

The spring water temperature change of the cliff line ;An example of Setagaya-ku, Tokyo

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1.Introduction

The groundwater temperature is about the same with yearly average temperature of the land. In the center of the big city, a rise of the temperature is reported by warming or the heat island effect of the climate. If temperature rose, I thought that the ground water temperature might rise and examined from the data of the water temperature of the spring of about 10 years.

A place of the springs is three places along the Kokubunji cliff line of Setagaya-ku, Tokyo, and it is Mitsuike Pond spring, Seijo green tract of land spring, an Okura house spring.

2.A measurement method

I measured water temperature every approximately 1 week and analyzed it with data from January 7, 1993 to February 24, 2004 in that. I used a mercurial stick-shaped thermometer for a measure. The scale at the minimum was 0.2 degree Celsius, but read it by a 0.1 degree Celsius unit. In addition, the thermometer which I used for the measurement examined a thermometer and comparison with an official approval certificate on the site and a request revised an instrument error every time and did it with measurement data.

3. A rise of the temperature

I used data of yearly average temperature from 1876 to 2004 in Otemachi, Tokyo that I observed at the Meteorological Agency. The temperature was 14 degrees Celsius level from 13 degrees Celsius level in the 19th century. Temperature rises to 16 degrees Celsius level in 1980's.

4. A change of spring water temperature

It is distinguished from a short-term change for a long-term change. When the water temperature sprang out with a fall tendency, and quantity of increased when the short-term change was a season change, and quantity of gush decreased, it was an upward trend. If there becomes little quantity of gush, it is easy to become affect by the temperature at the time of the gush. Cases of the winter season are affected by low temperature in many things generally for the decrease period of the quantity of gush of these springs, and spring water temperature falls. The tendency of the water temperature fall is remarkable, and the comparatively little Mitsuike Pond spring of the quantity of gush is the Okura house spring which it springs out, and maintain quantity of 2 L/ sec adversely even in the winter season, and the degree of the water temperature fall is small.

The water temperature rises when I watch a change in a long-term viewpoint called ten years. In these ten years, 0.5 degree Celsius rose at Mitsuike Pond spring, 0.4 degree Celsius rose at Seijo green tract of land spring, 0.6 degree Celsius rose at an Okura house spring when I watched spring water temperature of the yearly average. I had constant relation to the size of the presumed cultivation area of these three springs and the rise of the water temperature, and the water temperature rise change of the spring was small if cultivation area was small, and it became clear that a water temperature rise change was big at the spring that cultivation area was wide.