

# Electronic Supplementary Material to: Convective/Large-scale Rainfall Partitions of Tropical Heavy Precipitation in CMIP6 Atmospheric Models\*

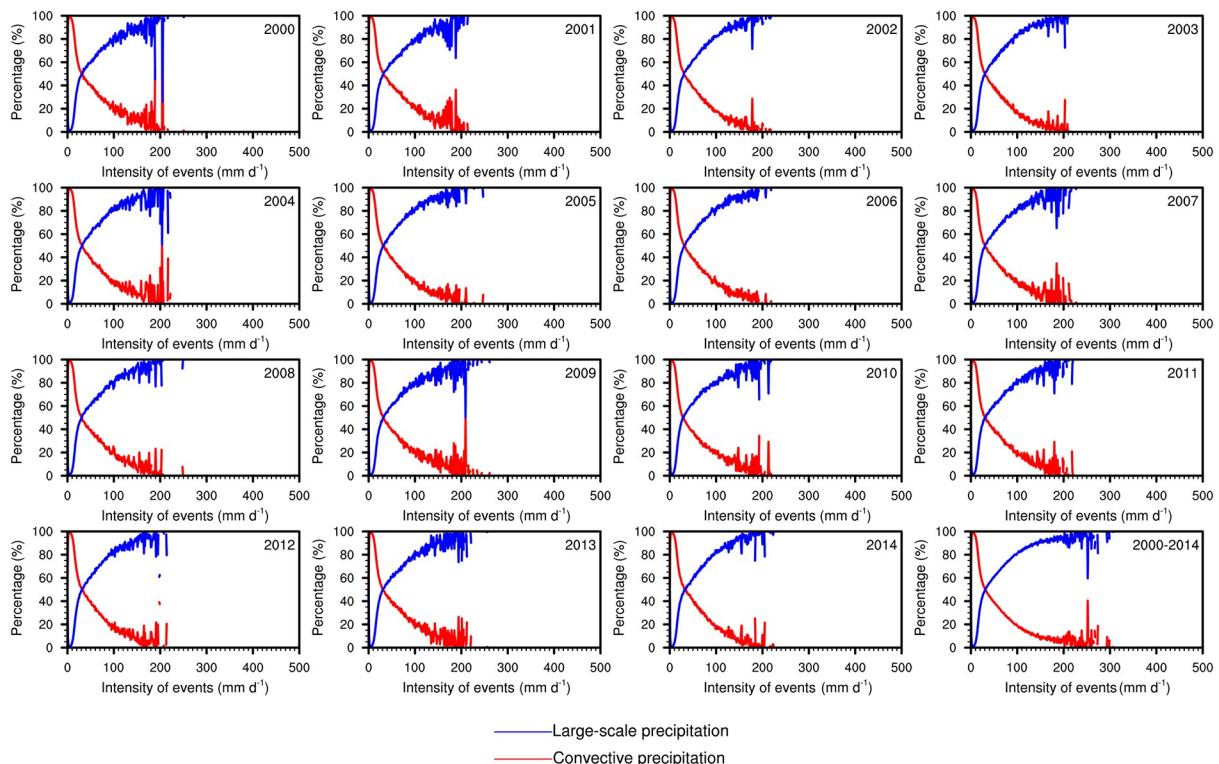
Jing YANG<sup>1,2</sup>, Sicheng HE<sup>1</sup>, and Qing BAO<sup>3</sup>

<sup>1</sup>*State Key Laboratory of Earth Surface Process and Resource Ecology/Key Laboratory of Environmental Change and Natural Disaster, Ministry of Education, Faculty of Geographical Science, Beijing Normal University, Beijing 100875, China*

<sup>2</sup>*Southern Marine Science and Engineering Guangdong Laboratory, Guangzhou 511458, China*

