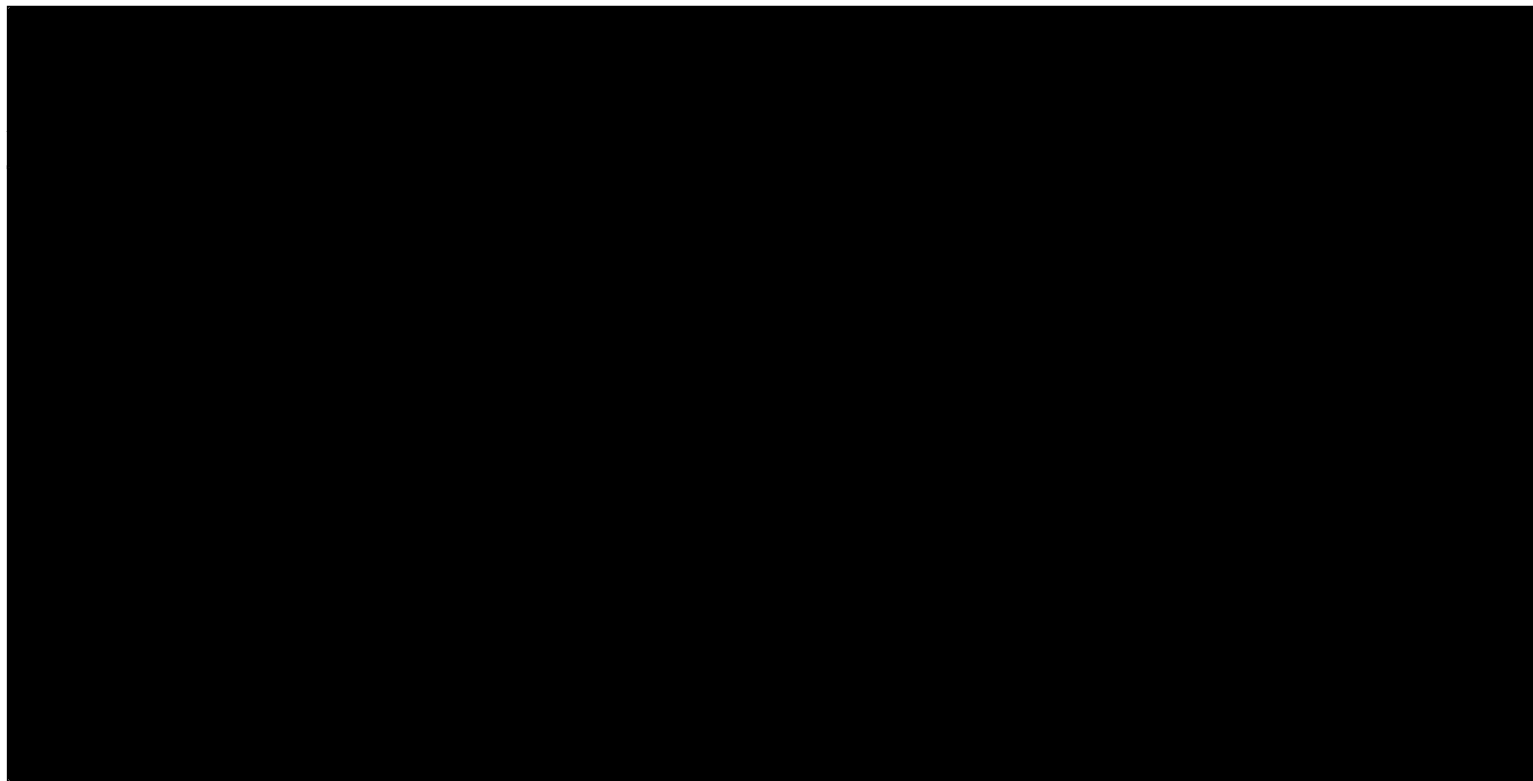




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*‘Development of **Web-GIS** Tool for estimating the Rooftop Solar Power potential for Indian Solar Cities’*



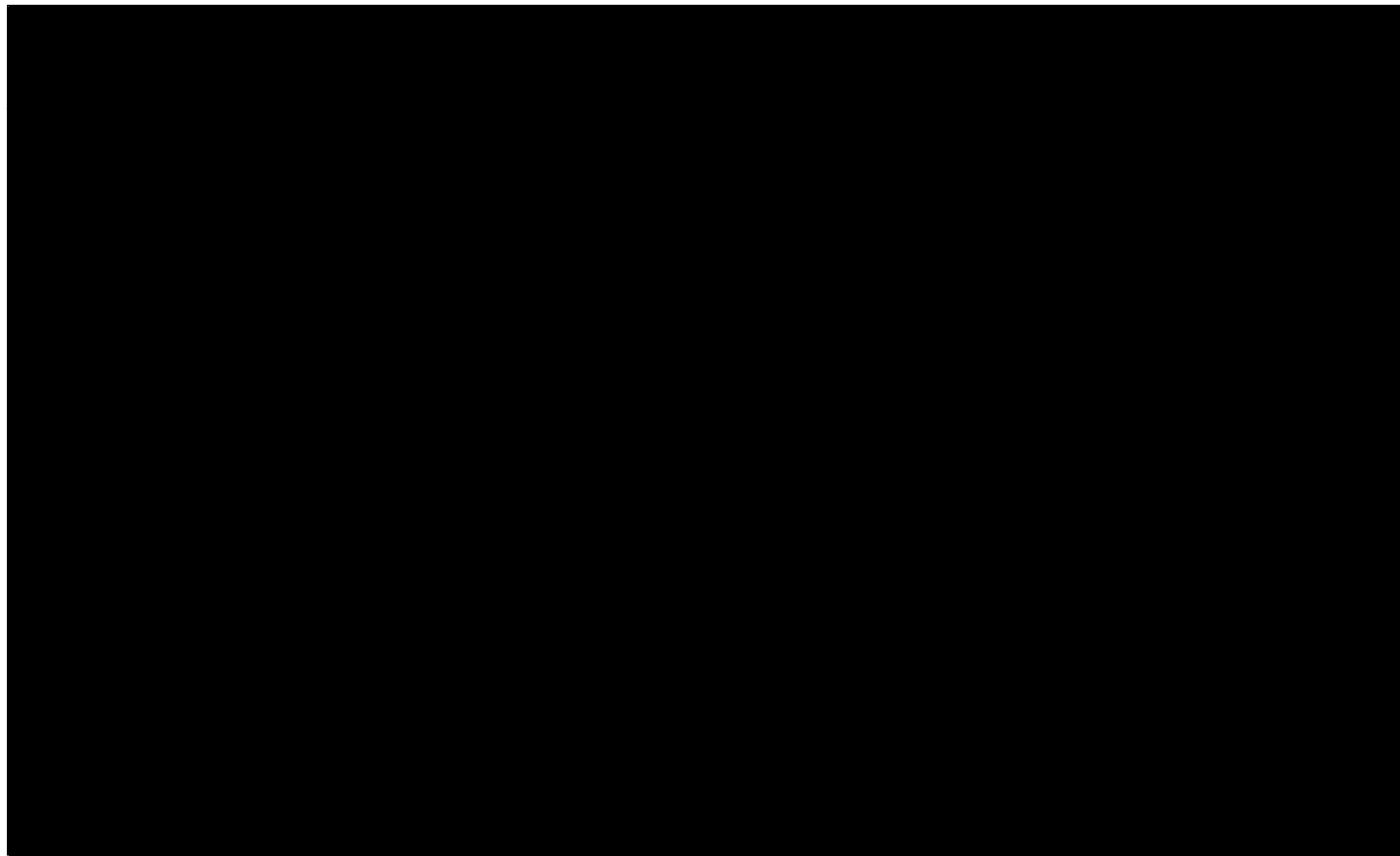
Study Objective



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To develop a high performing and flexible Web-GIS tool to estimate the rooftop solar power potential for a city.

