

WMO RADAR DATABASE

Joint RA II / RA VI Workshop on WIGOS

12-14 September 2017, Minsk-Belarus

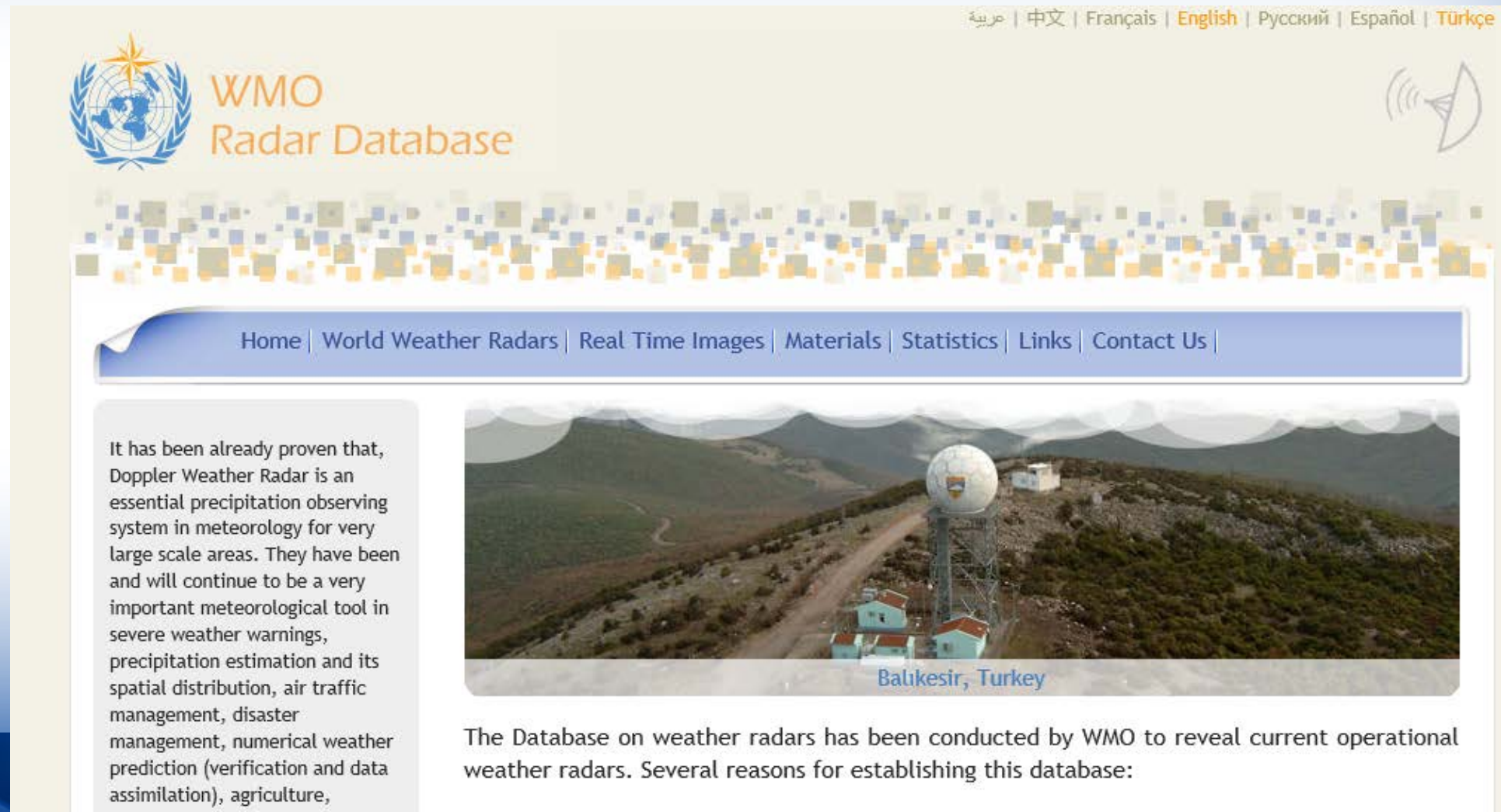
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- **WRD History**
- **WRD Structure**
- **WRD Statistics**
- **WRD&OSCAR/Surface**
- **Conclusion**

