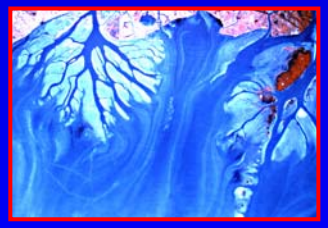
STRATEGIC DIRECTIONS IN CIVIL WORKS R&D

WATERSHED SYSTEM 2003 CONFERENCE
PORTLAND, OREGON
14 MAY 2003

TOM RICHARDSON
DIRECTOR
COASTAL AND HYDRAULICS LABORATORY
ENGINEER RESEARCH AND DEVELOPMENT CENTER



AGENDA

- OVERVIEW OF GI R&D AREAS
  - Environmental Technologies
  - Flood and Coastal Storm Damage Reduction
  - Navigation
- FUTURE OPERATING CAPABILITIES (FOC's)
- FUNDS PER R&D AREA
- GI R&D STRATEGIC PROGRAMS
  - RSM
  - SMART
  - TOWNS
- EMSAC
- CHALLENGE STATEMENT
- CONCLUSION

GI R&D AREA:
ENVIRONMENTAL TECHNOLOGIES

To provide scientifically sound and environmentally sustainable means to restore and manage our nation's resources in a comprehensive manner, consistent with present and future needs to balance environmental and economic benefits of water resources development.

HQUSACE Monitor: Dave Shepp
ERDC Lead Technical Director: Bob Engler

GI R&D AREA:
FLOOD AND COASTAL STORM DAMAGE REDUCTION

To assure prudent infrastructure investments, improve early warning, and forecasting of flooding and storm damages, and sustainable development of the region.

HQUSACE Monitor: Harry Kitch

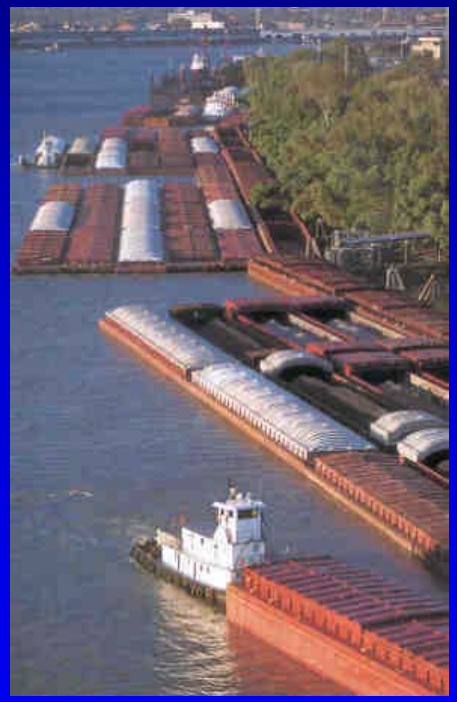
ERDC Lead Technical Director: Joan Pope

GI R&D AREA:
NAVIGATION

To provide safe, reliable, efficient, and sustainable waterborne transportation systems for commerce, national security and recreation.

HQUSACE Monitor: Barry Holliday

ERDC Lead Technical Director: Sandra Knight

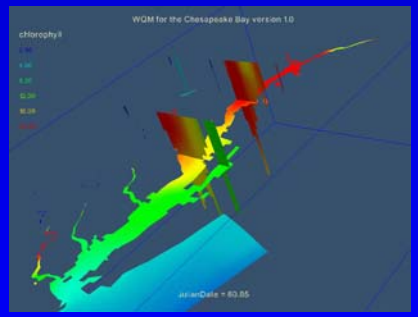


FOC's:
ENVIRONMENTAL TECHNOLOGIES

1) Capabilities to quantitatively **PREDICT FUTURE ENVIRONMENTAL CONDITIONS** as affected by the Corps and others at project and regional (i.e., basin-wide) scales.

2) Capabilities to **LINK ENVIRONMENTAL ASSESSMENT TOOLS** with sustainability concerns, based on sound science and engineering principles.

3) Technologies and guidelines to better **PARTNER** with others in environmental restoration and management.



