



# Report about registration process and access to INGV Ionospheric model & data products

Emanuele Pica on behalf of the INGV group



ISTITUTO NAZIONALE  
DI GEOFISICA E VULCANOLOGIA

TPW#5

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# List of registered data collections



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## Data collection registered before TPW #4

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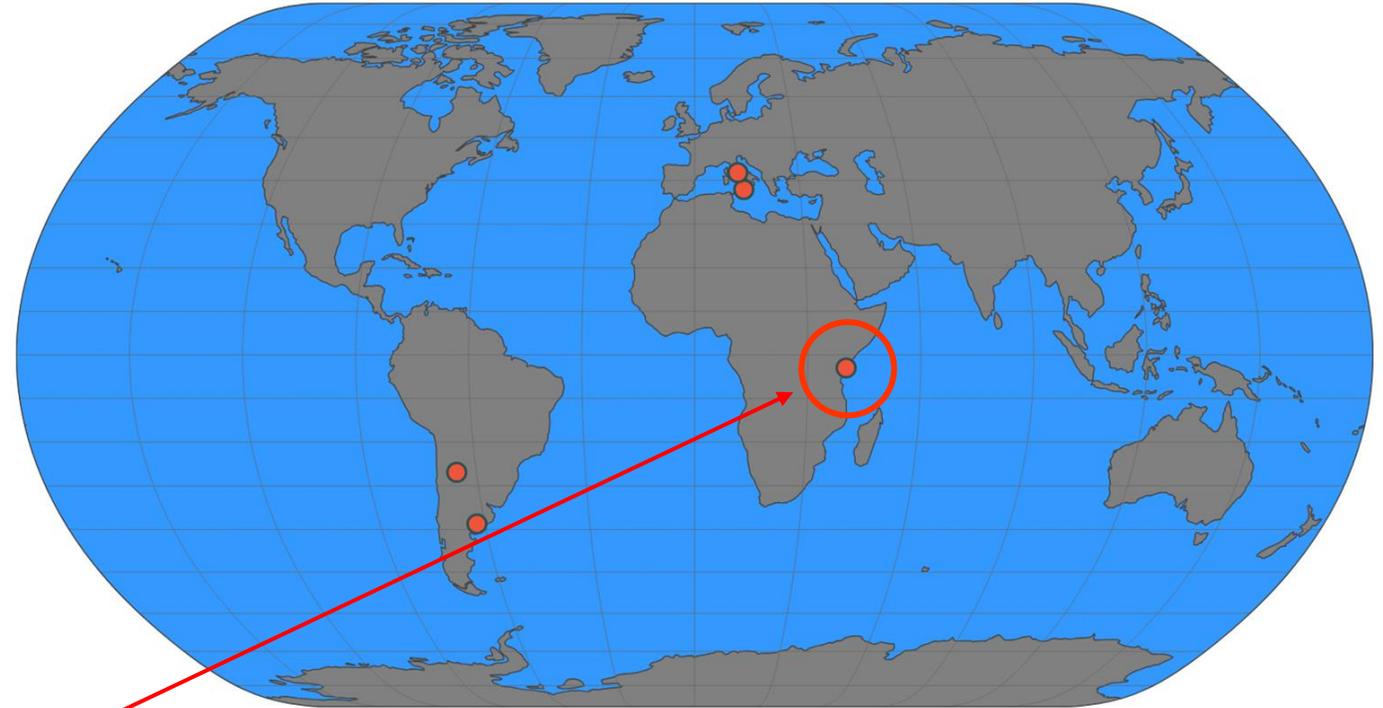
- [eSWua: Ionograms database, autoscaled records](#)
- [eSWua: Ionograms database, manually scaled records](#)
- [eSWua: Scintillation Indices and Total Electron Content \(TEC\) database](#)

## Data collection registered after TPW #4

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- [eSWua IONORING tool: Nowcasting TEC maps over Italy](#)
- [eSWua IONORING tool: Short-Term Forecasting TEC maps over Italy](#)
- [eSWua IONOWORD tool: Nowcasting global TEC maps](#)
- [eSWua IONOWORLD tool: Long-term forecasting global TEC maps](#)

**eSWua:  
Ionograms  
database**



**New AIS-INGV Ionosonde (code: ML10L) installed in Kenya (Broglia Space Center, Malindi) in July 2023. To the best of our knowledge, it's currently the only ionosonde systematically performing vertical soundings 24/7 in the low-latitude African sector.**



