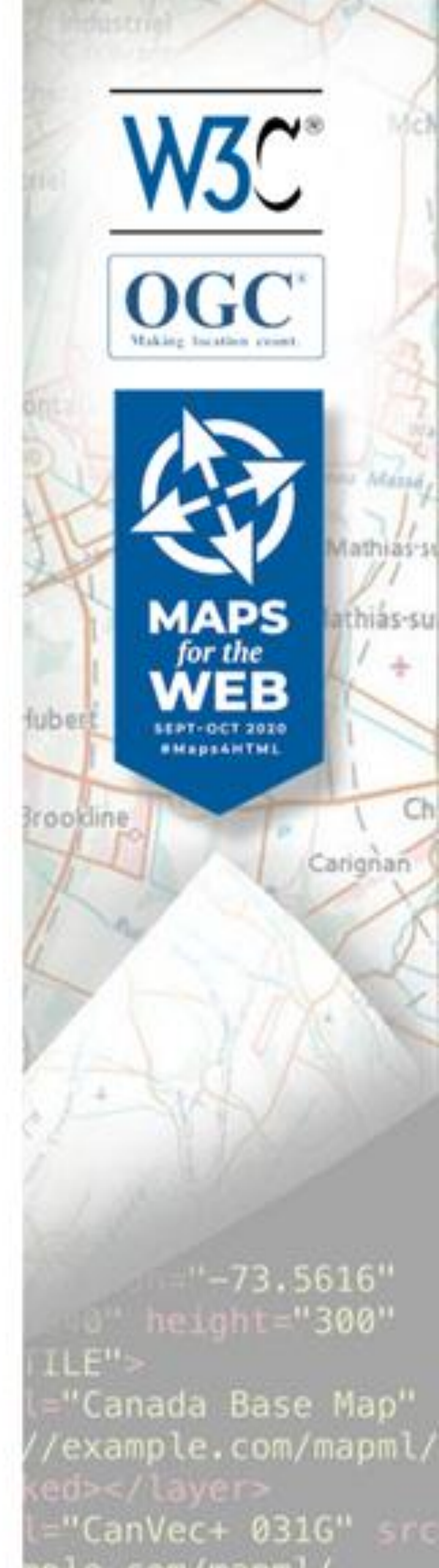


WEB GIS APPLICATION FOR INDIAN PRIME MINISTER'S RURAL ROAD PROGRAMME

Sajeevan G, Associate Director, C-DAC Pune, India

September 28, 2020

W3C/OGC Joint Workshop Series on Maps for the Web
w3.org/2020/maps



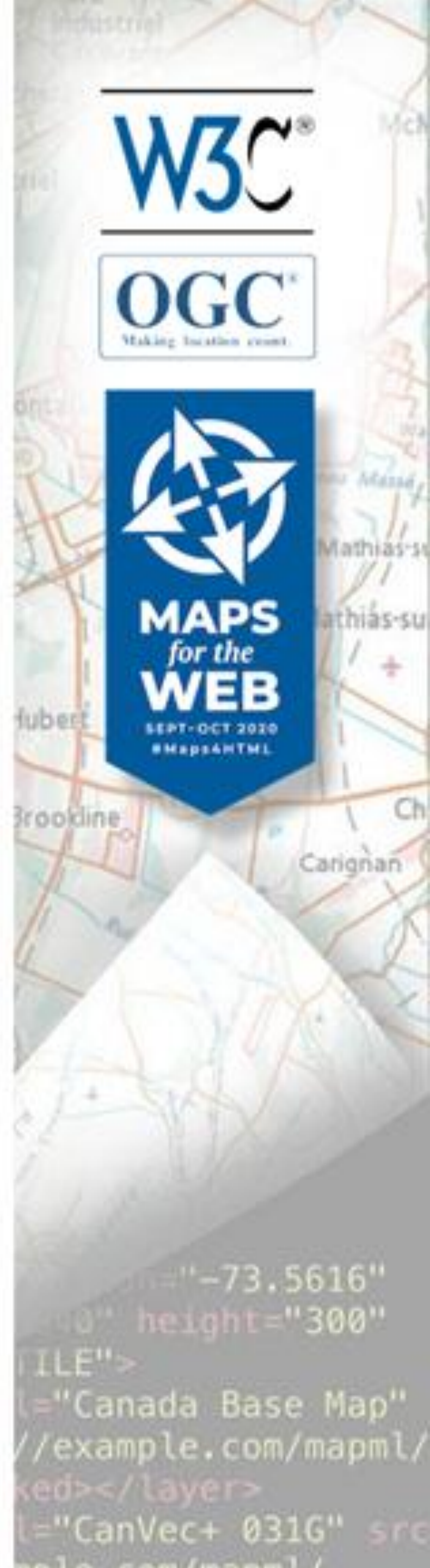
Introduction



PMGSY – *Pradhan Mantri Gram Sadak Yojana* – Prime Minister's Rural Road Programme.

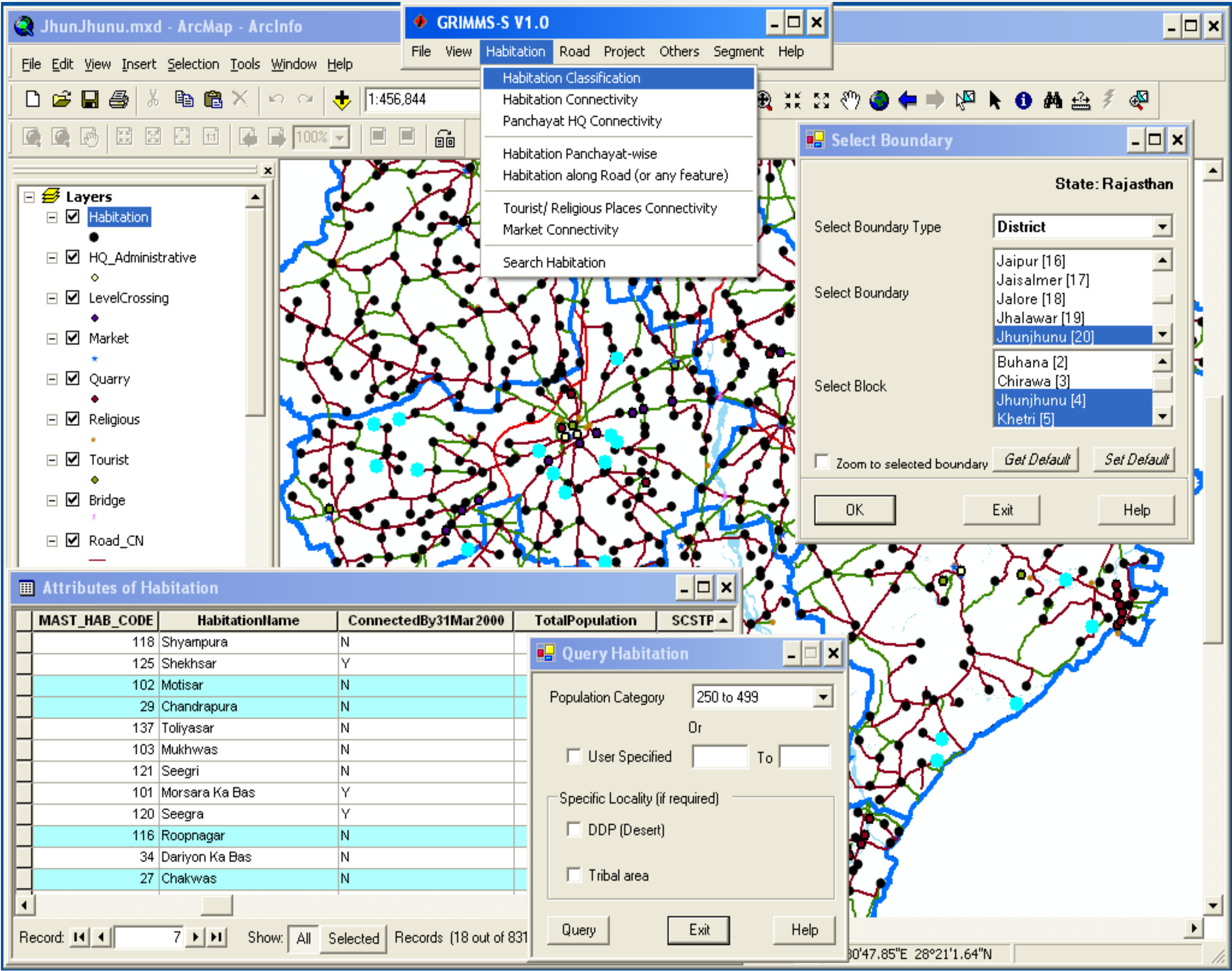
Launched by the Govt. of India to provide all weather road connectivity to unconnected rural habitations

