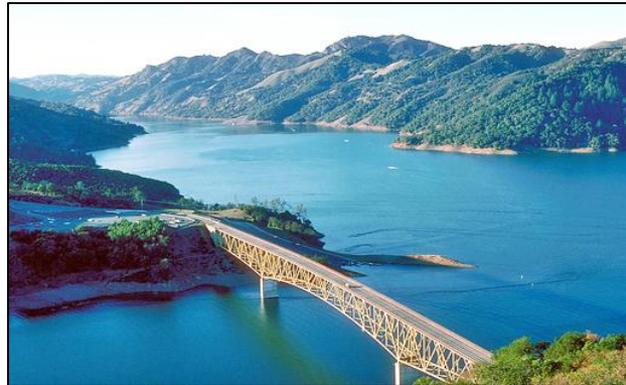




***NOAA Habitat Blueprint:
Development of a high resolution Coastal Storm
Modeling System (CoSMoS) for the
Russian River estuary***



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Monte Rio, California
April 20, 2016***

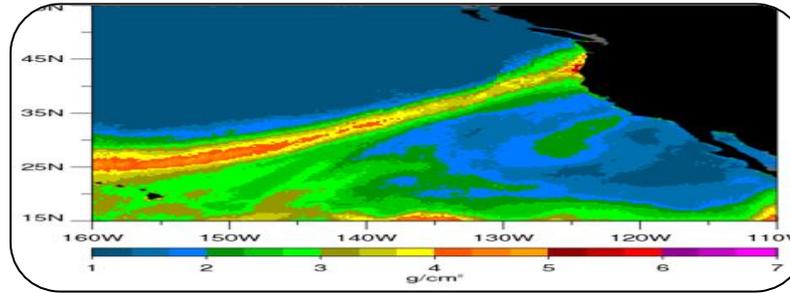
WHAT IS NOAA'S HABITAT BLUEPRINT?



- The **Habitat Blueprint** is NOAA's strategy to integrate habitat conservation throughout the agency, focus efforts in priority areas (**Habitat Focus Area - HFA**), and leverage internal and external collaborations to achieve measurable benefits within key habitats such as rivers, coral reefs, and wetlands. *Improving the way we do business !*
- Russian River was designated first **HFA** in the Nation
- Ten HFAs nationally

OBJECTIVES: RUSSIAN RIVER HABITAT FOCUS AREA

- Rebuilding endangered coho salmon and threatened Chinook salmon and steelhead stocks to sustainable levels through habitat protection and restoration.
- Improving frost, rainfall, and river forecasts in the Russian River watershed through improved data collection and modeling.
- Increasing community and ecosystem resiliency to flooding and drought through improved planning and water management strategies.



