

SWAT Implementation in India – Some initiatives by IIT Delhi

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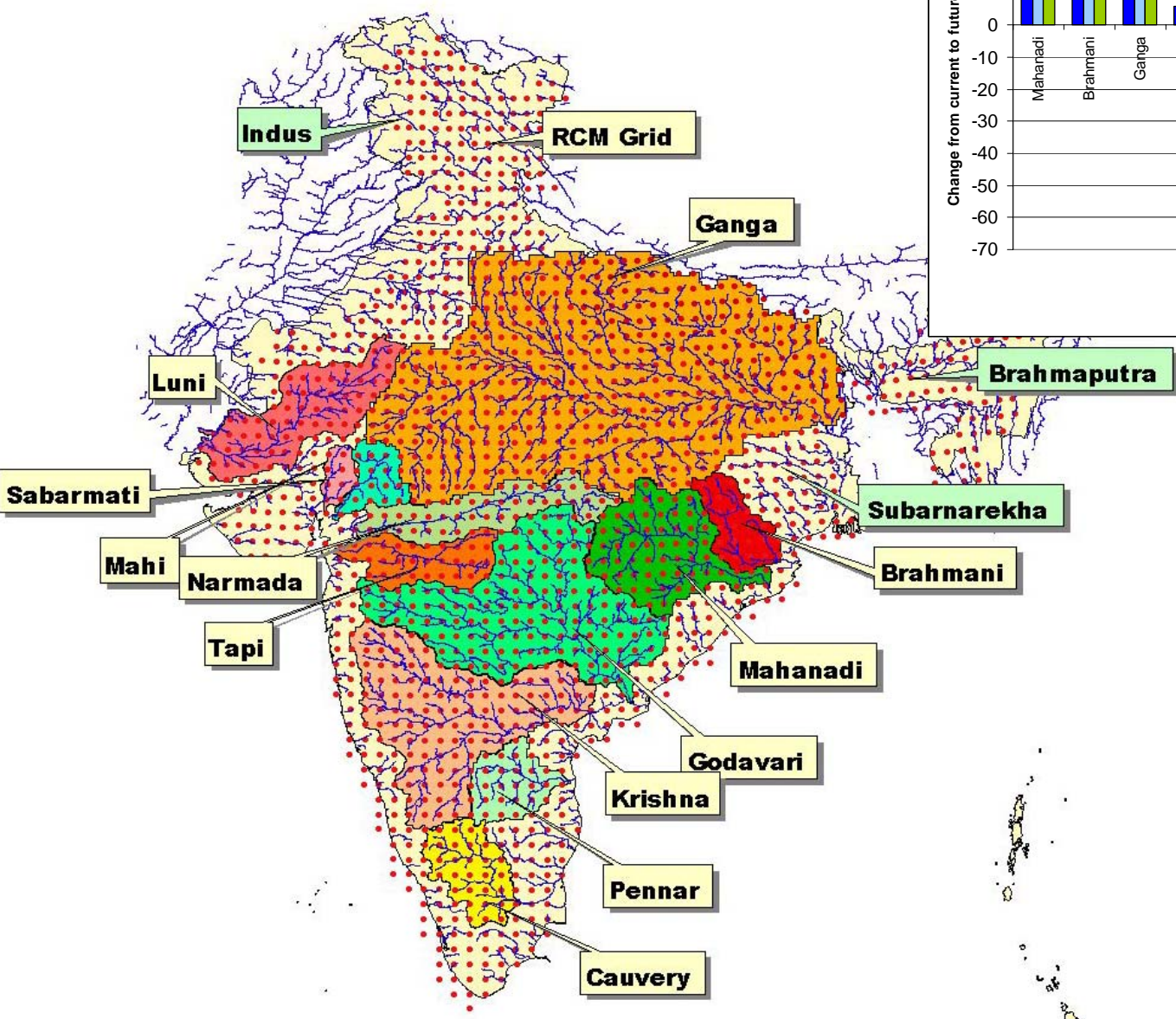
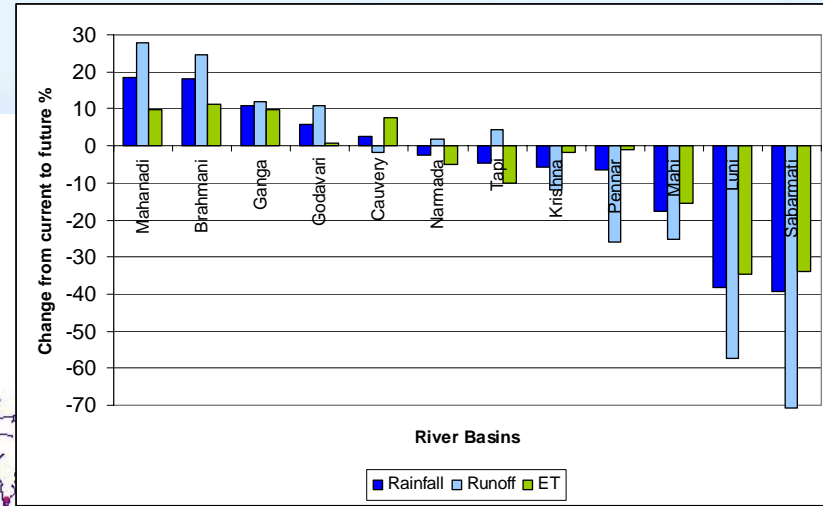
The Beginning