WRD History

- Started in **2009** as a joint task of CBS and CIMO expert teams to establish a web based platform for radar metadata;
- to collect
- to archive
- to monitor
- to update
- to exchange



The screenshot shows the WMO Radar Database website. At the top right, there are language options: العربية | 中文 | Français | English | Русский | Español | Türkçe. The WMO logo and 'WMO Radar Database' text are on the left. A navigation bar contains links: Home | World Weather Radars | Real Time Images | Materials | Statistics | Links | Contact Us. Below the navigation bar, there is a text box on the left and a photograph of a radar station on the right. The text box contains the following text: 'It has been already proven that, Doppler Weather Radar is an essential precipitation observing system in meteorology for very large scale areas. They have been and will continue to be a very important meteorological tool in severe weather warnings, precipitation estimation and its spatial distribution, air traffic management, disaster management, numerical weather prediction (verification and data assimilation), agriculture,'. The photograph shows a radar station on a hillside with the caption 'Balıkesir, Turkey' below it.

Home | World Weather Radars | Real Time Images | Materials | Statistics | Links | Contact Us

It has been already proven that, Doppler Weather Radar is an essential precipitation observing system in meteorology for very large scale areas. They have been and will continue to be a very important meteorological tool in severe weather warnings, precipitation estimation and its spatial distribution, air traffic management, disaster management, numerical weather prediction (verification and data assimilation), agriculture,

Balıkesir, Turkey

The Database on weather radars has been conducted by WMO to reveal current operational weather radars. Several reasons for establishing this database:

WRD History

The purpose of the project for the development of WRD is;

- to establish a platform for weather radars metadata
- to provide a tool for the Members to access the required metadata
- to assist the improvement of radar data quality
- to present a comprehensive web-based database for radar network planning information and resource allocation for all members
- to assist a wide spread international exchange of radar data
- to gather radar information to protect radio-frequency spectrum allocation
- to analyze the threats (e.g. wind turbines) for radar operations to get necessary precautions
- to share the basic radar information among the Members

Hidrometeoroloski zavod Beograd hazirlayan: Teča sa Dunava Yorumlar Fotoğraf yükle



Yeni eklenen fotoğraflar »



After development process by TSMS in cooperation with WMO, WRD is operational since 2011 for the use of Members with the information on;

- **owner**
- **manufacturer**
- **location**
- **operational principles**
- **technical features**
- **link for radar images**



The screenshot shows the WMO Radar Database website. At the top left is the WMO logo and the text "WMO Radar Database". Below this is a navigation bar with links: Home | World Weather Radars | Real Time Images | Materials | Statistics | Links | Contact Us. The main content area is divided into two columns. The left column contains text about the importance of Doppler Weather Radar and the development of radar networks. The right column features a photograph of a radar station and a list of reasons for establishing the database. At the bottom of the main content area is a world map with orange dots indicating the locations of weather radars. A "Login" link is visible at the bottom right of the page.

WMO Radar Database

Home | World Weather Radars | Real Time Images | Materials | Statistics | Links | Contact Us

It has been already proven that, Doppler Weather Radar is an essential precipitation observing system in meteorology for very large scale areas. They have been and will continue to be a very important meteorological tool in severe weather warnings, precipitation estimation and its spatial distribution, air traffic management, disaster management, numerical weather prediction (verification and data assimilation), agriculture, hydrological, weather modification and climate applications.

