AAPG Datapages/Search and Discovery Article #90254 ©2016, GEO-2016, 12th Middle East Geosciences Conference & Exhibition, Manama, Bahrain, March 7-10, 2016

Carbonate petroleum plays associated to the Mesozoic rifting in the Adriatic area (Central Mediterranean region)

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ABSTRACT

The widely extended sabkha type Triassic Carbonate platform of the present day Central Mediterranean area ended in the lower Jurassic when its eastern part started top break apart with an initial rifting stage that produced two separate carbonate platforms separated by an intracontinental basin. The two carbonate platforms are the Apulian Carbonate platform to the west and the Adriatic Carbonate platform to the east. The basin (Adriatic basin) in between was never characterized by the generation of oceanic crust.

The carbonates deposited in the Apulian platform and in the Adriatic basin host some of the largest oil discoveries in this region and are now carefully reevaluated as the major targets for the new exploration campaigns active in the Adriatic Sea region.

The Jurassic and Cretaceous rifting phases produced a new organization of the depositional setting with the deposition in the area between the platform margin and the distal basin settings of various types of deposits produced and shed by the carbonate platform. These deposits were caused by high-energy catastrophic events related to the tectonic or gravitational collapse of the platforms margin or by turbidite currents controlled by carbonate production rates; sea level variations and tectonic activity.

The accumulated sediments can vary from massive megabreccias to turbidites. With their thickness, dimension and distribution strongly controlled by palaeotopography they can represent prolific, albeit elusive, exploration targets. During the Mesozoic and the lower Cenozoic rifting phases the Apulian Platform and the Adriatic Platform produced enormous amount of sediments accumulated in the basins separating the two platforms.
The deposition within the basin of the lower Jurassic excellent source rock, the Posidonia beds, and other intervals with similar source rock potentials allows to identify a main petroleum play in the area associated to the re-sedimented carbonate deposits related to the rifting phase with the associated basinal source rock deposits.

These deposits outcrop extensively in Italy, Croatia and Albania and represent excellent analogues for some of the offshore Adriatic discoveries and for some of the plays identified in the basin and that will be targeted by future exploration activity.

This study demonstrates how the study of carbonate platform margins outcropping in peri-Adriatic areas is of fundamental help in interpreting seismic data for exploration play definition.