

Interactive comment on “Generalized swath profiles” by S. Hergarten et al.

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RC from Dr Ian Evans, Durham University, UK.

S. Hergarten, J. Roble & K. Stuwe Generalized Swath Profiles:

GENERAL COMMENTS by ISE

This is a very useful development of the popular swath profile method. It provides a simple but effective solution for curved baselines. It is tempting to download the tool and try it out. The examples are well chosen and varied.

It is not clear why the Grand Canyon swaths (Fig.2b) produce a general flat floor: presumably these are alluvial flats, but I am surprised at their continuity. Fig. 2a does not help here, but a contour map might be revealing. A 1 km wide swath covers only the inner part of the Grand Canyon. The flat floor is only 125 to 200 m wide.

C278

The submission is acceptable with minor polishing of expression. It could, however, be strengthened if an example(s) of misleading results from ‘standard’ swath profiling were included, to back up the statement “even a perfectly V-shaped valley will look like a U-shaped valley” (p.2 lines 24-25; also p.7 line 25). Are there any published examples of misleading graphics?

SPECIFIC & TECHNICAL POINTS:

Page 3 line 10: ‘core’ or ‘centre’ rather than ‘morphology’?

Page 3/ line 20: maybe ‘the convex side’?+

Page 4 line 3 & many later instances (plus abstract): I am not comfortable with ‘oriented distance’: perhaps ‘directed distance’ or ‘directional distance’ would be more accurate? Or just ‘distance’? . . .’(taken as positive on the right and negative on the left)’ . . .

Page 4 line 13 (hereafter: 4/13) ‘in more detail’

4/16-17 Could an example of this increasing smoothness be included? It is not obvious in the map Figures here.

4/25-26 Not ovals because the sides are straight. Semi-circles at each end are what have to be excluded. [For me oval = elliptical or egg-shaped.]

4/27 replace ‘in case of’ with ‘for’

5/8 there is no black frame in Fig.2, only in Fig. 1 . . .

5/18 p is a point (line 12): presumably it is the distance from p that is minimal. . .

6/4 delete ‘it occurs’

6/7 Perhaps you mean ‘DEM width’? - DEM resolution (i.e. grid mesh) does not make sense. . .[higher resolution = lower grid mesh : power three is smaller for higher resolution]

8/25 ‘for’ rather than ‘at’?

C279

8/27 'near-vertical' (90 degrees does not occur? Even if Fig.4 graphs are truncated at 2 m/m.)

9/1-6 I do not follow this reasoning. Where is the evidence of a planation surface' on the left (negative distance) side – standard deviations there are not low (as for such a surface), they are very high.. What is the glacial imprint here?? And what chronological evidence does this provide ('... prior to the last glaciation...')

9/19 'value' rather than 'virtue' !!

9/24-25 'age and mechanical properties of ... are ...'

10/1 (especially for the submarine part of the swath)

10/3 'plains' not plane ?

10/4-5 'maxima recognized as seamounts; the minima are graben structures' [again, avoid 'in case of' – it is not really an English-language construction. Also these minima are not outliers – they are less extreme than the maxima. It seems that the altitude distribution at a given distance is positively skewed.]

10/10 'reaches sea-level at an average distance...'

10/12 delete 'of the zone' –it seems unnecessary.

10/19 'distributed along strike'. Delete 'of the zone'

11/3 'with' is better than 'and' here.

11/4 'a rounded rectangular shape' ?

11/6 ideas?? Maybe 'approaches'.

11/8 State why 1/5 omitted. References: journal titles seem over-abbreviated. Why is the digit at the end of each reference needed?

Fig.2 caption 'a curved baseline...' The 'frame' is not drawn.

C280

Fig.3a Can you please locate this more precisely? I could not find this topography in the Grand Canyon, at least not the National Park. Is it in fact on a tributary?

Fig.3 NOT 'coined' !! 'eroded' ? Constant distance lines are red: only baseline is dashed 'red and white'. 'Gray' is not apparent, just 'pale' or 'beige'. Last sentence: 'system, with a spatial...'

Figs. 3 to 6: p.4 implies that bin width should be stated...

Fig.4, Fig.5 and Fig.6: '(white and red dashed line)'

Fig.4 shows absolute surface elevation / altitude: given the downstream gradient of the river, relative height above the river would be more relevant to analysis of cross-profile shape.

-Ian S. Evans

Interactive comment on Earth Surf. Dynam. Discuss., 1, 387, 2013.

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