- ❁ Texas Agricultural Experiment Station (TAES) & IIT Delhi MoA - 1996, to collaborate in further development and dissemination of the SWAT model

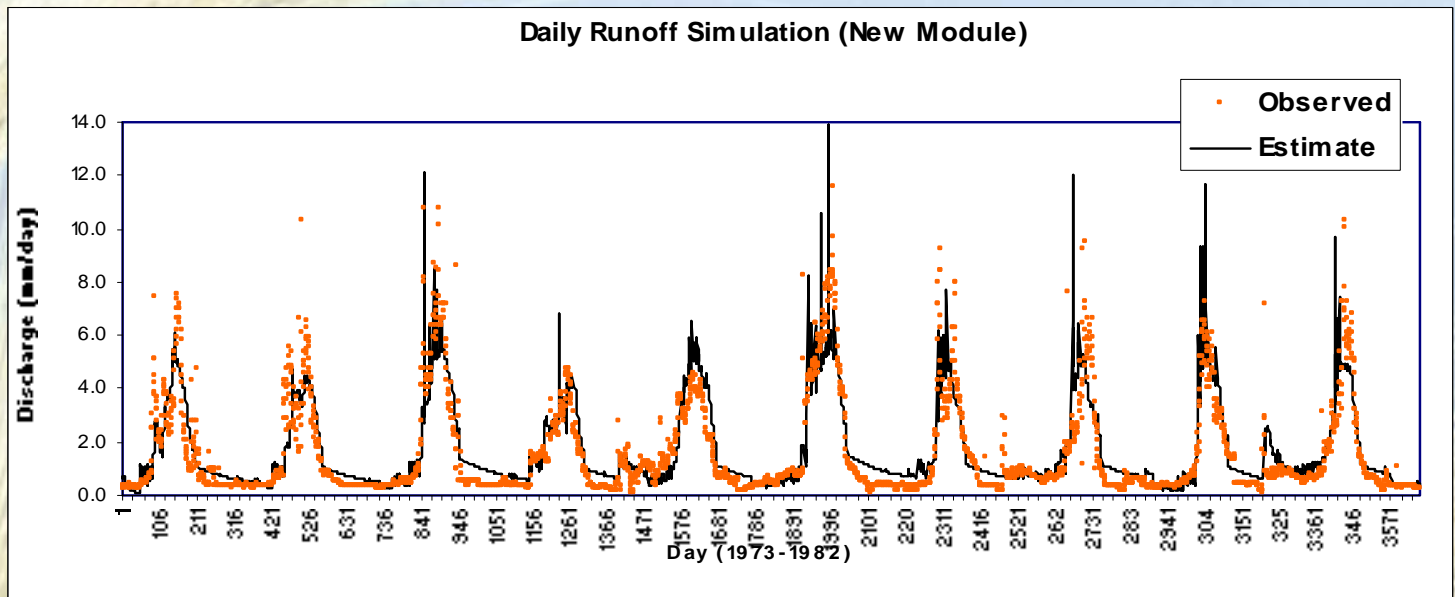
Some of the Salient Applications

- ❖ Initial National Communication of India to UNFCCC to quantify the impact of the climate change on the water resources of India
 - All the river basins except one have been modelled
 - Flood and drought analyses have been performed
 - Sponsor – Ministry of Environ. & Forests