Phase I: Chandigarh Area



Study Area



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Pleiades-1A



Source: Google Earth (<http://www.google.com/earth/index.html>)

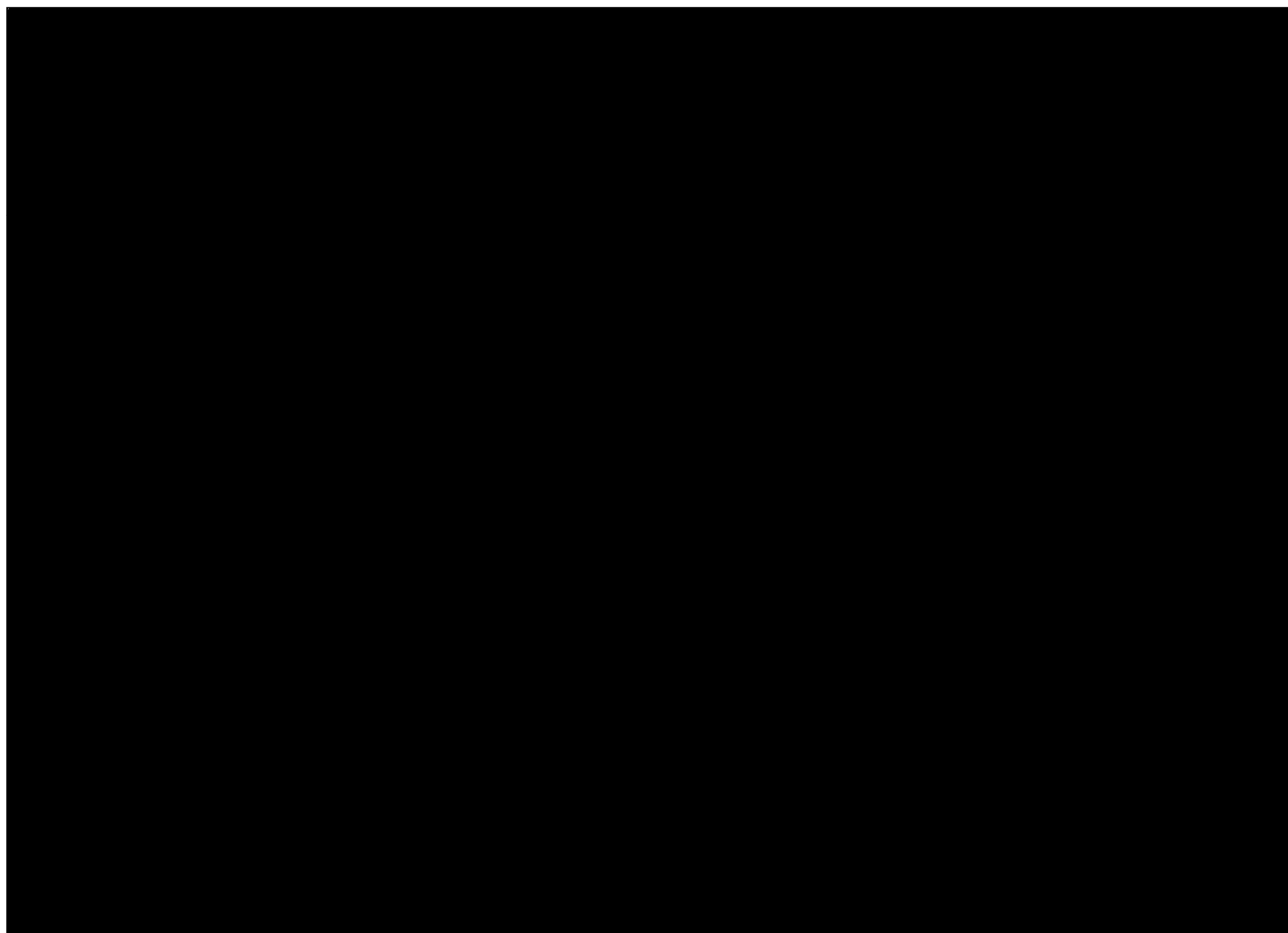
Source: <http://www.astrium-geo.com/pleiades>

Pleiades Satellite Imagery



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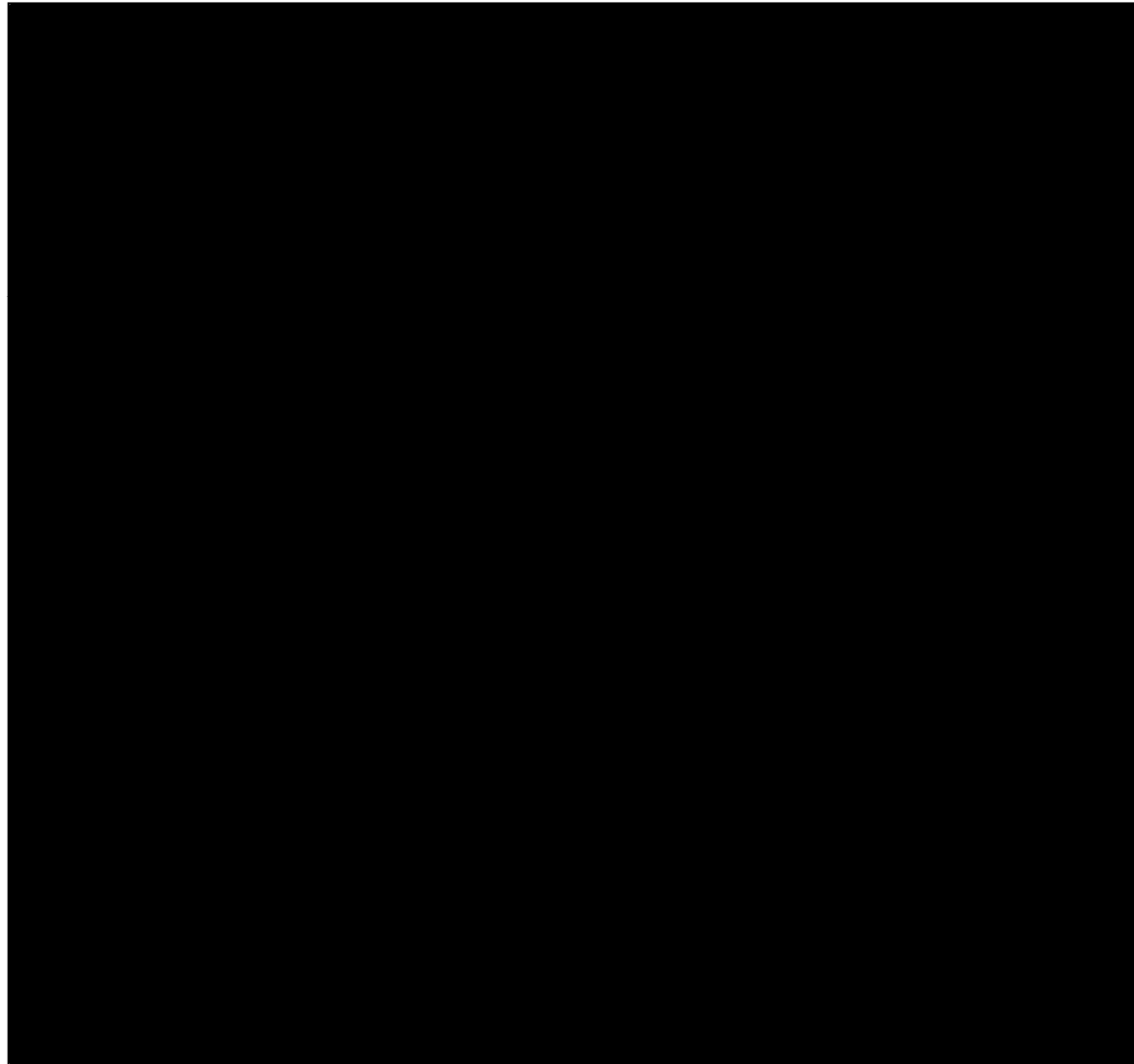
Pleiades Satellite Imagery Coverage: Chandigarh Area



