


# SOLAR CALCULATOR ANDRIOD APP

A step to preserve Earth by  **इसरो** isro

# What is Solar Calculator ?



- Space Applications Centre, ISRO has developed a Android based solar calculator app and Solar Calculator on Web at the behest of Ministry of New & Renewable Energy, Govt. of India.
- It is useful for calculating solar energy potential and related parameters at any given location (entered Longitude and Latitude value). The solar energy potential of a location is measured in kWh/m<sup>2</sup> .
- Information is available in form of Table, Charts and Maps.
- It can facilitate users to set up solar photovoltaic cells and thermal power plants at given location.
- This solar potential is calculated using data processed from Indian satellites, Kalpana [2013-2015] and INSAT-3D 2016 onwards.

# The Solar calculator APP



## Key features -

- A detailed report for any given location can be exported and shared as a .pdf file. The data can be viewed in three ways, as a table, as a graph, and as a map.
- In the map view, the direct satellite imagery is overlaid on the map along with the calculations of solar potential.

Download the solar calculator APP from  
<https://vedas.sac.gov.in> → Downloads → Android Apps  
→ Solar Calculator

# The Solar calculator APP – Summary View

- Desired latitude & longitude can be obtained by entering the values or through GPS / NaVIC by clicking on **Get Location**. Click on **Calculate** button to get results.
- Summary view displays the latitude ,latitude, country ,Day Length , Global Horizontal Irradiance ,average minimum and maximum temperatures ,Optimum Tilt Angle for Solar PV. along with Power Production of PV.



Note:- GHI parameters are provided by NIWE, MNRE .

# The Solar calculator

## APP – Table View

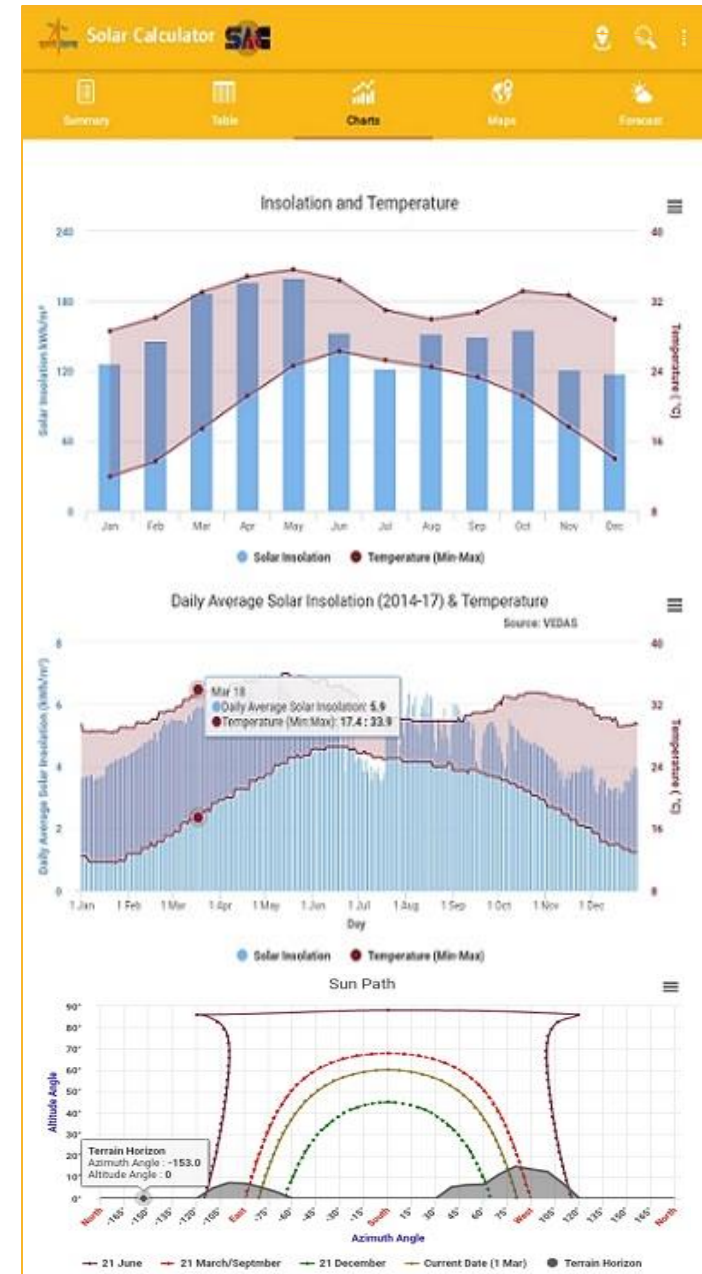
- Desired latitude & longitude can be obtained by entering the values or through GPS / NaVIC by clicking on **Get Location**. Click on **Calculate** button to get results.
- Table view displays the, monthly insolation of current and previous year maximum ,minimum and maximum temperatures along with Optimum Tilt Angle for Solar PV.
- It also enumerates parameters like :-
  - Annual Energy Production (AEP)
  - Capacity Utilization Factor (CUF)
  - Global Horizontal Irradiance (GHI)
  - Direct Normal Irradiance (DNI)
  - Diffused Horizontal Irradiance (DHI)Note:- AEP,CUF,GHI,DNI,DHI parameters are provided by

