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Integrated stratigraphic and basin modeling study of a frontier offshore area :The Colorado basin, Argentina

Exploration in frontier areas requires the review of all the available information either specific to the study area or taken from analogous basins. The realisation of basin evolution simulations allows to evaluate the functioning of the petroleum systems.

The Colorado Basin (160000 km²), located in the Atlantic margin of Argentina, records 12000 meters sediments mainly explored by seismic since the '60. Eighteen exploration wells provide geological data from Upper Cretaceous to Quaternary. The exploration of the deep waters (1000-3500 m) began with the last 2D seismic shot on 1999. Existence of an active petroleum system is proven by several oil shows.

The aim of the study was to assess the location of the generative source-rocks and review the basin hydrocarbon potential.

This multidisciplinary approach includes pre-stack depth migration, deep-sea-bottom core, radar oil seeps detection and refraction seismic acquisition. All the data were used for stratigraphical and basin modelling.

Stratigraphic modelling (Dionisos[®]) first constrained the facies distribution and reservoir properties.

The results of the stratigraphic simulations, calibrated on the seismic analysis, were integrated in the basin modelling (Temis3D[®]) which provides the kitchen evolution for the different potential source-rocks. Migration efficiency was tested for the most relevant prospective areas.

The results of this work highlights the exploration potential of the Colorado Basin, in particular the Repsol --YPF operated blocks, which are in strategic location near to important humans and industrial centers.