

GSA Data Repository 2016206

Structural segmentation controlled the 2015 M_w 7.8 Gorkha earthquake rupture in Nepal

Hubbard et al.

Supplementary materials:

Data file 1 (MHT_surface_xyz.txt) provides the triangulated surface of our MHT fault model in projection WGS1984 UTM Zone 45. This file was exported from GoCAD. Depths are positive downward and represent meters below sea level. Data file includes (1) list of numbered vertices as xyz points, and (2) triangles indicating how vertices are linked. Note that the surface was generated in three parts (west, central, east) and there are suture lines dividing the three sections. Associated with this division, the file contains three sets of vertex/triangle lists. If file extension is changed to “.ts” it can be directly imported into GoCAD.

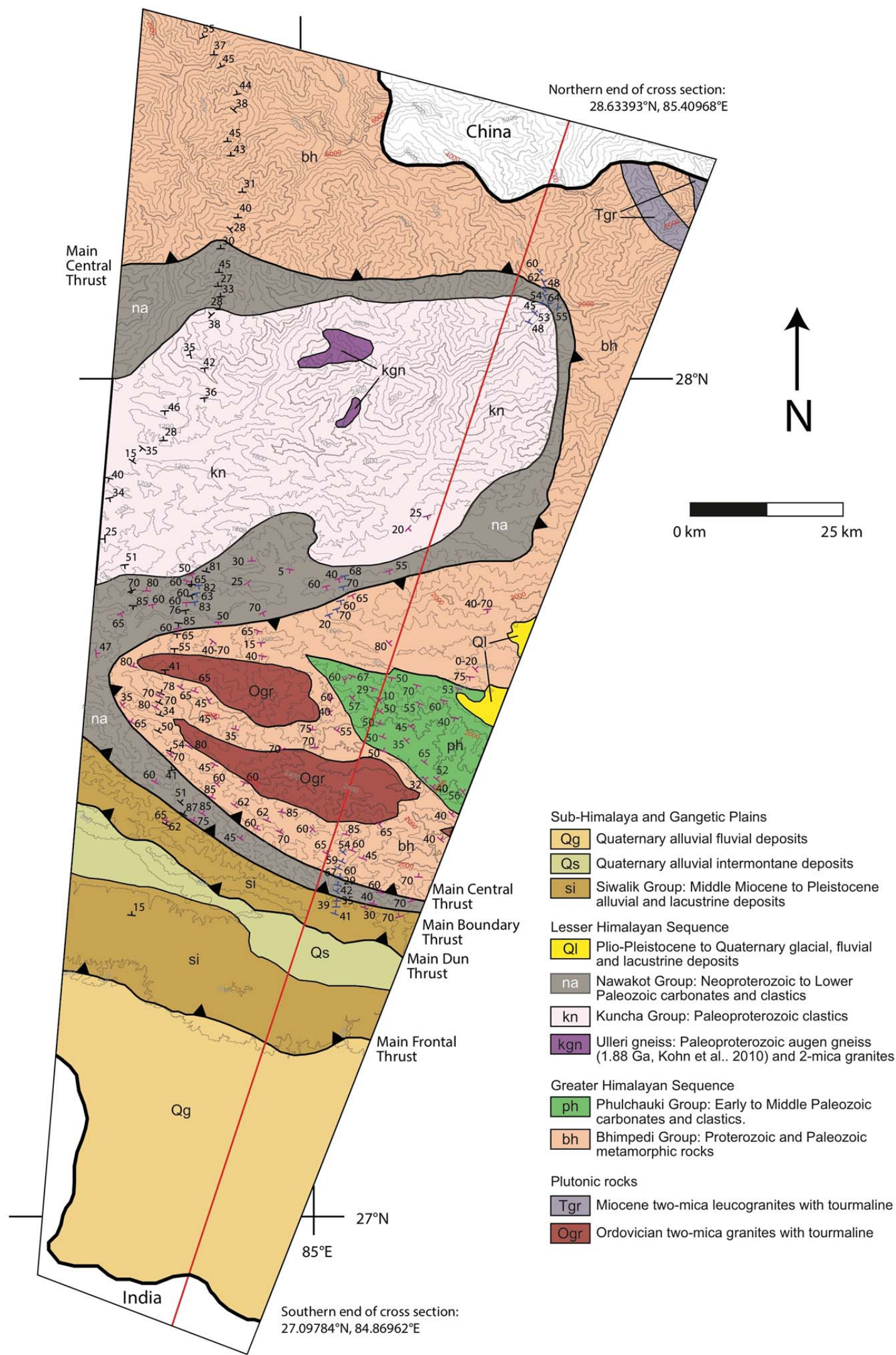


Figure DR1: Surface geology of Nepal from the Geologic map of Nepal around our cross section (red line). Strike and dip symbols represent both beddings and foliations. Representative dips are shown from Stocklin (1980, red), Pearson and DeCelles (2005, green), and Khanal and Robinson (2013, black). Bold lines represent national boundaries. Contours are every 400 m; bold contours are every 2000 m.

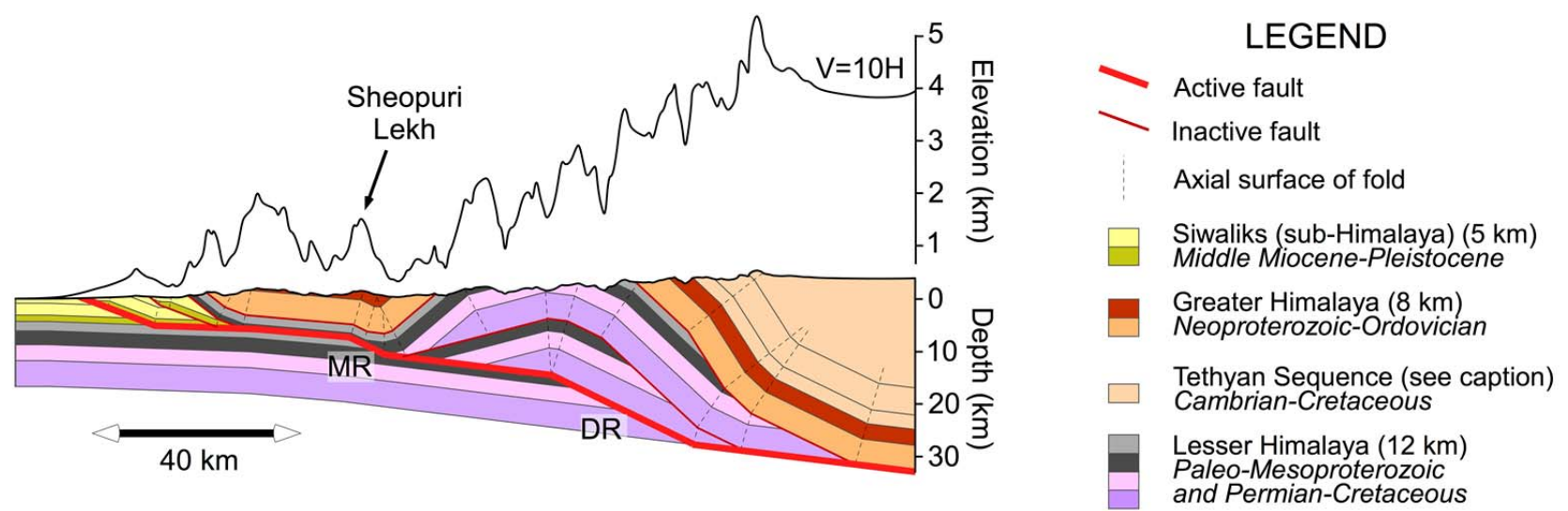


Figure DR2: Cross section from Figure 1F. Exaggerated topography is shown as black line (10x). A small mountain range lies above the middle ramp; we suggest that this represents active uplift above the ramp.