- Poverty alleviation
- Access to market
- Employment
- Health care
- Education
-



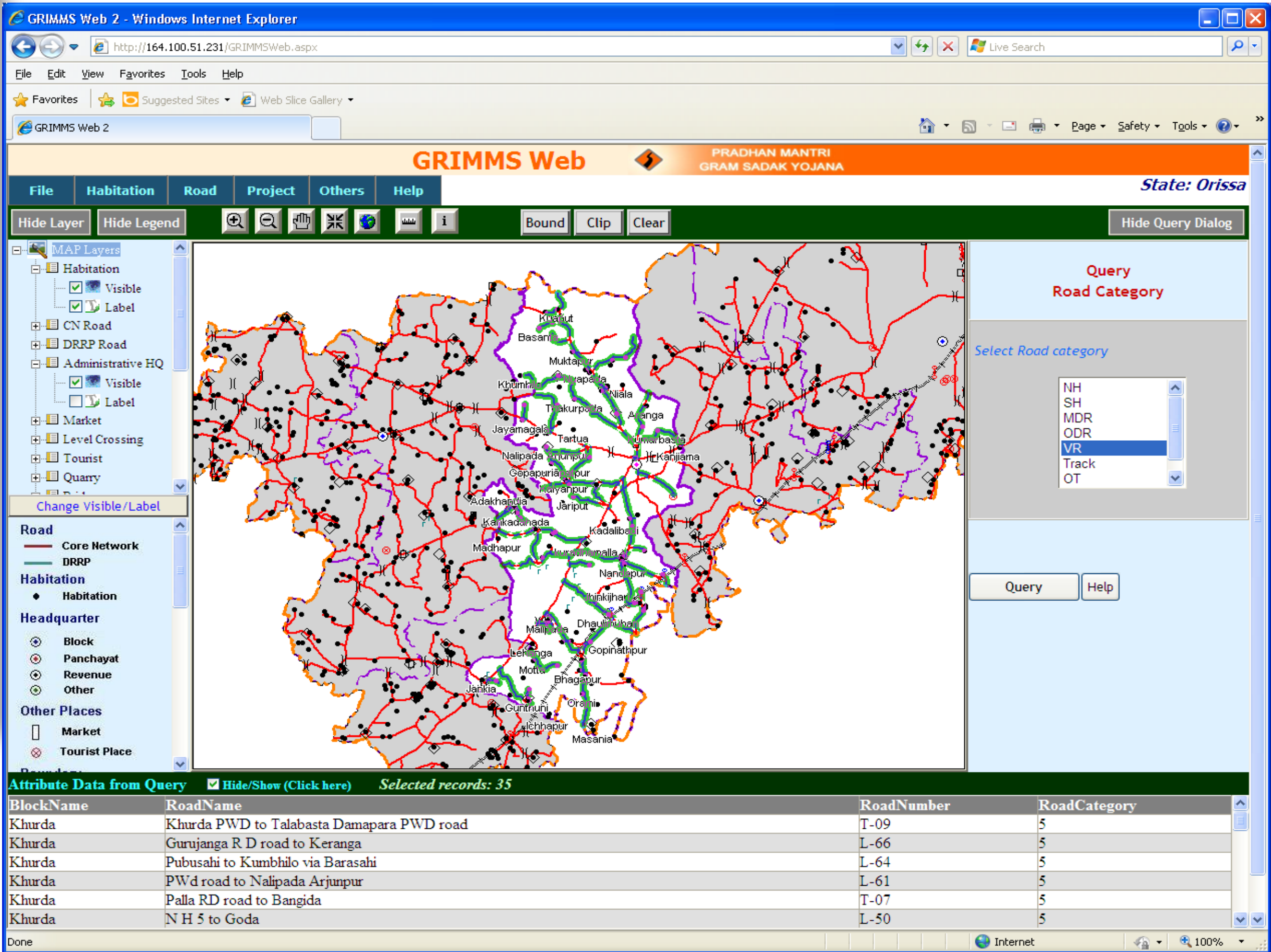
History

2005 - 2006



Sandalone - VB.Net, ArcEditor

Web - ASP.Net, MapXtreme



Current Status – PMGSY National GIS


File Edit View History Bookmarks Tools Help

PMGSY National GIS


www.pmgys-grris.nic.in

110%


Search



Login




Shri Narendra Modi
Prime Minister of India



Shri Narendra Singh Tomar
Minister of Rural Development

Pradhan Mantri Gram Sadak Yojana (PMGSY – Prime Minister’s Rural Road Programme) was launched by the Government of India as part of a poverty reduction strategy to provide all-weather road connectivity to unconnected habitations. **Geospatial Rural Road Information System (GRRIS)** is a Geographical presentation of PMGSY. GRRIS seeks to provide every citizen, even in the remotest corner, of this country to visually see on a simple map, the details of the rural roads and roads improved/covered under the PMGSY scheme in a particular Block, District and State. It also provides locational information of habitations, markets, administrative headquarters etc, which will help in better decision making of the resident communities of a rural area and development of rural markets & enterprises.

The application uses data from heterogeneous databases. It performs queries and display dynamic spatial information using the live national level [OMMAS](#) database. GRRIS dynamically displays the data updated in the external MIS database. Based on user interactions, the Web GIS application generates thousands of possible outputs; therefore, you may take a look at the online [help](#).



