

# **Numerical Modeling of Hydrodynamics and Sediment Transport at Coastal Inlets and Navigation Channels**

**U.S. Army Corps of Engineers**

**Coastal Inlets Research Program**

**6th Annual Technology-Transfer Workshop**

**January 31 – February 2, 2005, Hilton Sandestin Beach Golf Resort and Spa, Destin, Florida**

**In cooperation with**

**Florida Shore and Beach Preservation Association**

**National Conference on Beach Preservation Technology, February 2-4, 2005**

**Draft, 12 September 2004**

**<http://www.fsbpa.com/seminar.htm>**

**<http://cirp.wes.army.mil/cirp/cirp.html>**

**Monday, January 31, 2005**

	<b>Session A</b> <b>Regional Hydrodynamic Modeling</b>	<b>Session B</b> <b>Inlet Management Support Tools</b>
8:00 - 8:30	Registration, Welcome (load software)	Registration, Welcome (load software)
8:30 – 9:00	<a href="#">Session A: Overview:</a> Progression of CIRP-Inlet Modeling System Workshops Session topics, outline, and expectations Inlet Modeling System overview and near future plans PC versus HPC versions of IMS models	<a href="#">Session B: Overview:</a> Session topics Session outline
8:30- 9:00	<a href="#">Lecture:</a> IMS-ADCIRC capabilities: present and near future	<a href="#">Lecture:</a> Reservoir Model, Introduction (Kraus)
9:00 – 10:30	<a href="#">Finite Element Grid Generation:</a> Bathymetry sources Aerial photography Coastline extraction/revision Grid generation methods Grid refinement/adjustment	<a href="#">Reservoir Model Case Studies:</a> Hands-on practice
10:30 - 10:50	<b>Break</b>	
10:50 - 12:00	<a href="#">IMS-ADCIRC Input Files:</a> Tidal forcing (Le Provost, EastCoast databases) Wind River inflow Water level boundary Radiation stress Control file (Fort.15)	<a href="#">Sediment Budget Analysis System</a> Lecture and hands-on practice (Batten)
12:00 - 1:00 pm	<b>Lunch</b>	
1:00 - 3:00	<a href="#">Post-Processing:</a> Global results: Water surface elevation results (fort.63) Velocity results (fort.64) Contour plots Vector plots Animations Single point results: Fort.61 and Fort.62 Time series plots	<a href="#">Engineering Models of Inlet Hydrodynamics and Inlet Stability,</a>  CEA Model; Hands-on Practice (Seabergh)
3:00 – 3:30	<b>Break</b>	
3:30 – 5:00	<a href="#">Hands-On Session:</a> Fire Island Inlet, New York	Hands-on practice with all tools; questions, discussion (bring your own data)
5:00	<b>Adjourn</b>	

**Tuesday, February 1, 2005**

	<b>Session A</b> <b>Project-scale Hydrodynamic Modeling</b>	<b>Session B</b> <b>Inlet Management Support Tools</b>
8:00- 9:00	<u>Lecture:</u> IMS-M2D capabilities: past, present, and near future	<u>Lecture:</u> Jetty weirs and spurs (Seabergh)
9:00 – 10:00	<u>Finite-Difference Grid Generation:</u> Bathymetry sources Aerial photography Coastline extraction/revision Grid generation methods Grid refinement/adjustment	<u>Lecture:</u> Wave Processes at Inlet Structures (Hughes)
10:00 - 10:15	<b>Break</b>	
10:15 - 11:00	<u>IMS-M2D Input Files:</u> Tidal forcing (Le Provost, EastCoast databases, ADCIRC results) Wind River inflow Water level boundary Water level and velocity boundary Wave-adjusted boundary Radiation stress Control file (m2d.m2c)	<u>Hands-on practice</u> (Hughes)
11:00 - 12:00	<u>Post-Processing:</u> Global results: Water surface elevation results Velocity results Contour plots Vector plots Animations Single point results: Time series plots	<u>Regional Morphology Analysis Package (RMAP)</u> (Batten)
12:00 - 1:00	<b>Lunch</b>	
1:00-2:00	<u>Particle Tracking Model</u> (Demirbilek)	
2:00-3:00	<u>Hands-On Session:</u> Mattituck Inlet, New York, and Fire Island Inlet, New York	<u>Additional PTM examples</u>
3:00-3:15	<b>Break</b>	
3:15-4:00	<u>Lecture:</u> IMS-STWAVE Theory Grid development Control parameter development	<u>Inlet Inner Bank erosion</u>

4:00 – 5:00	<a href="#">M2D/ADCIRC-STWAVE Hydrodynamic Steering:</a> Loading M2D/ADCIRC Loading STWAVE SMS Steering Module Interface	
5:00	<b>Adjourn</b>	

**Wednesday, February 2, 2005**

	<b>Session A</b>	<b>Session B</b>
	<b>Hydrodynamic and Morphologic Steering Modules</b>	<b>Inlet Management Support Tools</b>
8:00- 9:00	<a href="#">Lecture:</a> Sediment transport theory Implementation in ADCIRC and M2D	<a href="#">Lecture:</a> Channel Infilling Model and SMS Implementation
9:00 – 10:00	<a href="#">Morphology change modeling:</a> IMS-M2D-STWAVE-Sediment IMS-ADCIRC-STWAVE-Sediment	<a href="#">Hands-on Practice</a>
10:00 - 10:15	Break	
10:15 – 12:00	<a href="#">Hands-On Session:</a> Fire Island Inlet and Mattituck Inlet Morphologic Steering	<a href="#">Hands-on Practice</a>
12:00	<b>Adjourn</b>	

**Workshop Instructors**

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