NIWE, MNRE .



# The Solar calculator APP – Chart View

- First Chart depicts the insolation and temperature trends throughout the year in simple yet intuitive format.
- Second Chart displays the Daily Average Insolation (2014-17) along with Temperatures.
- Third chart showcase depicts the Sun Path over the year along with the obstruction observed calculated using DEM (shown with grey colour).
- The Charts also allows user to interact by zooming in & out and displaying info at the specific month, when selected.



# The Solar calculator APP – Chart View

- Fourth Chart depicts Sun Path over the year .
- Fifth Chart depicts the Solar Heat Map For Shadow Analysis.
- The Charts also allows user to interact by zooming in & out and displaying info at the specific month, when selected.



# The Solar calculator APP – Map View

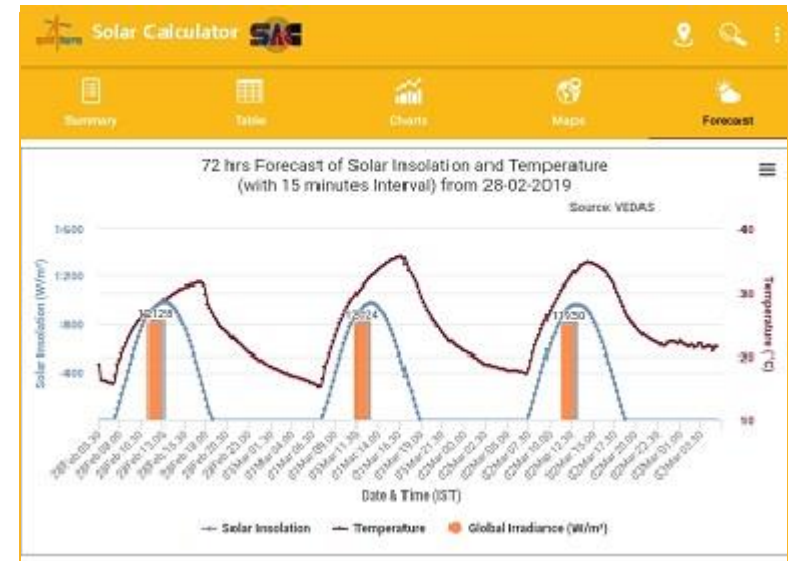
- MAP view locates selected longitude and latitude on the map overlaid with Cartosat satellite imagery and Indian Administrative Boundary.
- Different satellite imagery can be overlaid on the map using layer switcher (+ icon on right-side of the map)





# The Solar calculator APP – Forecast View

- Forecast View displays the 72 Hours Forecast of Solar insolation at 15 minutes of interval from current date and time along with Global Irradiance in simple yet intuitive format.



# The Solar calculator

## App- Align Solar Panel

- Align Solar panel help us to attain the maximum solar potential by setting the PV panel at particular Elevation(slope or tilt)angle and Azimuth angle.
- When Target Azimuth reaches current Azimuth and Target Slope(Elevation) reaches to current Slope(Elevation) the column will change its colour from blue to green.
- By clicking on Arrow button compass will show its directions.
- When light blue panel overlaps on the fixed dark blue panel it depicts the best Elevation angle for solar PV.

