

## ANNEX

TABLE X: Selected Climate Features from NASA POWER Project

Definition	Variable Name	Treatment	Unit	Description	Group
All Sky Insolation Clearness Index	ALLSKY KT	MEAN	-	A fraction representing clearness of the atmosphere; the all sky insolation that is transmitted through the atmosphere to strike the surface of the earth divided by the average of top of the atmosphere total solar irradiance incident.	1
All Sky Surface Longwave Downward Irradiance	ALLSKY SFC LW DWN	MEAN	MJ/m <sup>2</sup> /day	The downward thermal infrared irradiance under all sky conditions reaching a horizontal plane the surface of the earth. Also known as Horizontal Infrared Radiation Intensity from Sky.	1
All Sky Surface Longwave Upward Irradiance	ALLSKY SFC LW UP	MEAN	MJ/m <sup>2</sup> /day	The upward thermal infrared irradiance under all sky conditions.	1
All Sky Surface PAR Total	ALLSKY SFC PAR TOT	MEAN	MJ/m <sup>2</sup> /day	The total Photosynthetically Active Radiation (PAR) incident on a horizontal plane at the surface of the earth under all sky conditions.	1
All Sky Surface Shortwave Diffuse Irradiance	ALLSKY SFC SWDIFF	MEAN	MJ/m <sup>2</sup> /day	The diffuse (light energy scattered out of the direction of the sun) solar irradiance incident on a horizontal plane at the surface of the earth under all sky conditions.	1
All Sky Surface Shortwave Downward Direct Normal Irradiance	ALLSKY SFC SW DNI	MEAN	MJ/m <sup>2</sup> /day	The direct solar irradiance incident to a horizontal plane normal (perpendicular) to the direction of the sun's position under all sky conditions.	1
All Sky Surface Shortwave Downward Irradiance	ALLSKY SFC SW DWN	MEAN	MJ/m <sup>2</sup> /day	The total solar irradiance incident (direct plus diffuse) on a horizontal plane at the surface of the earth under all sky conditions. An alternative term for the total solar irradiance is the "Global Horizontal Irradiance" or GHI.	1
All Sky Surface Shortwave Upward Irradiance	ALLSKY SFC SW UP	MEAN	MJ/m <sup>2</sup> /day	The upward shortwave irradiance under all sky conditions.	1
All Sky Surface UVA Irradiance	ALLSKY SFC UVA	MEAN	MJ/m <sup>2</sup> /day	The ultraviolet A (UVA 315nm-400nm) irradiance under all sky conditions.	1
All Sky Surface UVB Irradiance	ALLSKY SFC UVB	MEAN	MJ/m <sup>2</sup> /day	The ultraviolet B (UVB 280nm-315nm) irradiance under all sky conditions.	1
All Sky Surface UV Index	ALLSKY SFC UV INDEX	MEAN	-	The ultraviolet radiation exposure index	1

TABLE X: (continued)

Definition	Variable Name	Treatment	Unit	Description	Group
Cloud Amount	CLOUD AMT	MEAN	%	The average percent of cloud amount during the temporal period.	2
Cloud Amount at Daytime	CLOUD AMT DAY	MEAN	%	The average percent of cloud amount during daylight.	2
Cloud Amount at Nighttime	CLOUD AMT NIGHT	MEAN	%	The average percent of cloud amount during nighttime.	2
Zero Plane Displacement Height	DISPH	MEAN	m	The height at which the mean velocity is zero due to large obstacles such as buildings/canopy.	2
Evaporation Land	EVLAND	MEAN	$\text{kg m}^{-2} \text{ s}^{-1} 10^6$	The evaporation over land at the surface of the earth.	3
Evapotranspiration Energy Flux	EVPTNS	MEAN	$\text{MJ/m}^2/\text{day}$	The evapotranspiration energy flux at the surface of the earth.	3
Profile Soil Moisture	GWETPROF	MEAN	-	The percent of profile soil moisture a value of 0 indicates a completely water-free soil and a value of 1 indicates a completely saturated soil; where profile is the layer from the surface down to the bedrock.	3
Root Zone Soil Wetness	GWETROOT	MEAN	-	The percent of root zone soil wetness a value of 0 indicates a completely water-free soil and a value of 1 indicates a completely saturated soil; where root zone is the layer from the surface 0 cm to 100 cm below grade.	3
Surface Soil Wetness	GWETTOP	MEAN	-	The percent of soil moisture a value of 0 indicates a completely water-free soil and a value of 1 indicates a completely saturated soil; where surface is the layer from the surface 0 cm to 5 cm below grade.	3
Midday Insolation Incident	MIDDAY INSOL	MEAN	$\text{MJ/m}^2/\text{day}$	The total amount of solar irradiance (i.e. direct plus diffuse) incident on a horizontal plane at the earth's surface during the solar noon hour midday period.	1
Precipitation Corrected	PRECTOTCORR	MEAN, SUM	mm/day	The bias corrected average of total precipitation at the surface of the earth in water mass (includes water content in snow).	3
Precipitable Water	PW	SUM	cm	The total atmospheric water vapor contained in a vertical column of the atmosphere.	3
Specific Humidity at 10 Meters	QV10M	MEAN	g/kg	The ratio of the mass of water vapor to the total mass of air at 10 meters (g water/kg total air).	3
Specific Humidity at 2 Meters	QV2M	MEAN	g/kg	The ratio of the mass of water vapor to the total mass of air at 2 meters (g water/kg total air).	3