Sadhvi Niranjana Jyoti
Minister of State for Rural Development

Select state and click proceed

Andhra Pradesh

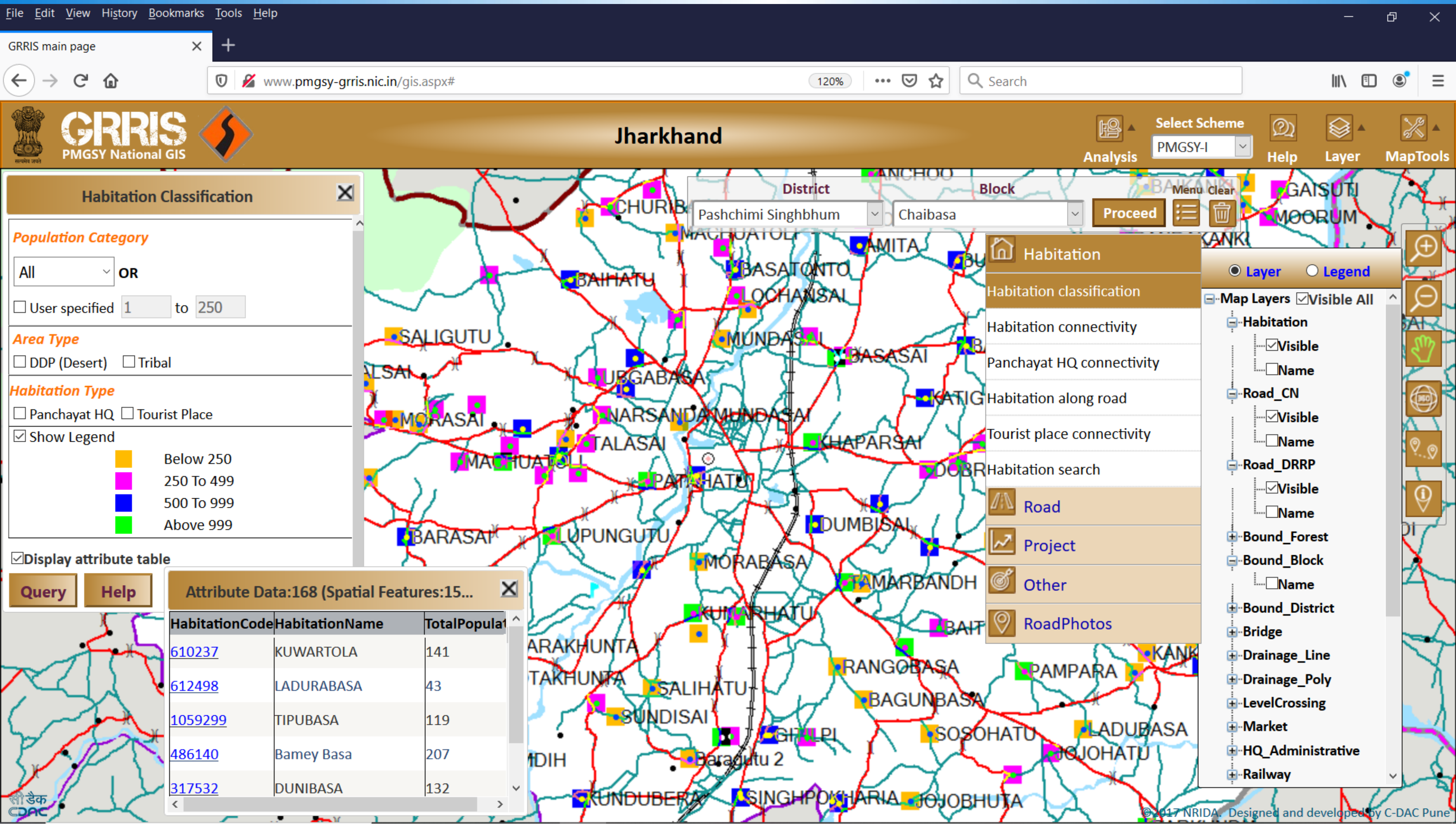
Proceed

सी डैक CDAC

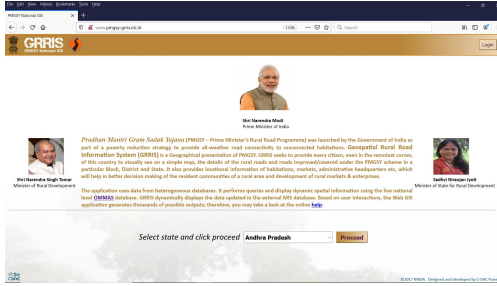
©2017 NRIDA. Designed and developed by C-DAC Pune



PMGSY National GIS



PMGSY National GIS



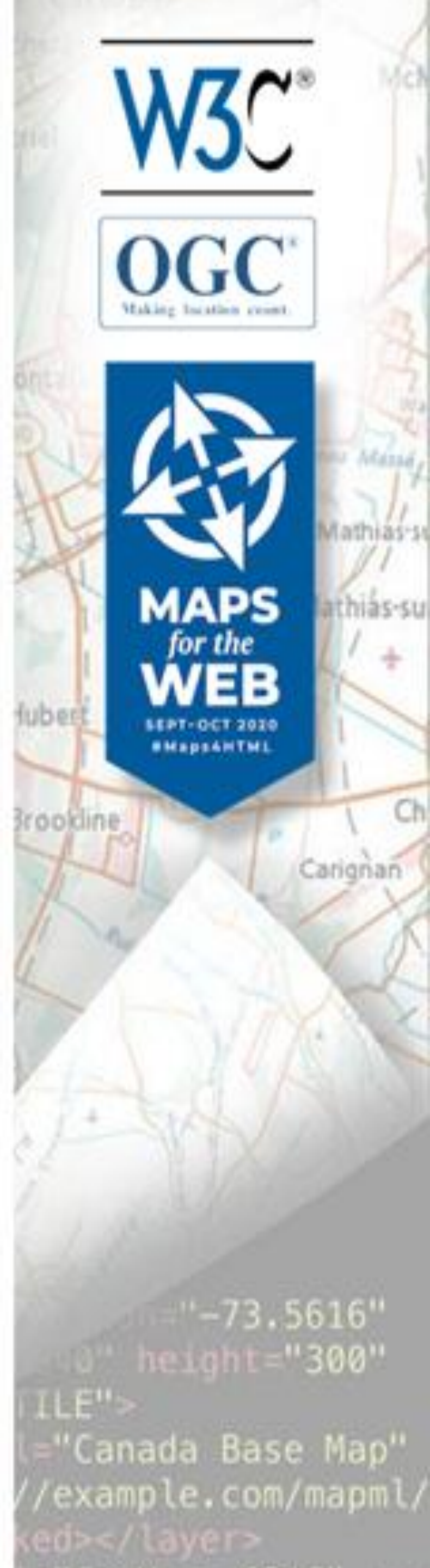
<http://pmgsy-grris.nic.in>

<http://omms.nic.in>

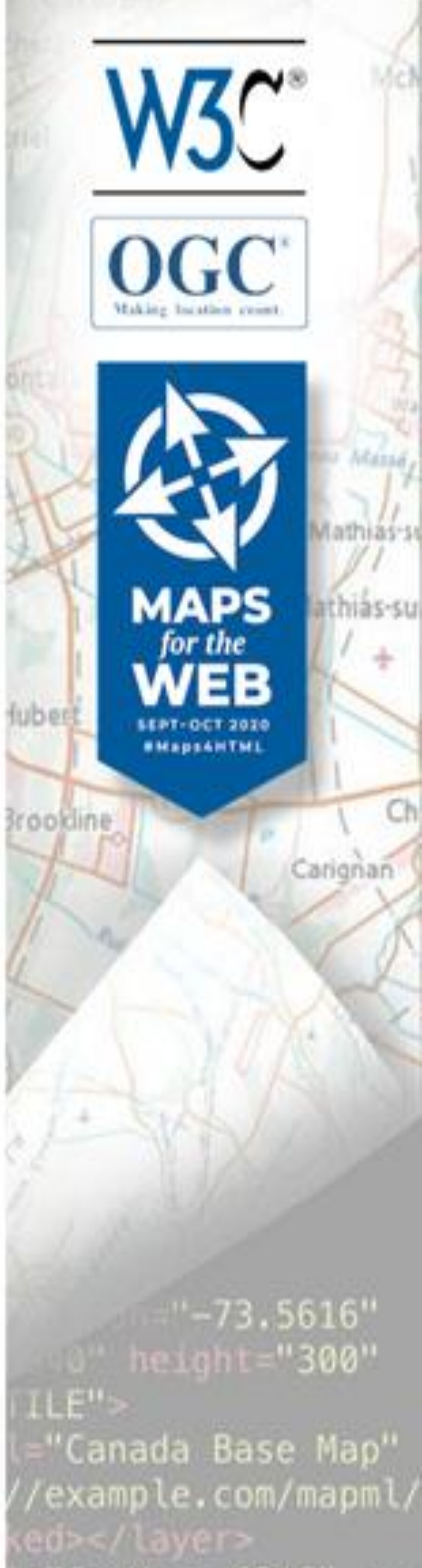
+ *Live non-spatial database integration (MIS -GIS)*

+ *Like a standalone GIS*

- *GIS engine : No Transaction (WFS-T)*



Online Geospatial Transaction System (FOSS)





GeoSadak is Online Geospatial Transaction System for PMGSY.



Upload/Approve



QC Report



Edit



State Report



National Report



Trace Map

>

Pradhan Mantri Gram Sadak Yojana (**PMGSY**) was launched by the Government of India to provide connectivity to unconnected habitations in order to provide continuing access to economic and social services thus increasing the agricultural incomes, employment and other economic opportunities for the rural population. **PMGSY-III** envisages consolidation of the existing Rural Road Network launched with the primary objective of consolidation of the existing rural road network by up gradation of existing through routes and major rural links that connect habitations to rural agricultural markets, higher secondary schools and hospitals. **GeoSadak** enables collating, managing, online spatial data quality report, editing and serving geospatial data in real time. System will be utilized by all the state government departments and ministry of rural development for new road proposal, upgradation, monitoring and management.

Odisha

Balangir

Bolangir

User26-1

Home / Edit menu / Edit

RoadDRRP Spatial Data Edit

info

Enter here.

