

The Global Atlas for Solar and Wind Energy

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Knowledge for Tomorrow



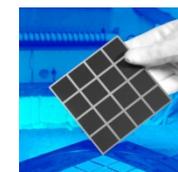
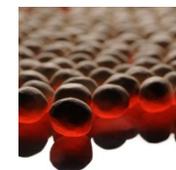
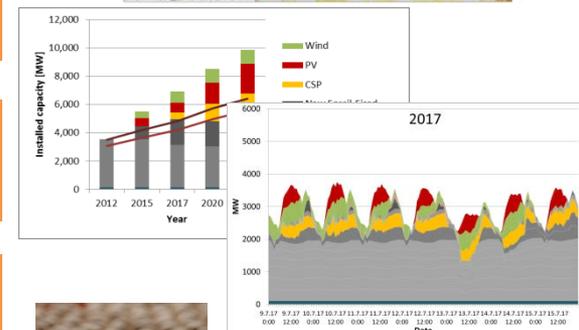
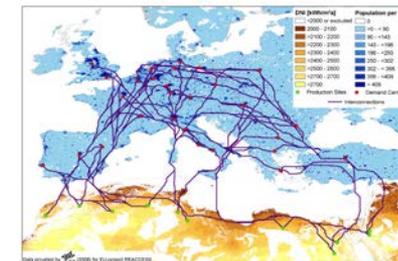
DLR - Who we are



Research Areas

- Aeronautics
- Space Research and Technology
- Transport
- Energy
- Space Administration
- Project Management Agency

- Solar Research
- Wind Energy Research
- Systems Analysis
- Thermal & Chemical Storage
- High & low Temp. Fuel Cells
- Combustion & Gas Turbine Technologies



Background of the Global Atlas

- The Multilateral Working Group on Solar and Wind Energy of the Clean Energy Ministerial Process identified a Global Atlas for Solar and Wind Energy as **a need for the successful deployment of renewable energies.**
- IRENA now acts as a secretariat and governs the process.
- DLR coordinates the technical team (NREL, Mines-ParisTech, Masdar)
- Launch of the Global Atlas at the IRENA General Assembly in Abu Dhabi in January 2013



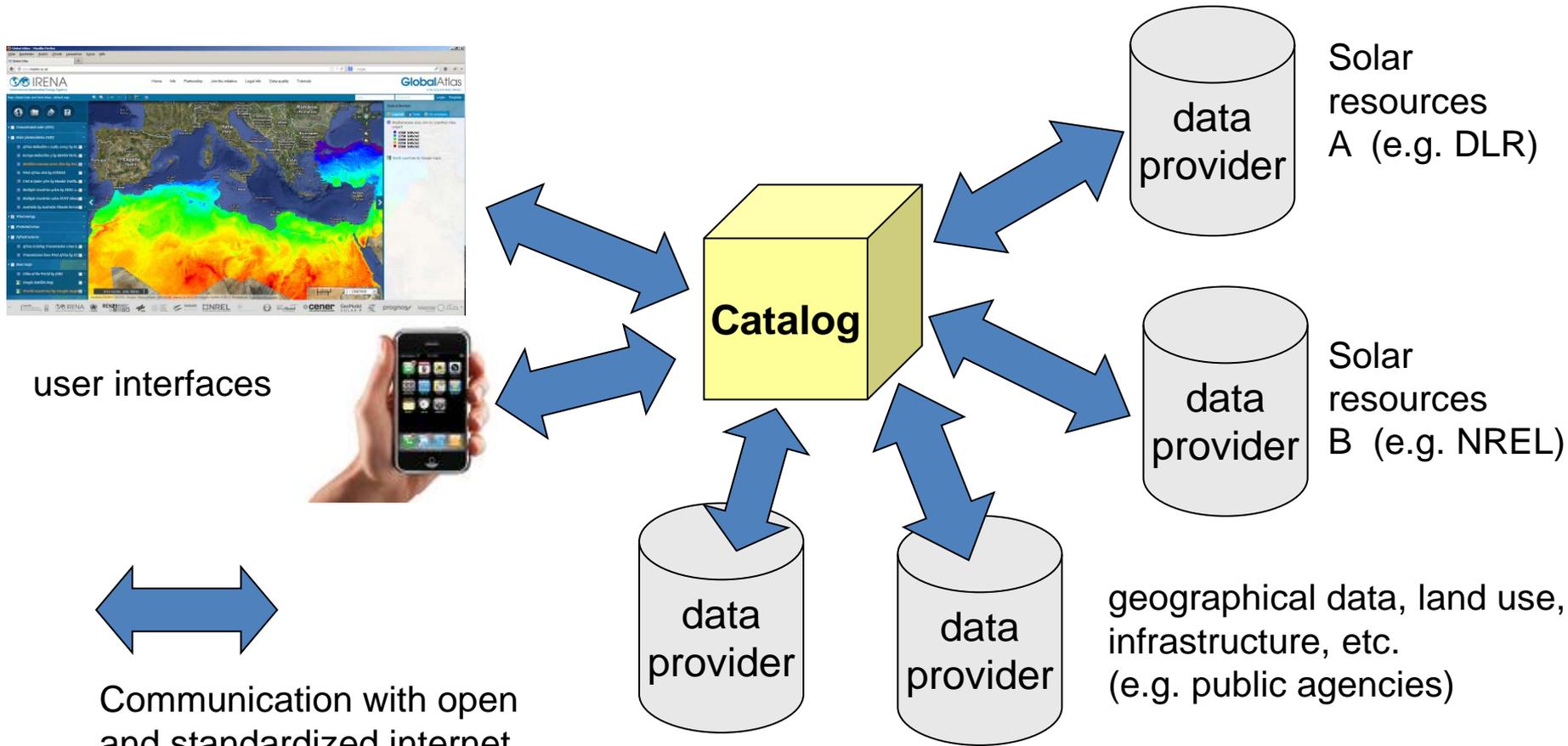
Why a Global Atlas for Solar and Wind Energy?

