

DHI Software . . . Couplings

The Trend is Integration and Flexibility

- DHI software integration
- Viable couplings
- Combination of simple and advanced approaches
- Open Interfaces to Public Domain Codes
- Open Interfaces to GIS, Dbases, MS Office
- Open engines

LI

11

Well structured codes and Open Ended Architecture are required

- Object Oriented Software Architecture

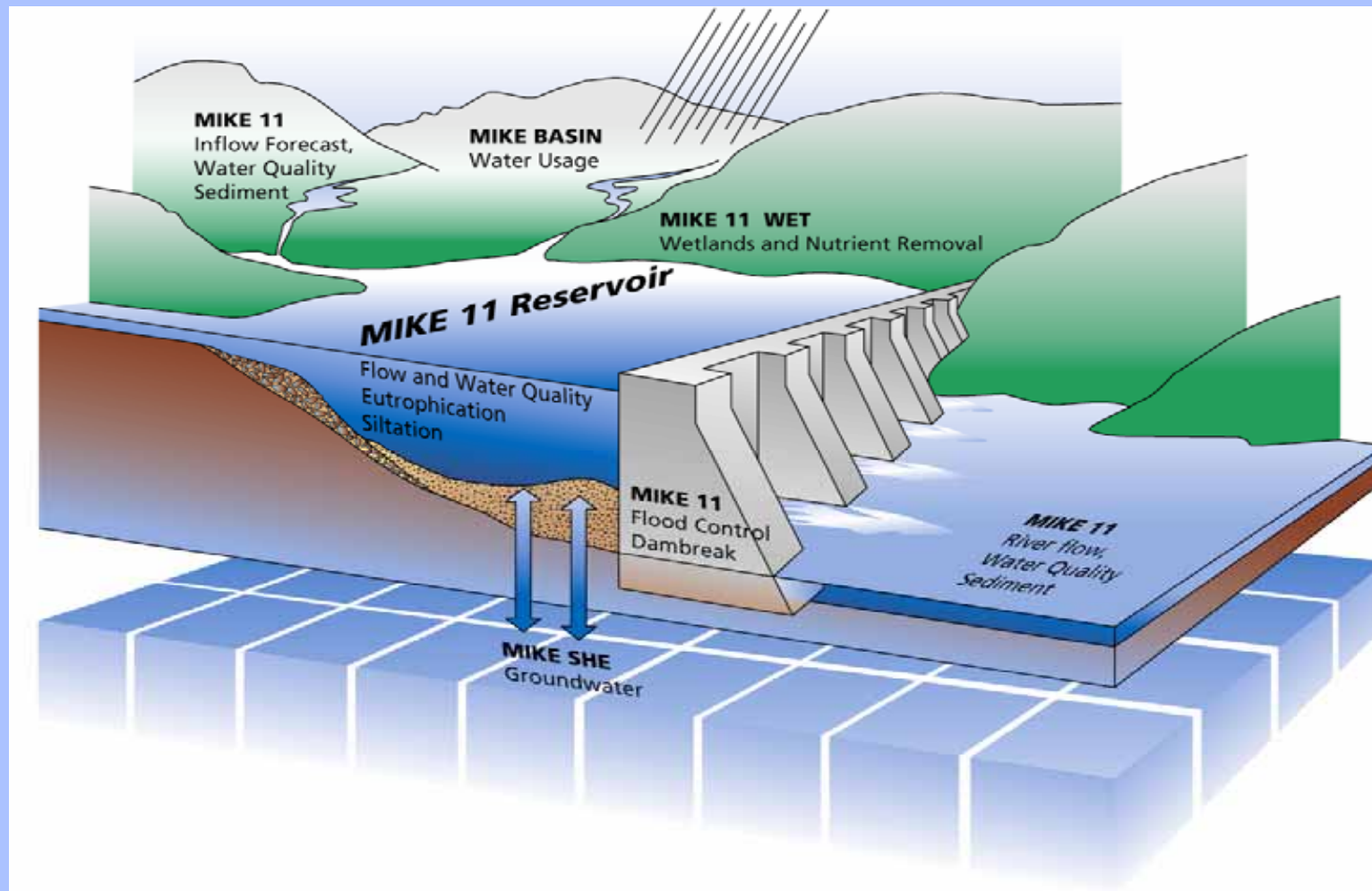
MIKE SWMM

MIKE NET

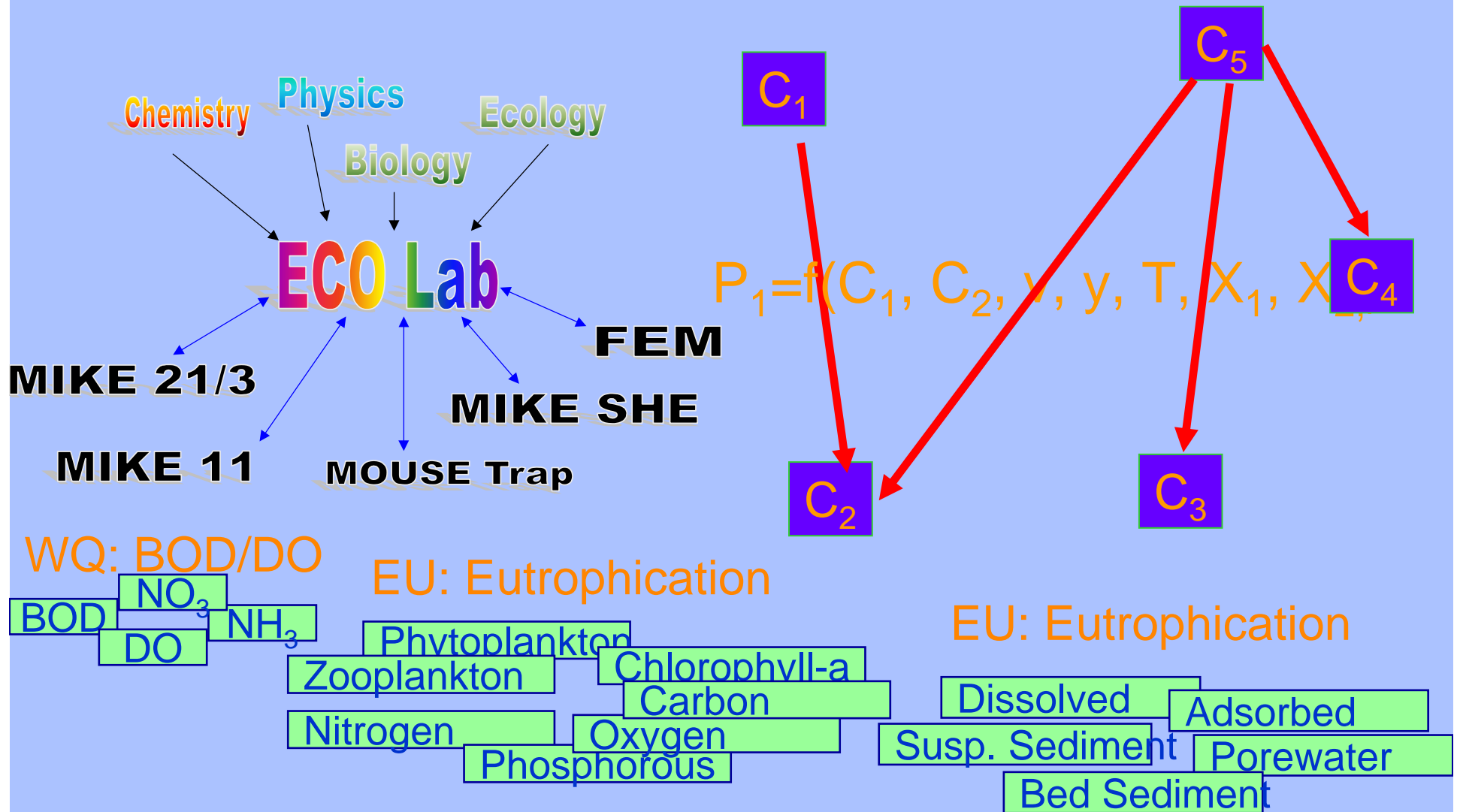
MIKE INFO

DHI – Water and Environment

Water Resources tools, M3, M21, M21C, MFLOOD not shown



ECO Lab – Water Quality



Vietnamese Version



The screenshot displays the MIKE Zero software interface in Vietnamese. The main window, titled 'MIKE Zero - Untitled1', features a menu bar with options like '%Tệp', 'Chỉnh sửa', 'Xem', 'Cửa sổ', and 'Hỗ trợ'. Below the menu is a toolbar with icons for file operations and help. The main workspace is divided into several sections. On the left, there is a list of model components, and on the right, there is a table of parameters with 'Chỉnh sửa' (Edit) buttons. A 'Mới' (New) dialog box is open, showing a list of model types with icons and names in Vietnamese. The status bar at the bottom indicates 'Sẵn sàng' (Ready) and 'Không theo dõi' (Not tracking).

