



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

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Introduction

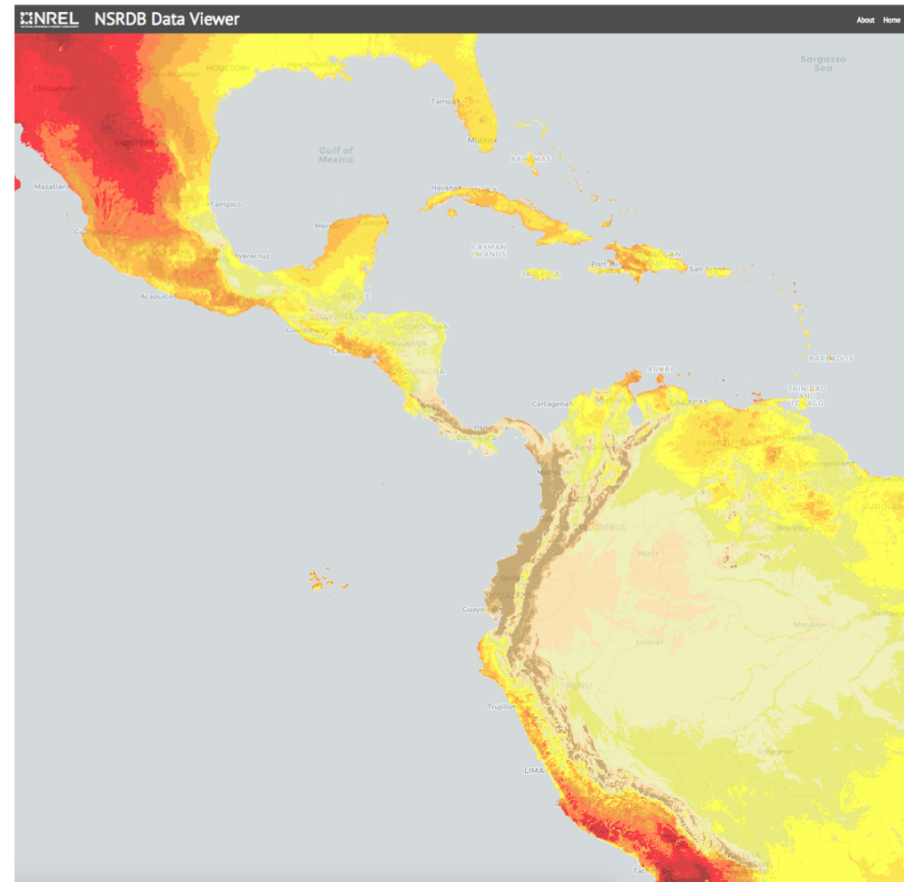
- Focus is primarily on freely available, large spatiotemporal resource data for use in SAM
- This is not an exhaustive list – we are certain there are other “resources” out there
- SAM website has additional information here: <https://sam.nrel.gov/weather>
- Focusing specifically on solar and wind resource 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)

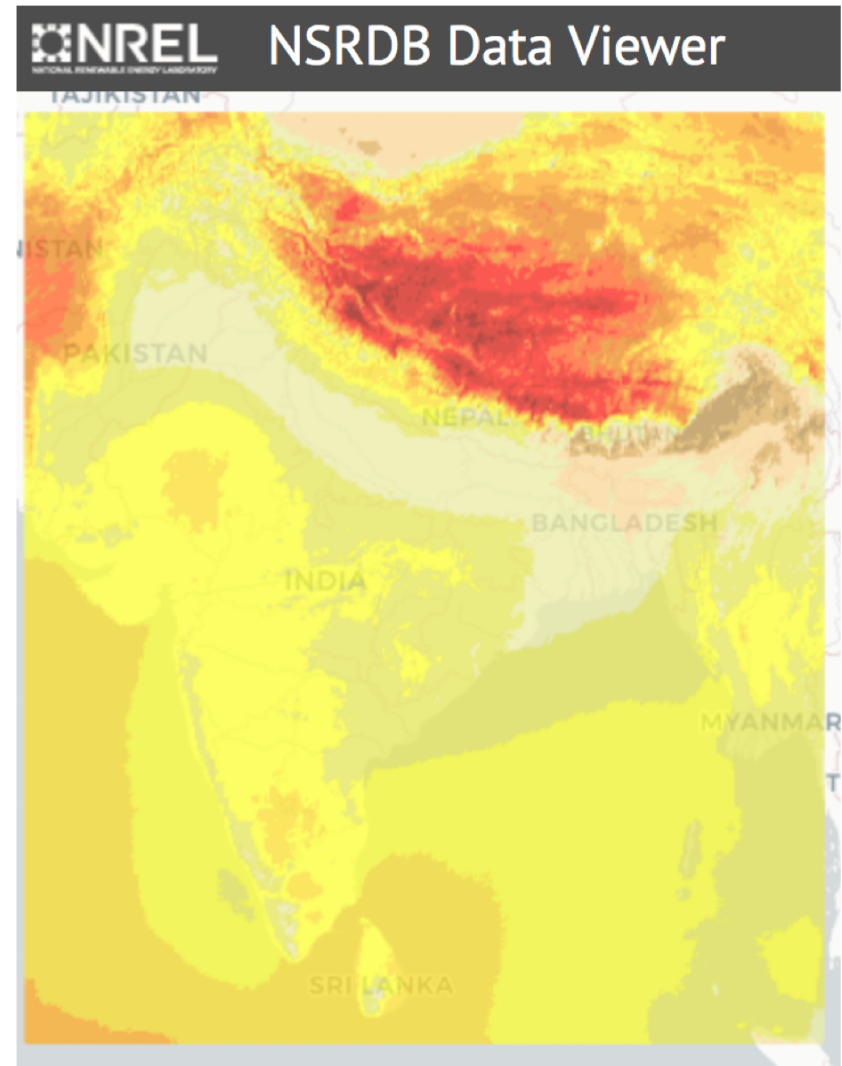
- Physical Solar Model (PSM)
 - Temporal Range: 1998-2016; TMY
 - Temporal Interval: ½ hour
 - Spatial Resolution: nominal 4 km
 - Spatial Extent: Western Hemisphere
- Data Access
 - Interactive
 - <https://maps.nrel.gov/nsrdb-viewer/>
 - API (PSM)
 - <https://developer.nrel.gov/docs/solar/nsrdb/>
 -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



