

SO292 ICECARB

Towards an understanding of carbonate platforms in the icehouse world

RV SONNE

15. May – 21. June 2022

Nouméa – Nouméa (New Caledonia)



1st Weekly Report

14. - 15.05.2022

The scientific party of cruise SO292 arrived at Nouméa in the late evening of the 13th of May. We boarded the research vessel SONNE on the morning of the 14th, and after a COVID testing we could begin setting up the laboratories and the gears. The containers have all been loaded on the vessel prior to our arrival, and the crew had already unloaded the heavy equipment. Cruise SO292 will use an interdisciplinary approach to verify the hypothesis that tropical carbonate platforms since the onset of the middle and late Miocene global cooling (i.e. during the last 10 – 15 million of years) are strongly controlled by ocean currents. It is proposed that the modern carbonate platforms are in an "icehouse world mode".

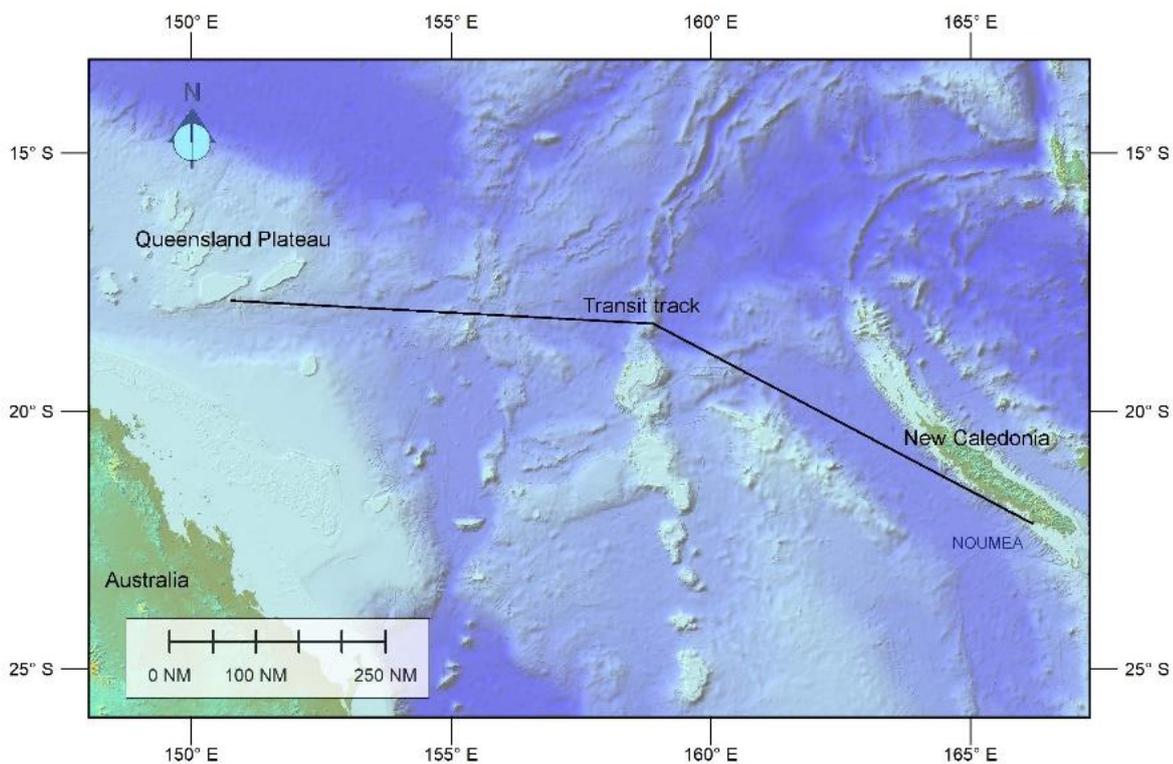


Fig. 1: Transit track from Nouméa to the Queensland Plateau.

Four aims will allow achieving this goal: By linking seismic reflection- with stratigraphic data from Ocean Drilling Program Leg 133 sites at the Queensland Plateau carbonate platform (NE Australia), the backstepping of carbonate bank margins will be understood. Here, the focus is on the mapping and correlation of current features such as submarine dunes, drift bodies or current moats. Recent and youngest depositional processes of the carbonate banks will be analyzed with multibeam and Parasound determining ocean current impact on the carbonate source to sink system (e.g. sediment thickness distribution, slope instabilities).

The direct observation of the seafloor will be performed by the ship's own OFOS (Ocean Floor Observation System) and the ROV MOHAWK. Sedimentary variations with regard to carbonate bank exposure to currents and wind will be analyzed via sediment composition (grain size, texture, components), linking geological and geophysical data. To assess how the carbonate banks exposed to ocean currents disturb the water mass stratification, CTD stations will be measured up- and downcurrent of the buildups.

All scientists performed an antigenic COVID test in the early morning of the 15th of May, results were all negative. The pilot arrived at 9 am local time, and SONNE departed for the 900 nm transit to the first working area located at the southern margin of the Queensland Plateau, just south of the Tregrosse Reefs platform. After a first CTD measurement to assess the structure of the water column a first hydroacoustic survey will be performed. The transit time will be used to finalize the setup of the labs and for science talks. We are looking forward and very eager to start our research and to acquire the first data.



Fig. 2. Scientists board RV SONNE in Nouméa (Foto: Thomas Wasilewski).

Everyone is in good health and sends his greetings home.

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