NREL
NATIONAL RENEWABLE ENERGY LABORATORY





Solar and Wind Resource Data for use in the Systems Advisor Model

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Introduction

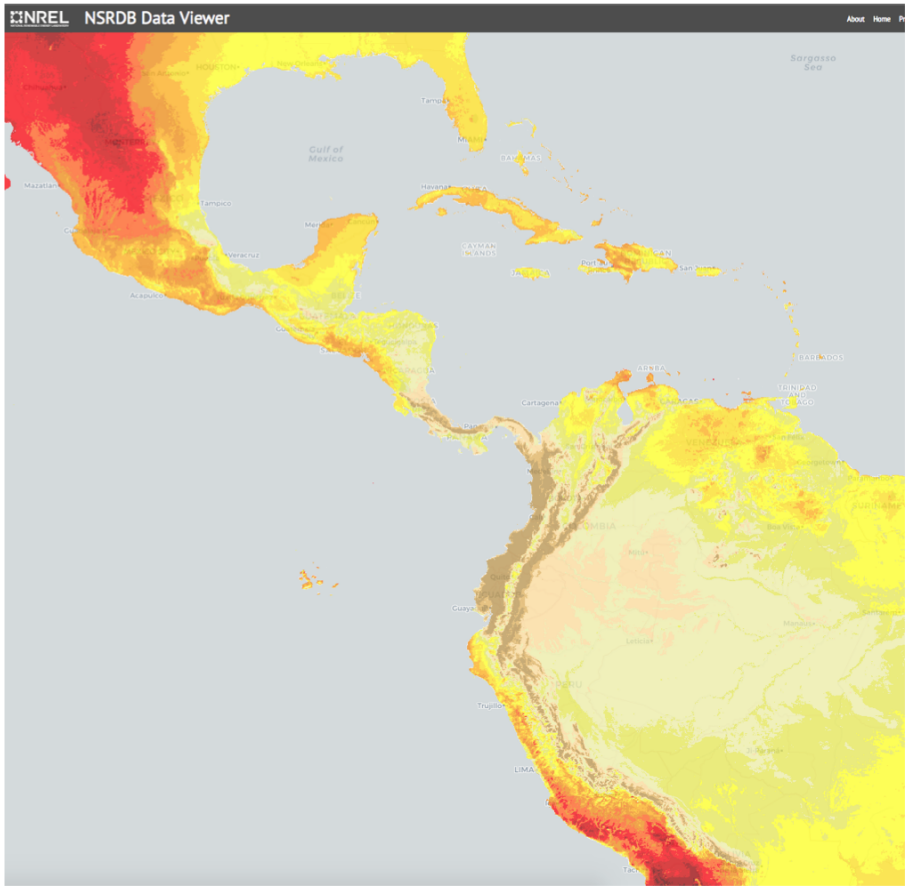
- Focus is primarily on freely available, large spatiotemporal resource data for use in SAM
- This is not an exhaustive list – we are certain there are other ”resources” out there
- SAM website has additional information here: https://sam.nrel.gov/weather
- Focusing specifically on solar and wind resource datasets
- NREL resource APIs are down for maintenance until February 27th

Introduction

- Typical Meteorological Year (TMY)
  - Statistical algorithm for stitching together a single representative hourly profile using many years of data. Generally represents a median year
- Actual-Year
  - Data representing the observed or modeled resource for the exact time period
- Temporal Range
  - Refers to the number of years the dataset has available
- Temporal Interval
  - Refers to the sample rate
- Spatial Resolution
  - Refers to the size of “pixels”, each containing time-series data
- Spatial Extent
  - Refers to the coverage of the data

National Solar Radiation Database (NSRDB)