Thành phần	Giá trị	Chỉnh sửa
Mạng sông		Chỉnh sửa
Mặt cắt		Chỉnh sửa
Điều kiện biên		Chỉnh sửa
Tham số RR		Chỉnh sửa
Thông số HD		Chỉnh sửa
Tham số AD		Chỉnh sửa
WQ Parameters		Chỉnh sửa
Thông số chuyển động bùn cát		Chỉnh sửa
Tham số FF		Chỉnh sửa
Correlation Analysis & Gap Filling		Chỉnh sửa
Mô phỏng		Chỉnh sửa
River Channel Design		Chỉnh sửa
MIKE Flood		Chỉnh sửa
MIKE11 ECO Lab		Chỉnh sửa
Đồng hoá dữ liệu		Chỉnh sửa
ham số RR		Chỉnh sửa
ham số HD		Chỉnh sửa
ham số AD		Chỉnh sửa
ham số WQ		Chỉnh sửa
ham số ST		Chỉnh sửa
ham số FF		Chỉnh sửa
ham số DA		Chỉnh sửa
ham số băng		Chỉnh sửa
Kết quả HD		Chỉnh sửa
Kết quả RR		Chỉnh sửa



Modelling tools – Samples from Vietnam

Water flow

- M11
- NAM
- MIKE BASIN
- M11GIS
- MIKE21
- MIKEFLOOD

Water Quality

- 1D Hydrodynamic
- Rainfall runoff
- Basin wide planning
- GIS Floodmapping tool
- 2D Hydrodynamic
- Coupled 1D and 2D

Sediment Transport

Water flow

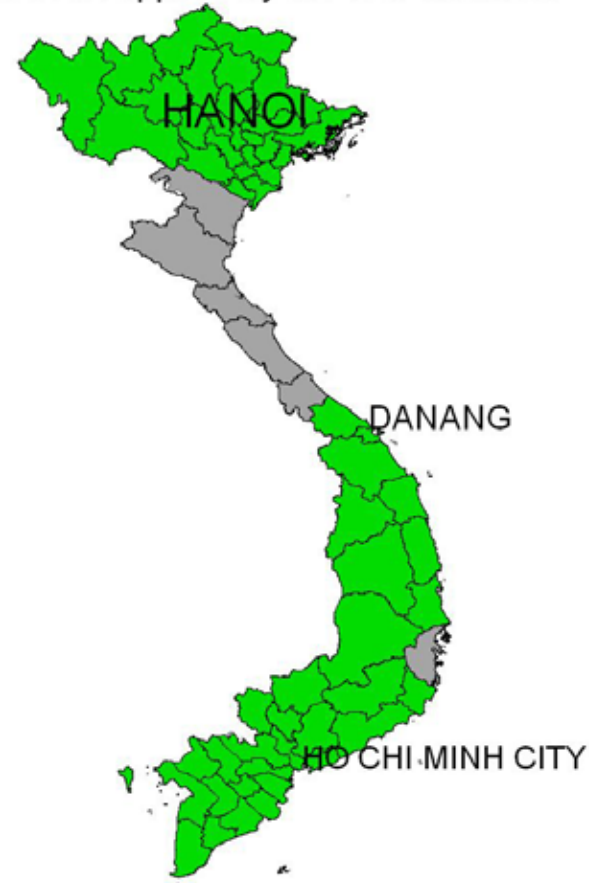
Water Quality

Sediment Transport

- **Examples**

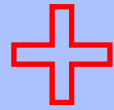
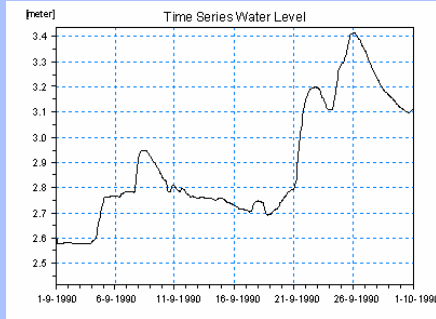
- IWRP
- SIWRP
- IWRR
- SIWRR
- HMS
- ADICO
- TEDI PORT
- PECC1
- DITAGIS
- DHI
- MRC

Provinces where tools introduced by WRSI has been applied by the four institutes



Flood Mapping – M11 & M11 GIS

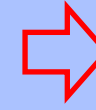
Sample Dong Nai – Sai Gon M11 HD Results



