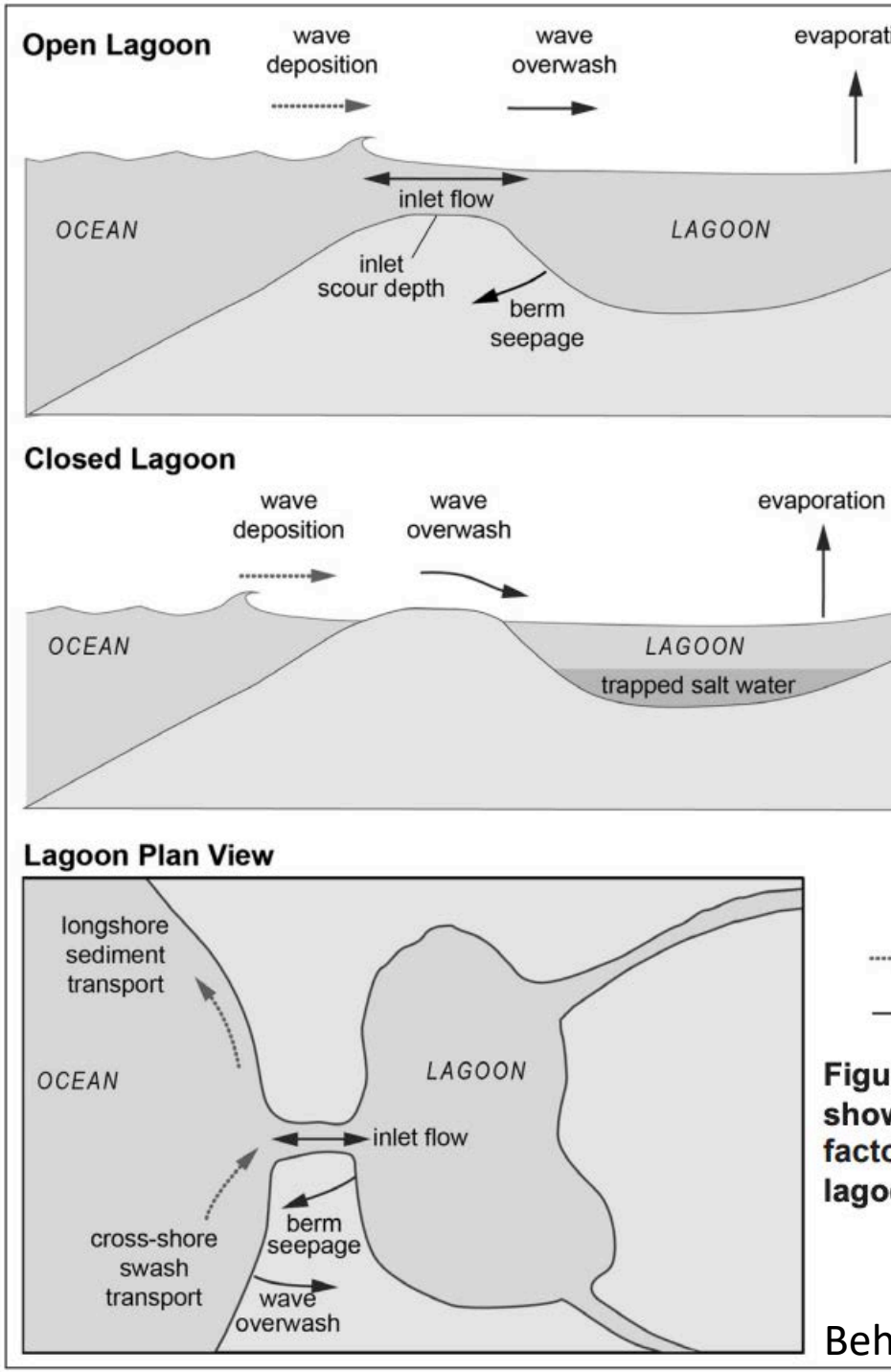
Naval Postgraduate School

RBR Webinar

September 2nd, 2020

Bar-built estuary preliminaries

Prolific on the US West Coast (and other climatologically similar coastlines including in Portugal, South Africa, and Australia)



Figu
show
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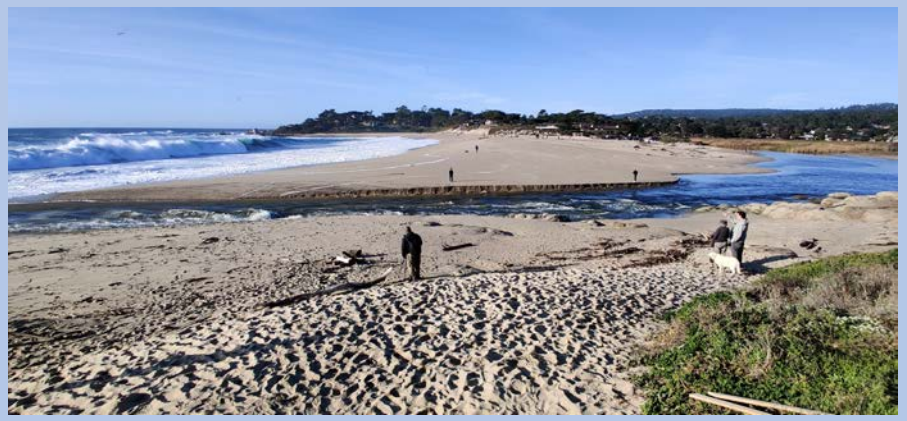
Beh

Scientific Questions:

- Is it possible to predict breaching and closure events?
- Where does the sand go and when does migration happen?

How quickly does breaching happen?



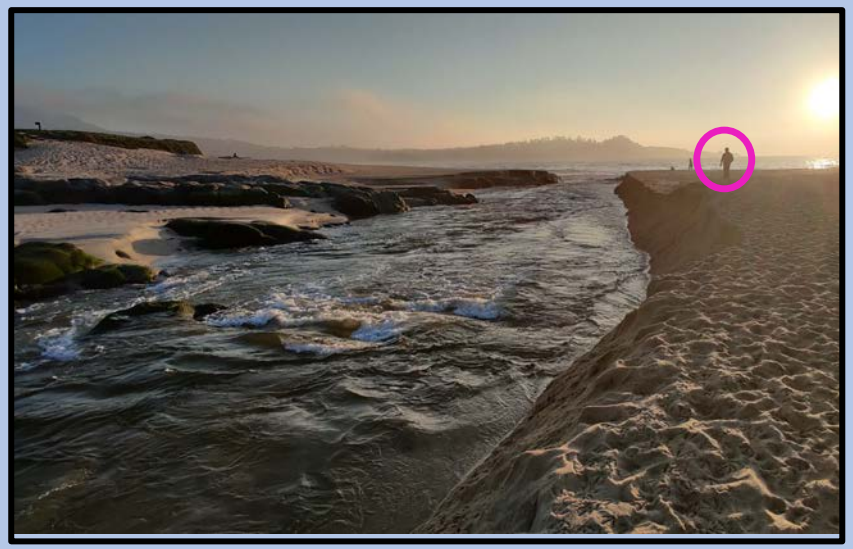
February 7, 2020:

1322

1329

1348

1717



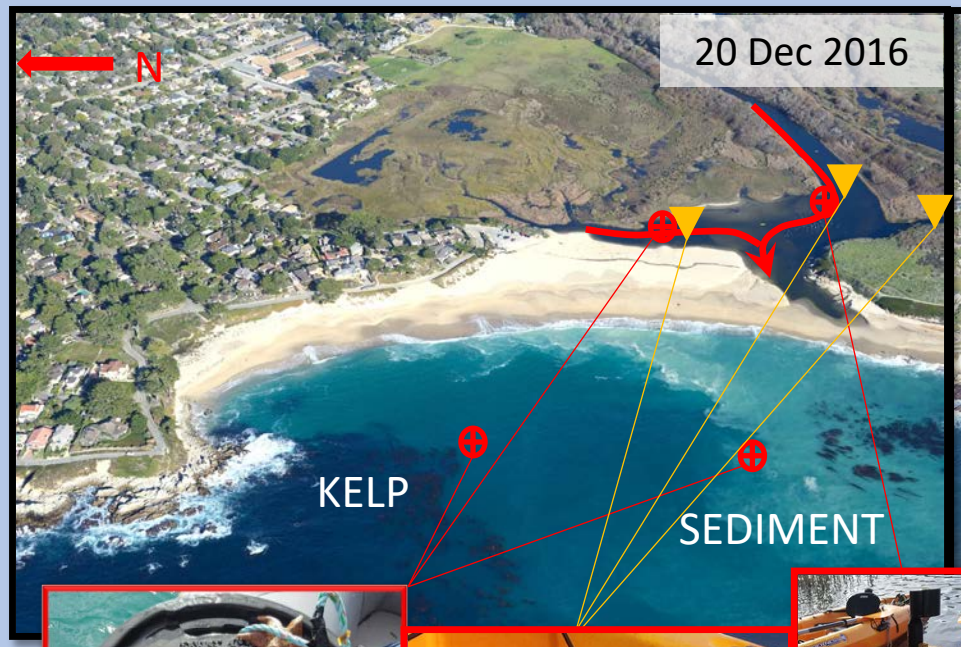
In most observed breaches this happens in less than one quarter tidal cycle

Why is this so difficult to measure?