Methodology



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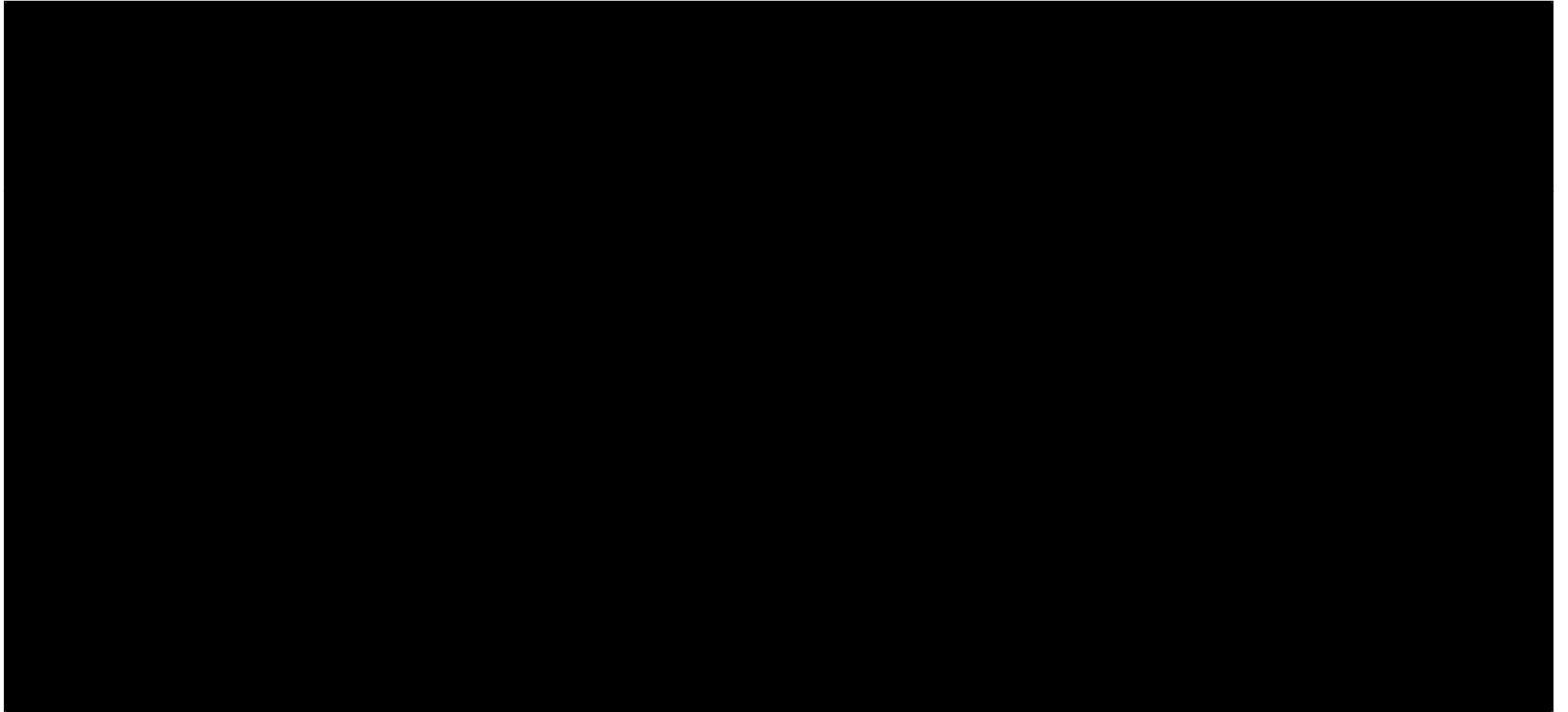


6

GIS Data-sets for Chandigarh Area (Building Rooftop)



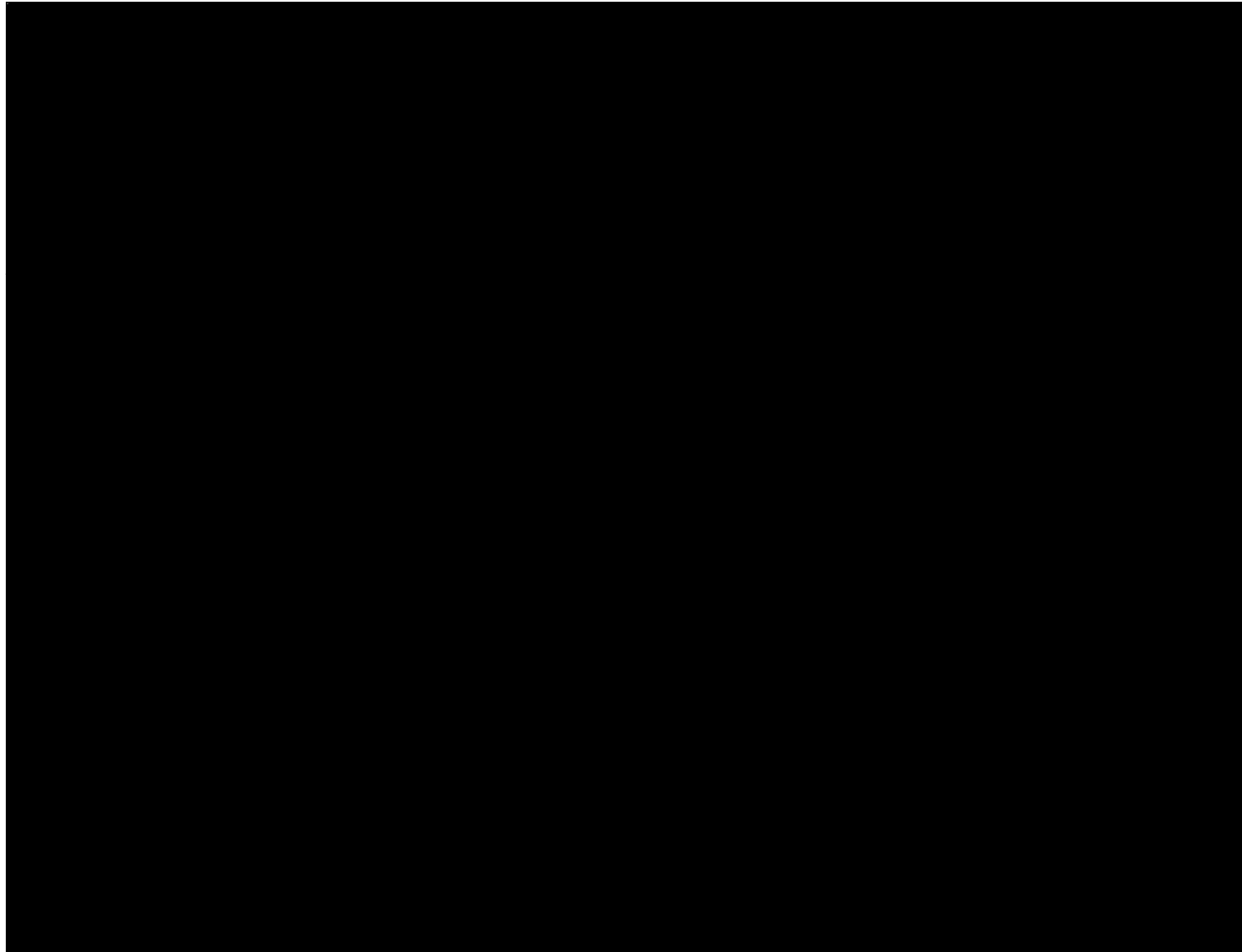
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7 Digital Surface Model (DSM) for Chandigarh



