Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

ACG36-06 Room:103 Time:May 21 10:45-11:00

Development of a gridded temperature dataset and its application to rain/snow discrimination of precipitation.

YASUTOMI, Natsuko[1*], HAMADA, Atsushi[2], KAMIGUCHI, Kenji[3], ARAKAWA, Osamu[3], YATAGAI, Akiyo[4]

[1]Research Institute for Humanity and Nature, [2]Atmosphere Ocean Research Institute, Univ. of Tokyo, [3]Meteorological Research Institure, [4]Integrative Environmental Sciences, Univ. of. Tsukuba

We created a daily mean gridded temperature dataset of monsoon Asia (15S-55N, 60E-155E) for the period of 1951-2007, with a 0.50 x 0.50 degree grid. We analyzed this dataset based on station observations collected and a quality control and interpolation system developed through the activities of the Asian Precipitation – Highly Resolved Observational Data Integration Towards Evaluation of Water Resources (APHRODITE) project. The number of stations is up to 1.5-3 times the number of stations based on the Global Telecommunication System (GTS), which have been used to obtain other gridded temperature products. The monthly means and climatology of our product are comparable to the monthly means of those products. This is the only product in Asia that has high resolution both temporally and spatially as the APHRODITE precipitation product is known for.

The ability to discriminate between rain and snow is added to the APHRODITE daily precipitation product by using daily mean temperature and relative humidity (RH) derived from a reanalysis product. We found use of the temperature product (of this study) and the RH derived from the reanalysis product to be adequate for determining whether precipitation was rain or snow. Our estimated solid precipitation amount using rain/snow discrimination for late fall to early spring (October to March) is consistent with satellite observations.

This dataset is available on the APHRODITE website (http://www.chikyu.ac.jp/precip). The combination of daily mean temperature, precipitation and rain/snow information in this high- resolution gridded format would be useful as input to river-flow models, crop models and many other situations where water resources must be estimated.