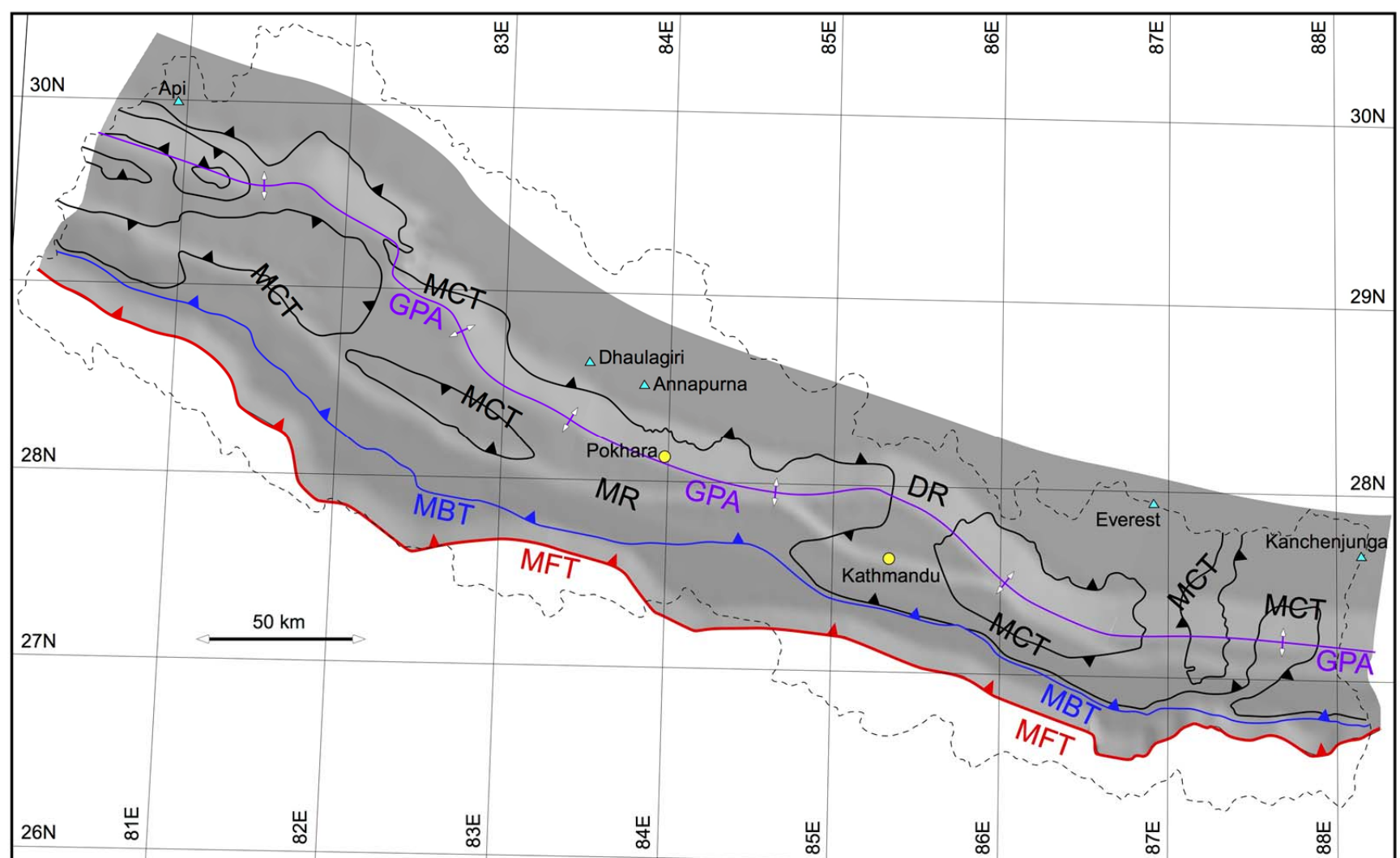


Figure DR3: Map view of Main Himalayan Thrust; the MR and DR are marked. Surface traces of MFT, MBT, MCT, and GPA are marked. Note that the trace of the MBT parallels the MR, while the GPA parallels the DR. Selected mountains and cities are shown. Dashed line represents national border of Nepal.