- Good resource data is the planning infrastructure for successful deployment of renewable energy technologies
- The Global Atlas shall be the **freely accessible central hub** for high quality renewable resource data and information about its proper use.
- Bridge the gap between nations having access to the necessary funding, technologies, and expertise to evaluate their national potentials, and those deprived of those elements.
 - Access to data and methods
 - Access to training materials and courses
 - Access to a network of experts



Networking with Collaborative Information Systems

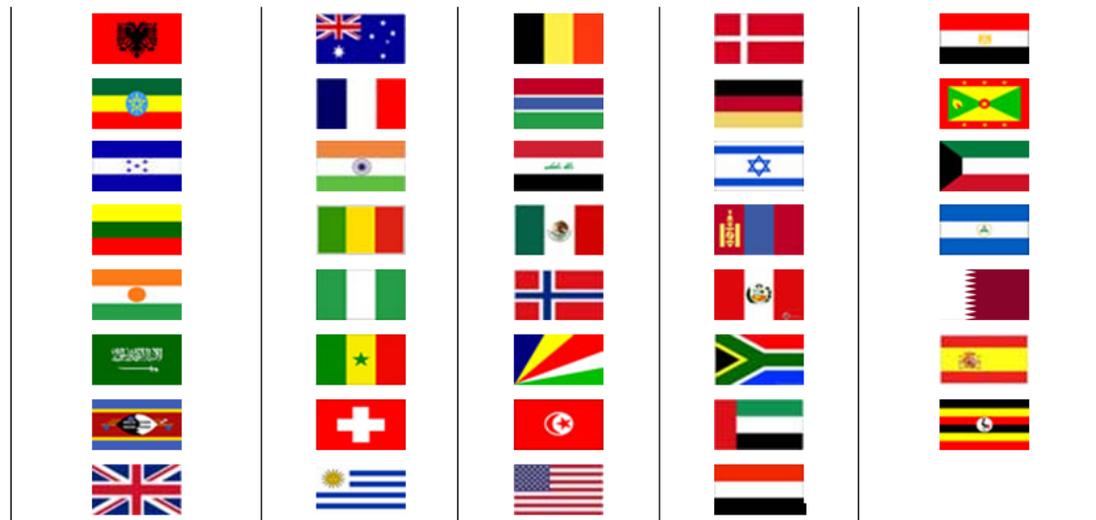
Web-GIS



set up of the architecture within the framework of GEOSS



Participating Countries



Albania, Australia, Belgium, Denmark, Egypt, Ethiopia, France, Gambia, Germany, Grenada, Honduras, India, Israel, Kuwait, Lithuania, Mali, Mexico, Mongolia, Nicaragua, Niger, Nigeria, Norway, Peru, Qatar, Saudi Arabia, Senegal, Seychelles, South Africa, Spain, Swaziland, Switzerland, Tunisia, UAE, Uganda, UK, Uruguay, USA, Yemen.



Technical partners and data providers

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Partner projects and multilateral initiatives

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www.irena.org/GlobalAtlas



Home About Partnership Join the initiative

Training Material

Map interface



Search data sources

What is the Global Atlas for Solar & Wind?

The Global Atlas is the comprehensive information platform on the potential of renewable energy. It provides resource maps from leading technical institutes worldwide and tools for evaluating the technical potential of renewable energies. It can function as a catalyst for policy development and energy planning, and can support investors in entering renewable energy markets.

[Read more about the global atlas](#)

[Read more on data quality](#)

[Read more about the map interface](#)

[Status and way ahead](#)

Map Interface



[Directly launch the Map interface](#)

Data Catalogue

Search the database of worldwide atlases

[Directly launch the Data Catalogue](#)

Contribute to the Global Atlas

Data providers willing to contribute independently are welcome to contact potentials@irena.org to initiate the dialogue.

[Contribute to the Global Atlas](#)

What users say



[See More](#)



