ID: Type: **Oral**

T2.3-O1. A new, improved and fully automatic method for teleseismic depth estimation of moderate earthquakes (4.5<M<5.5) and an application to the Guerrero subduction zone (Mexico)

We have developed a new, blind and fully automatic teleseismic depth estimation method, insensitive to epistemic uncertainties due to depth-phase picking and identification. It consists of a modification of the cepstral analysis (Letort et al., 2014), which aims to detect surface reflected (pP, sP) waves at teleseismic distances (30°-90°) through the study of the spectral holes in the shape of the signal spectrum. This new method is adapted for complex sources, emergent P-waves arrivals and for complex P-coda showing several phase's arrivals. We first validate this method in different tectonic contexts (eg. Nepal, Chili, GT5 catalog, worldwide seismicity), using CTBTO arrays and stations from the IRIS network. The use of CTBTO arrays allows us to deal with lower magnitude earthquakes (around M=4). We then provide an improved view of the Guerrero (Mexico) subduction geometry, by combining new depth estimations with an analysis of the phases reflected on the subduction interface and recorded on the CTBTO arrays. This study shows no important lateral variations of the geometry, suggesting that the lateral variations of Slow Slip Event properties observed for this area by Cavalié et al., 2013, are related to interface frictional property changes.

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Track Classification: 2. Events and their characterization