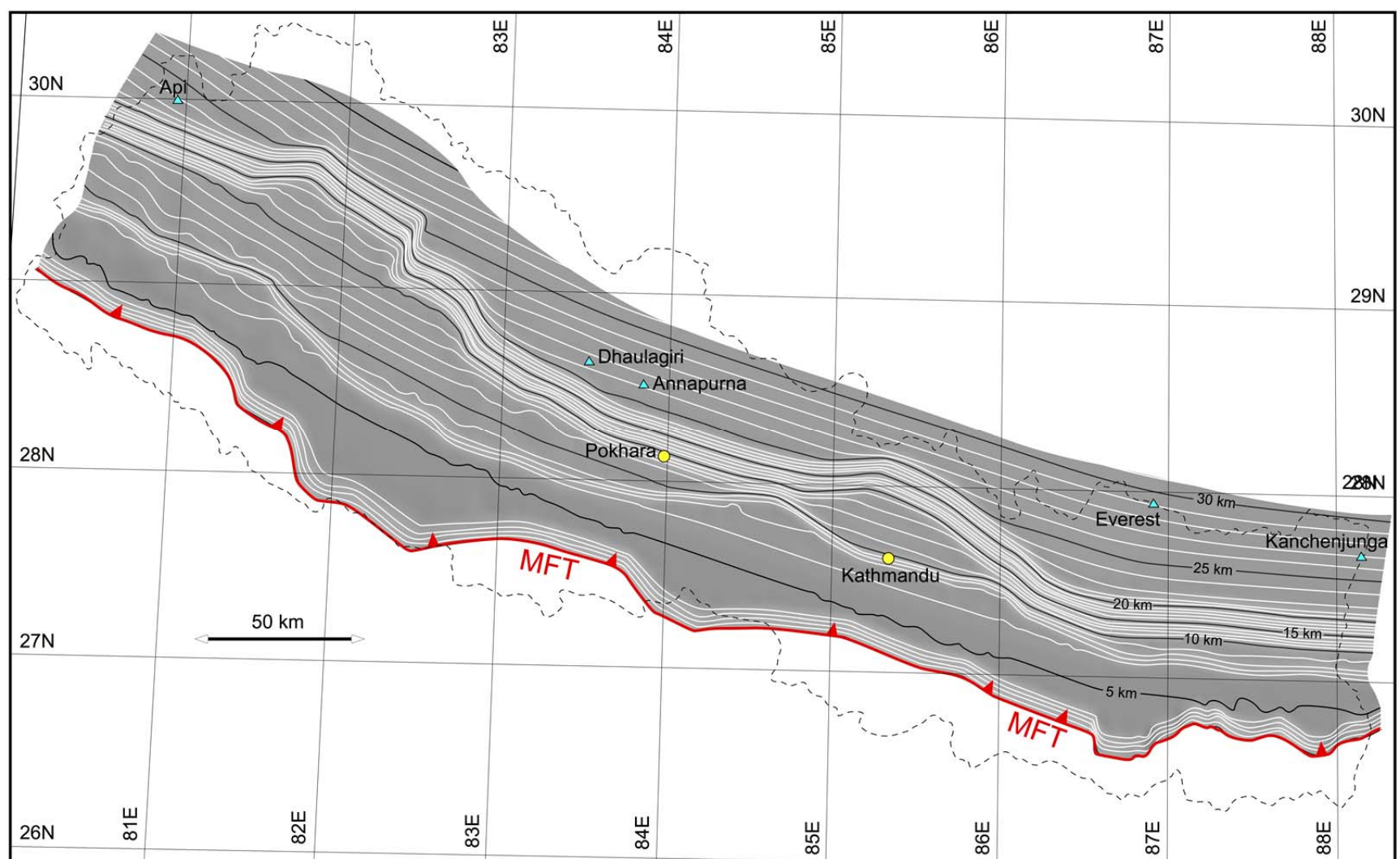


Figure DR4: Map view of Main Himalayan Thrust; the MFT is marked. White and black contours are 200 m and 1 km contours below sea level, respectively. Selected mountains and cities are shown. Dashed line represents national border of Nepal.