**Broglio Space Center (Italian Space Agency), Malindi, Kenya**



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**INGV Ionospheric Observatory at Broglio Space Center**



**AIS-INGV Ionosonde**



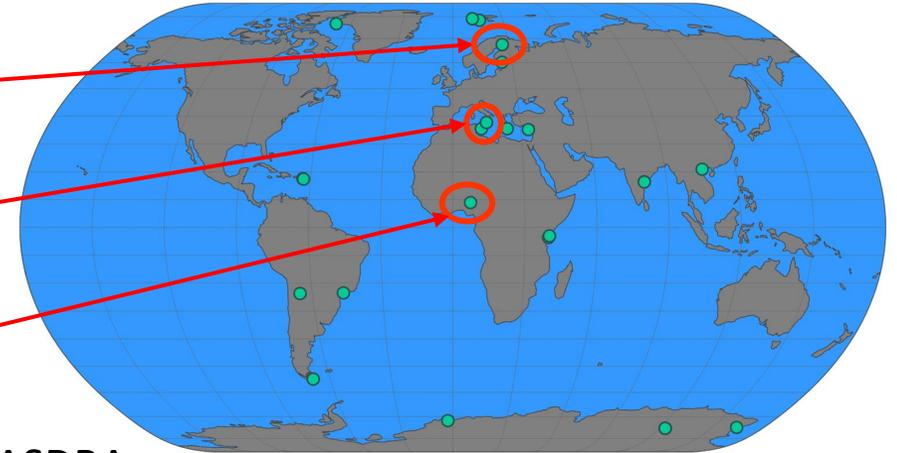
**GNSS scintillation receiver**

**eSWua: GNSS  
scintillation  
database**



## New GNSS scintillation receiver (PolaRx5S)

- Sodankyla (Sweden)  
Data owner: FMI
- Pizzi Deneri (Italy)  
Data owner: INGV
- Abuja (Nigeria)  
Data owner: INGV, Host Institution: NASDRA



**NOTE: Sodankylä Geophysical Observatory, Finland already exist. How to find a contact through PITHIA? Mail contacts of individuals seems to not appear (but the information is provided withing the XML records...)**

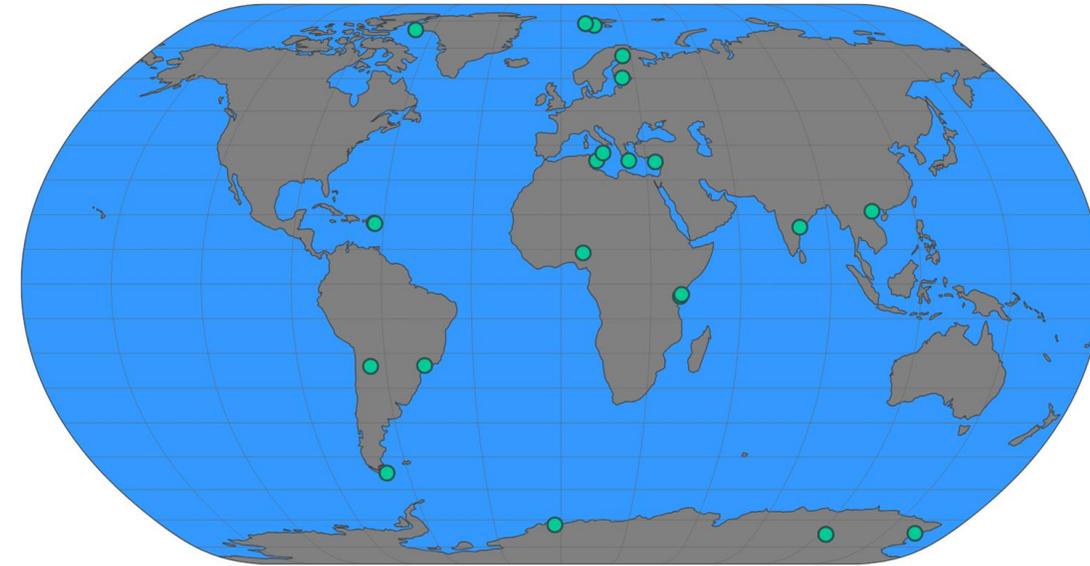
## GBSC: Ground Based Scintillation Climatology [1]

[1] L.Spogli et al., 2009 <http://dx.doi.org/10.5194/angeo-27-3429-2009>

It consists in building maps of the percentage occurrences of GNSS scintillation above predefined threshold and evaluate over a certain time period.