☒ Bhuvan

GIS layers

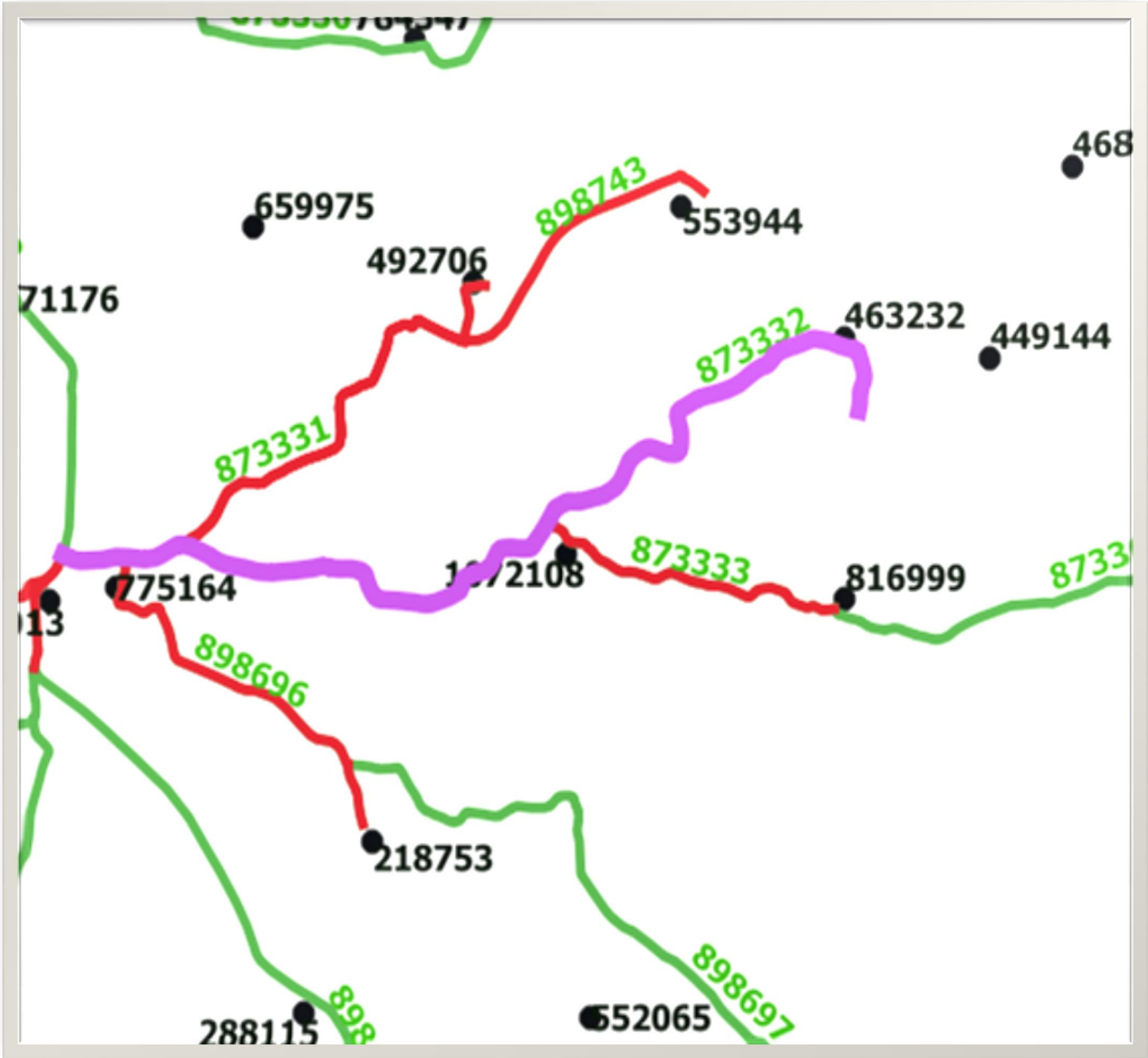
☒ Habitation☐ CN Road☒ DRRP Road☐ Proposals

Info- Road_DRRP

ER_ROAD_NUMBER	T05
ROAD_NAME	Bolangir to Patnagarh Boarder SH42 road
ROAD_OWNER	RD
ROAD_CATEGORY	OT
STARTCHAIN	0
ENDCHAIN	24.4
CARRIAGE_WIDTH	3
FORMATION_WIDTH	7
LAND_WIDTH	10
AADT	414
CVPD	121
CDWORKS	0

Web Service / Web API

Benefitted habitations:- extracted using spatial analysis (*MIS list has limitations*)