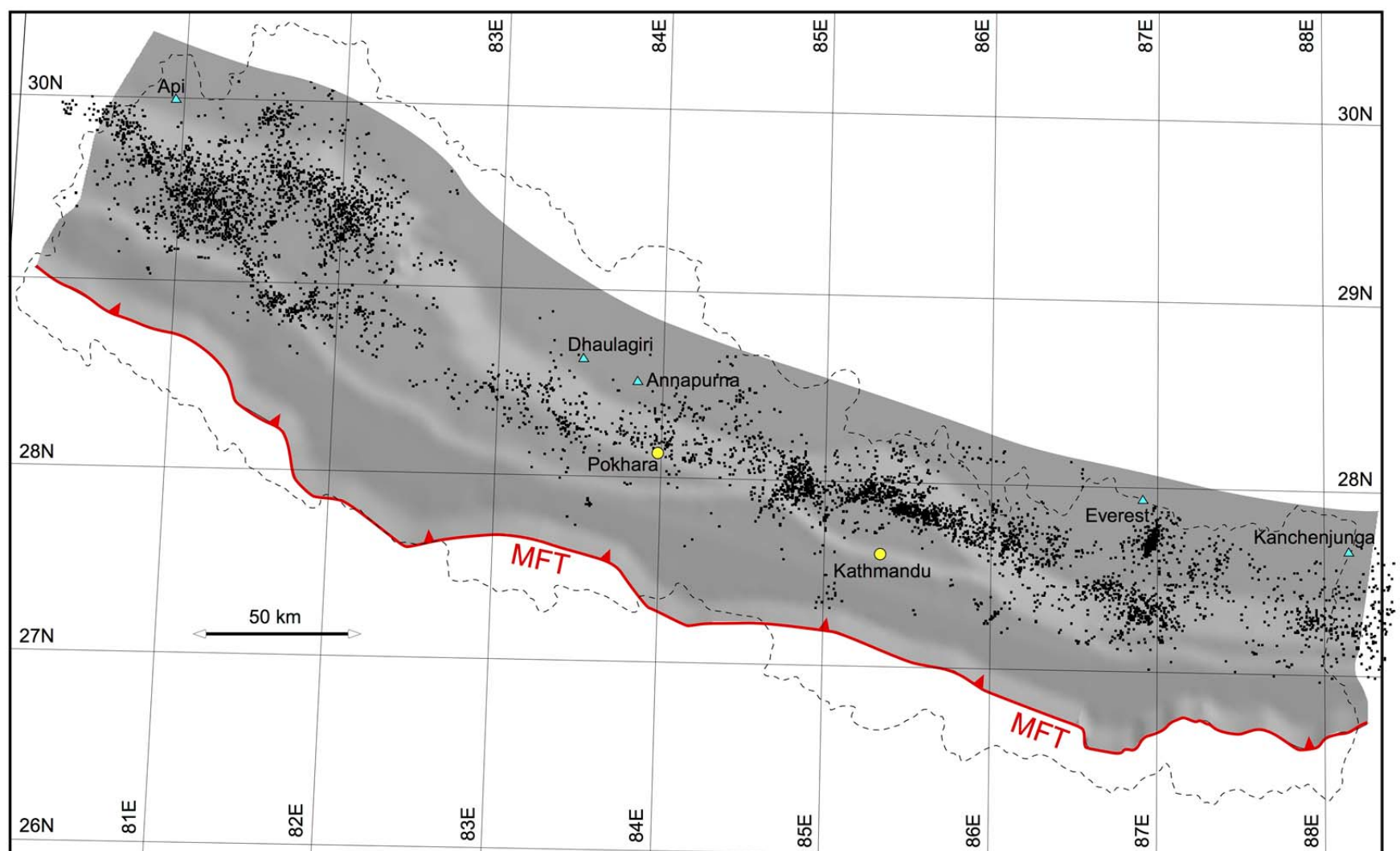


Figure DR5: Map view of Main Himalayan Thrust; the MFT is marked. Black dots represent microseismicity (1995-2001; Ader et al., 2012). This figure is an enlarged and edited version of Figure 4C. Selected mountains and cities are shown. Dashed line represents national border of Nepal.