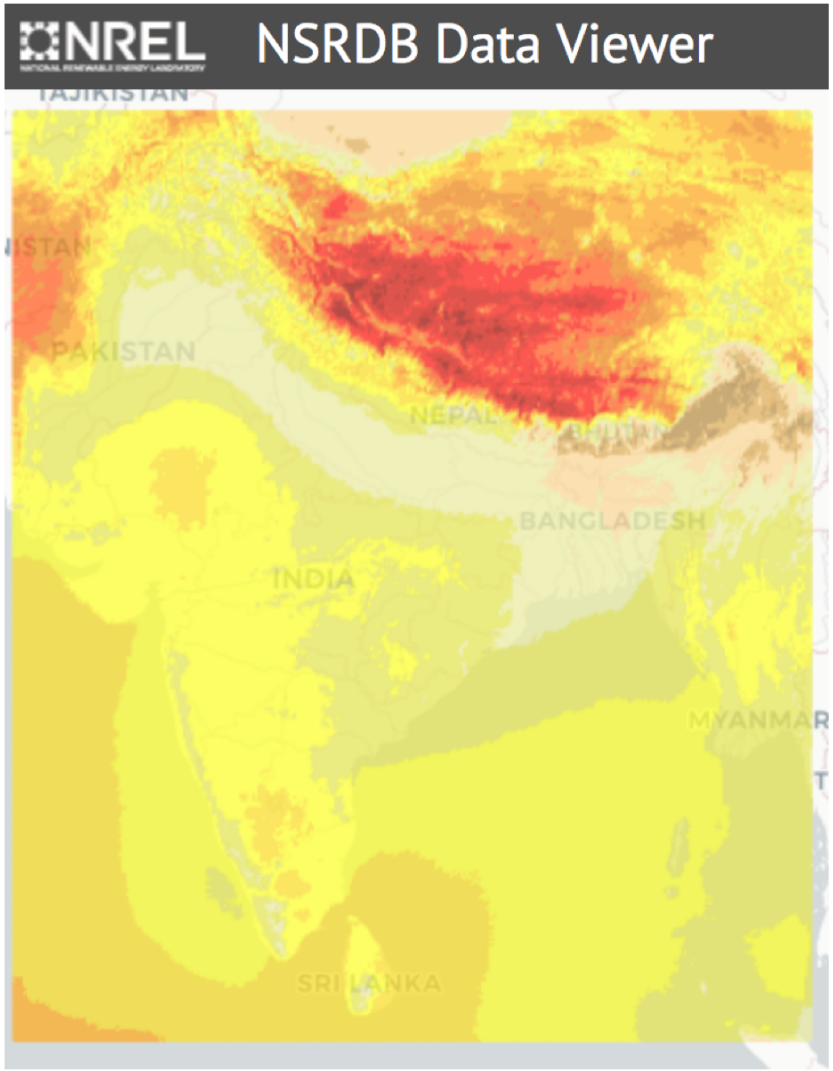
- Physical Solar Model (PSM)
  - Temporal Range: 1998-2016; TMY
  - Temporal Interval: ½ hour
  - Spatial Resolution: nominal 4 km
  - Spatial Extent: Western Hemisphere
- Data Access
  - Interactive
    - https://maps.nrel.gov/nsrdb-viewer/
  - API (PSM)
    - https://developer.nrel.gov/docs/solar/nsrdb/
  - Direct access in SAM



www.nsrdb.nrel.gov

National Solar Radiation Database (NSRDB)

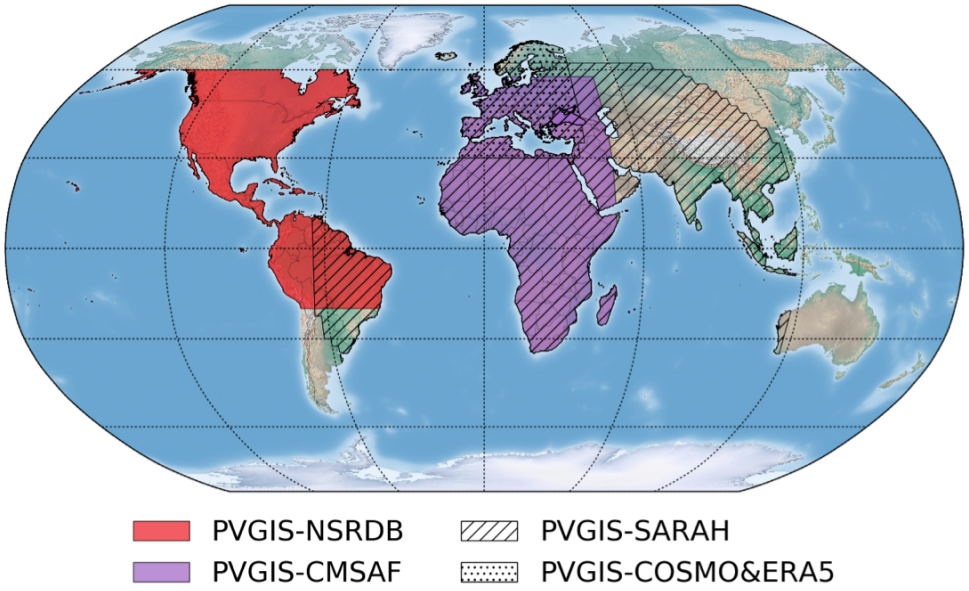
- SUNY/Albany India
  - Temporal Range: 2000-2014; TMY
  - Temporal Interval: 1 hour
  - Spatial Resolution: nominal 10 km
  - Spatial Extent: South Asia
- Data Access
  - Interactive
    - https://maps.nrel.gov/nsrdb-viewer/
  - API (SUNY International Data)
    - https://developer.nrel.gov/docs/solar/nsrdb/
  - Direct access in SAM



