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# Current status of JRA-55 project

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A new generation reanalysis JRA-55 project has been processed. In the JRA-55, many problems found in the previous reanalysis JRA-25 are fixed and improved. For example, dry bias in Amazon Basin and large temperature bias in stratosphere are resolved in the JRA-55. In addition, a target period of 55 years in the JRA-55 is much longer than one of the JRA-25, and studies of long-term variability over the last half century become to be possible with the JRA-55. In JRA-55, we include a lot of observation, for example, snow depth from Russia and China, and tropical cyclone wind retrieval data, that are not used in other reanalysis, and aim at the reanalysis with higher quality as possible.

In the JRA-55 project, we are making the subset products for specialized purpose other than a main product. The one includes reanalysis JRA-55C which is specialized for climate change studies. In the traditional reanalysis, all available observations are utilized in data assimilation system to produce higher quality reanalysis products as possible. It was the effective and necessary methodology in the time that computer resources are not enough, but the available observations are fewer in the earlier time. Especially, the satellite observations are never available before the 1970s. Due to such times change of observation data, the quality of the reanalysis product is variable depending on the times. In addition, satellite observations include some bias, and the bias has different characteristics in different satellites. Because the lifetime of individual satellites is around several years, and the different bias level introduces large inhomogeneity in the reanalysis products in each several years. In general, the signal of the climate change is smaller than the noises in the reanalysis products originated from the time change observation systems, and inhomogeneity in the reanalysis products is obstacles in applying the reanalysis products to climate change studies. To achieve the homogeneous reanalysis products applicable to climate change studies, we started the JRA-55C only using upper air and surface observations which are expected to have relatively small time change.

In addition, the AMIP run is also processing with the global model used in JRA-55. It is a numerical experiment only using the boundary condition such as the sea surface temperature, and not to assimilate observation data. Using AMIP products, we can quantitatively understand characteristics of the climatology of the forecast model used in the data assimilation system, and can directly obtain how much modification is made in the data assimilation system.

Keywords: Data Assimilation, Reanalysis, Integration