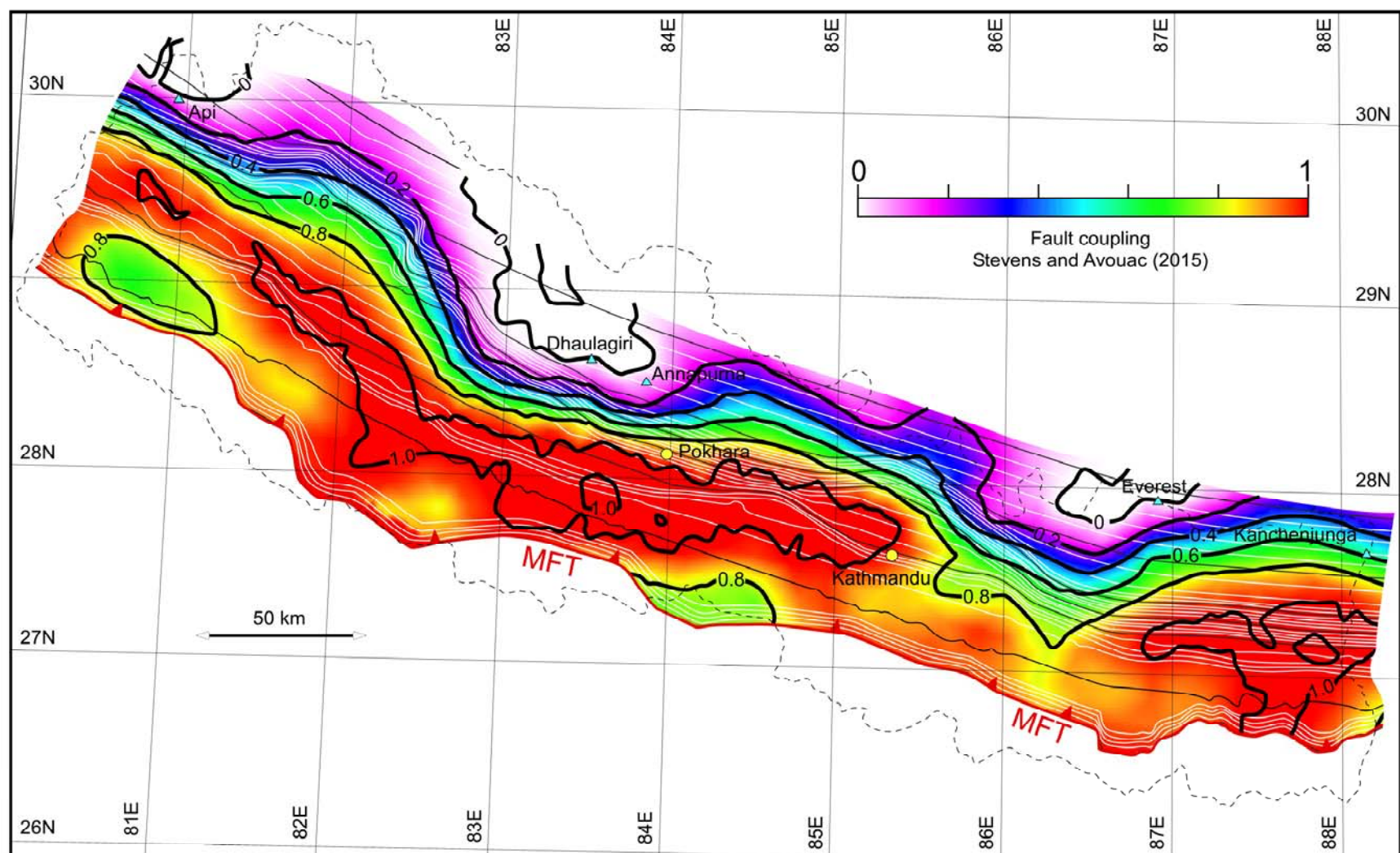


Figure DR6: Map view of Main Himalayan Thrust; the MFT is marked. Colors and thick black contours show fault coupling from Stevens and Avouac (2015). Thin white and black contours are 200 m and 1 km contours below sea level, respectively. Selected mountains and cities are shown. Dashed line represents national border of Nepal. Note that the coupling pattern seems to correlate with the geometry of the deep ramp in western Nepal, but in eastern and central Nepal the two datasets are decorrelated. The coupling contours in central Nepal are shown in Figure 4B.

Supplementary Figure References

Geologic map of Nepal, 1:1,000,000, 1994, Department of Mines and Geology of Nepal.

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Kohn, M.J.; Paul, S.K. and Corrie, S.L., 2010, The lower Lesser Himalayan sequence: A Paleoproterozoic arc on the northern margin of the Indian plate. *Geol. Soc. America Bulletin*, 122, 323-335.

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Stocklin, J., 1980, Geology of Nepal and its regional frame. *J. Geol. Soc. Lond.*, 137, 1-34.