Radar networks have developed in many countries and often have competing requirements resulting in multiple networks created by different internal agencies and not just NHMS's. [More >>](#)

WMO "Weather Radar Observations" [Web Page >>](#)

The Database on weather radars has been conducted by WMO to reveal current operational weather radars. Several reasons for establishing this database:

- Presenting a comprehensive web-based database for radar network planning information and resource allocation for all members
- Assisting a wide spread international exchange of radar data
- Gathering radar information to protect radio-frequency spectrum allocation
- Presenting common issues/problems and potential solutions gathered by questionnaire

WORLD METEOROLOGICAL ORGANIZATION

This is public domain.

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WRD Structure

| Tables | Content |
|-------------------------------|--|
| Radars | Table contains detailed information regarding with all radars |
| Radar History | Table almost same as “Radars” table. This table keeps registry of updates of “Radars” table. |
| Radar History (Manual inputs) | Manual inputs by focal points to the “Radar History” like radar calibration etc. |
| Countries | Official names of all countries, status in WRD |
| Country borders | Contains data for vectorial map |

Radar Details

Gissar, MRL-5 / Tajikistan

Maps



Links



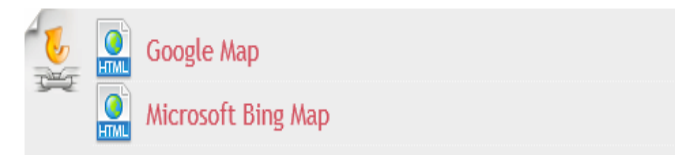
| Details | |
|---------------|---------------------------|
| Status | Active |
| Owner | |
| Wmo Id | |
| Latitude | 38° 32' 59" N 38.549722 |
| Longitude | 68° 37' 14" E 68.620556 |
| Ground Height | 854 m |
| Tower Height | 8 m |
| Band | SX |
| Beam Width | 1.5° |
| Frequency | MHz |
| Pulse Width | 0.5 - - - μSec |
| Prf Min | 250 Hz |
| Prf Max | 500 Hz |

WRD Structure

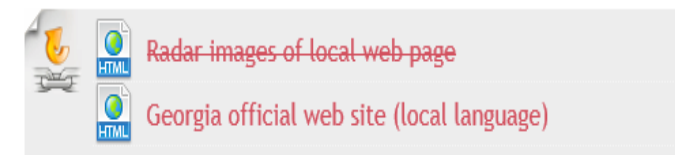
| Tables | Content |
|--------------------|---|
| Materials – Movies | Registry of all movies regarding with radars. There are fields for all official languages for document names and explanations |
| Users | User(Focal point) communication information, user name and password, authorizations |
| Users – actions | Logs of actions of users (adding, updating radar etc.) |
| Users – logins | Logs of user logins to the WRD |
| Announcements | Announcements through WRD |

Meteo 1100 / Georgia

Maps



Links



| Details | |
|---------------------|------------------------------------|
| Beam Width | 1.3° |
| Frequency | 9595 MHz |
| Pulse Width | 0.5 - 0.8 - 1 - 2 μSec |
| Prf Min | 250 Hz |
| Prf Max | 1180 Hz |
| Signal Processor | MRP / IQ2/ DST |
| TX Type | Magnetron |
| Power | 200 kW |
| RX Type | Digital |
| Polarization | Dual |
| Manufacturer | Enterprise Electronics Corporation |
| Lowest Angle | -6° |
| Highest Angle | 90° |
| Task Cycle Time Min | 16 min |
| Task Cycle Time Max | 90 min |
| MDS | -110 Dbm, |
| RX Type | Digital |

WRD Structure



| Field | Type | Range |
|---------------|--------------|-----------------------|
| radar id | int(11) | Primary key, Identity |
| wmo id | varchar(12) | String |
| country | char(2) | String |
| owner id | varchar(4) | String |
| owner | nvarchar(64) | String |
| radar name | nvarchar(50) | String |
| lat degree | tinyint(2) | 0 - 90 |
| lat minute | tinyint(2) | 0 - 59 |
| lat second | tinyint(2) | 0 - 59 |
| lat direction | char(1) | "N" or "S" |
| lon degree | tinyint(3) | 0 - 180 |
| lon minute | tinyint(2) | 0 - 59 |
| lon second | tinyint(2) | 0 - 59 |
| lon direction | char(1) | "E" or "W" |



