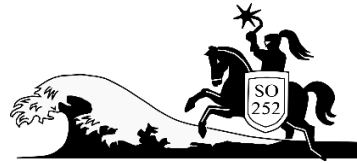


SO252: Ritter Island

3. Weekly Report



This is the third weekly report of cruise SO252 "Ritter Island". On Tuesday morning we reached our working area off Ritter Island. After a CTD cast for the determination of the water sound profile for the hydroacoustic systems, we tested the release units for the ocean floor seismometers. Based on these tests we decided to prepare eleven devices for deployment. After lunch we started with the deployment of the 2D seismic system and from 3 pm onward we started acquisition. In the course of the next three days (until Friday evening), we then acquired 650 km of 2D seismic data on the inner part of the Ritter Island landslide deposit as well as the distal turbidite system linked to the Ritter Island collapse. Simultaneously, we collected EM122 and Parasound seismic data. On the very first seismic line, we passed Ritter Island in a few hundred meters distance, giving the cruise participants the first impression of our object of research.

From these data it became clear how heterogeneous the landslide deposits are and we can now define some new questions which need clarification to reach the expedition's targets. On one hand it has to be clarified whether a large block, which is located in the head scarp at Ritter Island, is an autochthonous part of the original volcanic edifice or if it was itself part of the landslide. On the other hand, we must try to find out whether the up to 250 m-high conical mounds on the seabed are also landslide deposits or parasitic volcanic craters. The bathymetry suggests that in the late phase of the landslide very strong currents have mobilized some of the landslide deposit once more.



Figure 1: Ritter Insel in the mist. Photography: Swaantje Bennecke.

Another important result of last week is a much better understanding of the nature of Ritter Island. In contrast to many other island volcanoes, it appears to consist mainly of sedimentary rocks such as tuff, lapilli and scoria, and only to a small extent of lava flows and intrusions. This is clearly evident from the seismic data and the few sediment samples, which could be recovered in the nights from Friday to Saturday and from Saturday to Sunday with the gravity corer.

On Saturday, we conducted a drone flight to create a 3D model of the island as it looks today. To this end, we positioned ourselves to the east of the island and flew twice along its eastern flank. This worked very well and with another flight, which we will carry out in the evening light, it should be possible to map the whole island.

On Sunday morning, we deployed the 3D seismic system and we will now collect 3D seismic data for six days, if nothing intervenes. During the deployment of the system, we could witness an eruption of Langila volcano, which is exactly opposite Ritter Island on the island of New Britain. However, we could see not much more than a big ash cloud.

On behalf of the cruise participants,

Christian Berndt (Chief scientist)