



# Technical Assistance for Flood Forecasting and Early Warning System for Maritza and Tundja rivers

## Inception Workshop

Plovdiv, November 30th 2007



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Flood Forecasting and Early Warning System Workshop

11/30/2007  
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## Technical Assistance for Flood Forecasting and Early Warning System for Maritza and Tundja rivers

This project is part of the more global European PHARE project “Capacity Improvement for Flood Forecasting in the Bulgarian-Turkey Cross Border Cooperation Region”. Its realisation has been entrusted by the Ministry of Regional Development and Public Works to the consortium “BCEOM société d’Ingénierie” & “HKV Consultants” from France and Holland with the participation of Bulgarian experts and the support of the National Institute of Meteorology and Hydrology (NIMH) and the East Aegean River Basin Directorate of the Ministry of Environment and Water. It started officially on October 2nd.

It comes with a supply component contract where Hydro-meteorological stations and software for Flood modelling and Flood forecasting is provided.





## Technical Assistance for Flood Forecasting and Early Warning System for Maritza and Tundja rivers

The purpose of this workshop, beside the project presentation is to give room for discussion upon the modelling approach, results to be expected for mapping the flood extensions, and the functions of the operational forecasting system for alert and flood mitigation which will be set up.

This discussion is necessary in order to take into account in an integrated and concerted management approach, the specific wills, needs and knowledge of the different stakeholders which are concerned by the issue of floods in this area.

- Data availability
- Reservoir management
- Turkey-Bulgaria data exchanges and harmonisation
- User need analysis for flood forecasting



## Workshop Agenda

### *Morning session*

#### **Block 1 General**

9:30 – 10:00 Opening by Mr. Roques and the representatives of the beneficiary

Introduction of the project

Introduction of the participants

Agenda and goals of workshop

10:00 – 10:45 Presentation by Mr. Roques

Project “Technical Assistance for Flood Forecasting and Early Warning System in Maritsa and Tundja catchment”

10:45 – 11:00 Coffee break

#### **Block 2 Model approach**

11:00 – 12:00 Presentation by Mr. Lissev and Mr. Udo

Project areas and flood analysis

Model approach

Data needed

12:00 - 13:00 Lunchbreak

### *Afternoon session*

#### **Block 3 Databases and data exchange**

13:00 - 15:00 Presentation by Mr. Vassilev and Mr. Roques

Geographical Information System by Mr. Vassilev

Case recent floods Bulgaria by Mr. Artinian

Case recent floods Turkey

Discussion about information system Bulgaria/Turkey:

- GIS data exchange
- Hydrological data exchange
- Harmonisation of data and databases

