



Figure DR1. Sample stream profiles from (A) Nepal and (B) Bhutan and (C) map view of deeply incised valleys for both regions. Model stream profiles (heavy dashes) are best-fitting exponential curves to actual profiles (heavy solid). Stream gradient index (SGI) is ratio of actual stream gradient to model gradient; horizontal line gives  $SGI = 1$ . Cross-valley curvature computed as second derivative of cross-valley profiles at valley center point; profiles spaced at uniform 5 km intervals along stream channel and oriented perpendicular to local stream direction. Black marks indicate profiles where cross-valley curvature is  $>0.02$ .