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# Some seismotectonic characteristics of the Ljubljana Basin, Slovenia

M. Bavec (1), T. Ambrožič (2), J. Atanackov (1), I. Cecić (3), B. Celarc (1), A. Gosar (3,4), P. Jamšek (1), J. Jež (1), D. Kogoj (2), B. Koler (2), M. Kuhar (2), B. Milanič (1), M. Novak (1), P. Pavlovčič Prešeren (2), S. Savšek (2), O. Sterle (2), B. Stopar (2), M. Vrabec (4), M. Zajc (4), and M. Živčić (3)

(1) Geological Survey of Slovenia, Slovenia (milos.bavec@geo-zs.si), (2) University of Ljubljana, Faculty of Civil and Geodetic Engineering, (3) Slovenian Environment Agency, Office of Seismology and Geology, (4) University of Ljubljana, Faculty of Natural Sciences and Engineering

Seismicity of the Ljubljana Basin, the most densely populated area of Slovenia, is evaluated as “moderate” with a seismic hazard characterized by design ground acceleration of 0.25 g and expected intensity VIII EMS-98 for a return period of 475 years. So far the seismic hazard has been evaluated solely on the basis of historic seismicity, the largest event being the 1895 Ljubljana M=6.1 earthquake with Imax=VIII-IX EMS-98. Given that the Basin is situated at the tectonically active junction of Alpine, Dinaric and Pannonian tectonic domains and given that it is infilled by up to 280 m of relatively loose Quaternary sediments, efforts are being made in recent years to better constrain seismotectonic characteristics starting with a tectonic model and finishing with site effects.
The faults that are currently being evaluated as potential seismogenic sources are:
• Sava dextral strike slip fault; a geomorphically and geologically well expressed fault with recent displacement determined by GNSS measurement and representing the NE boundary of the Basin,
• Želimlje, Ortnek, Mišjedol and Žužemberk dextral strike slip faults (NW-SE striking) belonging to the Ljubljana - Imotski tectonic zone toward the SE and most probably passing the city of Ljubljana toward the NW,
• Borovnica dextral strike slip fault system (also NW-SE striking) as the W boundary of the Ljubljana Moor,
• WSW–ENE oriented reverse faults (Vič, Vodice) as structures in-between regional faults where the Vič fault may have formed due to formation of the transverse extrusion wedge between Borovnica and Želimlje faults, while formation of the Vodice fault may be explained as a secondary structure in the shear system between the Sava fault to the NE and the NW-SE striking faults to the SE.
According to current understanding of the tectonic setting, the structures with the highest seismogenic potential seem to be the NW-SE striking faults, although the earthquake catalogue does not indicate any significant clustering of events along any of these structures. Beside the geological and geomorphologic evidence such interpretation is also supported by preliminary results of high resolution seismic reflection profiling. Moreover, the earthquake intensity map of the 1895 earthquake may be interpreted in a way that it corroborates the idea that the most probable seismic source was one of the NW-SE striking faults. However, structures oblique to them, such as Vič and Vodice faults also exhibit characteristics of recent (coseismic?) displacements and can’t be discarded as potential sources. Paleoseismological study on these faults is ongoing, as well as interpretation of repeated terrestrial (micro-terrestrial networks and leveling) and GNSS geodetic measurements. Up-to-date results are presented.