FOC's:
ENVIRONMENTAL TECHNOLOGIES

4) Capabilities to **INFUSE ENVIRONMENTAL SUSTAINABILITY** in engineering and operation and maintenance practices, with attention to overall ecosystem condition.

5) Capabilities to address quantitatively **HABITAT NEEDS FOR BIOTA** including threatened and endangered species.

6) Technologies for **DECISION MAKING** over a variety of spatial and temporal scales.

FOC's:

FLOOD AND COASTAL STORM DAMAGE REDUCTION

1) **REDUCE LIFE CYCLE COSTS** of system and unit infrastructure.

2) Improved system monitoring, early-warning forecasting, operation, and response to **REDUCE LOSS OF LIFE AND DAMAGES** due to flooding and storms.

3) **WATERSHED/REGIONAL MANAGEMENT** to optimize function of system, reduce costs, and increase benefits for multipurpose use.

FOC's:
NAVIGATION

1) Capability to make the existing system work better by: **INFRASTRUCTURE ENHANCEMENTS** to support projected 2020 traffic demands and ensure a high level of reliability.

2) Capability to provide new system components that offer: **INTEGRATED NAVIGATION SYSTEM DESIGN AND MANAGEMENT** for the NAV/MTS 2020 Vision -- a safe, efficient, effective, reliable, and environmentally sustainable system.

FOC's:
NAVIGATION

3) Capability to perform: **REGIONAL SEDIMENT MANAGEMENT** to optimize function of the system, reduce costs, and increase benefits.

4) Capability to conduct: **DREDGING AND DREDGED MATERIAL MANAGEMENT** to minimize costs and maximize benefits.