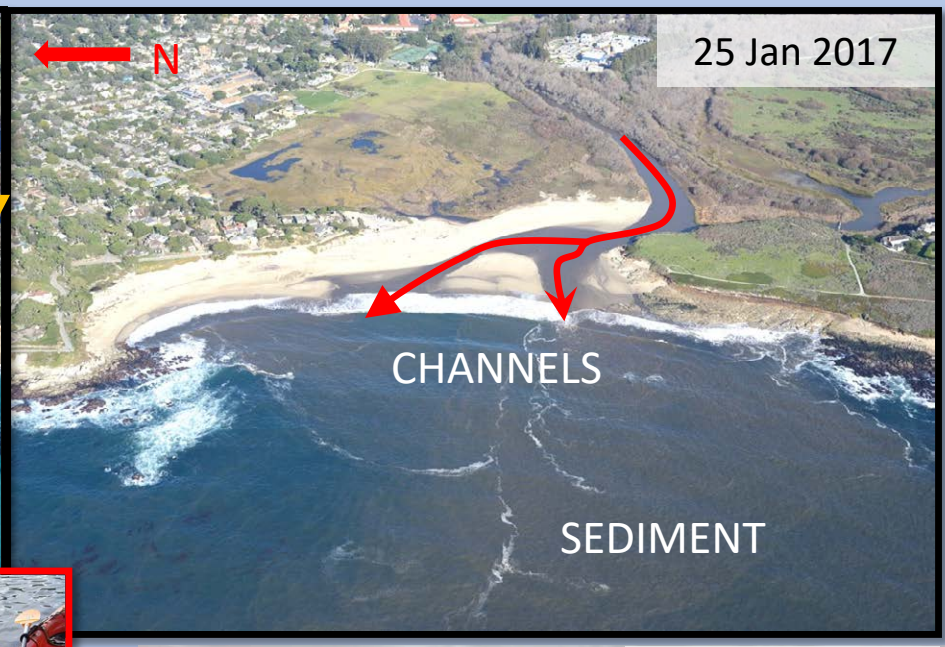
Why is it so difficult to quantify the morphodynamics?

