

Geo-environmental risk assessment around Qayitbay castle, Rosetta, Egypt, using remote sensing and GIS techniques

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Abstract

In this paper, the environmental risks and their effects on preservation issues are investigated for the archaeological area at Rosetta (Rashid “North of Egypt”), where the most famous Islamic monuments are located. The history of Rosetta is passed over different periods of historical value according to the political and economic situations. The main problem that faces the historic buildings of Rosetta is the salt coming from the soil moisture, caused by saltwater intrusion from the Mediterranean Sea. Over the past twenty years, the Ottoman buildings became the subject of many restoration tasks but most of them have been re-damaged due to the increasing level of the groundwater and humidity. Multi-temporal Satellite images have been used to detect all the changes mainly linked to the expansion of urban, water, and agriculture areas. This unplanned change in land use strongly caused witnessed disturbance in the levels of groundwater which, in turn (and along with changes in temperature), caused the deterioration process affecting the Qayitbay castle. Innovative solutions are created to support the preservation of the castle using GIS and remote sensing techniques.

Keywords; Risk, Qayitbay Castle, Remote Sensing, GIS, Egypt