Map Interface

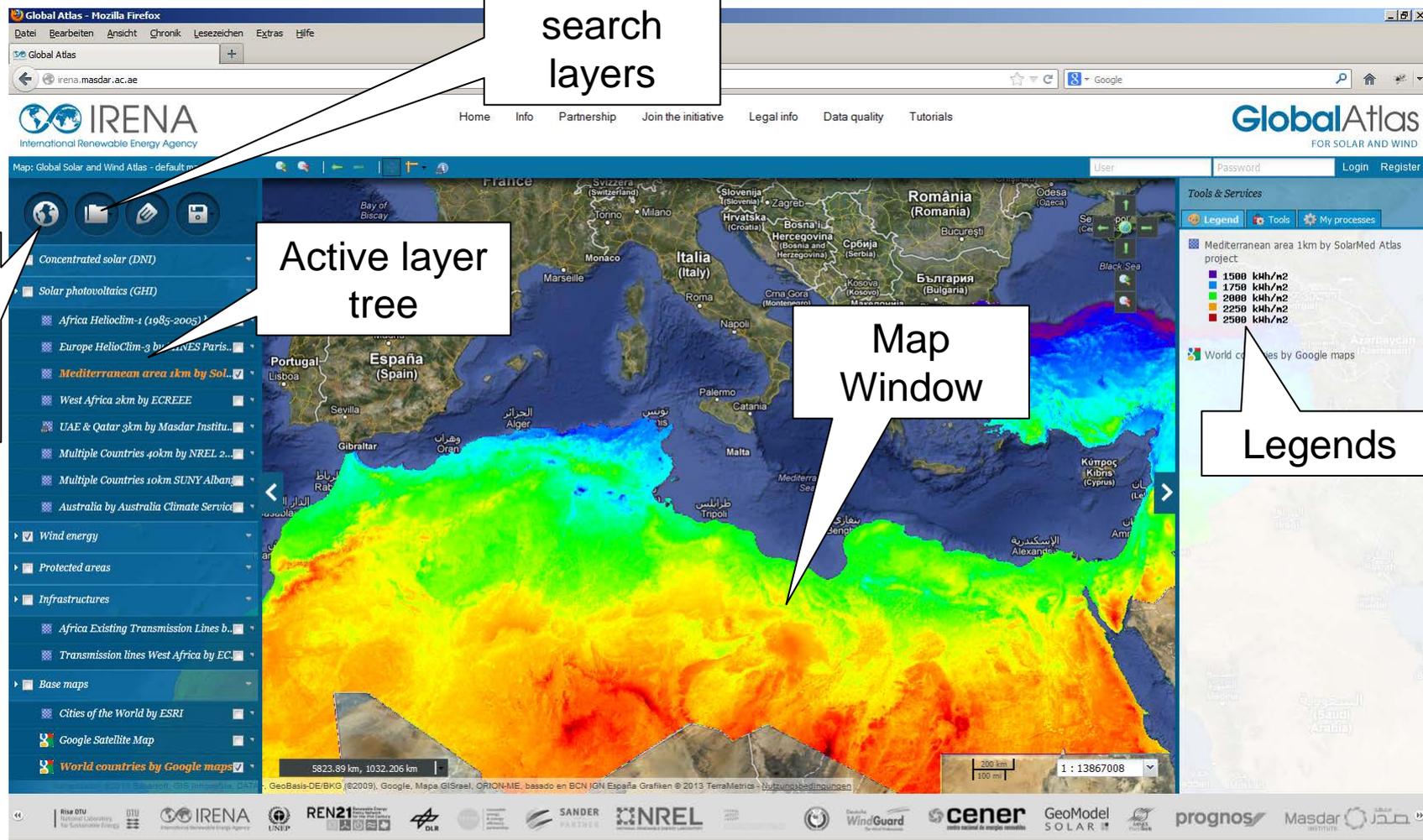
Add and search layers

Save and load maps

Active layer tree

Map Window

Legends



Search Data

Description of the selected data sets

Search Criteria

Search results

The screenshot displays the Global Atlas web interface. On the left, a sidebar contains search filters categorized by region, type, and source. The main content area shows a list of search results for 'solar radiation'. A callout box highlights the 'HelioClim-1 Surface Solar Radiation' dataset. A second callout box provides a detailed description of this dataset, including its data range (1985-2005), source (MINES ParisTech), and various technical details like keywords, creation date, and contact information.

Search Criteria:

- By region:** Africa, Europe, Middle East, North America, South America, Asia, Australia, Antarctica, Protected Areas, Infrastructure, Base maps, City maps, Web maps
- By type:** Raster layers, Vector layers, Services, Catalog items
- By source:** Base layers, Masdar WMS, Global Atlas Catalog (MINES ParisTech)

Search Results:

Name	Source
Solar GHI Polygon Multiple Countries 40km NREL 2006	National Renewable...
Solar GHI Polygon Multiple Countries 40km NREL 2006	National Renewable...
Solar TILT Polygon Global NASA 2008	National Renewable...
Solar TILT Polygon Multiple Countries 40km NREL 1985-1991	National Renewable...
Solar TILT Polygon Multiple Countries 40km NREL 1985-1991	National Renewable...
HelioClim-3 Map	Mines ParisTech
ATLAS_PACA_BTI Dataset	MINES ParisTech
ATLAS_PACA_GHI Dataset	MINES ParisTech
ATLAS_PACA_DTI Dataset	MINES ParisTech
Averaged Solar Radiation 1990-2004	MINES ParisTech
Yearly Mean of Daily Irradiation in UV in the World	MINES ParisTech
Africa - Photovoltaic Solar Electricity Potential	MINES ParisTech