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Solar Radiation Analyst



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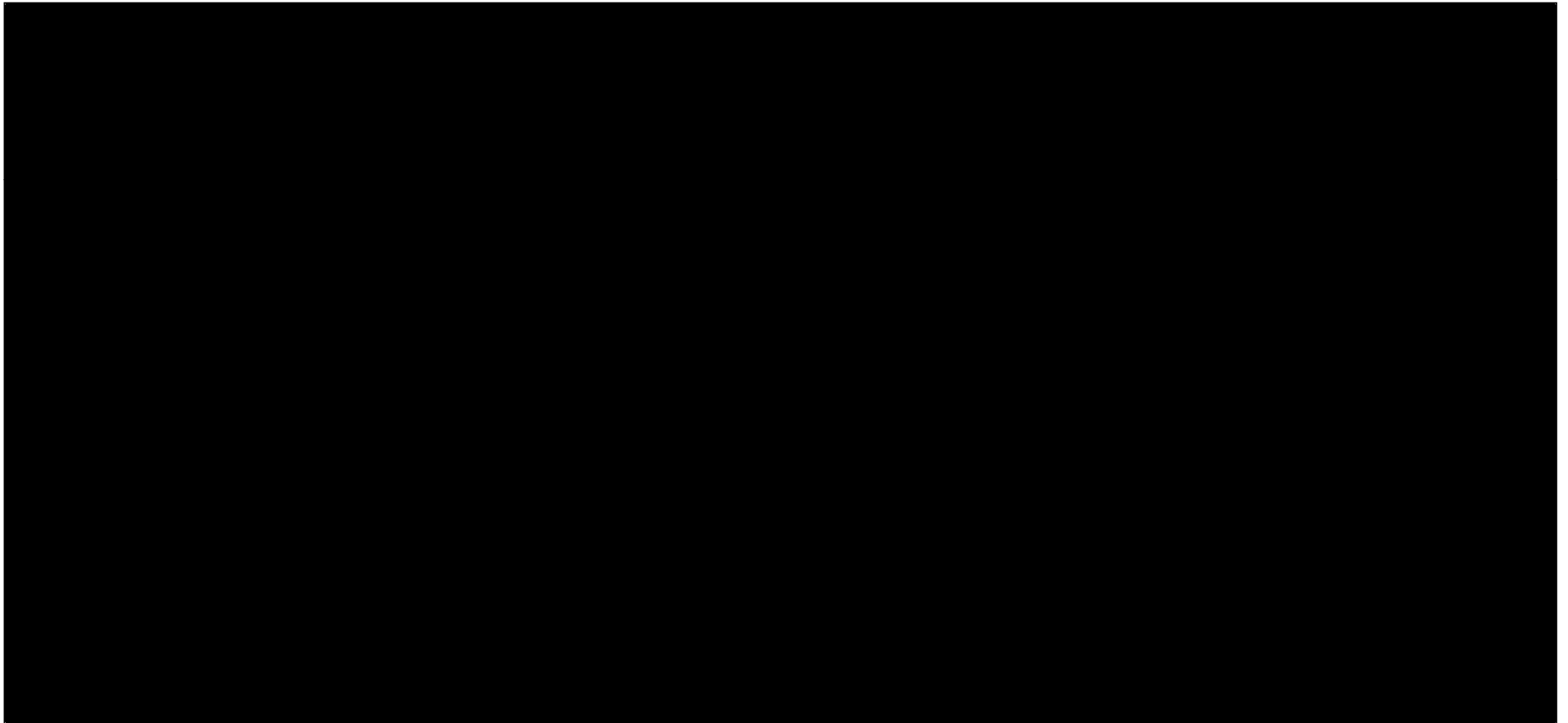
ESRI ArcGIS Solar Radiation Tools:

[http://resources.arcgis.com/en/help/main/10.1/index.html#/An overview of the Solar Radiation tools/009z000000t4000000/](http://resources.arcgis.com/en/help/main/10.1/index.html#/An%20overview%20of%20the%20Solar%20Radiation%20tools/009z000000t4000000/)

Rooftop Area and Solar Radiation



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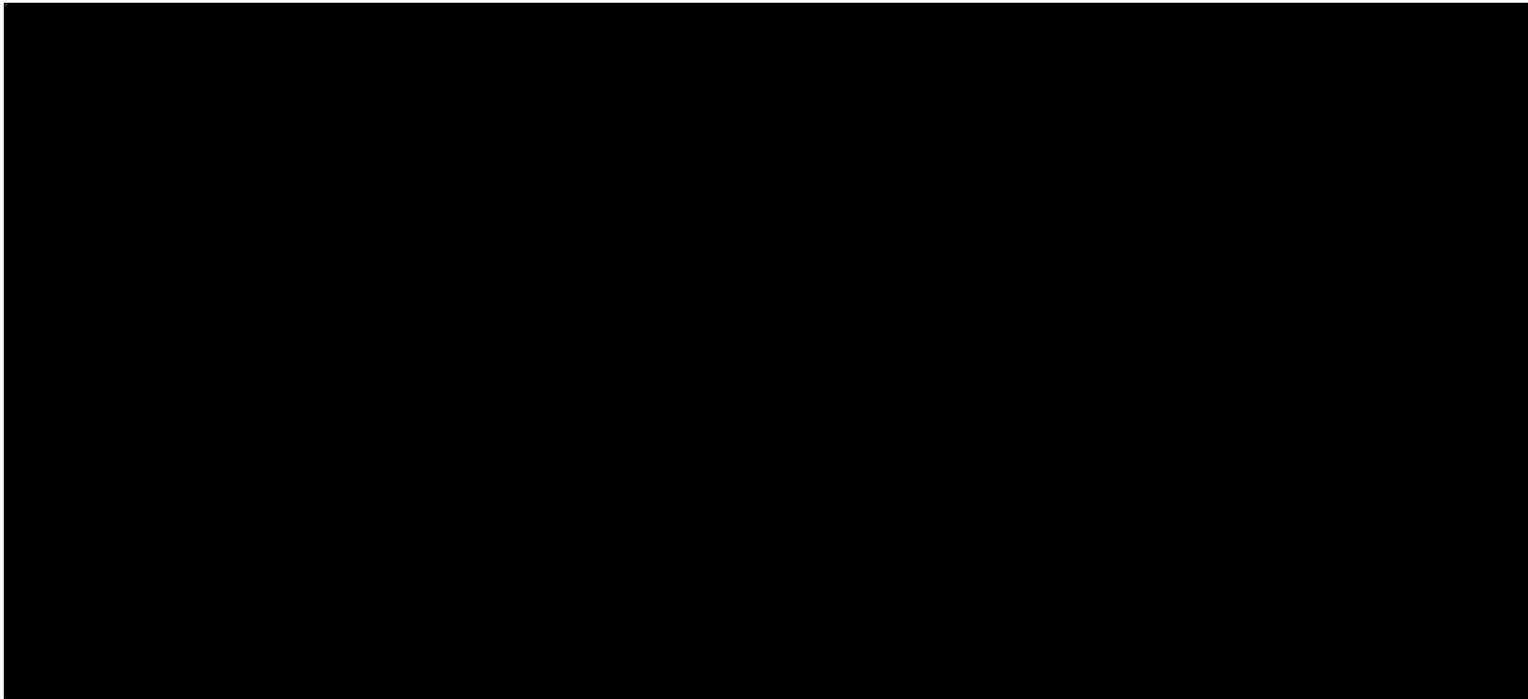


Analysis Results: Chandigarh Area



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- ✓ **Total Buildings Surveyed (Nos.): 14,000 (approx.) ##** ##To be crossed-checked.
- ✓ **Total Rooftop Digitized (Nos.): 1,10,500 (approx.) ##**
- ✓ **Potential Roof Area (70%) for Solar PV (Area > 10 Sq-M && GHI > 4kWh/m²/Day): 4 Sq-Kms. (approx.) ##**
- ✓ **Ground Validation for actual Roof Area, and Solar Radiation: 50-60 Samples (approx.)**
- ✓ **Validation using Solar PV Generation Data: 5-10 Samples (approx.), TBD.**



Using Open-Source GIS and What's new in this study?