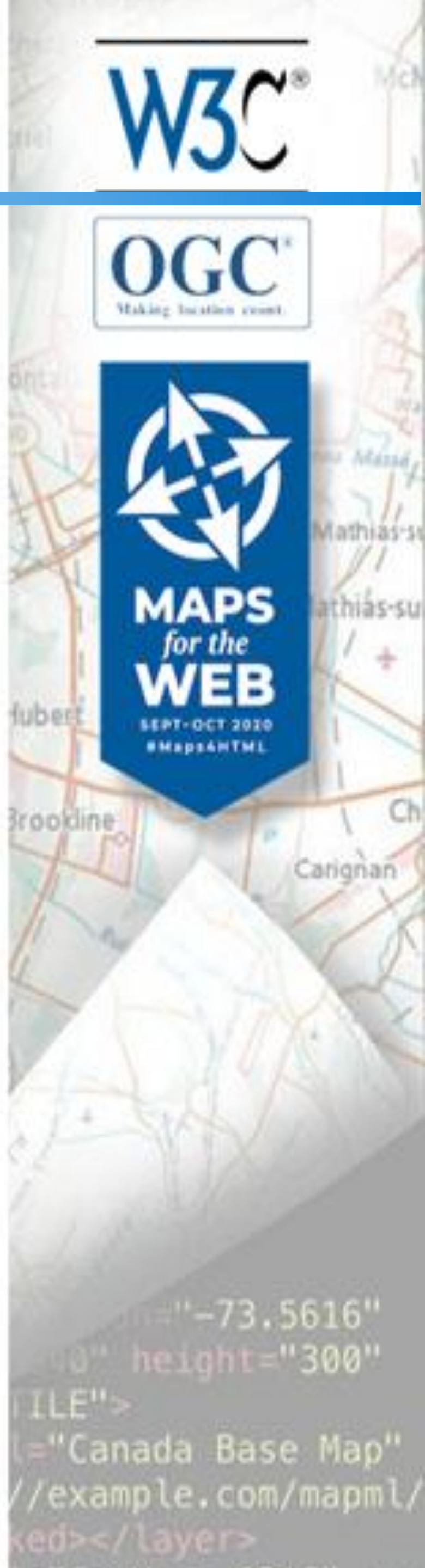


localhost:8089/api/habalongroad/8

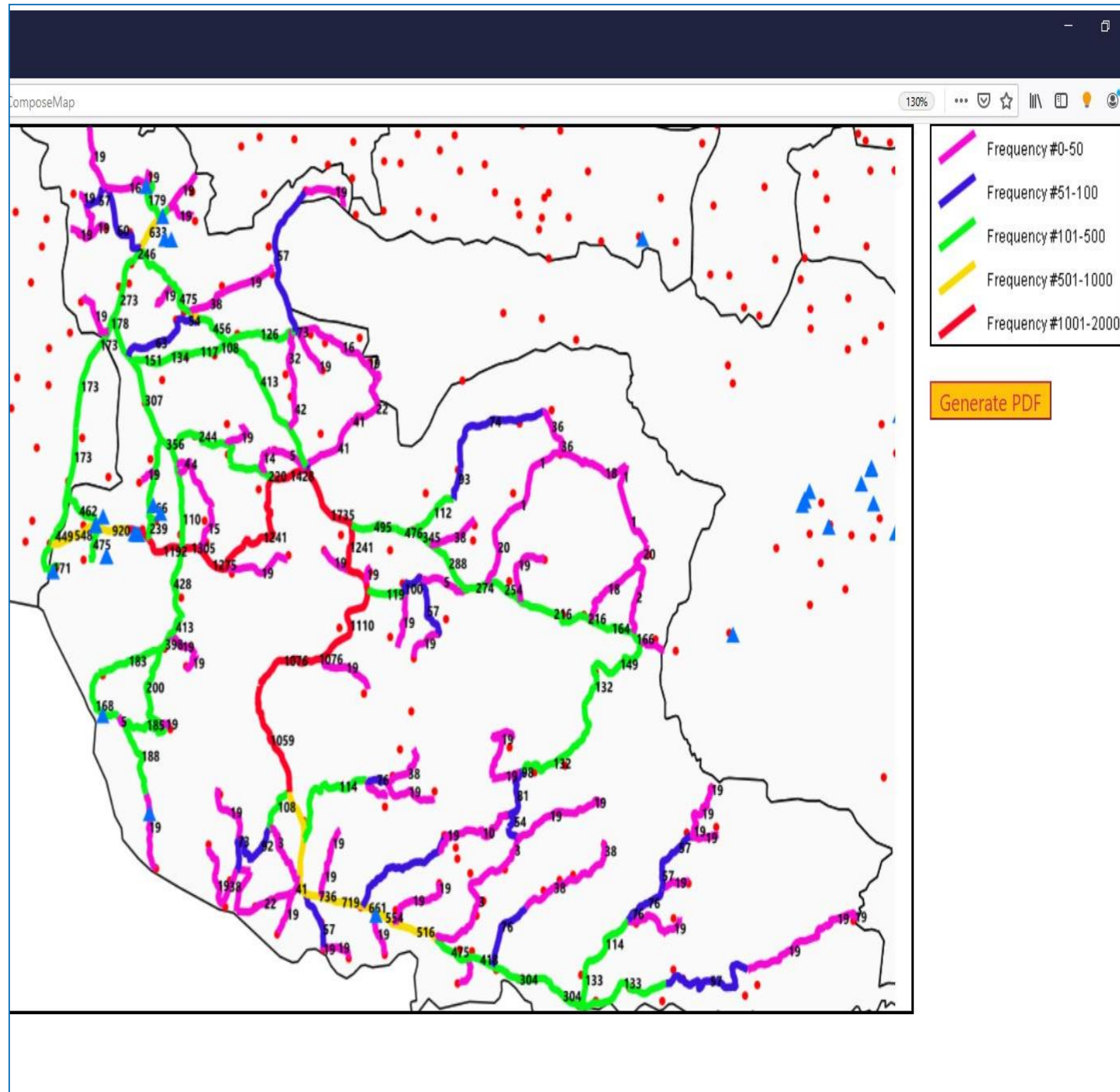
JSON Raw Data Headers

Save Copy Collapse All Expand All Filter JSON

2:	hab_Id:	816999
	direct/Indirect:	"I"
	onMajorRoads:	"N"
	distance:	"2.31866732674054 kms"
3:	hab_Id:	466679
	direct/Indirect:	"I"
	onMajorRoads:	"N"
	distance:	null
4:	hab_Id:	449144
	direct/Indirect:	"I"
	onMajorRoads:	"N"
	distance:	"3.38210541520953 kms"
5:	hab_Id:	492706
	direct/Indirect:	"I"
	onMajorRoads:	"N"
	distance:	"3.928847591128275 kms"
6:	hab_Id:	271176
	direct/Indirect:	"I"
	onMajorRoads:	"N"