Data Collection and Instrumentation

CLOSED



OPEN



3x Pressure sensor

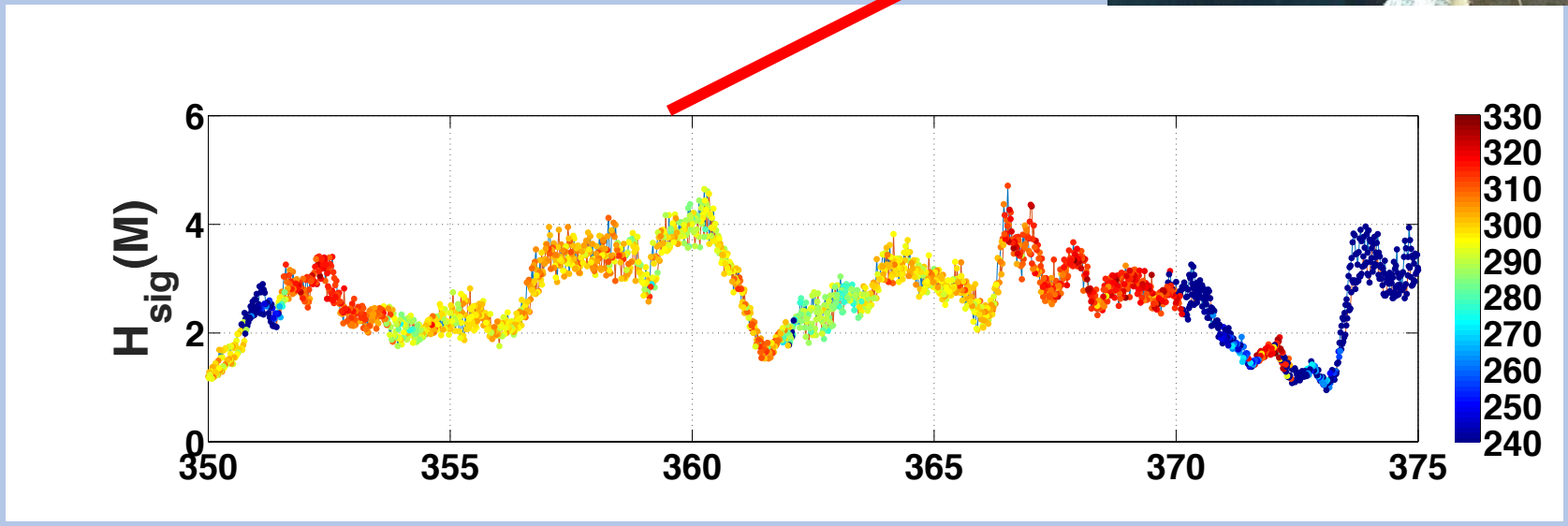
3x Tilt Current Meter

CTD
Pressure sensor

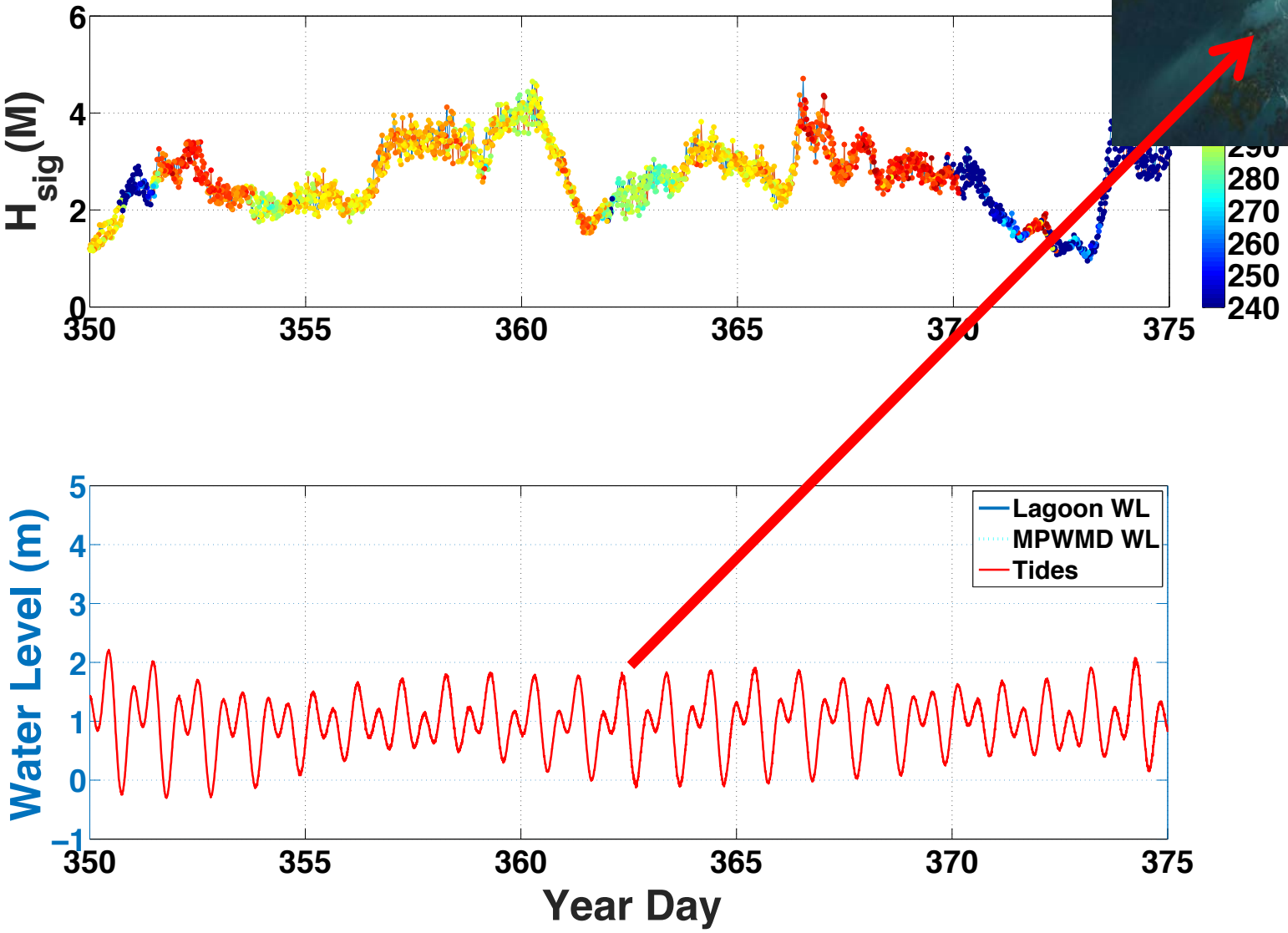
Observations

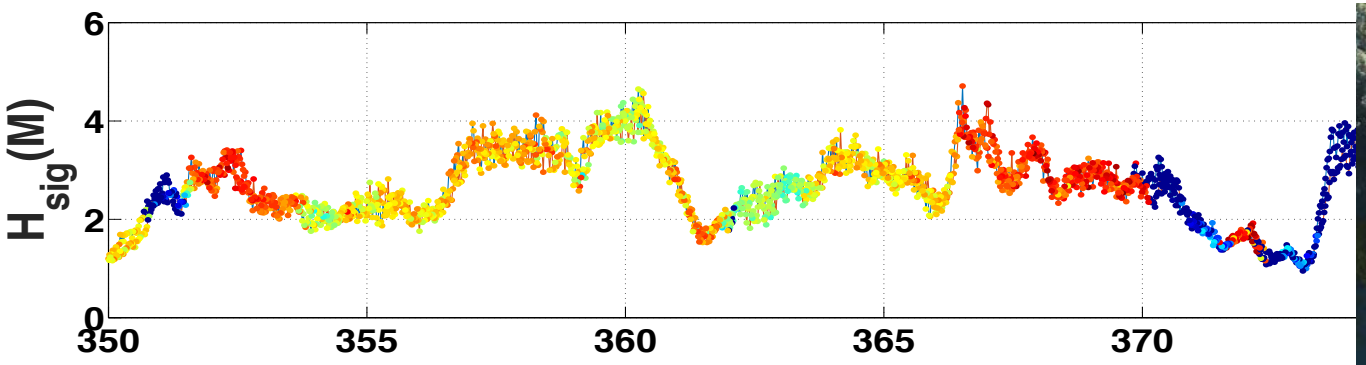
Wave height from NDBC Point Sur

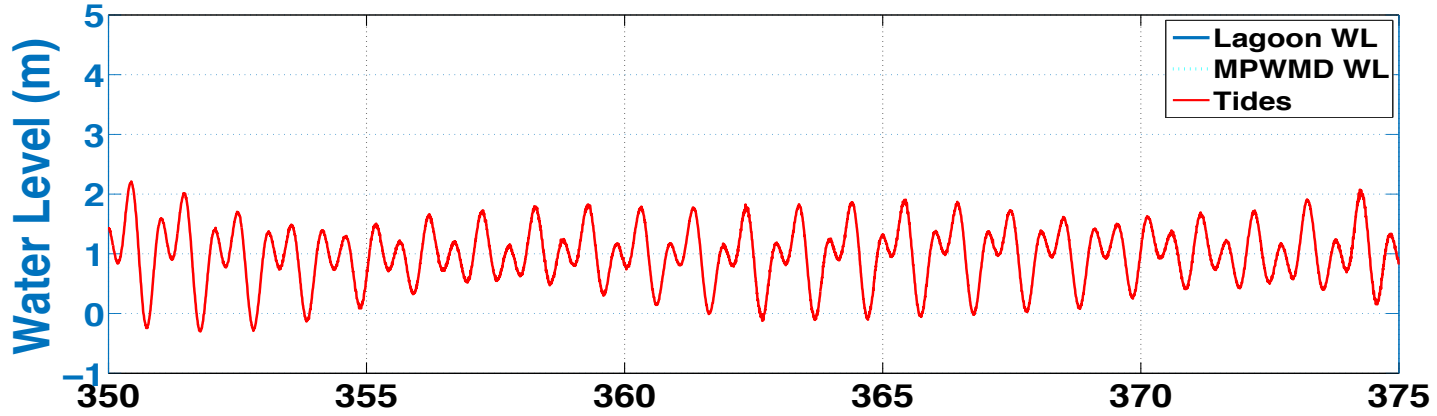
- Matches observed offshore to within 0.5m