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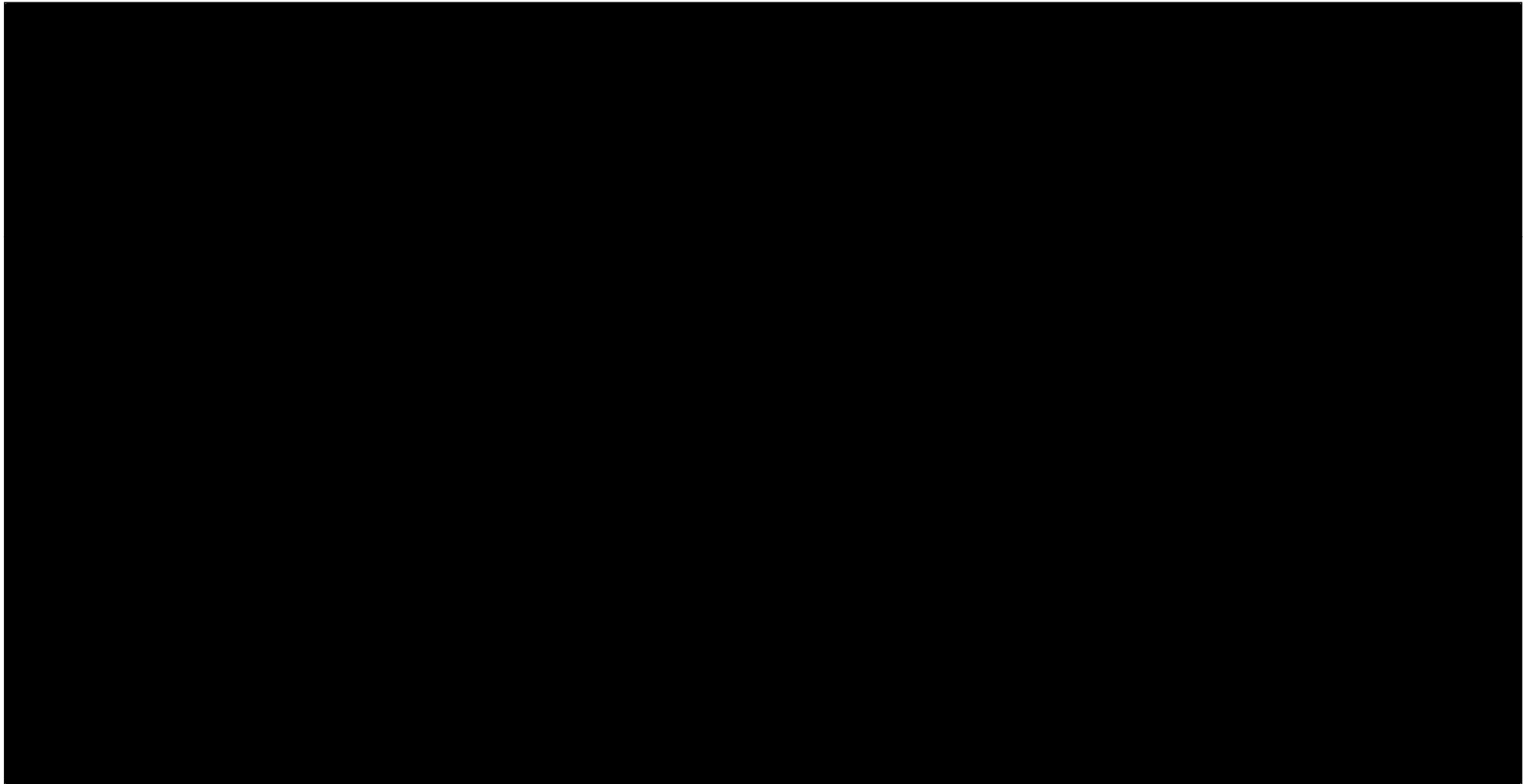


- ✓ **Web Application: Open Layers, Ext-JS, Geo-Ext, PHP, and Ajax;**
- ✓ **Open-Source GIS Server: Geo-Server, and Map-Server;**
- ✓ **Open Geo-Database: PostgreSQL with PostGIS;**
- ✓ **Tile-Server Caching, Cloud based, and Publicly Accessible.**

Rooftop Solar Web-GIS Tool (Beta)



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Source: <http://regisindia.teriin.org/solar/Solar-WebGIS.php>

Rooftop Solar Web-GIS Tool (Home Page)



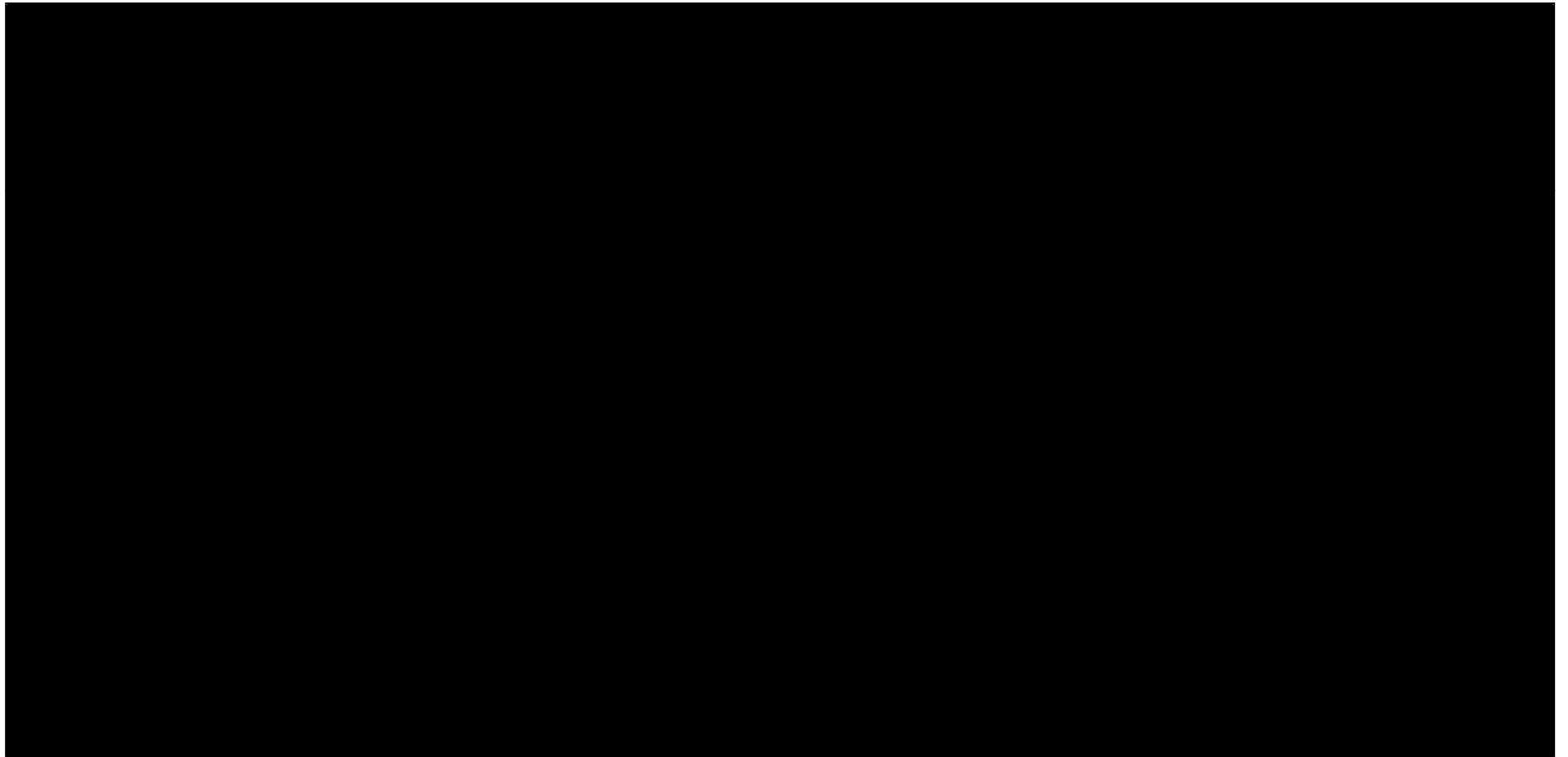
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Rooftop Solar Web-GIS Tool (Base Maps)



