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 the East Asian monsoon.
- To assess the relative importance of oceanographic factors, compared to sea level and tectonics, influencing the geometry and facies 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. Epting, 1980; Vahrenkamp et al., 2004; Ting et al., 2011; Menier et al., 2014) while the impact of oceanographic changes in the South China Sea (SCS) is much less studied. Although it has been hypothesized that waves, winds and ocean currents impacted the carbonate platforms, no clear mechanism was proposed (Gartner et al., 2004).

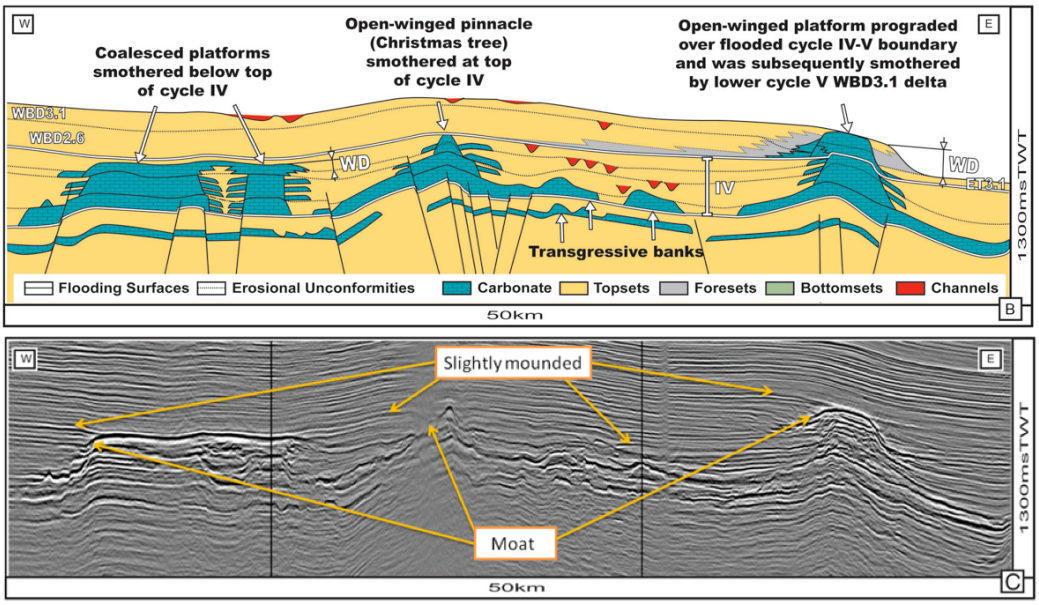

Figure 1. A semiregional section showing a range of carbonate-siliciclastic configurations characteristic of Central Luconia (Modified after Koša et al., 2015 (B) Schematic drawing of stratigraphic relationships interpreted in section by Koša et al., 2015 (C) Characteristics of seismic geometry that may be caused by ocean currents and aid in platform drowning.

There is increasing evidence that oceanographic changes, in particular the onset of strong ocean currents, have contributed to the drowning of platforms;

for example, the Marion platforms (Eberli et al., 2010) and parts of the Maldives (Betzler et al., 2009). Thus, we propose to evaluate if the oceanographic changes, which acted in concert with tectonic and sea-level changes, influenced the platform demise in the Luconia province.

SCOPE OF WORK

This research will focus on the Neogene environmental impact on Luconia carbonate platforms. To estimate the timing and causes of the drowning we will focus on the pre-, syn, and post-drowning strata by determining their ages and composition. Seismic 2D and 3D will be used to identify the seismic expression of current activities at the bounding surfaces. 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.

SIGNIFICANCE

Understanding the impact of the SCS paleoceanographic changes on the Luconia carbonate platform evolution will provide new insight on the drowning mechanism. 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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