

Interactive comment on “On the uncertainty of stream networks derived from elevation data: the error propagation approach” by T. Hengl et al.

Anonymous Referee #1

Received and published: 21 April 2010

General comments:

This is very well written paper that presents a sophisticated error propagation analysis for extraction of stream data from DEMs. It makes a valid argument that error propagation tools should become a standard tool available in systems that are designed for geospatial analysis.

The results are in agreement with well documented difficulties to extract accurate streams in areas with relatively flat topography, such as floodplains or coastal plains, but the innovative quantitative and geospatial representation of the results provides more detailed information that can improve effectiveness of elevation data acquisition.

Specific comments:

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- The first application that came to mind when reading the paper was planning of lidar surveys that are extensively used for hydrologic and flood risk mapping and planning an optimal point density is an important cost issue. Unfortunately paper uses only rather limited, older type of data and mentions possible difficulties with applications to lidar-based DEMs. The paper would have been much more valuable if the test examples were performed with modern, widely available type of data such as SRTM or lidar that are rapidly replacing the traditional technologies for elevation mapping. Although one would expect the general conclusions to be the same, the spatial pattern of uncertainty may be different.

- Figure 1 and the text shows filtering of spurious sinks as a necessary step for stream extraction - given that there is number of algorithms that do not require this step it would be useful to make it clear that the procedure in Fig. 1 is specific to this paper, rather than a general methodology.

Technical corrections:

- p. 771 l.10 says that the methodology is to assess errors of stream networks and then l. 12 talks about assessment of propagated uncertainty - these are two different issues so it would be useful to clarify or modify the text to improve consistency

- p. 775 l.17,18 - why is Matern variogram.... in parenthesis?

- p. 777 l. 6 combined should be combine

- p. 778 l. 2 From recently?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 767, 2010.