River Basins Modeled



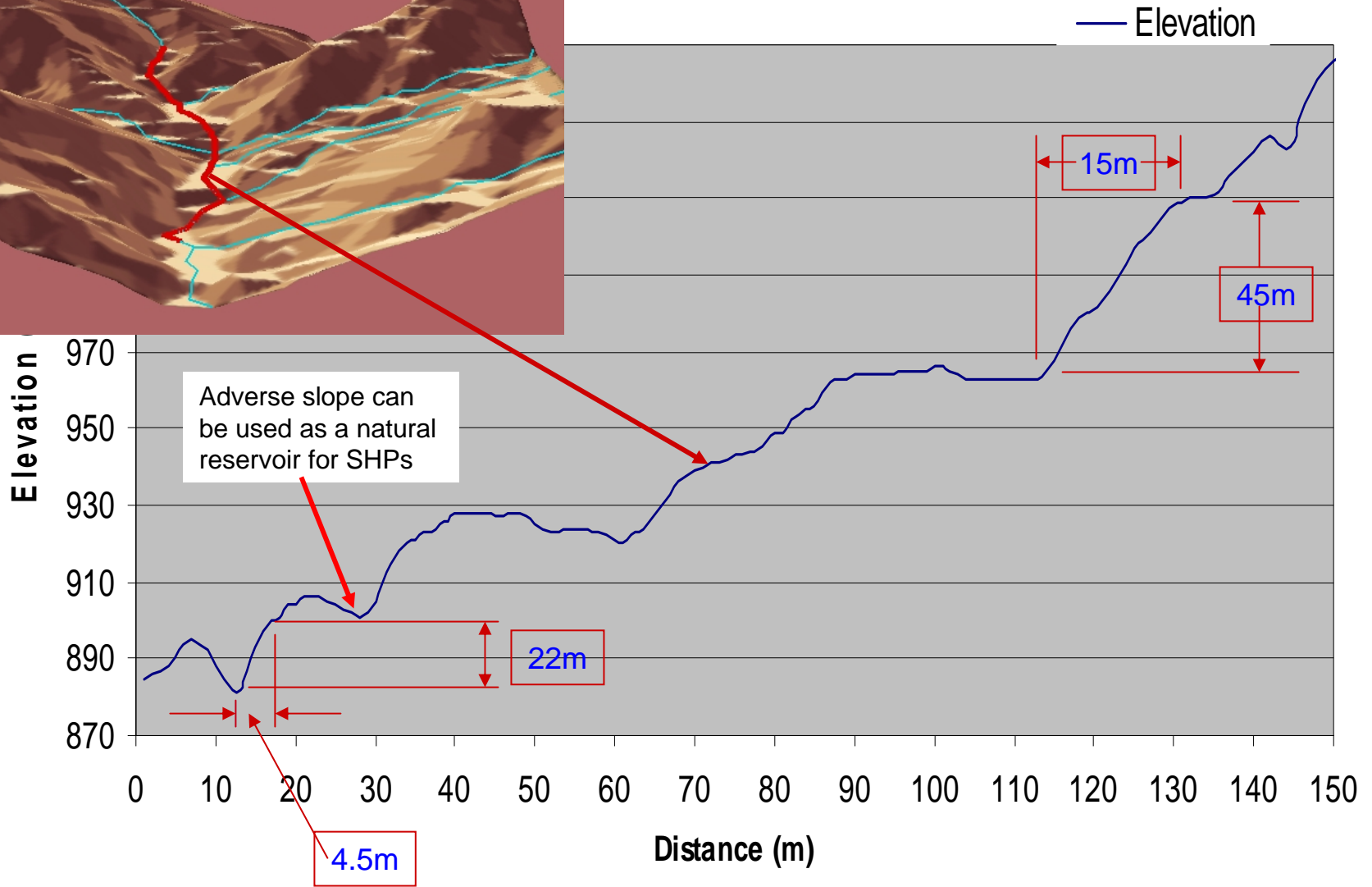
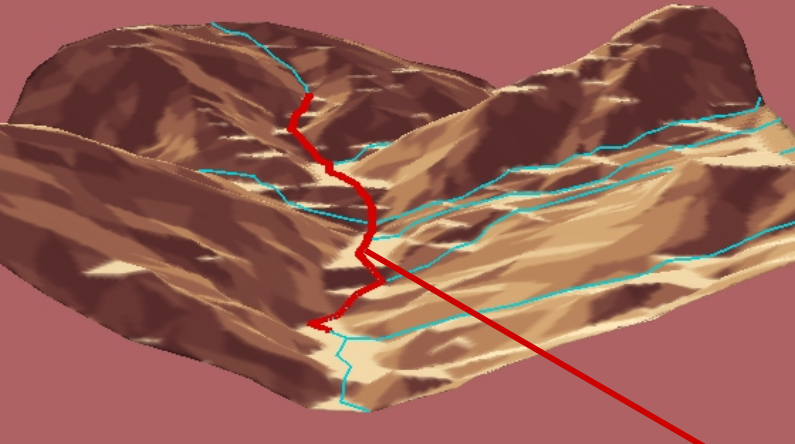
Improvement of the snowmelt component of SWAT