moderated by Mr.Vassilev/Mr. Roques/Mr. Dimitrov

15:00 – 15:15 coffee break

#### **Block 4 Flood Forecasting**

15:15 – 16:15 Presentation by Mr. Roques

Flood forecasting

User need analysis

#### **Block 5 Closure**

16:15 – 16:30 summary, conclusion and closure of the workshop by Mr. Roques



## Project description and Organisation



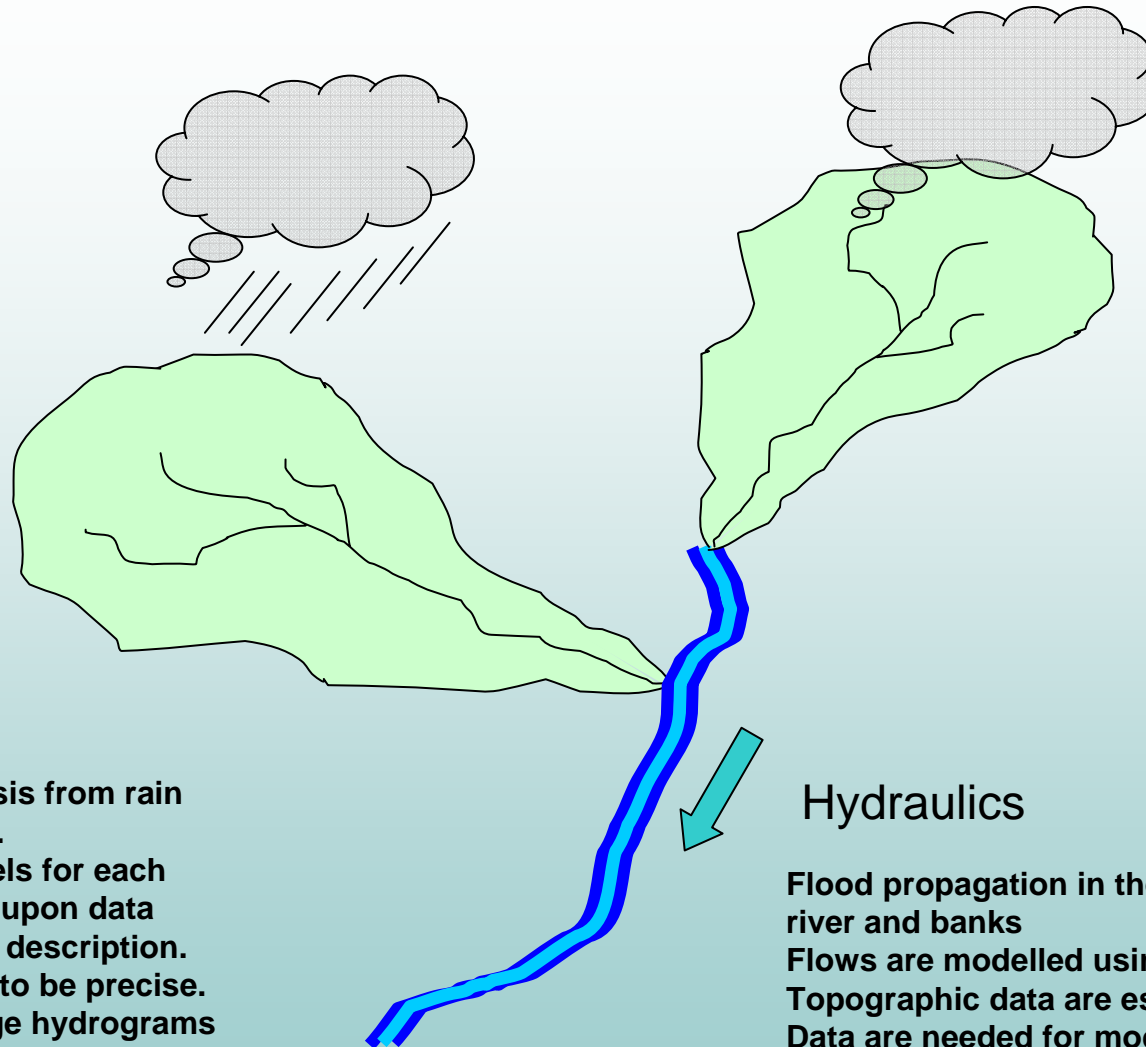


# Project description and organisation

- Some basic concepts for the project
- Project study logic
- Tasking
- Project Planning



# The flood modelling approach



## Hydrology

Study of Flood genesis from rain and/or snow-melting.  
Rainfall-Runoff models for each sub-basin are based upon data analysis and general description.  
Topography has not to be precise.  
Outputs are discharge hydrograms

