



Regional Sediment Management (RS) RPC Experiment

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RSM Talk Overview



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- Background
- Objectives
- Basic Methodology
- Validation
- Present Status

Background



- Transported sediments and associated erosion in the contiguous U.S. has caused monetary damage of up to \$16 B in a year
- Not only erosion but reduction in sediment movements can also have an impact, especially to inland and coastal wetlands
- Sediments heighten water turbidity, impacting watercourse flora and fauna
- Contaminated sediments have been a cause of continuing concern in various U.S. locales – e.g. the Great Lakes, GOM (Gulf of Mexico)
- GOM hypoxia incidents have been linked to polluted sediments draining from watercourses into the Gulf
- Sediment character, movements, and volume are both a regional and local scale problem

Background, cont'd



- RSM is regarded as a USACE DST – a GIS-based collection of customized tools that can be linked to numerical models (e.g., ADCIRC, GENESIS, STWAVE)
- Input data layers partially include hydrodynamic, meteorological, bathymetric, topographic, aerial/land imagery, and dredge-related GIS data
- Potential NASA contribution to USACE RSM would center on remote sensor data and possible use of NASA numerical circulation models (e.g., MITgcm, Wavewatch)
- Contact made with J. Lillycrop as USACE POC
- NASA next-generation RPC sensor candidates discussed

Objectives



- Objectives – RSM RPC experiment
 - Identify potential next-generation sensor data useful to RSM DST: VIIRS and LDCM targeted
 - Demonstrate that RPC simulated VIIRS and LDCM would be of value as data input layers to the USACE RSM DST
 - Use simulated imagery to detect, track, and map sediment movements and their impact on regional water clarity
 - Use the imagery to track effects of sediment movements on various ecosystems in the area of study
 - Perform validation of the simulated RMS GIS data layers to show viability of the NASA next-generation sensor data
 - Provide partner agency with results of the experiment

Basic Methodology



- Acquire hyperspectral datasets over target area(s)
- Preprocess the acquired datasets
- Submit to RPC for simulation of VIIRS and LDCM imagery.
- Process the RPC provided imagery to produce salient RSM DST data input layers
- Perform validation of the RPC image-derived data layers by comparing to field data
- Analyze the value of the simulated datasets in RSM GIS DST
- Write and submit wrap-up RPC experiment report
- Provide results to USACE RSM DST through its POC

RSM Status



- RSM RPC experiment is scheduled to begin the last week in July 2007
- Candidate sites are still under discussion with USACE POC; tentative sites include Mobile, AL, and Panama City, FL, areas

Relevant References



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