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Rooftop Solar Web-GIS Tool (Analysis Tools)



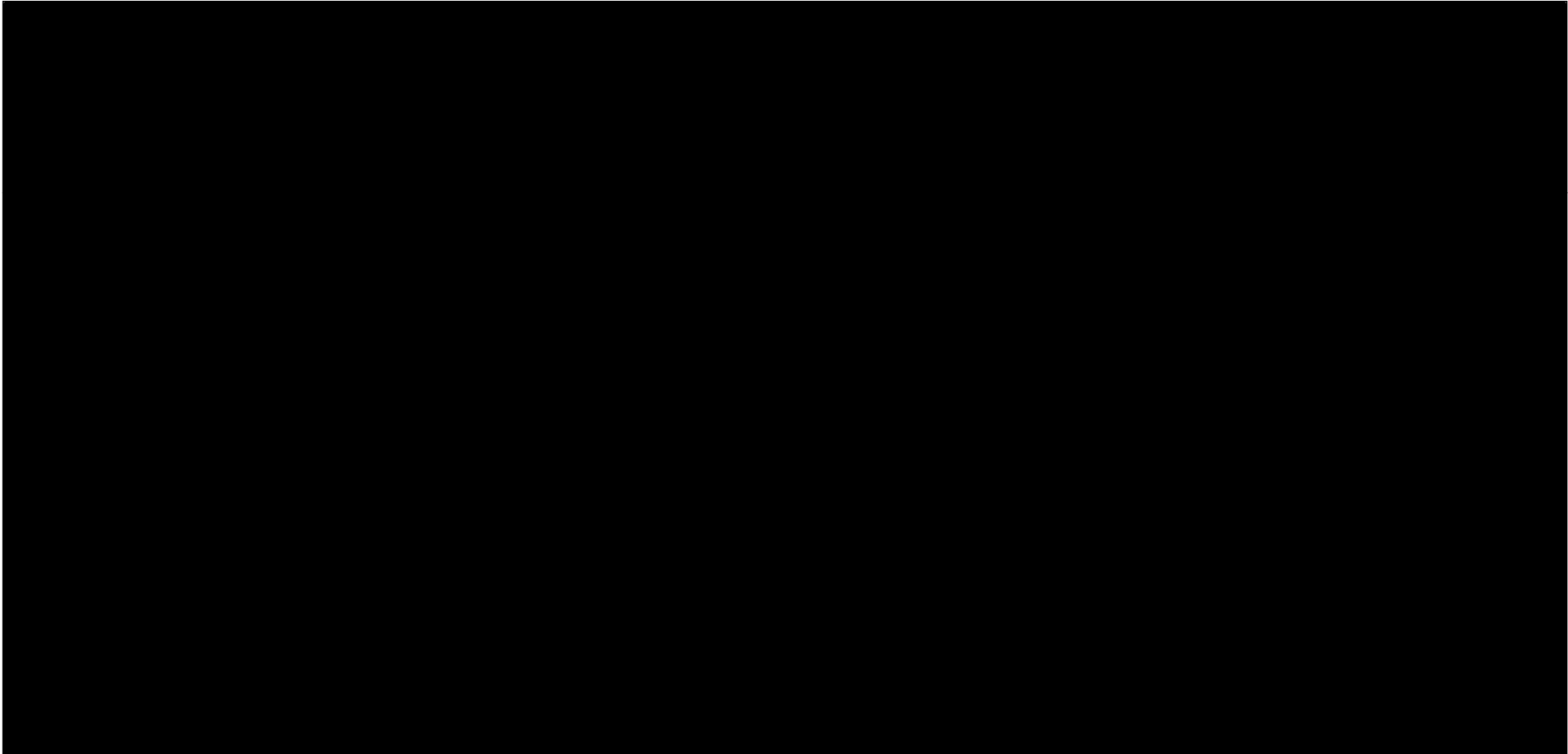
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Rooftop Solar Web-GIS Tool (Placeholder)



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Rooftop Solar Web-GIS Tool (Core Tools)



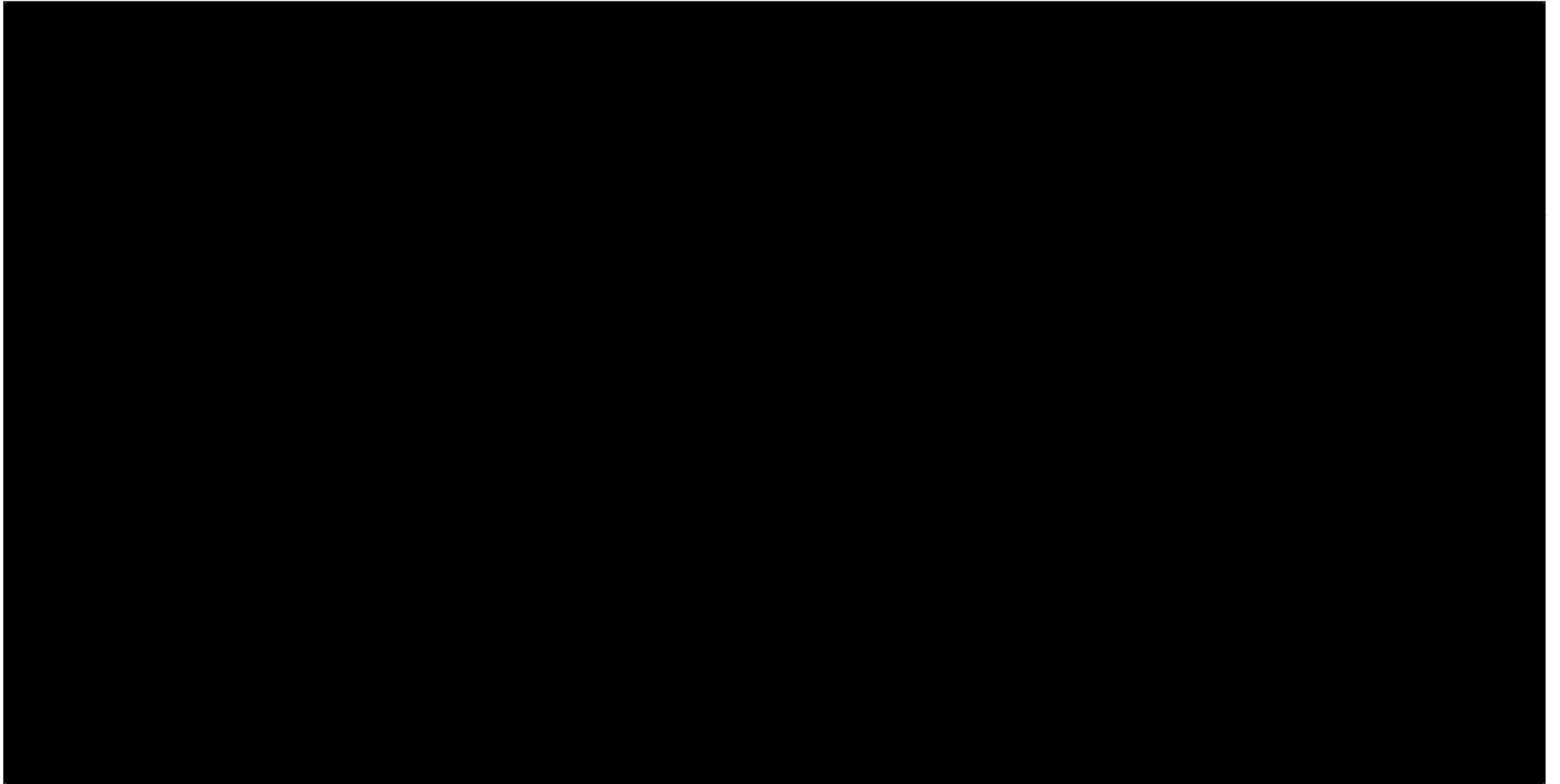
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Solar Simulation Model Calculation Tool



