SOUTH CHINA SEA OCEANOGRAPHIC IMPACT ON THE LUCONIA PLATFORMS OFFSHORE SARAWAK, MALAYSIA

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PROJECT OBJECTIVES

- To investigate whether the demise of the carbonate platforms in the Luconia province was influenced by the strengthening of currents sweeping across the province.
- To assess the relative importance of oceanographic factors compared to sea level and tectonics, influencing the geometry and dolomite distribution of the platforms in the Luconia province.

PROJECT RATIONALE

For the past three decades, the morphology and reservoir distribution of the carbonates in the Luconia province has been discussed in terms of eustasy, tectonics and clastic input (e.g. Vahrenkamp et al, 2004; Menier et al., 2014). The impact of oceanographic changes in the South China Sea (SCS), in particular the changes in atmospheric and ocean circulation, is much less studied. Although it has been hypothesized that waves, winds and ocean currents impacted carbonate platform growth, and ultimately their

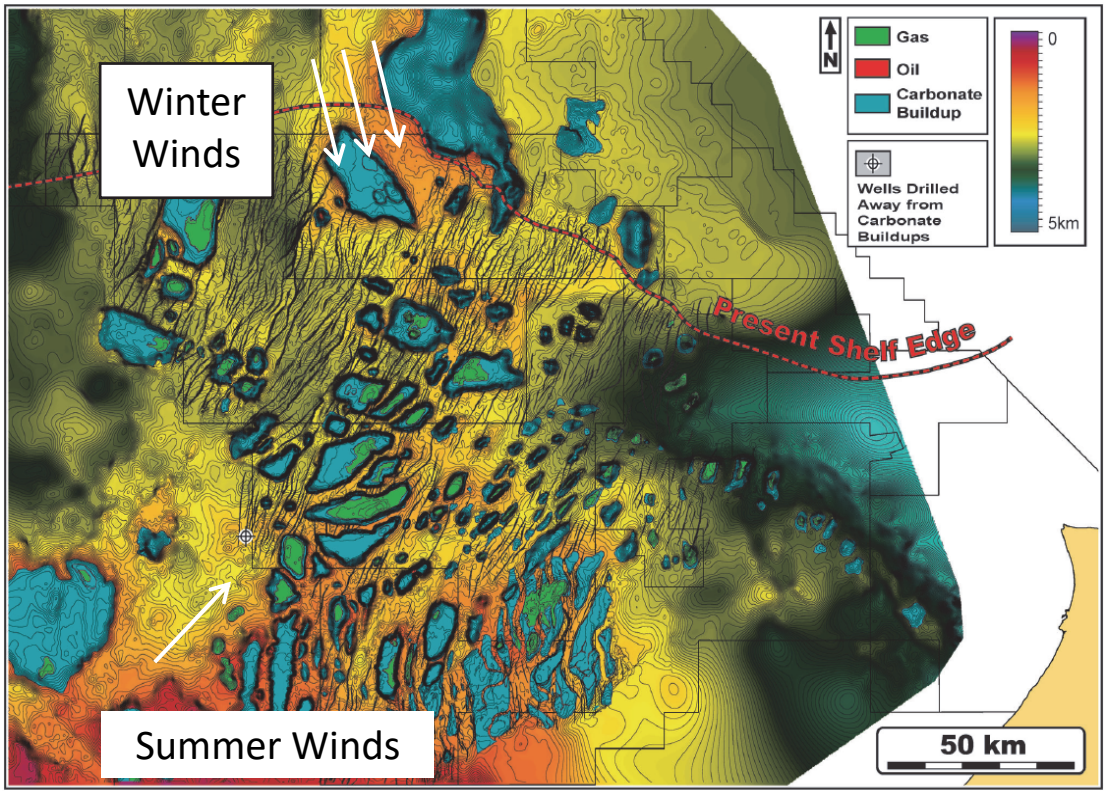

Figure 1. The Luconia carbonate province, offshore Sarawak, Borneo, in the South China Sea. The white arrows show the East Asian Monsoon wind patterns (Modified after Kosa, 2015).

demise, no precise mechanism was proposed (e.g. Bracco Gartner et al., 2004). There is increasing evidence that oceanographic changes, in particular the onset of strong ocean currents, have caused or at least contributed to the drowning of platforms on the Marion plateau and parts of the Maldives. Thus, we evaluate if the oceanographic changes influenced the platform demise in the Luconia province.

DATA SETS AND SCOPE OF WORK

A large 2D and 3D seismic data set, provided by PETRONAS, that also includes core and log information, will be systematically searched for geometries indicative of current deposits, such as moats or mounded features in the off-platform areas that have been documented in the Luconia Province (e.g. Koša et al., 2015). The onset of the current system and the platform demise will be studied by comparing the age of the platform drowning with the base of the basinal (drift) deposits. The age will be constrained using available well and biostratigraphic data. We will also investigate if changes in platform architecture correlate with the oceanographic events and if the dolomite distribution is indicative of changes in upwelling currents.

SIGNIFICANCE

Understanding the impact of the SCS paleoceanographic changes on the evolution of the Luconia carbonate platform will provide new insights regarding the influence of currents on the platform architecture and platform demise. Findings from this research can be applied to other carbonate platforms in the SCS region and potentially to many drowned isolated platforms. Furthermore, trends recognized in the sedimentary record of the Luconia province will shed light on the history of both the East Asian monsoon and the Western Pacific Warm Pool.

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