

On the temporal variation of precipitation in Suruga Bay and the basins of First-class rivers flowing into Suruga Bay

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Because the mouth of Suruga Bay opens widely to the south, it is considered that not only the surface layer but also the middle and deep layers are influenced by oceanic water, while at the same time, since there are four First-class rivers-the Ooi River, Abe River, Fuji River, and Kano River-it is considered that the influence of the land area is very large. Therefore, to understand the water mass structure of Suruga Bay, it is important to understand the interaction between Suruga Bay and the open ocean, and the interaction between Suruga Bay and the land area. However, the mouth of Suruga Bay is extremely deep at 2500 m, the flux across the bay mouth section is still not known, and river discharge and other data contain many missing values, so it is not known how much freshwater flux exists in Suruga Bay. Therefore, in this study, to clarify the interaction between the land area and Suruga Bay, the objective was to determine the temporal variation of freshwater supply to Suruga Bay from the precipitation within Suruga Bay and the basins of each First-class river flowing into it. The data used were rainfall intensity observed by the Japan Meteorological Agency radar observations (1 km² grid). In addition, basin mesh data provided by the Ministry of Land, Infrastructure, Transport and Tourism were used to define the locations including tributaries of each river and the basin boundaries. The target period was 17 years from 2006 to 2022. From the grid data used, the basin areas are 1380 km² for the Ooi River, 565 km² for the Abe River, 4080 km² for the Fuji River, and 887 km² for the Kano River, and Suruga Bay was 2168 km². Based on this, the seasonal variation of precipitation over 17 years in each river basin flowing into Suruga Bay showed peaks in July and September, and exhibited a so-called M-shaped pattern with low precipitation in winter. This corresponds to the characteristics of the Southwest Pacific type (Kusanagi, 2016) and is consistent with previous findings. The precipitation directly falling into Suruga Bay also showed a similar seasonal variation. In addition, the interannual variation of annual precipitation in each river basin showed a minimum in 2013 (1599 mm), peaks in 2011 (2308 mm) and 2019 (2352 mm), and has decreased since 2019. And the average precipitation within the four river basins over the 17 years was 2048 mm. On the day of the presentation, the freshwater supply to Suruga Bay over these 17 years will be discussed.

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