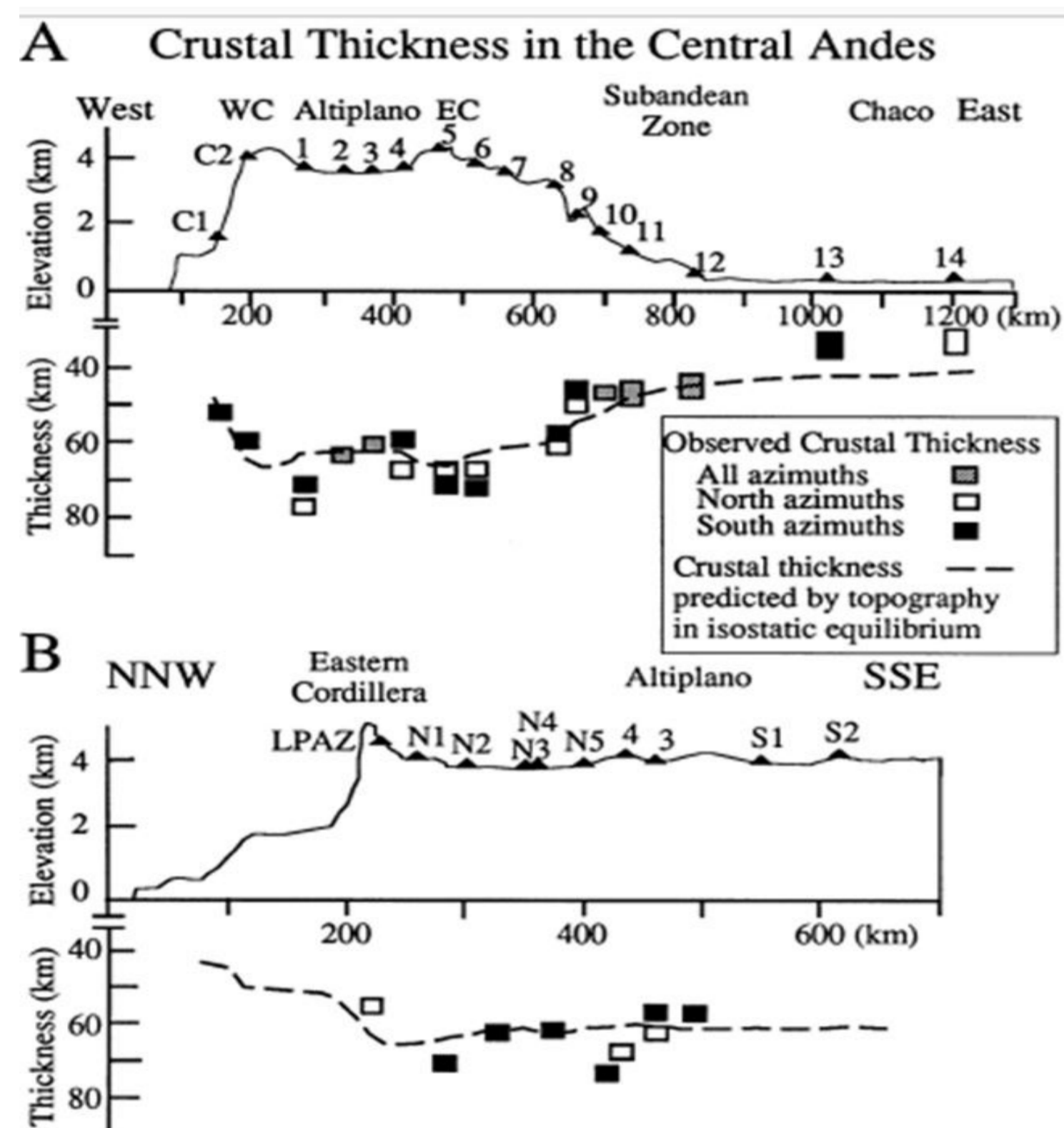
