Evaluation of quality and scale of DEM data in watershed boundary estimation

Ibrahim M M Aly

Department of Agriculture and Biological Engineering

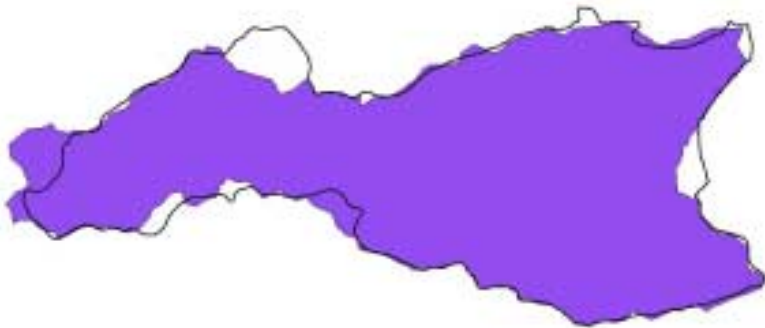Purdue University

December 4, 2002

Objectives :

To compare between the accuracy of the <u>three methods</u> of <u>watershed</u> boundary estimation using <u>two sets of DEM</u> data
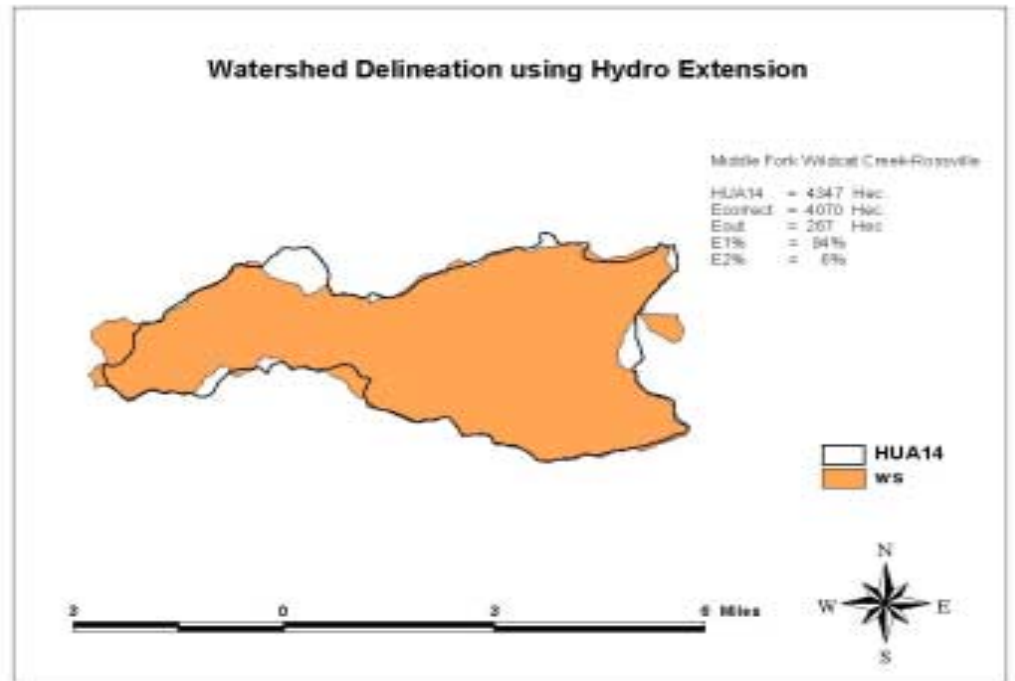
. To Determine which method among the three is <u>easier and faster</u> in the process of the watershed delineatin

Watershed # 4
Ecorrect = 4069 Hec.
Eout   = 219 Hec
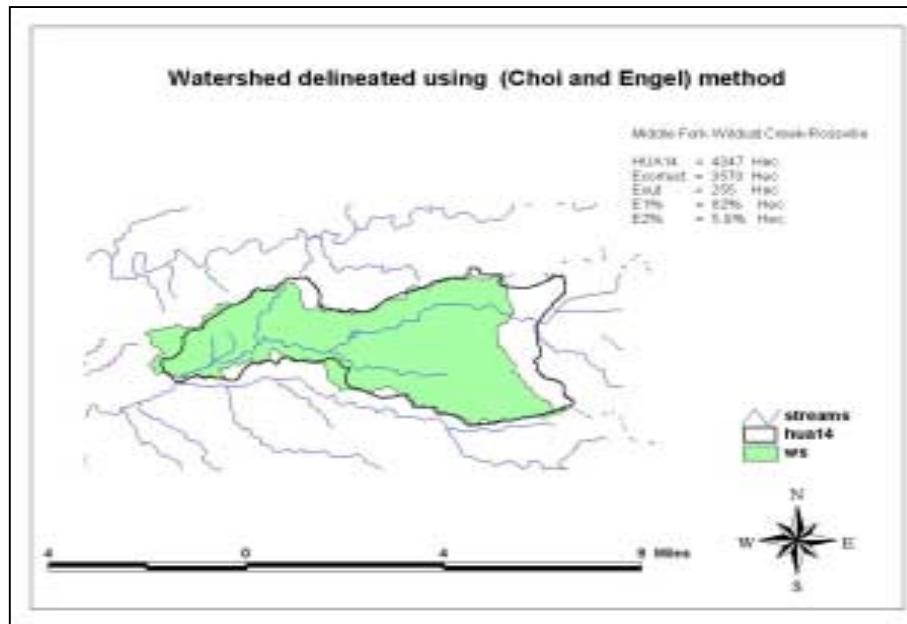HUA   = 4347 Hec
E1%   = 94%
E2%   =   5%

