

Honolulu District – West Maui Sediment Inputs Tom Smith, Jessica Podoski, and Lauren Molina

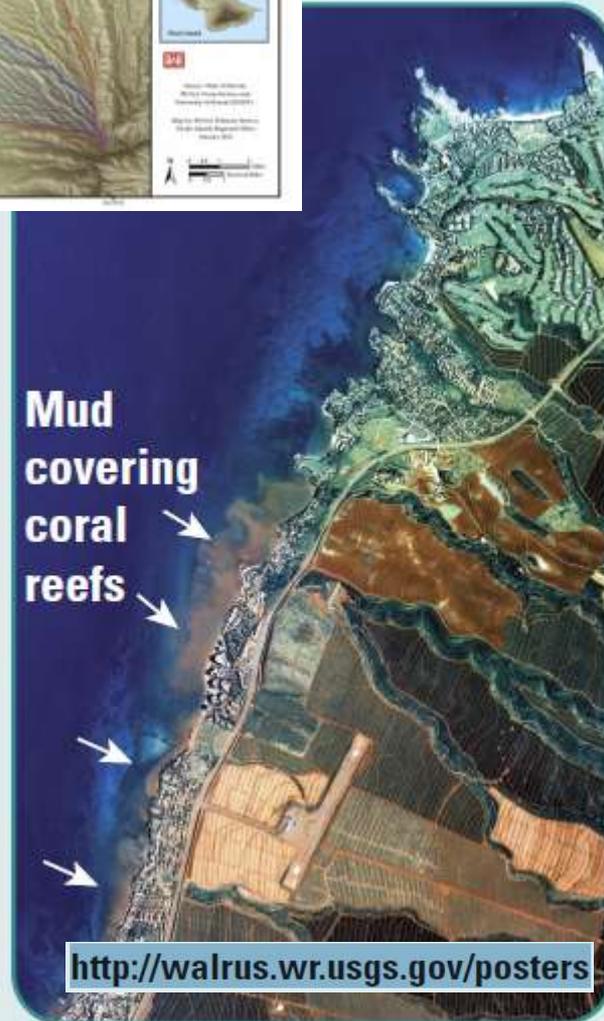
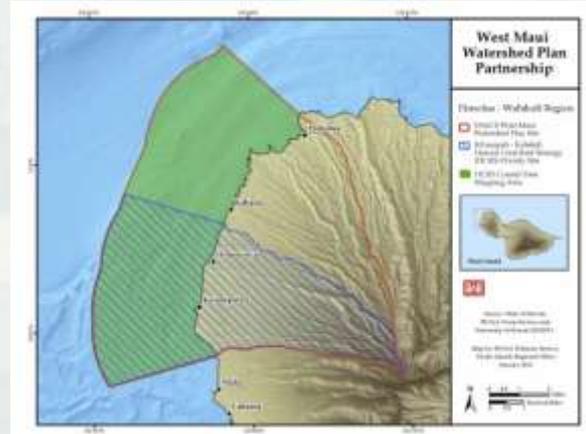
BLUF: In order to better address sedimentation issues relative to coral reef habitat, a better understanding is needed of the fate of inland sediment inputs within the nearshore littoral environment.

Problem Statement/Issue

- Inland sediment making its way to coastal waters via streams and drainages is a coral reef stressor.
- It is poorly understood as to what the circulation patterns are along the coast that influence the fate and transport of terrigenous sediment.

Approach to Address Problem (non-technical)

- Use existing model results from FY14 HRSM studies to evaluate input of upland sediments
- Incorporate JABLTCX benthic mapping results to locate areas of potential coral reef impact
- Visualize sediment pathways using PTM (Particle Tracking Model)



