

REGIONAL SEDIMENT MANAGEMENT PROGRAM

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Innovative solutions for a safer, better world

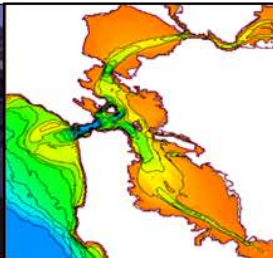
US Army Corps
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Regional Sediment Management

Established 1999, CERB Charge



- “A systems approach using best management practices for more efficient and effective use of sediments in coastal, estuarine, and inland environments for healthier and more resilient systems.”
- Recognizes sediment as a valuable resource
- Work across business lines, projects, and authorities to create short and long-term economically viable and environmentally sustainable solutions
- Improve operational efficiencies and natural exchange of sediments
- Consider regional implications of project scale actions and benefits
- Apply/Enhance tools and technologies for regional approaches
- Share lessons learned, information, data, tools, and technologies



RSM Goals and Strategies



Reduce
Upland/CDF
Disposal



Bypass
Backpass
Sediments



Reduce
Erosion



Save
Capacity



- **Keep sediments in the system**
- **Mimic natural sediment processes**
- **Reduce unwanted sedimentation**
- **Environmental enhancement**
- **Maintain & protect infrastructure**

Reduce
Channel
Shoaling



Reduce
Runoff



Ecosystem
Habitat
Restoration



Stabilize
Structures



RSM Process

4. TAKE ACTION

- Construct, monitor & adaptively manage
- Capture benefits & lessons learned
- Incorporate into standard practice



1. UNDERSTAND REGION

- Sediment sources, project needs, processes, gaps, engineering actions, ecological considerations
- Resources, challenges & requirements



3. REGIONAL RSM STRATEGY

- Integrate projects into Regional Strategy
- ID authorities, funding, permit requirements, leveraging opportunities
- Prioritize: need, benefits, timelines



2. EVALUATE RSM STRATEGIES (PROJECT SCALE)

- Efficient & effective use of sediments
- Project-level analysis (tools, models, technologies)
- RSM pilot projects



Communication, Collaboration, Innovation, Decision Making
Interagency, Stakeholders, Partners, Resource Agencies

RSM Network of Experts

National RSM Program Participation (2000-2018)

>200 Projects

Collaboration

asbpa
American Society of Biological and Environmental Engineers
since 1926



29 Districts
20 Coastal
9 Inland
6 Coastal/Inland
ERDC, IWR, HEC



Tools & Technologies

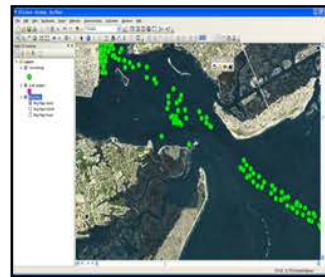
RSM Collaboration: National and Regional Teams



Tools for RSM Inland



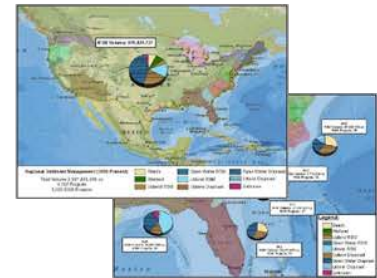
SIAM Sediment Budgets & Database



SAGA – Sediment Database & Tools



CE-Dredge Dredging Manager & DST

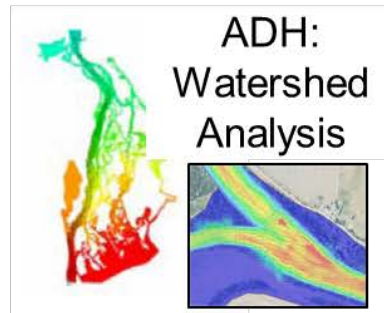
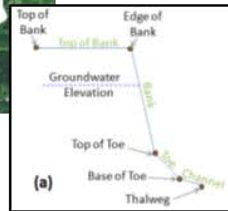


