

Supporting Online Material for Enhanced future variability during India's rainy season

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Table 1: Details of the data availability for the 20 comprehensive models used in the study. Only those models are selected for which data for historic period, RCP 8.5 and atleast one more scenario is available at the time of the study.

Modeling Center (Group)	Model	RCP8.5	RCP6.0	RCP4.5	RCP2.6
Commonwealth Scientific and Industrial Research Organization (CSIRO) and Bureau of Meteorology (BOM), Australia	ACCESS1.0	Y	N	Y	N
Beijing Climate Center,China Meteorological Administration	BCC-CSM1.1	Y	Y	Y	Y
Canadian Centre for Climate Modelling and Analysis	CanESM2	Y	N	Y	Y
National Center for Atmospheric Research	CCSM4	Y	Y	Y	Y
Centre National de Recherches Meteorologiques / Centre Europeen de Recherche et Formation Avancees en Calcul Scientifique	CNRM-CM5	Y	N	Y	Y
Commonwealth Scientific and Industrial Research Organization in collaboration with Queensland Climate Change Centre of Excellence	CSIRO-Mk3.6.0	Y	Y	Y	Y
LASG, Institute of Atmospheric Physics, Chinese Academy of Sciences	FGOALS-s2	Y	Y	Y	Y
NOAA Geophysical Fluid Dynamics Laboratory	GFDL-CM3	Y	Y	N	Y
	GFDL-ESM2G	Y	Y	Y	Y
	GFDL-ESM2M	Y	Y	Y	Y
Met Office Hadley Centre	HadGEM2-CC	Y	N	Y	N
	HadGEM2-ES	Y	Y	Y	Y
Institute for Numerical Mathematics	INM-CM4	Y	N	Y	N
Institut Pierre-Simon Laplace	IPSL-CM5A-LR	Y	Y	Y	Y
	IPSL-CM5A-MR	Y	N	Y	Y
Japan Agency for Marine-Earth Science and Technology, Atmosphere and Ocean Research Institute (The University of Tokyo), and National Institute for Environmental Studies	MIROC-ESM	Y	Y	Y	Y
	MIROC-ESM-CHEM	Y	Y	Y	Y
Max Planck Institute for Meteorology	MPI-ESM-LR	Y	N	Y	Y
Meteorological Research Institute	MRI-CGCM3	Y	Y	Y	Y
Norwegian Climate Centre	NorESM1-M	Y	Y	Y	Y

