

# SO290 Paleooceanography of the Tasman Sea



RV SONNE

SO290 – Paleooceanography of the Tasman Sea

15<sup>th</sup> April – 12<sup>th</sup> May 2022

Nouméa (New Caledonia) – Nouméa (New Caledonia)

1<sup>st</sup> Weekly Report

(11<sup>th</sup> – 17<sup>th</sup> April 2022)

Cruise SO290 is a cooperation between the Institute of Chemistry and Biology of the Marine Environment (ICBM) of the University of Oldenburg and the Alfred-Wegener-Institute Helmholtz-Center for Polar and Marine Research in Bremerhaven. Together with scientists from the Leibniz Institute for Baltic Sea Research Warnemünde (IOW), the University of Otago, New Zealand, the Lamont-Doherty Earth Observatory of Columbia University, USA, and the University of Birmingham, UK, we want to study the oceanographic and climatic history of the Tasman Sea and the South Island of New Zealand. The Tasman Sea stretches from mid to high southern latitudes, encompassing subtropical to subantarctic waters. Latitudinal shifts in the boundary between these waters are tightly linked to climatic changes in the Southern Hemisphere, which in turn influence glacier advances/retreats in the southern Alps of New Zealand. At depth, water masses formed in the high latitude Southern Ocean are transported northward at intermediate (~1000 m water depth) and bottom (>4000 m water depth) depths, communicating Southern Hemisphere climate signals into the Pacific Ocean and the global ocean conveyor. Additionally, the Tasman Sea receives nutritious dust from Australia and sediments from New Zealand's southern Alps.

Understanding the link between continental and marine climate and ocean circulation changes over the last glacial-interglacial cycles is one of the main scientific goals of our cruise. As a prerequisite to our reconstructions of past conditions and changes, we will need to understand the current situation and particularly, the factors influencing the parameters we will use as indicators or 'proxies' of past conditions, such as the faunal composition and geochemical element distribution in the Tasman Sea and their incorporation into the sedimentary archives.

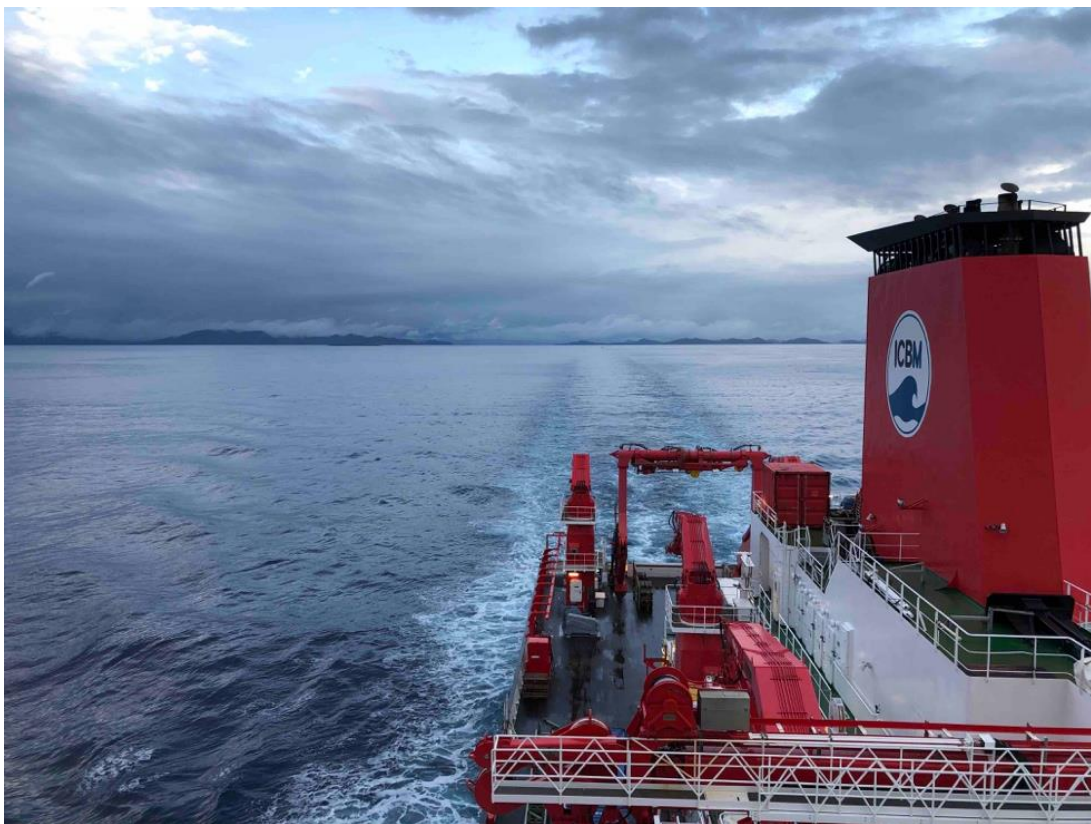
Our work in the coming weeks will therefore focus on the recovery of sediment cores from the New Zealand coast offshore into the Tasman Sea, different water depths and seawater samples from the entire water column.

