Interactive comment on “Regional scale analysis of landform configuration with base-level maps” by C. H. Grohmann et al.

M. Jaboyedoff (Referee)
michel.jaboyedoff@unil.ch

Received and published: 12 February 2011

This paper is dedicated to the concept of the base level used to extract the tectonic feature from landscape using DEM. The proposed method is applied to a large region of Brazil. The changes suggested by all reviewers and myself will greatly improve the paper, but I recommended the authors add more info on some references, which will make the text easier to read.

General comments The paper is well written. The authors make a good overview of the base level concept in the first part of the paper, but they do not really go into detail about the method used to perform a base level using DEM. In the method section more detail have to be given about how they extract the base level surface even if there is a reference. For instance AT least-cost algorithm must be described shortly way in the paper. On the whole, I am convinced by the base level concept used to analyze topography, but I am not convinced with the treatment of small scale (DEM 1km), because abrupt changes are not captured. In that case you will get more mantle effect on topography than really faults. I prefer local use for base level to analyze topography, as it is suggested in the last figure. In addition, Strahler is not the good classification for morphometry. I cannot go further because I have a paper on that topic, which has been rejected for 5 years. The main issues are linked to the discussion's section, because the figures do not really support the text. Each map in figure 5 must contain the river courses, in order to see the link between base level and the surface. Figure 6 can probably be improved by overlapping both the 2nd (and not 24nd as displayed in the caption) and 3rd contours with a hillshade draping the geology, this will improve the readability of the maps. Figure 8 can be transformed in a pseudo 3D profile using the 3D representation using sections; this will permit to see the fault scarp, if it exists, maybe it is more a limit of the extension zone, and more an effect of the mantle than a unique fault. Figure 8 needs more explanation.

Specific and technical comments I have no direct specific comments because my comments are requests for adding information. In addition, the reviewer (RC, C5) has already made good detailed comments.