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# Stability problems in apulian rupestrian settlements

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The large number of rupestrian settlement sited in Apulia region have had the possibility to born and to grow up also in order to the special geological and geomorphological habitat of the sites where are localised.

These sites since their origin they have suffered for an intrinsic fragility related to their constructive technique and to the distribution of the empty zone dug in the rock masses. In this way the actual stability condition are strongly conditioned by the continuous modification of the state of stress in the sandstone rock masses; due to complex distribution and concentration of stresses in the rock as an effect of the excavation activity and of the load transmitted by the buildings.

The sandstone rock has locally a low diagenesis degree and it is characterized by an high imbibitions coefficient. The detrimental micro-climate conditions has favoured chemical processes as decalcification of rock and biochemical corrosion processes; favouring loss of strength of sandstone and rock collapse and mutilations to the decorative and architectural elements. An important destabilization role is also played by rock joints due rarely to tectonic activity and more often to stress relief due the valley o to digging activity or to the applied loads. The relative movements between rocky blocks induce detrimental effect on the sites. An other detrimental effect is induced by the morphogenetic dynamics of the sub-vertical valley banks of the sites. These banks are affected by falls and toppling of rocky blocks and secondary by translation slide.