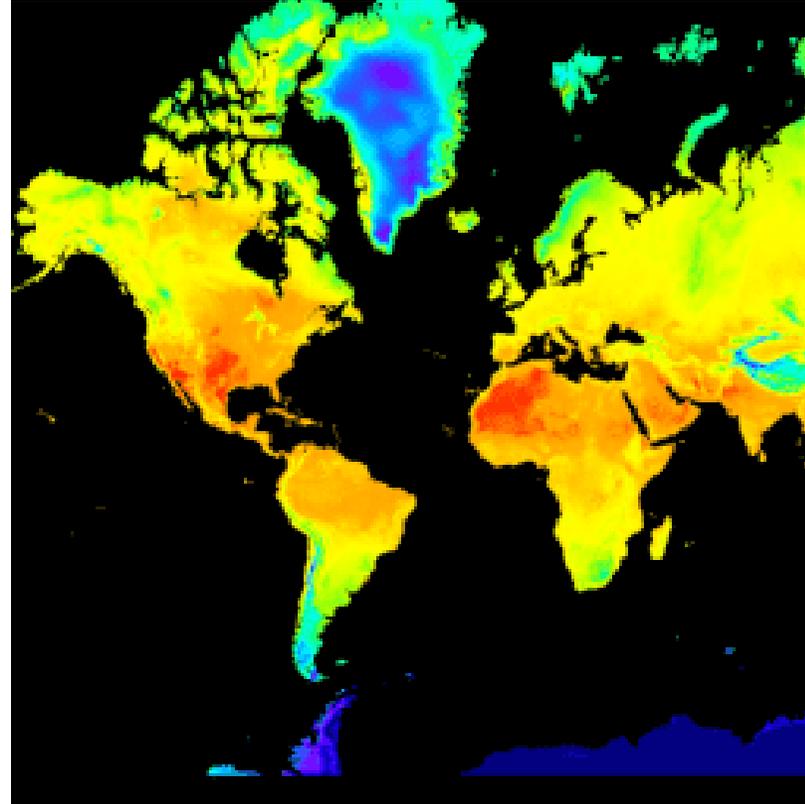# ERA-5 and PRISM for HRS

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ERA-5 Land

- 1950-present reanalysis data

- Based on ECMWF model

- 9 km, hourly—we converted to daily after converting UTC -> local time

ERA-5 Land Harmonized Metrics Calculated for Participants: Short-Term

- Daily mean temperature retained for 30 days before each survey
- Daily minimum temperature retained for 30 days before each survey
- Daily maximum temperature retained for 30 days before each survey
- Daily maximum heat index for the 30 days before each survey
- If the day is extremely high temperature retained for 30 days before each survey (i.e., daily maximum over 97.5 and 99th percentile of the daily maximums over the previous 10 years, based on the previous complete years of Jan-Dec*)

