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cGNSS recordings at the Adria microplate northern boundary reveal fault-induced fluid diffusion during the seismic cycle.

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The analysis of long-term deformation signals at the northern tip of the Adria microplate revealed the surge of a transient signal. The correction for the hydrological loading effects, both at global, and local scale enabled to state its independence upon these, and a possible tectonic origin. This latter is confirmed by the location of its source close in space on the continuation of the seismogenic Ravne fault in the Bovec basin in W-Slovenia, and in time to the occurrence of the Bovec-Krn Mw=5.1 earthquake of 2004. A tomographic approach allowed reconstructing the 3D field of the propagation velocity and hydraulic diffusivity. Adding to this information other physical properties of the four most representative lithological formations of the region, we obtain the initial effective stress. The ratio of the effective stress and the lithostatic load calculated for different vertical profiles in the Bovec area indicates a state of overpressure, with pore pressure close to the value of the lithostatic load. In such conditions, the dilatation and formation of domains of interconnected fractures - i.e. of a porosity wave - that increasing the permeability relieve the overpressure, can contribute to restoring the equilibrium. Our results, hence, support the interpretation of the transient as due to a porosity wave, allowing to insert the phases of the seismic cycle in the Bovec-Krn area in a scenario very close to the Sibson's fault valve model.