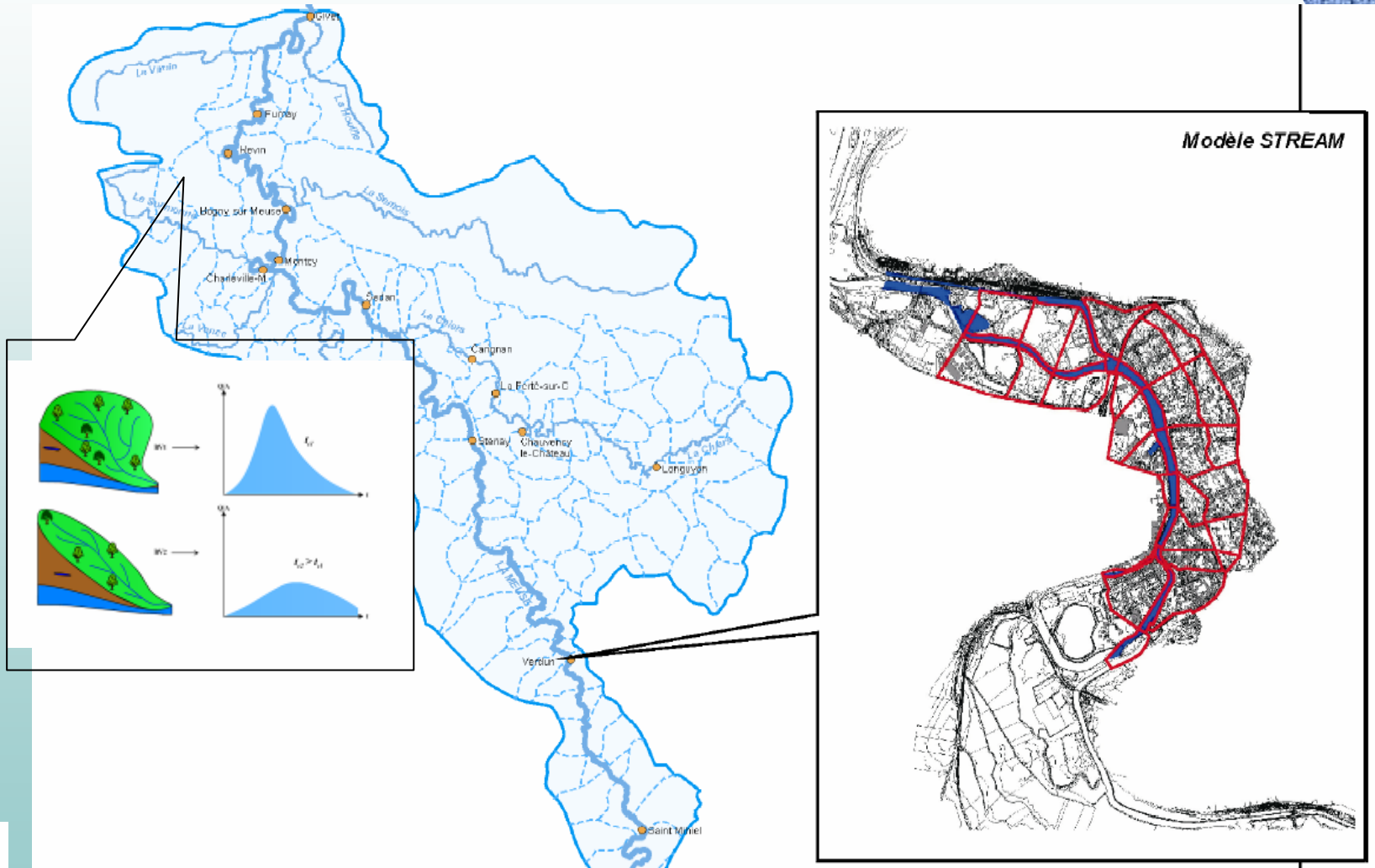
## Hydraulics

Flood propagation in the river and banks  
Flows are modelled using flow mechanics  
Topographic data are essential  
Data are needed for model calibration  
Discharges and water heights are linked in the model





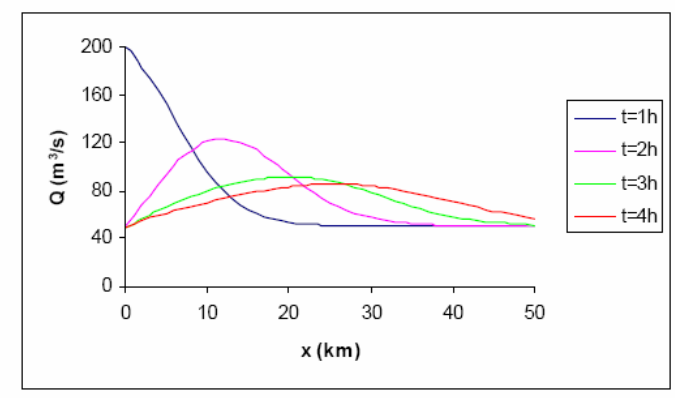
