

# LANDSCAPE DEVELOPMENT

A clear climate change, reflected in a significant increase in air temperature and atmospheric precipitation, is the reason for an increase rate of landscape development. Therefore, each environmental-landscape component, apart from solid bedrock, has changed.

The first and direct result of climate warming has been glacial recession, which stimulated an entire process of landscape (and seascape) changes along the eastern boundary between western Sørkapp Land (devoid of glaciers during the Holocene) and the glaciated peninsula's interior. These profound landscape changes, described above, have mainly been the result of the after-effects of the glaciers' retreat. A completely new landscape has appeared.

The fore-fields of glaciers, i.e. areas outside the glaciers' maximum extent, have been indirectly influenced by the glaciers' retreat. Landforms, Quaternary deposits and water networks have been significantly affected, especially on the coastal plains in the north and south of the study area: Gåshamnøyra and Tørrflya.

Some sequences of non-glacial and non-postglacial coastline have been affected by an increase in the geomorphic activity of the sea due to a shorter sea-ice season, which can be observed via a clear retreat (under abrasion) or advance (under accumulation) of the coastline. The formation of new coastlines at the front of the tidewater glaciers (Körberbreen and Olsokbreen) is a more complicated process.

Current environmental and landscape changes in large parts of the coastal lowlands and mountains – being ice-free during the Holocene – are much more successive and not as explicit as changes previously mentioned. However, a longer summer season and less snow patch persistence, an increased quantity of water in the ground surface and the active layer of permafrost affected geomorphic and hydrologic processes everywhere. After 25 years, this effect is visible in a slower rise of nivation moraines, more frequent debris-flows and more intensive fluvial processes.

During the next few decades, the described trend of environmental-landscape transformation will continue unless the climate cools down. In the case of a progressive warming, the extensive tongues of the Gåsbreen, Bungebreen and Vitkovskibreen glaciers will first retreat and then disappear. The principal reason for this is that the main part of each glacier is located at an altitude of 300 m above sea level or less. The same is true of low-lying smaller glaciers or their parts. The main result of that would be an expansion of non-glacial landscape, vegetation and animal life to the east, into the currently glaciated peninsula's interior.