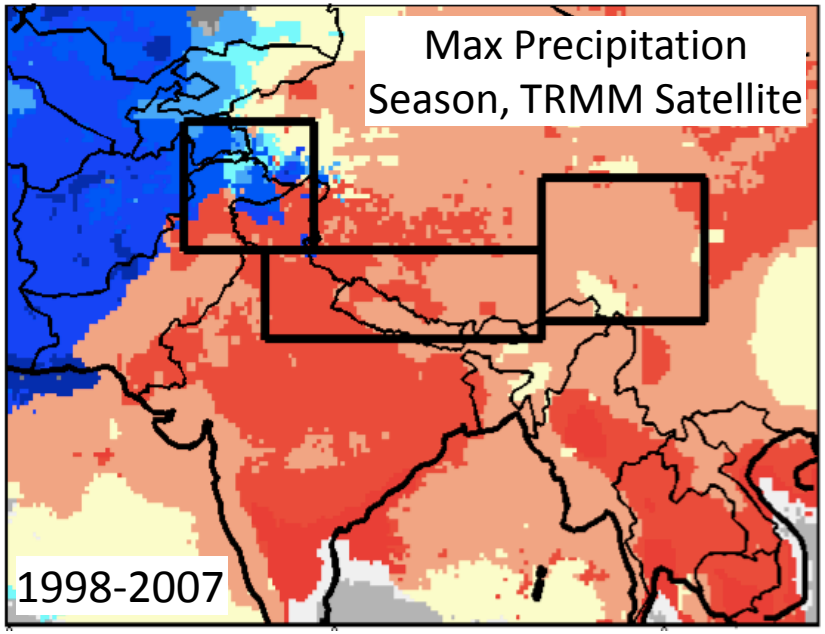
Climate & Precipitation Trends over High Mountain Asia

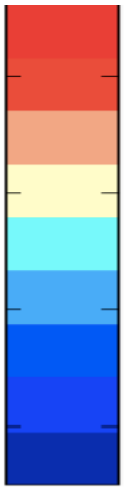
Sarah B. Kapnick

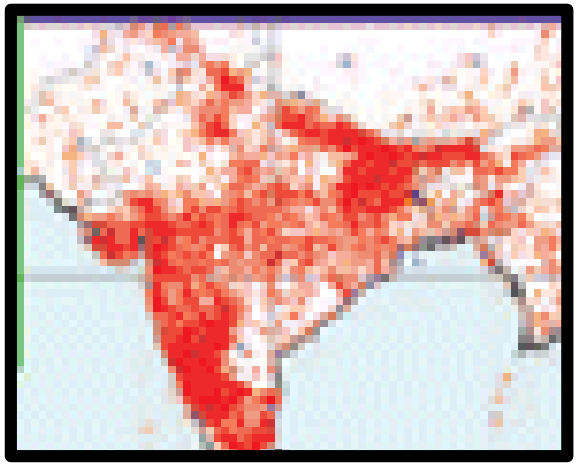
NOAA Geophysical Fluid Dynamics Laboratory

