



DigitalWorld 2023 Congress

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Development of a Web-Based Geospatial Application For Efficient Spatial Data Management

Rouhollah NASIRZADEHDIZAJI & Anıl OLGAÇ

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Education

- Ph.D., in Civil Engineering, Hydraulic Program, Istanbul University, Turkey (2022).
- Ph.D., in Geomatic Engineering, Remote Sensing and GIS Program, Yildiz Technical University, Turkey (2020).
- M.Sc., degree in Geographical Information Technology, Istanbul Technical University, Turkey (2015).
- B.Sc., degree in Civil Engineering, I.A University Shabestar, Tabriz, Iran (2006).

Research Interest

- He has conducted research in several areas, including Interferometric SAR (InSAR) coherence and backscattering analysis, polarimetric SAR (PolSAR) analysis for crop variables investigation, and the integration of Optical and SAR data for crop mapping improvement. He has experience in flood mapping and permanent water bodies change detection using Radar data, as well as the application of remote sensing techniques in land monitoring.
- He has also conducted research on the application of hydrological models to assess the impacts of land use changes such as forest fires on runoff and sediment loads.

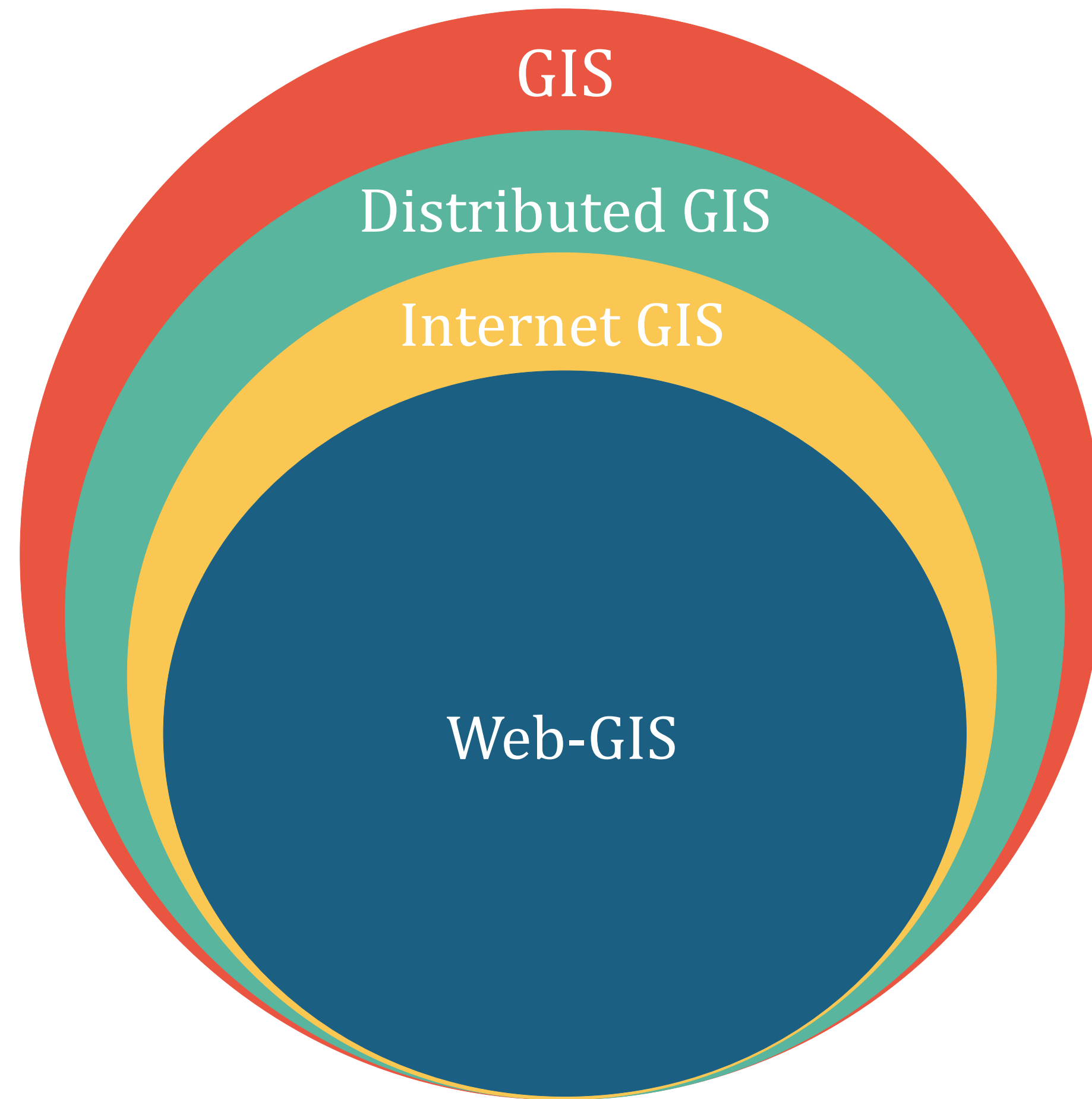
Current Profession

- He works as a specialist engineer in Water & Environment Department at Yüksel Proje Inc., Turkey, where he is working as a senior engineer on water-related projects, including conducting hydrological analysis and hydraulic modeling, as well as managing and developing GIS and remote sensing R&D projects related to water and environmental studies.

