

Precipitation intensity of East Asian summer monsoon simulated by CMIP3 models

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1. Introduction

Precipitation intensity of East Asian summer monsoon simulated by Couple Model Intercomparison Project 3 (CMIP3) models was evaluated. Daily precipitation output data for Climate of the 20th Century experiments (20C3M) were collected from simulations of sixteen models

2. Models

CMIP3, 20C3M, Daily precipitation data

No	ID	Name	Nation	Resolution	Leap year	Period used here	Year Flux adjustment	ID
		alphabetical order		*				
1	A	BCCR-BCM2.0	Norway	T42	YES	1991-1998	8 NO	A
2	B	CCSM3	USA	T85	NO	1991-1999	9 NO	B
3	C	CGCM3.1(T30)	Canada	T30	NO	1991-2000	10 YES	C
4	D	CGCM3.1(T42)	Canada	T42	NO	1991-2000	10 YES	D
5	E	CNRM-CM3	France	T42	YES	1991-2000	10 NO	E
6	F	CSIRO-MK3.0	Australia	T63	NO	1991-2000	10 NO	F
7	G	ECHAM5/MPI-OM	Germany	T63	YES	1991-2000	10 NO	G
8	H	FGOALS-g1.0	China	T42	NO	1991-2000	10 NO	H
9	I	GFDL-CM2.0	USA	G47	NO	1991-2000	10 NO	I
10	J	GISS-AOM	USA	G29	YES	1991-2000	10 NO	J
11	K	INGV-SXG	Italy	T106	YES	1991-1999	9 NO	K
12	L	INM-CM3.0	Russia	G23	NO	1991-2000	10 YES	L
13	M	MIROC3.2(hires)	Japan	T106	YES	1991-2000	10 NO	M
14	N	MIROC3.2(medres)	Japan	T42	YES	1991-2000	10 NO	N
15	O	MRI-CGCM2.3.2	Japan	T42	NO	1991-2000	10 YES	O
16	P	PCM	USA	T42	NO	1991-1999	9 NO	P

* "G" denotes grid model.
 Two digits after G show corresponding spectral wave number.

3. Method

(1) Target month

June to July, East Asia summer monsoon season

(2) Period

1991-2000, 10 years, Some models use 8 or 9 years.

(3) Precipitation intensity

- Simple Daily precipitation Intensity Index (SDII): total precipitation / number of rainy days (precipitation >= 1 mm/day)

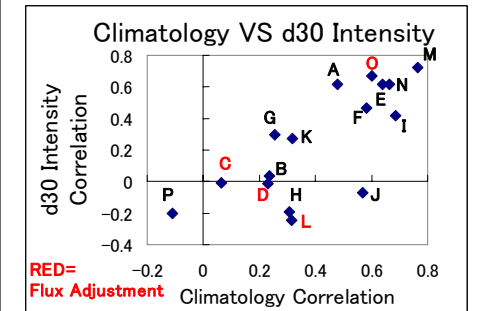
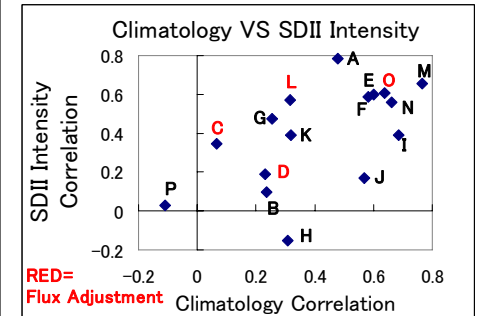
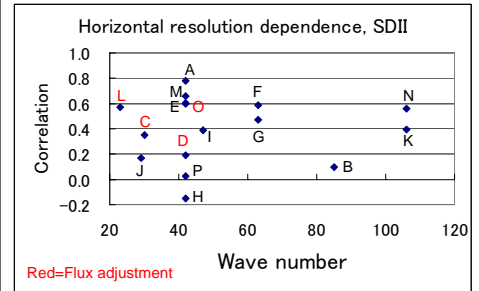
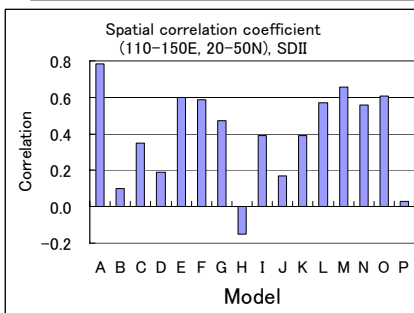
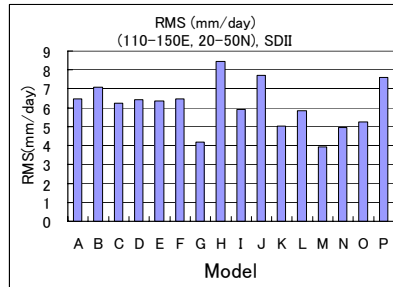
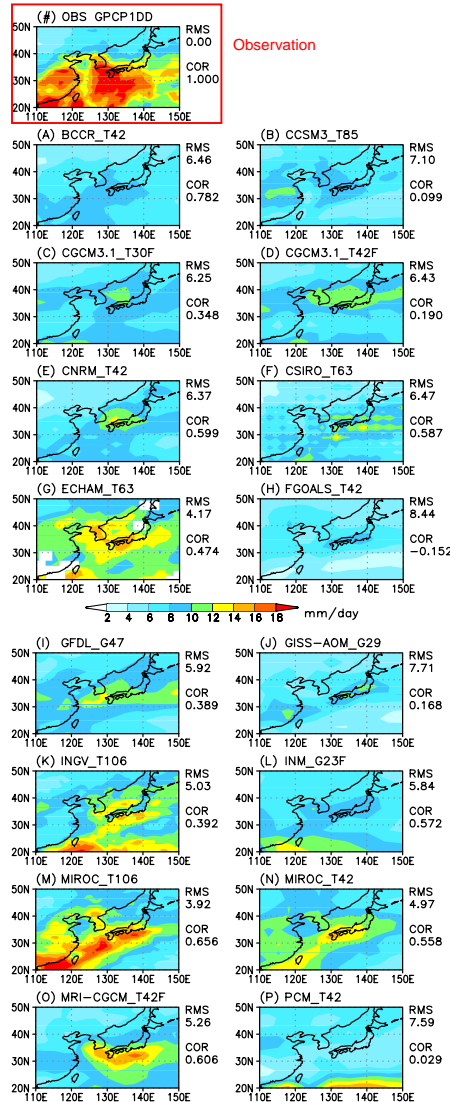
- The number of heavy rainfall days : precipitation >= 30 mm/day

(4) Observational data

The one-degree daily precipitation data of Global Precipitation Climatology Project (GPCP) from 1979 to 2003 (7 years) Huffman et al. (2001)

4. Results

Simple Daily Intensity Index (SDII) mm/day
 CMIP3 20C3M 1991-2000 Month= 6 to 7



5. Summary

- (1) Reproducibility of intense precipitation does not depend on horizontal resolution of model.
- (2) Reproducibility does not depend on the use of flux adjustment.
- (3) Model with good precipitation climatology show high reproducibility of intense precipitation.

Acknowledgements

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