

Behaviors of spring water in gneiss region of Taihang Mountain, China

Zhongqu Ma[1], Changyuan Tang[2], Yasuo Sakura[3], Shizuo Shindo[4]

[1] Faculty of Science, Chiba University, [2] Graduate School of Sci. and Tech., Chiba Univ., [3] Earth Sci. Chiba Univ, [4] Chiba University

Water shortage is the key factor that restricts the development of arid and semi-arid area. Among studies on various water resources, the study on spring water and mountainous brook has particular importance for the inhabitants in mountainous area. In order to make clear characteristics of spring water, the experiment site has been chosen at Taihang Hilly Ecological Station, CAS.

By using automated flow gauge and thermometer, both spring water flow and temperatures for air and topsoil have been measured. It was found that there exists a diurnal change of spring water.

Results indicate both variations of air temperature and soil temperature has a cycle of 24 hours and a negative correlation with a diurnal change of spring water with the maximum coefficient of 0.93. It is considered that spring flow is affected greatly by evapotranspiration.

At the same time, the diurnal changes of spring flow are different from season to season. In December, spring flow almost has no fluctuation in a day, so its fluctuation curve is like a straight line. With the rise of temperature in April, the spring flow begins to fluctuate periodically but the amplitude is very small. Until June, the diurnal fluctuation of spring flow is very obvious, even in some day spring water dries up for no supplement of rain. In the rainy season, from July to September, the amplitude of the diurnal variation of spring flow reaches the peak in the whole year.