sarah.kapnick@noaa.gov

Mountain Climate Drivers





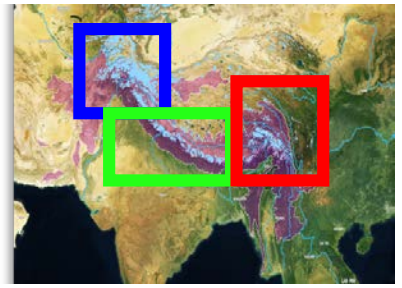


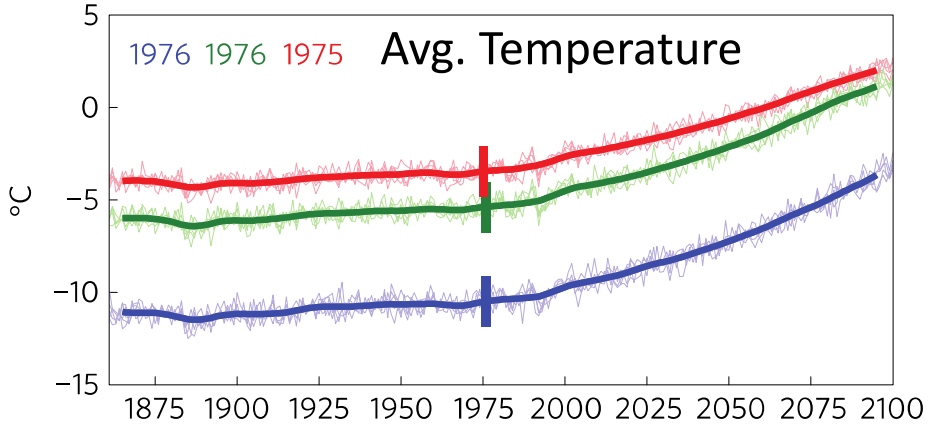
Station Locations 1998

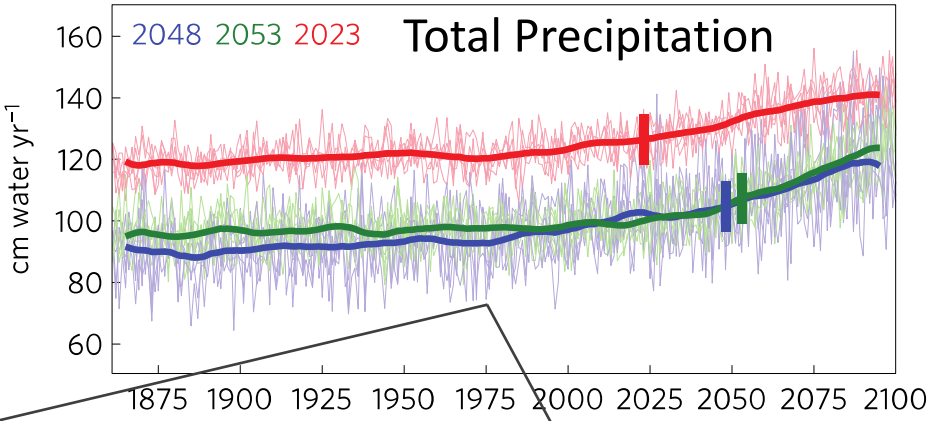
Yatagi et al., BAMS, 2012

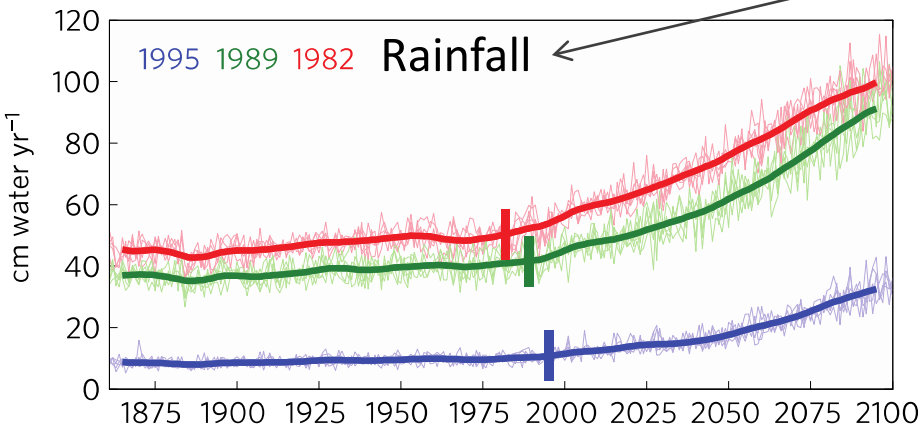
- Different weather patterns produce precipitation
- Remote sensing gives data from ~1980-present, trends emerge, but cannot predict future change
- Station data (pre-1980) / measurements are sparse in remote locations

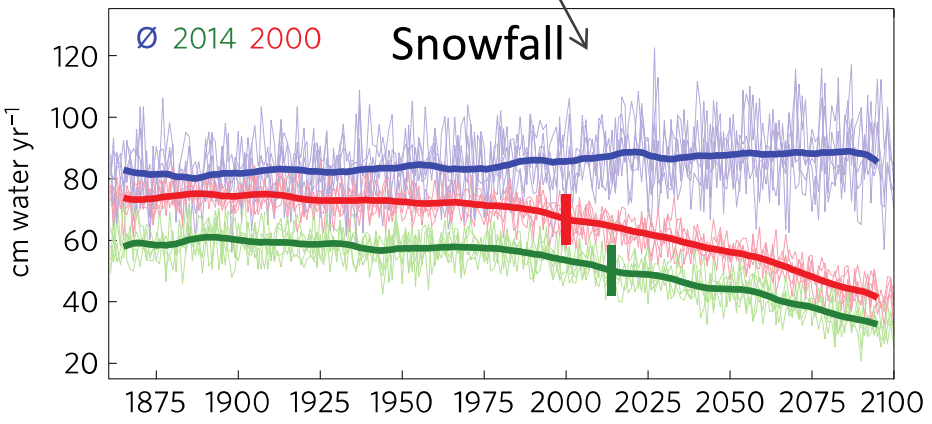
Trends in Precipitation Regimes











Source: GFDL-CM2.5 Model; Kapnick et al., Nature Geosciences 2014

Rainfall Hazards: Floods & Landslides

2010 Pakistan Flooding; Image from World Health Organization

Moderate Severe

Landslides linked to extreme precipitation

Stanley et al., In Press

Current Major U.S. Effort: NASA High Mountain Asia Team

- 3 year award from NASA Earth Sciences (2017-2019)
- Goal: to advance understanding of processes driving changes in climate and the cryosphere in the High Mountain Asia region
- 14 teams funded, 90 individual members
- Interdisciplinary effort to bring together glaciologists, hydrologists, climate scientists, hazard specialists, social scientists, applications

www.himat.org

Team leader: Anthony Arendt; arendta @ uw.edu