

Proc. NIPR Symp. Antarct. Geosci., 2, 174, 1988

CHEMICAL CHARACTERISTICS OF POND WATERS IN THE
LABYRINTH OF SOUTHERN VICTORIA LAND,
ANTARCTICA (ABSTRACT)

Tetsuya TORII¹, Shyu NAKAYA², Osamu MATSUBAYA³, Genki I. MATSUMOTO⁴,
Nobuki TAKAMATSU⁵, Noriyasu MASUDA⁶, Tamio KAWANO⁷
and Haruta MURAYAMA⁸

¹*Chiba Institute of Technology, 17-1, Tsudanuma 2-chome, Narashino 275*

²*Department of Earth Sciences, Faculty of Science, Hirosaki University,
3, Bunkyo-cho, Hirosaki 036*

³*Research Institute of Underground Resources, Mining College, Akita University,
1-1, Tegatagakuen-cho, Akita 010*

⁴*Department of Chemistry, The College of Arts and Science, The University of Tokyo,
8-1, Komaba 3-chome, Meguro-ku, Tokyo 153*

⁵*Department of Chemistry, Toho University, 2-1, Miyama 2-chon.e, Funabashi 275*

⁶*Department of Chemistry, Faculty of Fisheries, Hokkaido University,
1-1, Minatomachi 3-chome, Hakodate 041*

⁷*Department of Chemistry, Faculty of Education, Oita University,
700, Dannohara, Oita 870-11*

⁸*Department of Chemistry, Faculty of Education, Yokohama National University,
156, Tokiwadai, Hodogaya-ku, Yokohama 240*

A large number of fresh and saline ponds are found in the Labyrinth (77°33'S, 160°50'E) of the upper Wright Valley in the Dry Valleys region of southern Victoria Land, Antarctica. They are located near the terminus of the Wright Upper Glacier between 800–1000 m above sea level. From a limnological point of view, the most interesting problems concerning these saline ponds are the origin of their salts and their evolutionary history.

Chloride ion contents vary remarkably among the ponds ranging from 0.0049 to 52.4 g kg⁻¹. Surprisingly, more than a half of the ponds are saline with the highest chloride ion content being 2.7 times greater than that of seawater. The δD and $\delta^{18}O$ values of the pond waters indicate a snow and/or glacier melt-water origin, and that the ponds underwent subsequent alteration due to evaporation or freezing. The composition of chemical components reveal no evidence of trapped seawater. Thus the salt concentrations in the Labyrinth pond waters must be explained principally by the accumulation of atmospheric salts and subsequent repeated cycles of evaporation and freezing of the pond waters over a considerable period of time. (This paper is submitted to the special issue of *Hydrobiologia*.)

(Received March 9, 1988)