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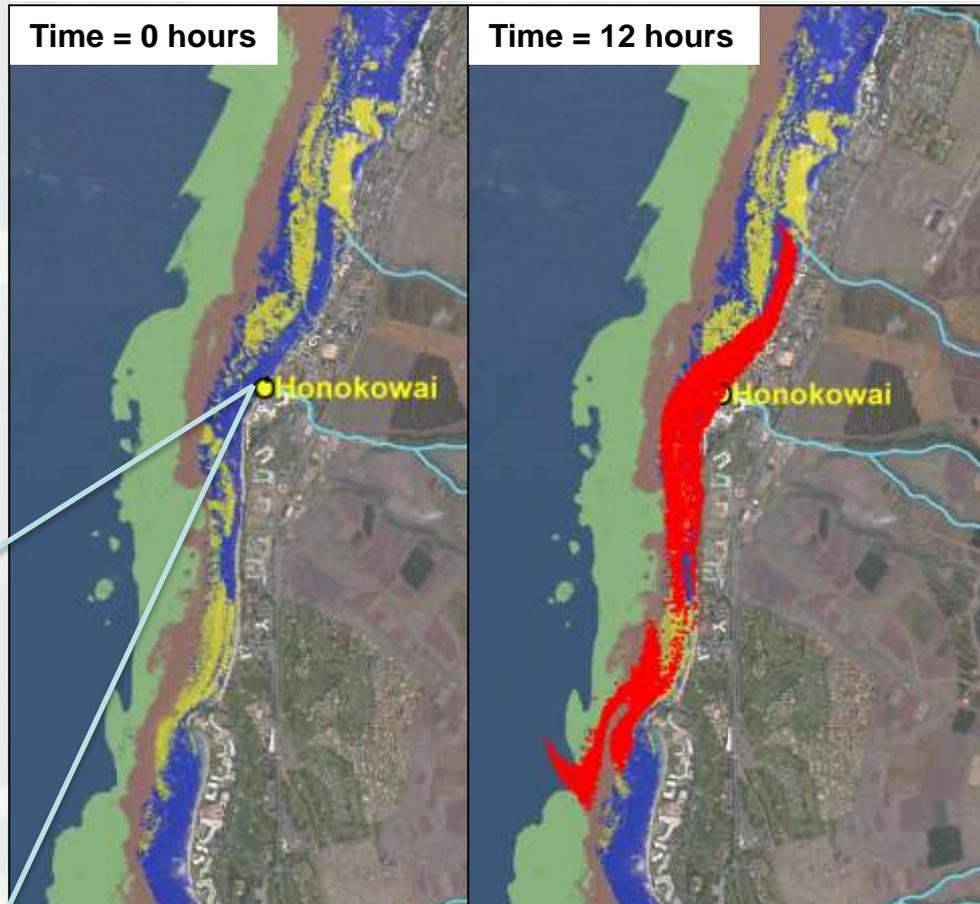
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Approach to Address Problem (Tools, Models, Technologies)

- Long-term wave and circulation model runs were completed as part of FY14 HRSM West Maui Investigations of coastal sediment transport
- FY14 Hydrodynamics were used in new PTM simulations with release of fine sediment from Honokowai Stream
- Benthic mapping completed by JABLTCX indicates location of hardbottom (purple areas) that may be impacted under various wave/circulation conditions



PTM Simulation of Sediment Outflow during North Swell



Benthic Classification

TYPE

- Hard bottom (reef, coral, pavement, rubble/rock, artificial reef, etc.)
- Other (exposed shoreline, breaking waves/whitecaps, or clouds)
- Sand and Halimeda Mix (dominated by sand and Halimeda; few patches of rubble)
- Uncolonized Sand (primarily sand with little to no Halimeda, rubble, or coral)
- Unconsolidated Sediment Mix (mostly sand with some patchy areas of rubble/pavement)

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USACE RSM PDT

- Honolulu District
 - Nani Shimabuku: RSM Program Manager
 - Tom Smith: RSM/Nav O&M Technical Manager
 - Jessica Podoski: Coastal Engineer
 - Lauren Molina: Coastal Engineer
- ERDC/CHL
 - Zeki Demirbilek: Dr. Turkey
 - Lihwa Lin: CMS Kahuna

Stakeholders/Partners

- State of Hawaii DLNR/OCCL (Sponsor)
- Maui County Planning Department
- West Maui Ridge to Reef (R2R) Initiative
- USGS (sort of)
- JABLTCX

What key leveraging opportunity(s) did stakeholders/partners provide?

