

INTRODUCTION

Zdzisław Czeppe, a physical geographer, viewed Sørkapp Land as a potential geographic area for scientific research. He was a participant of the Polish expedition during the 3rd International Geophysical Year, which wintered on the northern coast of Hornsund Fjord on Isbjørnhamna bay in 1957–1958, and the summer expeditions of 1959 and 1960. Sørkapp Land, located south of the fjord, appeared to be an ideal place for research, which unfortunately could not be carried out at the time. However, he returned to western Sørkapp Land as a professor and the leader of Jagiellonian University expeditions in 1980 and 1981. He created a program of interdisciplinary research for this area, which was executed by the University's summer expeditions in the 1980s. Landscape analysis played the most important role in the research of abiotic environmental features, whereas botanical analysis was crucial in the research of biotic features. The former was carried out in 1981–1984 and 1986, and the latter in 1982 and 1985. Six physical geographers (Z. Czeppe, P. Gębica, K. Kalicki, M. Kuczek, P. Libelt and W. Ziąja) took part in field investigations of landscape, and two botanists (E. Dubiel and M. Olech) took part in field investigations of vegetation. Their published results constitute the first relatively complete and reasonably detailed (maps at a scale of 1 : 25 000–1 : 50 000) characterization of the natural environment of the area.

The natural environment and landscape in Sørkapp Land have changed rapidly since the 1990s mainly due to climate warming as well as due to the progressive regeneration of animal life since the establishment of South Spitsbergen National Park in 1973. The effects of this transformation were observed during two short (two-week) Jagiellonian University summer scientific expeditions, which covered the northernmost part of western Sørkapp Land starting with the eastern coast of Gåshamna bay: (1) at Konstantinovka hut in 2000, (2) in the tent in 2005. An understanding of this transformation, in light of the accelerated evolution of the Arctic natural environment associated with *global climate change*, could help solve new and interesting research problems such as the regeneration of the reindeer population, which was virtually absent in the 1980s.

After a quarter of a century, two participants of the aforementioned expeditions in the 1980s, Maria Olech and Wiesław Ziąja, thought of repeating these investigations using similar methods but more advanced techniques (satellite remote sensing, GPS). Hence, together with younger colleagues, they proposed a research project to

tled *Changes in the western Sørkapp Land natural environment due to global warming and human activity since 1982* and asked the Ministry of Science and Higher Education for financing. The project's objective was an analysis of changes in the structure and functioning of the western Sørkapp Land natural environment due to the aforementioned factors since the beginning of the 1980s. In 2008, the project was approved by the Ministry and a summer Jagiellonian University scientific expedition to western Sørkapp Land was organized.

The research team of this expedition was comprised of six people: Wiesław Ziaja (geographer, leader), for whom it was the ninth summer research season in Sørkapp Land and twelfth in Spitsbergen, Piotr Osyczka (botanist), for whom it was the second summer season in Spitsbergen, Michał Węgrzyn (botanist), Justyna Dudek (geographer), Maja Lisowska (botanist), and Jan Niedźwiecki (geographer), who were spending their first summer in the Arctic. Five expedition members arrived in Longyearbyen by air on June 30th, 2008. Piotr Osyczka arrived via a research vessel operated by Gdynia Maritime University, *Horyzont II*. He arrived at the Polish Polar Station (of the Institute of Geophysics, Polish Academy of Sciences) in Hornsund with the main expedition's baggage. After their arrival at Longyearbyen, the expedition members found shelter at Marek Zajączkowski's hospitable home. From Longyearbyen, a yacht called the *Eltanin*, under Jerzy Różański's (owner and shipmaster) command, transported them to the westernmost part of the Sørkapp Land coast. The first attempt (July 1–3) failed because of a dense ice-pack at the mouth of the Hornsund Fjord, and the yacht had to return to Longyearbyen. After a few days, three members of the expedition arrived from Longyearbyen to Hornsund via the *Eltanin* and the remaining members arrived via the *Horyzont II* on July 8th. The three expedition members who had arrived at the Polish Polar Station first, had boarded the yacht during its brief stop in Isbjørnhamna bay, which is near the station. Immediately, the yacht sailed across the mouth of Hornsund Fjord to its southern shore in front of the trapper hut north of Palffyodden. Our colleagues from Hornsund Station, under Mateusz Moskalik's command, accompanied the yachts in motorboats loaded with the expedition's baggage (food, built materials, equipment). The expedition was conducted from the yacht to the Sørkapp Land coast with their help, landing on the coast on July 8th at 6:00 p.m. The staff of the Polish Polar Station in Hornsund, under the leadership of Piotr Głowacki and Marek Szymocha, helped our expedition in a number of ways, transporting our baggage and delivering necessary equipment several times. The geological team from the Polish Academy of Sciences in Warsaw, under the command of Krzysztof Krajewski, transported us via their dinghy to Breinesflya and Gåshamnøyra. Jerzy Czerny, our colleague from the AGH University of Sciences and Technology in Cracow, took one of the expedition members (who had to go away earlier from Spitsbergen) by boat from Sørkapp Land. On August 12th at 3:00 a.m., the expedition was transported by Krzysztof Krajewski from the coast near Palffyodden to the *Eltanin* yacht and departed from Sørkapp Land. We are very obliged to the aforementioned colleagues and their teams for their priceless help, which enabled us to realize all the elements of our plan. The expedition returned to Poland on August 15th.