CCC Coho Salmon



CC Chinook Salmon

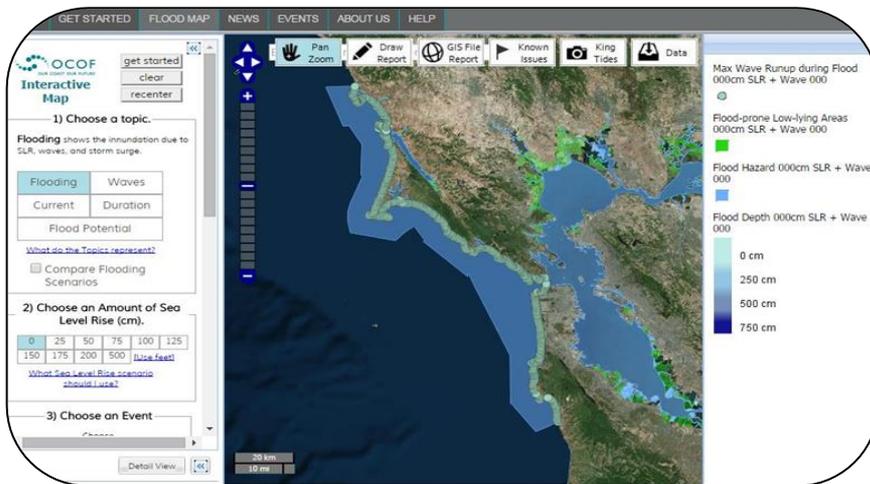


CCC Steelhead Trout

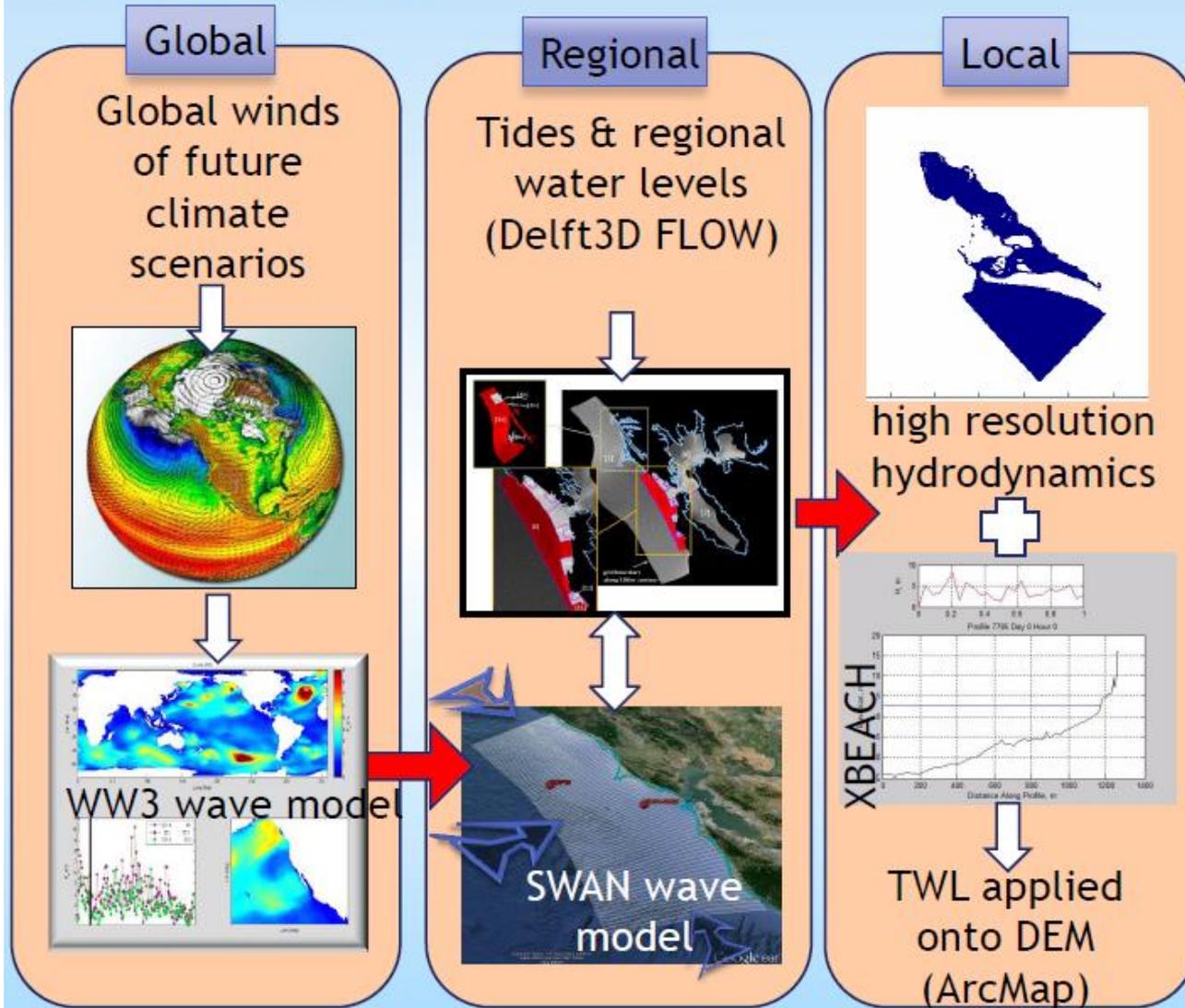
NOAA COLLABORATIVE PROJECTS: Russian River Estuary – Climate Change and Sea Level Rise

Collaborators: NOAA (NOS, NWS, NMFS, OAR), SCWA, USGS, Point Blue, Sonoma County Permit and Resource Management District

Objective: Develop a high resolution Coastal Storm Modeling System (CoSMoS) for the Russian River estuary and coastal areas just North and South. This model which will leverage existing data and models on sea level rise projections, future wave climatology, barrier beach and river mouth sedimentations regimes. This integrated model and associated data will be useful for management of estuary resources, guide habitat restoration and inform coastal planning. Data will be added to the Our Coast Our Future application.



