The Great Aletsch glacier

No matter whether you are at Moosfluh, Bettmerhorn, or Eggishorn, the view of the Aletsch glacier is unique: you can admire the glacier from up above with a gorgeous view of the enormous stream of ice. This is quite unusual because anywhere else in the Alps you usually have to look up to a glacier. Another impressive fact about the Aletsch glacier is its length: at 23 kilometers (75,463 ft), the Aletsch glacier is the longest stream of ice in the Alps. The catchment area in the Jungfrau region lies at about 4,000 m (13,124 ft) above sea level; the glacier cave in the Massa gorge is about 2,500 m (8,202 ft) lower.

A phenomenon without comparison

The surface of the entire ice flow amounts to 86 square kilometers (53 square miles); the Konkordiaplatz itself would be large enough to put up medium-sized Swiss towns like Chur, Bellinzona, or Frauenfeld. Just as impressive as the length is the depth of the ice. Scientists from ETH Zurich (the Swiss Federal Institute of Technology at Zurich) have measured a depth of 900 meters (2,952 ft) at the Konkordiaplatz. The weight of the ice is calculated at 27 billion tons, which is equal to the weight of 72.5 million jumbo jets! If we were to melt the glacier, the meltwater would suffice to provide every human being on earth with one liter of water a day for six years. The Aletsch glacier is indeed a phenomenon without comparison!

The ice of the Great Aletsch glacier consists of three large firn fields in the Jungfrau region: the Aletschfirn, the Jungfraufirn, and the Ewigschneefeldfirn. This entire firn region is also called the accumulation area, because it is where the glacier gets nourished with new ice. At this altitude, precipitation falls almost all year round in the form of snow. Pressure and temperature fluctuation gradually convert this into firn snow, firn ice, and eventually into dense glacial ice. Under the weight of the continuously newly formed ice mass, gravity forces the glacier to flow slowly downhill. “Slowly” is a rather relative term to describe this phenomenon. In fact, the glacier is moving continuously, and at the altitude of the Konkordia hut its velocity reaches about 200 meters (656 ft) per year, which amounts to half a meter (20 inches) per day. At the Aletsch forest its velocity still amounts to about 80-90 meters (262-295 ft) per year.

Medial moraines – the glacier’s typical appearance

Two dark stripes mark the glacier’s surface. They stretch almost along the entire length of the glacier and capture the attention of passing hikers. These stripes are called medial moraines and are formed when two glaciers merge. The lateral moraines of each of the converging ice

streams flow together and find themselves in the middle of the glacier, forming a medial moraine. Two large medial moraines are formed at the Konkordiaplatz where three firn fields meet. These two dark lines give the Aletsch glacier its typical appearance. Medial moraines mainly consist of till and boulders, which gradually rise to the surface as the glacier melts. At the terminus of the glacier where the melting is at its most intensive due to the higher temperatures, the medial moraines are at their most distinctive. This area is also called the ablation zone of the glacier. Here, you will also find typical phenomena caused by the melting of the ice, for example the impressive glacier tables or the equally fascinating dirt cones.

History of the glacier

The difference between the ice that forms in the accumulation area and the ice that melts in the ablation area determines whether the glacier is expanding or receding. Various surveys have shown that during the last Ice Age the Aletsch glacier expanded more than it does today. Then, 18,000 years ago, even the mountain ridge between Bettmerhorn and Riederhorn was covered with ice. Only the peaks of Bettmerhorn and Eggishorn or Sparrhorn on the opposite side and the Fusshörner rose above the giant expanse of ice. At close quarters, these bizarre, jagged mountains stand out against the other mountains in the remaining areas, which were shaped roundly by the glacier's movement. After retreating strongly for some time, the glaciers expanded immensely at the end of the last Ice Age (about 11,000 years ago). At that time the snout of the Aletsch glacier lay in the Rhone valley and its edge reached almost up to Riederfurka. Then, the Aletsch glacier developed a mighty lateral moraine which is still visible today at the "Moränenweg" (moraine path) in the Aletsch forest.

Since the last Ice Age, the Aletsch glacier has not retreated continuously. In fact, due to minor climate changes, it expanded several times and advanced to its maximum extension most recently around 1860. At that time the glacier was about three kilometers (1.86 miles) longer and its edge lay close to the Aletsch forest, about 200 meters (656 ft) higher than today. The glacier's last maximum extension is still visible today: at both sides, a distinctive broad line of lighter material along the glacier can clearly be distinguished from the vegetation above. Those light lines house some rather young vegetation, which has formed only over the past several decades.

The Aletsch glacier – a victim of global warming

Retreating by up to 50 meters (164 ft) a year, the Great Aletsch glacier has been dramatically affected by ablation in recent years. Nevertheless, it is still the longest stream of ice in the Alps, at 23 kilometers (14.29 miles). However, the rapid ablation is preoccupying above all the people who study the giant ice mass every day. The employees of the Pro Natura Center

Aletsch at Riederalp, for example, have observed in recent years not only a tremendous retreat in terms of length but also at the glacier's lateral edges. Local mountain guides confirm these observations. In the past few years, they have had to find a new access path to the glacier, as the old path was not accessible anymore due to ablation.

Impressive glacier tours

Yet, the receding of a glacier is nothing unusual. In the course of time, glaciers have always retreated and then extended later on. However, the rapid retreat presently being observed gives cause for concern. Here, the much-cited climate change is leaving its mark in quite significant proportions. Nevertheless, the Aletsch glacier remains an important attraction in the local area. And certainly one of the most impressive experiences is a guided tour on the glacier.

Information on glacier tours:

Bettmeralp Tourism, CH-3992 Bettmeralp; www.bettmeralp.ch; info@bettmeralp.ch
Riederalp Tourism, CH-3987 Riederalp; www.riederalp.ch; info@riederalp.ch
Pro Natura Center Aletsch, CH-3987 Riederalp; www.pronatura.ch/aletsch; aletsch@pronatura.ch

Information on the Great Aletsch glacier:

Pro Natura Center Aletsch, CH-3987 Riederalp; www.pronatura.ch/aletsch; aletsch@pronatura.ch

Literature on this topic:

Laudo Albrecht: Aletsch – eine Landschaft erzählt (Aletsch – a landscape tells its story). Fourth book in the series „Die Reichtümer der Natur im Wallis" ("The wealth of nature in Valais"). Rotten Verlags AG Visp, 1997.