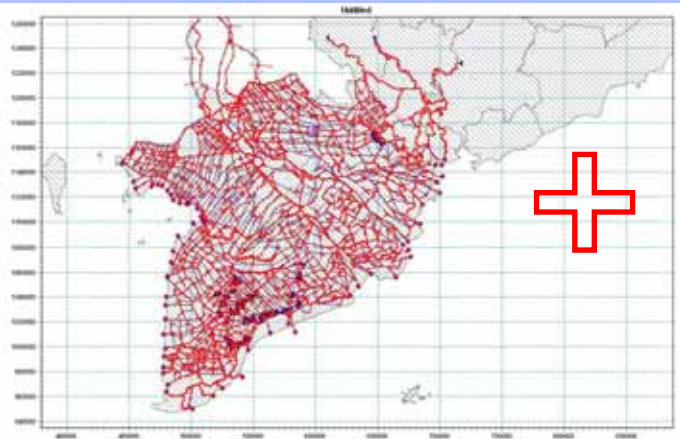
+ DEM



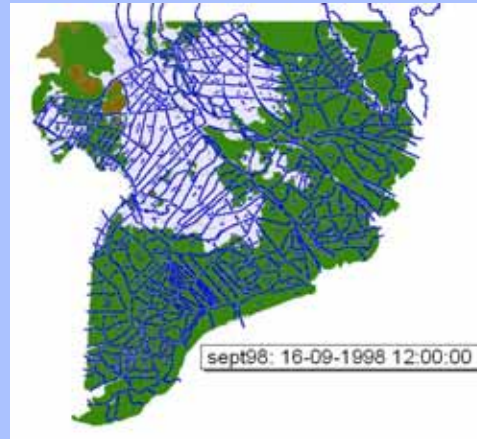
= Flood Map



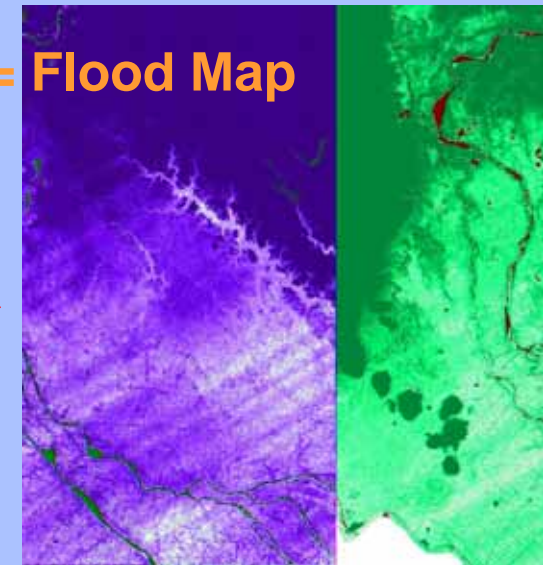
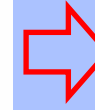
Sample Mekong M11 HD Results



+ DEM



= Flood Map

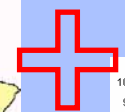
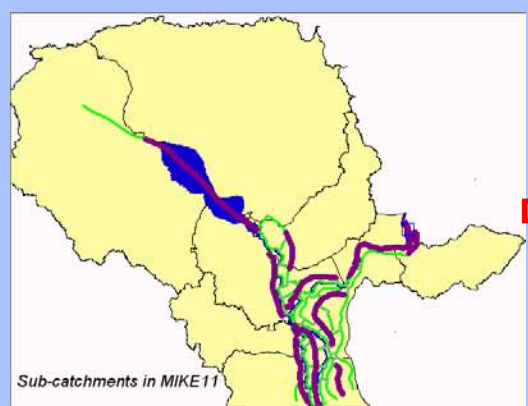


Flood Mapping – M11/M11 GIS/NAM

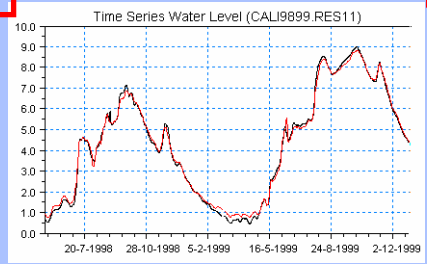
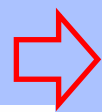
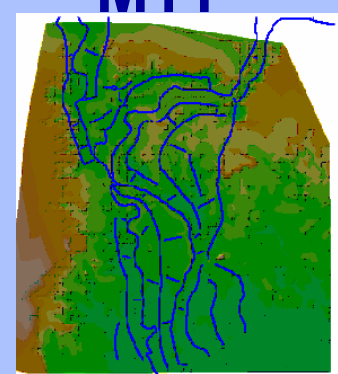
Sample Upper Mekong