CoSMoS Overview



- Using CMIP5 Global Climate Model Projected winds and sea level pressures for the 21st century
- High resolution grids of lagoons and protected areas
- Explicit modeling of dynamic wave runup
- 40+ scenarios
 - background, 1yr, 20yr, 100yr storm events in combination with SLR 0m to 2m at 0.25m increments +5m
- Web-based tool

CoSMoS Model Sonoma Extension

- Bodega Head to Point Arena
- Particular emphasis on the Russian River mouth and Jenner
- Integrate coupling with RDHM
- Eventually simulate all 40 scenarios
 - (SLR from 0 m to 2m at 0.25m increments + 5m)
 - Storms: 1yr, 20 yr, 100yr & background



Output products: Flooding

- * Maximum extent of flooding during storm
- * Flooding depth above MHW
- * Vulnerable areas designated



Output products: Flood Duration

- * # hours flooded during 24.8 hour storm simulation
- * Only for hydraulically connected grid cells above MHHW



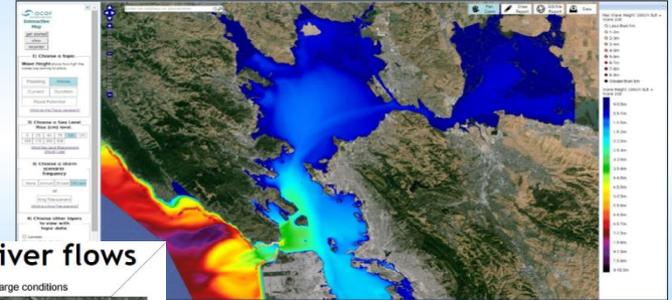
Output products: Tidal Currents

- * Maximum currents in each grid cell during the storm simulation



Output products: Waves

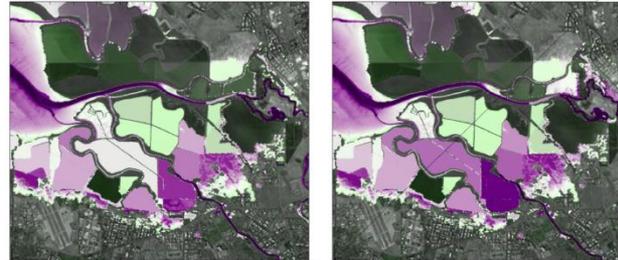
- * Maximum wave height in each grid cell during the storm simulation



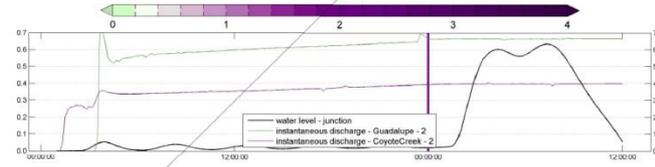
Output products: Sensitivity to river flows

Average discharge conditions

Maximum discharge conditions



Water depth (m)



CoSMoS Model Applications thus far...

- Southern California ver. 1.0 (Pt. Conception to border): 2012
- North-central CA coast (Bodega Head to Half Moon Bay): Feb 2013
- San Francisco Bay: August 2014
- Southern California ver. 2.0 (Pt. Conception to border): summer 2015



NOAA COLLABORATIVE PROJECTS: Russian River Estuary – Climate Change and Sea Level Rise

- Provides an integrated model and associated data that will provide science based, decision support tools to aid with coastal planning, habitat restoration, and management of estuary resources.
- Increases understanding of the connection between coastal and watershed processes
- Develops coastal and watershed scenarios representative of conditions relevant to coastal and estuary management