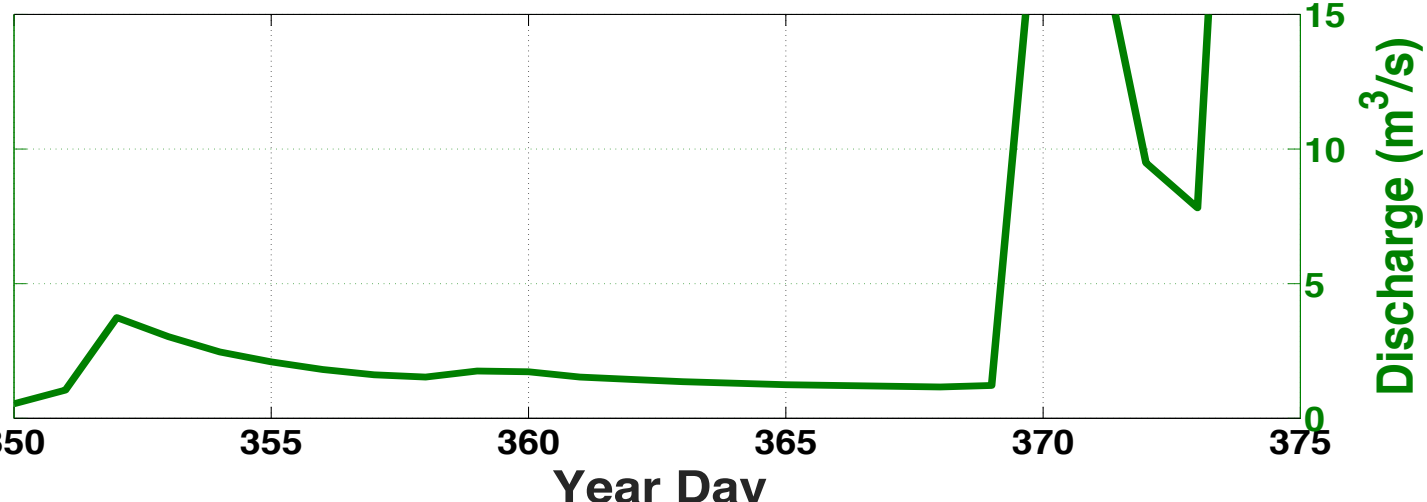


Observations

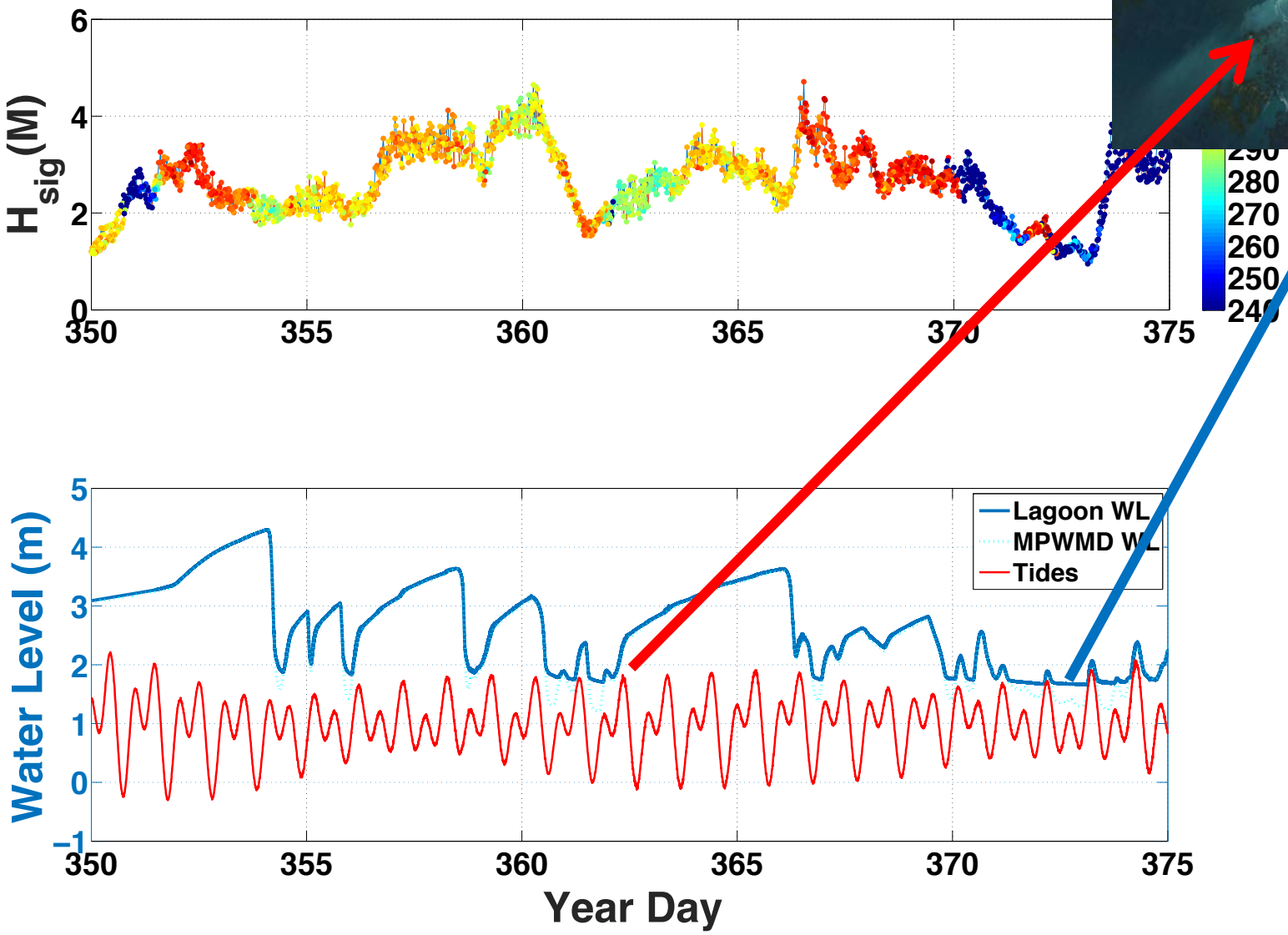



H_{sig}(M)
6
4
2
0
350
355
360
365
370

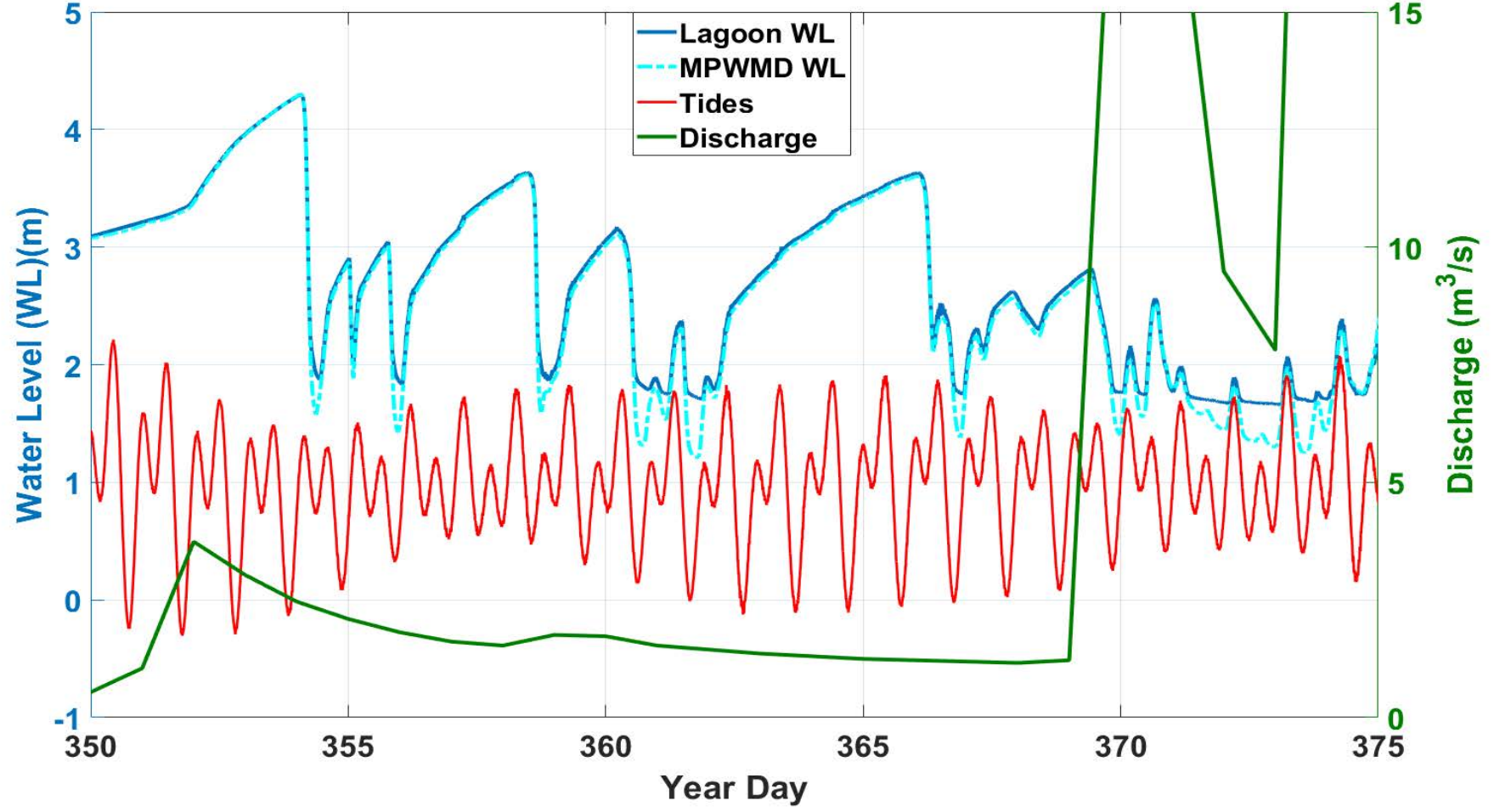

Water Level (m)
5
4
3
2
1
0
−1
350
355
360
365
370
375
Lagoon WL
MPWMD WL
Tides


15
10
5
0
Discharge (m^3/s)
350
355
360
