

## **Born of Fire**

Volcanic activity has shaped the landscape of Tokachi Shikaoi Geopark. Over the course of a million years, eruptions caused land to form where there had once been sea, new mountains to be born, and Lake Shikaribetsu to be created through the damming of a river.

### *The formation of the Tokachi Plain*

The formation of the Tokachi Plain began with the collision of two continental plates around 13 million years ago. This produced the Hidaka Mountains and created a tectonic basin in what is now the Tokachi area. The basin was initially submerged by the Pacific Ocean, which extended inland much further than today. Over many millions of years, the basin became filled with sediment. This was deposited through various geological processes, including the fluvial processes of the Tokachi River and its tributaries, and as a result of volcanic eruptions, such as the massive eruption of a supervolcano north of Shikaoi around one million years ago. Wetlands gradually formed over the basin, and these subsequently became the Tokachi Plain as it is today.

### *New mountains emerge*

The mountains around Lake Shikaribetsu are made up of stratovolcanoes and lava domes from different periods, forming the Shikaribetsu volcanic group. Kita-Petoutoru (1,400 m) and Minami-Petoutoru (1,348 m) are the oldest. Their formation began in approximately 300,000 BP—around the time modern humans evolved—and continued for 200,000 years. Both mountains are stratovolcanoes, built up through repeated eruptions of slow-moving low-viscosity lava. The younger mountains date from between 60,000 and 10,000 BP. These are lava domes, which form when sticky, viscous lava accumulates around a vent without flowing away. Many of the lava domes around the lake have rocky slopes with rock fragments of uniform size caused by a combination of freeze-thaw weathering and friction-induced fragmentation. Nishi-Nupukaushinupuri (1,254 m) and Higashi-Nupukaushinupuri (1,252 m) are the highest of the four lava domes, which also include Hakuunzan (1,187 m) and Tenbozan (1,173 m).

### *A lake is born*

Shikaribetsu's lava domes have had a significant impact on the landscape. As they formed, they blocked the path of a river. The gradual damming of the river resulted in Lake Shikaribetsu. The lake covers 3.4 square kilometers and has 13.8 kilometers of

shoreline, but the original lake would have been larger and extended farther north and west. The damming of the river was temporary as the water eventually found an alternative outlet through a valley that formed southwest of the lake. The landforms of the Shikaribetsu area are tangible examples of the powerful forces that sculpted the landscape of the geopark.