



The July 2004 Western Slovenia earthquake: from localized fault-scale complexities to distributed deformation at the junction between the South-Eastern Alps and external Dinarides

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On July 12th, 2004, a magnitude 5.5 earthquake occurred close to Kobarid (NW Slovenia), right at the junction between South-Eastern Alps and External Dinarides. The earthquake occurred in the close vicinity of the 1998 magnitude 5.8 Bovec right-lateral strike slip faulting earthquake and 30 km far from the magnitude 6.5 Friuli 1976 thrust faulting earthquake. We study the July 2004 earthquake in terms of source parameters, aftershock distribution, coseismic deformation using GPS measurements made before and after the event. The “very coseismic” GPS results, within a 4 days time-span between the pre and post earthquake measurements are partly due to an alarm declared by prediction algorithms based on premonitory seismicity pattern (e.g. CN, RTP algorithms). The preliminary results of the July 2004 earthquake provide further insights on the interaction between the pure strike-slip Dinarides domain and the Alpine thrust faulting system. We discuss the interaction between the 1998 Bovec and July 2004 earthquakes in terms of structural complexities as exhibited by the geomorphology and seismology. We further elaborate on the redistribution of the stress based on elastic and visco-elastic modeling. We show how the fault-scale kinematics of the 2004 earthquake reflects the kinematics of the distributed deformation at the junction between the South-Eastern Alps and external Dinarides. Preliminary results of the crustal deformation based on campaign GPS measurements since 2002 will be also presented.