365
370
375
Year Day

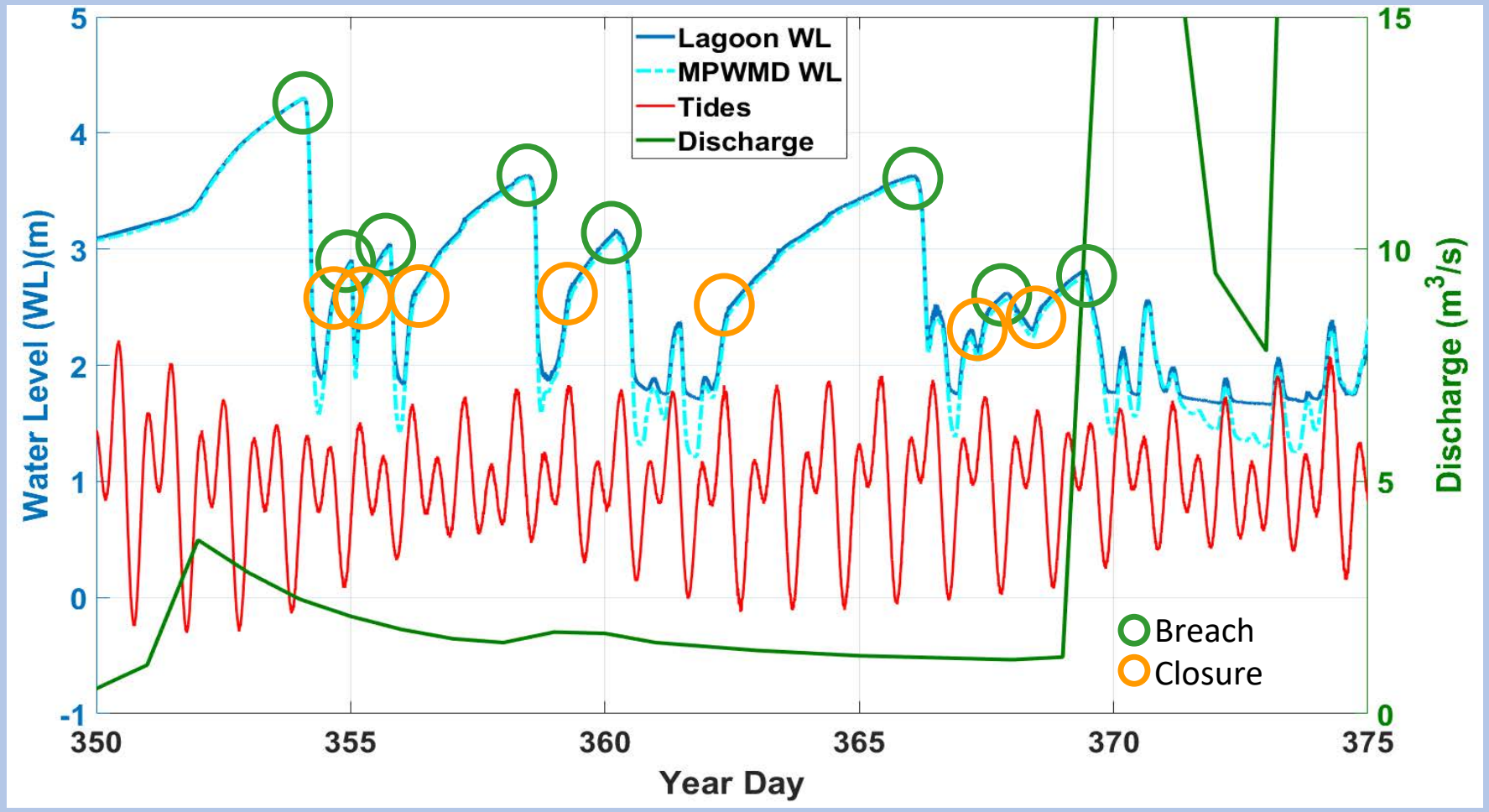
Observations



Breaching Events

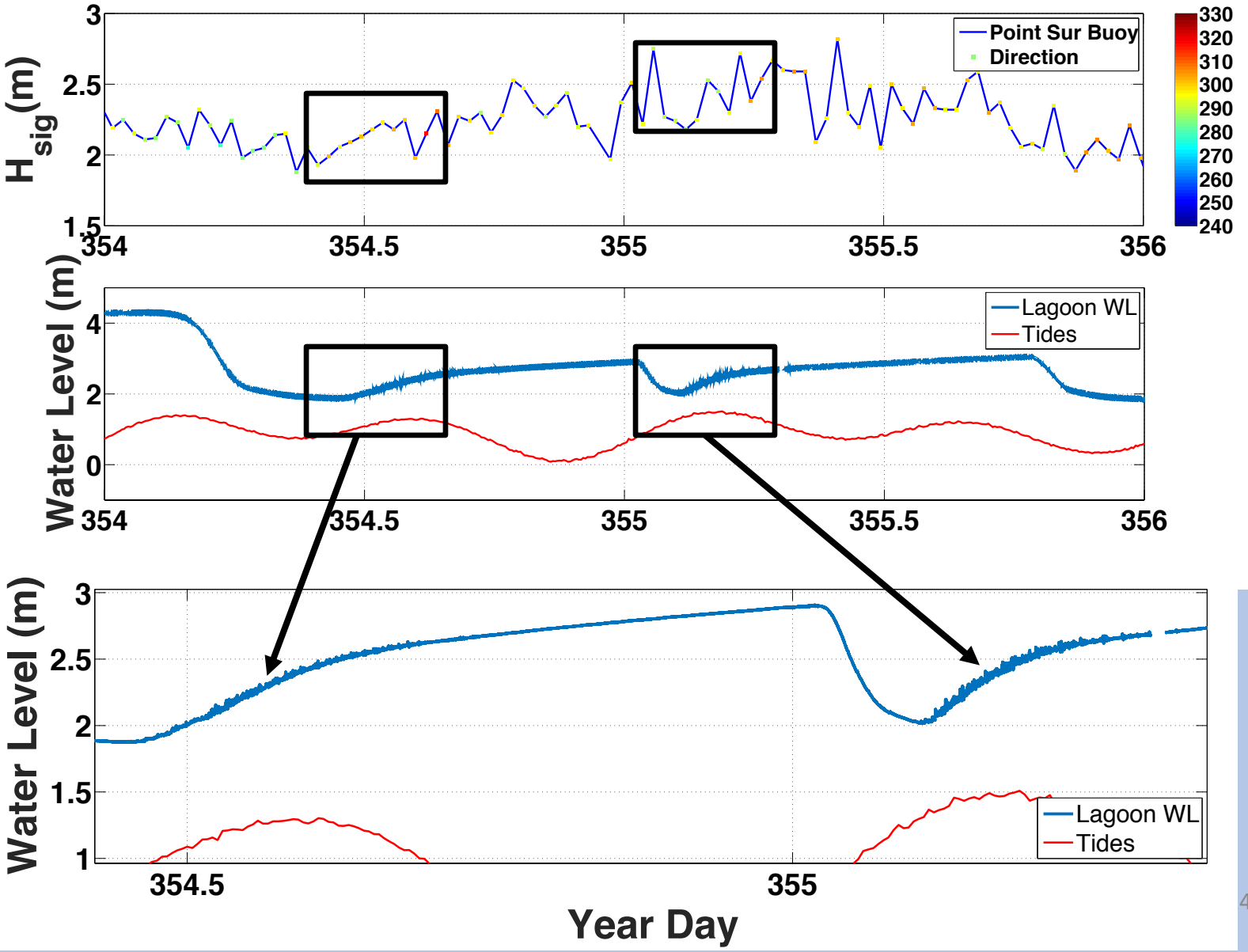


Breaching Events

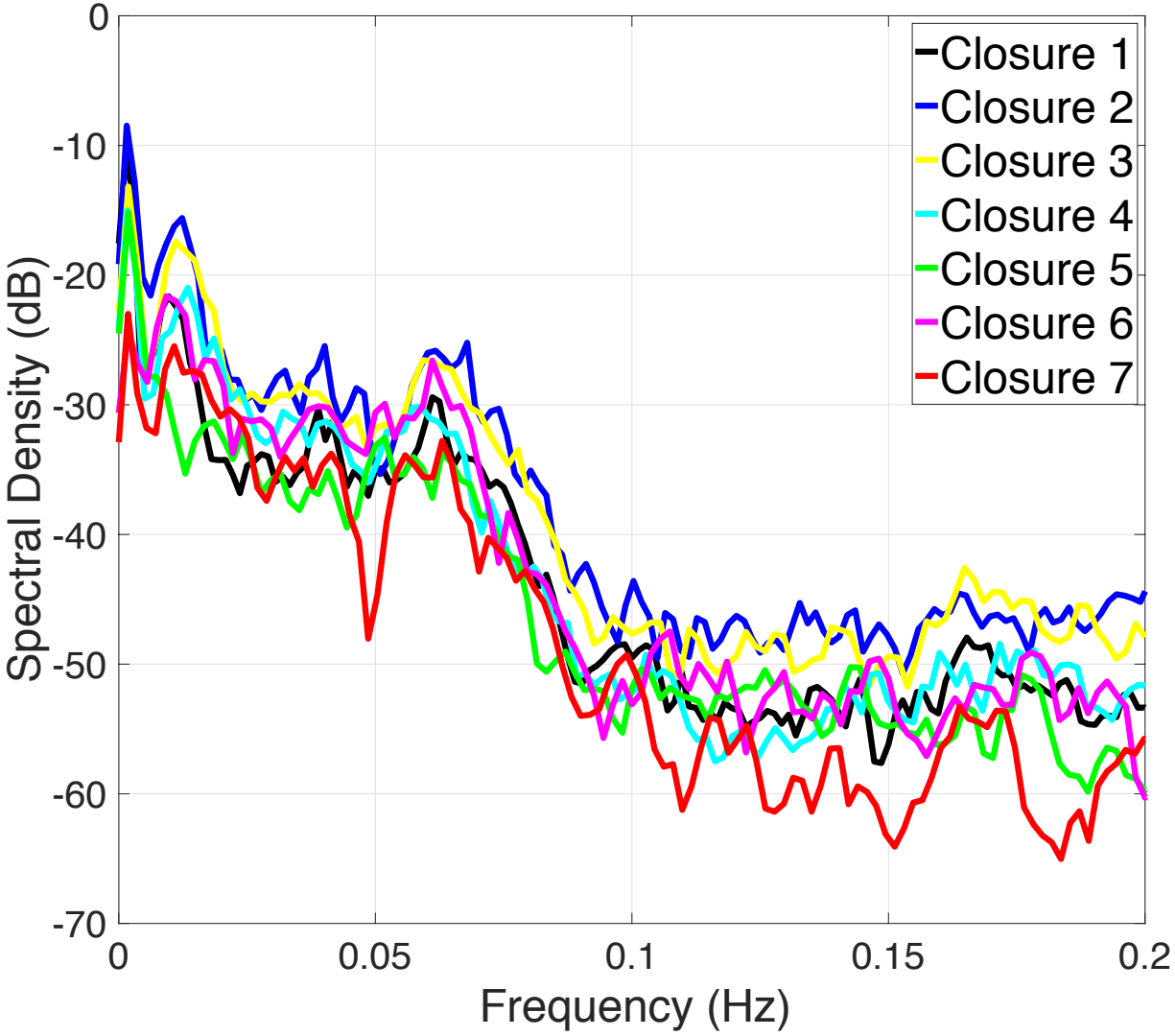


- 7 breaching and closing events (day 354-367)
- No correlation between breaches and Hsig/tides
- Strong correlation between closing and rising/high tide

Breaching Events: a close up view



Energy spectra: Wave infiltration



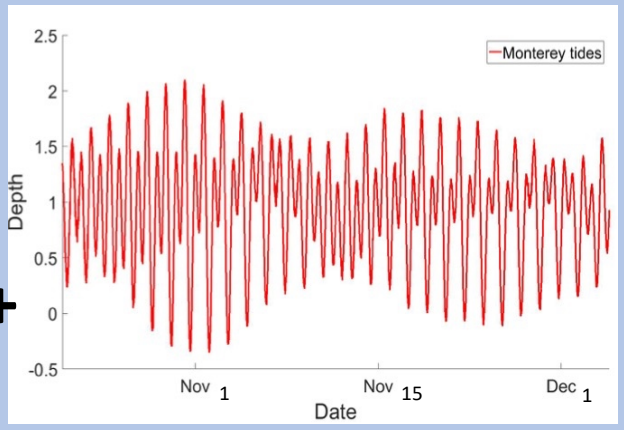
All closure events have similar characteristics: Very low frequency swell and infragravity energy are dominant

What are the driving factors?