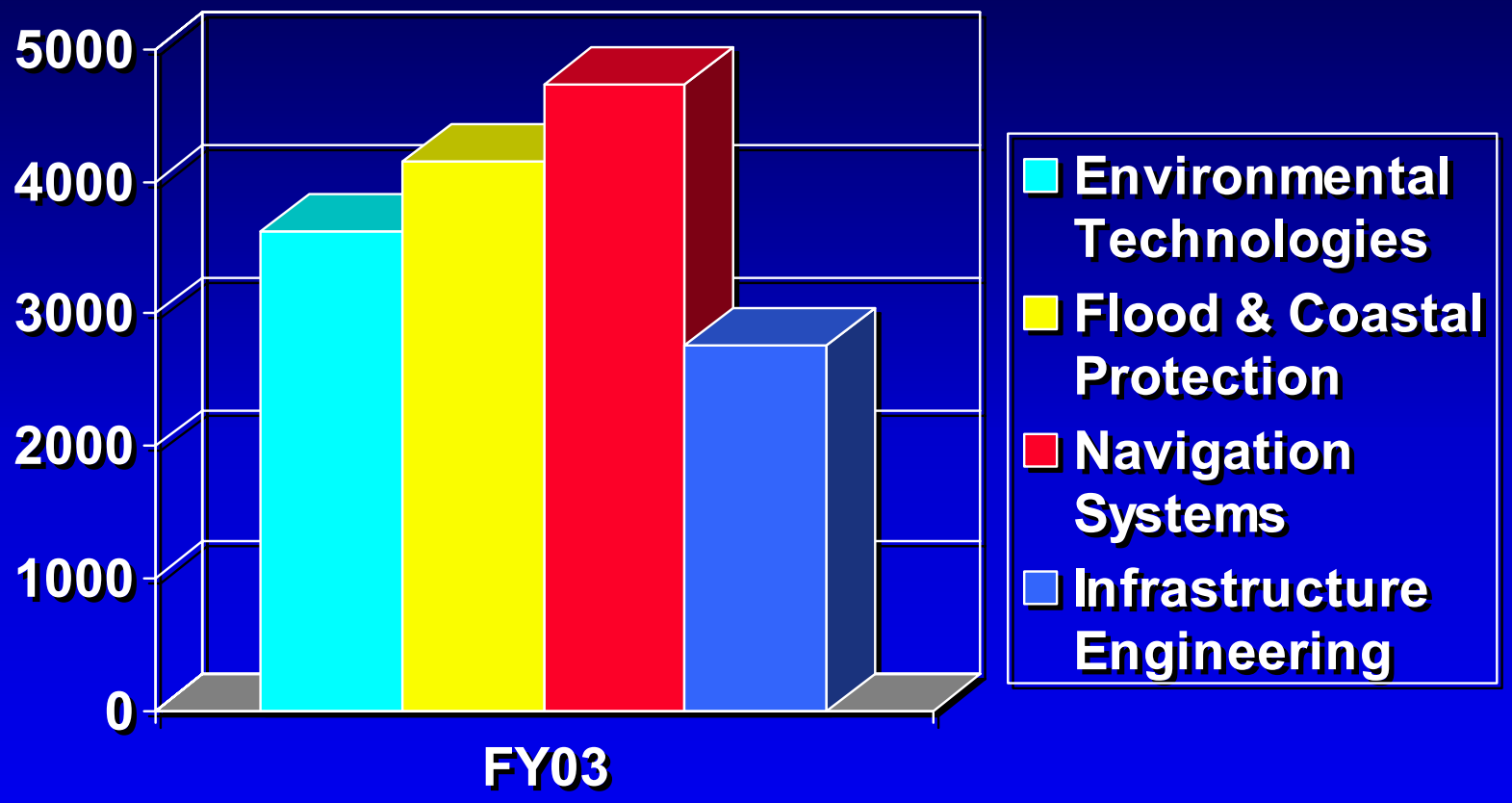
RESEARCH AND DEVELOPMENT PROGRAMS

"We need to move to a watershed approach as it applies to water resources projects so that *each of our projects fits into the context of a regional plan*."

LTG Robert Flowers

LTG Robert Flowers – e-mail to USACE on 19JUN02, commenting on his testimony to the Senate Environment and Public Works Committee hearing on Corps of Engineers water resources programs.

FY03 FUNDS AVAILABLE PER GI R&D AREA



RSM
REGIONAL SEDIMENT MANAGEMENT

R&D PROGRAM OBJECTIVE
Provide the Corps and Nation with tools and knowledge needed to 'whole-istically' manage sediment on a regional basis to achieve effective & efficient water resources projects that are environmentally sustainable.

PROGRAM MANAGER: Jack Davis

FUNDING:

FY03	FY04	FY05	FY06	Total
2.8 M	4 M	4 M	4 M	41 M

RSM

REGIONAL SEDIMENT MANAGEMENT

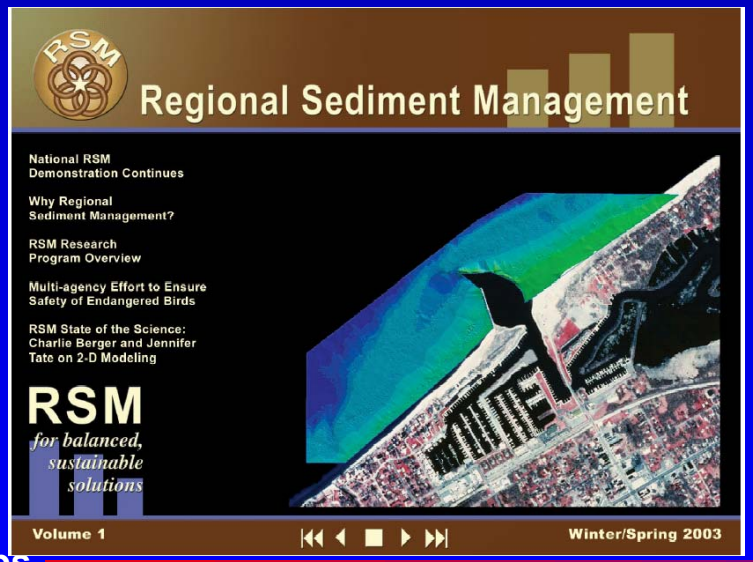
RSM
REGIONAL SEDIMENT MANAGEMENT

PRODUCTS AND CAPABILITIES

- Website available at:

