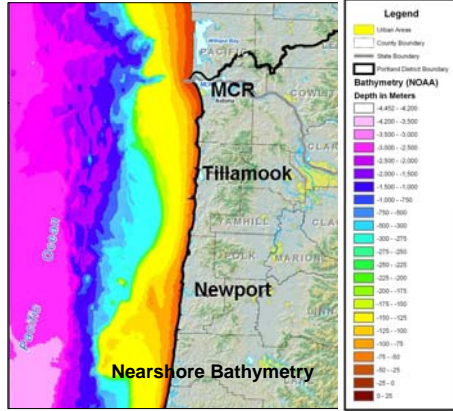
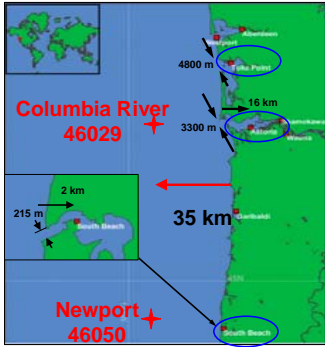




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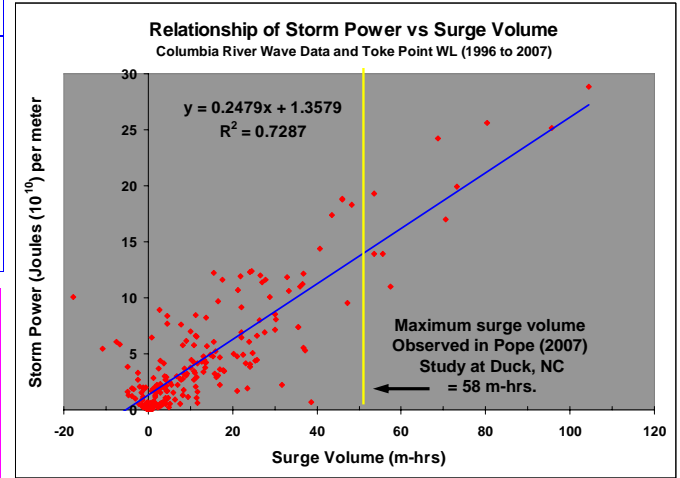
Assessing the Intensity of Coastal Storms by Combining Wave Power with Surge Volume - Oregon Coast, USA

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- ### Method
1. Predicted and observed water levels were obtained for 3 NOAA water level gages. - Toke Point (WA), Astoria (OR), South Beach (OR)
 2. After comparisons during several large storm events, Toke Point gage was selected as most representative of "Open" Coast conditions.
 3. For storm events with wave heights > 4m; Using Columbia River buoy, surge and surge volume was calculated throughout storm event.
 4. Surge volume was summed by analysis year.
 5. High surge volume events were correlated to high storm wave power events.

- ### Observations and Questions
1. Location and period of record for water level gage play a large role in Coastal Zone surge analysis.
 2. On the Oregon Coast, storm surges are relatively small (up to 2 meters) and occur during periods with the largest storm wave heights.
-> A condition of moderate storm surge with very long duration can have significant negative consequences
 3. While magnitude of storm surge can be relatively small, total surge volume is quite large due to long storm duration (>72 hours).
-> A condition of moderate storm surge with very long duration can have significant negative consequences
 4. There is little variability in surge response (height) along PacNW coast. Differences in magnitude appears to be related to degree of open ocean exposure and local morphology.
 5. A "Best" (rational/objective) metric for combining total storm wave power with total surge volume remains to be determined.



NOAA Water Level and Buoy Stations

Metric Station	Record
Observed Water Level	
Toke Point	1996 to 2007
Astoria	1947 to 2007
South Beach	1967 to 2007
Offshore Wave Height	
Columbia River - NDBC	1984 to 2007
Newport NDBC	1991 to 2007