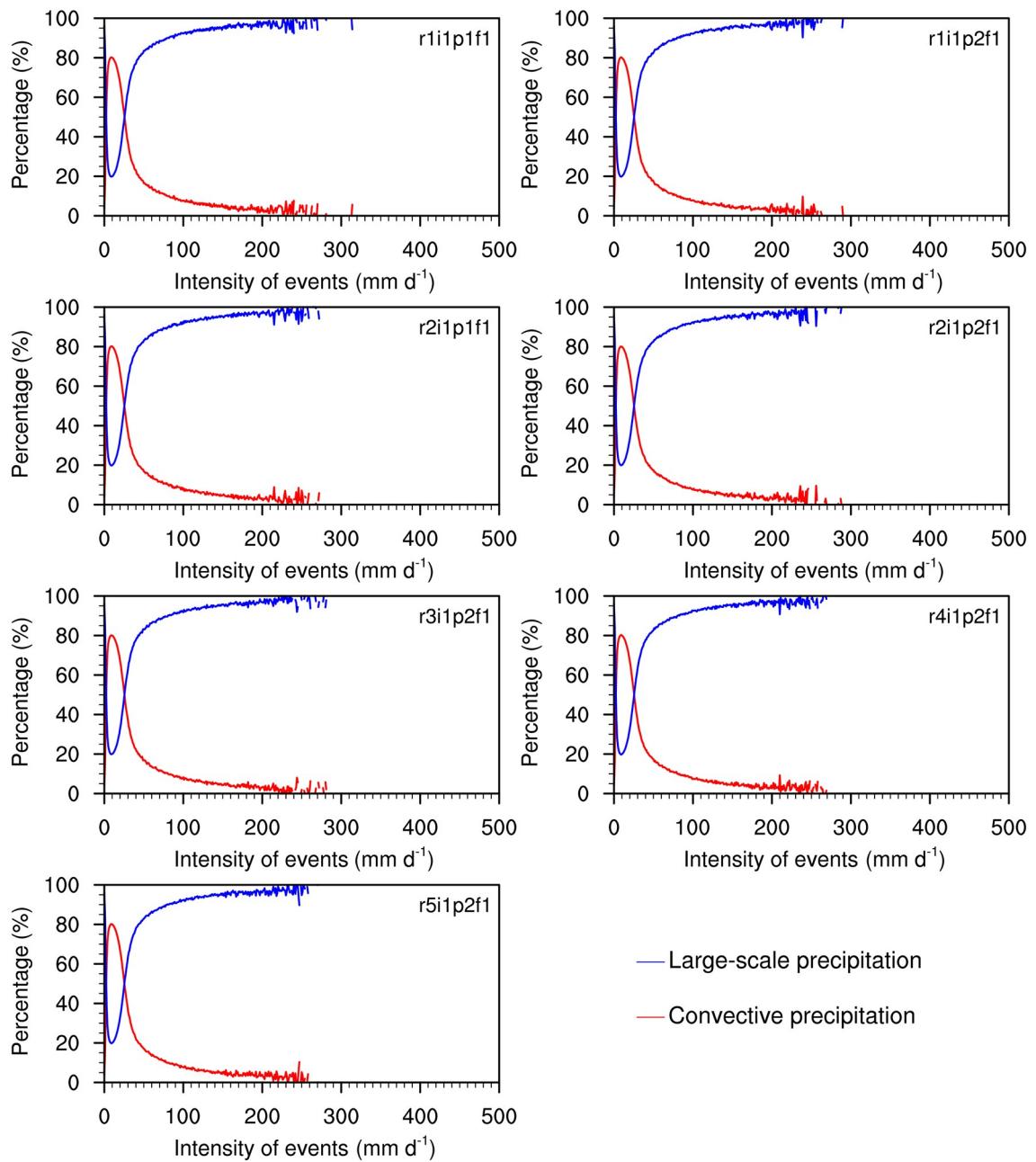
<sup>3</sup>*State Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG), Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing 100029, China*