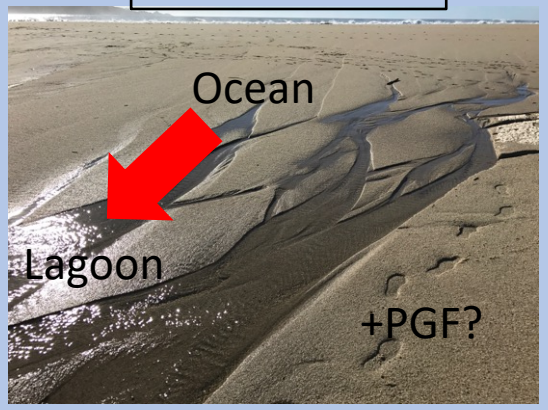
River Discharge (rain) = Waves + Tides

=

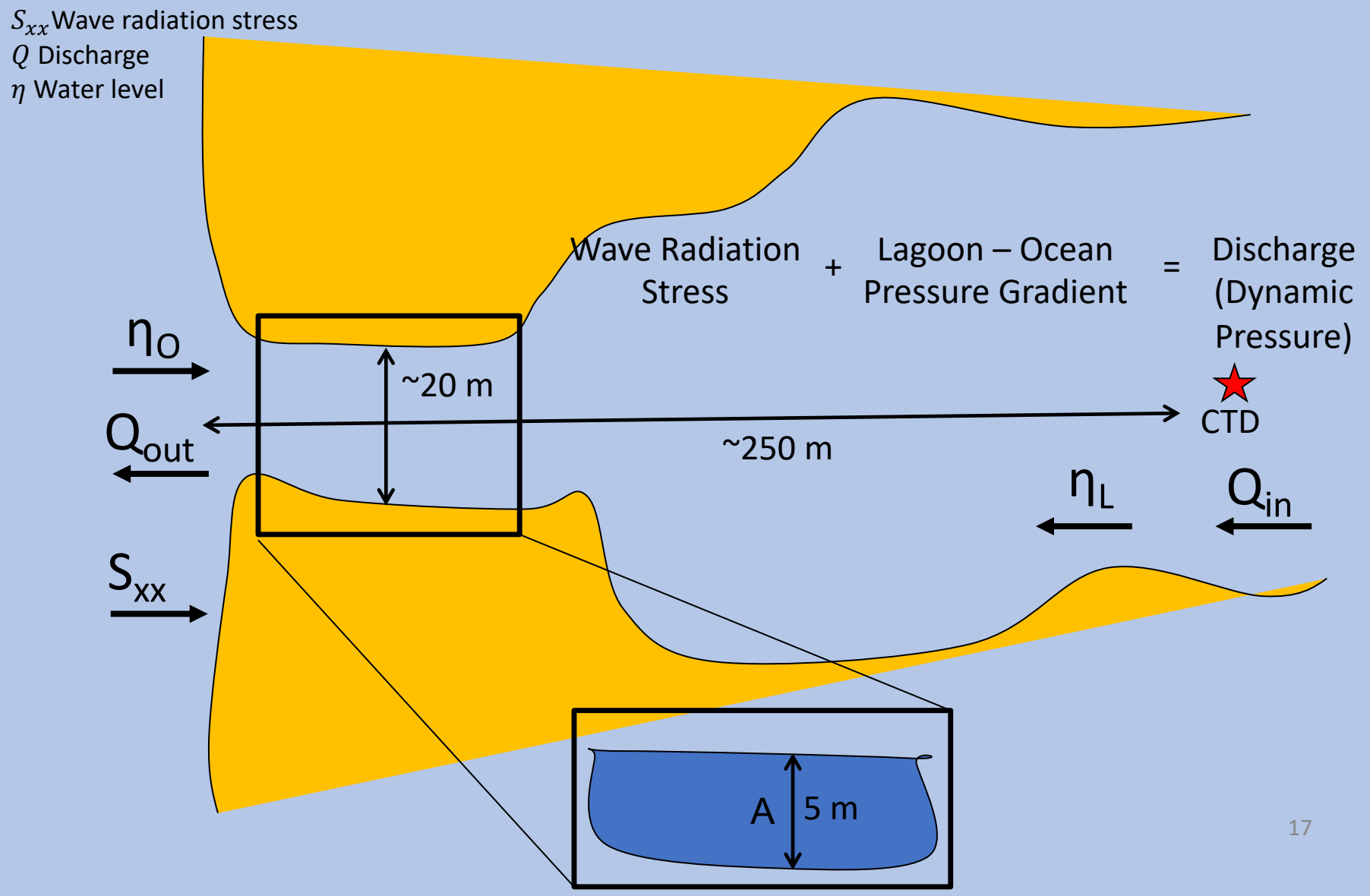
+



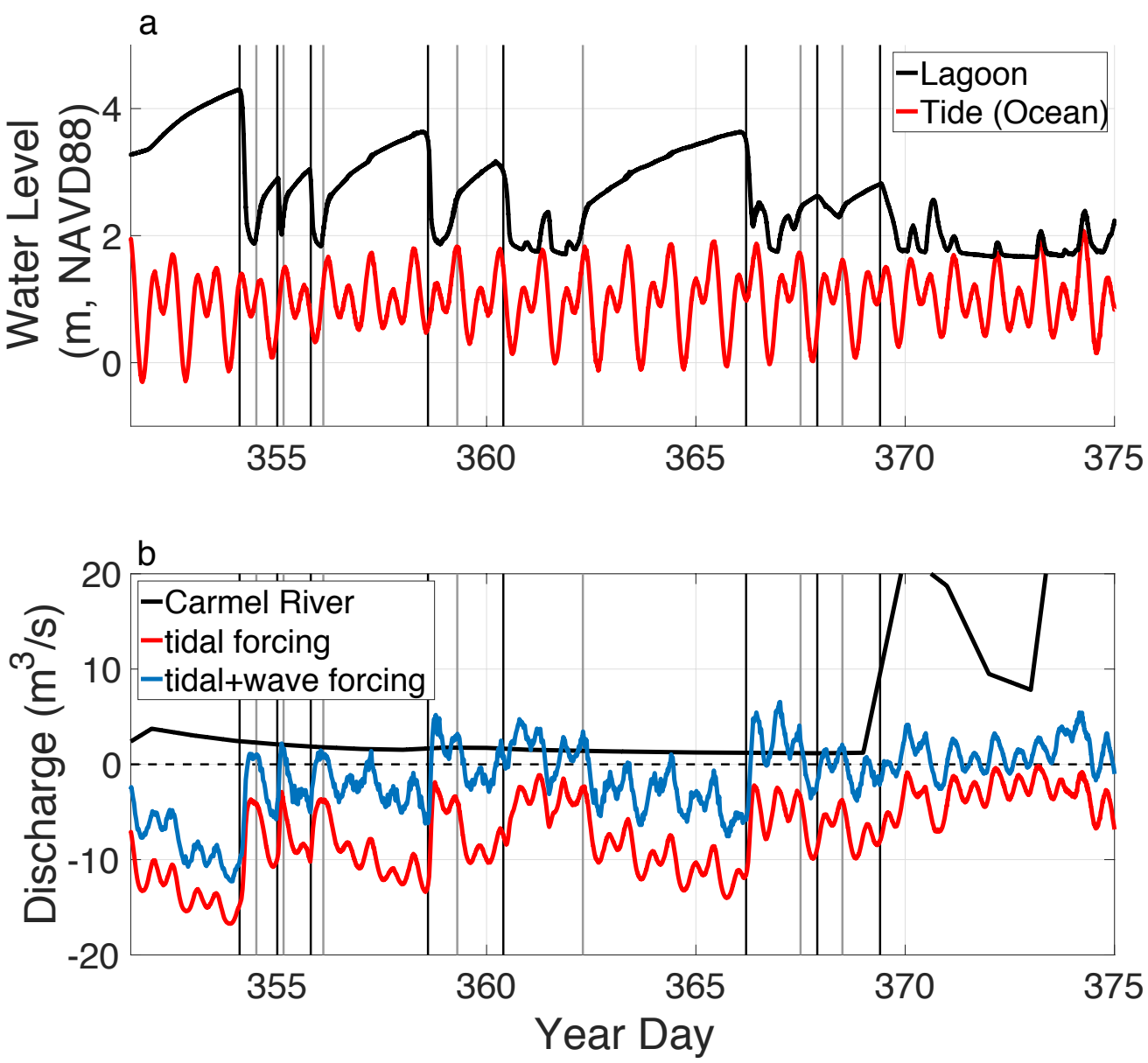
Seepage ?



Momentum Balance



Momentum Balance



Breach Closure

Red, Blue < Black = offshore pressure gradient

Red, Blue ≥ Black = onshore pressure gradient

Breach/Closure Prediction

Breaches not correlated with:

- Tide stage
- Wave height

Onshore directed wave forcing:

- Acts against an offshore directed jet
- Required for breach closure

Closures correlated with:

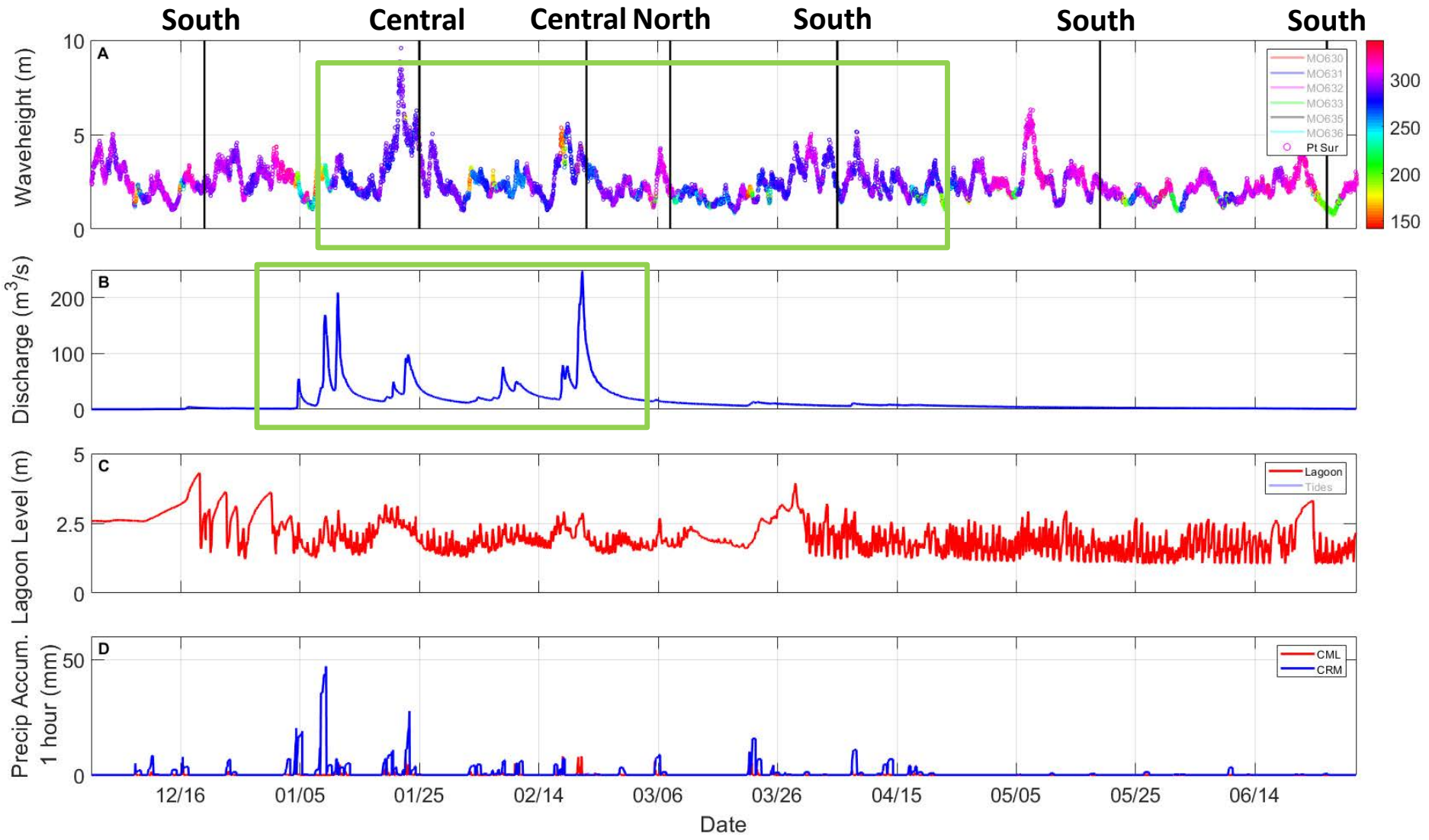
- Maxima in ocean (tides + waves) forcing