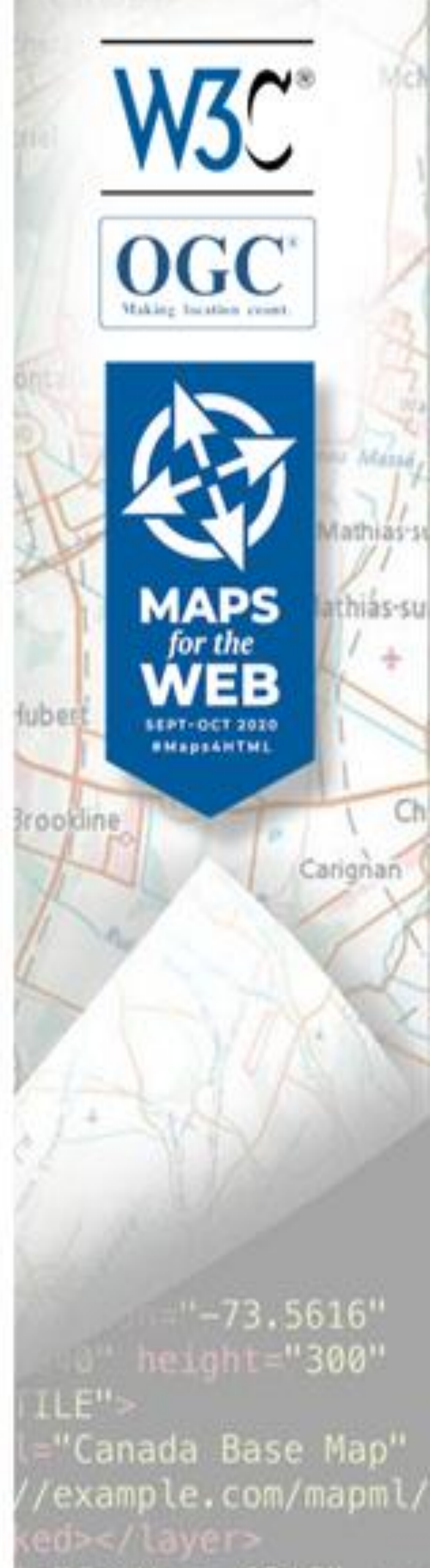


Simulation for Road Prioritisation - Tracemap

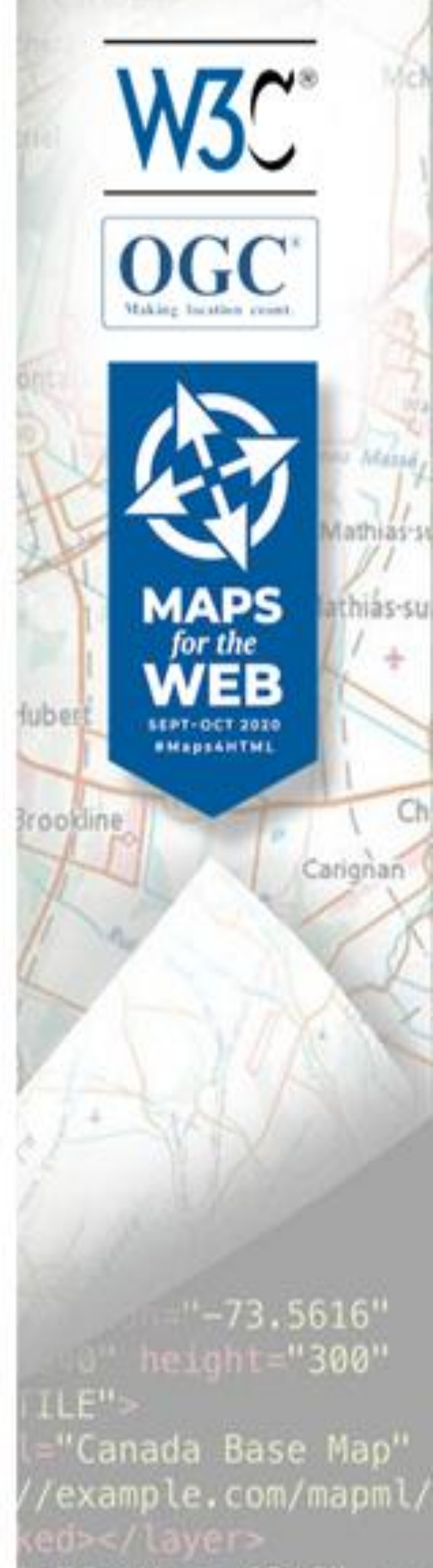


For PMGSY III, to facilitate identification and prioritization of roads

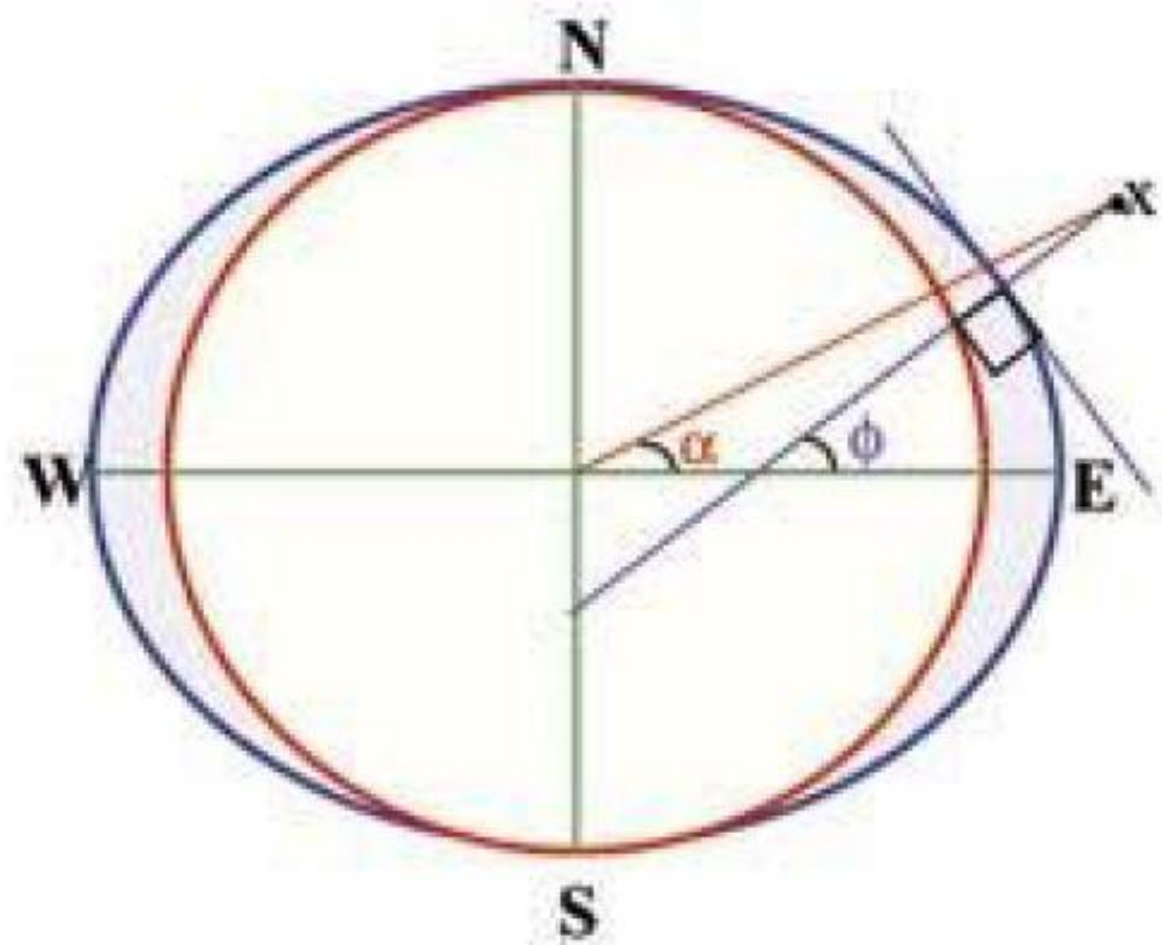
Algorithm based on shortest route and on parameters of population served, agricultural market, educational and medical facilities



Maps4HTML (Suggestions)



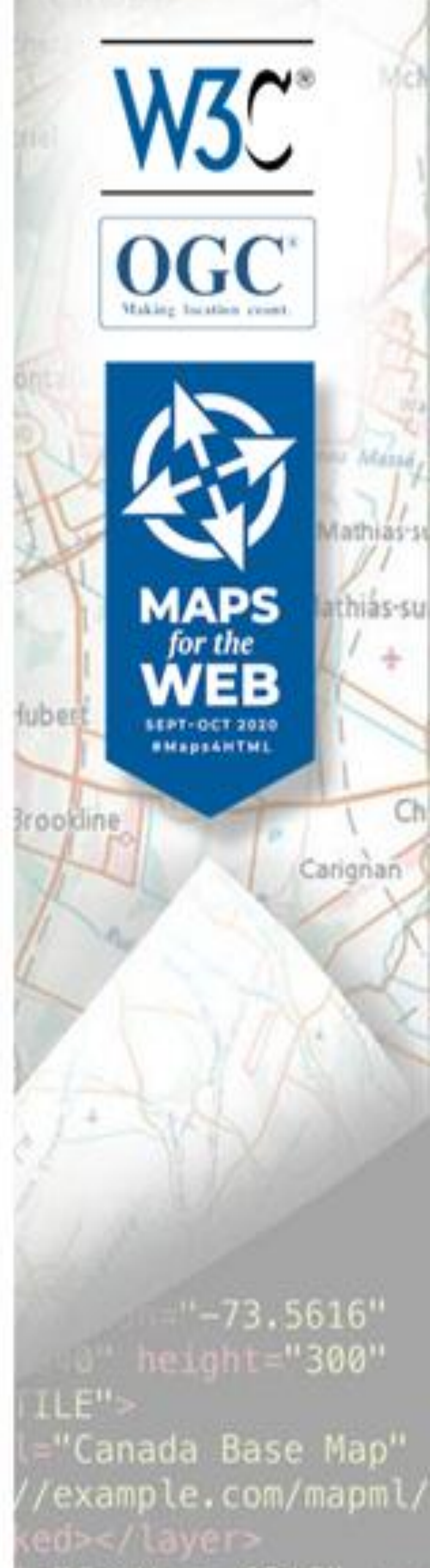
Latitude / Longitude – for understanding



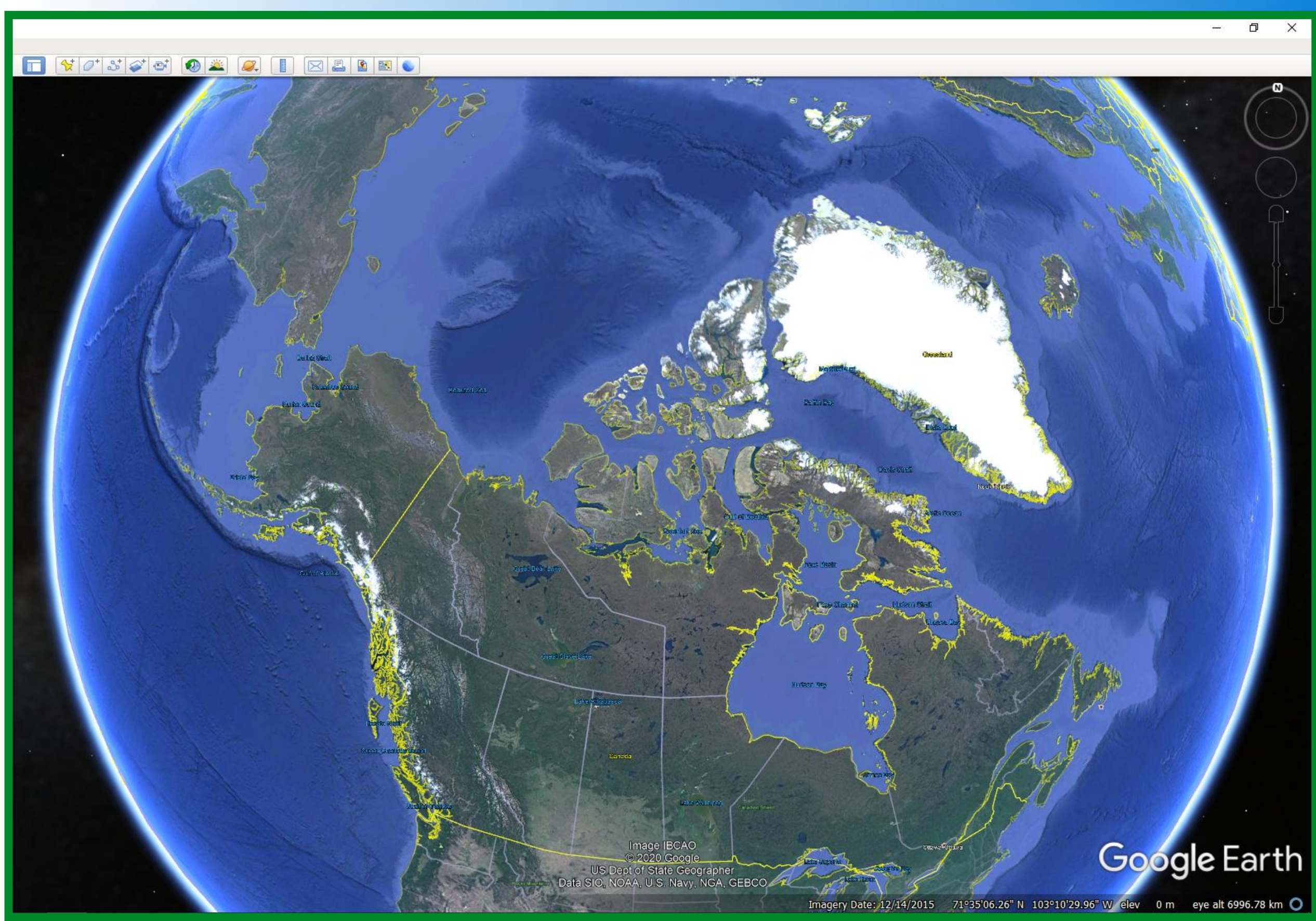
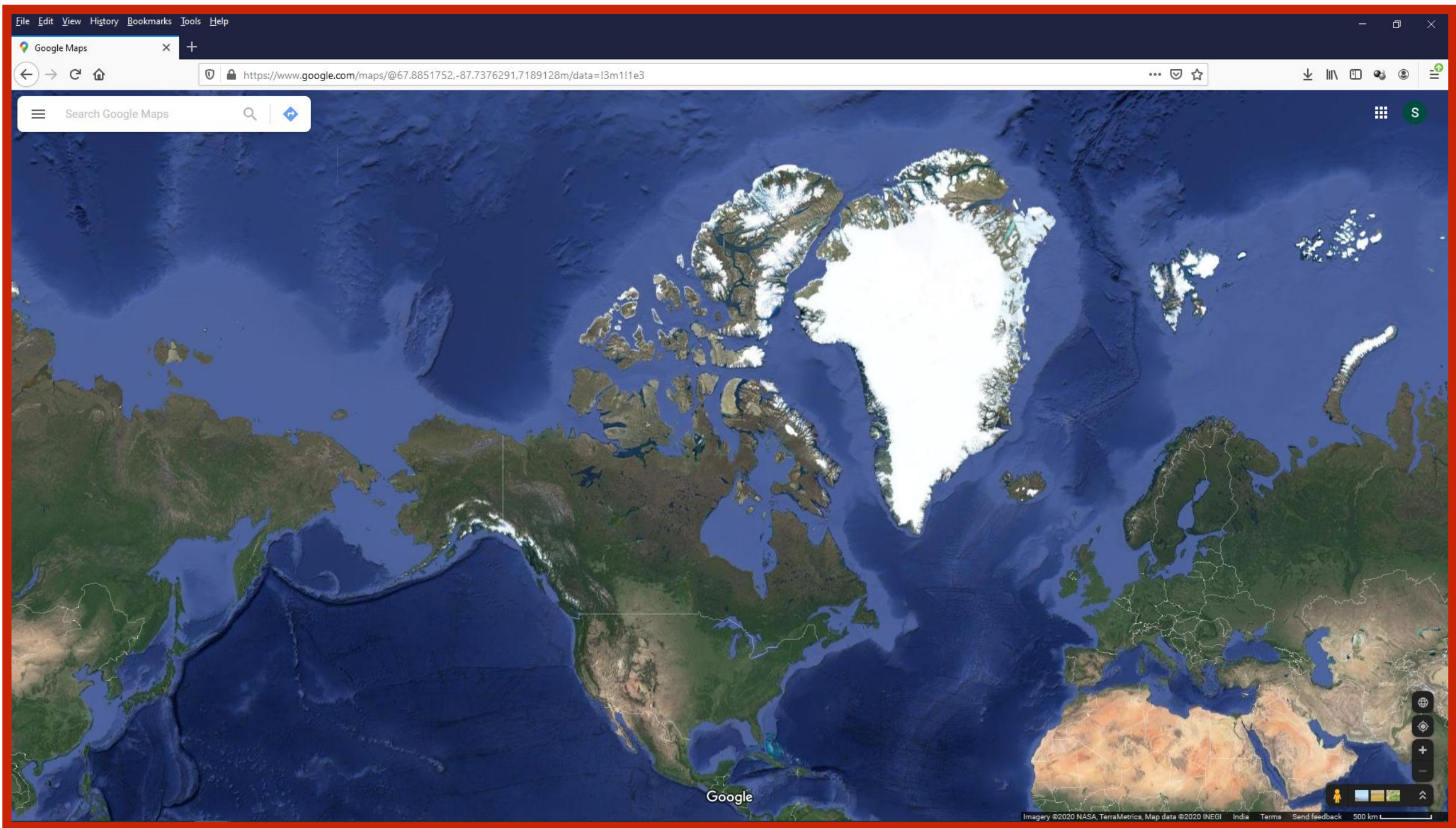
Authalic latitude (α) and geodetic latitude (ϕ) at a location x.

