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FEM modelling of stress accumulation in the Friuli Venezia Giulia area

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n this study, the eastern part of the Southern Alps (northern Italy, Friuli V.G. Region) is the object of a numerical investigation to produce a realistic geodynamical model for the Julian Alps, Prealps and the adjacent Friuli plain. Surface deformation, structural and seismic data have been used for constructing the model cross-sections.

The strain accumulation, due to tectonic deformations, is investigated along two cross-sections, one in direction NE-SW, 15km deep and 80km long, and the other in direction N-S, 15 km deep and 70km long, using 2D elastic mechanical finite element models.

The model includes all the active primary and secondary tectonic structures (faults and crustal blocks). A major task was to create a mechanical model of the cross section with contact pairs reproducing as close as possible the physics of the fault zones. Preliminary results indicate a strong correlation between zones of stress accumulation and location of hypocenters.