Supplementary Material on "Constraining the Stream Power Law : a novel approach combining a Landscape Evolution Model and an inversion method"

T. Croissant, J. Braun



FIGURE 1 – River profiles for different combinations of n, m and K. These river profiles illustrates the inversion results for the first synthetic case where n and m are free when $K = 1 \times 10^{-5}$ (blue and purple profile) and also the second synthetic case where n, m and K are free (red, blue and purple profile).



FIGURE 2 – Plots showing the value of n and m versus the misfit for misfit values under 30 for the synthetic case where n eand m are free.



FIGURE 3 – Maps of the difference between observed and theoretical topography (Diff (in m)) for the case where n, m and K are free. a) Theoretical topography generated with n = 1 and m = 0.4. b) Theoretical topography generated with n = 0 and m = 0. c) Theoretical topography generated with n = 3 and m = 1. d) Theoretical topography generated with n = 2 and m = 0.5.



FIGURE 4 – Results from inversion for the free parameters m and n, for a reference landscape generate with $n \neq 1$. a) Scatter plot showing the results from NA sampling stage. A reduction of the misfit value is observed for the n and m combination of the reference model (i.e. n = 2 and m = 1). b) PDF of the two parameters.



FIGURE 5 – a) Picture of Whataroa catchment. In white : pixels used to make the inversion. b) River profiles of the 2 main rivers : the whataroa and the perth