Sites Identification for Small Hydropower in Nagaland State

- ❖ GIS to extraction of longitudinal profiles
- ❖ Algorithms formulated for selecting natural drops within a distance specified by the user
- ❖ SWAT is used to construct flow duration curves at the identified sites
- ❖ Sponsor – Ministry of Non-conventional Energy Sources

Longitudinal Profile



Assessment of Return-flow due to introduction of irrigation

❖ A Case Study –

- Paleru Sub Basin of Krishna Basin, in Andhra Pradesh State
- Area: 3200 sq. Km.
- Sponsor – State Water Resources Department, Govt. of Andhra Pradesh

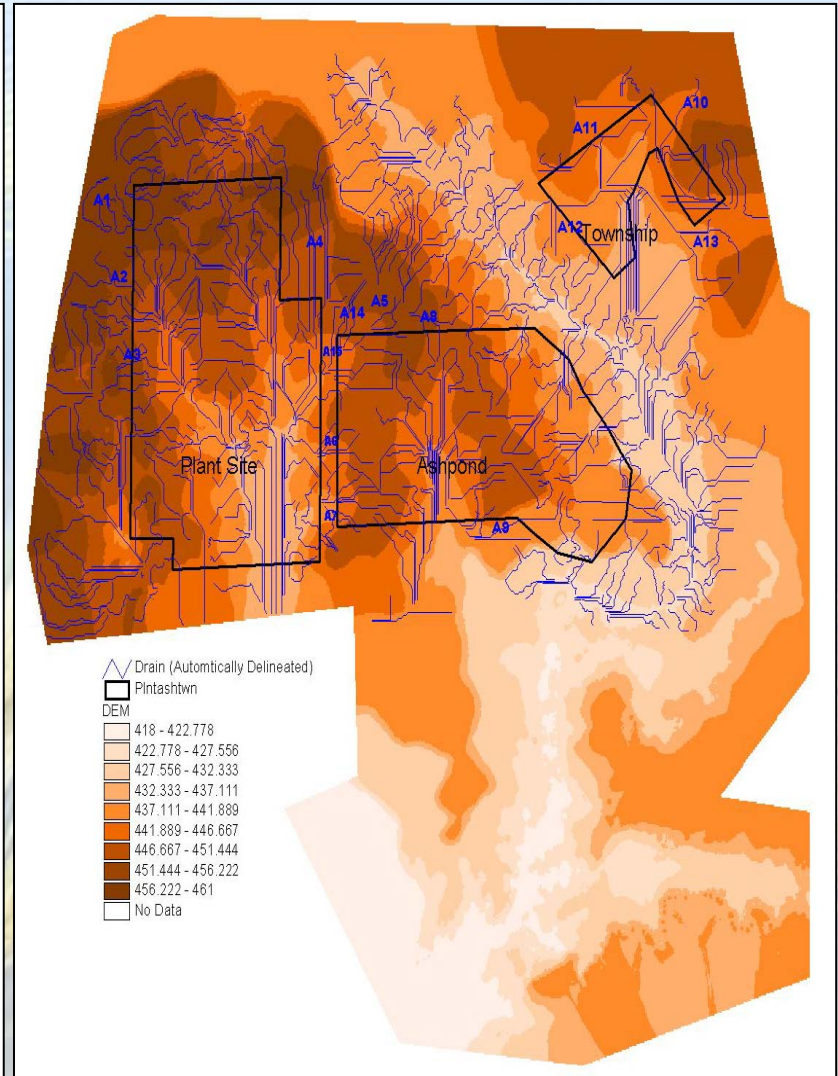
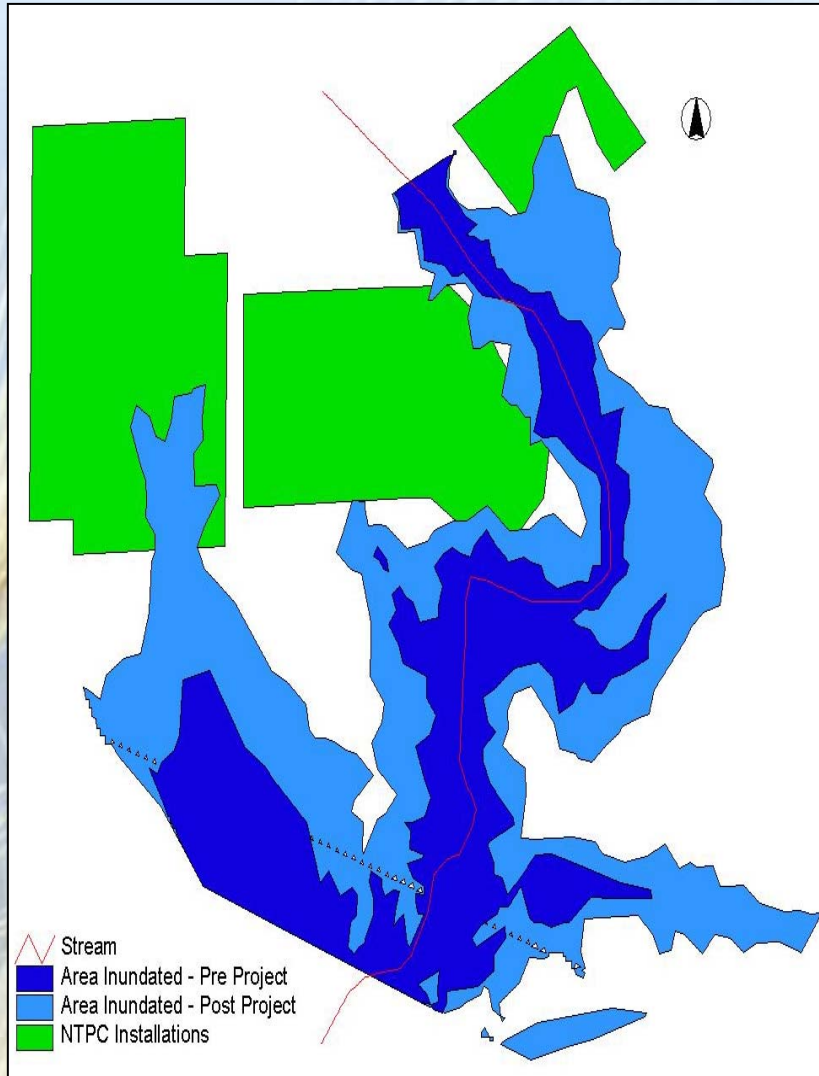
Watershed Management Program