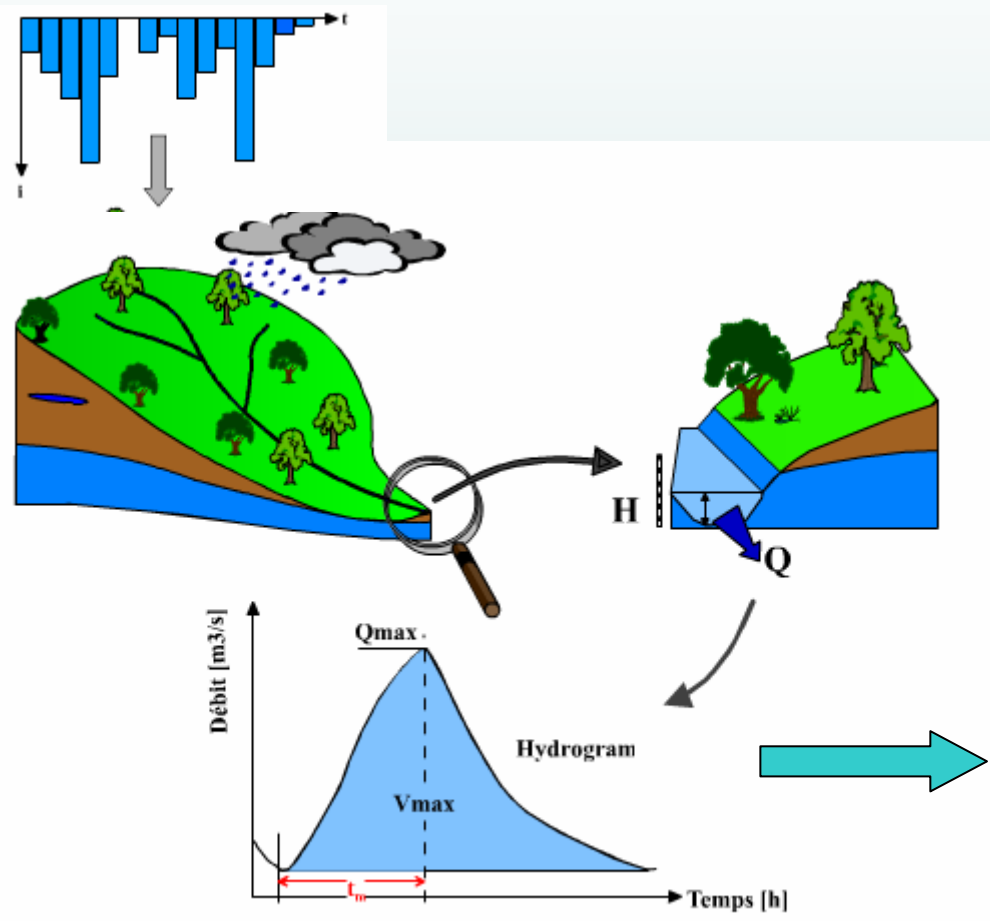
# Hydrology versus Hydraulics





# Need for geographical and historical data studies

- Geographical data on basin and rivers
- Precise topographical data for the mainstream rivers
- Meteo data analysis
- Discharges analysis
- Flow propagation along the river