- WGS84 ellipsoid/datum
- Geodetic latitude at a location is the angle between the equatorial plane and a line normal to the reference spheroid
- For spatial accuracy

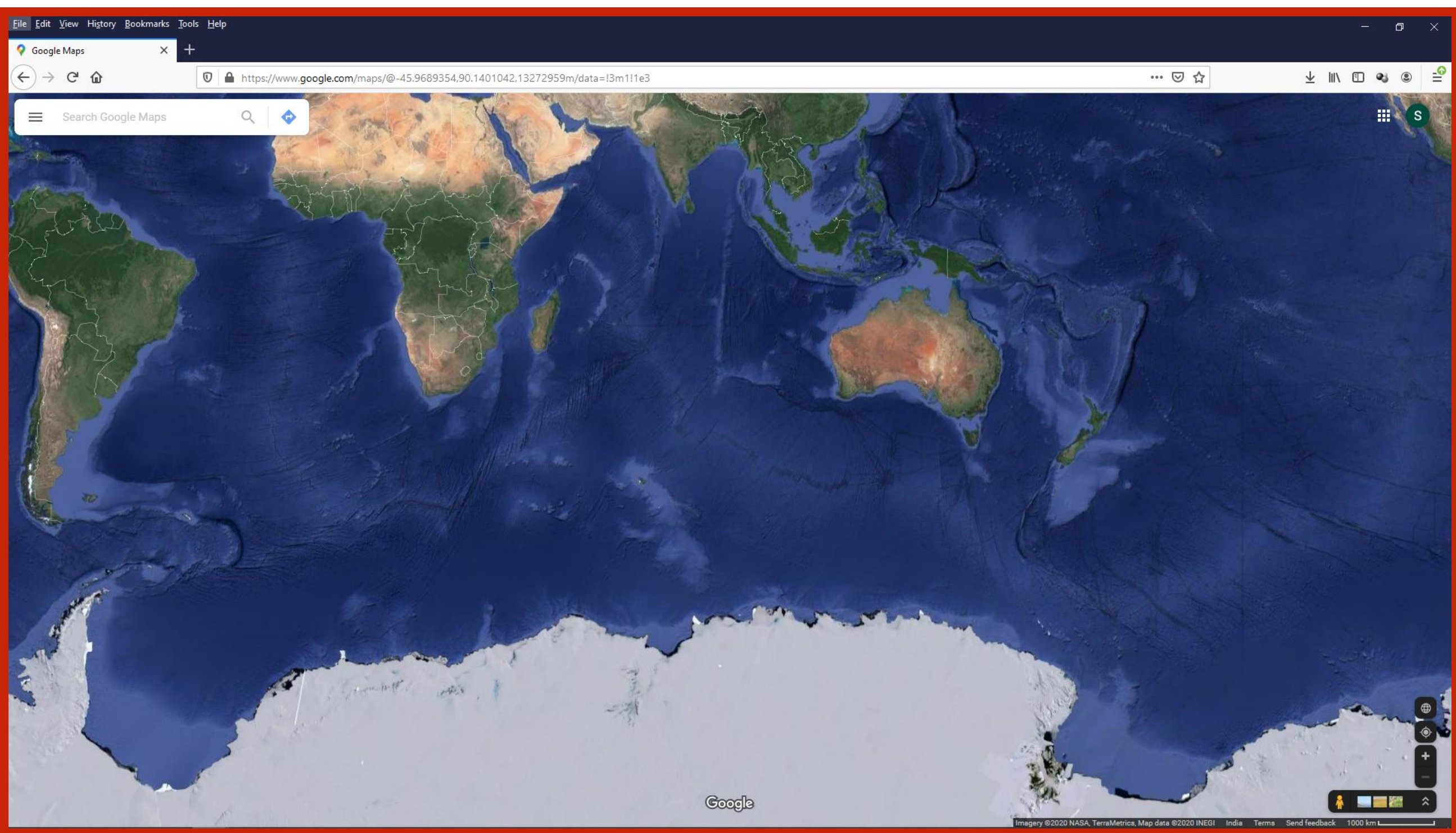
Sajeevan G (2008). *Latitude and longitude – A misunderstanding*. Current Science, vol. 94, no. 5, pp. 568-569