  www.wes.army/RSM

- RSM Newsletter



SMART

SYSTEM-WIDE MODELING, ASSESSMENT, AND RESTORATION TECHNOLOGIES

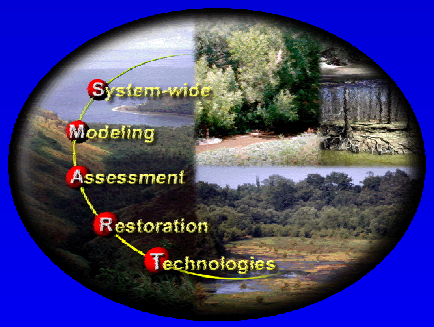
OBJECTIVE

Provide technical capabilities to address environmental missions and responsibilities in water resources development at project, watershed, and basin (large watersheds) scales.

PROGRAM MANAGER: Steve Ashby

FUNDING:

FY03	FY04	FY05	FY06	Total
1.1 M	2 M	4 M	8 M	45 M

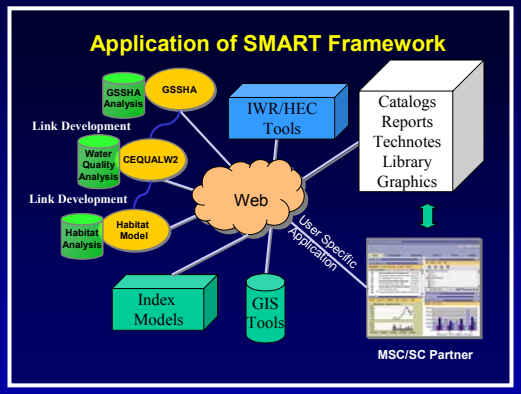


SMART

PRODUCTS AND CAPABILITIES

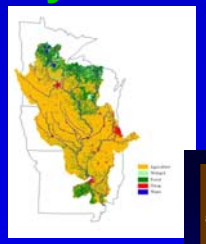
Web-based Decision Support Framework for System-wide Assessments and Supporting Technologies

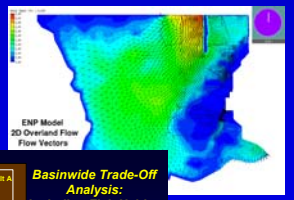
- System-wide Modeling and Assessment
- Watershed Approaches to Ecosystem Management
- TMDL Assessments
- Trade-off Analysis
- Sustainability Evaluations

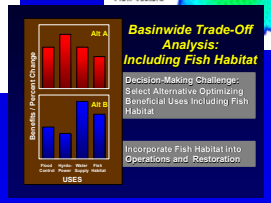


User Friendly Decision Framework

System-wide Assessments







Trade-off Analysis

TOWNS

TECHNOLOGIES AND OPERATIONAL INNOVATIONS FOR URBAN WATERSHED NETWORKS

PROGRAM OBJECTIVES

Develop tools to effectively plan, design, construct, maintain, operate, and monitor urban channel systems to maximize and sustain flood damage reduction benefits (morphologically, environmentally, socially, and economically).

PROGRAM MANAGER: Kate White

FUNDING:

FY03	FY04	FY05	FY06	Total
1.2 M	3 M	4 M	4.5 M	8.5 M

TOWNS

TECHNOLOGIES AND OPERATIONAL INNOVATIONS FOR URBAN WATERSHED NETWORKS

PRODUCTS AND CAPABILITIES

- Improved coastal and inland urban flood and storm damage reduction strategies
- Integrated watershed-scale decision support for urban FDR
- Enhanced tools for urban channel restoration
- Innovative emergency management methods

EMSAC

ENVIRONMENTAL MODELING AND SYSTEM-WIDE ASSESSMENT CENTER

PURPOSE:

- Enhance coordination and technical focus for modeling (assessment and forecasting) activities directed towards management of complex environmental systems across multiple media and over broad spatial scales.

- Advance system-wide applications of predictive environmental modeling, assessment, and management tools.

