

1.5-P35. Seismic Monitoring of the Namaqualand-Bushmanland Region: developments

In the late 1970s a programme to find a suitable site for low- and intermediate-level radioactive waste was launched in Namaqualand-Bushmanland region. Vaalputs was identified and has been operational since 1986, and seismicity is one of several key factors monitored as part of on-going disposal operations. The seismic history of the region is evaluated so as to assess its long-term stability and geodynamic setting. The two-station network of short-period seismometers installed in 1989 was replaced with a three-station network in 2012, comprising one broadband and two short period seismometers. Data from this network, the South African National Seismological Network, and the International Seismological Centre is used to compile a seismic catalogue. A previously known cluster of earthquakes, with $M_{max} = 5.8$, termed the “Grootvloer cluster”, is found to consist of three distinct seismic source zones, namely: (1) the Springbok area - attributed to mining activities that ended around 2000; (2) the Great Escarpment area - attributed to continental margin instability, and (3) the Bushmanland Plateau area, which is not easily understood. This sub-cluster could reflect the strain in the upper/middle crust in response to a transpressional force known as the Wegener Stress Anomaly.

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