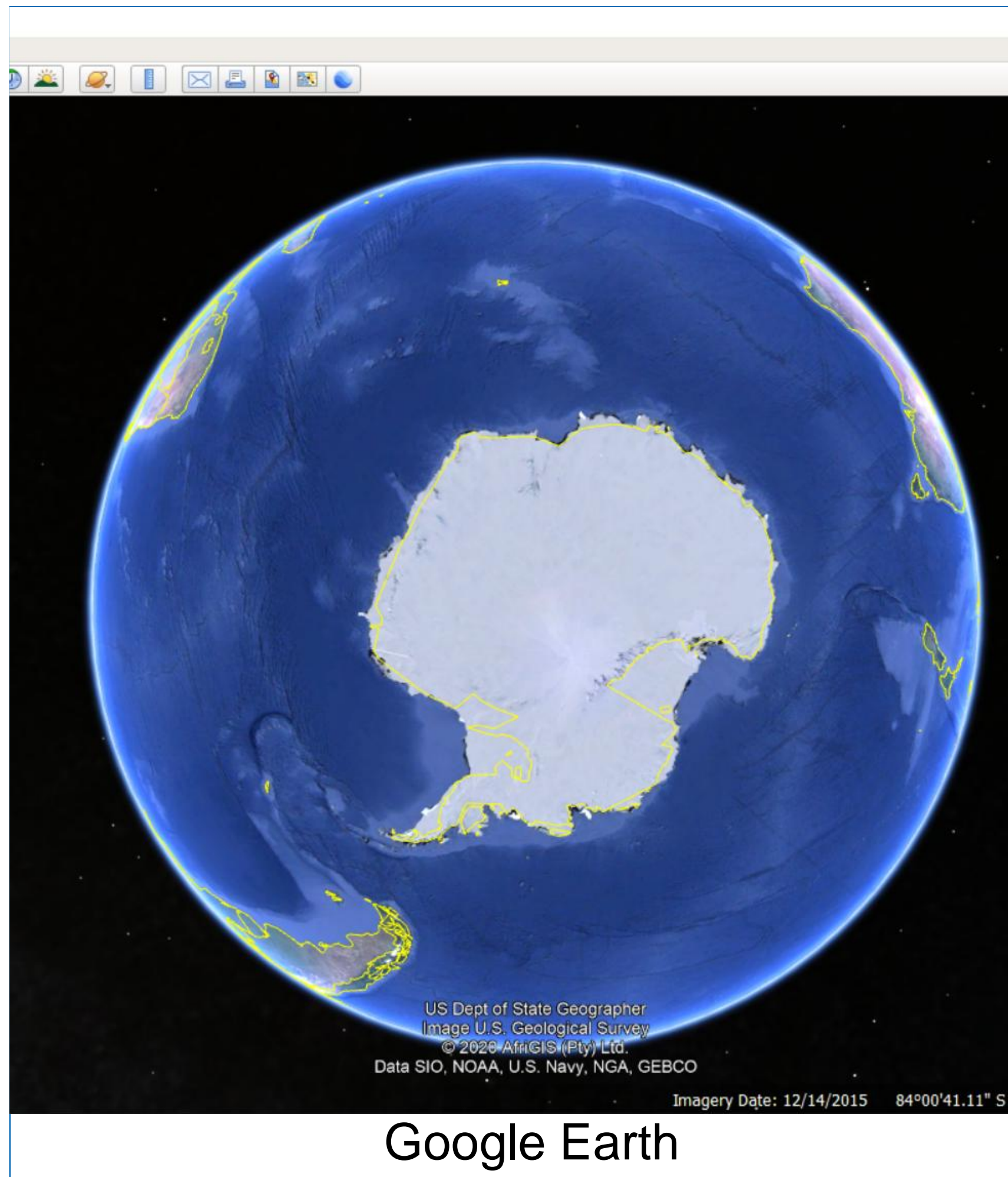
HTML Map Viewer



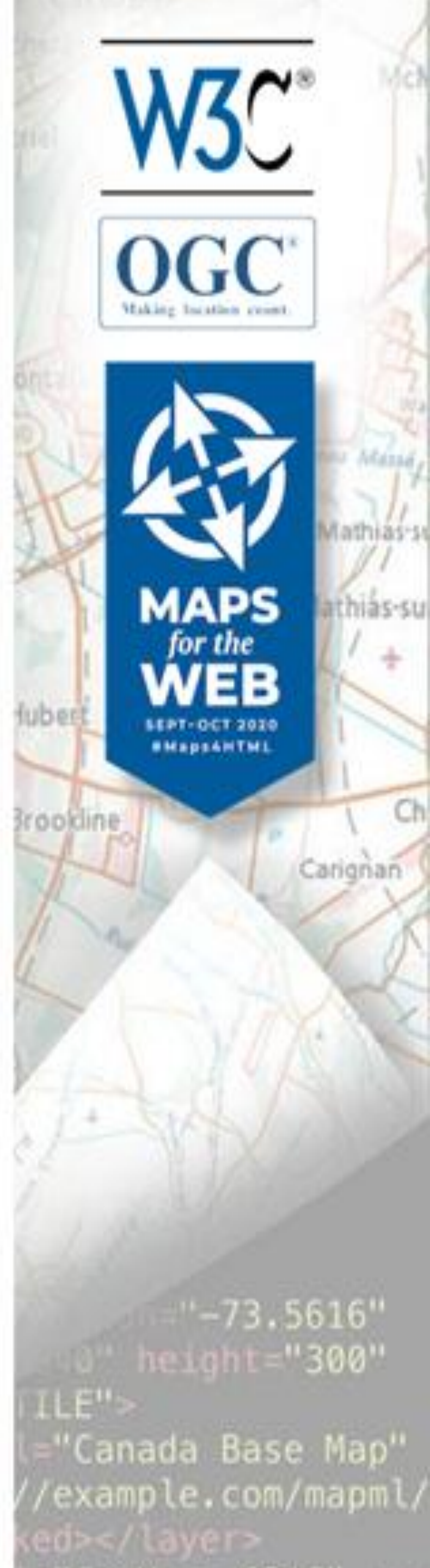
HTML Map Viewer



HTML Map Viewer

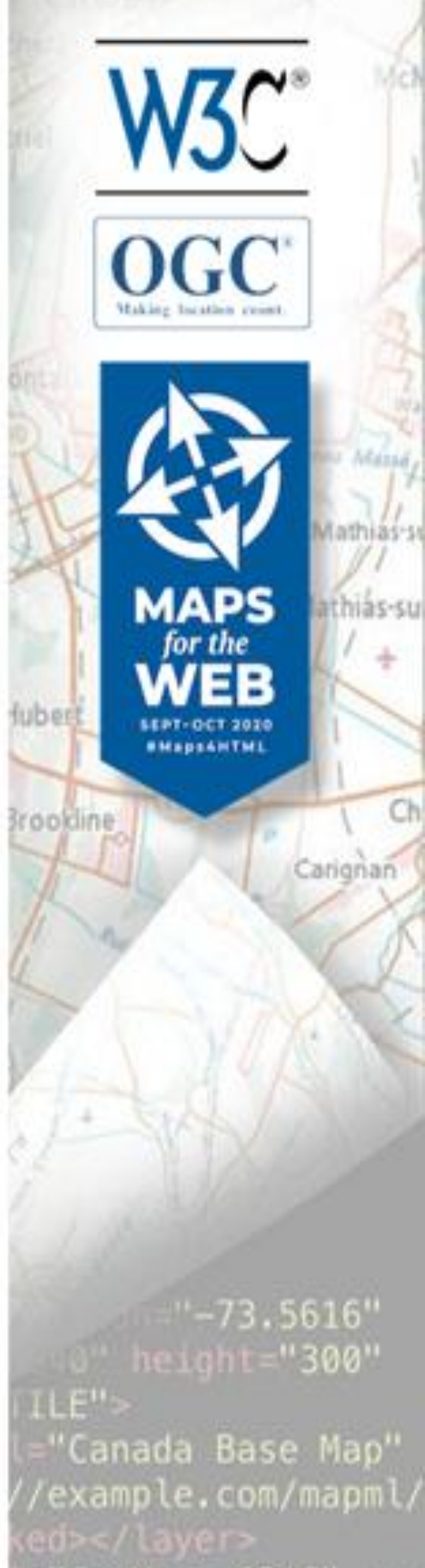


- **Globe view like Google Earth**
- **Location and scale aware**
- **Avoid the standard map projections and implement on-the-fly projection at the viewer**
- **Raster, vector, Web data service**
- **Spatial accuracy for interoperability**
- ...



HTML Map Viewer

- Web API
- **Cyber Security, trustworthy data, data security, availability**
- Authentication / privilege
- International Projection/datum – How to prioritize?/select one?
- **Expect enormous contributions from the developer community**
- **Geospatial-data-as-a-service could be the next big business opportunity**



THANK YOU!

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https://www.researchgate.net/profile/Sajeevan_G

28 September 2020

W3C/OGC Joint Workshop Series on Maps for the Web
[w3.org/2020/maps](https://www.w3.org/2020/maps)

