



Long-term variation of the Baiu precipitation in the northwestern Japan during the 20th century (With attention to the appearance of the heavy rainfall days)

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In East Asia a significant rainy season called the “Baiu” (called the Meiyu in China) appears just before the mid-summer, greatly influenced by the global-scale Asian summer monsoon. Especially in the western part of the Japan Islands (such as Kyushu District) and the Changjiang River Basin in Central China, the frequent appearance of the heavy rainfall days in that season results in the large total precipitation amount climatologically. It is also well known that the precipitation features around the Baiu/Meiyu frontal zone show the great variety from east to west and that from stage to stage of the seasonal evolution. In order to understand the possible response of the detailed regional climate associated with the Baiu/Meiyu precipitation to the global-scale climate change, such as the Global Warming, it does be necessary to examine the past long-term variability paying attention to the contribution of the appearance tendency of the daily heavy precipitation events. Since the Baiu precipitation in the northwestern Kyushu is especially large in the Japan Islands area, the present study examined firstly the long-term variation during the 20th century at Nagasaki as an example for that region, based on the daily precipitation data provided by the Japan Meteorological Agency.

In the former half of the 20th century, large non-symmetric year-to-year variation of monthly precipitation was found at Nagasaki in June, i.e. while the large amount of precipitation was brought every 5 to 10 years, the rather small amount of precipitation was observed in the other many years. This year-to-year variation of the total precipitation was reflected by that of the contribution of heavy rainfall days with 50 [U+301C] 100 mm/day.

On the other hand, total precipitation in July and its year-to-year variability increased in the latter half of the 20th century, although the appearance frequency of the “non-precipitation days” in July also increased. Such features were especially predominant for the latter half of July, which is the transition season from the Baiu to the midsummer there climatologically. The increase in total precipitation and the large year-to-year variability in the latter half of the 20th century were reflected by the increase in contribution of the “extreme” heavy rainfall days (with more than 100 mm/day).