Chapter 1-6
Geological History

Abstract
Research into the so-called "Kobiwako Group" found around the lake has shed light on the history of Lake Biwa. According to the results of this research, the origins of Lake Biwa date back to small lakes that formed several tens of kilometers south of the current site roughly 4 million and several hundreds of thousands of years ago. These small lakes gradually changed size and position, reaching the current location approximately 400,000 years ago.
Keywords: Kobiwako Group, Tectonic lake, Pliocene

1. Age of Lake Biwa

Lake Biwa has a geohistory of 4 million and several hundreds of thousands of years. This has been revealed by research into deposits under the current Lake Biwa and the "Kobiwako Group" which is distributed around the lake and to the surroundings of Iga City in Mie Prefecture to the south.

There are some opinions about the age of Lake Biwa.The difference of opinion is due to the viewpoints of the lake history.

The lake has a history as a wide and stable lake like the current lake since four hundred thousand years ago, a stable lake history at the current position since one million years ago, and a geohistory on the same sedimentary basin since approximately 4 million years ago.

2. Movements of the Lake

It is theorized that Lake Biwa has moved. This theory is endorsed by the relationship between distributions of strata of the Kobiwako Group and their depositional ages. Earlier and later formations are at southern and northern locations respectively. The latest sediments are under the current lake.

The movement of the lake is caused by changing of topological subsided places. The present-day Lake Biwa and its predecessors, known as "tectonic lakes," were formed by faults.

Sediments are accumulated by transport through the water flow in the basin which is caused by faults. Therefore, that lake and/or water area is filled up by their sediments over a long period of time. But, a tectonic lake can be kept a lake in the case its subsidence ratio is higher than its sedimentary ratio. Conversely, a tectonic lake is filled by sediments in the case of a reversed relation of their ratios. The view of lake movement is as follows; 1) a tectonic lake is formed by tectonics at first position, 2) subsidence at first position is stopped and it is subsided at second position (north area), 3) the tectonic lake widens at first and second positions, 4) the lake is moved by being filled up at first position and subsidence at second position (Fig. 1-6-1).

The reason of changing subsidence position toward the north is not revealed in detail.

3. Transitions of Paleo-lake Biwa

Sedimentary environments are revealed through examination of strata by using litho-facies models. The Kobiwako Group has been examined about its sedimentary environment.To summarize the results of all the research to date, the geological history of Lake Biwa is as follows. A small lake called Lake Oyamada was formed approximately 4 million years ago and was filled after several hundred thousand years. After that, a shallow lake called Lake Ayama was formed at the northern area of previous lake. Lake Ayama spread to the north and became a deeper lake known as Lake Koka. Lakes Ayama and Koka formed a series of lakes. Ap-

proximately 2.6 million years ago, Lake Koka filled and the sedimentary basin moved further north, heralding the beginning of the Gamo Lakelands period when no stable lakes existed. From 1.8 million years ago, river environments were abundant. About 1 million years ago, a small lake called Lake Katata formed at the southern part of the current lake and expanded northward to a position near the Lake Biwa we know today approximately 400,000 years ago.

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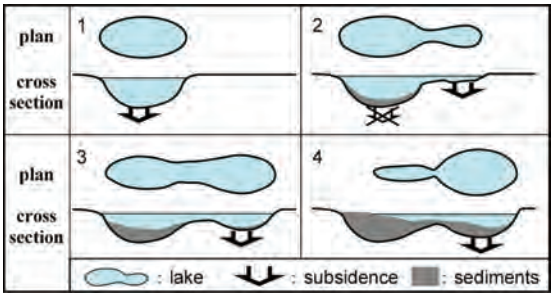

Fig. 1-6-1 Schematic illustrations of Paleo-lake transference

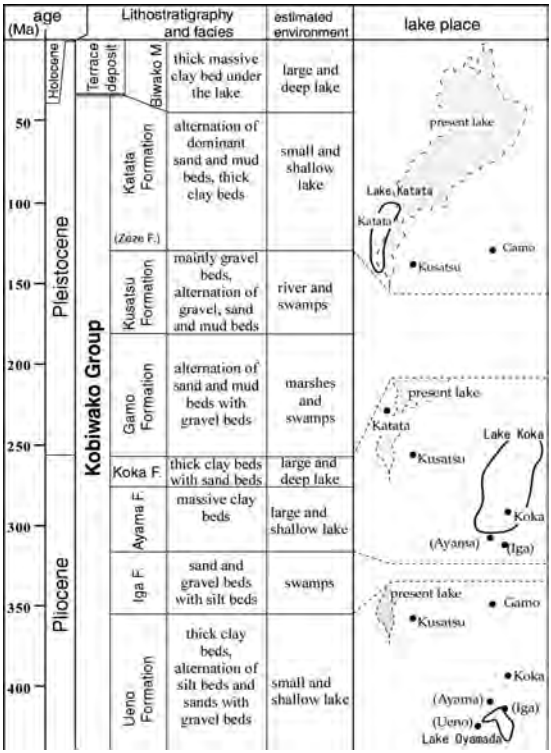

Fig. 1-6-2 Stratigraphy of the Kobiwako Group and estimated environments of Paleo-lakes.