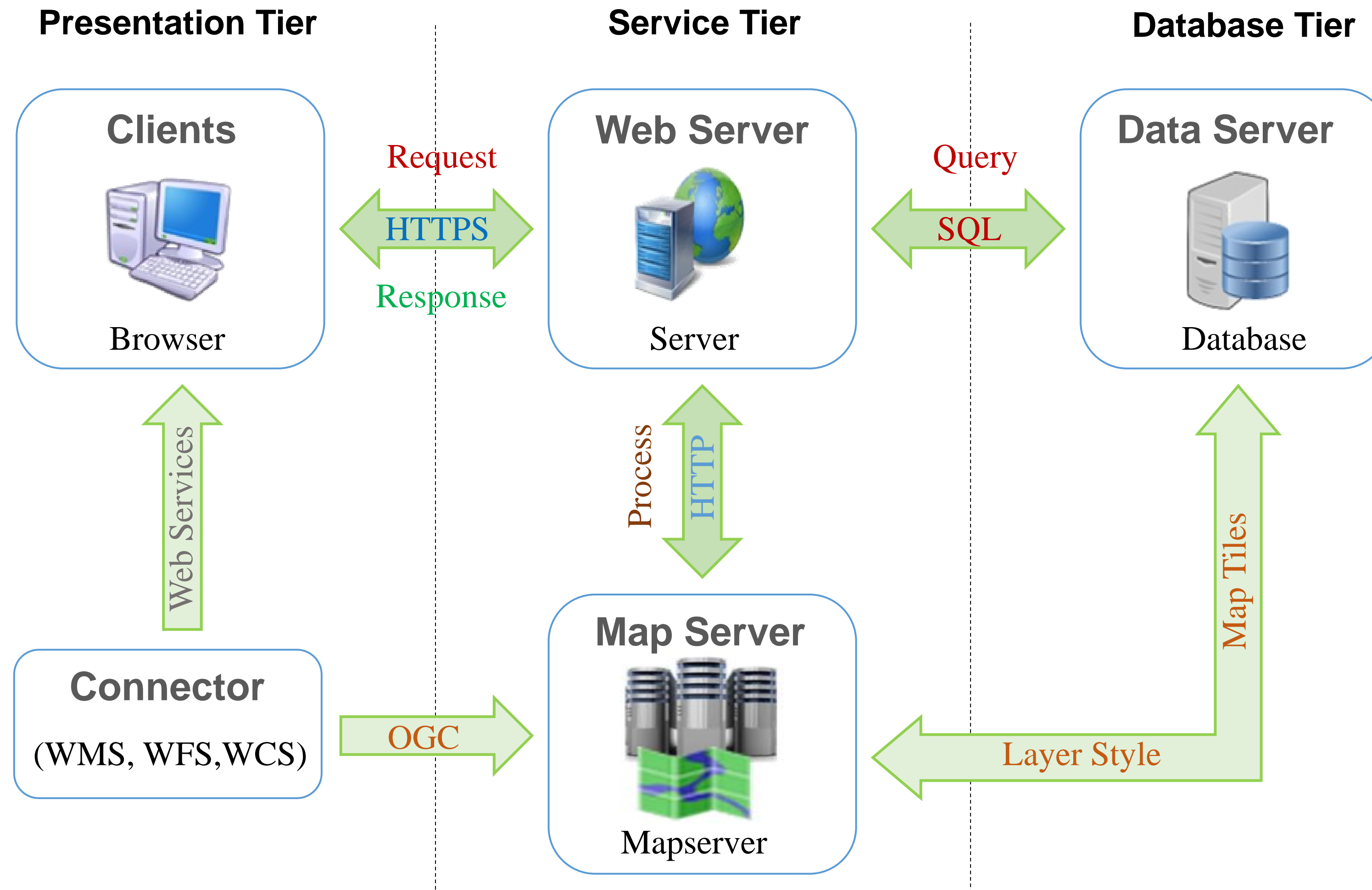
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- ❖ <https://scholar.google.com/citations?user=AcOz2T4AAAAJ&hl=en>
- ❖ <https://www.researchgate.net/profile/Rouhollah-Nasirzadehdizaji-2>
- ❖ <https://www.linkedin.com/in/rouhollah-nasirzadeh/>

- GIS; a mechanism for digitally representing real-world objects and processes in a computer system
- Combination of general information (maps) and specific information (attributes)
- Web technology has led to an improvement in the use and accessibility of geographic information
- Web-Based GISystems has accelerated in parallel with the developments in computer and internet technology
- Web-GIS; tools for storage, recovery, management, analysis, and delivering spatial data on WWW