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Solar Simulation Model (Report)



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Rooftop Solar Web-GIS Tool (Spatial Editing)



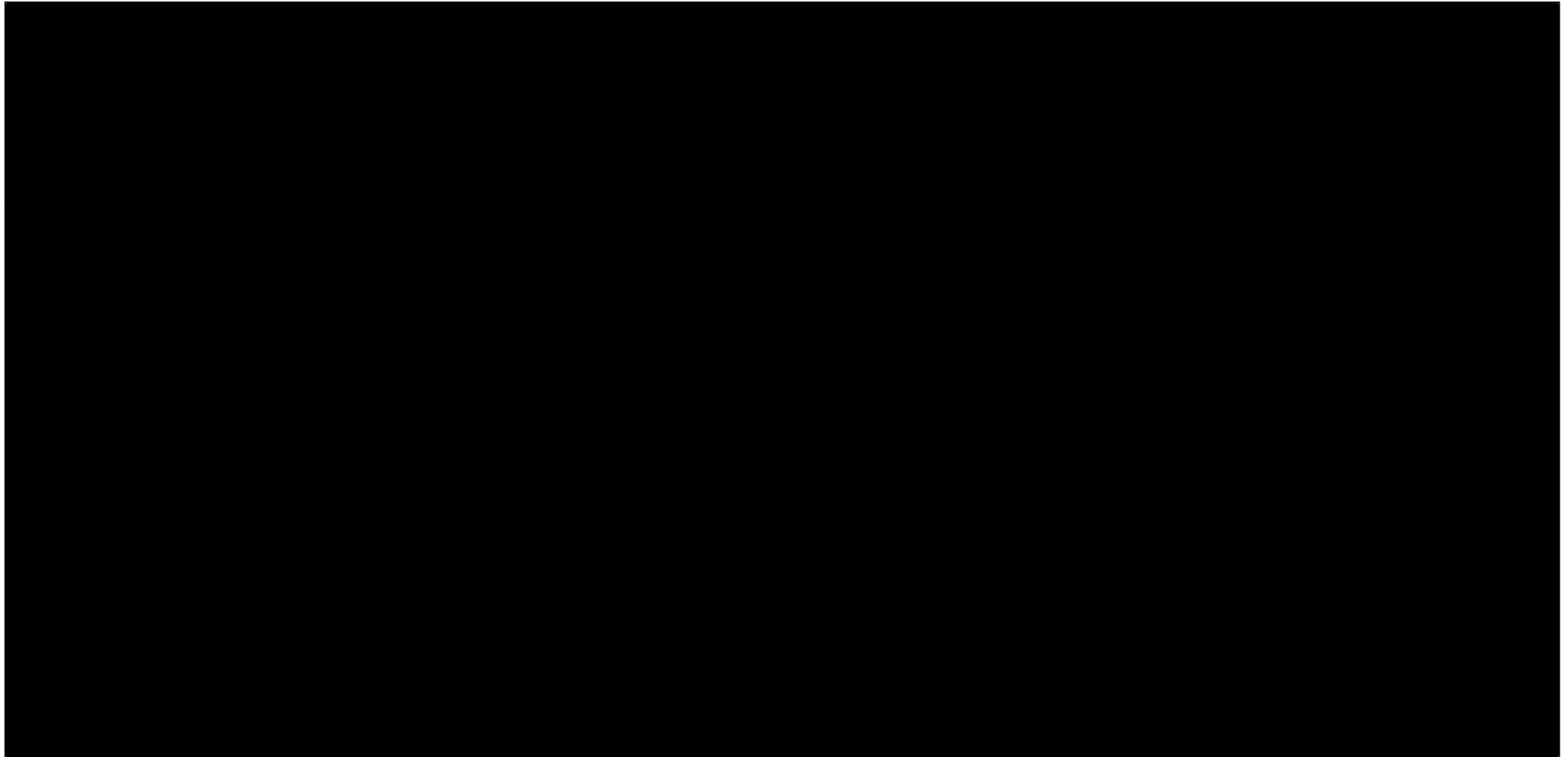
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21 Rooftop Solar Web-GIS Tool (User Feedback)



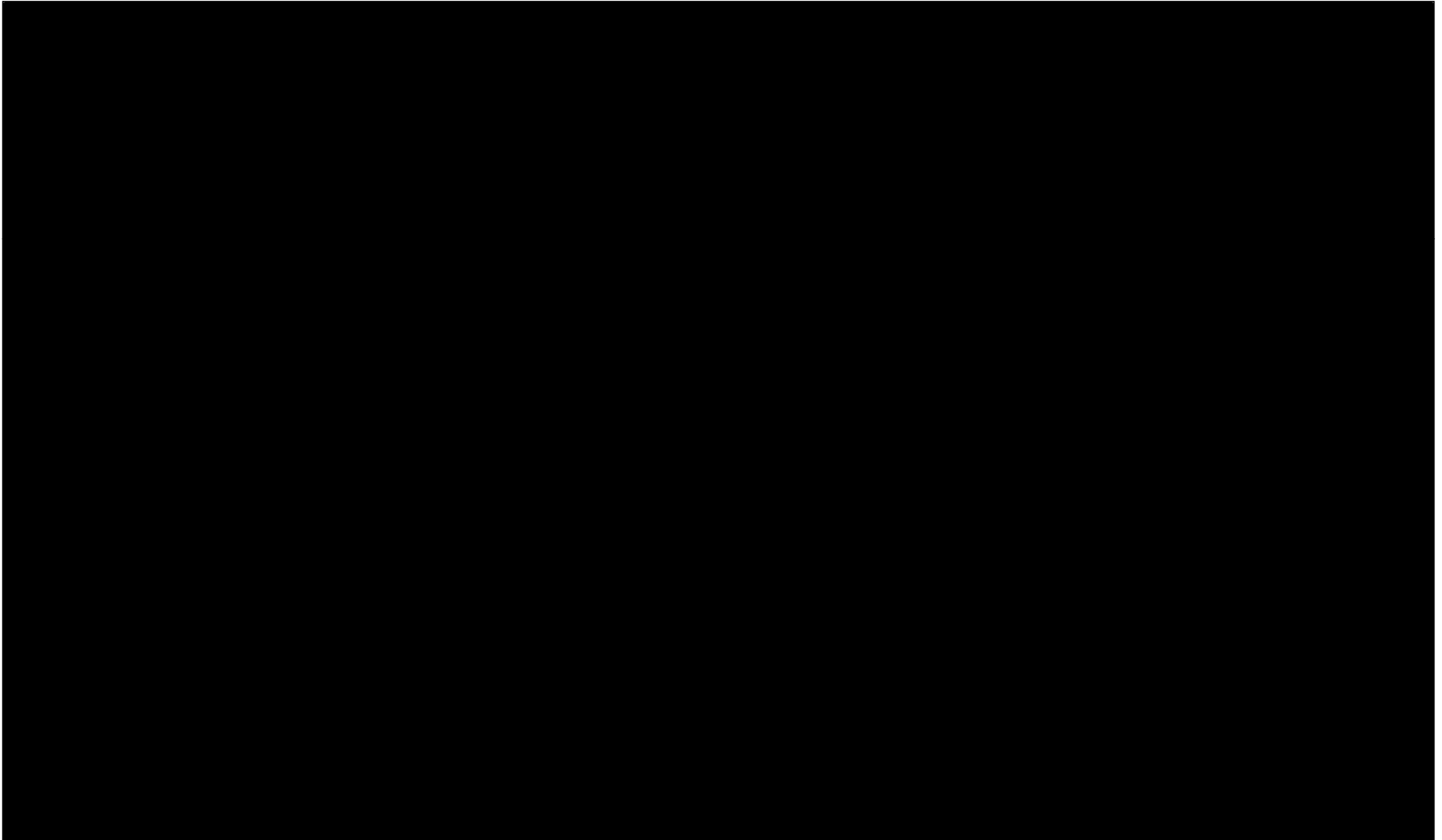
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Web-GIS based Renewable Energy Atlas for Gujarat (Ongoing Project)