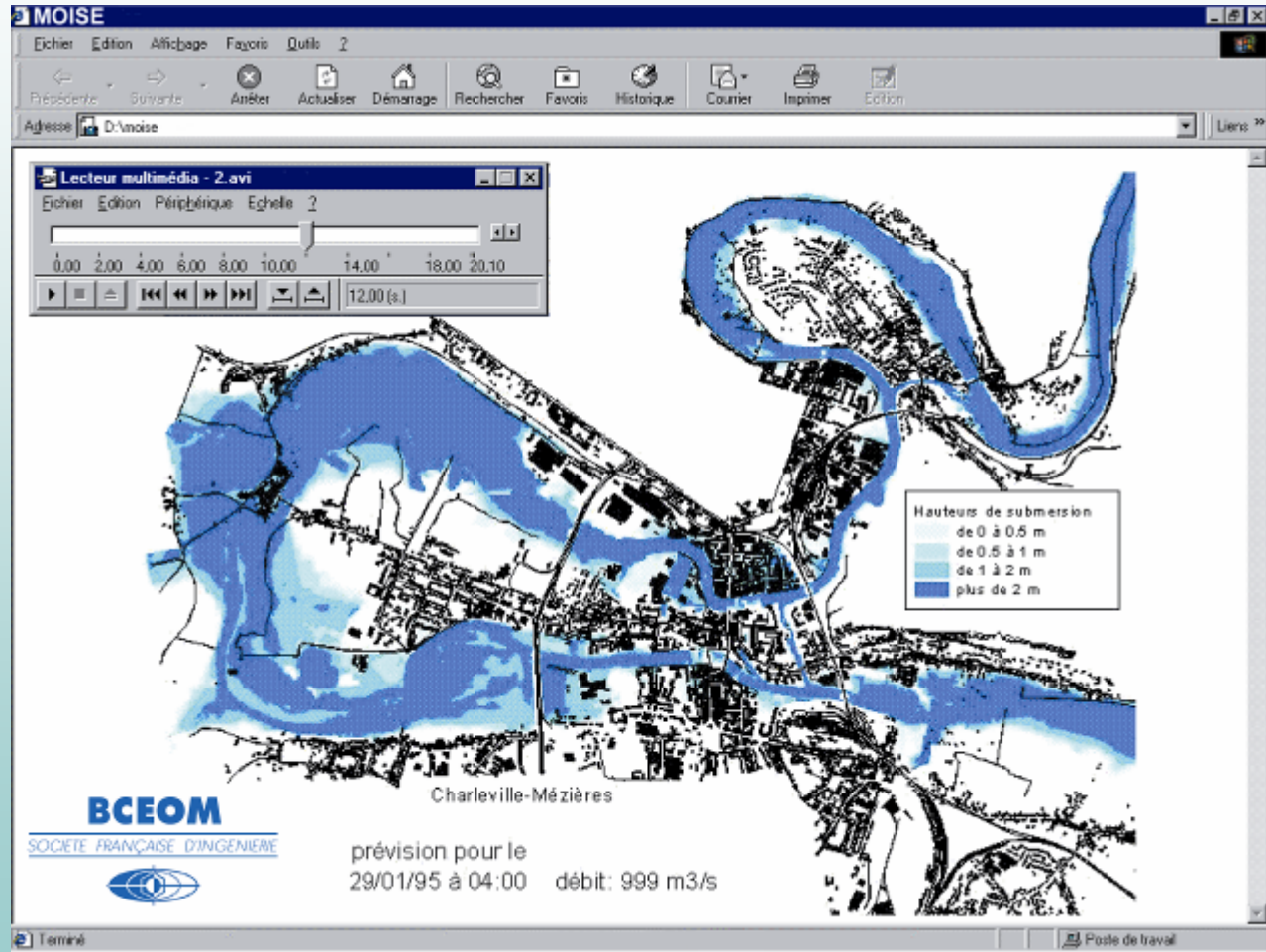




# Output from hydraulic models : flood maps

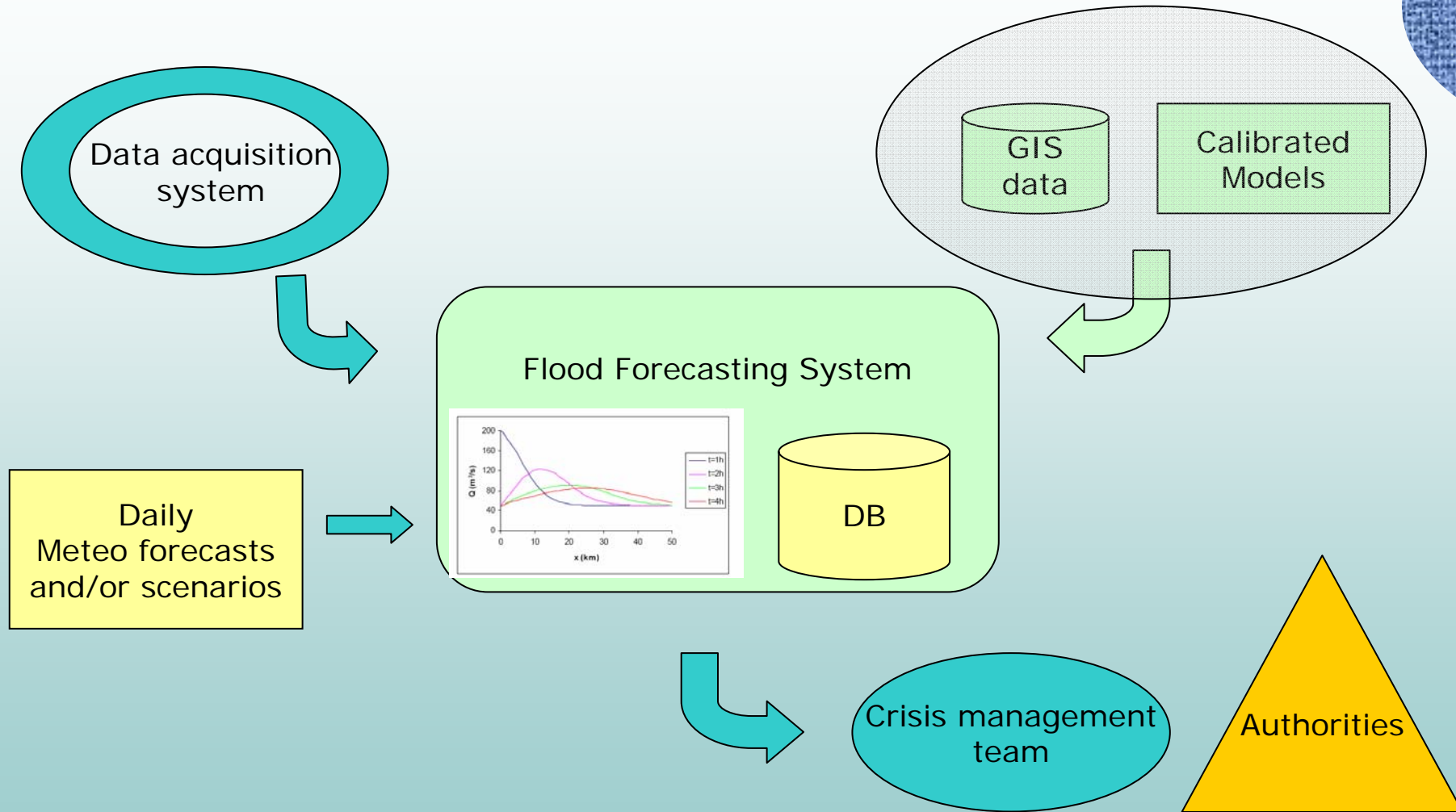
Hydraulic models provide water heights and velocities at node points.

Flood maps are produced from water heights as computed by models and superimposed upon topographic data