TABLE X: (continued)

Definition	Variable Name	Treatment	Unit	Description	Group
Relative Humidity at 2 Meters	RH2M	MEAN	%	The ratio of actual partial pressure of water vapor to the partial pressure at saturation, expressed in percent.	3
Temperature at 10 Meters	T10M	MEAN	°C	The air (dry bulb) temperature at 10 meters above the surface of the earth.	4
Temperature at 10 Meters Maximum	T10M MAX	MEAN, MAX	°C	The maximum hourly air (dry bulb) temperature at 10 meters above the surface of the earth in the period of interest.	4
Temperature at 10 Meters Minimum	T10M MIN	MEAN, MIN	°C	The minimum hourly air (dry bulb) temperature at 10 meters above the surface of the earth in the period of interest.	4
Temperature at 10 Meters Range	T10M RANGE	MEAN	°C	The minimum and maximum hourly air (dry bulb) temperature range at 10 meters above the surface of the earth in the period of interest.	4
Temperature at 2 Meters	T2M	MEAN	°C	The average air (dry bulb) temperature at 2 meters above the surface of the earth.	4
Dew/Frost Point at 2 Meters	T2MDEW	MEAN	°C	The dew/frost point temperature at 2 meters above the surface of the earth.	3
Wet Bulb Temperature at 2 Meters	T2MWET	MEAN	°C	The adiabatic saturation temperature which can be measured by a thermometer covered in a water-soaked cloth over which air is passed.	4
Temperature at 2 Meters Maximum	T2M MAX	MEAN, MAX	°C	The maximum hourly air (dry bulb) temperature at 2 meters above the surface of the earth in the period of interest.	4
Temperature at 2 Meters Minimum	T2M MIN	MEAN, MIN	°C	The minimum hourly air (dry bulb) temperature at 2 meters above the surface of the earth in the period of interest.	4
Temperature at 2 Meters Range	T2M RANGE	MEAN	°C	The minimum and maximum hourly air (dry bulb) temperature range at 2 meters above the surface of the earth in the period of interest.	4
Air Temperature Range at 2 Meters Maximum	T2M RANGE MAX	MEAN, MAX	°C	The maximum air (dry bulb) temperature range at 2 meters above the surface of the earth in the period of interest.	4
Air Temperature Range at 2 Meters Minimum	T2M RANGE MIN	MEAN, MIN	°C	The minimum air (dry bulb) temperature range at 2 meters above the surface of the earth in the period of interest.	4

TABLE X: (continued)

Definition	Variable Name	Treatment	Unit	Description	Group
Maximum Wet Bulb Globe Temperature	T2M MAX WBG	MEAN, MAX	°C	The maximum Wet Bulb Globe Temperature. The Wet Bulb Globe Temperature (WBGT) is a composite temperature used to estimate the effect of temperature, humidity, wind speed (wind chill), and visible and infrared radiation (usually sunlight) on humans.	4
Minimum Wet Bulb Globe Temperature	T2M MIN WBG	MEAN, MIN	°C	The minimum Wet Bulb Globe Temperature.	4
Temperature Range Maximum	T2M RANGE MAX	MEAN, MAX	°C	The maximum hourly air temperature range (maximum temperature minus minimum temperature).	4
Temperature Range Minimum	T2M RANGE MIN	MEAN, MIN	°C	The minimum hourly air temperature range (minimum temperature minus maximum temperature).	4
Wind Speed at 10 Meters	WS10M	MEAN	m/s	The average of wind speed at 10 meters above the surface of the earth.	5
Wind Speed at 10 Meters Maximum	WS10M MAX	MAX	m/s	The maximum hourly wind speed at 10 meters above the surface of the earth.	5
Wind Speed at 10 Meters Minimum	WS10M MIN	MIN	m/s	The minimum hourly wind speed at 10 meters above the surface of the earth.	5
Wind Speed at 2 Meters	WS2M	MEAN	m/s	The average of wind speed at 2 meters above the surface of the earth.	5
Wind Speed at 2 Meters Maximum	WS2M MAX	MAX	m/s	The maximum hourly wind speed at 2 meters above the surface of the earth.	5
Wind Speed at 2 Meters Minimum	WS2M MIN	MIN	m/s	The minimum hourly wind speed at 2 meters above the surface of the earth.	5
Wind Speed at 50 Meters	WS50M	MEAN	m/s	The average of wind speed at 50 meters above the surface of the earth.	5
Wind Speed at 50 Meters Maximum	WS50M MAX	MAX	m/s	The maximum hourly wind speed at 50 meters above the surface of the earth.	5
Wind Speed at 50 Meters Minimum	WS50M MIN	MIN	m/s	The minimum hourly wind speed at 50 meters above the surface of the earth.	5

**Note:** Use ‘\_’ for spaces in variable names.

The groups are defined as follows:

- 1 - Solar Radiation: Variables related to solar radiation levels.
- 2 - Cloud Cover: Variables describing the extent of cloud cover.
- 3 - Hydrological Variables: Variables associated with water-related factors, such as precipitation and humidity.
- 4 - Temperature: Variables related to temperature measurements.
- 5 - Windspeed: Variables describing windspeed and related factors.