

Chapter 1-3

Topography of the Lake Bottom

Abstract

Rather than being uniform in depth and shape, the lake comprises the North Basin, an expansive lake more than 70 m deep the lake bottom of which has a planation surface, and the South Basin, a small shallow lake no more than 5 m deep.

Keywords: Lake bottom, Tectonic lake, Freshwater lake

1. Outline

Lake Biwa, the largest lake in Japan, the name of which is said to derive from its shape that resembles Japanese lute called biwa, covers an area of 670.25 km², approximately one-sixth of the land mass of Shiga Prefecture. The lake surface is roughly 85 m above sea level.

The topography of the lake bottom can be determined from the “isobath diagram” and “vertical and horizontal cross-section diagram” shown in Fig. 1-3-1. The deepest point is located offshore from the mouth of the Ado River (Asterisk (*)) in the diagram indicate a depth of 104 m) approximately 18 m below sea level. The lake also features the islands of Okishima, Chikubushima, Takeshima and the Oki-no-Shiraishi rocks.

2. Topography of the Lake Bottom of the North Basin

Together with the North Lake basin extending from the northwest to the southeast and the Middle Lake basin extending from the northeast to the southwest, the North Basin, the larger of the two lakes that comprise Lake Biwa, forms a planar form angled to the north. In addition, the lake bottom of the North Basin is gently angled toward the west shore that features sheer cliffs reflective of recent crustal changes.

The north bank is sedimentary, and the young ria shape extends to the lake bottom, producing a submerged valley in the waters of Tsuzura-Osaki 40 to 60 m in depth. The lake bottom also features terraces off the shores of the Yasu, Ado and Ane Rivers comparable to the terraces

that have evolved on the land. Said to be unique among the lakes of Japan, the submerged delta is the result of layering and has attracted attention as a topography that illustrates basin-forming movement.

3. Attached Lakes

One of the features of Lake Biwa is the numerous attached lakes dotted around the lakeshore. These shallow attached lakes with flat bottoms form in the same way as lakes and marshes known as “lagoons” that usually appear on lakeshores. However, like lakeshore lowlands, more and more, these attached lakes are being drained and reclaimed for use to increase food production and are rapidly disappearing due to filling for development in urban areas.

Meanwhile, concrete-enclosed attached lakes are appearing as zones for fishing spots in some boating inlets and waterway intersections on reclaimed land frontage.

4. Topography of the Lake Bottom of the South Basin

Sedimentation of the South Basin is advancing rapidly due to alluviation of the basin, with the result that its average depth is only 3 m while the depth at the ebb water route in its center is no more than 4 to 5 m. The existence of remains from the Jomon to Yayoi periods on the lake bottom at a depth of 2 to 3 m indicates that this is the site of the secondary submergence of the alluvial plane. This is proof that localized natural disasters (changes in the lake surface) have occurred repeatedly throughout the lake's

history.

Thus, the topography of Lake Biwa's lake bottom is the result of the superior fault topography of the North Basin and the submergence of the alluvial plane in the South Basin caused by sedimentation. It is, therefore, important to understand that it is the contrast between the lake

area and lake bottom resulting from these phenomena that have produced regional diversity on the east to west side and the north to south side.

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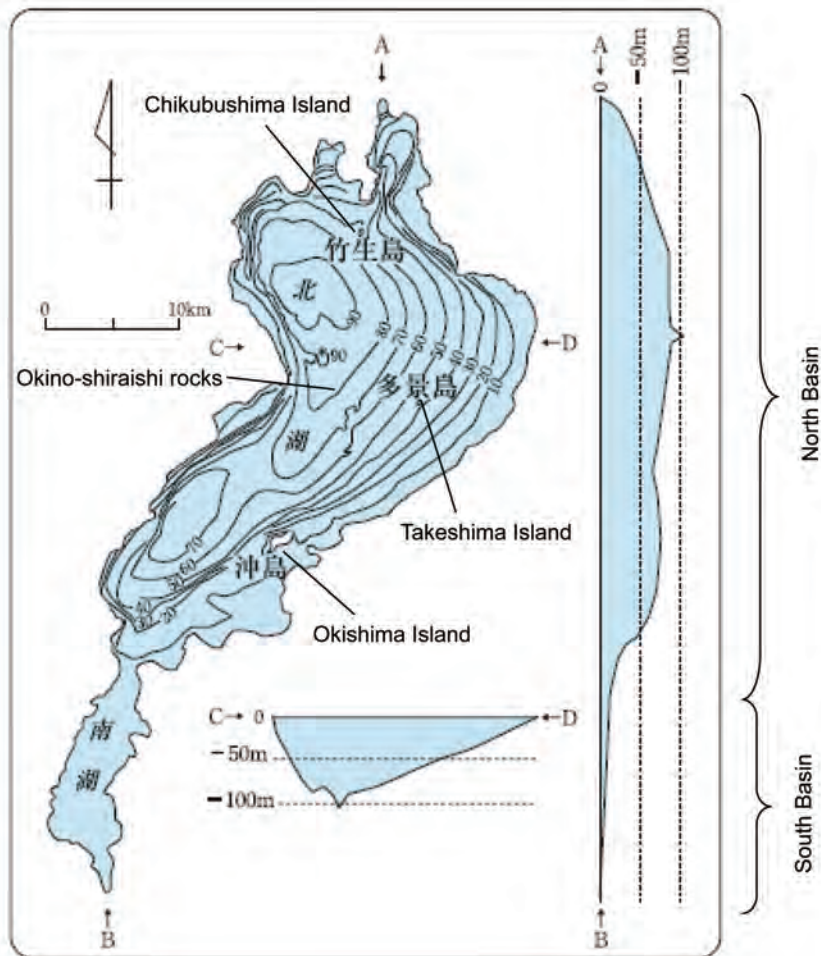


Fig. 1-3-1 Isobath diagram and cross-sectional diagram of the deepest part of the lake bottom