

Characteristics of precipitation in Japan evaluated from the ratio of precipitation events

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This study quantitatively evaluated the spatial difference in characteristics of precipitation in Japan based on the time variability in precipitation events and the occurrence ratio of each of clustered events at 47 points (prefectural capitals) in Japan. First, the time variation patterns in precipitation events were classified by the method of hierarchical clustering. In this study, the precipitation event was been defined as follows: (1) the total precipitation is 0.5 mm and over; (2) the start value is 0 mm/h; (3) the time period of a precipitation event is set to be 72 hours; (4) when two-hour break appears, the value of 0 mm/h is set into the subsequent period in the 72 hours. Based on this definition, the precipitation events were extracted in the time period from 1978 to 2018. Then, the precipitation events were separately investigated for “warm” (May to October) and “cold” (November to April) seasons.

The results show that the number of annual precipitation events tends to be large in the area with heavy snowfall and to the south of Kagoshima. In addition, in the warm season, light rain events account for 60 % and more at all points in Japan, and the events lasting for one day are less than 10 %. On the other hand, in the cold season, light rain events are more than 60 % at all points in Japan, and the events lasting for one day are less than 15 %.

From the above results, the characteristics of precipitation in Japan is divided into five; (1) winter light rain area, (2) summer light rain area, (3) summer long-term rain area, (4) winter long-term rain area, (5) all year round rain area.

Keywords: precipitation events, time variation patterns of precipitation, precipitation characteristics in Japan, hierarchical clustering