Breach Seasons

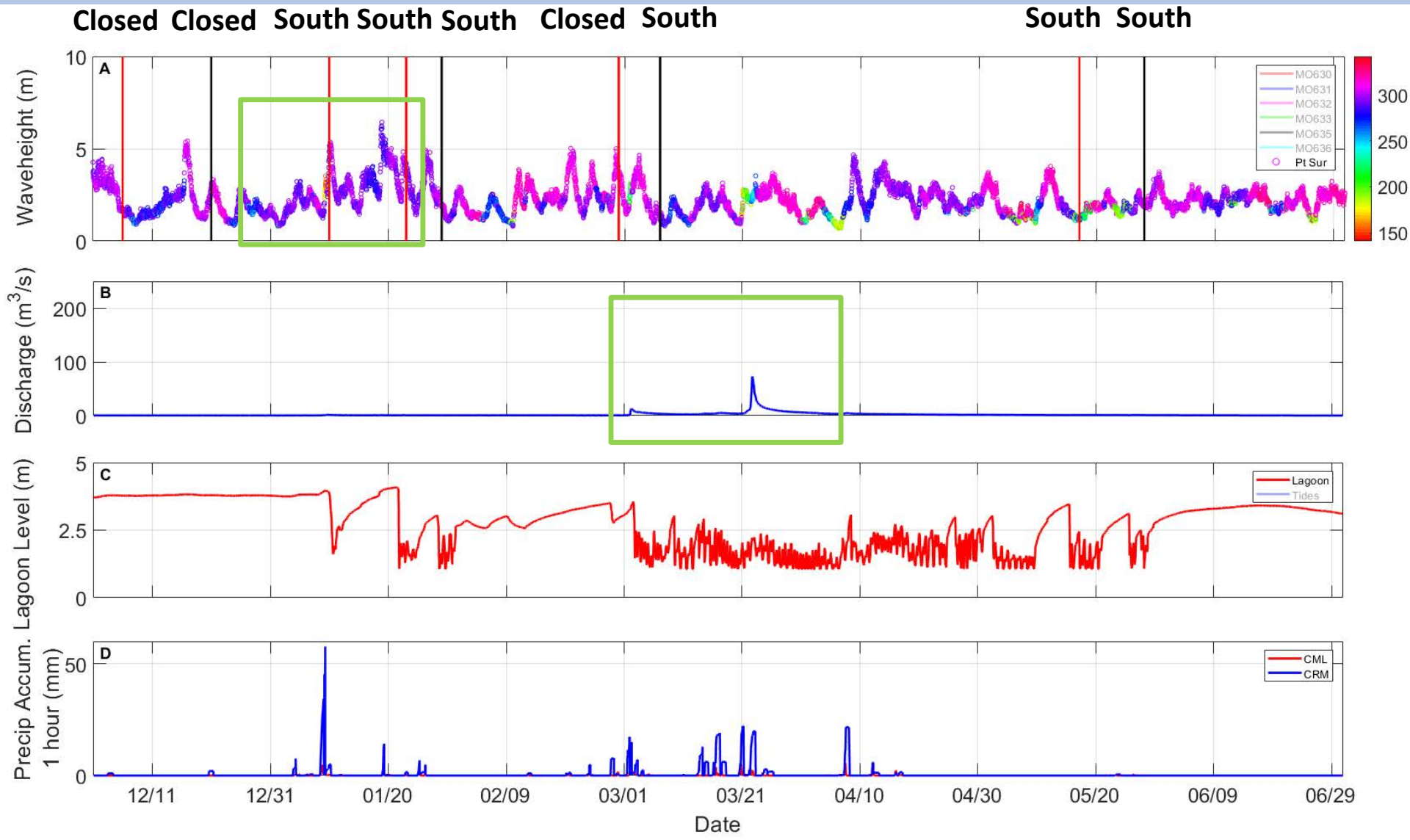
2016 – 2017: wet winter; high discharge

2017 – 2018: dry winter; low discharge

2016 – 2017 Breach Season

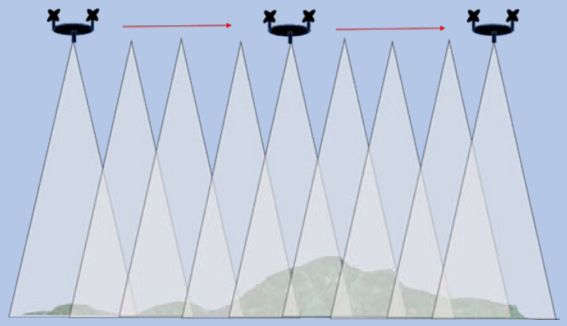


2017 – 2018 Breach Season



Morphological Measurements

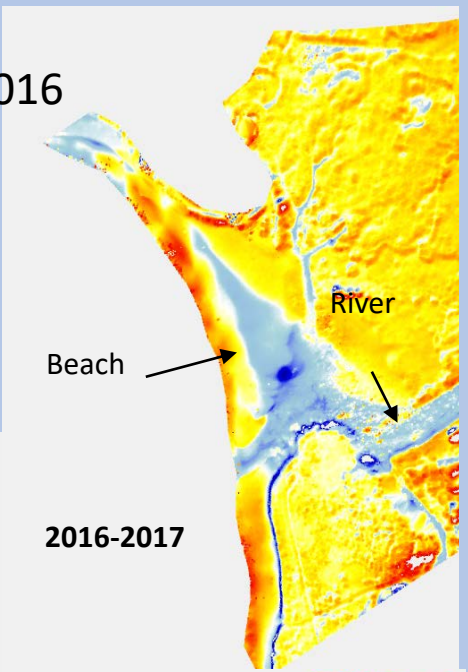
- Structure from Motion (SfM) method to determine topography.
    - Aerial photography of terrain multiple angles
    - Overlap to employ Multi- View Stereo (MVS) photogrammetry
    - Surveyed Ground Control Points (GCP)



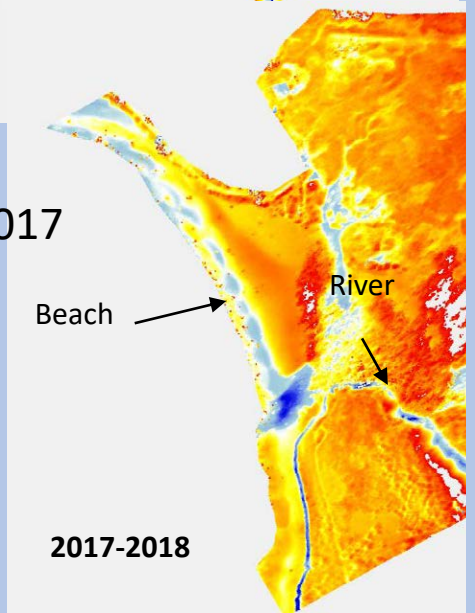
- Bathymetry from SonTek RiverSurveyor M9

Seasonal Variations

June 2017 – December 2016 =WET YEAR



June 2018 – December 2017 =DRY YEAR



- Error near beach ~10cm (higher inland)

Morphological evolution: summary

- Low discharge years/northwesterly waves:
  - No migration
  - Onshore sediment transport

- High discharge years/westerly waves:
  - Migration to north
  - Loss of sediment from lagoon

Conclusions

- Breaches occur at any ocean condition (waves + tides)
  - Dependent on discharge
- Closures occur at high tide + large waves
  - Ocean forcing balances river discharge

- (Large) discharge and waves are necessary for migration

Thank you!! Questions??