UV-A Radiation Reaching the Ground in France (1993 - 2002)	MINES ParisTech
NCEP Forecast	National Centers fo...
Environmental Life Cycle Impact Assessment Web Processing Service	Mines ParisTech
IOLEMI Free Access	DLR (Deutsches Zen...
HelioClim-3 Free Access	MINES ParisTech / ...
EMP Climate	MINES ParisTech
HelioClim-1 Surface Solar Radiation	MINES ParisTech
HelioClim-1 surface solar irradiation (1985-2005)	MINES ParisTech
Surface Solar Irradiation - Beam Normal Irradiation (BNI) - Annual Mean (2004-2011) - 1km - Solar Med Atlas project	Transvalor Innovati...
Surface Solar Irradiation - Global Horizontal Irradiation (GHI) - Annual Mean (2004-2011) - 1km - Solar Med Atlas pr...	Transvalor Innovati...
Surface Solar Irradiation - Diffuse Horizontal Irradiation (DHI) - Annual Mean (2004-2011) - 1km - Solar Med Atlas p...	Transvalor Innovati...
Surface Solar Irradiation - Beam Normal Irradiation (BNI) - Annual Mean (2004-2011) - 1km - Shadow effects - Solar ...	Transvalor Innovati...
Surface Solar Irradiation - Global Horizontal Irradiation (GHI) - Annual Mean (2004-2011) - 1km - Shadow Effects - S...	Transvalor Innovati...
Surface Solar Irradiation - Diffuse Horizontal Irradiation (DHI) - Annual Mean (2004-2011) - 1km - Shadow Effect - S...	Transvalor Innovati...
McClear: A time-series of solar radiation that would be received on a horizontal plane at ground level if the sky were cl...	MINES ParisTech
Yearly Irradiation in Europe in 2004	MINES ParisTech
HelioClim-3 surface solar irradiation (2004-2010)	MINES ParisTech
Solar DNI Polygon Northern Africa SMA	National Renewable...
Solar DNI Polygon Northern Africa SMA 1991-2005	National Renewable...
Solar GHI Polygon Northern Africa SMA 1991-2005	National Renewable...