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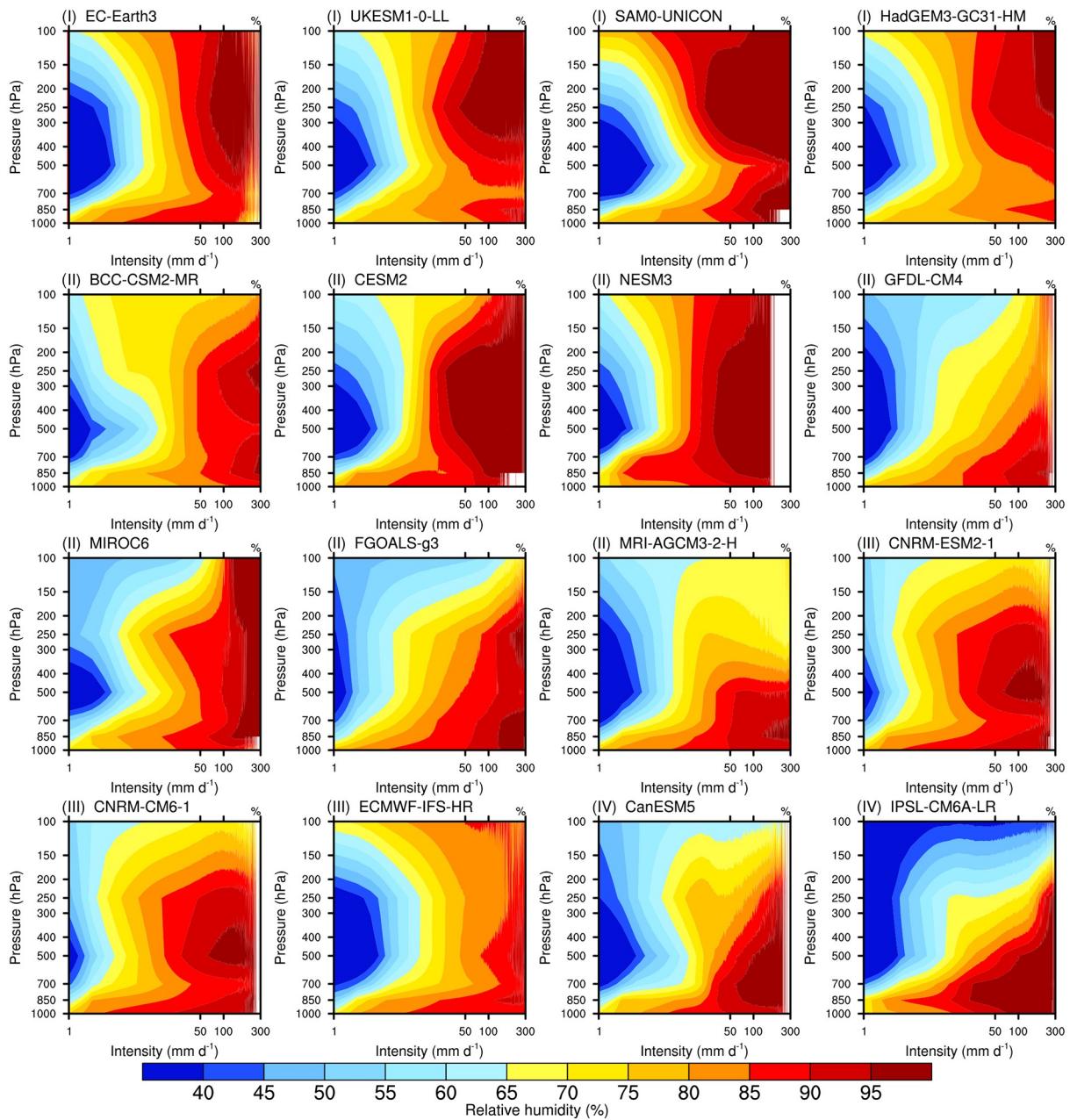


**Fig. S1.** Percentage–intensity distribution of C/L rainfall in each year and the whole period in IPSL-CM6A-LR.

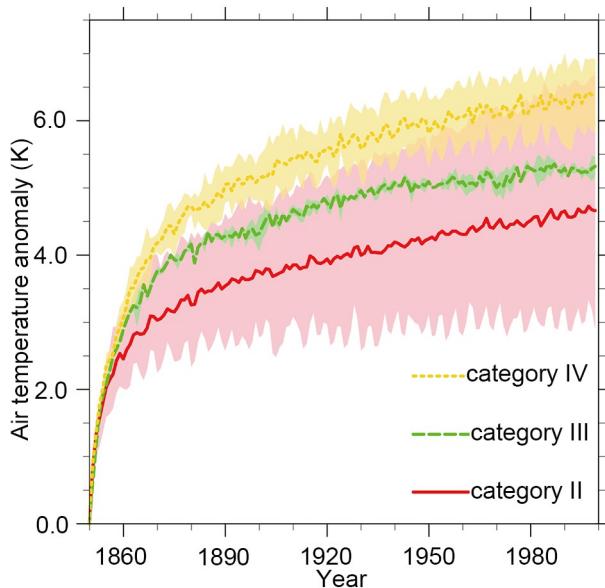
\*The online version of this article can be found at <https://doi.org/10.1007/s00376-021-0238-4>.



