



Hazard connected to tunnel construction in Mt Stena karstic area (Rosandra Valley, Classical Karst)

F. CUCCHI, W. BOSCHIN, L. VISINTIN, and L. ZINI

University of Trieste, Department of Geological Environmental and Marine Sciences, Trieste, Italy (lucavisintin@alice.it)

Rosandra Valley –a unique geomorphological environment– is located in the western side of the Classical Karst plateau. This deep limestone gorge is crossed by a stream that is fed by a large basin located in Slovenia. Rosandra Valley is the only example of Classical Karst river valley with surface hydrography; the torrent digs a deep gully into the rock, rich in rapids, swirl holes, small waterfalls, enclosed meanders and basins; here, the first seepage phenomena occur, and part of the water feeds the underground aquifer.

Rosandra Valley is theatre to complex structural situation; the NE slope culminates in the structure of Mt Stena, a limestone tectonic scale located between two faults and firmly rooted in the karst platform. Tectonics is quite important for the development of deep karst in this area; Mt Stena, in particular, hosts a comprehensive net of articulated and diversely shaped caves, basically organised on several levels, which stretches over a total of 9,000 metres, bearing testimony to ancient geological and hydrogeological origins.

The deepest areas of the system reach a suspended aquifer that is probably sustained by an overthrust and placed about 100 meters above Rosandra torrent underground aquifer.

During feasibility studies about Trieste-Divacà high velocity railway link, interaction between project and karst features was examined; in fact the proximity of proposal project and Mt Stena karst system suggest to improve the knowledge related to karst and hydrogeological aspects of the massif.

Compatibly with the project requirements, risk of voids intersection and water contamination were analyzed. In fact the Mt Stena suspended aquifer partially feeds Rosandra torrent which flows in a protected natural area.

Karst features were represented in a 3D model in order to better understand the spatial relationship between railway project and karst system.