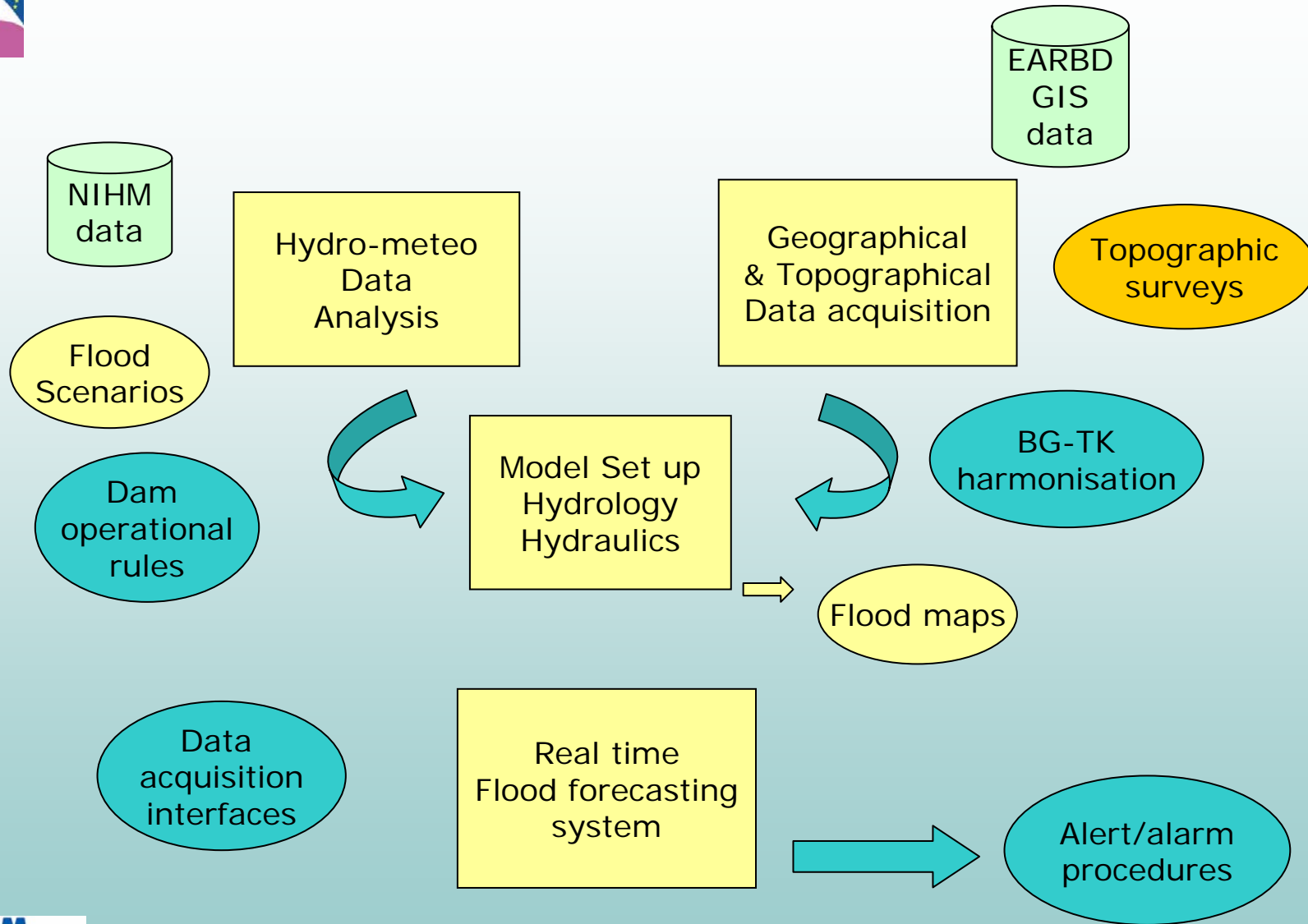




# The Flood forecasting system



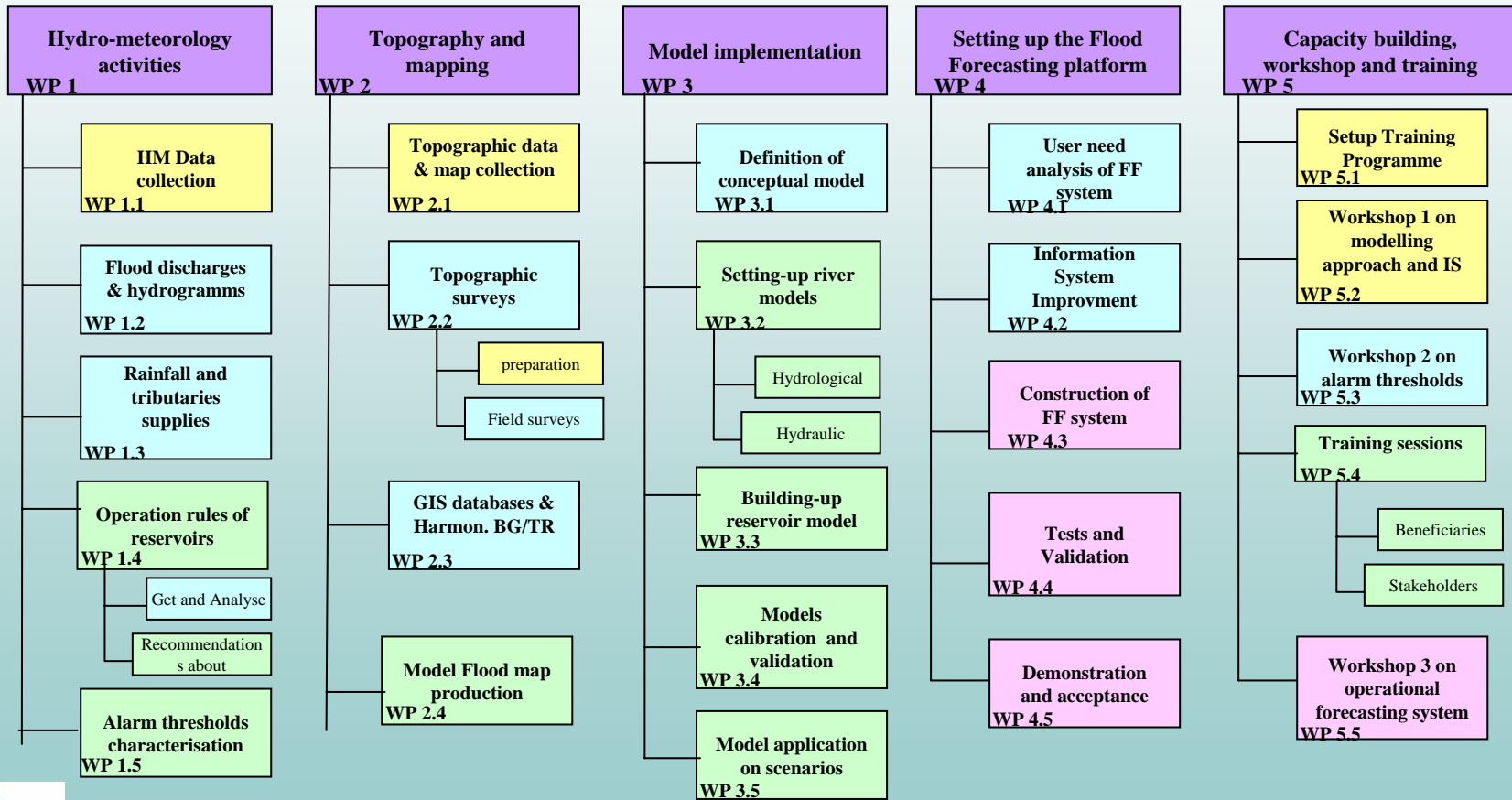
# Project study logic





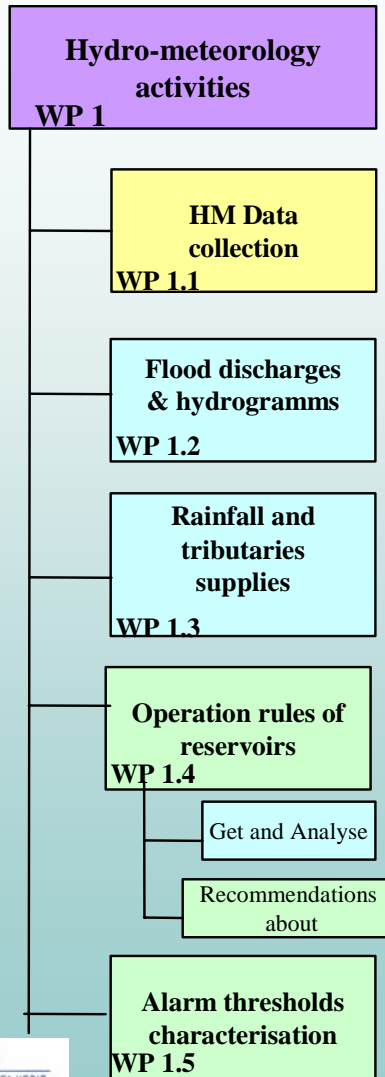
# Project Work Breakdown structure

- Phase 1 : Inception phase & data collection
- Phase 2 : Surveys and data analysis
- Phase 3 : Model setup and outputs
- Phase 4 : Operational forecasting system setup
- Not phased activity





# Hydro-meteorological activities



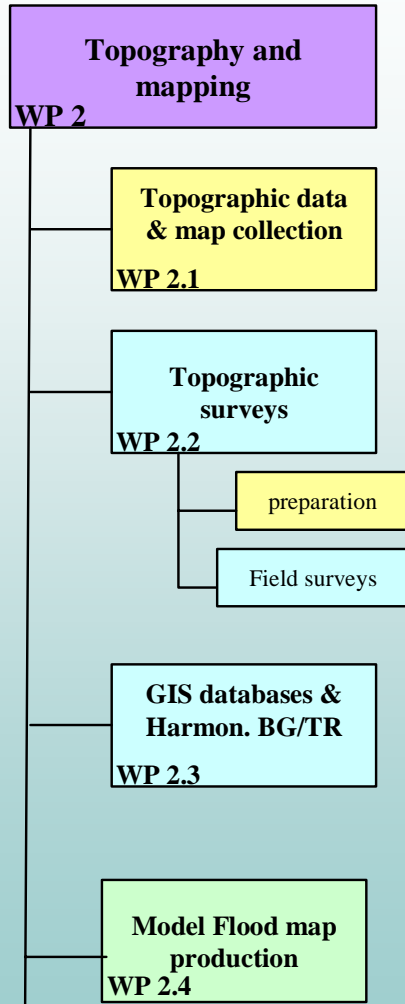
This work package encompasses the collection and selection of the existing data from NIMH (WP1.1) aiming at the study of the flood genesis through the different spatial distribution