Preparation for our cruise was marked by precautionary measures with respect to the Corona pandemic as well as Corona-related hurdles we had to take in order to get our scientific equipment on board. Arriving in Nouméa, New Caledonia, from five different countries (Germany, UK, New Zealand, USA, Chile) and gathering in a confined space on the research vessel required caution and discipline from all parties involved to ensure that we were able to embark on our endeavor. Full vaccination including booster and several PCR and rapid antigen tests with negative results were necessary before boarding the ship. Additionally, strict hygiene rules and further daily testing on the SONNE are still part of our daily life. We have so far been lucky to have had no Corona cases since arriving in Nouméa and we are of course hoping for the best.

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Our planned departure on April 11, however, was delayed by the late arrival of the containers with our scientific equipment, despite their initially scheduled arrival in Nouméa on March 12. This is a reflection of the current difficulties in cargo shipment and unfortunately out of our direct control. We had packed and sent off the containers from Germany in mid-January this year, knowing that extra time was needed for the transport. But not every situation and delay can be anticipated and accounted for ahead of time. Of course, this delay and loss of several valuable working days onboard RV SONNE massively affects our envisaged program for SO290. Nevertheless, we were delighted when our containers arrived alongside the ship around noon on April 15, were loaded, secured on deck, and we were able to depart Nouméa at 4 pm on a track to the south.



*Fig. 1: Departure from Nouméa (SO290)*

Since our departure we have been busy unloading the containers and setting up the labs. One of our instruments, the multi corer (MUC), had to be assembled (see fig. 2) and the weights (2-3 tonnes) of the gravity and piston corers, that we will use to recover long (10-25 m) sediment cores, were put in place. With the great support by the crew, this all went smoothly and we are now excitedly awaiting our first station that will mark the real start of our cruise and work at sea. Wind is currently increasing to 6-7 Beaufort and wave heights are in the range of 3-4 m, giving us a flavor of autumn in the Tasman Sea after leaving the subtropics of New Caledonia.

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Fig. 2: Assembly of the multi-corer (SO290)



Fig. 3: Preparations in the 'water lab' (SO290)

We are very grateful to everyone who made this cruise possible. We thank the German Research Fleet Coordination Centre at the University of Hamburg, the captain and doctor of the SONNE, the shipping company Briese, the Agent AMSUD in Nouméa, LPL Projects + Logistics GmbH and the PTJ for their great support and the BMBF for funding the cruise.

Greetings from RV SONNE at 30.9°S, 165.4°E!

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You can also follow our activities on board via our blog: <https://icbm-auf-see.uni-oldenburg.de/en/blick-in-die-vergangenheit/>