**Fig. S2.** Percentage–intensity distribution of C/L rainfall for each ensemble member in CanESM5.



**Fig. S3.** Composite vertical profiles of RH against different precipitation intensities of the CMIP6 models.



**Fig. S4.** Time series of ensemble air temperature anomaly in abrupt-4xCO<sub>2</sub> experiment in three types of CMIP6 models categorized by vertical moisture biases.

**Table S1.** Datasets, institutes and country/regions, horizontal resolution, and experiments of the CMIP6 models used in this study.

Model name	Institutes and country/region	Horizontal resolution	Experiment
BCC-CSM2-MR	Beijing Climate Center, China (BCC)	1.125°×1.125°	amip
CanESM5	Canadian Centre for Climate Modelling and Analysis, Environment and Climate Change Canada, Canada (CCCma)	2.8125°×2.8125°	amip
CESM2	National Center for Atmospheric Research, Climate and Global Dynamics Laboratory, USA (NCAR)	0.9375°×1.25°	amip
EC-Earth3	EC-Earth consortium, Rossby Center, Swedish Meteorological and Hydrological Institute, Sweden (EC-Earth-Consortium)	0.7°×0.7°	amip
GFDL-CM4	National Oceanic and Atmospheric Administration, Geophysical Fluid Dynamics Laboratory, USA (NOAA-GFDL)	1°×1.25°	amip
IPSL-CM6A-LR	Institut Pierre Simon Laplace, France (IPSL)	1.26°×2.5°	amip
NESM3	Nanjing University of Information Science and Technology, China (NUIST)	1.875°×1.875°	amip
SAM0-UNICON	Seoul National University, Republic of Korea (SNU)	0.9375°×1.25°	amip
UKESM1-0-LL	Met Office Hadley Centre, UK (MOHC)	1.25°×1.875°	amip
FGOALS-g3	Chinese Academy of Sciences, Beijing 100029, China (CAS)	2°×2.25°	amip
MIROC6	JAMSTEC (Japan Agency for Marine-Earth Science and Technology), AORI (Atmosphere and Ocean Research Institute), NIES (National Institute for Environmental Studies), and R-CCS (RIKEN Center for Computational Science), Japan (MIROC)	1.4°×1.4°	amip
CNRM-CM6-1	Centre National de Recherches Meteorologiques / Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique, France (CNRM-CERFACS)	1.4°×1.4°	amip
CNRM-ESM2-1	Centre National de Recherches Meteorologiques / Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique, France (CNRM-CERFACS)	1.4°×1.4°	amip
MRI-AGCM3-2-H	Meteorological Research Institute, Japan (MRI)	0.56°×0.56°	highresSST-present
ECMWF-IFS-HR	European Centre for Medium-Range Weather Forecasts, UK (ECMWF)	0.5°×0.5°	highresSST-present
HadGEM3-GC31-HM	Met Office Hadley Centre, UK (MOHC)	0.23°×0.35°	highresSST-present

**Table S2.** Two resolution ensemble groups of CMIP6 models used in this study.

Resolution group	Model name	Horizontal resolution
High resolution model ensemble (HRM)	CESM2	0.9375°×1.25°
	EC-Earth3	0.7°×0.7°
	SAM0-UNICON	0.9375°×1.25°
	HadGEM3-GC31-HM	0.23°×0.35°
	MRI-AGCM3-2-H	0.56°×0.56°
	ECMWF-IFS-HR	0.5°×0.5°
Low resolution model ensemble (LRM)	CanESM5	2.8125°×2.8125°
	GFDL-CM4	1°×1.25°
	IPSL-CM6A-LR	1.26°×2.5°
	NESM3	1.875°×1.875°
	UKESM1-0-LL	1.25°×1.875°
	FGOALS-g3	2°×2.25°
	MIROC6	1.4°×1.4°
	CNRM-CM6-1	1.4°×1.4°
	CNRM-ESM2-1	1.4°×1.4°
	BCC-CSM2-MR	1.125°×1.125°