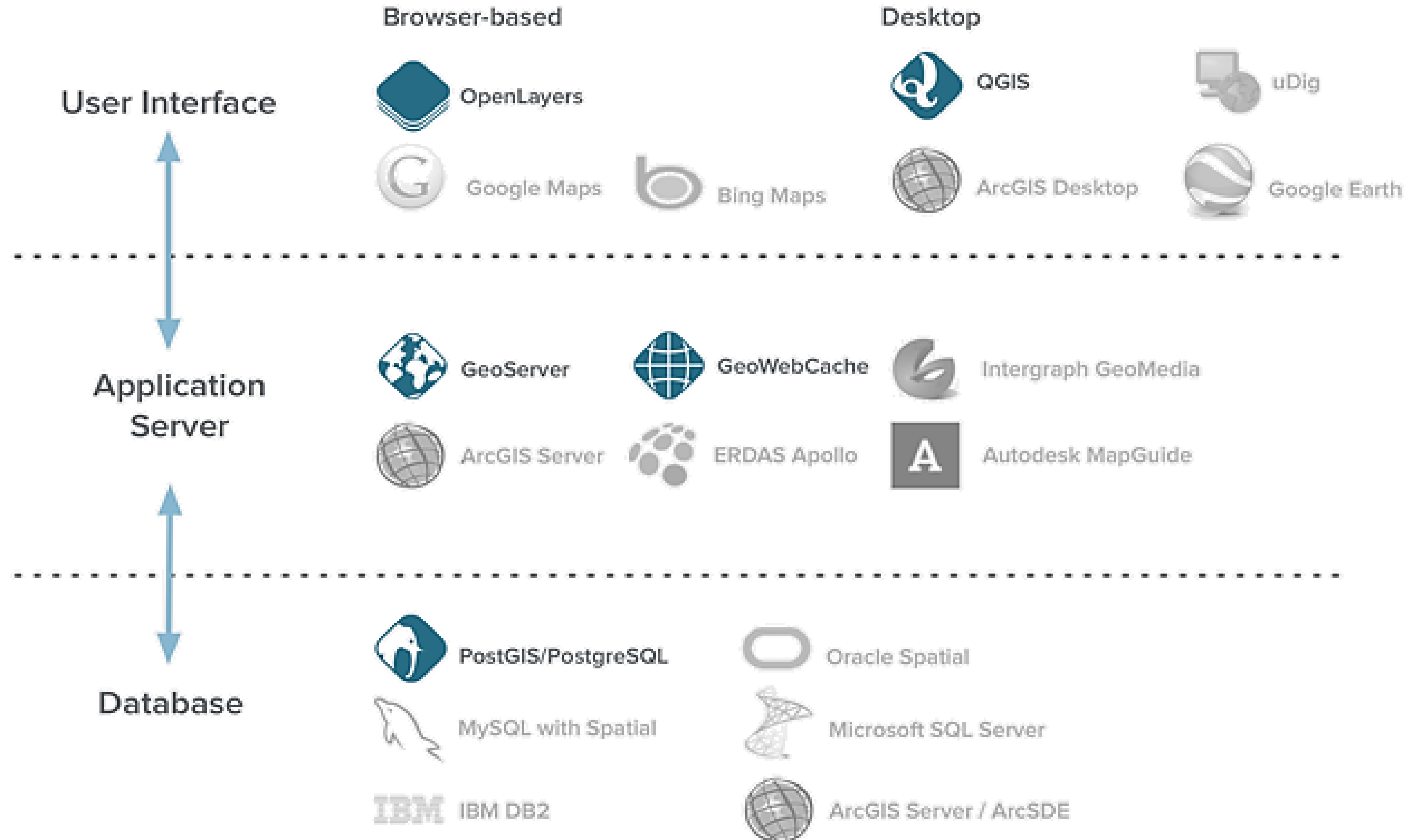
Web-GIS Structure



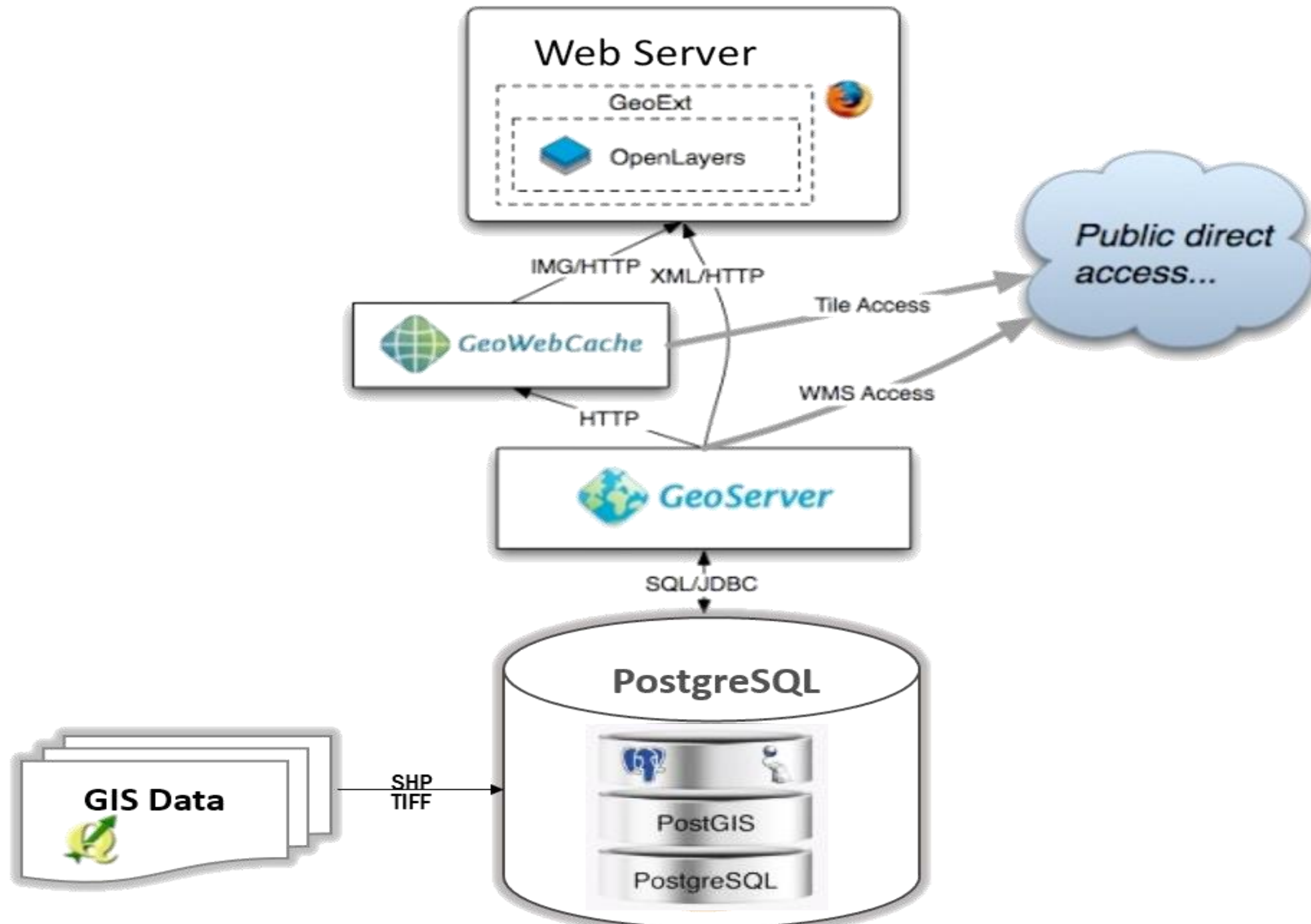
Adapted from: (Nasirzadehdizaji R., 2015)

- Script (Language): JavaScript (OpenLayers library), HTML, XML, PHP, etc.
- Interface Design: CSS
- Operating System: Windows, Linux, Mac
- Web Server: Apache, IIS, PWS
- Web Browser: Mozilla, Chrome, Opera, Safari, etc.

Web-GIS Components



Web-GIS Arrangement



Source: (Nasirzadehdizaji R. & Celik N.R., 2015)

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<https://ypnet.yukselproje.com.tr/YpCbs>

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Project

+ Add Discipline Filter

Filter Layers

Filter in results

+

-

E

Cluj-Napoca

Târgu Mureş

Bacău

Vaslui

Bârlad

Cahul

Focşani

Galati

România

Sfântu Gheorghe

Râmnicu Vâlcea

Braşov

Piteşti

Craiova

Alexandria

Plevne

Vraça

Ловеч

София

България

Благоевград

Пловдив

Кърджали

Корина

Дония

Αποκεντρωμένη Διοίκηση Μακεδονίας Θράκης

Αθήνα

Αποκεντρωμένη Διοίκηση Κρήτης

Scale = 1 : 7M

0 166.67 km 333.33 km 500 km

Clear

Select Measurement Type ▾

Show Info

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Yüksel Proje CBS - User Login

