



A New seismic zone in Porto dos Gaúchos - MT

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Abstract

The biggest earthquake ever observed in all Stable Continental Interior of the South American plate occurred in Serra do Tombador (ST)/MT, in 1955. After that no other earthquake has been located close to ST. However, 100km to northeast of ST, in Porto dos Gaúchos (PG) a recurrent seismicity has been observed since 1959, when it arrived the first inhabitants to the region. Earthquakes continues to be detected in this area with the installation of the first seismic stations in the Amazon region in the end of 1970 decade. Two magnitudes 5 earthquakes occurred in 1998 and 2005 with intensities up to VI and V, respectively. These two main shocks were followed by aftershock sequences, both studied by local seismic networks lasting up today. Both sequences occurred in the same WSW-ENE oriented fault zone with right-lateral strike-slip mechanisms. Recently, on January 26 of 2015 we detected, 16km away from the PG seismic zone, another seismic activity with a main shock of magnitude 4.0. The new seismic area, is parallel to PG fault, with similar Focal Mechanism to the 1998 and 2005 seismic sequences. The graben and horst system in Parecis basin are perpendicular to the seismogenic faults. So, the seismicity in the north of Parecis Basin seems not to be related with stressed crust. Caiabís graben are located distant to the PG. Therefore, it is not responsible for the PG seismicity. Then, there is no relation between seismicity and geological lineaments. In light of new studies on Intraplate seismicity (e.g. Calais and Stein, 2009; Stein et al. 2009; Stein and Liu, 2009; Calais et al. 2016), it seems that the seismicity observed in north of Parecis Basin are interconnected: Serra do Tombador earthquake of 1955 Triggered Porto dos Gaúchos (PG) earthquakes and PG Triggered the seismicity of the new seismic zone. This work presents results of studies that has been made about this new seismic zone.

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