www.nsrdb.nrel.gov

National Solar Radiation Database (NSRDB)

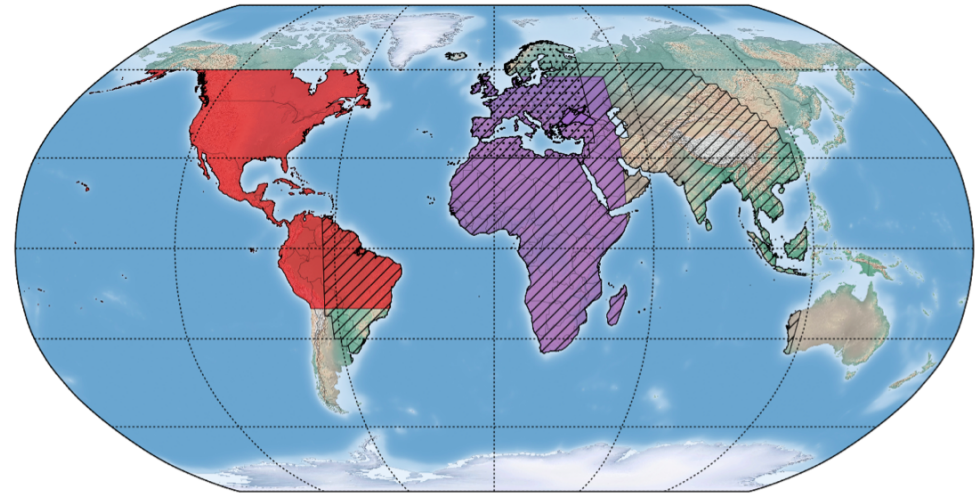
- SUNY/Albany India
 - Temporal Range: 2000-2014; TMY
 - Temporal Interval: 1 hour
 - Spatial Resolution: nominal 10 km
 - Spatial Extent: South Asia
- Data Access
 - Interactive
 - <https://maps.nrel.gov/nsrdb-viewer/>
 - API (SUNY International Data)
 - <https://developer.nrel.gov/docs/solar/nsrdb/>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