Username

Password

Login ✓

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Layers

Select Map

☒ OSM

☐ Stamen Terrain

☐ Humanitarian

☐ Bing Maps

☐ ESRI

☐ Google Maps

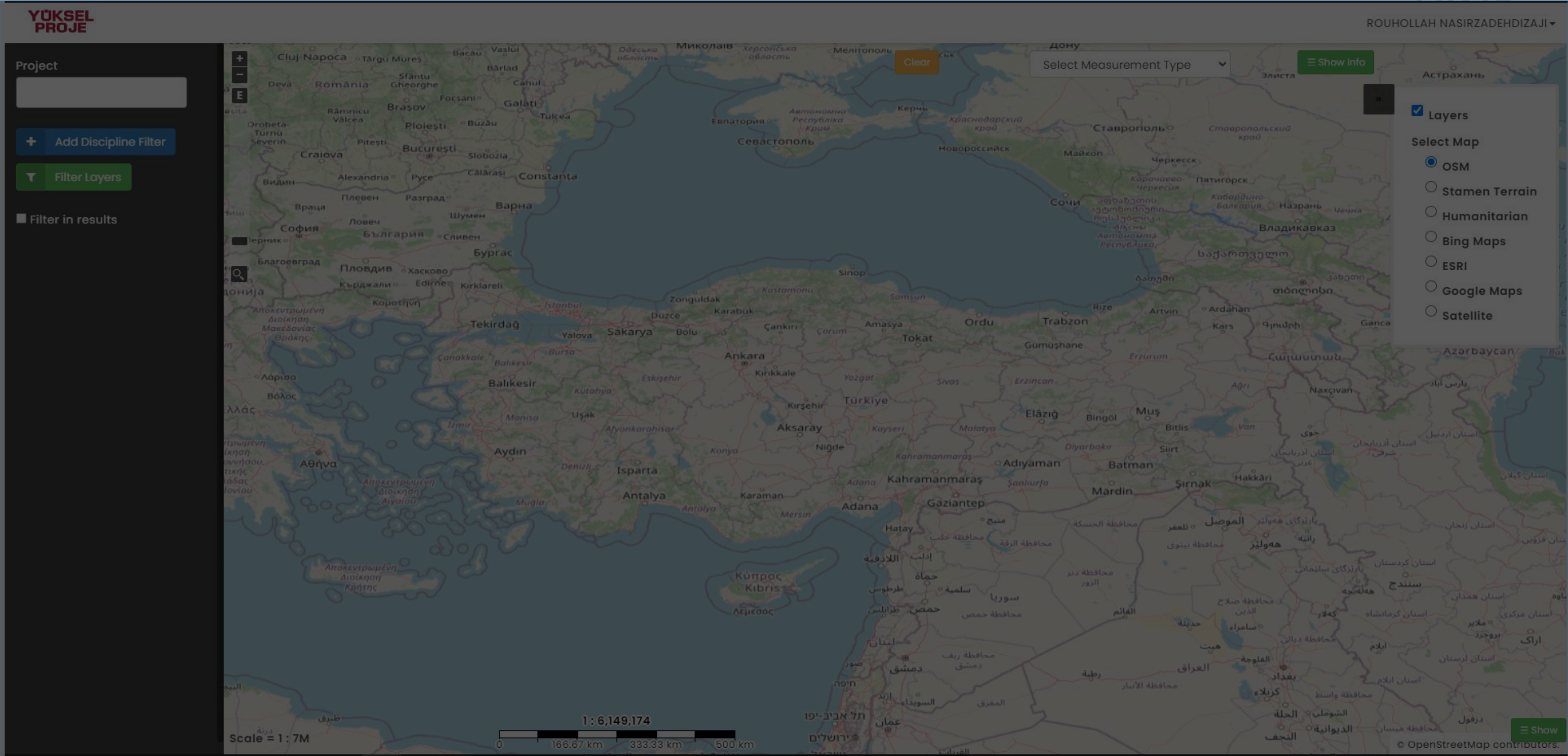
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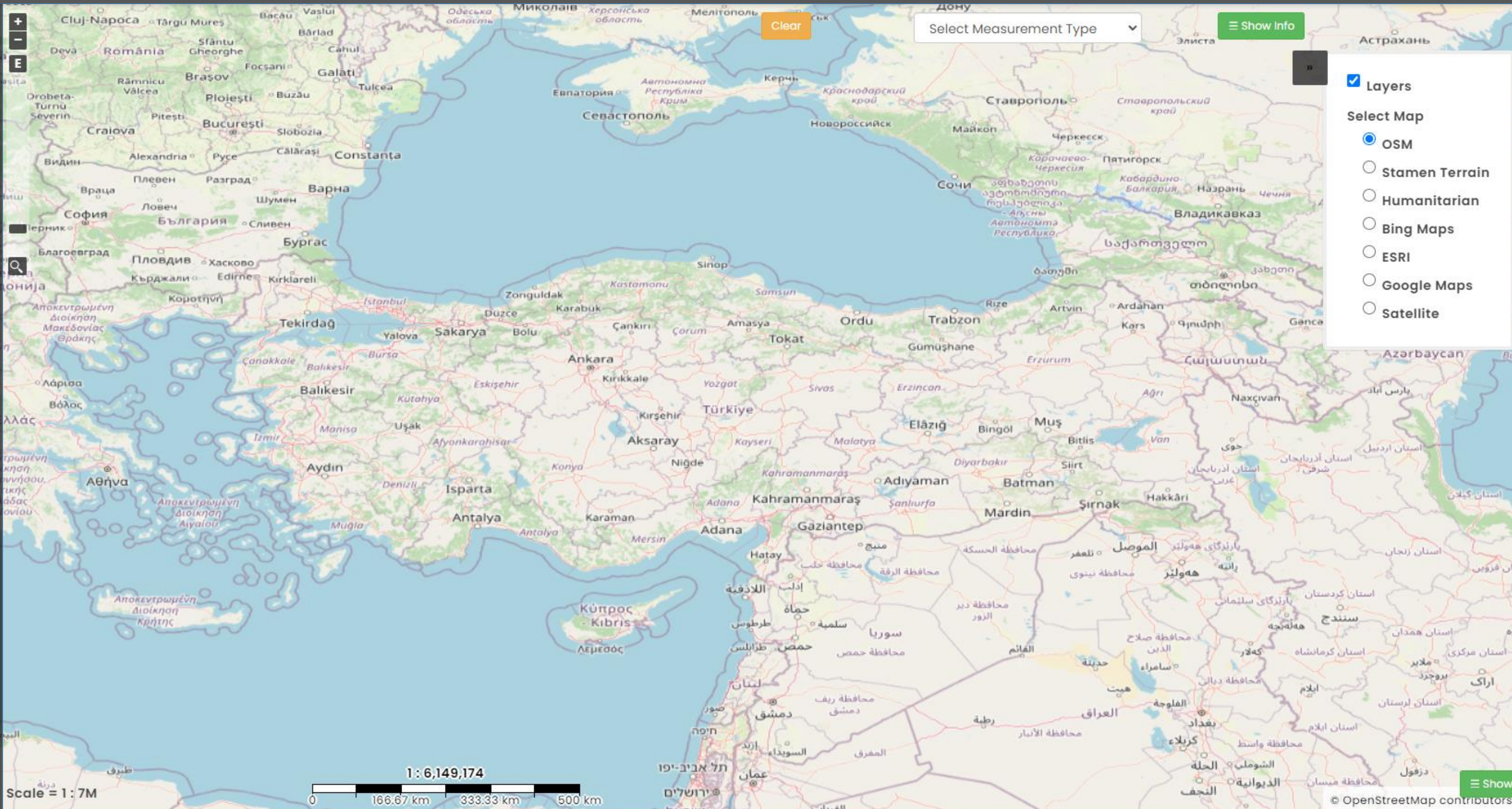
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Project

