Numerical Modeling of Hydrodynamics and Sediment Transport at Coastal Inlets, Navigation Channels, and on Regional Scale

U.S. Army Corps of Engineers

Coastal Inlets Research Program and System-wide Water Resources Progam

***7th* Annual Technology-Transfer Workshop**

January 30 – February 1, 2006, Sarasota Hyatt on Sarasota Bay, Sarasota, Florida

In cooperation with

Florida Shore and Beach Preservation Association

National Conference on Beach Preservation Technology, February 1-3, 2006

Monday, January 30, 2006

	Session A (limited to 12 PCs, 24 attendees total) **Inlet Modeling System (IMS)**	**Session B** (limited to 30 attendees total) **Inlet and Regional Coastal Management**
8:00 - 8:30	Registration, Welcome (load software)	Registration, Welcome (load software)
8:30 – 9:00	Session A: Overview: Progression of CIRP-Inlet Modeling System (IMS) Workshops Session topics, outline, and expectations IMS overview and near future plans	Session B: Overview: Session topics Session outline (Connell)
9:00- 9:30	Lecture: IMS-M2D capabilities: Morphology Change and Beyond (Cialone)	Lecture: Sediment Budget Analysis System (SBAS) (Rosati)
9:30 – 10:30	Finite-Difference Grid Generation: Bathymetry sources Aerial photography Coastline extraction/revision Grid generation methods Grid refinement/adjustment (Brown)	Hands on Session: Sediment Budget Analysis System (SBAS) (Rosati)
10:30 - 10:50	**Break**	
10:50 - 12:00	Lecture: Nearshore Wave Modeling at Inlets IMS-Wave Model Theory, M2D-wave Hydrodynamic Steering (Lin)	Hands on Session: Sediment Budget Analysis System (SBAS) (Rosati)
12:00 - 1:00 pm	**Lunch**	
1:00 - 2:00	Model Options and Parameters: Hydrodynamic Options Timing Parameters Output Options Hot Start Options Model Forcing: Boundary Forcing Surface Forcing (or Wind Forcing) Wave Forcing (Brown)	Lecture: Regional Morphology Analysis Package (RMAP) (Morang)
2:00 - 3:00	Lecture and Hands-On Session: IMS-M2D Sediment Transport and Morphology Change Case: Idealized Inlet (Ono)	Case Studies and Hands-On Session: Regional Morphology Analysis Package (RMAP) (Morang)
3:00 – 3:30	**Break**	
3:30 – 5:00	Post-Processing: Global results: Water surface elevation and velocity Contour and vector plots Animations Single point results: Time series plots (Connell)	Hands-On Session: Hands-on practice with RMAP and SBAS; questions, discussion
5:00	**Adjourn**	

Tuesday, January 31, 2006

	Session A **Inlet Modeling System (IMS)**	**Session B** **Inlet and Regional Coastal Management**
8:00- 9:00	Lecture: IMS-M3D capabilities: present and near future (Reed)	Lecture: Inlet Reservoir Model, Introduction (Dabees & Kraus)
9:00 – 10:00	3-D Grid Generation and Model Options: IMS-M3D 3-D grid generation, boundary Conditions, and model parameters (Reed)	Case Studies and Hands on Session: Inlet Reservoir Model (Dabees & Kraus)
10:00 - 10:15	**Break**	
10:15 - 11:00	Lecture: IMS-M3D Sediment Transport Implementation and Morphology Change (Reed)	Lecture: Cascade – a new regional sediment transport model for project management & engineering (Kraus)
11:00 - 12:00	Case Studies and Hands-On Session: IMS-M3D Case: idealized inlet (Reed & Rosati)	Hands-On Session: Cascade Input data sources and model setup (Connell)
12:00 - 1:00	**Lunch**	
1:00-2:00	Lecture: IMS-M3D w/ Channel infilling (Reed & Rosati)	Case Studies and Hands-On Session: Cascade (Connell)
2:00-2:15	**Break**	
2:15-3:00	Hands-On Session: IMS-M3D (Reed & Rosati)	Case Studies and Hands-On Session: Cascade (Connell)
3:00 – 4:00	Post-Processing: Global results: 3-D output visualization Single point results: Time series plots (Reed & Rosati)	Hands-On Session: Hands-on practice with all tools; questions, discussion (bring your own data)
4:00-5:00	Particle Tracking Model (Demirbilek)	
5:00	**Adjourn**	

Wednesday, February 1, 2006

	Session A **Inlet Modeling System (IMS)**	**Session B** **Inlet and Regional Coastal Management**
8:00- 10:00	Hands-On Session: M2D-STWAVE Long-term Morphologic Steering w/ Hard Bottom Case: Sebastian Inlet (Zarillo)	Hands-on Practice, all technology
10:00 - 10:30	Break	
10:30 – 11:30	M2/3D Future Developments Preview: Implicit Solution Scheme in IMS-M2/3D (Reed)	Hands-on Practice, all technology
11:30-12:00	Evaluation	
12:00	**Adjourn**	

Workshop Instructors

Mitch Brown, Mitchell.E.Brown@erdc.usace.army.mil, USACE-CHL, 601-634-4036

Mary Cialone, Mary.A.Cialone@erdc.usace.army.mil, USACE-CHL, 601-634-2139

Ken Connell, Kenneth.J.Connell@erdc.usace.army.mil, USACE-CHL, 601-634-2840

Mohamed Dabees, md@humistonandmoore.com, Humiston and Moore, 239-594-2021

Zeki Demirbilek, Zeki.Demirbilek@erdc.usace.army.mil, USACE-CHL, 601-634-2834

Nick Kraus, Nicholas.C.Kraus@erdc.usace.army.mil, USACE-CHL, 601-634-2016

Lihwa Lin, Lihwa.Lin@erdc.usace.army.mil, USACE-CHL, 601-634-2704

Andy Morang, Andrew.Morang@erdc.usace.army.mil, USACE-CHL, 601-634-2064

Nobuyuki Ono, Noboo57@aol.com, ECOH Corporation of Japan

Chris Reed, Chris_Reed@URSCorp.com, URS Corporation, 850-402-6320

Julie Rosati, Julie.D.Rosati@erdc.usace.army.mil, USACE-CHL, 601-634-3005

Gary Zarillo, zarillo@fit.edu, Florida Institute of Technology, 321-674-7378

http://cirp.wes.army.mil/cirp/cirp.html