RSM-BU Database

HEC-RAS: River Analysis

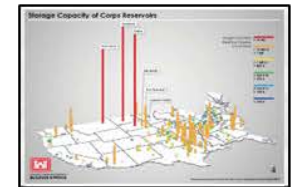
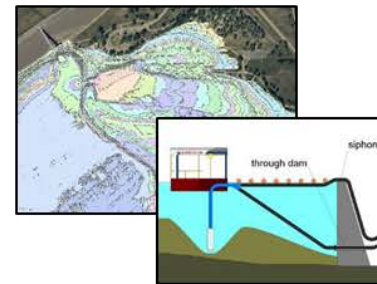


BSTEM Bank Stabilization



ADH: Watershed Analysis

Reservoir Flushing Bypassing



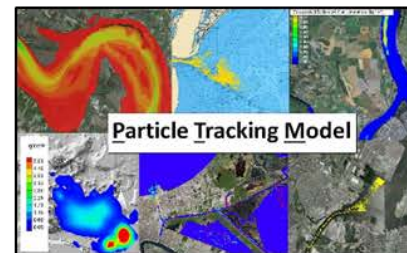
Reservoir Sedimentation Information Database



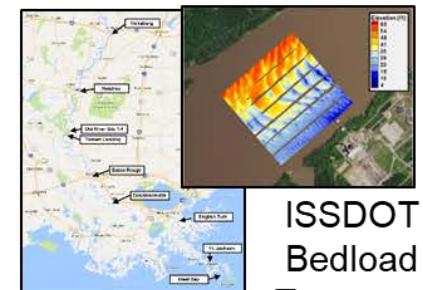
Physical Models



Post-Wildfire Sedimentation



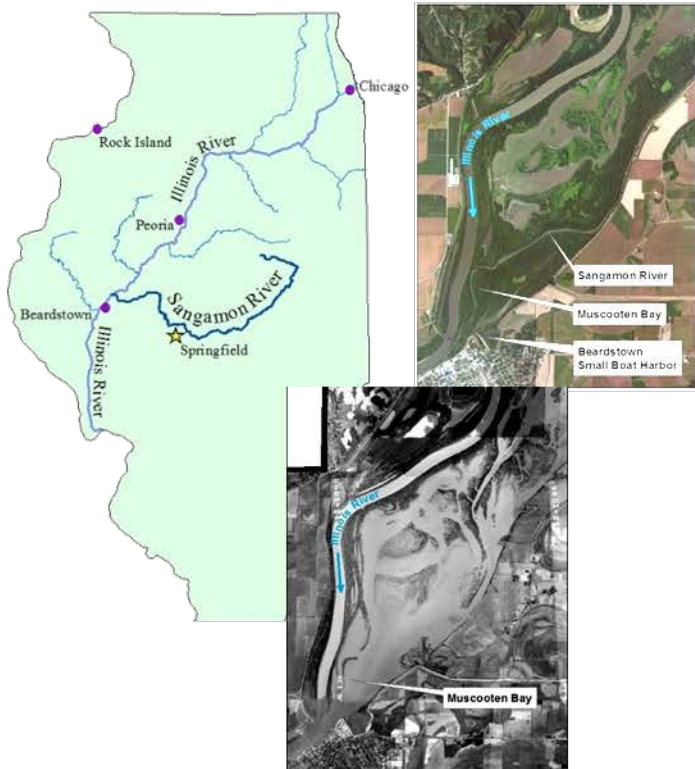
Particle Tracking Model



ISSDOT Bedload Transport

Riverine Systems

Sedimentation Impacts at the Confluence of the Sangamon and Illinois Rivers



Consequences of Channelization
Land Use Impacts
Beneficial Use
Restore sediment delivery downstream

Impacts/Benefits Increased Sediment Load Lower MO/MS Rivers



Changing degradation MO River ?
Benefits to MS River?
Moving Sediments an Investment?

