Long-Term Daily Gridded Precipitation Dataset for Asia and Its Use for Climate Monitoring





1. Introduction

- The changes of extreme events under human-induced global warming are focused in the international scientific and political frameworks (IPCC AR5, 2013).
- The Japan Meteorological Agency (JMA) operationally issues reports on extreme climate events on a weekly basis with SYNOP messages.
- Identification of weekly extreme (statistically rare) events is difficult due to a limited period of historical daily data. We have investigated **more suitable** threshold determination method for extreme precipitation events with **APHRODITE's daily precipitation** dataset (e.g., Yatagai et al. 2012).



2. Data and Method

Asian Precipitation – Highly Resolved Observational Data Integration Towards Evaluation of the Water Resources (APHRODITE's Water Resources)

#Rain gauge based dataset #Period: 1951 – 2007, Daily

We define climatological mean as 57years mean from 1951 through 2007.



Fig. 2. Target areas for this research. Dots show monthly mean of *CLIM_7DAY* [mm] for July.

How to identify weekly extreme precipitation event?

In this study, we regard an extreme event as a phenomenon that would happen once or less every 30 years. Reference values for identifying extreme precipitation are as below.

	JMA_Ext	t (X)		PCT097
Defini tion	JMA's empirical thresholds given by (A). In this study we can obtain X from historical daily data, but in actual operation, X estimated from monthly climatological mean is used because of insufficient historical daily data.			97 percentil target week from historic data.
$JMA_Ext(X) = \begin{cases} (-24.15 \times \ln(X)) \\ 0.5876 \times X \end{cases}$		() + 208.84)/100	$0 \times X 0 < X \ge X$	
X: climatological mean of 29-day precipitation centered at target week N: The numbers of weekly extreme precipitation event from 1951–2017.		CLIM_7DAY: Clin day precipitation STD_7DAY: Stan precipitation asso variability.	natological n dard deviatio	

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> Acknowledgements: This research was supported by the Environment Research and Technology Development Fund of the Ministry of the Environment, Japan. References: Yatagai, A. et al., 2012: APHRODITE: Constructing a Long-term Daily Gridded Precipitation Dataset for Asia based on a Dense Network of Rain Gauges, BAMS.