of rainfalls along various meteorological situations (WP1.2) then the production of the statistical study on these data in order to produce the hydro-meteorological scenarios for the project floods which will be used in the model runs (WP1.3).

Other activities have been included in this WP as the analysis of the operational rules of the reservoirs (WP 1.4) and the definition and characterisation of the alarm thresholds to be used within the warning system (WP1.5).





# Topography and mapping



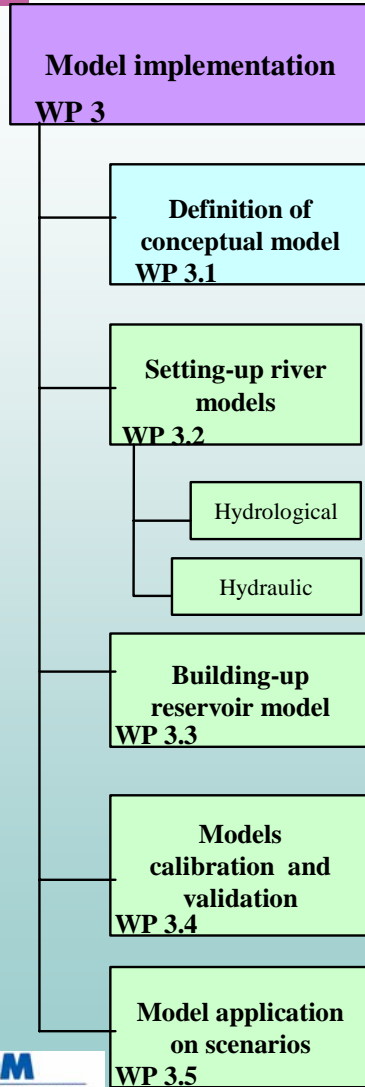
This Work package encompasses the activities linked with maps and topography, including GIS configuration, and exploitation.