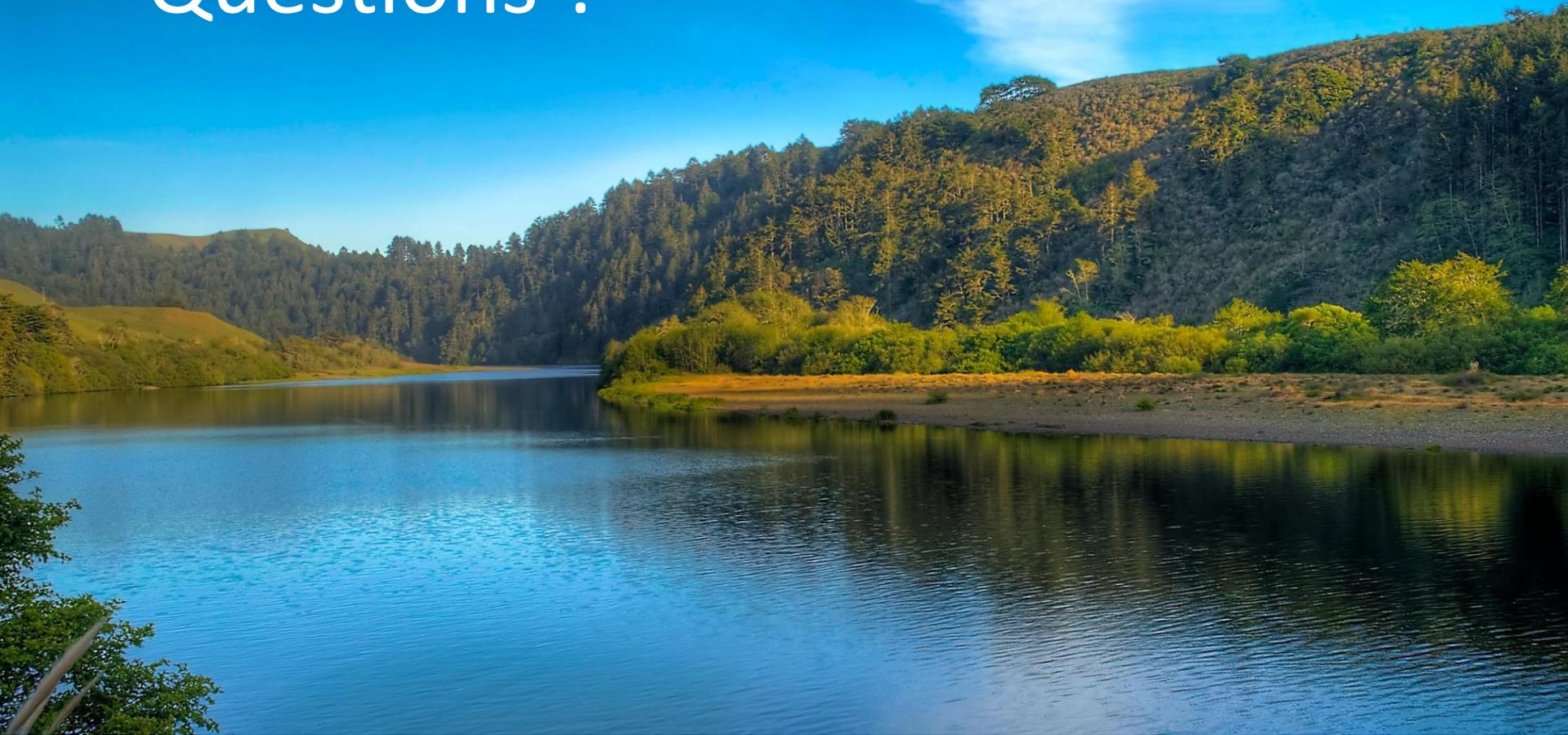
Timing :

August 2016 for first release of Our Coast Our Future tool for coast (Bodega to Jenner).

October 2016 second release of Our Coast Our Future tool for Russian River Estuary.

Our Coast Our Future (<http://data.prbo.org/apps/ocof/>)

Questions ?



www.noaa.gov/habitatblueprint

www.noaa.gov