ERA-5 Land Harmonized Metrics Calculated for Participants: Long-Term

- Daily mean temperature averaged over 1, 5, and 10 years
- Daily maximum heat index averaged over 1, 5, and 10 years
- Daily maximum temperature averaged over 1, 5, and 10 years
- Number of extremely high-temperature days in the last 1 and 5 years (i.e., daily maximum over 97.5 and 99th percentile of the daily maximums over the previous 10 years, based on previous complete years Jan-Dec)
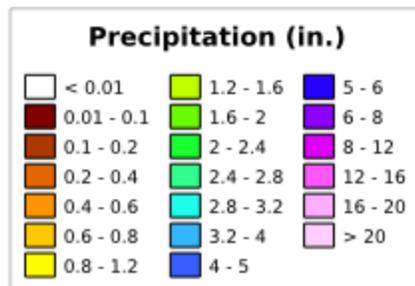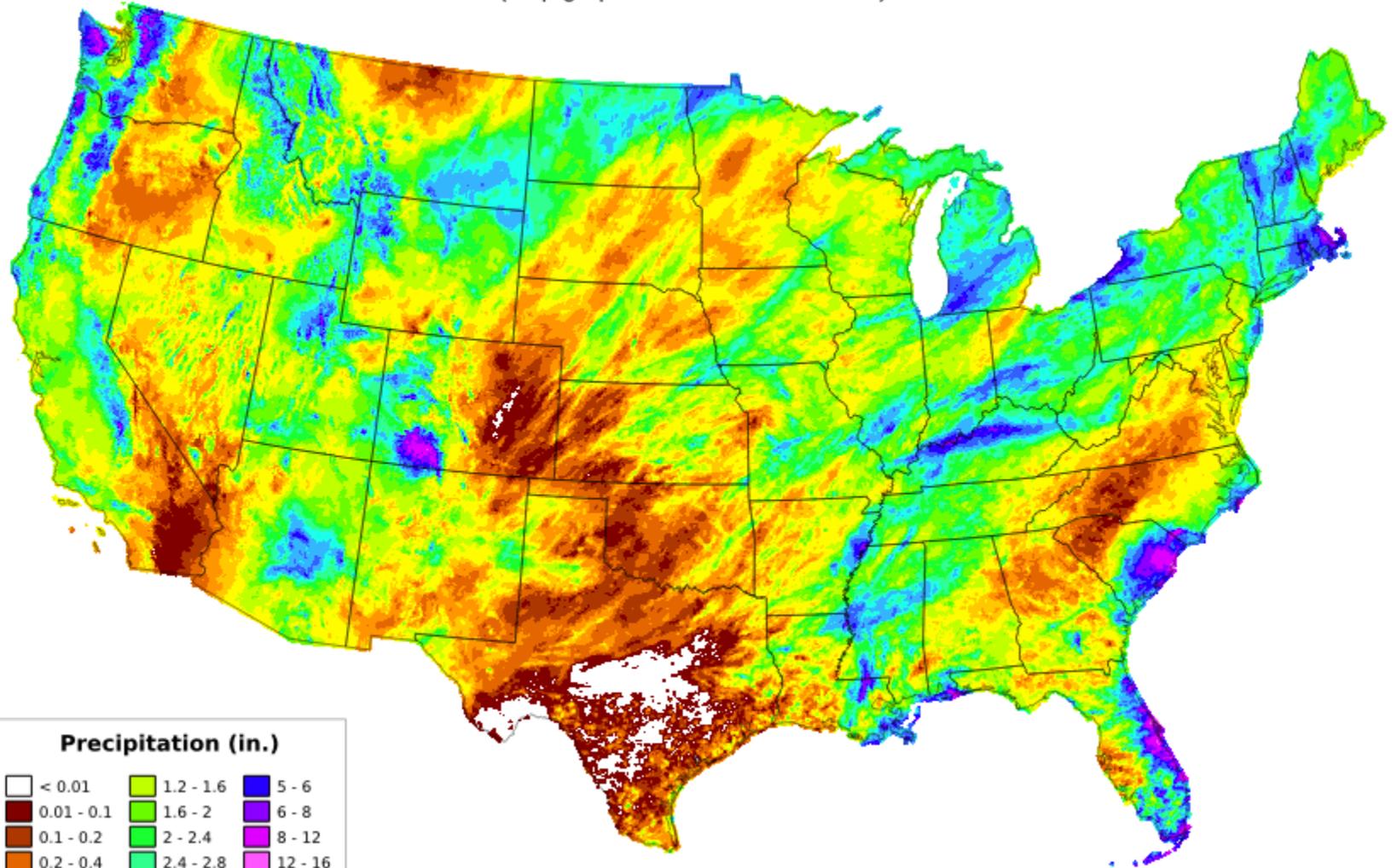
PRISM

- Parameter-elevation Regressions on Independent Slopes Model

- Daily 800x800 m and 4x4 km resolution (4x4 km is on NaNDA)

- Daily min and max temperature and precipitation on NaNDA

- Relative humidity

- Based on GHCN (usually airport) weather monitors, USDA monitors, US Forest Service, citizen science networks and a digital elevation model

- We aggregated by census tract (2000, 2010, and 2020 boundaries)

Total Precipitation: 01 Oct 2025 - 23 Oct 2025
Period ending 7 AM EST 23 Oct 2025
(Map graphic created 24 Oct 2025)

Precipitation (in.)

< 0.01	1.2 - 1.6	5 - 6
0.01 - 0.1	1.6 - 2	6 - 8
0.1 - 0.2	2 - 2.4	8 - 12
0.2 - 0.4	2.4 - 2.8	12 - 16
0.4 - 0.6	2.8 - 3.2	16 - 20
0.6 - 0.8	3.2 - 4	> 20
0.8 - 1.2	4 - 5	

Strengths

- Available for all of U.S. (and all of world for ERA-5 Land) without gaps in time or space
  - Can harmonize analyses across climates
  - No missing data issues
- Long time series
- State-of-the art modeling (interpolation, re-analysis)

Limitations

- No black globe temperatures, i.e., influence of radiant heat from sun or other heat-emitting source (e.g., workplace sources), or wind speed

- Local (intra-urban) urban heat island effects may not be well captured by monitor network

- No indoor temperatures or time activity patterns to calculate individually-experienced temperatures

HRS Temperature Exposure Hacks

- Land cover from NaNDA to proxy intra-urban urban heat island effects
- Home condition: How about the physical condition of your house or apartment, would you say it is in excellent, very good, good, fair, or poor condition?
- Neighborhood safety and walkability
- Vehicle ownership

Wish List

- Better urban heat island metric
- Solar radiation
- Indoor information—do you have/use air conditioning
- And more?