Reservoir Sediment Management

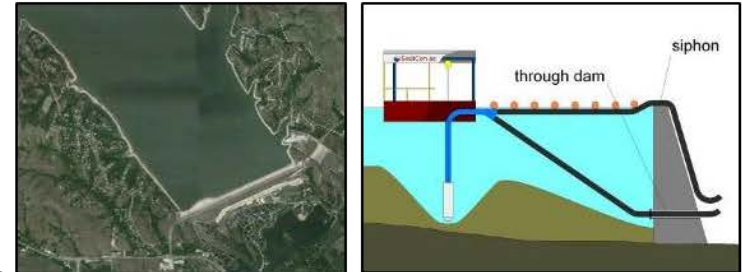
Reservoir Flushing

- Monitor reservoir flushing events
- Develop & apply new features in HEC-RAS
- Inform future reservoir flushing events
- Provide tools to manage downstream effects



Evaluate Low-cost Reservoir By-Passing

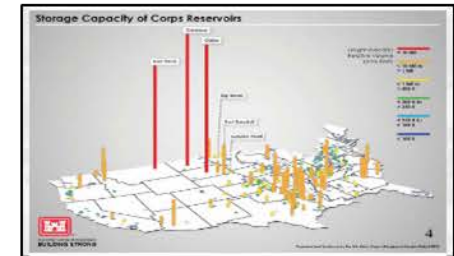
- ID Methods & solutions
- Coordinate Pilots



Environmental Impacts Reservoir Sediment Trapping

Inventory of Corps Reservoir Sediment Management Activities

- Inform future conditions, actions, regional impacts, benefits
- Reservoir Sedimentation Information (RSI) Data Portal



RSM Reservoir Sediment Management Workshops

Jul 2016, RSM Strategies, Milford Lake, KS
Aug 2013, Tuttle Creek Lake & Perry Lake, KS
Aug 2017, Operators & Managers, BoR, CO
Jun 2018, Tools & Technologies, University of KS



RSM University

USACE/Stakeholder Outreach, Education & Training

11-12 April 2017, Thin-Layer-Placement:
Regulatory & Permitting Meeting
Jacksonville, FL



15-17 Aug 2017, Reservoir Sediment Mgmt
for Managers, Regulators, Operators
Lakewood, CO



12-13 Feb 2018, SBAS Training
Detroit, MI

11-15 Jun 2018, Reservoir Sediment Mgmt
Engineering Workshop:
Assessment & Numerical Modeling
Lawrence, KS

Tools for RSM:
Overview and Training

Professional Development Hours (PDH)



RSM-U Training Certificate



RSM Program Funding Process

- Annual Request for Proposals: *Submittals Due* ****22 June 2018****
- Submittals THROUGH:
 - District RSM POC
 - District Navigation BL Leader
 - MSC RSM POC and MSC Navigation BL Leader
- Submittals TO:
 - HQ, Navigation Business Line Manager
 - ERDC Nat'l RSM Program Manager
- Review Team: Districts (Coastal/Inland OP, PD, EN); HQ CWG/Inland Leads
- Recommend Program/Budget: ERDC RSM PM/Deputy PM & TD Nav
- Approval: HQ Navigation Business Line Manager
- Required from all initiatives
 - Quarterly Progress Reports, Fact Sheets, Present RSM IPR& Workshop
 - Lessons Learned: RSM TN/TRs, Newsletters

