

A Study on the Water Environment and changes in the South Eastern part of Tibetan Plateau

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1. Introduction : The water environment of the Tibetan plateau is paid to attention in various fields on the environmental change in global and the environmental change that remains having strong ties in the melt of the mountain glacier by Global-warming. Especially, the lakes and marshes research group that is said the lake in the sky has been done neither the scientific study nor the research enough yet, and is important as the research object of the earth planet science. The purpose of our reseach is to clarify the characteristics of water environment in the southeastern part of Tibetan Plateau, China from the view point of comparative limnology and hydrogeography. The character of inland waters (river water and chiefly lakes and marshes water) in the southeastern part of Tibet is clarified based on the local investigation result for a joint research with Chinese Academy of Science, and an environmental change is considered compared with a past investigation result.

2. Regional outline : Three lakes and marshes, the collection waters in the Chinese west warehouse autonomy district south-east, the maximum Yalzsampo valley in Tibet, and the Lhasa river valley in the branch are the research zones. Lake Pmayumtso Co is a fresh-water lake located from Lhasa to the southwest about 150km, and area 328.4m² of the lake and the lake side altitude are 5009m. The greatest river where the upstream region has the glacier flows in the west shore, and a wide delta low ground is formed. At the east shore of the lake only a outflow river exists. The valley in middle reaches of Yalzsampo where with the width of about 50km in the north the pass is separated spreads out, and the Lhasa river is joined. Lake Nam Co is located in the Lhasa northwest in the world's largest lakes and marshes of the lake side above sea level 4000m or more.

3. Research methods : We carried out the continuous observation of water level and water temperature, and tracking of the current drogoue for Lagragian current measurement in order to clarify the correlation between the water quality and physical process in Lake Pumayum Co.

We also carried out the observation of water quality in many lakes and rivers in the southeastern part of Tibet. We measured the vertical distributions of water temperature, electric conductivity (EC), pH and dissolved oxygen (DO) with the multi water quality profiler in several lakes.

We selected the continuous observation point about 60m in depth. The thermistor would be moor at 10m intervals from lake surface to bottom, and we measured at 10 minutes. This observation purpose is to clarify between movement of thermocline and water quality. We measured the vertical distributions of water temperature, electric conductivity (EC), pH and dissolved oxygen (DO) with the multi water quality profiler. We analyzed the ion composition of lake water with the ion chromatography. Analysis items are Na⁺, NH₄⁺, K⁺, Mg²⁺, Ca²⁺, Cl⁻, NO₃³⁻, SO₄²⁻, PO₄³⁻.

4. Results : The water environment of the climatic province and each river water system was obtained as the difference of the character in the center part of the Tibet Autonomous Region (the central eastern part of Tibet) where a lot of Yalzsampo river valleys where Lake Pmayum Co existed and the blockage lakes existed was clarified etc. Moreover, a part of different result existed, too and after having collected information on an environmental change in such a region in the future, we felt the necessity for advancing consideration of the relation though similar regional division was obtained compared with a past investigation result.

Reference : Tibet Pmayumtso lake science research team (2003): Report on a Scientific Research Expedition to Lake Pumayum Co on the Tibetan Plateau,2001, Tokai University Himalayas expedition committee, 197p./Chinese Academy of Science (1984): 'Rivers and Lakes in Tibet',Science publisher, 238p.



Fig.1 The Study Area

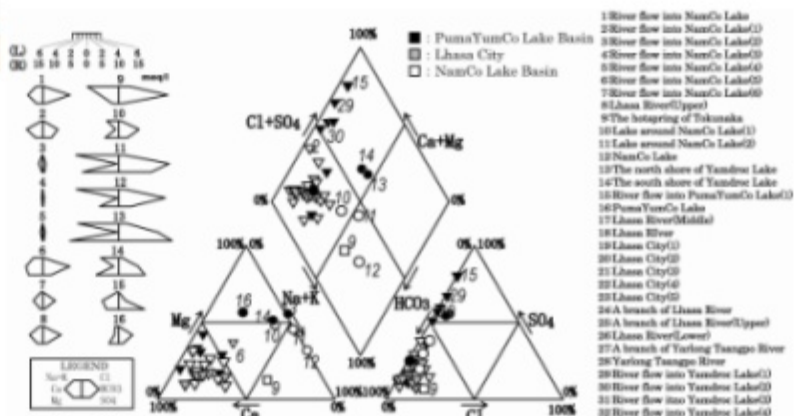


Fig.2 Water Quality in Tibetan Plateau