

## **Multi-Scale Stratigraphic Architecture of Carbonate Ramps Series (Example from the Lias–Dogger Transition, High Atlas, Morocco)**

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### **Abstract**

Carbonate ramps have been described since 1970's as a type of carbonate shelf. Ramp profiles are defined by an overall depositional slope lower than 1 degree. They differ from the more inclined rimmed carbonate platform that can reach up to 70 degrees of slope. Consequently, facies changes are progressive in ramp setting and rather abrupt in rimmed shelf/platform settings. Due to the  $n \times 10$ km size of the ramp systems from shoreline to offshore environments, complete outcrops section are rare. Recent and modern examples of ramps are also limited. The study of ramp systems is therefore less advanced than for rimmed carbonate platforms.

Super-giant fields such as Ghawar (Saudi Arabia) and North-Dome/South Pars (Qatar/Iran) contain astounding amounts of hydrocarbons stored in carbonate ramp facies. New exploration opportunities and field developments in the Middle East made the study of carbonate ramps critical for carbonate researchers in major oil-companies and in Universities in the last 10 years.

This talk will present one of the best outcrop examples of ramp depositional systems located in Morocco where a complete Jurassic dip section is exposed along a 35km $\times$ 1500m cliff alignment (Pierre et al. 2010). It will be compared with some modern sedimentary systems in the Persian Gulf. The nature of the sediments, the hydrodynamism, and the climatic conditions as well as their interactions and their cyclicity are investigated and discussed. The main result is a set of well-understood sedimentary processes that help predicting size and properties of reservoirs at the scale of high frequency cycles.

### **Reference Cited**

Pierre, A., Durllet, C., Razin, P., and Chellai, E. (2010). Spatial and temporal distribution of ooids along a Jurassic carbonate ramp: Amellago outcrop transect, High-Atlas, Morocco. Geological Society London Special Publications, vol. 329, pp 65-88.