Intraplate Earthquakes along the Nile Valley in Egypt

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As Egypt is a historical country, an extended earthquake catalogue is documented during the past 4300 years. Moreover, the seismic monitoring has been carried out in this country since 1898 with a single component seismograph located at Helwan twon, Cairo, Egypt. At present time, there is a national seismic network of 86 filed stations distributed over the whole country area. The seismic signals from field stations are transmitted by satellite and radio link to a central recoding unit located at Helwan. Both the historical and instrumental earthquake catalogues indicate that the Nile Valley is characterized by moderate size seismicity, which sometimes generates destructive shocks such the 1981 Lake Aswan and 1992 south Cairo earthquakes of M = 5.7 and 5.9, respectively. The seismicity of these two areas are here analyzed to demonstrate characteristics of the Nile Valley is an intraplate events. The data indicate that the earlier seismicity sequence of the two regions had occurred at depth in the crust (i.e., around 20 km depth); both events were followed by an extended micro earthquake sequence; they are situated along tectonic fault trends and the seismicity of both regions increases sometimes exhibiting burst of small magnitude events. They are however, characterized by: 1) different fault plane solutions and 2) in particular, the Lake Aswan seismicity bursts are significantly correlated to the water level changes in Lake. The change in seismicity pattern from a seismically-active place to another is mainly due to the local accumulated stresses of each active region. This study presents also a seismotectonic study of Egypt based on its both intra-plate and surrounding earthquake activity, tectonics and other related features

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