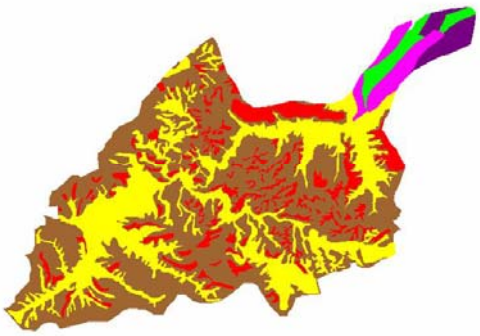
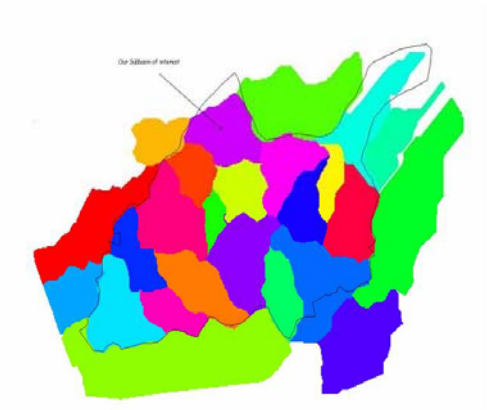
GIS Data:

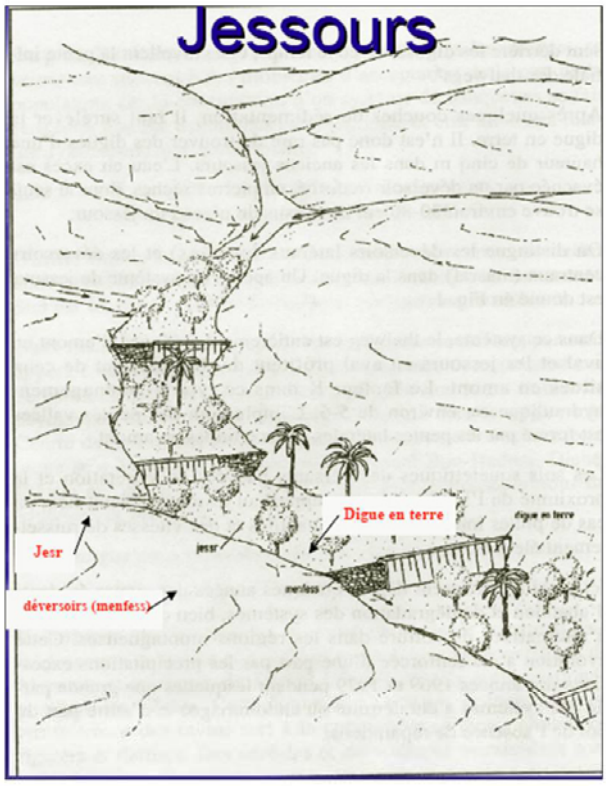
Multilayered GIS Data from Tunisia was used for the project. These files included elevations, soil types, and land use,etc.
This data was analyzed to determine the best locations for Jessour, based on which areas had sufficient runoff with a heavy sediment load



GIS Map showing soil types: The brown and yellow areas are very shallow sandy soils. (The yellow areas have a Jessour in place somewhere) The red areas are rock outcropping.



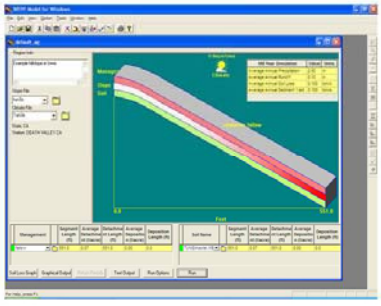
Picture of the complete Halouf watershed, with the subbasins shown in different colors



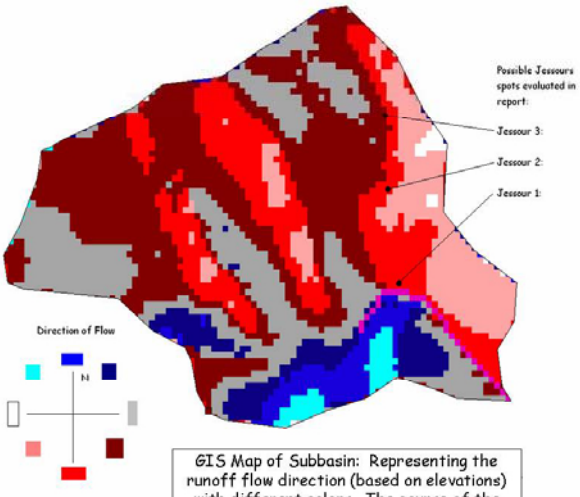
Computer Programs for Simulation

- WEPP—Simulates Sediment Accumulations and water runoff for selected areas
  - Inputs -> Slope of Hill, Ground Cover, Climate Information, Soil Type
  - Outputs -> Sediment Return, Deposition (usually zero in our cases), Runoff

- Excel—Use the Universal Soil Loss equation to approximate soil loss and also evaluate economic impacts of jessours
  - -Inputs -> Sediment Return from WEPP, Jessour Size
  - -Outputs -> Economics of Having Jessour such as cost/benefit, Also analyzes how fast soil accumulates behind dam, runoff and soil erosion using different methods

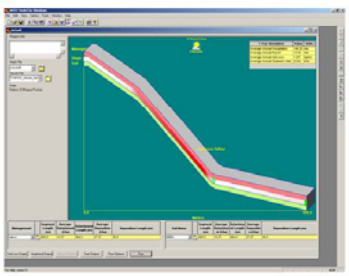


The vegetation in the area is very sparse. We found that the 'fallow' ground cover best represented this. WEPP allows you to create your own soil profiles, based on Sand/Silt/Clay percentage, etc.



GIS Map of Subbasin: Representing the runoff flow direction (based on elevations) with different colors. The course of the stream bed is in purple.

The middle line describes soil movement. Deposition rarely occurs in these types of soils. (Notice the green area in the simulation on the right. This is the deposition.)



Results from sediment loss due to annual precipitation from site in Tunisia

PURDUE UNIVERSITY

A Computer Model for Evaluating Jessour Design and Location in Arid Regions, Matt House and Josh Carter, ABE

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