DIRECTOR: John Nestler

TECHNICAL DIRECTOR: John Barko

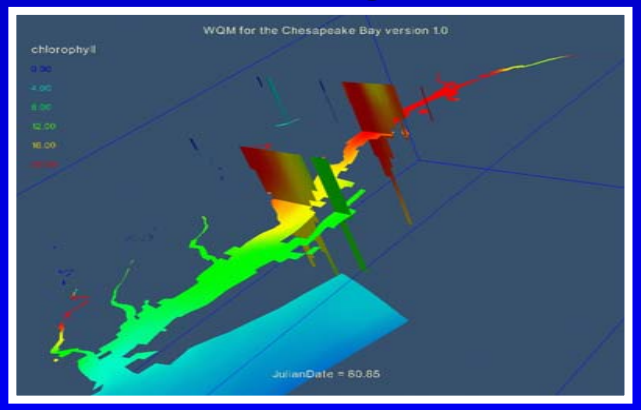
PARTNER LABORATORIES: Enviromental
Coastal and Hydraulics
Information Technology

EMSAC

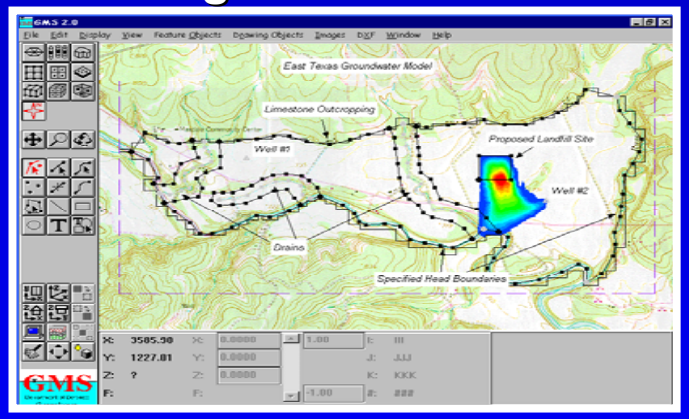
Virtual center teams of E&S

Tools: manage ecosystems / impacts

Focus: forecasting & assessment



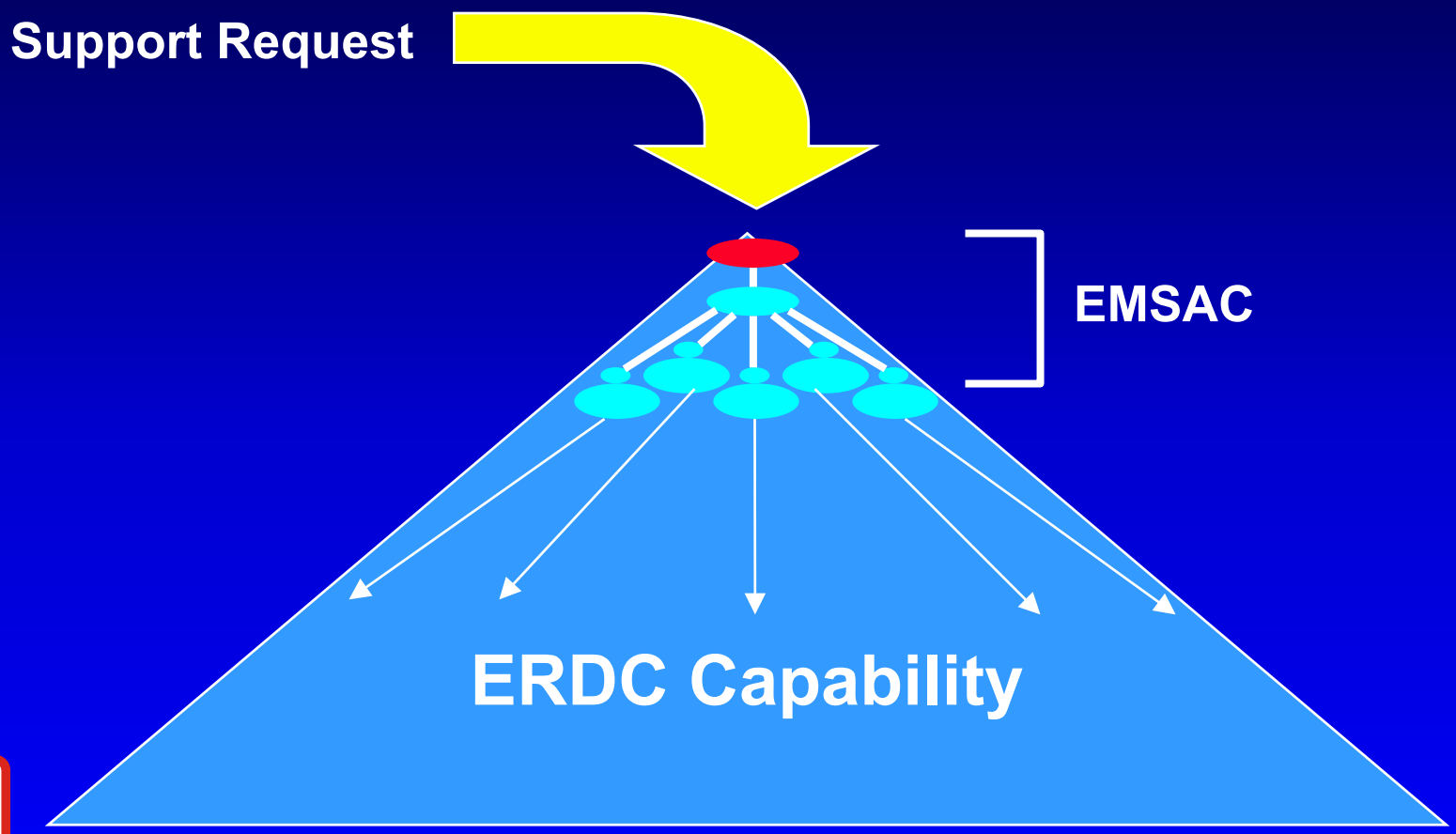
Integrate R&D and IT



EMSAC

ENVIRONMENTAL MODELING AND SYSTEM-WIDE ASSESSMENT CENTER

Single Access Point

