

GIS – Based Management System in Flooding



**Prepared by:
Jaafar Bu-Saad**

**Instructor:
Dr. Baqer Al-Ramadan**

Term 051

Outlines



- Objective
- Introduction
- Problem Overview
- Study area
- Methodology
- Discussion & Areas of Improvement

Objective



Developing a user-friendly Flood Forecasting and Warning System, GIS based, to prevent/reduce damages occurred from flood.



Introduction

- Flood, types
- Key elements, response forms
- Existing forecasting methods (field information, not timely reliable data - errors)
- Looking for – regular flood forecasting and warnings



Problem Overview

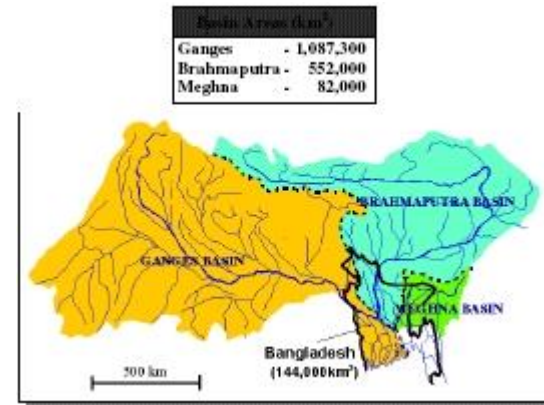
- Flood forecasting and warning is a fundamental non-structural measures to aid mitigating – the loss of life, crops and property caused by the annual flood occurrences.

Study



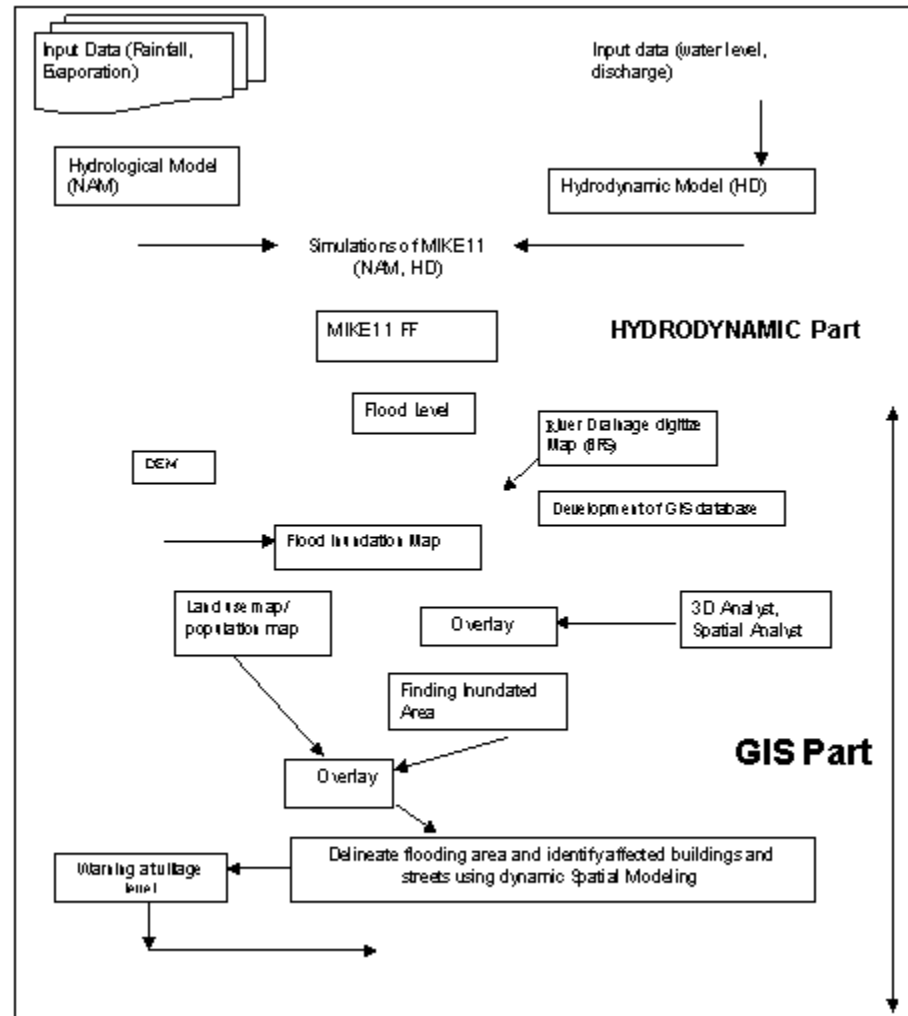
- **Area: Bangladesh**

- 3 Rivers: Ganges, Brahmaputra and Meghna
- Population (800 persons per sq. Km)
- Flate topography, heavy monsoon rainfall, enormous discharge of sediments



- History records
- Primary Flood Cause: rainfall & rivers discharge

Methodology approach



Methodology approach

The screenshot displays the ArcView software interface with several windows open:

- FLOOD WATCH:** A map showing a river network with various colored markers (yellow, green, blue, red) indicating different levels of rainfall or flood risk. A legend on the left lists categories: Rainfall Stations (No rain, Moderate, Medium, Heavy, Very heavy) and Level Stations (Normal, Warning, Danger, Severe).
- FLOOD WARNING STATUS:** A map showing a network of roads or boundaries with colored markers.
- form - [eddata.fbb]:** A data table with the following content:

	25/08/96	25/08/96	25/08/96	25/08/96
	12:00:00	15:00:00	18:00:00	21:00:00
B'putra at Bar	18.74	18.73	18.72	
Millbarak -Tel	5.24	5.23	5.24	5.25
Ganges at Ha	13.88	13.89	13.9	
O'Brahmaputi	15.29	15.27	15.26	
O'Brahmaputi	10.74	10.73	10.72	
Nayarhat -Tel	6.08	6.07	6.07	6.07
Brahmaputra	13.02	13.01	13	
- MIKE 11 FF - ISSUE OF FORECAST:** A configuration window for the MIKE 11 FF model. It shows parameters for calculation, system files, input data, and time settings.
 - Calculation:** Mean areal rainFall, Rating curve calc., NAM, HD.
 - System file:** SM.MSF, .QSF, SM.NSF, SM.RDF, SM.SSF, SM.USF, SM.NOF, SM.RRF.
 - Input data:** SM.BSF, SM.BSF.
 - Update:** NAM hotstart, HD hotstart.
 - Time settings:** Start time (1996 8 20), Time of Forecast (1996 8 26), End time (1996 8 29), NAM Limestep (hours) (12), HD timestep (minutes) (30.00), No. timesteps between saving of HD-results (12).
- Fts Windows Application - [MIKE 11 FF]:** A graph showing the forecast and actual water level for Serajganj. The y-axis is water level in meters [m], ranging from 12.50 to 15.50. The x-axis is time in August 1996, from day 23 to 28. The graph shows a rising trend in water level, with a dashed line for RHWL (Right Hand Water Level) and a solid line for D.L. (Down Low).



Discussion and Areas of Improvement

- Regional cooperation
- Automated data recording and collection system
- A close monitoring and feedback
- Rainfall estimation using weather radar in conjunction with satellites

Thank You



Qs & As