

The 2017 Botswana M6.5 Earthquake: Scientific Rapid Response

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An earthquake of magnitude M6.5 occurred in the evening of 3 April 2017 in Central Botswana. The event was well recorded by the regional network and located by both the Council for Geoscience (CGS) and United States Geological Survey (USGS). Its effects were felt widely in southern Africa and were especially pronounced for residence of Gauteng and the North West Province. In response to these events, the CGS, together with the Botswana Geoscience Institute (BGI), embarked on two scientific projects. The first involved the quick installation of a temporary network of six seismograph stations in and around the location of the main Botswana event with the purpose of detecting and recording its aftershocks. Initially the intention had been to record the events for a period of one month, but on realizing just how active the area was it was decided to extend the period to three months. Data recorded in the first month were collected and delivered to both the CGS and BGI for processing. Currently data recorded in April 2017 after the installation of the stations has been analysed and more than 500 located aftershocks identified. All are located at the eastern edge of the Central Kalahari Park near the location of the main event in clear two clusters. The observed clusters imply that a segmented fault is the source of these earthquakes and is oriented in a NW-SE direction. The second scientific project involved a macroseismic survey to study the extent and nature of the effects of the event in southern Africa. This involved CGS and BGI scientists conducting interviews of members of the public to extract as much information as possible. Other data were collected from questionnaires submitted online by the public. In total 180 questionnaires were obtained through interviews and 141 online from South Africa, Zimbabwe and Namibia. All collected data have been analysed to produce 76 intensity data points located all over the region, with maximum intensity values of VI (according to the Modified Mercalli Intensity scale) observed near the epicenter. These are quite low values of intensity for such a large event, but are to be expected given that the epicentral region is in a national park which is sparsely populated.