Arcview GIS method

Watershed Delineation using Hydro Extension

Middle Fork Wildcat Creek-Rossville

HUA14   = 4347 Hec
Ecorrect = 4070 Hec
Eout   = 267 Hec
E1%   = 94%
E2%   =   6%

HUA14
WS

Watershed delineated using (Choi and Engel) method

Middle Fork Wildcat Creek-Rossville

HUA14   = 4347 Hec
Ecorrect = 3570 Hec
Eout   = 255 Hec
E1%   = 82%   Hec
E2%   = 5.8% Hec

streams
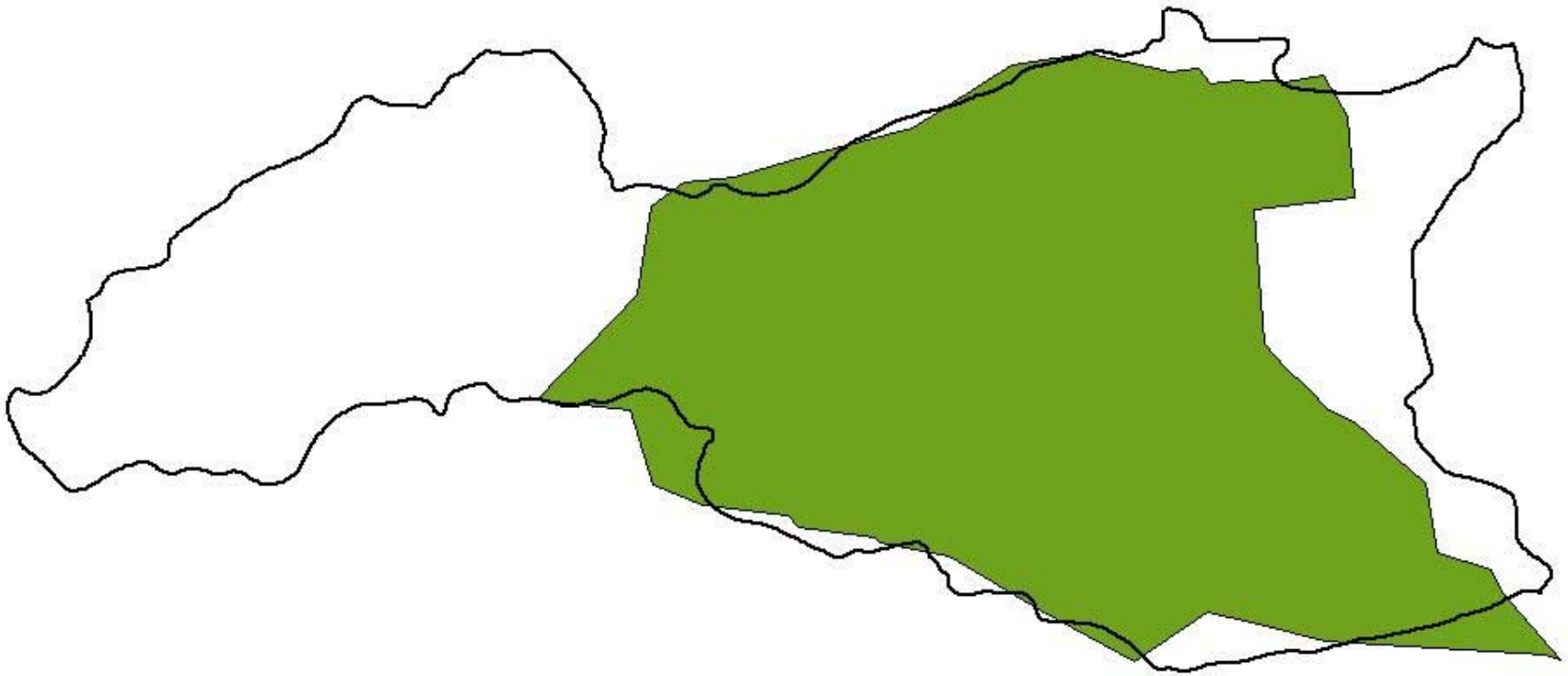hua14
WS

Watershed # 4
Ecorrect= 2523 Hec
Eout   = 129 Hec
HUA   = 4347 Hec
E1%   = 58%
E2%   = 3%

Summary and Conclusions

1- The accuracy of the watershed delineation depends on the first place on the accuracy of the Data available (DEM)

2- The Choi and Engel Method is the easiest and the fastest. But you have to do each watershed at a time

3- In the Hydro Extension method, you have to do a second step by grouping some sub watershed to get that of the desired one.

4- The ArcView method is logic and sestematic and easy in defining the inlet and outlet of the desired watershed. You can get all the desired watershed at once.