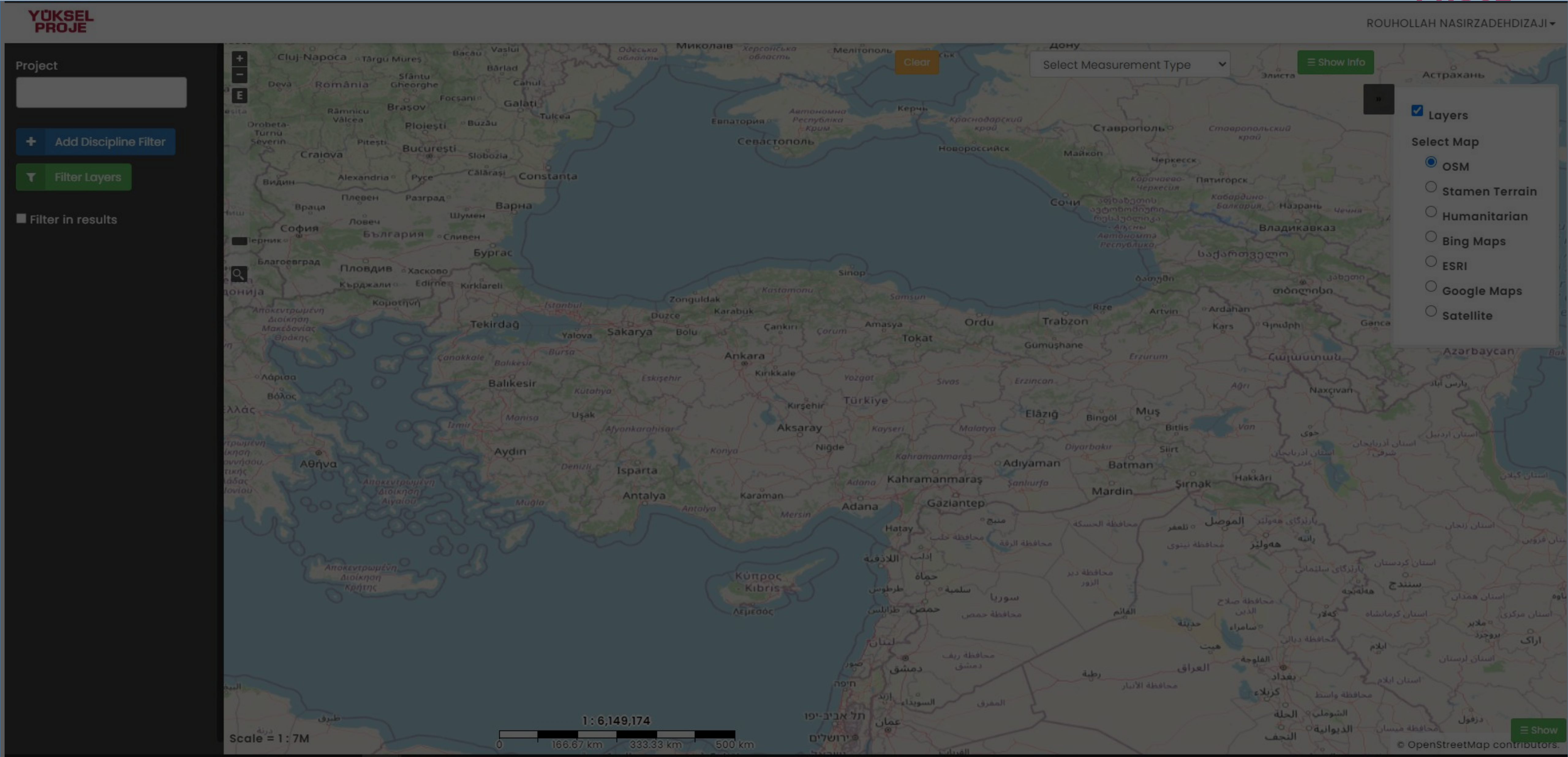
+ Add Discipline Filter

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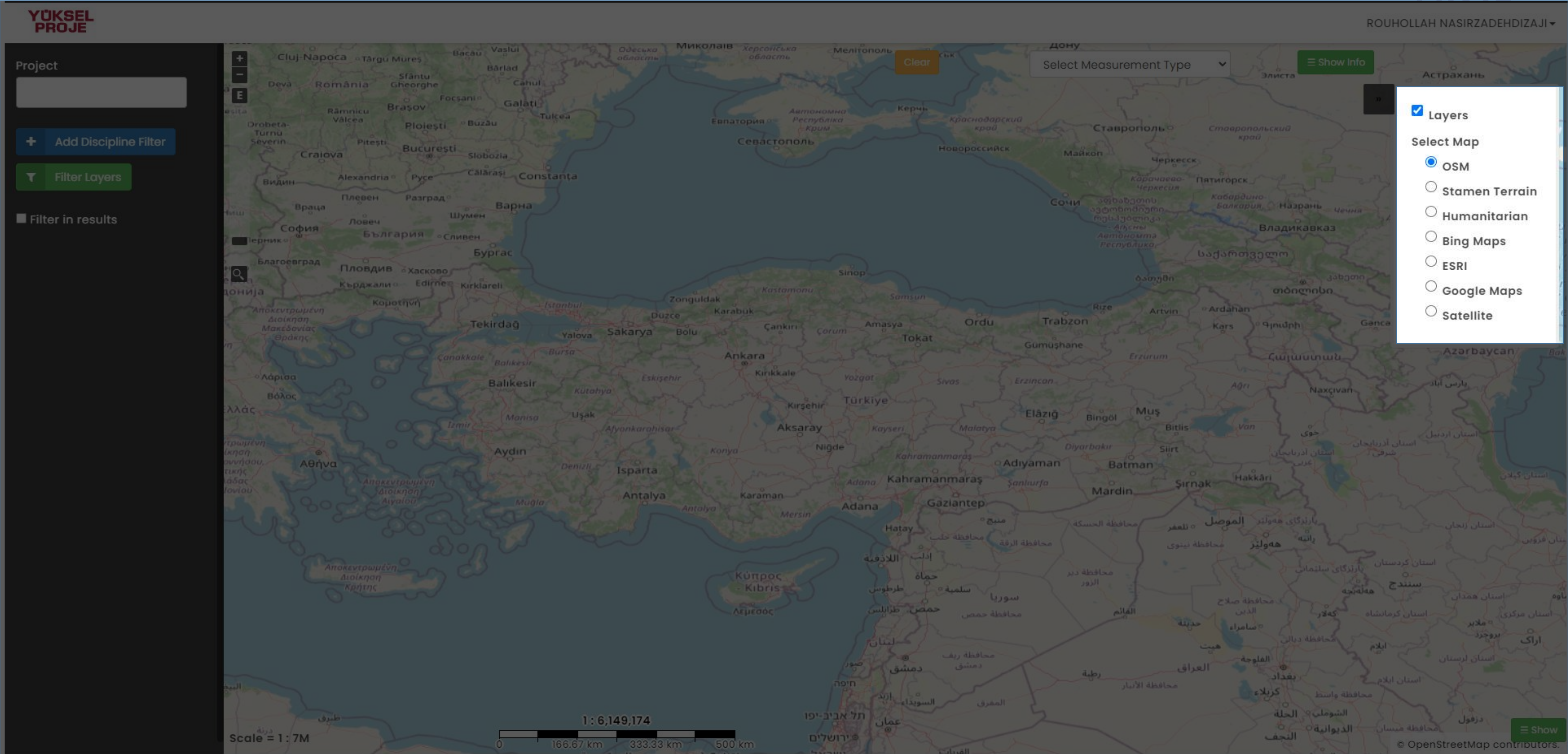
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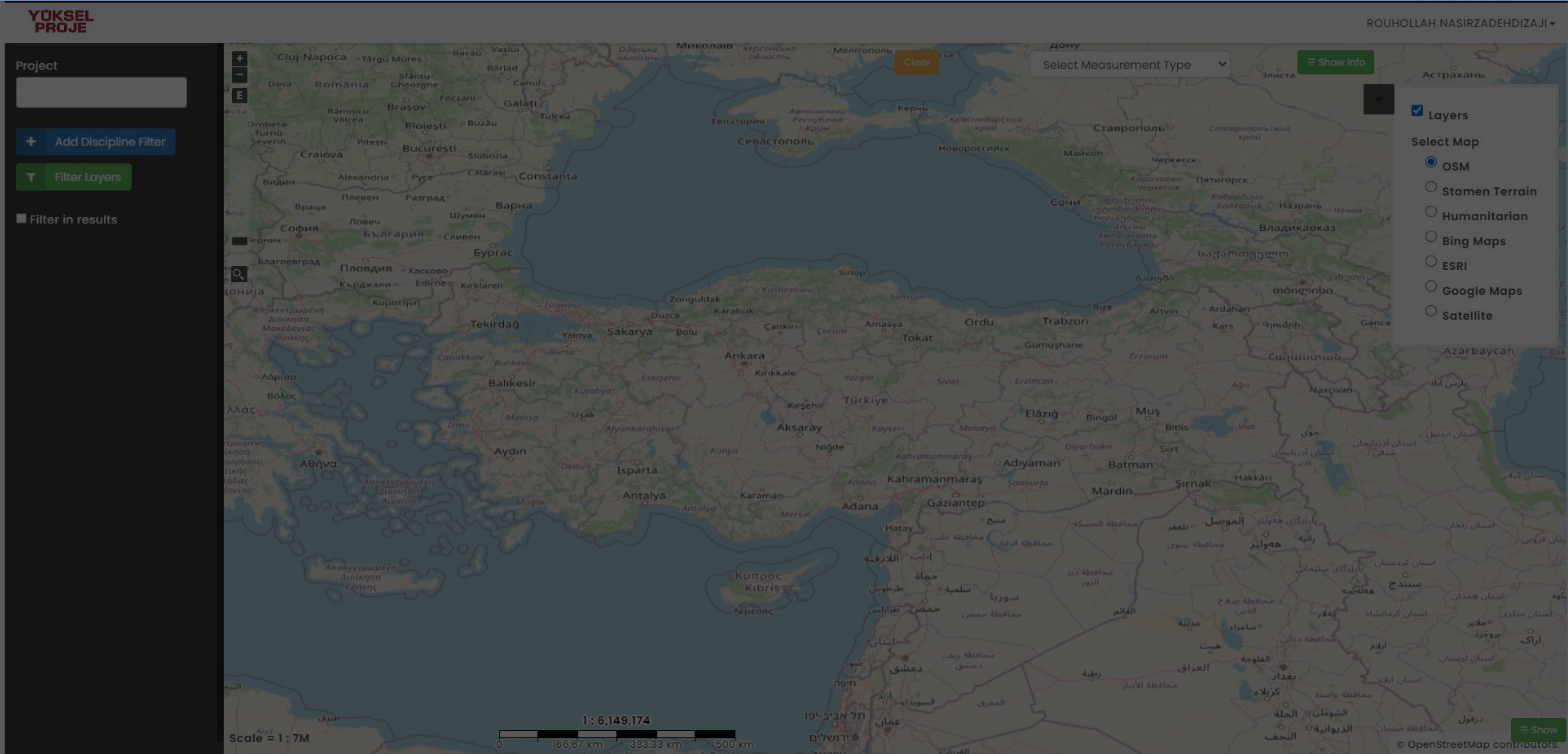
