

Global Change Data Encyclopedia

Lake Manasarovar

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Lake Manasarovar, also known as Mafamu Lake, means “incompetent holy lake” and “eternal undefeated lake” in Tibetan^[1]. Located in Purang county, 20 km southeast of Kangrinboqe, the lake has an altitude of 4,588 m. The maximum water depth of the lake area is 81.8 m, and the average water depth is about 46 m. It is a freshwater lake with the largest accumulation of freshwater resources in high-altitude areas in the world^[2]. The lake shores are relatively regular. The lake basin is wide in the north and narrow in the south, shaped like a pear. The lake is 26 km long from north to south, and the maximum width is 21 km from east to west^[3]. The geolocation is 30°33'43"N–30°47'04"N, 81°21'51"E–81°36'44"E^[4] (Figure 1–2).

Manasarovar is located in the Garzangbo-Yarlung Zangbo River fault zone, which is a faulted structural basin between the Gangdise Mountains and the Himalayas. High mountains stand on the north and south sides of the lake. On the south side is Mount Naimona'nyi at 7,728 m asl., covered by glaciers all year round. On the north side is Mount Kailash at 6,656 m asl., covered by snow and glaciers all year round. The height of the modern glacier ends of the two peaks is about 5,500 m. A series of glacial landforms such as moraines, and ancient ice buckets remain on the edge of the lake basin^[1].

In 2015, the lake area was 412.14 km², and the shoreline was 90.02 km. It is a plateau



Figure 1 Map of Lake Manasarovar (.kmz format)

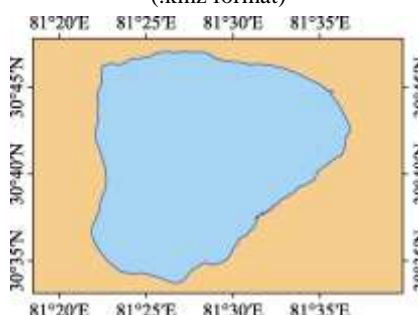


Figure 2 Map of Lake Manasarovar (.shp format)

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temperate semi-arid climate. The average annual precipitation is about 190 mm. The precipitation from June to August accounts for about 55% of the annual and the daily maximum precipitation reaches 47 mm. The average annual temperature is about 2.0 °C and the average daily temperature above 5 °C lasts for about 160 days. The annual sunshine hours is about 3,200 hours^[1]. The annual average evaporation is 2,197.4 mm.

The basin area of the lake is about 4,560 km², and the supply of lake water mainly depends on precipitation and surface glacial meltwater runoff^[2]. The supply rivers are mainly distributed in the east, north and south of the lakeshore. The larger runoff into the lake includes Zhaqu Zangbo, Samo River, Baqing River, Zumanong River, Baqiong River, etc. The rivers are short, with large slopes, and all belong to the melting water of ice and snow^[5]. From July to August 1907, the Swedish scientist Sven Heding measured the maximum water depth of the lake center to 81.8 m. In July 1976, the water depth was more than 60 m. The lake center has a maximum transparency of 14 m, which is one of the most transparent lakes in China. The lake has pH of 8.0–8.4 and salinity of 108.9–405.8 mg L⁻¹. The salinity at the mouth of the northeast bank is the lowest at 108.9 mg L⁻¹. It is a heavy carbonate freshwater lake^[1]. The lake water has the characteristics of sweet, cool, clear, soft, non-smelling, non-damaging to the throat, and non-damaging to the limbs. It is often drunk and bathed by local people^[6].

The vegetation type in this area is dominated by Stipa grassland. The main wild animals around the lake include bos mutus, equus hemionus, przewalski's gazelle, pseudois nayaur, wild sheep, tibetan antelope, snowcock, mallard, and black-necked crane. Algae are commonly found in the lake, including 8 species of crescent diatoms, window diatoms, and keel diatoms in the bacillariophyta; 4 species of stellaria and cosmarium in the chlorophyta; 4 species of oscillatoria and cyanococcus in the cyanophyta; tribonema in the phylum xanthophyta, etc. The fish in the lake mainly include stoliczkae and oxygymnocypris stewartii. The discovery of 2 genera and 5 species of ostracod fossils in lake sediments is of great significance to the study of lake evolution and climate change in lake areas^[1].

The dataset was developed based on Google Earth satellite images (2015) and related maps. The dataset is archived in .shp^[7] and .kmz formats, and consists of 16 data files with a data size of 616 KB (compressed into 2 files with 243 KB).

References

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Data computing environment

- [7] ESRI's computing platform in the ArcGIS of Qinghai Normal University.

URL for Data Downloading

<http://geodoi.ac.cn/WebEn/doi.aspx?Id=1503>.

Or search through: <http://www.geodoi.ac.cn>.