- ❖ Interventions at the local level for natural resource management (800 Million \$ per year is spent)
- ❖ Use of SWAT and APEX promoted through
 - UNDP project with DST(1996 – 2001)
 - DFID project with CLUWRR in HP and MP states

Modelling for Site Safety of 500 MW Karanpura Thermal Power Station

- ❖ SWAT used in conjunction with HEC-RAS hydraulic model
- ❖ PMF obtained using SWAT
- ❖ Routed through the proposed reservoir to get the inundation levels
- ❖ Sponsor – National Thermal Power Cor.

Inundation for Pre- and Post-Dam Scenarios



New Initiatives

- ❖ **Climate Change – Vulnerability & Coping**
 - 2nd Phase of NATCOM (MoEF)
 - International Hydrological Program (UNESCO)
 - Special Study (World Bank)
- ❖ **Watershed Development & Management**
 - Hill Area Development for Mid Himalayas (WB)
 - Orissa Watershed Development Mission (DFID)
- ❖ **Small Hydropower Atlas of India (MNES)**

Dissemination

- ❖ Conduct training workshops
 - 6 workshops for Govt. officials and researchers
- ❖ Doctoral students using SWAT as main tool
 - 4 Ph.D. students – Awarded
 - 4 Students – Under progress
- ❖ Provide support to many trained and new users who approach us with various queries

A close-up photograph of several golden-brown grass heads with long, thin awns, set against a clear, light blue sky. The grasses are in sharp focus, showing their intricate structure. The text "Thank You" is centered over the middle of the image.

Thank You