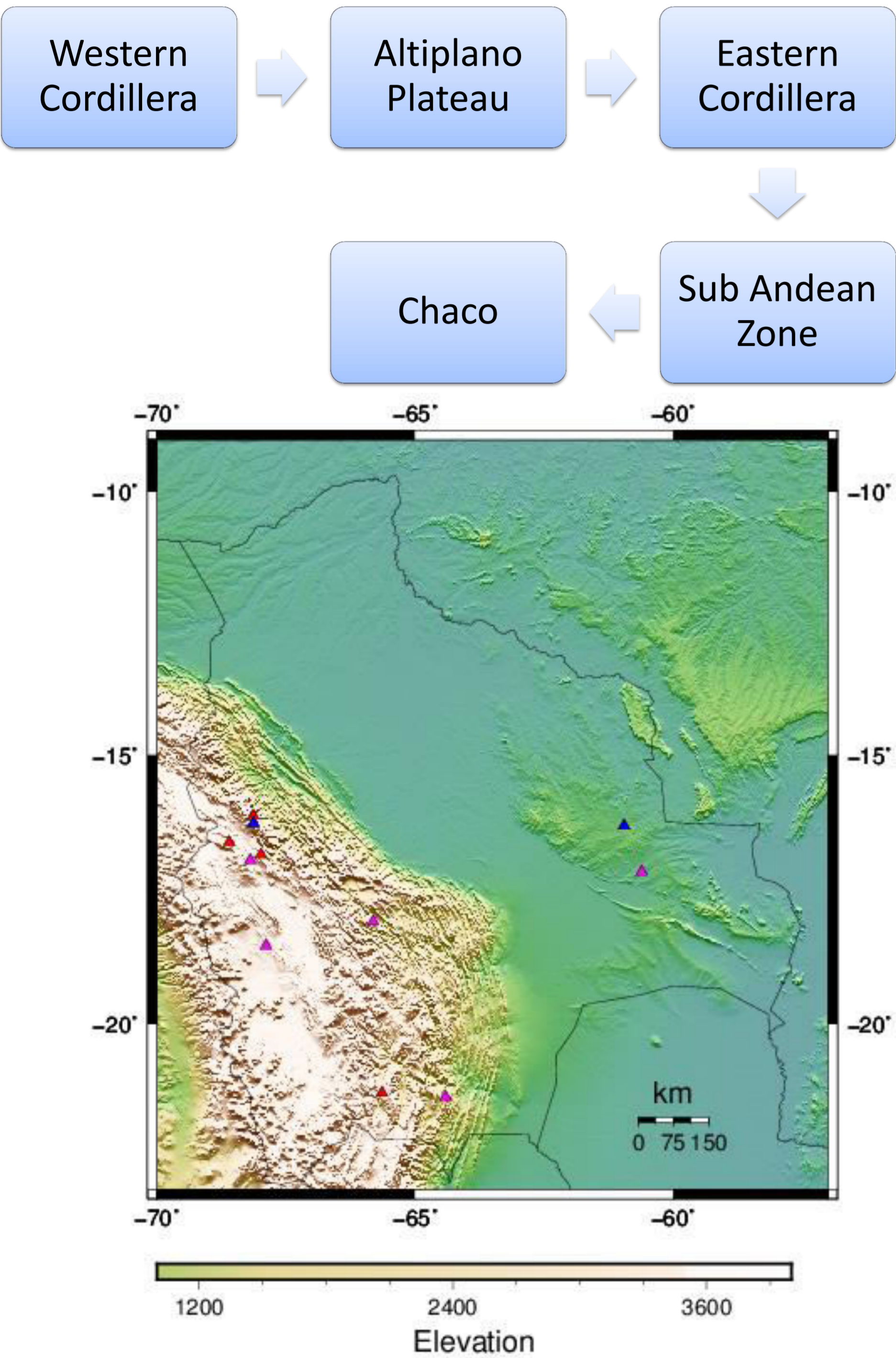




