

日本とオランダにおける地下水、 湧水の水質の比較研究

寺 園 淳 子*

Comparative Study on the Water Quality of Groundwater and Spring Water in Japan and the Netherlands

Atsuko TERAZONO*

Abstract

The quality of shallow groundwater and spring water was investigated in two study areas in central Japan and central Netherlands, which are considered to have many contrasting geographical features. Human activities and their backgrounds were also investigated to clarify genealogically the relationships between land-water quality and surrounding human activities. The study areas are located in the eastern part of Tokyo Metropolitan area in Japan (referred to as JP) and between the cities of Amsterdam and Utrecht in the Netherlands (NL). An additional small area (Js) within the JP area was also selected to supplement shallow groundwater quality in the area. For each study area, 105 water samples were selected from data collected, sources of which included field data, a web-accessible database and a published thesis. Major inorganic ion concentrations and latitude/longitude/altitude information were collected for the selected water samples. In each study area, 7 classes of 15 samples were based on total major inorganic ion concentrations, and the values of data collected were averaged within the classes. The class-averaged values of ion concentrations and of latitude/longitude/altitude are shown and trends observed in each area are described. Common factors and differences among study areas are:

- ・ The conditions controlling class distributions in both JP (incl. Js) and NL areas are considered to be the same in terms of regional structures. Differences in source and residence time of groundwater along with altitude largely control distributions, and horizontal differences in land use have small effects in addition.
- ・ General characteristics as well as ways ion-balances and latitude/longitude locations change along with classes differ among study areas. One cause is the existence of brackish groundwater in NL. The other is considered to be the difference in land-use allocation and associated water-use mixture in terms of their patterns.

The above two causes of differences are linked, incorporating the fact that shallow groundwater from recent precipitation is present in areas where the land is drained and groundwater is disturbed by human activities. In conclusion, the formation of class distributions in both JP (incl. Js) and NL areas is strongly related to land-use allocation and associated water-use mixture. Differences in land use in terms of altitude are greater than those in terms

* 国際農林水産業研究センター 熱帯・島嶼研究拠点

* Tropical Agriculture Research Front, Japan International Research Center for Agricultural Sciences

of horizontal distribution, which led to the common regional structures controlling distributions.

Key words : water quality, groundwater/spring water, land use, Shimousa Upland, the Netherlands

キーワード : 水質, 地下水・湧水, 土地利用, 下総台地, オランダ