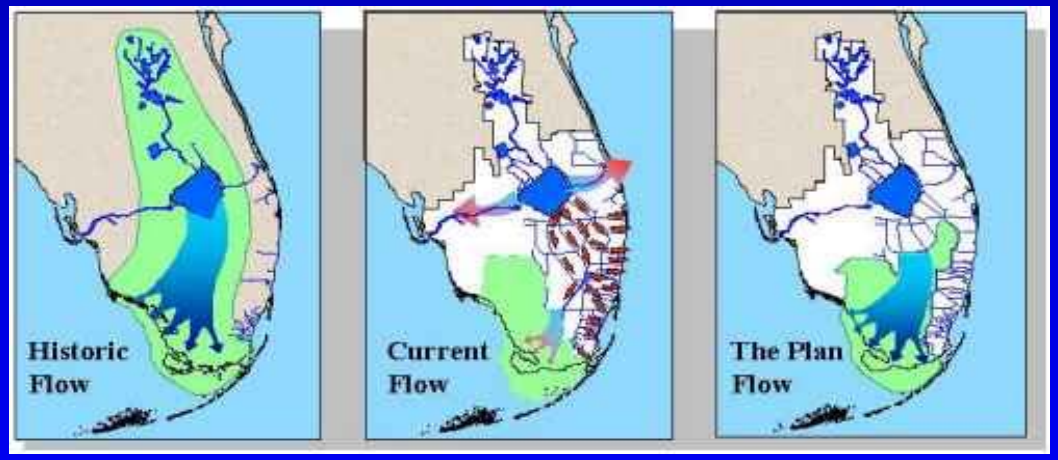


EMSAC

ENVIRONMENTAL MODELING AND SYSTEM-WIDE ASSESSMENT CENTER

OBJECTIVES:

- Supplement traditional vertical corporate structure with virtual horizontal structure
- Deliver products with minimal management overhead or restructuring



CHALLENGE STATEMENT

Add a “top-down” approach to our traditional “bottom-up” methods and hire or develop staff to implement it

QUESTIONS?

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