

## The Seasonal variation of the amount of flowing artesian well springwater in the Ashigara Plain, Kanagawa Prefecture.

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### Introduction

Many of cities are located in the alluvial plain of an area along the shore for our country which is an island country. In the alluvial plain, the confined groundwater cultivated in an upside fan or mountain area is used as the source of industrial water, or a source of tap water with river water. Overuse of groundwater in the city region in period of high economic growth caused groundwater obstacles, such as ground subsidence as one of the seven typical pollution and depleted of springwater.

Also in the flowing artesian well area from which is distributed in the Ashigara plain in the western area of Kanagawa prefecture decline has been reported after the 1960s. Moreover, the investigation in 2011 showed that there were 1,000 or more flowing artesian wells in the whole Ashigara plain. Furthermore, it turned out that about 50,000 tons per day of from the whole artesian wells. However, although relation with the irrigation to a paddy field is pointed out about the seasonal variation of the amount of the springwater from flowing artesian wells, there are many questions about details.

So, in this study, investigation over one year was conducted about the flowing artesian well springwater distributed in the Ashigara plain, and seasonal variation of the amount of springwater which gushes from a flowing artesian well was clarified.

### Results of an investigation and consideration

Investigation conducted one investigation per month for 205 flowing artesian wells for June, 2013 to one year, and performed measurement of the amount of natural flows, water temperature, electrical conductivity, pH, and dissolved ion concentration. Since the amount of natural flows measured at 205 points had the large variation in the amount of natural flows for every point, it standard scoreized the amount of natural flows of every month, and grouped by cluster analysis for every point where the change pattern of the amount of natural flows was alike.

As a result, the change pattern of the amount of natural flows was able to be classified into "the type corresponding to an irrigation term" which increases to the irrigation term to a paddy field, and "the type corresponding to un-irrigation term" with which a remarkable changing trend is not seen through every year. Moreover, many flowing artesian wells on the west side of the Sakawa river of "the type corresponding to an irrigation term" classified according to the above-mentioned method were distributed, and "the type corresponding to un-irrigation term" was mostly distributed on the east side of the Sakawa river.

**Keywords:** flowing artesian well, Ashigara Plain, amount of flowing artesian well springwater, seasonal variation, irrigation to a paddy field