Description of the selected data sets:

HelioClim-1 Surface Solar Radiation

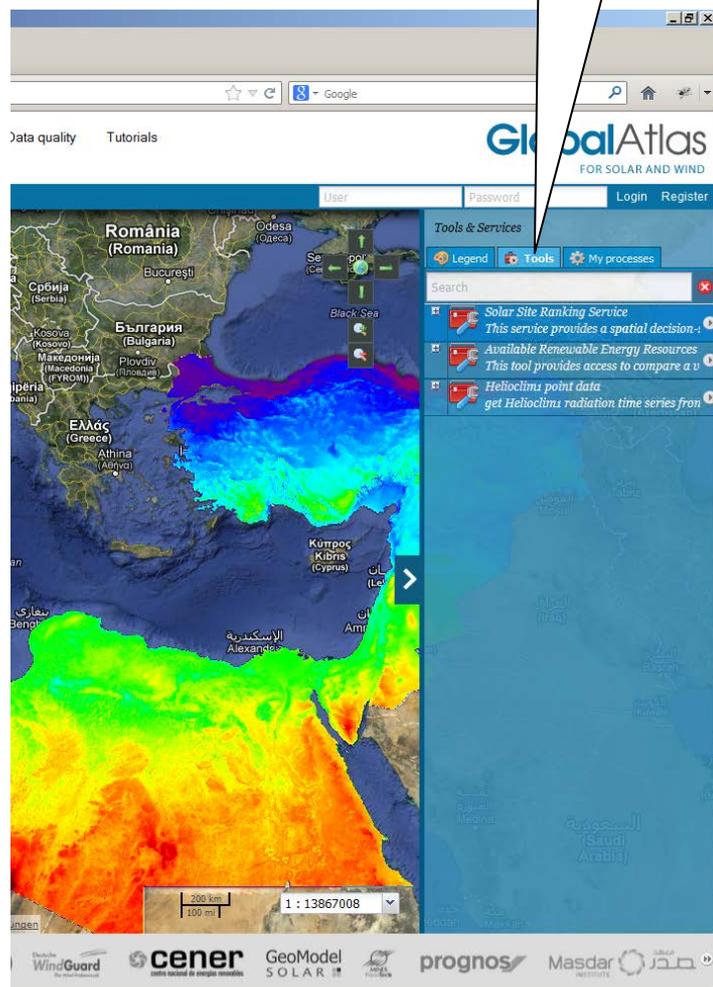
HelioClim 1 database contains 21 years of data (1985-2005). MINES ParisTech created HelioClim-1 by processing images from the Meteosat satellites. These data are of major interest for Africa, the Mediterranean Basin, and the Central Atlantic Ocean. They will provide valuable help for many applications, ranging from electricity production to climate studies. This service allows you either to - Compare up to five locations at a time and get summary time series of irradiances in Wh/m2, W/m2 and MJ/m2 on a daily, monthly or yearly basis - Retrieve one location at a time and get detailed time series of irradiances in Wh/m2, and associated informations (Uncertainty, Hour Ratio, Irradiation at the Top of Atmosphere) on a daily, monthly or yearly basis. Access to this resource is provided on a full, open and unrestricted basis addressing the GEOS Data CORE sharing principles. Implementation is provided as an OGC (open Geospatial Consortium) WPS (Web Processing Service). Surface Solar Radiation multi-point summary comparison helper application is available at: <http://gppf.genese-fp7.eu/web/guest/service-detail?serviceId=C4829C80> (login:demo passwd:demo). Surface Solar Radiation single point detail helper application is available at: <http://gppf.genese-fp7.eu/web/guest/service-detail?serviceId=C582CA80> (login:demo passwd:demo)