FY18 Funded Proposals

ERDC/LRC: Regional Sediment Budget Workflows, Tools, Web Map

ERDC: Annual Sediment Yield Ohio River Catchments 1980-2017

LRB: Lake Erie Sediment Budget

LRB: Lake Ontario Sediment Budget

LRC/CHL: UAS Technologies to Monitor Nearshore Placement

LRE/CHL: Sediment Source to Sink Lag Time

LRD: GLTM Program Outreach

NAP: RSM Strategies Along the DE & MD Coasts

NAP/ERDC: Application of GenCade DE & MD Coasts

NAO: James River Federal Navigation Channel RSM

NWK: RSM Effects of Bank Stabilization Kansas River Basin

MVP: Evaluation of Real Time Bedload Transport Chippewa

MVR: Impact of Reservoir Sedimentation on Project Benefits

MVS: Sedimentation Impacts within the St. Louis Harbor Reach

MVS/MVM/ERDC: Chirp Geophysical Data for RSM Goals

MVD/ERDC: Analytic Methods to Reduce the Uncertainties in ISSDOT

SPN: Monitoring Placement Pillar Point Harbor

NWP: Site Selection Framework: Estuary Habitat Restoration

NWP: North Head Argus Station Engineering Projects for RSM

NWP: West Sand Island Shore Stabilization

POH: Kahului Harbor Sediment Infilling

POH: Kahului Harbor Beneficial Use Opportunities

MVN: Sediment Sources Calcasieu Ship Channel

SWG: Utilization and Design for Channel to Victoria BU Sites

SAJ/ERDC: Sediment Sorting During the Dredging Process

****Plus workshops, RSM-U,
conferences, outreach, etc.**

**51 Proposals
28 Funded**

RSM.USACE.ARM.Y.MIL



**RSM Technical Notes, Reports
Manuals, Conference Papers**



**USACE Bi-Monthly
Call/Webinars**



**Technical Webinars
& Training with Districts
*R&D Programs**

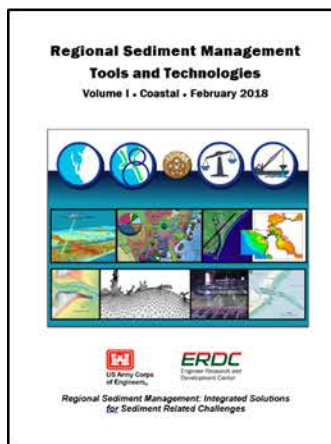
**DOTS
WOTS**



**District
Stakeholder Workshops**



**Annual RSM In-Progress Review
And Meeting**



Coastal



Inland

US Army Corps of Engineers • Engineer Research and Development Center



RSMmy Awards



Innovative Technical Achievement
POH Kahului Harbor



RSMer of the Year
Paul Boyd, PhD



Outstanding Collaboration & Outreach
NAP Delaware Coast



District of the Year
NWP Columbia River



Exceptional Team Achievement
SAM RSM Team



RSMmy Awards

Lifetime Achievement



W. Wynne Fuller
Chief, Mobile District Operations Division



Larry Parson
Co-Lead, Mobile District RSM Team



W. Jeff Lillycrop
Technical Director, Civil Works &
Navigation R&D



Tom Smith
Lead, Honolulu District RSM Team

Susan Rees, PhD
Program Manager, MS Coastal
Improvements Program

What are the impacts/value to the Corps?

Relationship Building:

- Across the USACE
- Stakeholder/Resource Agency Communication and Participation

More Efficient Systems

- Reduced lifecycle costs, increased value of sediments
- Leveraging across projects and business lines
- More project execution (Do more with less i.e. low use)

Utilizing Sediment Resources for Healthy Systems

- More Sustainable and Resilient
- Coastal and Riverine Systems
- Ecosystem and Aquatic Habitats

Recovery Operations

- Teams and Relationships Established
- RSM Strategies for Managing Sediments
- Data, Tools, Models Available

Tools and Technologies for Regional Approaches

- Enhanced tools, models, technologies to manage sediments
- Improved data storage, access, visualization, analysis



Regional Sediment Management = Resilient Healthy Systems

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Regional Sediment Budgets
Local Actions=Regional Benefits



ODMDS
Regional Strategies



Riverine &
Reservoir Mgmt



Data Management and Access



Improved Relationships
Outreach & Training



Ecosystem/Aquatic
Habitat