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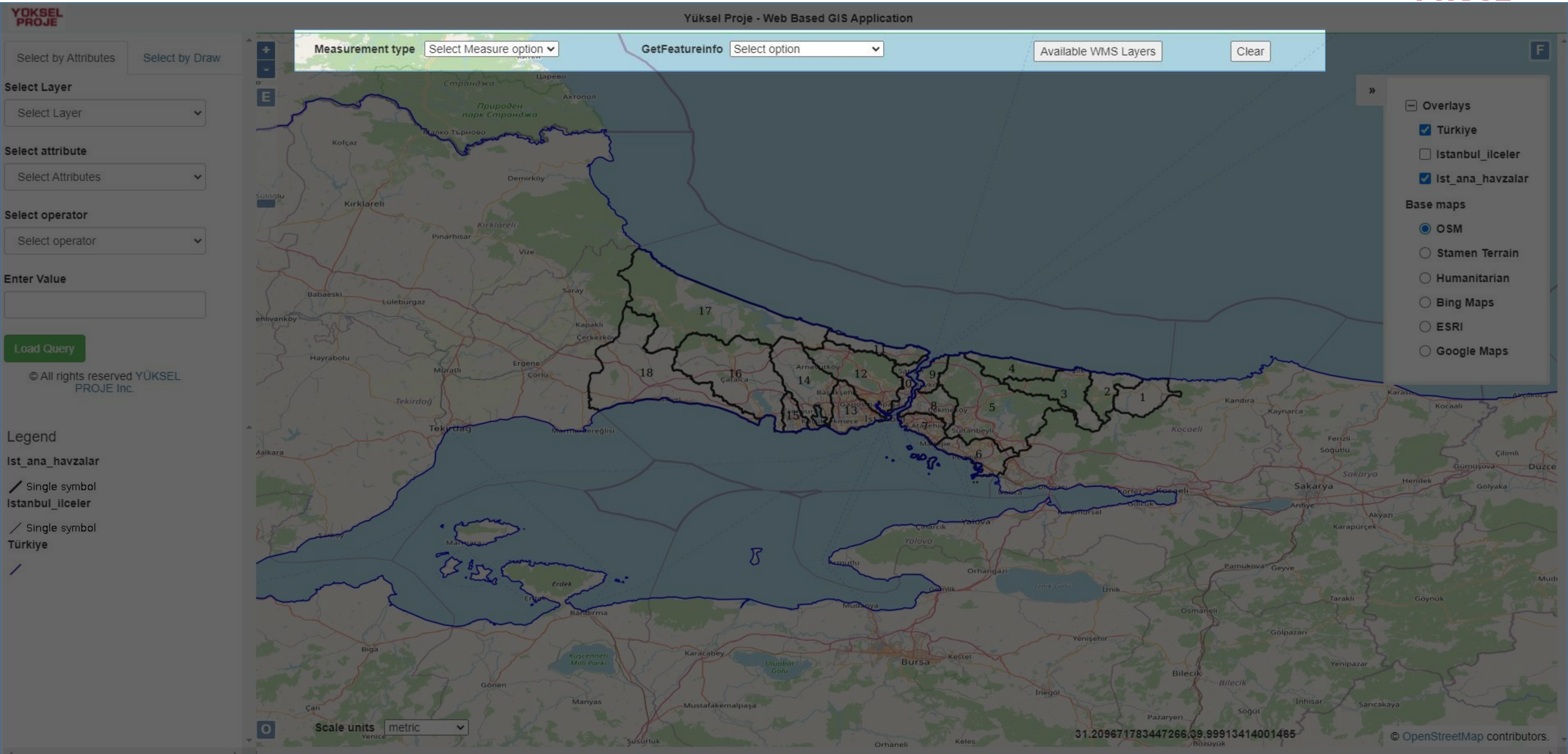
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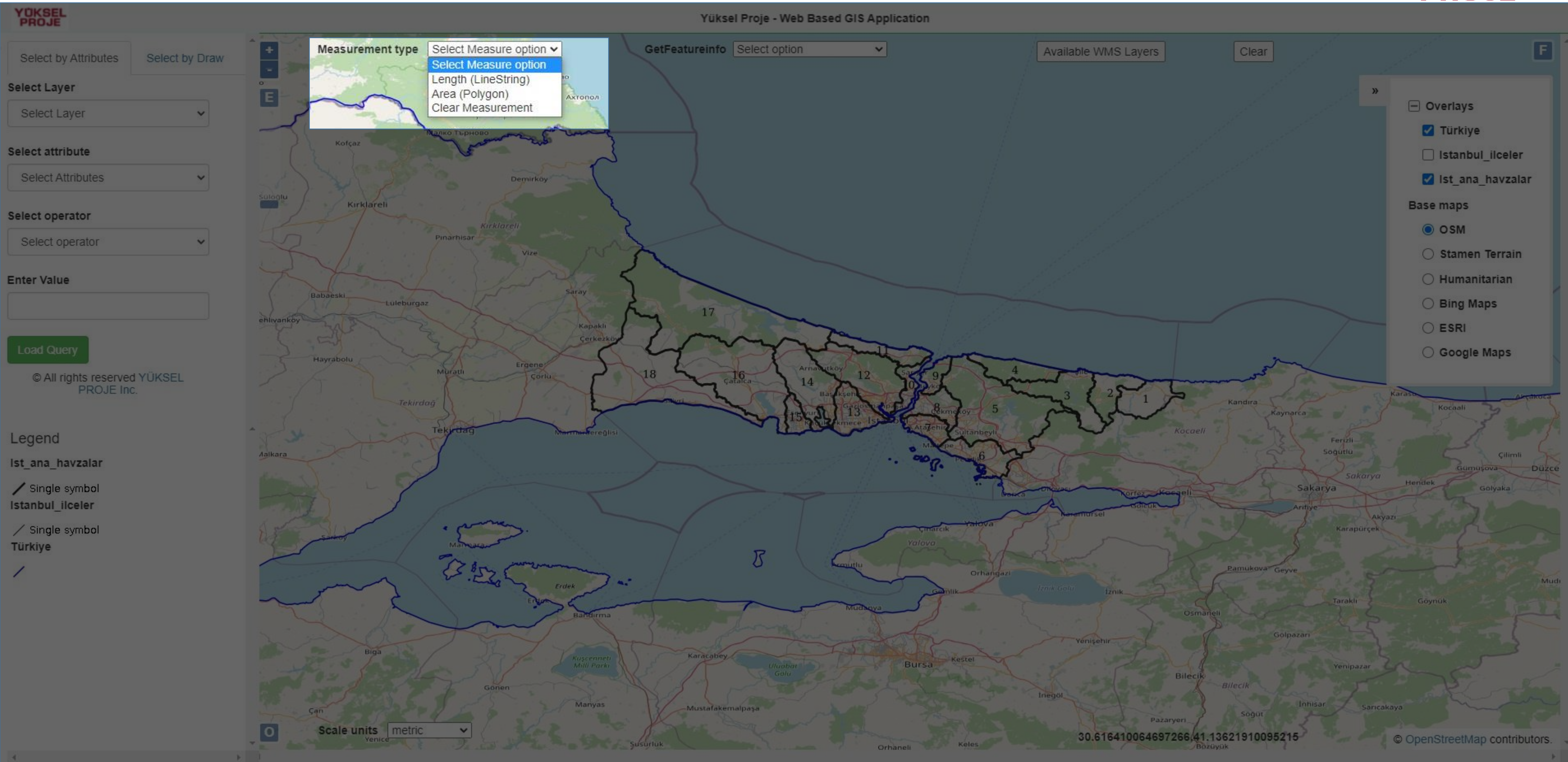
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Select by Attributes Select by Draw