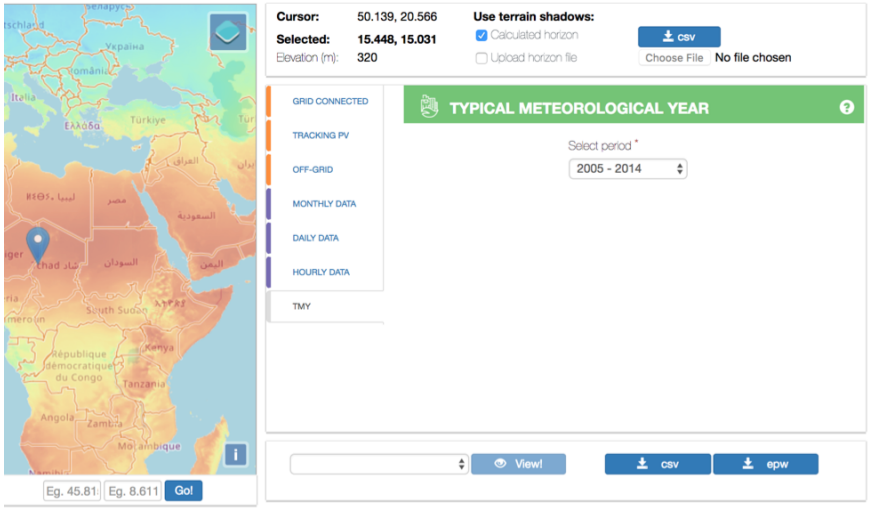
www.nsrdb.nrel.gov

European Commission PVGIS

- PVGIS provides access to solar time-series information compiled from multiple databases
- EPW formatted TMY files downloaded from the interactive tool work directly in SAM
- http://re.jrc.ec.europa.eu/pvg_tools/en/tools.html

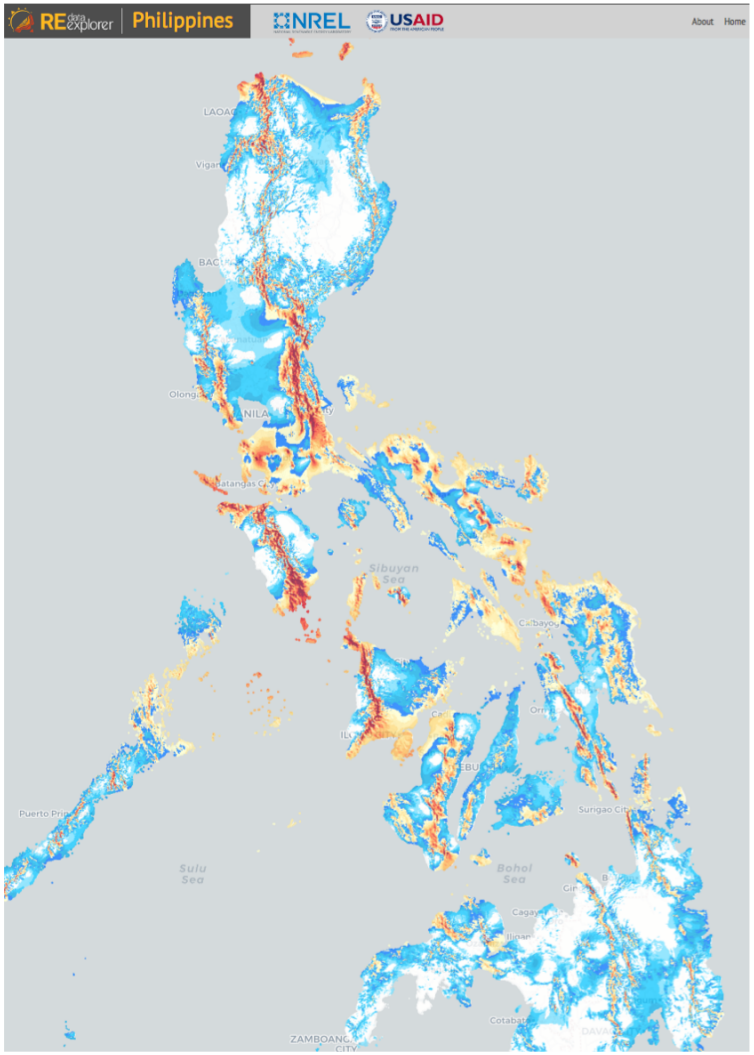


http://re.jrc.ec.europa.eu/pvg_static/en/manual.html



Renewable Energy Data Explorer (RED-E)