Combining Hydrology and Hydraulics seamless in GIS

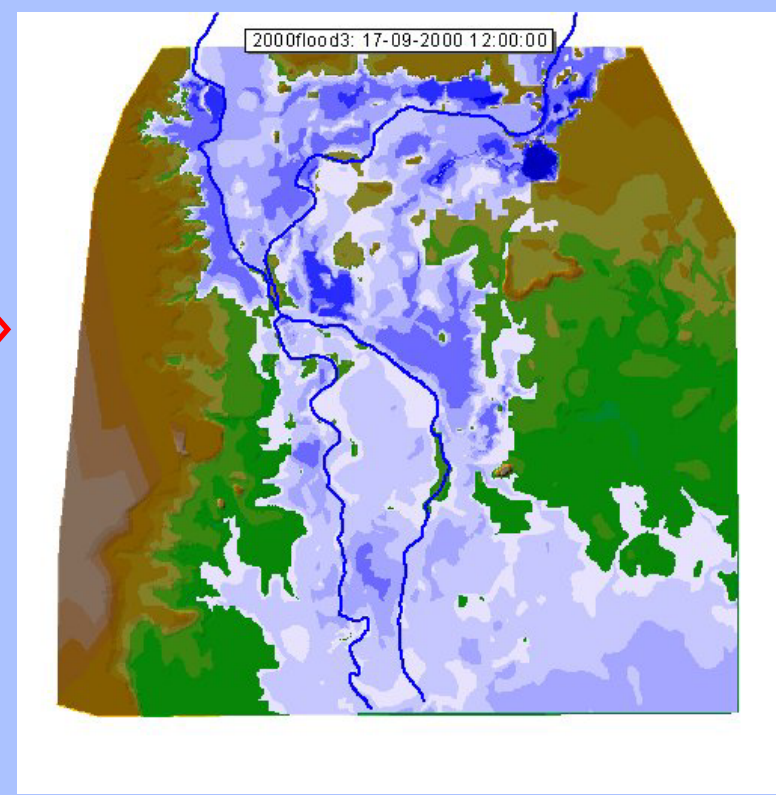
NAM



M11

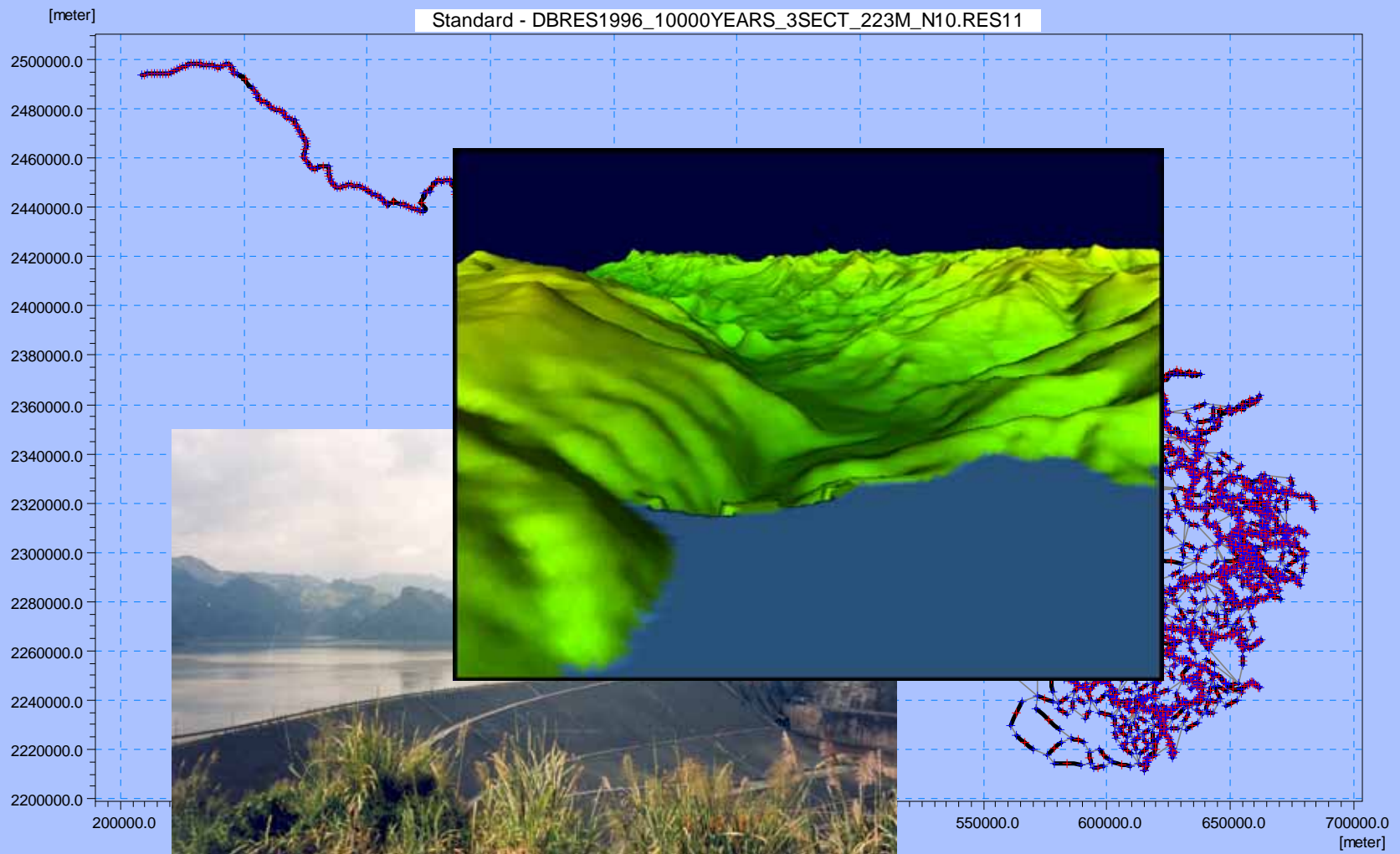


M11GIS





DA River Study Dambreak



DHI - Water & Environment

Leif Basberg

5th SCA Conference 11th of May 2005



