

THE ROLE OF PASSIVE CONTINENTAL MARGIN AND THE IMPACT ON STRUCTURAL STYLES AND PROSPECTIVITY IN THE CENTRAL MEDITERRANEAN

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ABSTRACT

Understanding the geological evolution of a basin and particularly, any phases of deformation is the key to successful petroleum exploration as it allows one to place the elements of the petroleum system within a tectonostratigraphic framework. Underlying structures have been found to influence the locus of deformation and types of structural styles in a variety of prospective sedimentary basins and this project forms part of an ongoing research theme by the research group investigating the effect and control exerted by underlying basement structures and lineaments on later tectonic episodes.

This study focuses on the offshore Central Mediterranean, an area with a particularly complex and long-disputed geological history. The nature, location and timing of the major tectonic elements is still uncertain and this may be partly due to lack of recognition of the influence of underlying lineaments on the subsequent deformation. The project makes use of subsurface seismic data, well logs and onshore mapping in order to investigate the role of the passive continental margin precursor geometries on structural styles within and outboard of a fold-and thrust system and their impact on petroleum systems. The first phase of the study concentrated on the deformation of the Alpine thrust belt in the Central-Southern Mediterranean with particular focus on the prospective areas lying to the south and west of the island of Sicily. Preliminary results suggest that pronounced curvilinear shape of the thrust system and the rigid buttresses either side formed in response to the geometry of the underlying precursor continental margin. The second phase of the study focuses on the Apulian foreland where similar curvilinear features have been identified. Particular focus will be given to two key areas namely; Istrea, NW Croatia and the Ionian islands of Western Greece. Both areas are currently receiving attention of exploration companies, yet are underexplored. Consequently, the study will also give insights into the potential petroleum maturation, migration and preservation of hydrocarbon systems in those areas.