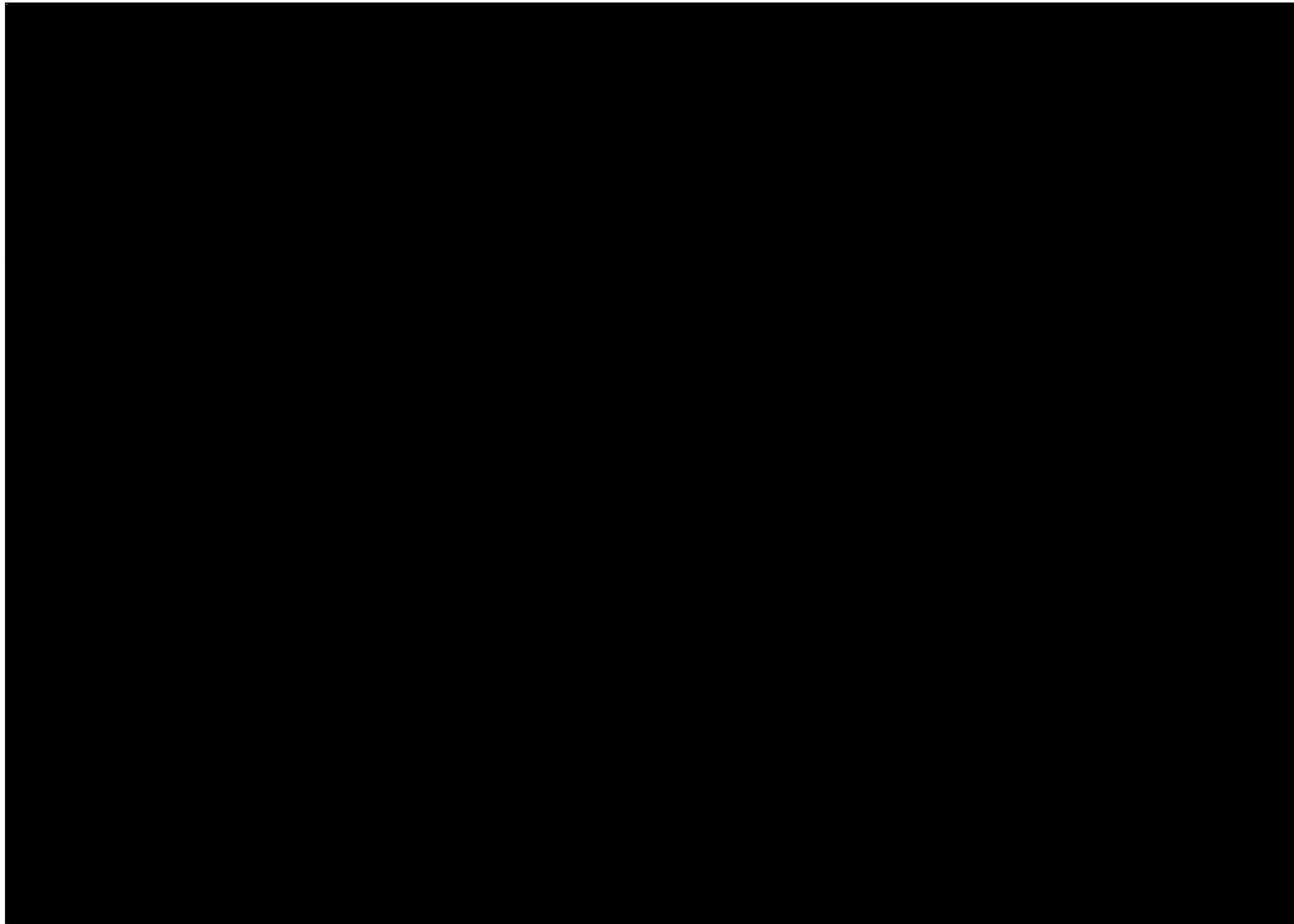
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Rooftop Solar Web-GIS Tool for NCT-Delhi (Proof of Concept)



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RE-GIS India (Website Highlights)



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GIS: Designing Our Future

Welcome to the Renewable Energy Geo-Spatial Gateway of India (RE-GIS India)..!

Expert Exchange/Blogs

- An overview of EPR ArcGIS Solar Radiation Tools
- Calculation of Solar Resource using Pointe Solar Radiation Tool (Operal Analyt)
- Understanding Solar Radiation Analysis
- How Solar Radiation is calculated
- Discovering the World Through GIS

Related Projects

- Rooftop Solar Web-GIS Tool for India **NEW**
- International Projects on Web-based Solar Photovoltaic Mapping Tools
- GIS for Renewable Energy

Featured News

- Base Version of Rooftop Solar Web-GIS Tool will be released soon with enriched Chandigarh Data-set
- First Demonstration has been completed (including comments from various Stakeholders) for Rooftop Solar Web-GIS Tool **NEW**
- GIS Field Survey activity has already been initiated for Chandigarh Area
- GIS Data creation process has been started for Chandigarh Area
- Draft Copy of Software Requirements Specification (SRS) Document for Rooftop Solar Web-GIS Tool

Renewable Energy Gyan Manthan

- RE Gyan: WU Sustainability Portal by TERI Gateways to Sustainable Development
- Discussion Forum: YouthConnect
- Online Survey: **NEW**
 - Household Level Electricity Survey
 - Industry Survey on Smart Grid Capabilities in India
- Quiz Climate Quiz
- Celebrate GIS Day **NEW**

FORTHCOMING EVENTS

First Stakeholders Workshop for the Demonstration of Rooftop Solar Web-GIS Tool
23/12/2013
Chandigarh

Rooftop Solar Web-GIS Tool
Dissemination Workshop for Official Launching
14/01/2014
New Delhi

FORTHCOMING TRAINING PROGRAMS

First Training Programme on Rooftop Solar Web-GIS Tool
17/01/2014
New Delhi

Second Training Programme on Rooftop Solar Web-GIS Tool
24/01/2014
New Delhi

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EVENTS CALENDAR

Oct 2013

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| 28 | 29 | 30 | 31 | | | |

1012

RE-GIS India (www.regisindia.com)

International Projects on Web-based Solar Photovoltaic Mapping Tools

Rooftop Solar Web-GIS Tool

Web-GIS Tool for estimating the Rooftop Solar Power potential for Indian Solar Cities
First-of-kind Cloud based Open-Source Web-GIS Architecture for Solar Energy Applications in India
Phase 1: Chandigarh Solar City

First-of-kind Cloud based Open-Source Web-GIS Architecture for estimating the Rooftop Solar Power potential for Chandigarh Solar City

Launching Soon..!!

Mapping Functionalities (First Cut) of Rooftop Solar Web-GIS Tool NEW

Chandigarh Solar City

Jan Dental & SATYANALYS

Chandigarh
Stylized by name

- Chandigarh, India (1)

Base map

Chandigarh, India

ADAPITAL FACILITIES AND SERVICES CHANDIGARH

Chandigarh, India

Map data ©2013 Google

FORTHCOMING EVENTS

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| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | | | |

Outcomes from the Study



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This proposed Web-GIS tool will be an ideal medium to showcase investors the logistics of rooftop solar energy investment. The proposed tool will have following benefits:

- ✓ **It will enable user to estimate the rooftop solar power potential of selected area or, buildings for a particular location w.r.t. various SPV technologies (crystalline/thin-film);**
- ✓ **Will act as a Decision Support System (DSS) to carry out the pre-feasibility assessment of putting rooftop PV system for a particular location;**
- ✓ **Will help users to estimate potential GHG mitigation through solar rooftop PV systems for a given locality;**
- ✓ **Assess the viability of any rooftop projects based on possible business models and financial schemes available.**

Disclaimer: <http://regisindia.com/disclaimer/>

Thank You



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