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SEISMIC ANISOTROPY OF THE NORTHEASTERN ALGERIA FROM SHEAR WAVE SPLITTING ANALYSIS

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In northeastern Algeria, study of the seismic anisotropy through the analysis of teleseismic shear-wave splitting leads to improve our knowledge of the lithosphere deformation mechanisms in this region. From the recent installation of several BB stations in this part of Algeria, we conducted study of the waveform data generated by many tens of teleseismic events recorded at five broadband stations. These stations installed in Constantine (CASM), Guelma (CABS), Khenchela (CBBR), Biskra (CDCN) and Sétif (CKHR) covered a large area from the Tellian geological units in the north to the Saharian Atlasic units in the south.

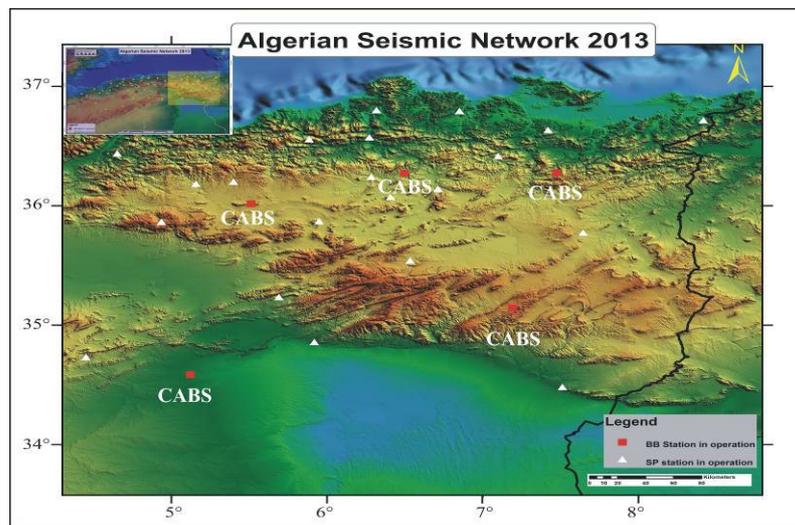


Figure 1: Geographical distribution of Algerian seismic network stations in north Algeria (Yelles Chaouche et al 2013)

From data analysis, significant variations in the fast polarization directions are observed. A first NE-SW direction set is observed at all stations. This polarization direction, following the same direction of the Tell Atlas mountain chain, is perpendicular to the convergence direction between Africa and Eurasia. The delay times, presents a significantly variation between 1.1 and 1.7 sec, and the anisotropy direction varies between 60° and 85°.

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At CKHR, CBBR, CABS and CASM stations, a second fast polarization direction with a NW-SE orientation has been detected. Its delay times vary significantly between 0.6 and 1.8 sec, and the anisotropy direction is -72° . This second observed direction is in relation with a later geodynamic evolution phase of this region. This first seismic anisotropy study of the northeastern part of Algeria

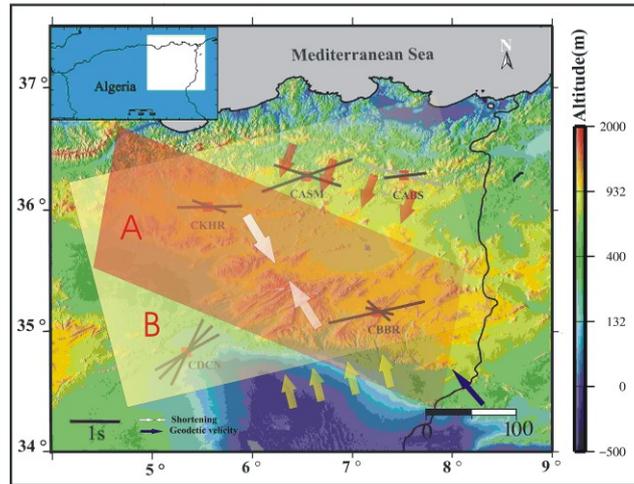


Figure 2: Directions of topography (a) and (b), and the white arrow indicate the shortening direction, blue arrow indicate geodetic velocity (Nocquet et al 2004).

Outlines two stress directions which affect the northeastern part of Algeria. Then, it represents information on effects of the collision between Africa and Eurasia plates in southern part of the Mediterranean Sea.

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