**Abstract.**

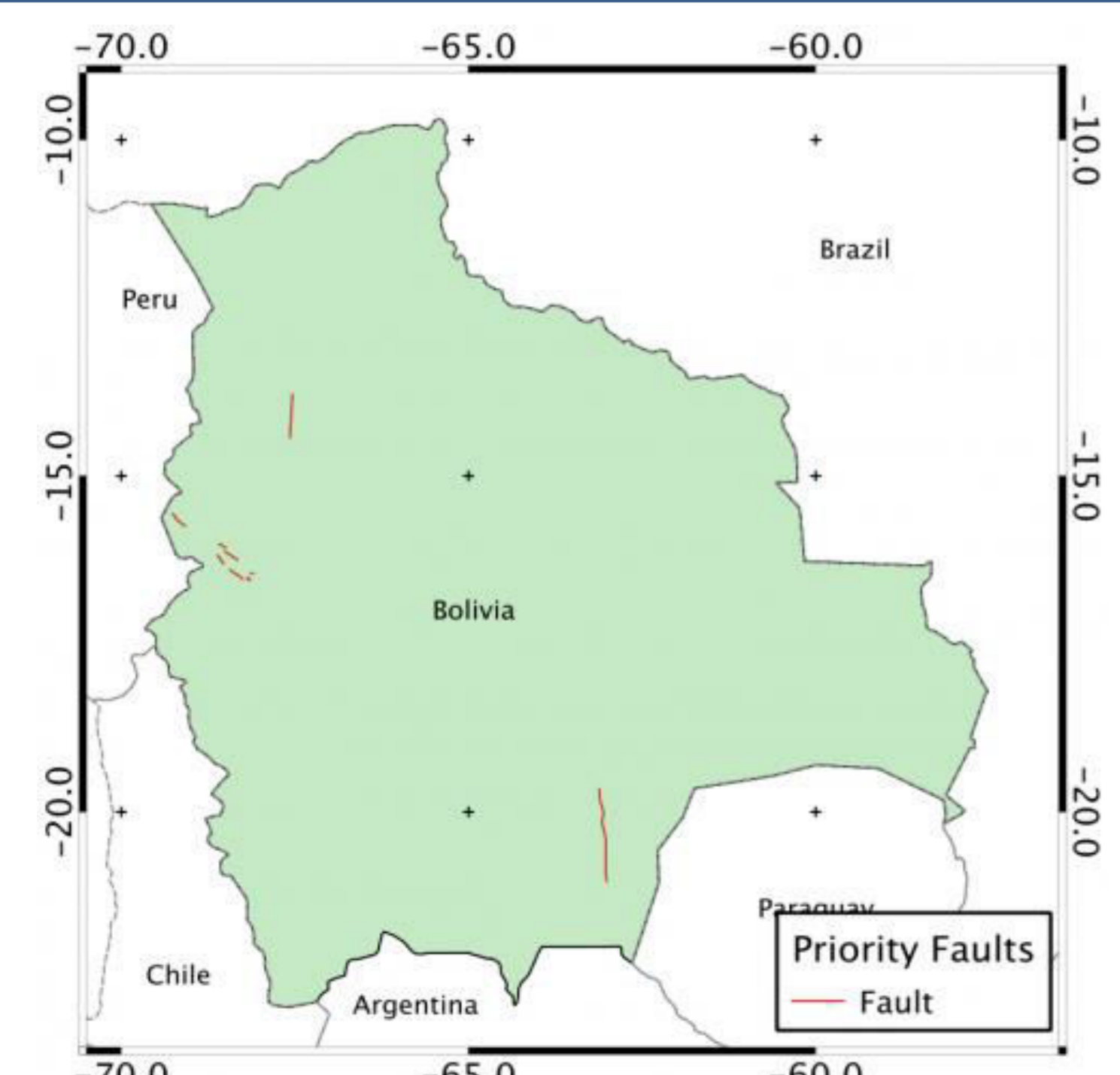
Shallow seismicity at the western side of Bolivia is not usual, particularly if it was felt at the capital cities and the impact is big enough to stop all activities from two to seven days. Obviously this kind of seismicity is related to geological faults which are plotted but not all of them are described. (By 'described' we mean that there is not a moment tensor solution.) On 1st October 2014 and 13th December 2016 there were two shallow seismic events in La Paz and Oruro City. Until now there were not a serious study involving the geologic framework, or the seismic event location determined by our seismic network plus the IMS stations (LPAZ and SIV), or the seismic wave correlation or finally the focal mechanic solution. Once we assemble all data, a classical seismic location was applied using the new 1D velocity model. The correlation was applied to get some family events, FOCMEC software was used to get the focal mechanics solution, and finally a field trip confirmed the focal mechanics solution, upgrading the information about the geological fault.