- Philippines
  - Temporal Range: TMY
  - Temporal Interval: 15-minute
  - Spatial Resolution: nominal 1 km
  - Spatial Extent: Philippines
- https://maps.nrel.gov/gst-philippines



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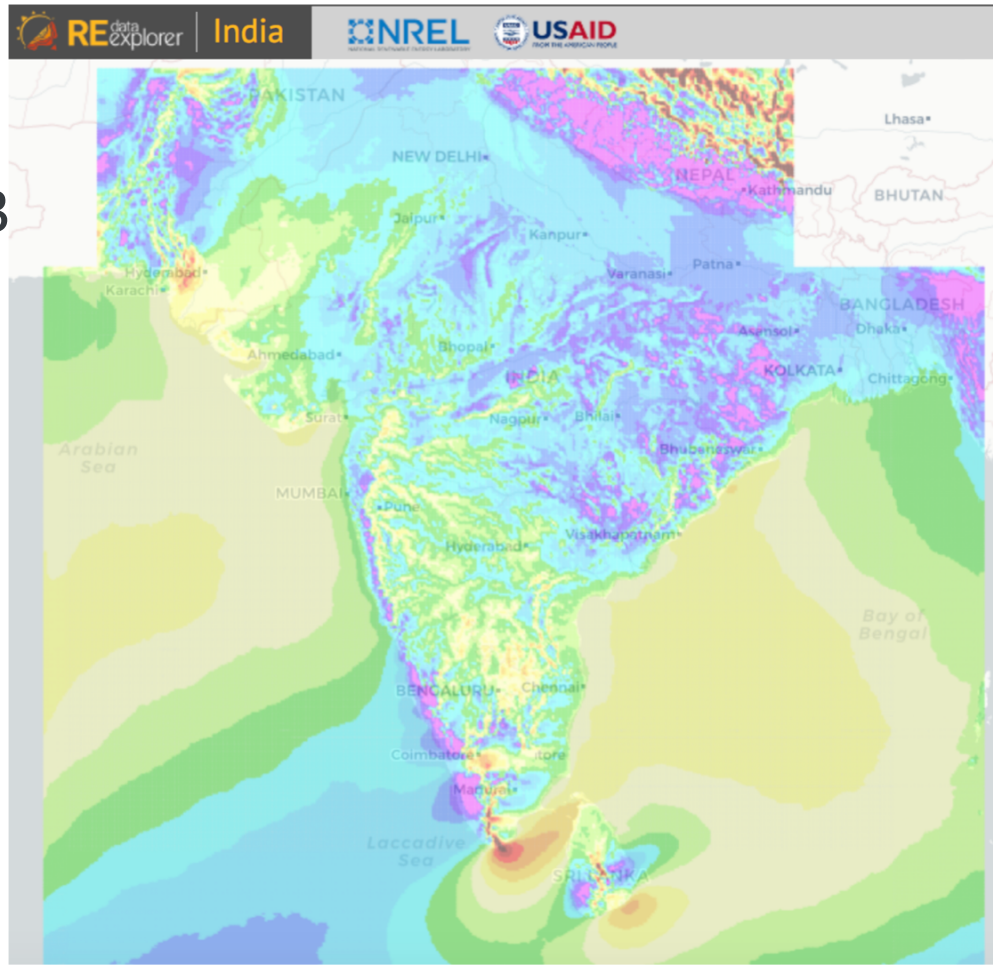
www.re-explorer.org

Renewable Energy Data Explorer (RED-E)

- India
  - Temporal Range: 2013
  - Temporal Interval: 5-minute
  - Spatial Resolution: nominal 3 km
  - Spatial Extent: India (ending at 31 degrees north latitude)
- https://maps.nrel.gov/gst-india



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Contributing

- SAM website has additional information here:
  - https://sam.nrel.gov/weather
- Please contribute by contacting the SAM team if you know of other sources:
  - https://sam.nrel.gov/contact

Thank You

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