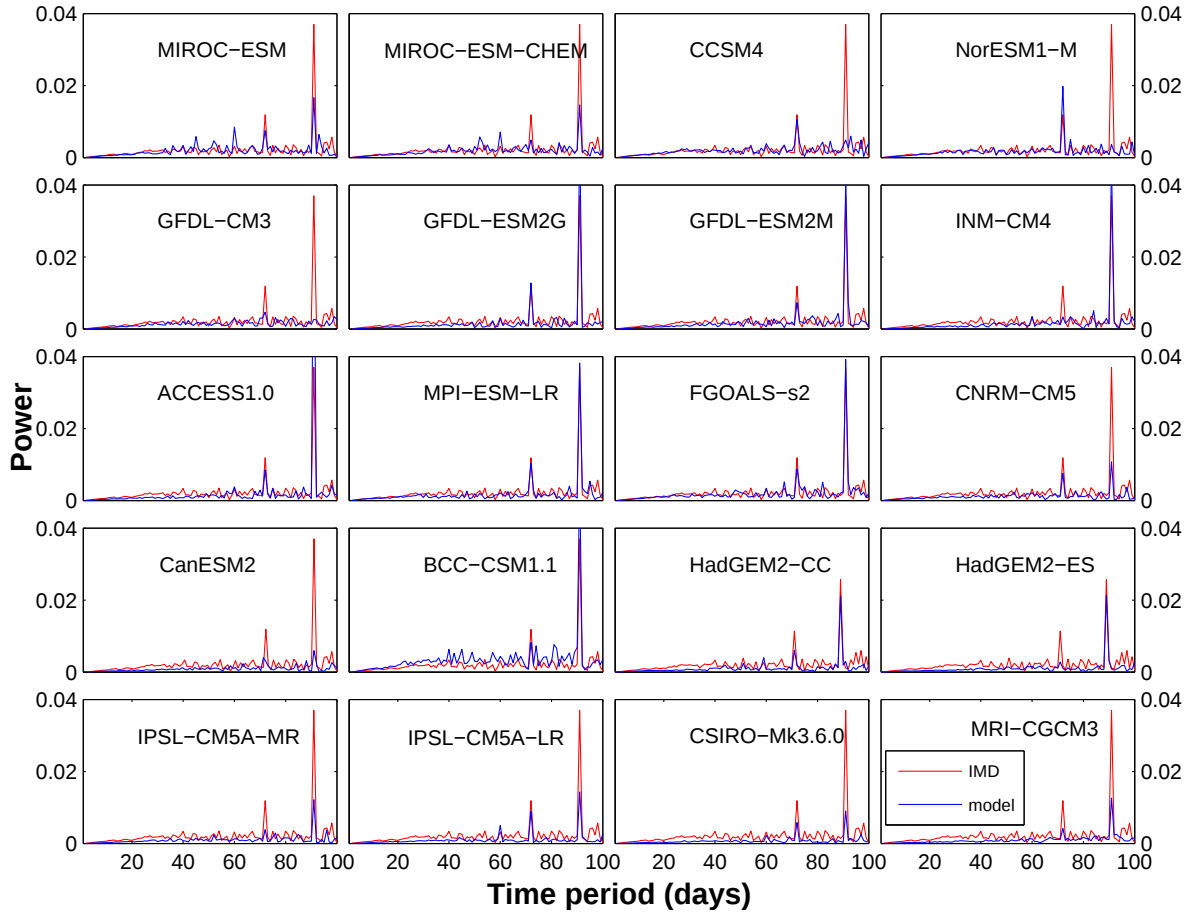


Figure 1: Smoothed power spectrum of daily rainfall from the models (blue lines) and 1 deg x 1 deg gridded observational data (red lines) provided by the India Meteorological Department (IMD) averaged over the all-India land region for the period 1951-2005. HadGEM-CC and HadGEM-ES models follow 360 days calendar and observational data is correspondingly adjusted in the panels for these two models. Majority of the models capture the intraseasonal variability comparable with observations.

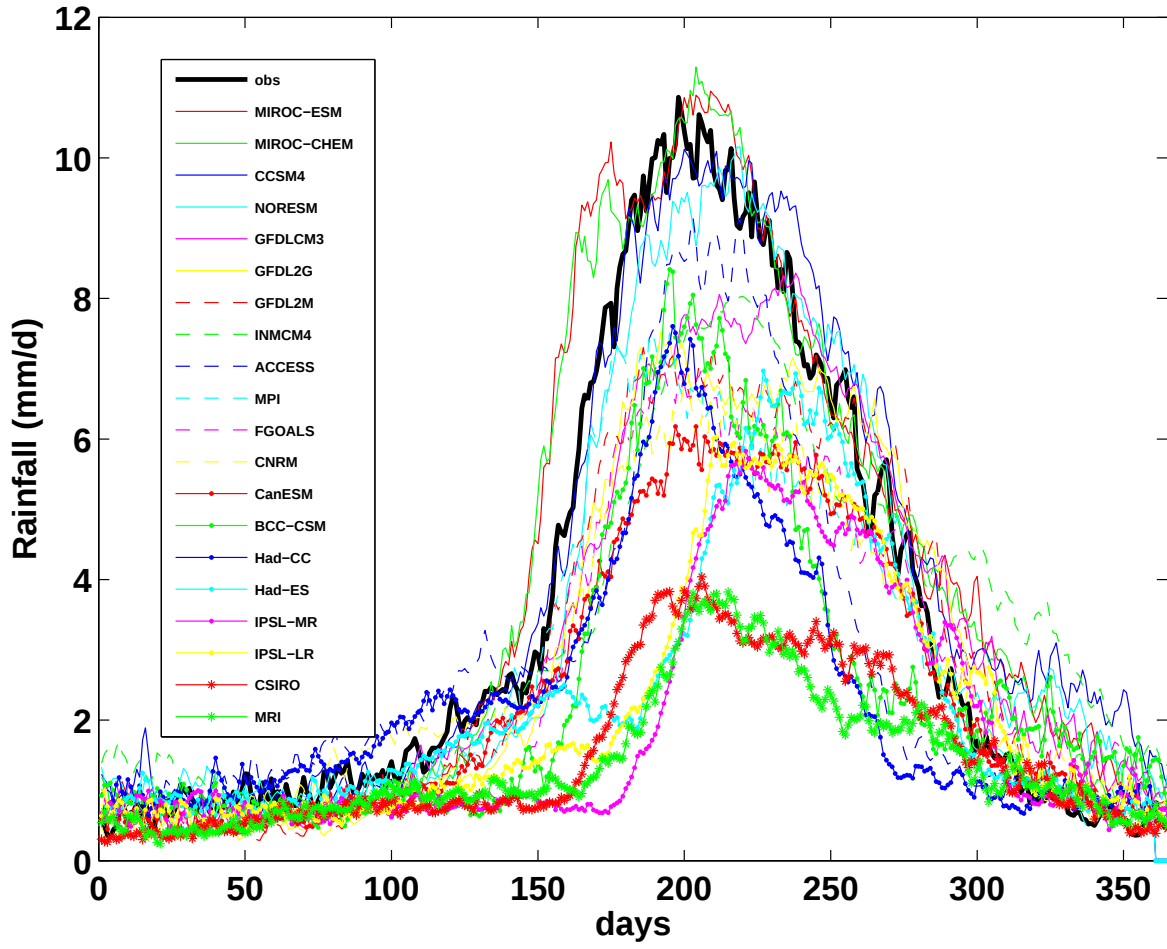


Figure 2: Annual cycle of rainfall from models and observation for the period 1951-2005 for the all-India region. Black line represents rainfall from observations. Models which capture seasonal mean rainfall within twice the standard deviation of observed mean captures the annual cycle too more realistically.