**1. Bolivia Tectonic Setting and Crustal Thickness.-**



**2. Last 10 years geological fault studies .-**

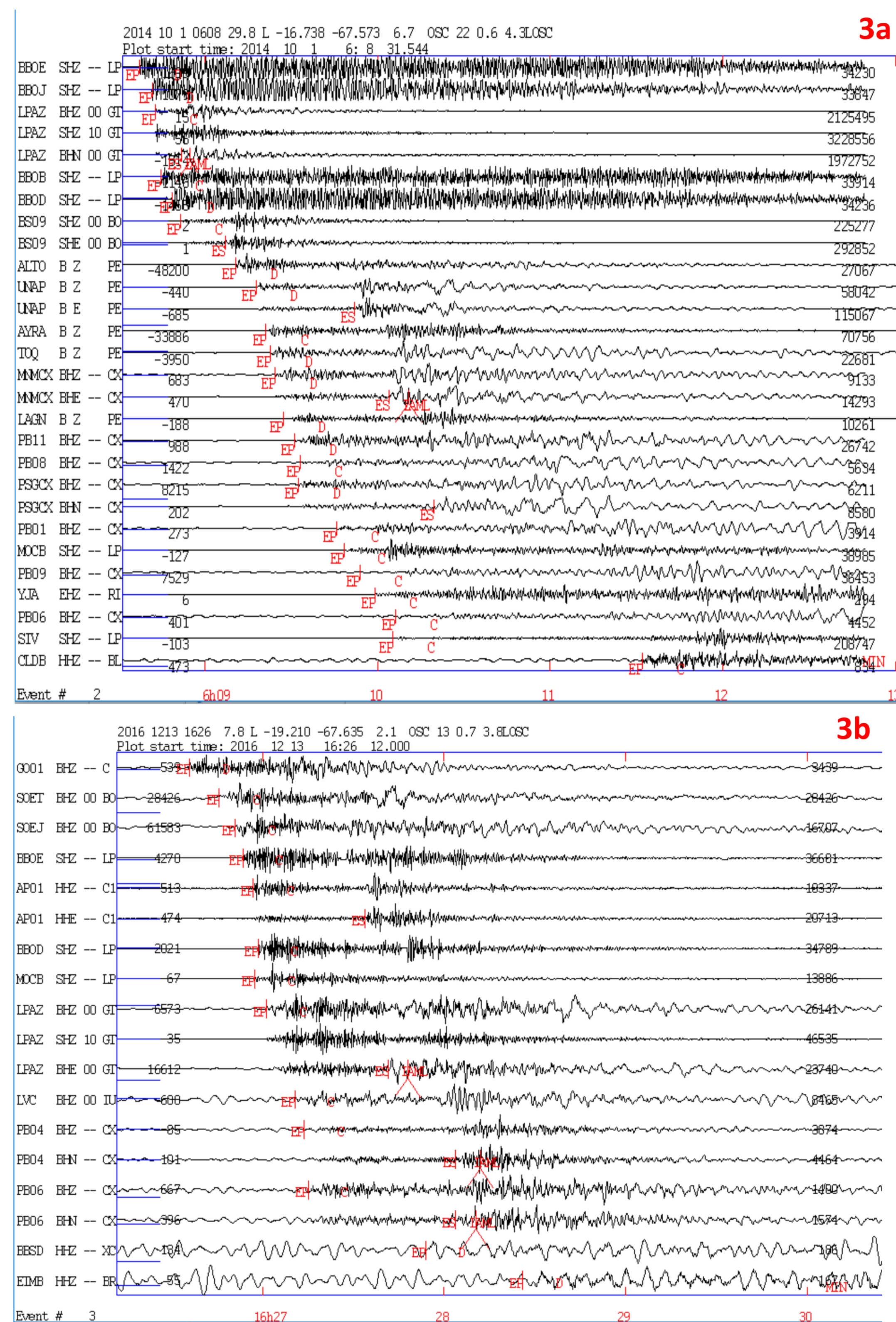
Based on Lavenue et al, (2000) a GEM – SARA T2 (2015) study were conducted in Bolivia to certify the potentially active geological faults