- UH – Sedimentation and Hydrographs at Streams
- Maui R2R – Liaison with stakeholder groups
- JABLTCX – Benthic Mapping



Figure 16: Honokawai #8 Debris Basin (Looking Downstream from Inlet Toward the Dam)

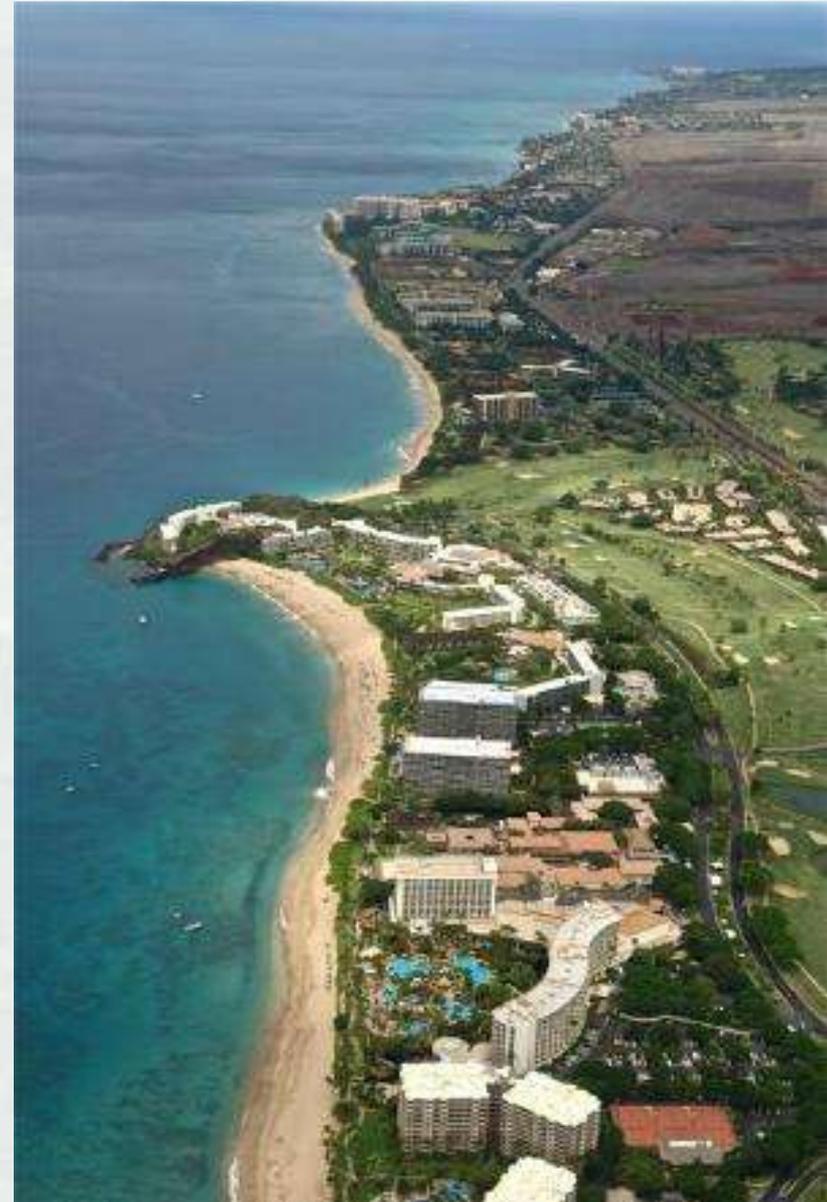


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UPs – 3 Positives from effort

- The West Maui Region provides a small-scale island style test bed to investigate the ultimate fate of upland inputs to the nearshore littoral environment.
- Leveraging of previously completed HRSM studies (CMS modeling and JABLTCX benthic mapping) to develop new products in support of reef sustainability.
- West Maui Ridge to Reef initiatives provided data and understanding of upland sources of sediment.



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DOWNs – 3 Negatives from effort

- Little to no recent stream flow data for the region – USGS has no active gages in the watershed
- Beach nourishment and coral reef protection may have opposing goals and/or solutions
- 2-D CMS Wave and Flow unable to resolve complex circulation over reefs.



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Value to the Nation

- Cost Savings – [West Maui Watershed Study](#), saves study \$\$
- Value Added – [Stewardship of natural resources \(coral reefs\)](#)
- Leveraging Resources – [HRSM](#), [R2R](#), [WM Watershed Study](#), [JABLTCX](#)
- Environmental Benefits – [Enhanced understanding of reef sedimentation](#)
- Improved Partnerships, Happy Stakeholders – [Federal agencies](#), [State partners](#), and [NGOs through R2R](#)