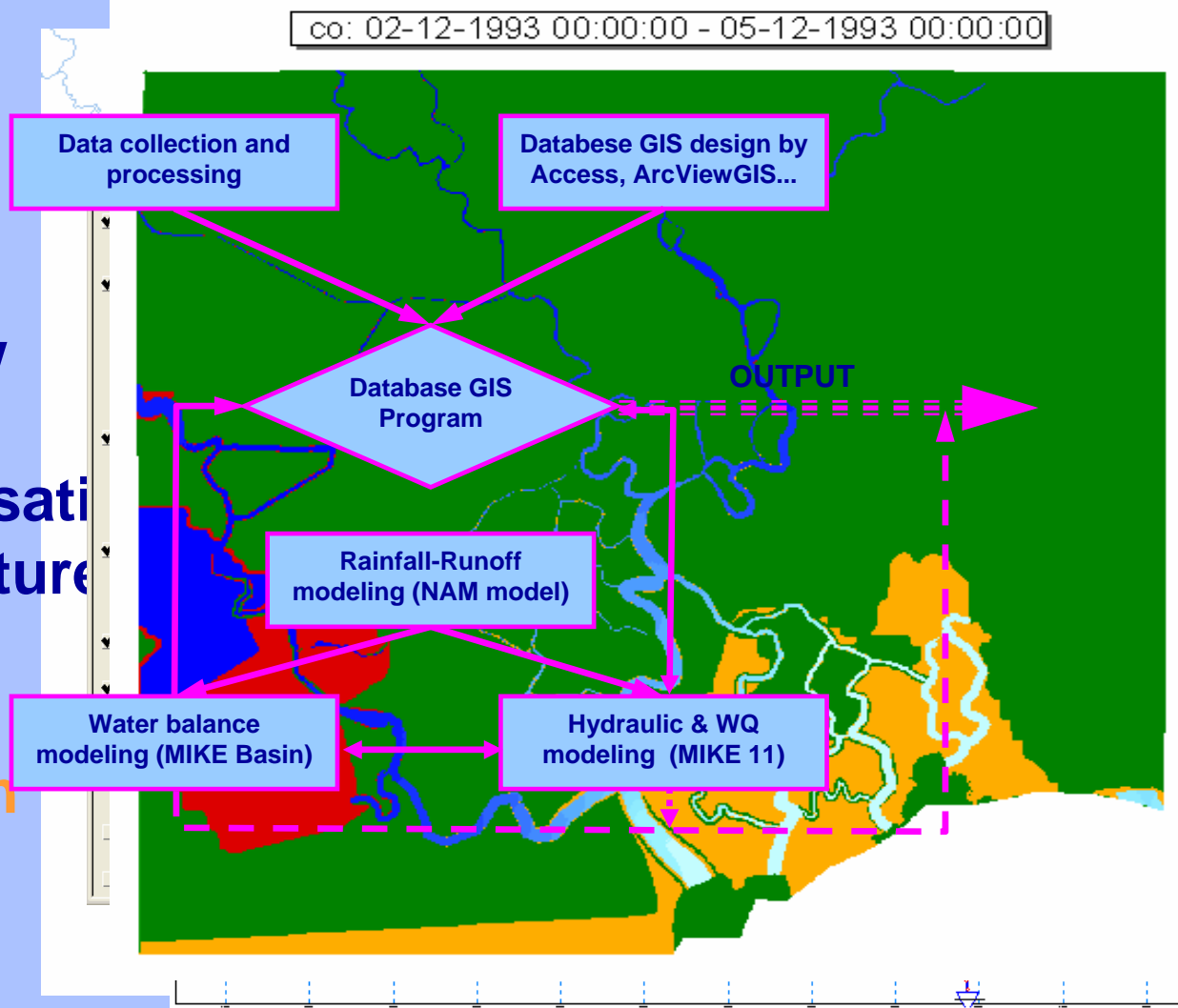
Flooding due to dambreak





Dong Nai Water Resources Study

- Approach
- Rainfall Runoff
- WB – calculations
- Environmental flow
- Salinity intrusion
- Reservoir Optimisation
- Effect of new structures
- Flooding
- Water Quality
- River bank erosion