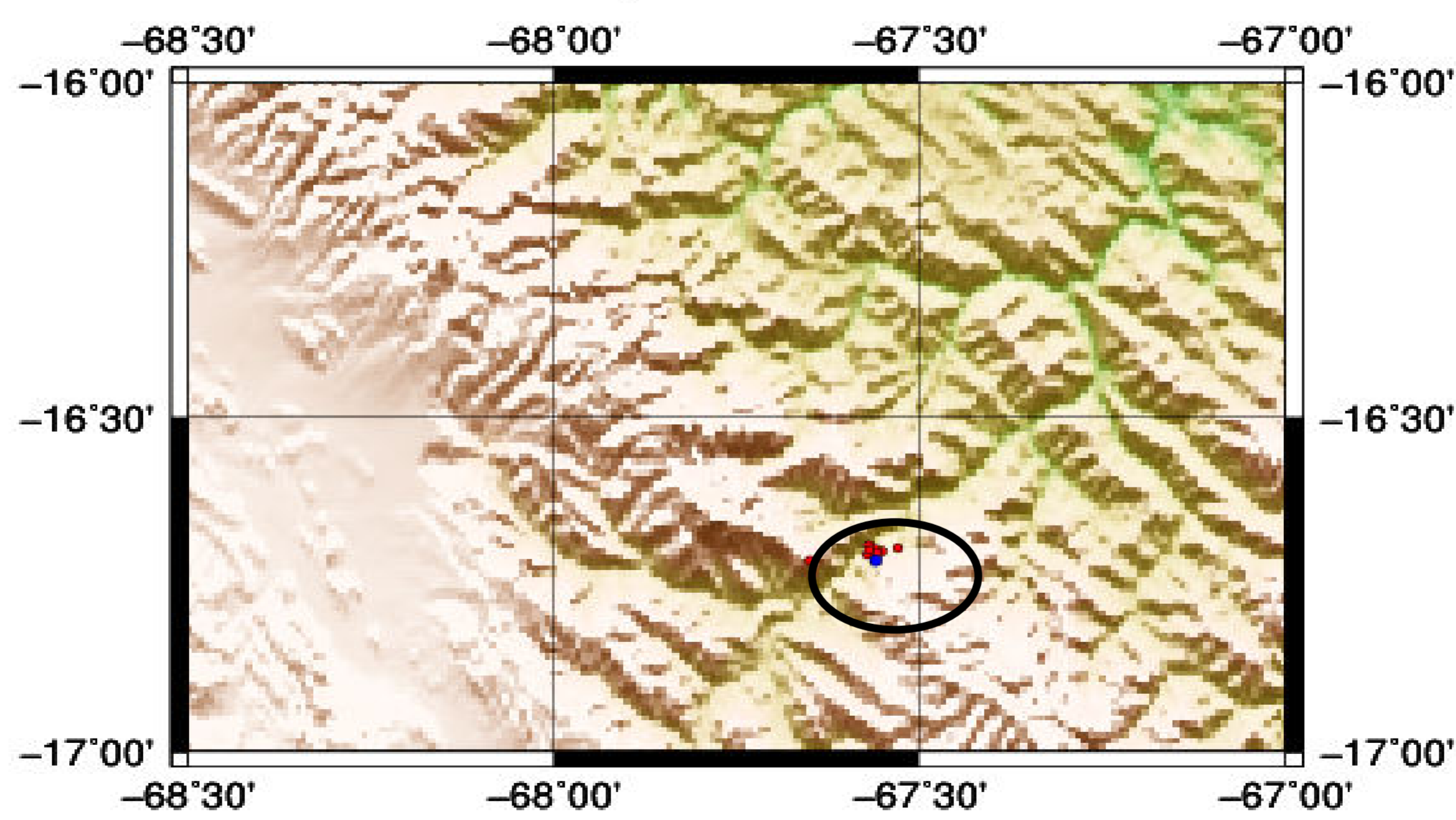
Due to the lack on Information only 20 potentially active faults were found all around Bolivia, Oruro for example was not included.

**3. Last Shallow Earthquakes on Altiplano.-**

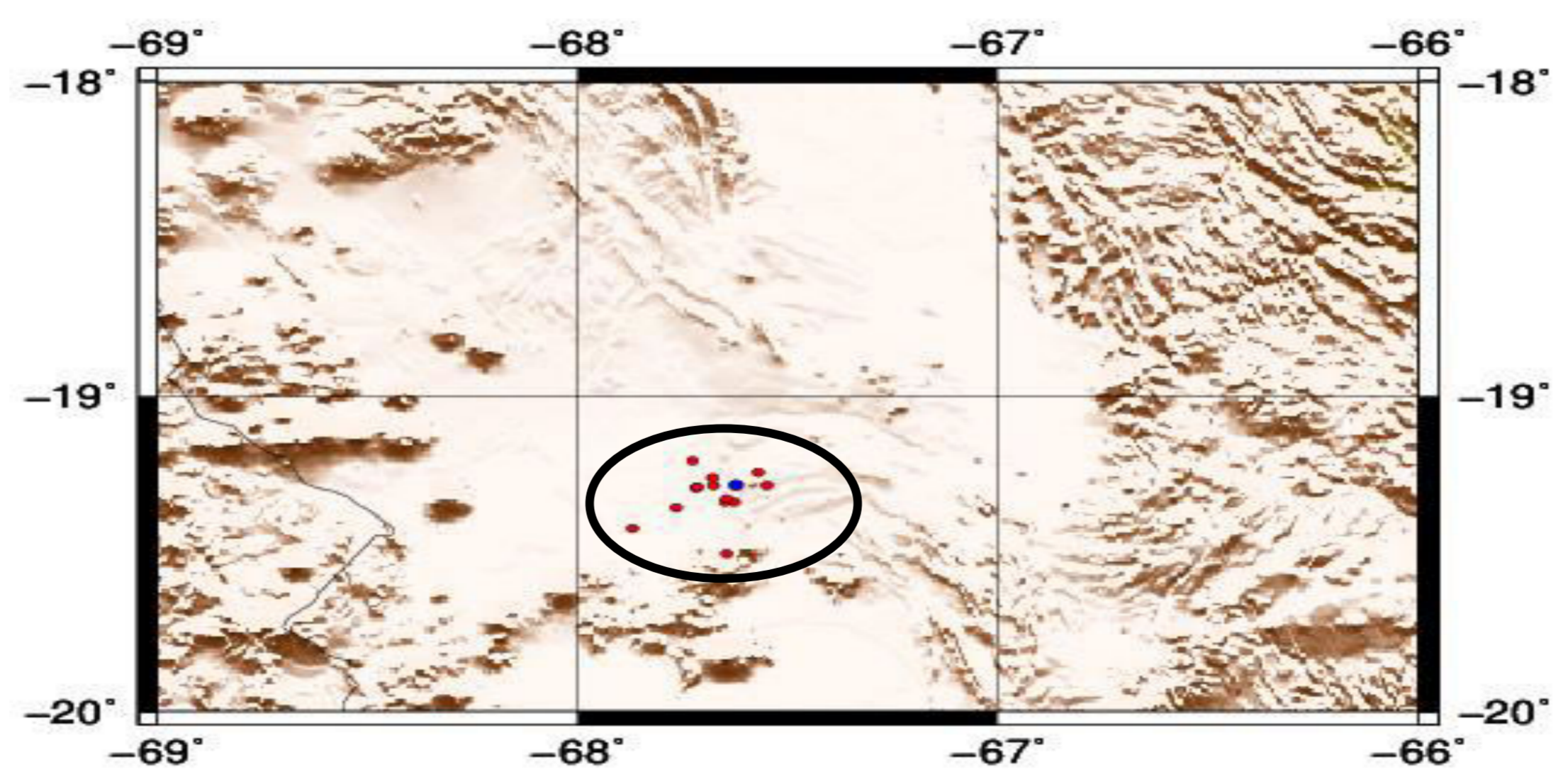
West Cordillera is well know for the inter – slab events, but on 1st October 2014 and 13th December 2016 happened two of the major earthquakes on the West Cordillera, near to La Paz (3a) and Oruro (3b), both events had more than 3 aftershocks



