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Table S1. Specifications of the four reanalysis temperature datasets and four rainfall datasets used in this study.

Product and Institution	Spatial Resolution	Time Range	Assimilation Scheme & Forecast Model	Unique Features, Comments, and websites for attaining datasets
Reanalysis Products				
ERA-Interim, European Centre for Medium-range Weather Forecasting (ECMWF)	0.75°	1979-Present	4D Variational (VAR): adaptive estimation of satellite bias correction. AGCM (IFS cycle 31r2).	▪ Surface gauge-based rainfall observations are not assimilated, instead rainfall is estimated from temperature and humidity data. ▪ Data accessible from: http://apps.ecmwf.int/datasets/data/interim-full-daily/levtype=sfc/
CFSR/CFSv2 National Centres for Environmental Prediction (NCEP)	0.3125°	1979-Present	Data assimilation through updated GDAS system (3DVAR). Climate Forecast System	▪ Full coupling of the ocean during generation of the 6-h guess field ▪ Interactive sea-ice model ▪ Data accessible from: http://cfs.ncep.noaa.gov/
MERRA2 National Aeronautics and Space Administration (NASA)	0.5° x 0.667°	1980-Present	3D VAR with incremental update (GDAS). Generated using Goddard Earth Observing System V5.12.4 AGCM. Observed SSTs.	▪ Interactive aerosols, a feature absent from other reanalyses. ▪ Global Precipitation Climatology Project (GPCP) is used to correct the model precipitation estimate ▪ Data accessible from: https://disc.sci.gsfc.nasa.gov/
JRA-55 JMA	0.5°	1957-present	4D VAR (T106 inner resolution): adaptive estimation of satellite bias correction. JMA's 2009 Global Spectral Model (AGCM).	▪ Observational surface pressure data is entirely excluded over the Amazon basin ▪ Data accessible from: https://rda.ucar.edu/datasets/ds628.1/
Precipitation Products				
TRMM 3B42 (V7) NASA	0.25°	1998-present	Merged satellite-gauge rainfall product	▪ Satellite estimate is combined with Global Precipitation Climatology Centre (GPCC) rain gauge analysis ▪ Data accessible from: https://disc.sci.gsfc.nasa.gov/
CHIRPS v2.0 USGS & CHG	0.05°	1980-Present	Merged satellite-gauge rainfall product	▪ Station data from: GHCN, GTS, GSOD, Southern African Science Service Centre for Climate Change (SASSCAL). Additional datasets come from national met. Agencies ▪ Data accessible from: http://chg.geog.ucsb.edu/data/chirps/
PERSIANN-CDR Univ. of California	0.25°	1983 - present	Merged satellite-gauge rainfall product	▪ Relies heavily on infrared satellite data from the GridSat-B1 satellite. ▪ Precipitation datasets are matched to the GPCP monthly product at a 2.5° resolution. ▪ Data accessible from: http://chrsdata.eng.uci.edu/
CMAP NCEP	2.5°	1979 - present	Merged satellite-gauge rainfall product	▪ Combines IR, SSM/I, Microwave Sounding Unit satellite data. Errors quantified by comparison with the GPCC rainfall product over land. ▪ Available with or without NCEP reanalysis precipitation values. This study used the version without NCEP fields. ▪ Data accessible from: https://www.esrl.noaa.gov/psd/data/gridded/data.cmap.html