

3. Volcanic observations on Scott Island in the Antarctic Ocean

By Gerhard Wörner* and Giovanni Orsi**

Scott Island is a small rocky oceanic island in the Southern Ocean located at 67° 23' S, 179°05' W (REITMAYR & REDFIELD pers. comm.). WRIGHT & KYLE (1990) list it in their compilation „Volcanoes of the Antarctic Plate and Southern Oceans“ (LEMASURIER & THOMPSON 1990) and noted „apart from a single phonolite sample, no geological investigations have been carried out on Scott Island“. However, reconnaissance sampling had been undertaken early during GANOVEX II in 1982. Samples and records were later lost after the expedition ship *Gotland* had sunk. For that reason, Scott Island had been visited by GANOVEX VI in order to provide more volcanological, petrographical and geochemical information on this small oceanic island.

WRIGHT & KYLE (1990) summarized earlier work (PRIOR 1907, JOHNSON et al. 1982, CAMPSIE et al. 1983) including five geochemical analyses of one phonolite and nepheline-mugearites from the island and its surrounding oceanic plateau, respectively.

The oceanic plateau is about 145 km long, 30 km wide and about 300 m deep. Echo soundings during our approach and departure from the island suggest a rather irregular topography between 200 and 400 m with several steep submarine slopes.

Scott Island (Fig. 1) represents the peak of this submarine plateau. It is about 350 m by 200 m in size with a maximum elevation of ca. 60 m. It is composed entirely of two overlying subaerial lava flows with columnar joints and typical basal breccias and blocky, scoriaceous flow tops with crudely developed pressure ridges. The latter indicate flow directions toward the N and S from the highest point of the island. The upper, thicker flow can be correlated to a rocky, tower shaped, island 200 m towards the W. Flow morphology and thickness indicate that these flows formed from evolved, viscous lava descending over rather steep topography. The island is bounded by steep wave-cut cliffs, however, there is no evidence for any glacial or other erosion of the island.

Taking together the evidence from the suboceanic Scott Island plateau and our observations from the island itself, we can conclude that Scott Island represents a remaining subaerial trace of a once larger, evolved and highly alkaline oceanic island complex.

Because of its isolated location in the southern ocean and its possible implication for mantle source compositions we believe it is important to fully document the chemical and isotopic character of the present set of samples with modern geochemical analyses. We have collected four samples from the two flows and intend to do petrographical, geochemical isotopical as well as K-Ar age dating.

References

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* Dr. Gerhard Wörner, Institut für Geowissenschaften, Universität Mainz, Saarstraße 21, D-W-6500 Mainz, FRG.
** Dr. Giovanni Orsi, Dipartimento di Geofisica e Vulcanologia, Università degli Studi di Napoli, Italy.

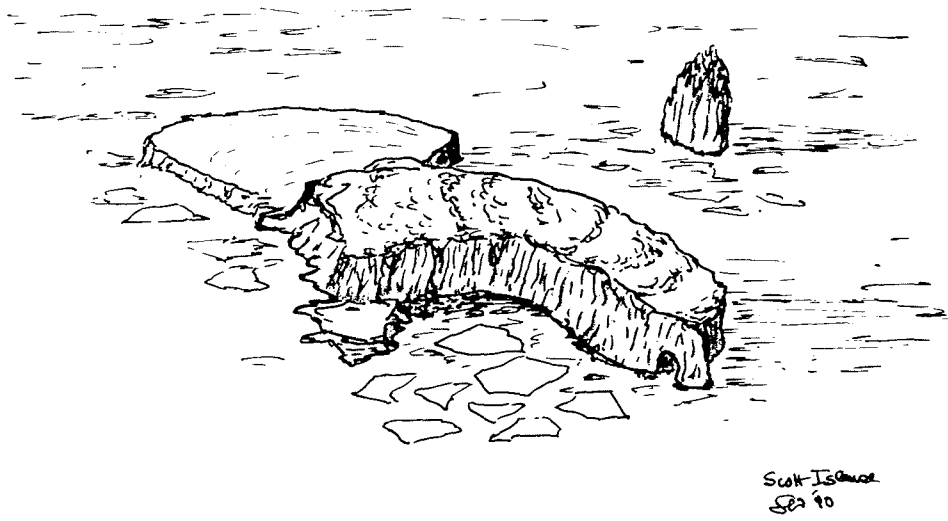


Fig. 1: Sketch of Scott Island, Antarctica viewed from the east.

Abb. 1: Ansichtsskizze der Scott-Insel von Osten.