It includes a preliminary task of topographic maps and data collection (WP2.1), the topographic survey of the river cross sections (WP 2.2), the GIS and databases production with data integration and the harmonisation of BG/TR data in the cross border area (WP 2.3) and the set up and exploitation of GIS tools for production of the flooded area maps from the output of the hydraulic models (WP 2.4).





# Model implementation



This work package encompasses all the activities necessary to achieve the operational modelling of the floods in the two river basins.

It includes the definition of conceptual models with a water system topological analysis (WP 3.1), the building of the tree of lumped hydrologic and the mesh of the hydraulic models using the modelling software provided (by the supply component) together with the GIS data including the cross sections (WP 3.2).

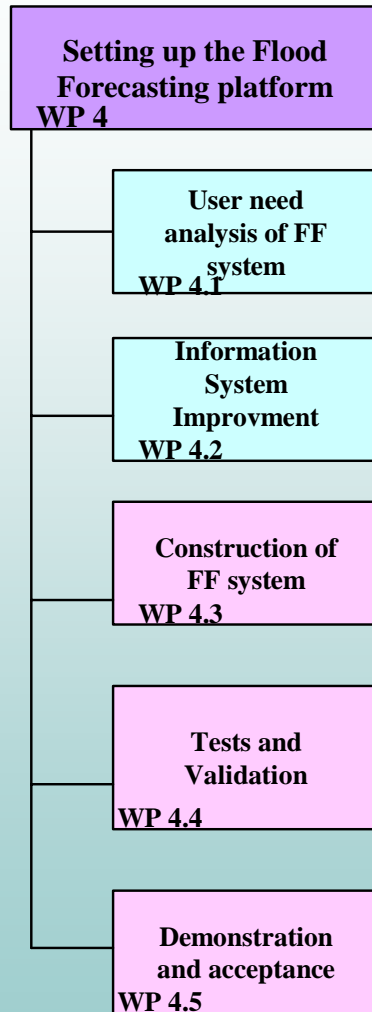
Then, once the operation rules are available, the reservoir model is defined and integrated (WP 3.3). The calibration and validation task (WP 3.4) based upon the available historical data can be started downstream of the reservoirs after WP 3.2 and achieved once the global model is complete.

The last task of this package (WP 3.5) will consist of applying the validated simulation model to the various scenarios which have been established during the hydrometeorological data studies





# Setting up the Flood Forecasting platform



This work package encompasses the activities necessary to set up the operational warning and forecasting system.

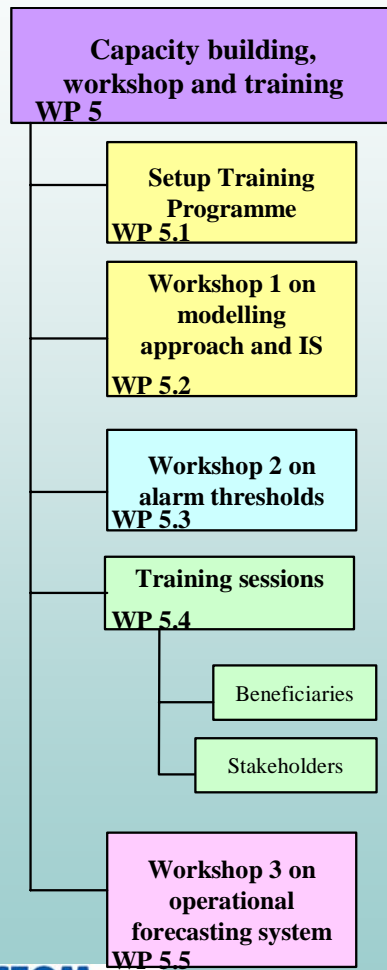
The flood forecasting platform is based upon (ie includes) the modelling software provided in the supply contract and used in WP3.

Preliminary tasks are the study of the needs of the various users, actors and stakeholders about the flood forecasting system (WP 4.1), and the study for Improvement of the Information system where we will analyse and give recommendations for the data collection system, transmission and information exchanges toward the stakeholders (WP 4.2).

The main activity then is the actual construction of the Flood Forecasting system based upon the validated models of WP 3 (WP 4.3). Once the FF system is built it will be operationally tested and validated on run tests based upon predefined scenarios (WP 4.4). A demonstration and acceptance session will formalise the completion and delivery of the operational system (WP 4.5).



# Capacity building, workshop and training



Beside the technical tasks, training activities must be held all along the project. Training activities should include on-the-job training, workshops and training sessions. We have gathered them in a fifth Work Package which we broke down into five different activities:

- Set up and validate the training programme
- Training sessions and capacity building on flood modelling and flood forecasting, on the various use of flood related information and warning tools procedure
- Workshop 1 on the development of the flood forecasting model and warning system and the improvement of the information system.
- Workshop 2 on the establishment of the alarm thresholds and warning procedures.
- Workshop 3 on the operational forecasting system



# Planning for the project