Select Layer
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Select attribute
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Load Query

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Legend
Ist_ana_havzalar
Single symbol
Istanbul_ilceler
Single symbol
Türkiye
Single symbol

Measurement type Select Measure option

GetFeatureinfo Select option
Select option
Activate GetFeatureinfo
Deactivate GetFeatureinfo

Available WMS Layers Clear

Overlays
☒ Türkiye
☐ Istanbul_ilceler
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Base maps
☒ OSM
☐ Stamen Terrain
☐ Humanitarian
☐ Bing Maps
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Scale units metric

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Available WMS Layers

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☐ Bing Maps

☐ ESRI

☐ Google Maps

Scale units metric

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Türkiye
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Measurement type Select Measure option

GetFeatureinfo Select option

Available WMS Layers Clear

Available WMS Layers

Name	Title	Abstract
imp:Türkiye	türkiye	
imp:Türkiye_il	türkiye_il	
sf:archsites	Spearfish archeological sites	Sample data from GRASS, archeological sites locatio
sf:bugsites	Spearfish bug locations	Sample data from GRASS, bug sites location, Spearf
tiger:giant_polygon	World rectangle	A simple rectangular polygon covering most of the wc
imp:h01_boru_sp	h01_boru_sp	
imp:h02_boru_sp	h02_boru_sp	
imp:h03_boru_sp	h03_boru_sp	
imp:h04_boru_sp	h04_boru_sp	
imp:h05_boru_sp	h05_boru_sp	
imp:h06_boru_sp	h06_boru_sp	
imp:h07_boru_sp	h07_boru_sp	
imp:h08_boru_sp	h08_boru_sp	
imp:h09_boru_sp	h09_boru_sp	

Scale units metric

Overlays
☒ Türkiye
☐ Istanbul_ilceler
☒ Ist_ana_havzalar

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Select by Attributes Select by Draw

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Load Query

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Single symbol

Istanbul_ilceler
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Türkiye
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Measurement type Select Measure option

GetFeatureinfo Select option

Available WMS Layers Clear

Overlays

- ☒ Türkiye
- ☐ Istanbul_ilceler
- ☒ Ist_ana_havzalar

Base maps

- ☒ OSM
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Scale units metric

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Measurement type: Select Measure option

GetFeatureinfo: Select option

Available WMS Layers: Clear

Select by Attributes | Select by Draw

Select Layer: Select Layer

Select attribute: Select Attributes

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Load Query

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Legend:

- Ist_ana_havzalar
- Istanbul_ilceler
- Türkiye

Scale units: metric

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Overlays:

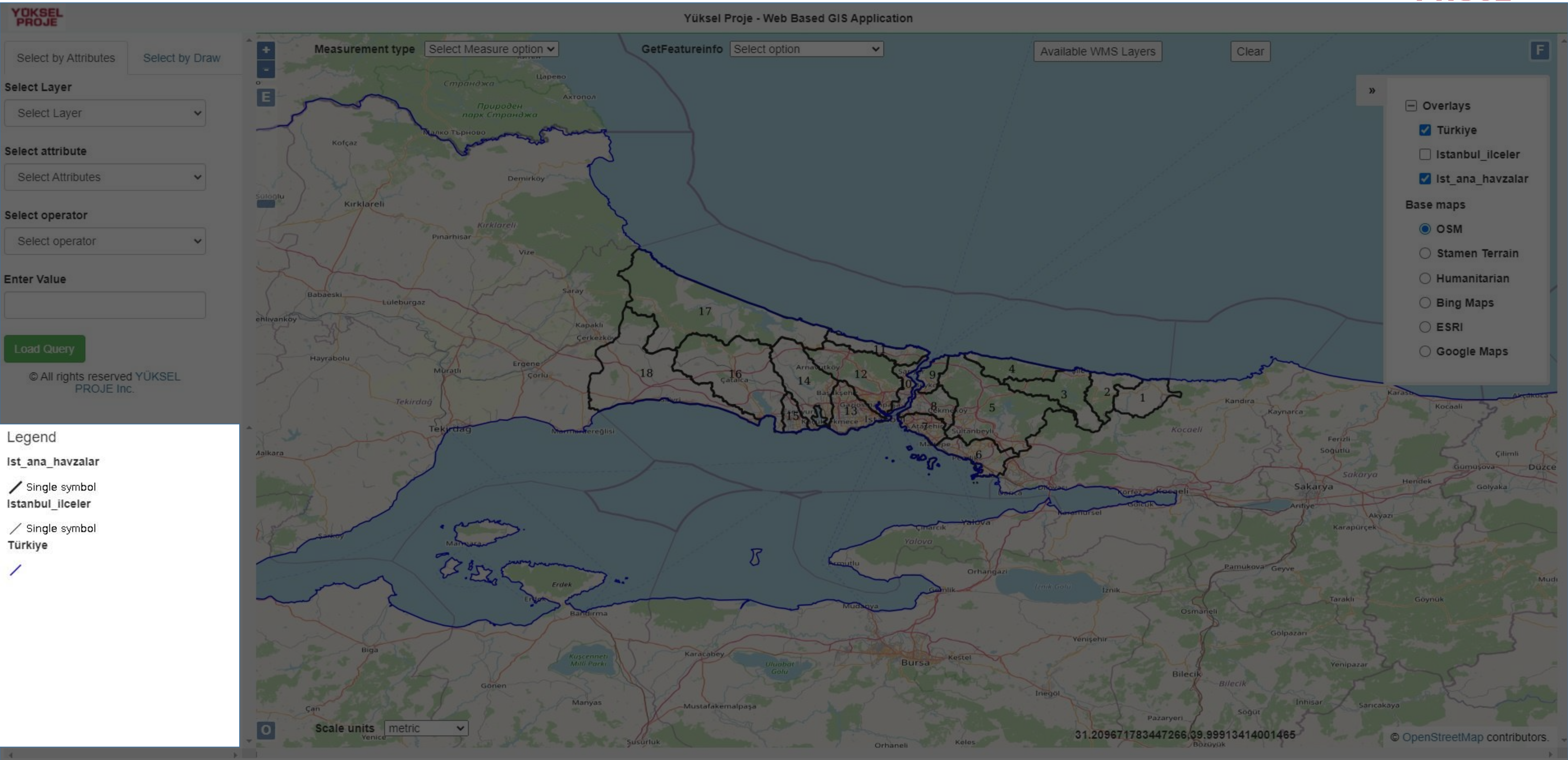
- ☒ Türkiye
- ☐ Istanbul_ilceler
- ☒ Ist_ana_havzalar

Base maps:

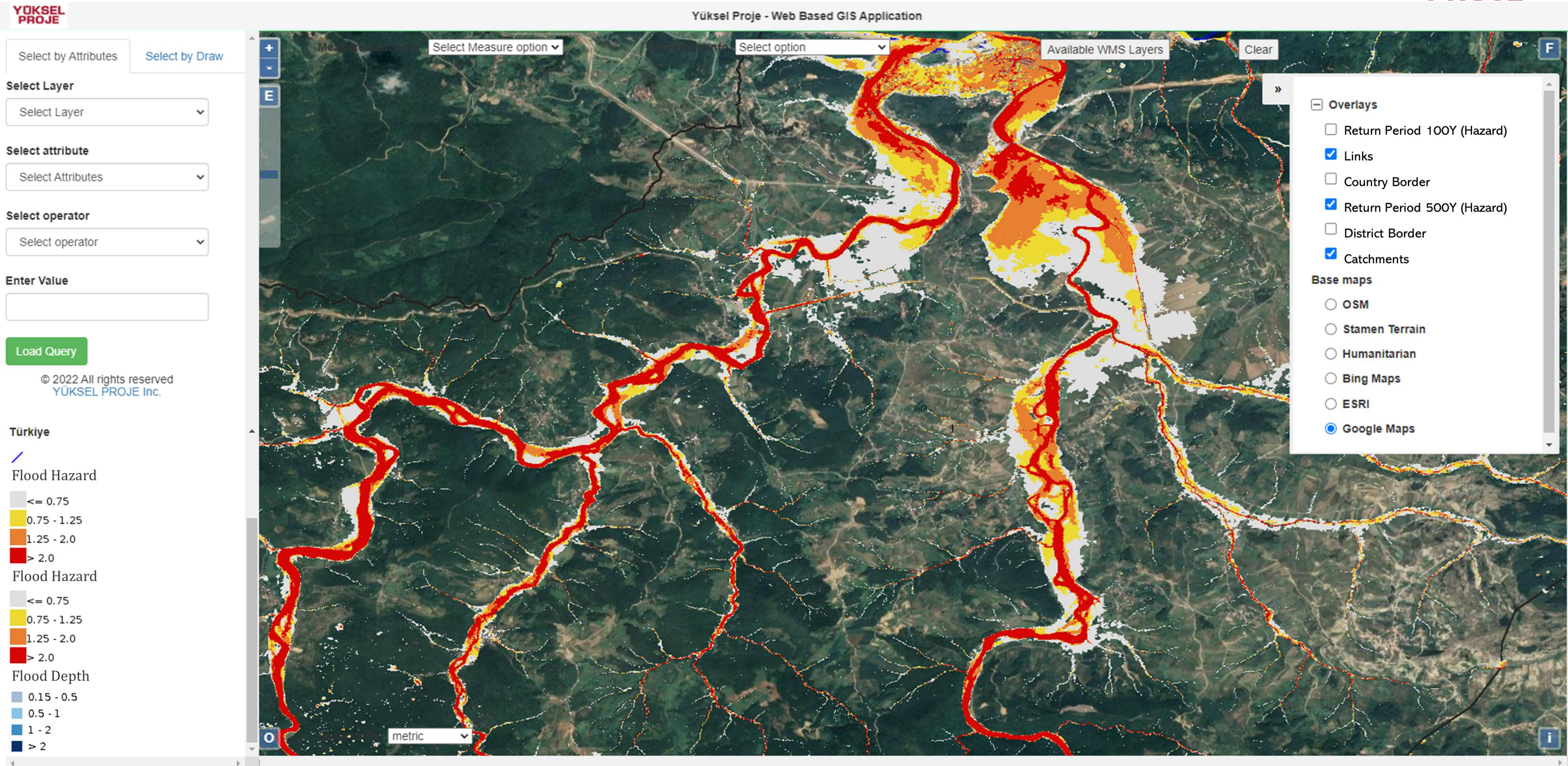
- ☒ OSM
- ☐ Stamen Terrain
- ☐ Humanitarian
- ☐ Bing Maps
- ☐ ESRI
- ☐ Google Maps

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- Not everyone has access to GIS and use it effectively,
- Easy-to-use and user friendly,
- Global access,
- Large number of users,
- Multi-platform feature,
- One update works for all clients,
- Low cost considering number of users,
- Spatial queries module.

- Maps are the most efficient and effective way to provide information about spatial and geospatial data.
- Interactive maps and services enable authorities to access data and information about projects online and simultaneously.
- Web-GIS is unlocking the power of GIS to a wider audience.
- Spatial data and layers on the online map will ensure that the institution is string along with up-to-date technologies.
- Web-GIS for projects dealing with natural hazard evaluation.

- Mobile client
 - 3D Web-GIS
 - Fast and easy query tools
 - Hydrological processing tools
 - Integrated BIM+GIS Web-Based Platform
 -
- ✓ Dynamic Geospatial Application

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Thanks for your attention!

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