Type: Web Processing Service
 Keywords: thematicProcessingService, solar energy, irradiation, electricity generation, Surface Solar Radiation, HelioClim, Meteosat, Irradiation, Irradiance, Mines-ParisTech, SoDa, GEOS Data CORE, geossDataCore, geossNoMonetaryCharge
 Created: 2011-10-18
 Published: 2011-10-18
 Period: 1970-01-01T00:00:00 until 1970-01-01T00:00:00
 Metadata: [Open in external window](#)
 Source: Mines ParisTech
 Contact: [Lionel Menard](#)



Web-GIS Tools

Tools



- Tools can be used
 - to extract more detailed information from the data sources
 - Processing of the data for further analysis
- Existing tools so far:
 - Solar Site Ranking
 - Available RE Resources
 - Time Series Point Query
- New tools will be developed based on use experience and end user feedback

Available RE Resources Tool

The screenshot displays the 'Available Renewable Energy Resources' tool interface. The top navigation bar includes 'Home', 'Info', 'Partnership', 'Join the initiative', 'Legal info', 'Data quality', and 'Tutorials'. The IRENA logo is on the left, and the GlobalAtlas logo is on the right. The main content area features a map of the world with a zoomed-in view of a region. A temperature chart is overlaid on the map, showing monthly temperature data for 'Air Temperature' (red line with circles) and 'Earth Skin Temperature' (black line with squares). The chart shows a seasonal cycle with a peak in August and a minimum in January. The y-axis is labeled 'degree C' and ranges from 20 to 32.5. The x-axis shows months from Jan to Dec. A legend on the right of the chart identifies the data series. Below the chart, there is a 'Download data layers from: OpenEI' link. The right sidebar contains 'Tools & Services' with a search bar and several service cards: 'Solar Site Ranking Service', 'Available Renewable Energy Resources', and 'Helioclim point data'. The bottom of the page features a footer with logos for various partners including cener, GeoModel SOLAR, prognos, UNEP, IRENA, REN21, JRC, Masdar, and NREL.



