Oral | Symbol S (Solid Earth Sciences) | S-SS Seismology

[S-SS26_30PM1] Crustal Structure

Convener:*Ayako Nakanishi(Institute for Frontier Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology), Chair:Ayako Nakanishi(Institute for Frontier Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology)
Wed. Apr 30, 2014 2:15 PM - 4:00 PM 315 (3F)

The aim of this session is to cover seismological and geophysical studies on the Earth's crust. Contribution on seismological and geophysical structure of the crust, processes that develop in the crust which include earthquakes, volcanoes and geological descriptions of the crust are welcomed. We also welcome theoretical and methodological studies that will serve as basics in such explorations.

3:15 PM - 3:30 PM

[SSS26-P15_PG] Seismo-stratigraphy and structure of the Adventure Plateau (Sicily Channel): an example of old data recovery

3-min talk in an oral session
Dario CIVILE¹, *Hakan ALP², Emanuele LODOLI³, Jacques CENTONZE¹ (1.Istituto Nazionale di Oceanografia e di Geofisica Sperimentale, 2.Istanbul University Department of Geophysics)
Keywords:Sicily Channel, Adventure Plateau, seismo-stratigraphy, synthetic seismograms, structural setting

We present here a seismo-stratigraphic and structural study of the Adventure Plateau, the north-westernmost sector of the Sicily Channel. This bank, where water depths do not generally exceed 150 m, is the shallowest part of the whole Sicily Channel, with relief which sometime rises up to less than 50 m. This analysis is based on a large set of multichannel seismic profiles and well information acquired mostly for commercial purposes in the 70s and 80s. Despite the general poor quality and consistency of the data used, it was possible to draw with sufficient detail the various seismo-stratigraphic sequences, calibrated with well information. The sedimentary sequence crossed by wells in the Adventure Plateau comprises deposits ranging from Triassic to Plio-Quaternary. A broad lithological distinction can be made between the sequences ranging from Triassic to Middle Miocene, predominantly carbonate, and the sequences ranging from Tortonian to Quaternary, predominantly siliciclastic. Moreover, we observe in the wells the presence of various hiatuses, particularly at the top of the Miocene and at the Early Jurassic. Three main structural domains have been identified within the Adventure Plateau: (a) a compressional belt in the N-W part of the bank, deformed during Middle-Late Miocene, and corresponding to the SW-trending offshore part of the Maghrebian Chain; (b) the Adventure foredeep of the Maghrebian Chain, located in the central part of the bank, and filled by over 2000 m of siliciclastic Late-Miocene to Quaternary deposits; (c) the Adventure foreland of the Maghrebian Chain, corresponding to the S-W part of the bank, affected from the Early Pliocene by a strong extensional phase associated to the Pantelleria Graben rifting. The eastern boundary of the Adventure Plateau is part of a broadly NS-trending, lithospheric-scale transfer zone which separates the Sicily Channel into two distinct sectors. This study shows the potential and capability of old data in areas where there is scarce geophysical knowledge. They represent an important source of information, especially for the shallow water areas of the Sicily Channel that are still poorly known in terms of geology and stratigraphy.