Hydrol. Earth Syst. Sci. Discuss., 8, C2698–C2700, 2011
www.hydrol-earth-syst-sci-discuss.net/8/C2698/2011/

Hydrology and Earth System Sciences Discussions

Interactive comment on "The use of LIDAR as a data source for digital elevation models – a study of the relationship between the accuracy of digital elevation models and topographical attributes in northern peatlands" *by* A. Hasan et al.

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Received and published: 11 July 2011

The manuscript describes an analysis of Digital Elevation Models at different resolutions (from 0.5m to 90m) comparing it with Lidar data. The topic is surely interesting and I am not writing this comment as reviewer so I will not enter in the evaluation details.

As I wrote in many other comments in this journal, my opinion is that in the last 15

years there was a significant evolution on GIS terrain analysis, DEM pre-processing and DEM-based hydrological modelling.

I do not want to include here the relevant list of paper available in literature or papers published by my research group (see for instance the Geomorphometry Group: http://www.geomorphometry.org/biblio and the GIStar group: www.gistar.org, where a large selection of paper is listed), but we should be aware that starting from the basic approach included in the ArcGIS or JGrass platforms now we have available evaluable studies on:

DEM evaluation (resolution effect, morphometric properties, etc.); flowdirection methods (single flow, multi flow, etc.); flat area issue (physically-based and geometrical methods for removing it); automatic drainage network extraction methods; DEM- based modelling; Evaluation of the new procedures in term of their effect on hydrological application;

and probably now these should be used by research community limiting the use of common platforms.

So, reading the manuscript it is frustrating that the authors did not feel enough important to recall the literature about their specific analyses and to specify the literature behind the methods used in the proposed analysis (the only one is Pilesjo et al., 2006 published in Agricultural Water Management with 4 citations).

If a new student approaches to this paper there should be the risk that he could consider it a seminal paper since no literature is recalled.

So, I close this short comment strongly encouraging to the authors to better describe the background in the introduction and to explain in more detail the applied methods.

For instance: how did author estimate the slope? how did they estimate the contributing areas? did authors find some problems with the pits that surely were created during the DEM resolution upscaling? Finally, it would have been nice to include pictures with

DEM map, slope map and contributing area maps.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 5497, 2011.