

Refining Locations of the 2005-2006 Recurrent Earthquakes in Mukacheve, West Ukraine, and Implications for their Source Mechanism and the Local Tectonics

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A b s t r a c t

Three groups of recurrent events have been identified within the 2005-2006 Mukacheve series of about forty M_{SH} 0.3-1.8 near-surface earthquakes. After a cross-correlation analysis of their waveforms and subsequent relocation with application of the adjusted arrivals and station terms it turned out that they most likely belong to at least two distinct crustal layers separated by an interface at about 4 km; the seismic activation started deeper and progressed upwards. As concerns polarities of first arrivals, the same source mechanism was inferred within individual groups, indicating a normal faulting along the $Az \approx 120^\circ$ with a slight component of right lateral slip; this finding is consistent with data available on some other local sources, as well as with an ambient field of extensional stresses in the local crust and a significant horizontal gradient of vertical movements across the epicenter area of the Mukacheve series.

Key words: recurring earthquakes, cross-correlation, relocation, station terms, source mechanism.