Volcanoes

Quite large parts of the Earth, among others the thousands of kilometres of deep sea ridges, are shaped by volcanic activity, and this has been the case in all of Earth’s history as far back as we can apprehend.

Volcanic eruptions take place because there are silicate melts with dissolved gasses (magma) underneath the surface. The volcanic activity is dependent on the heat distribution in the Earth’s mantle, including the distribution of rising hot spots in the Earth’s mantle, on plate tectonic processes (see also the exhibition on Plate Tectonics) and on the distribution of gasses (water, CO2, and SO2), which may reduce the melting point of silicate melts in the deep source zones. Depending on the conditions of formation, the silicate melts may have very different compositions.

In some areas the silicate melts from volcanic source areas penetrate directly up along tectonic fissures and give rise to lava flows or submarine ridges of pillow lavas. In many other areas several magma chambers are created above each other over the source area, and here large volcanoes emerge during hundreds of thousands of years with a varied structure of lava flows, ash cones, lava domes and pyroclastic layers created by the feared pyroclastic flows.

Volcanic eruptions range in size from a few cubic metres to several thousand cubic kilometres, and we know with certainty that even after the Ice Age there have been eruptions that have been much larger than the ones we know from historic times.

The exhibition shows some of the volcanic landscape forms and sections through volcanoes, and a rich selection of various eruption products. These will give the visitor the joy of recognition the next time a visit is paid to an ancient or an active volcanic area.

Please note the formation of columns in lava flows, which was created when the 1150°C-hot basaltic lava “shrunk” during cooling and see the beautiful lava stalactites. When the strong wind blew over the volcanic lava fountains, molten particles were drawn out and accumulated to form the beautiful glass hair – called Pele’s hair.

Do remember to look at the finely formed volcanic bombs created from the melt while it whirled around above the crater – one day one may find one during a visit to Etna. See also the many forms of volcanic ash or the large black block of volcanic acid glass called obsidian. And remember that through the millennia obsidian has played the same role in many cultures in the manufacture of tools, just as flint did to our Danish ancestors.

See also the products from the hot springs and the hot fumeroles and see them again on your next journey to an active volcano.

Pillow lava
Obsidian