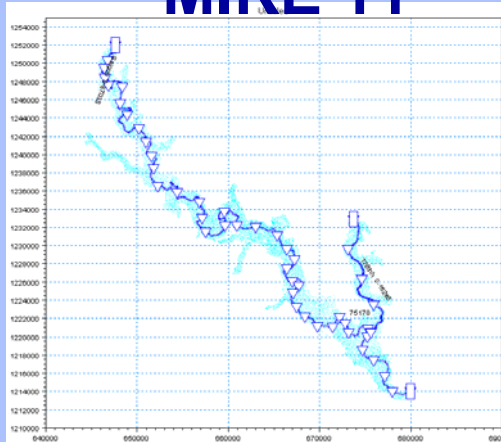




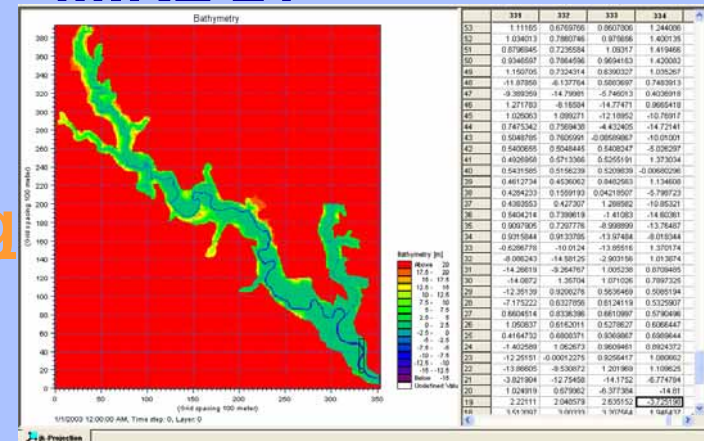
M11 – M21 - MFLOOD



MIKE 11

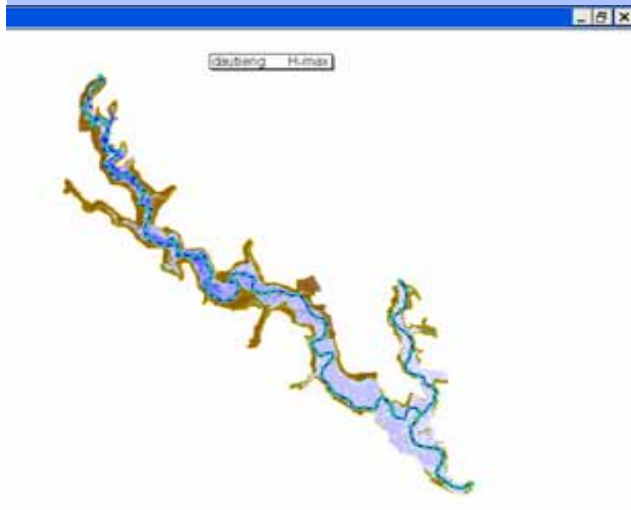


MIKE 21

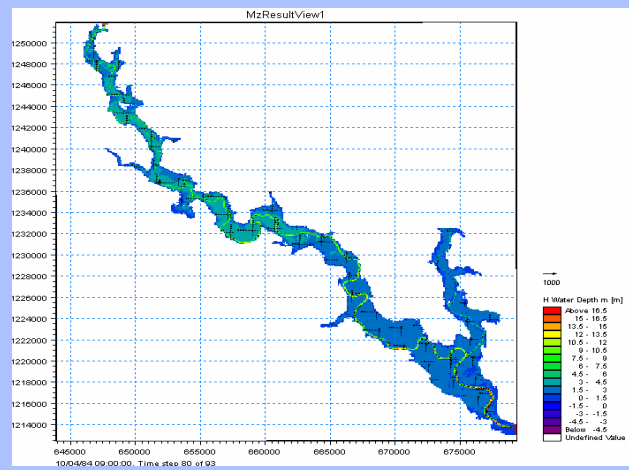


**Comparison
at
Sai Gon/Dau Tieng**

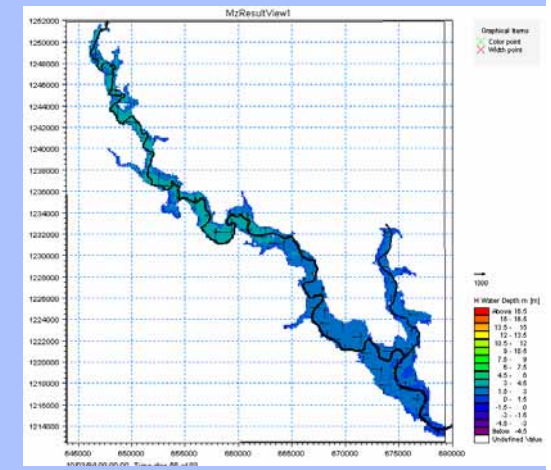
MIKE 11+M11GIS



MIKE 21

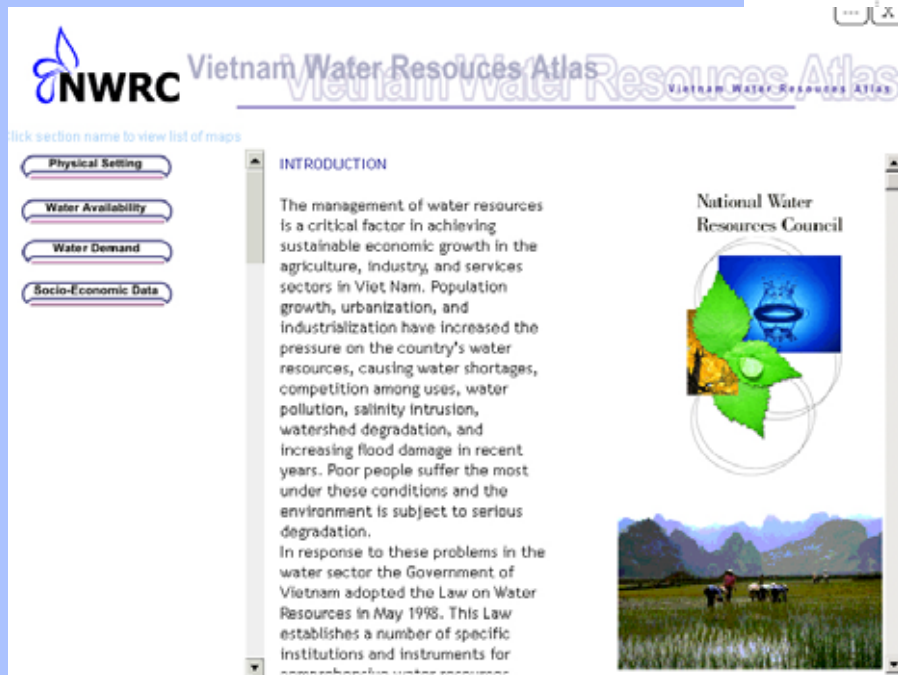


MIKE FLOOD



DHI – Water and Environment - Data

A good Start 1
cheap - timeseries



NWRC Vietnam Water Resources Atlas

Click section name to view list of maps



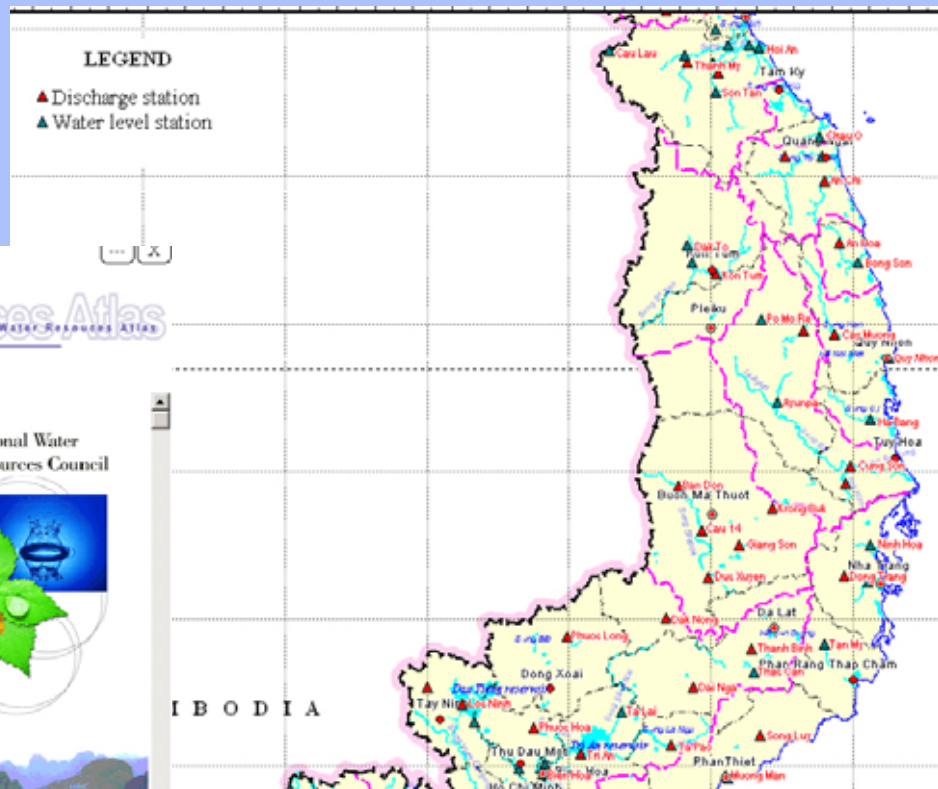
- Physical Setting
- Water Availability
- Water Demand
- Socio-Economic Data

INTRODUCTION

The management of water resources is a critical factor in achieving sustainable economic growth in the agriculture, industry, and services sectors in Viet Nam. Population growth, urbanization, and industrialization have increased the pressure on the country's water resources, causing water shortages, competition among uses, water pollution, salinity intrusion, watershed degradation, and increasing flood damage in recent years. Poor people suffer the most under these conditions and the environment is subject to serious degradation.

In response to these problems in the water sector the Government of Vietnam adopted the Law on Water Resources in May 1998. This Law establishes a number of specific institutions and instruments for

National Water Resources Council

DHI – Water and Environment - Data



A good Start 2

for free

Topographic

90 by 90 m DEM

Global Datasets



Thank you for your attention



More info at: www.dhi.dk and www.wrsi.org.vn