Tool for Site Ranking

Setting of Parameter for the Tools

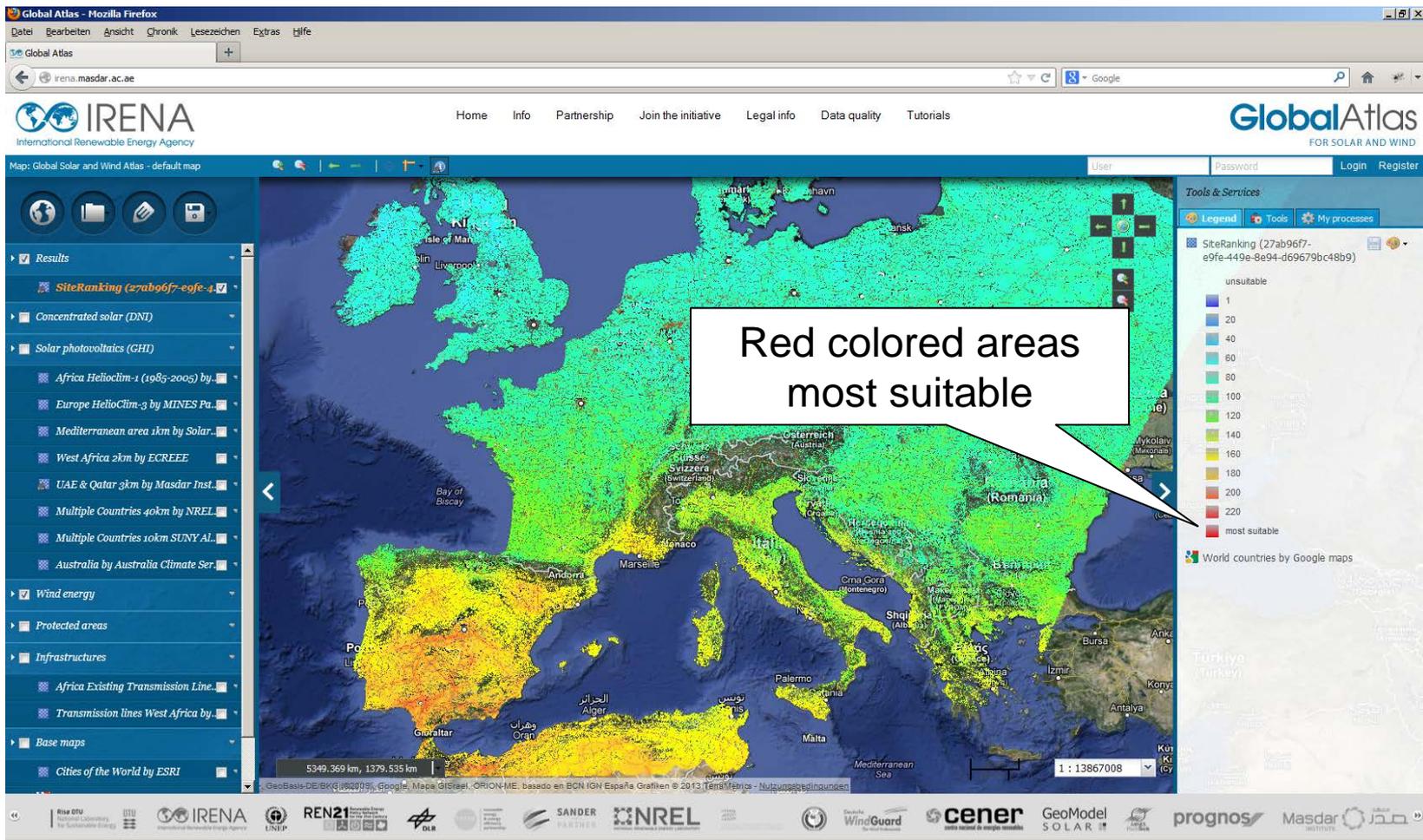
The screenshot displays the 'Solar Site Ranking Service' interface. It features a dark blue header with the DLR logo and a globe. Below the header, there are four main sections for parameter configuration:

- Options for Direct Normal Irradiance (DNI):** Optimal value: low irradiance high irradiance. Weighting for direct irradiance: a slider bar positioned towards the right. An 'Advanced' dropdown menu and an information icon are on the right.
- Options for Global Horizontal Irradiance (GHI):** Optimal value: low irradiance high irradiance. Weighting for horizontal irradiance: a slider bar positioned towards the left. An 'Advanced' dropdown menu and an information icon are on the right.
- Options for Slope:** Optimal value: small slope large slope. Weighting for slope: a slider bar positioned towards the left. An 'Advanced' dropdown menu and an information icon are on the right.
- Options for Population Density:** Optimal value: low density high density. An 'Advanced' dropdown menu and an information icon are on the right.

At the bottom of the interface, there are four buttons: 'Back', 'Next', 'Run', and 'Cancel'.



Site Ranking Result



Summary and Outlook

- The Global Atlas for Solar and Wind Energy is an open access platform for renewable resource data
 - In principle anyone can provide data (data sharing agreement with IRENA required, standards on data quality and transparency need to be followed – to be defined in 2013)
- New renewable technologies will be added in the future (geothermal, hydro, biomass, tidal)
- Newer high resolution data sets will be added
 - World Bank ESMAP resource assessments will contribute to the Atlas
- New tools will be developed and added in the future
 - Again: anyone can participate and contribute



Thank you very much for your attention!!!

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Point Query Results