Test are undergoing to understand the feasibility of a real-time processing of the data on a web-based interacting interface. API to collect the results (only in json/text) may also be developed in this case through the eScience-centre.

Alternative solution is an API based service on the eScience-centre to run offline the model on INGV server and receive the results through email.



## PROTOTYPE OF REAL-TIME WEB-BASED IMPLEMENTATION OF THE MODEL

Next improvements:

- Local time conversion
- Local time Vs Magnetic Latitudes plot
- Highlighting data availability on the maps

## AUTOSCALA model

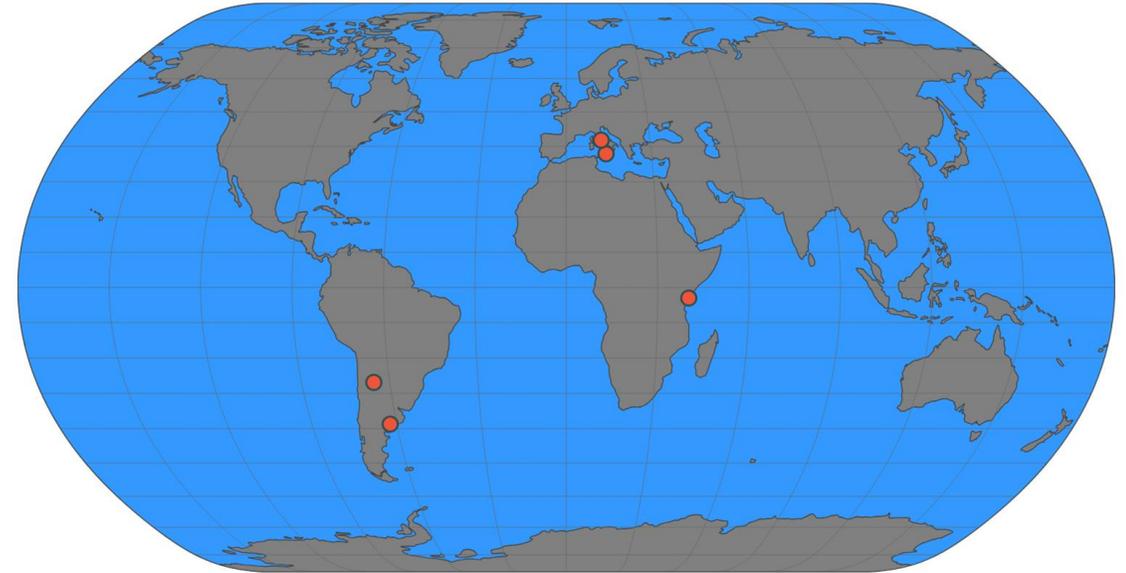
AUTOSCALA is a software to automatically scale the main standard ionospheric characteristics from an ionogram and the associated electron density profile. It was conceived as a windows executable.



A docker based version of the software capable to be executed on Linux based system it has been implemented.



Autoscala should be released in the PITHIA e-Science centre as a multi-platform executable to be downloaded or to be runned through a web-based interface. Currently AUTOSCALA take as input only the AIS-INGV ionograms; future plan is to make it working also with SAO files (Digisonde ionograms) as input.





# Suggestion and possible future points of discussion (e-Science centre)



Data Collection/ Catalog entries: It seems not existing a “citation” field. If the e-Science Centre will be the “landing page” for the catalog-related DOIs, this field should be mandatory...

[Limitation of the search capabilities](#): (obviously) it is not possible to describe everything through the ontology. A free text search tool (capable to also search through all the resources’ titles, descriptions, etc.) would be useful.

Few examples:

- how to currently search for “forecasting”-related data-collections?
- Total Electron Content can be find exclusively as “TEC” is in the Computation Type configuration and exclusively as “Total Electron Content” in the Observed Properties configuration: this may be a bit confusing for external users....
- It seems not possible to directly search the huge amount of information currently stored in the e-Science centre (ex: searching for a location and discover that a platform/observatory is existing and registered in PITHIA).

# Suggestion and possible future points of discussion (e-Science centre)

- Can we provide a sort of “geographic” search capabilities? Example: considering we had registered the coordinate of the observatories/platforms, an interactive world-map with placeholders for each observatory/platform can be created. By opening the description of each observatory/platform a list of all the related data-collections may be displayed. Besides highlighting information otherwise a bit “hidden” in the eScience centre, it will also make it more captivating...
- Mixing Data-collections and Models may be a bit confusing for external users



How an external users is supposed to know that he will find (and possibly run) also Models inside “Data collections”?