www.nsrdp.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



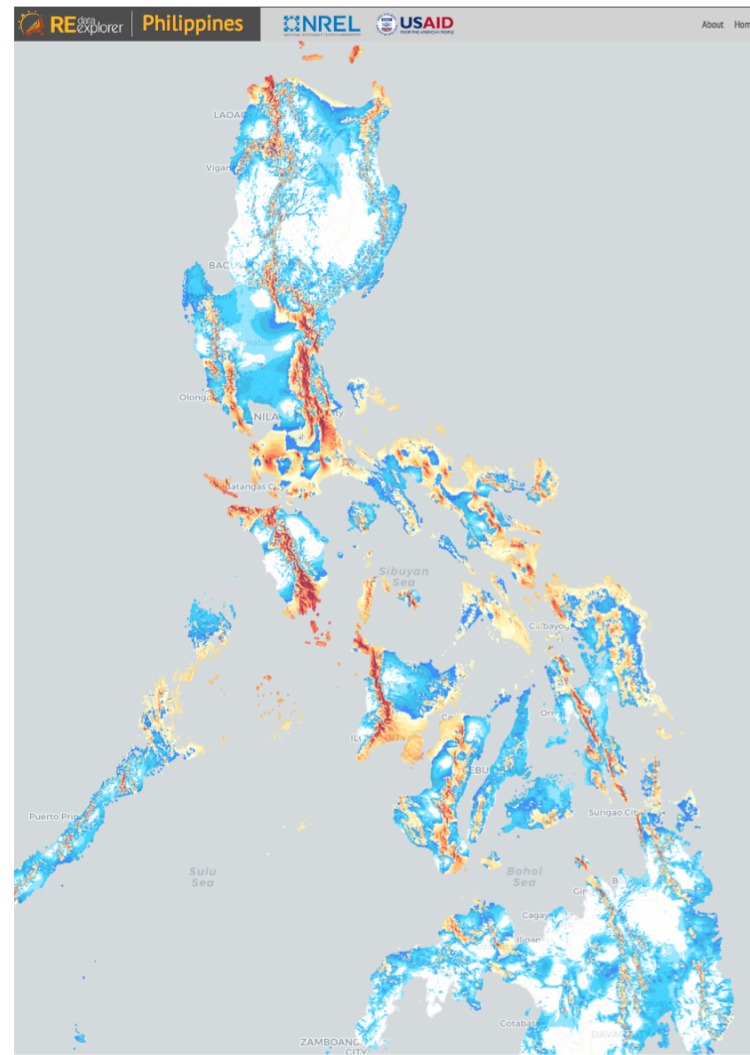
■ PVGIS-NSRDB ▨ PVGIS-SARAH
■ PVGIS-CMSAF ▩ PVGIS-COSMO&ERA5

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

A screenshot of the PVGIS interactive tool interface. The interface is divided into several sections. On the left, there is a map of Africa with a location marker. The main area contains a control panel with the following elements: a cursor location (50.139, 20.566), a selected location (15.448, 15.031), and an elevation (320 m). There are checkboxes for 'Use terrain shadows' (checked) and 'Calculated horizon' (checked). A 'Download CSV' button is visible. Below this, there is a 'TYPICAL METEOROLOGICAL YEAR' section with a dropdown menu set to '2005 - 2014'. On the left side of the interface, there is a vertical menu with options: 'GRID CONNECTED', 'TRACKING PV', 'OFF-GRID', 'MONTHLY DATA', 'DAILY DATA', 'HOURLY DATA', and 'TMY'. At the bottom, there are buttons for 'View', 'Download CSV', and 'Download EPW'.

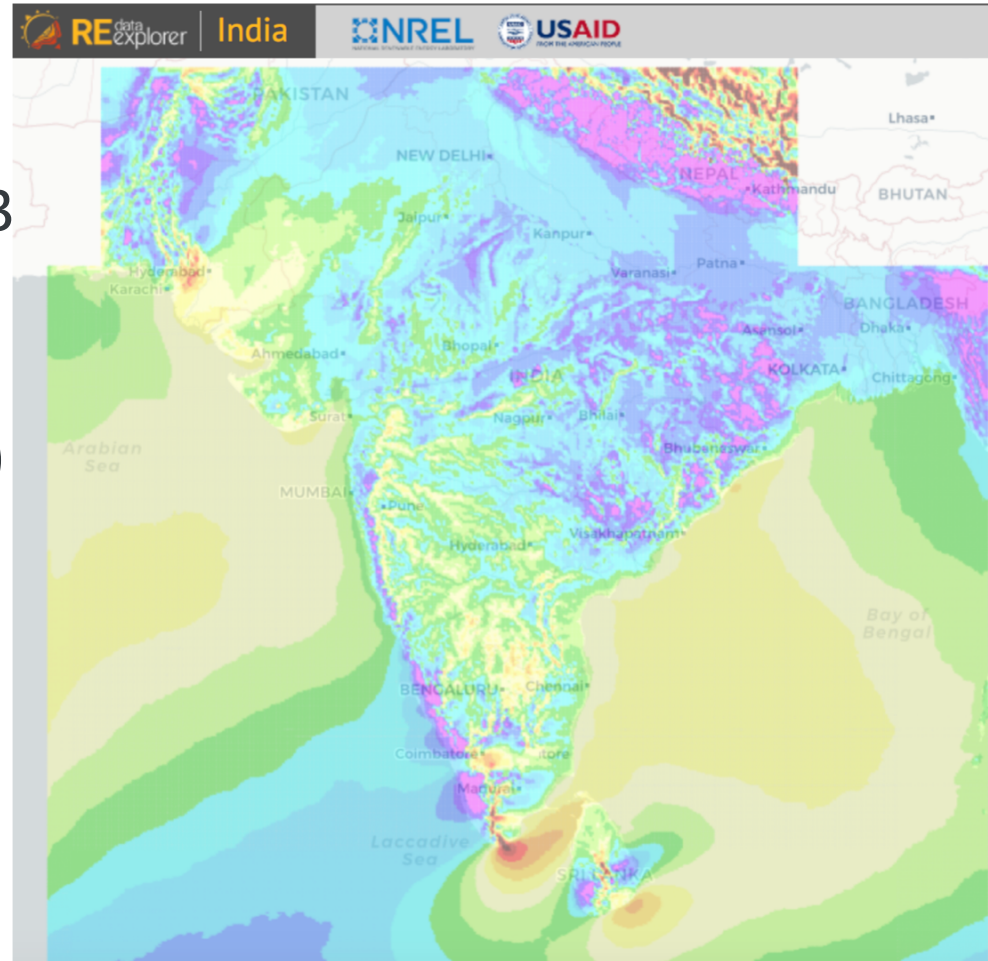
Renewable Energy Data Explorer (RED-E)

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



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>



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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