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Evaluation of spatial and temporal precipitation patterns in select AR5 global climate models and reanalyses over the Intra-Americas Sea and North American monsoon regions

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Precipitation data from three AR5 global climate models and two reanalyses are examined specifically over the Intra-Americas Sea (IAS) region and compared to observational data to determine which products best reproduce observed spatial and temporal precipitation patterns in the region. Model data includes daily precipitation from the Hadley Centre's HadGEM2-ES model, the Max Planck Institute for Meteorology's MPIOM-ECHAM6 model (depending on availability), and the National Center for Atmospheric Research's CCSM4.0 model. The two reanalyses chosen for this study are the National Aeronautics and Space Administration's (NASA's) Modern Era Retrospective-analysis for Research and Applications (MERRA) and the European Centre for Medium-Range Weather Forecast's (ECMWF's) ERA Interim reanalysis (ERAI). The models and reanalyses are compared to satellite and in-situ precipitation data from NASA's Tropical Rainfall Measuring Mission (TRMM), the Global Precipitation Climatology Project (GPCP), and the Global Historical Climatology Network (GHCN). Results of this evaluation will be used by the authors in future studies to separately examining land-cover change and synoptic wave and storm activity in regional 21st century climate simulations.