

# Chapter 1-2

## Topography of the Omi Basin

### Abstract

The Omi Basin, which lies in the middle of the largest freshwater lake in Japan – Lake Biwa, is a tectonic basin that was formed more or less in the center of the Japanese Archipelago.

**Keywords:** Tectonic basin, Lake basin, Lake Biwa

### 1. Location and Shape of the Omi Basin

Located in the northern part of the Kinki region, the Omi Basin extends approximately 30 km east to west and 50 km north to south, corresponding more or less to the area of Shiga Prefecture. The mountainous region surrounding the basin features the Ibuki and Suzuka mountain ranges in the east, ranging from roughly 1200 to 1300 m in elevation, and the Hira and Hiei mountain ranges in the west, ranging from approximately 800 to 1200 m in elevation. To the south lie the Shigaraki and Tanakami mountains, ranging in elevation from approximately 600 to 700 m and in the north, a ria drowned valley connects to the 800 m-class Kohoku mountains. Lake Biwa, roughly 670 km<sup>2</sup> in area with a surface, 85 m above sea level and 104 m at its deepest point, is located at the bottom of the basin.

Between the mountains and Lake Biwa geographical features can be found such as an alluvial fan, hills and terraces. Rivers flowing down from the mountains drain into Lake Biwa and merge with the Yodo River via the Seta River, Lake Biwa's only outlet in the south. From there they flow into Osaka Bay.

### 2. Shape of the Omi Basin

The Omi Basin is a tectonic basin that was formed as the central area sank while the mountains in the east and west rose.

The phenomena that best illustrate the shape and characteristics of the basin are the evolution of Lake Biwa and the process of its shift to its current location.

The oldest lake in Japan, Lake Biwa, first formed near the Iga-Ueno Basin in the south roughly 4 million years ago and gradually started moving north approximately 1 million years ago, finally reaching its current location about 400,000 years ago. This process left a thick sedimentary layer in the south of the basin, forming a wide alluvial plain.

### 3. Characteristics of the Topography Seen from the East and West Cross Sections of the Basin

The Suzuka mountain range in the east rose as a fault was trapped and tilted towards the basin side. This resulted in the development of an alluvial fan at the foot of the mountains created by the rivers flowing down from the mountains, burying the lake. Thus, the area featuring Kinugasa Island located in the lake and Mt. Mitsukuri became a small mountain on the inner side of the basin. As the Hira Mountains rose in the west, the lake side of the lowlands sank as the result of a fault trap, producing a deposit of silt more than 1,000 m deep at the bottom of the basin. The result of a 1,400 m boring survey conducted to measure the nature of this deposit revealed that the depth grew at a rate of 1.3 to 2.0 m every one thousand years. From these figures, it can be surmised that the Omi Basin was formed by the phenomena of continuous elevating and submerging, resulting in fault traps producing earthquakes, a process that is still ongoing today.

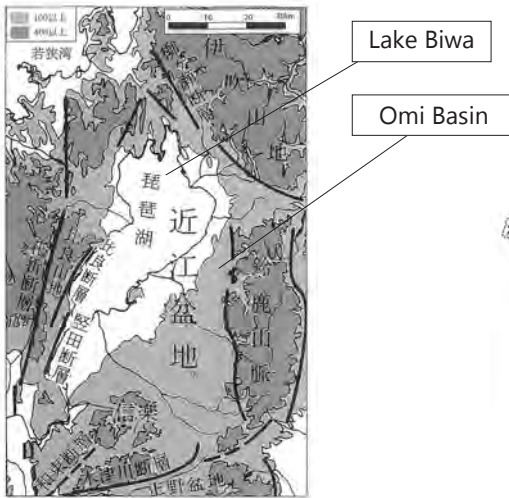
### 4. Life in the Omi Basin

We live in the midst of this young basin

topography that is still in its formative period. The fact that formation is still ongoing is documented in the history of earthquakes in the Omi basin. As long as we continue to live here, it has to be our fate to grow accustomed to and deal with earthquakes. To reduce damage caused by earthquakes, it is important to closely study the history of the formation of geographical features, such as basins

and lakes, to become familiar with the topographical characteristics and the surrounding environment and to be constantly thinking of countermeasures to cope in the event of such seismic events.

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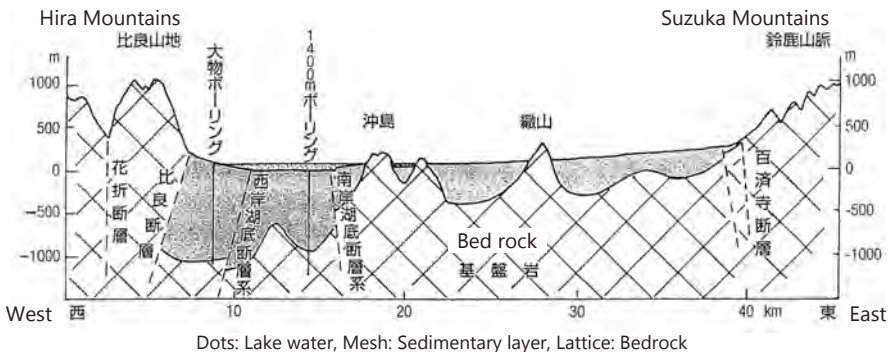


**Fig. 1-2-1** Topography of the Omi Basin



**Fig. 1-2-2** Rivers draining into Lake Biwa

(From the section on the Omi Basin, "The Nature of Japan," Kinki Region edition, (1995), Iwanami Shoten Publishers)



**Fig. 1-2-3** East-west geographical cross section of the Omi Basin (Uemura, 2001)

**Tectonic basin:** A basin surrounded by faults that was formed by crustal changes resulting in mountains rising on the rim and lowlands developing on the inside