**Lloja Events**

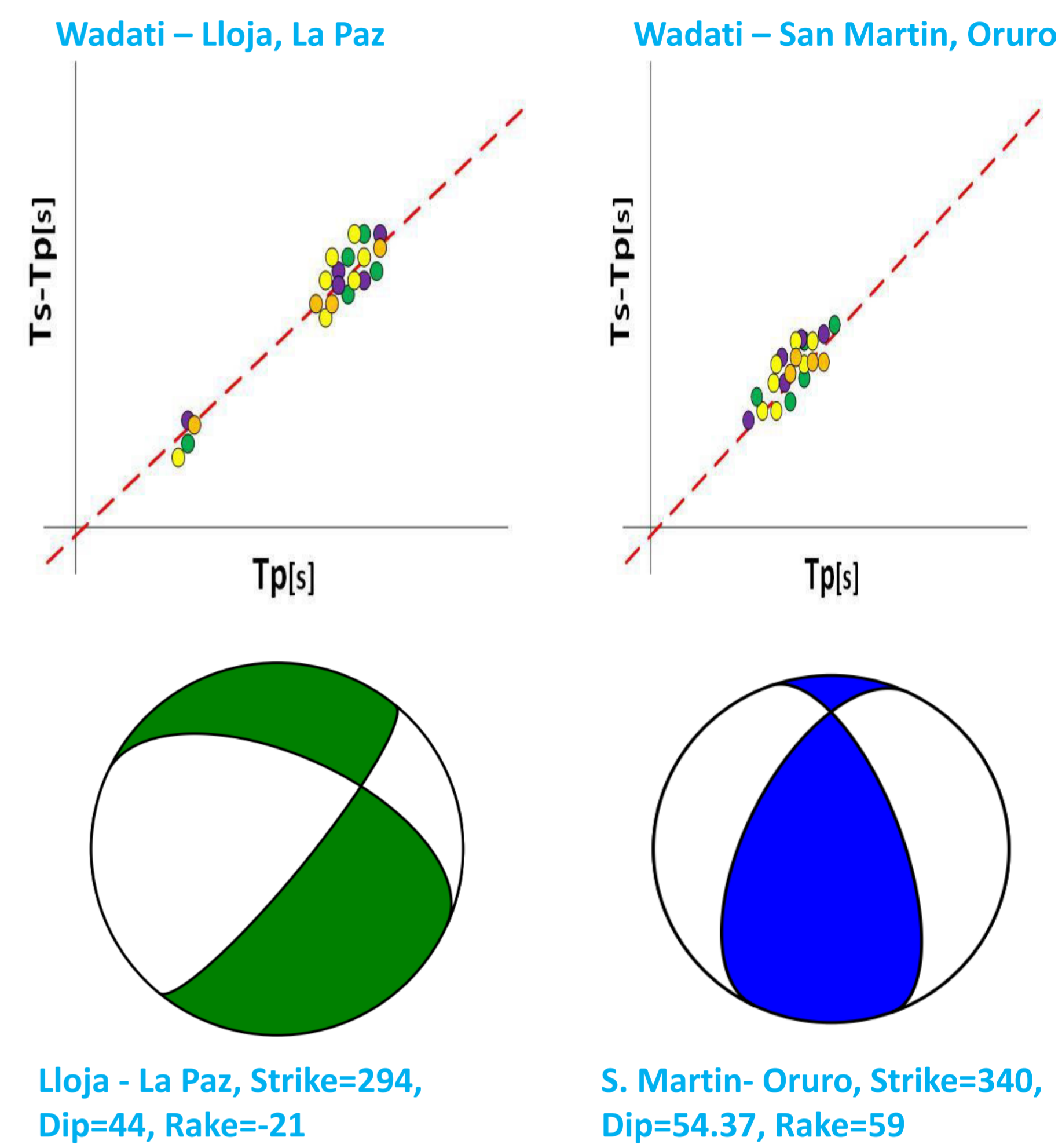


**Oruro Events**

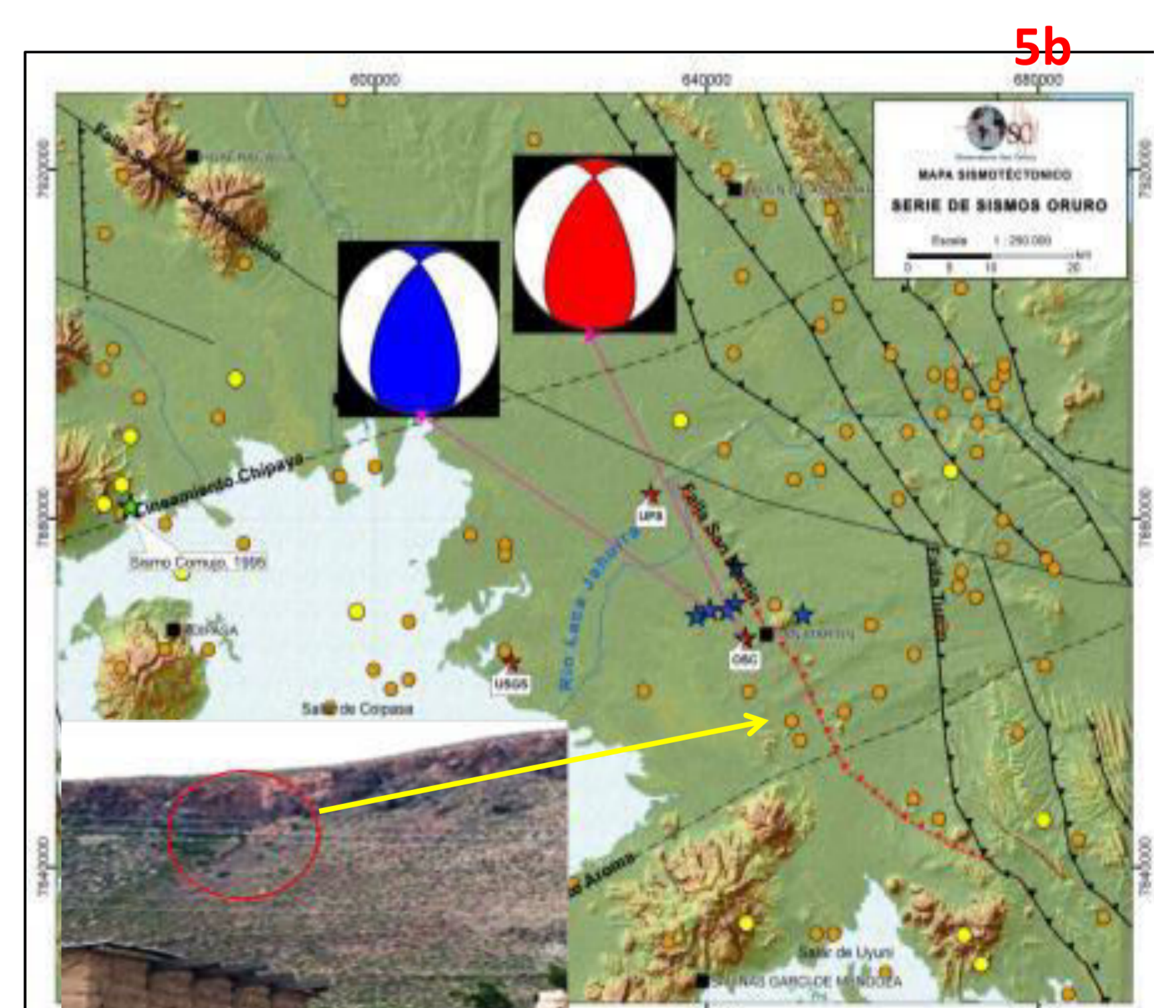
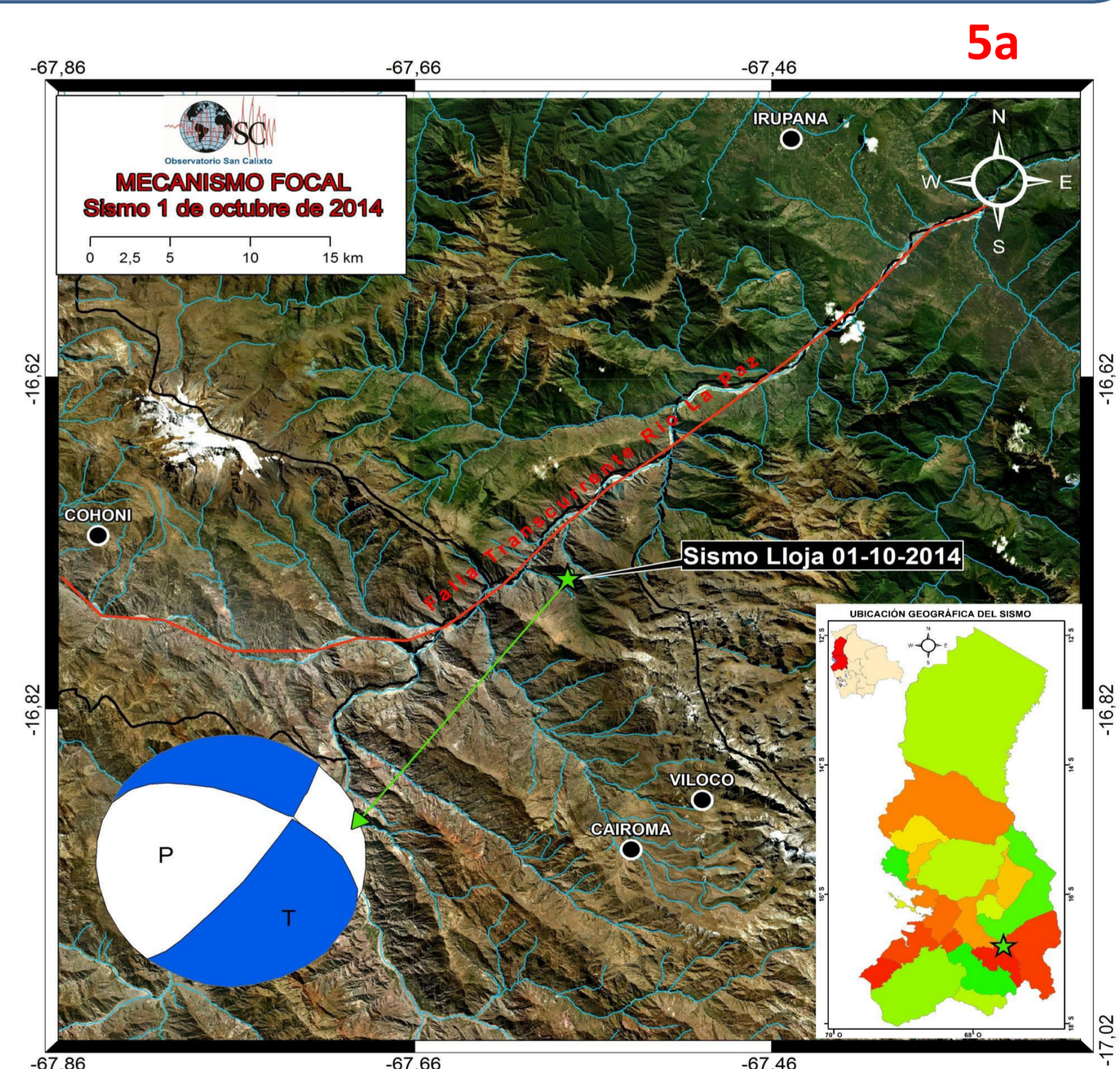


Information too basic on the geological maps, we must find and prove that at the Altiplano has active system faults to trigger shallow earthquakes

**5. Is there a Fault System there?.-**



The focal mechanic solution of most of them (including aftershocks ) gave us some tips to know if there is a fault out there, doing the field work we found in Lloja (5a) and San Martin (5b) the plane fault that fit with Focal Mechanics solutions



**6. On going work – Conclusion .-**

- A. Both Foc. Mec. Solutions were probed on a field trip, they are now validated in the Geological Service.
- B. The new geological faults have the name Lloja Fault and San Martin Fault.
- C. After 15 years we introduced new faults scientifically proved to the national catalog