Representation of the past weather prior to the International Geophysical Year (1957-1958) in JRA-3Q

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Abstract

The Japan Meteorological Agency (JMA) is currently producing the third reanalysis, called the Japanese Reanalysis for Three Quarters of a Century (JRA-3Q). JRA-3Q is based on the TL479 version of JMA's operational NWP system as of December 2018, which was extensively improved since the Japanese 55-year Reanalysis (JRA-55). The JRA-3Q reanalysis provides improved products using rescued historical observation data as well as reprocessed satellite data in the data assimilation system. JRA-3Q covers the period starting in the late 1940's. The reanalysis is divided into three streams, stream A (a period from the 1990's onward), stream B (a period from the 1960's to 1980's) and stream C (a period from the late 1940's to 1950's). The stream C corresponds to the period for which JMA has never produced reanalysis products. This period is important because several meteorological disasters happened in Japan at that time. For example, Typhoon Kathleen in September 1947 brought severe flood damage to eastern Japan and since then criteria of flood disaster prevention in Japan has been based on the record-breaking daily precipitation due to that typhoon. However, it is difficult to produce a high-quality reanalysis for this period because there was no network of regular radiosonde observations on a global basis. In this presentation, we show the past weather reconstructed in JRA-3Q during stream C and then examine the accuracy of the reanalysis compared to other reanalyses (e.g., 20CR and CERA-20C).

Keywords: reanalysis, evaluation, rescued historical observation, International Geophysical Year, tropical cyclone

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