Radar Details

Brest №8452 / Belarus

Maps





[Google Map](#)



[Microsoft Bing Map](#)

Links



[Radar images of local web page](#)


[Belarus official web site \(local language\)](#)

Details

| | |
|------------------|---------------------------|
| Status | Active |
| Owner | |
| Wmo Id | 8452 |
| Latitude | 52° 7' 50" N 52.130556 |
| Longitude | 23° 54' 10" E 23.902778 |
| Ground Height | 12 <i>m</i> |
| Tower Height | <i>m</i> |
| Band | SX |
| Beam Width | 1.5° |
| Frequency | <i>MHz</i> |
| Pulse Width | 1 - 2 - - <i>µSec</i> |
| Prf Min | 2950 <i>Hz</i> |
| Prf Max | 9595 <i>Hz</i> |
| Signal Processor | - |
| TX Type | Magnetron |
| Power | <i>kW</i> |

WRD Structure

| Field | Type | Range |
|------------------|--------------|------------|
| ground height | float | 0 - 5000 |
| tower height | Float | 0 - 100 |
| Bands | varchar(2) | String |
| beamwidth | Float | 0 - 3 |
| frequency | Float | 0 - 10000 |
| pulse width 1 | Float | 0 - 50 |
| pulse width 2 | Float | 0 - 50 |
| pulse width 3 | Float | 0 - 50 |
| pulse width 4 | Float | 0 - 50 |
| prf min | smallint(4) | 0 - 5000 |
| prf max | smallint(4) | 0 - 5000 |
| Power | Float | 0 - 1500 |
| signal processor | nvarchar(36) | String |
| tx type | nvarchar(16) | String |
| rx type | char(1) | "A" or "D" |

Meteor-500 / Ukraine

Maps



 [Google Map](#)
 [Microsoft Bing Map](#)

Links

 [Radar images of local web page](#)
 [Ukraine official web site \(local language\)](#)

| Details | |
|------------------|-------------------------|
| Status | Active |
| Owner | |
| Wmo Id | |
| Latitude | 48° 57' 0" N 48.95 |
| Longitude | 30° 45' 0" E 30.75 |
| Ground Height | 125 <i>m</i> |
| Tower Height | 10 <i>m</i> |
| Band | C |
| Beam Width | 1° |
| Frequency | 5600 <i>MHz</i> |
| Pulse Width | 0.8 - 2 - - <i>µSec</i> |
| Prf Min | <i>Hz</i> |
| Prf Max | <i>Hz</i> |
| Signal Processor | DRX |
| TX Type | Magnetron |
| Power | 250 <i>kW</i> |
| RX Type | Digital |
| Relaxation | Single |

WRD Structure

| Field | Type | Range |
|------------------|---------------|----------------|
| polarization | char(1) | "S" or "D" |
| manufacturer | nvarchar(48) | String |
| lowest angle | Float | (-6) – (+10) |
| highest angle | Float | 0 – 185 |
| cycle time min | Float | 0 – 600 |
| cycle time max | Float | 0 – 600 |
| mdb dbm | smallint(4) | (-130) – (-90) |
| mdb dbz | smallint(3) | (-90) – (+5) |
| zr summer | varchar(180) | String |
| zr winter | varchar(180) | String |
| zr others | varchar(180) | String |
| image link | varchar(180) | String |
| install year | smallint(4) | 1900 - 2100 |
| transaction date | bigint(12) | |
| notes | nvarchar(MAX) | - |

Radar Details

KURSK / Russian Federation

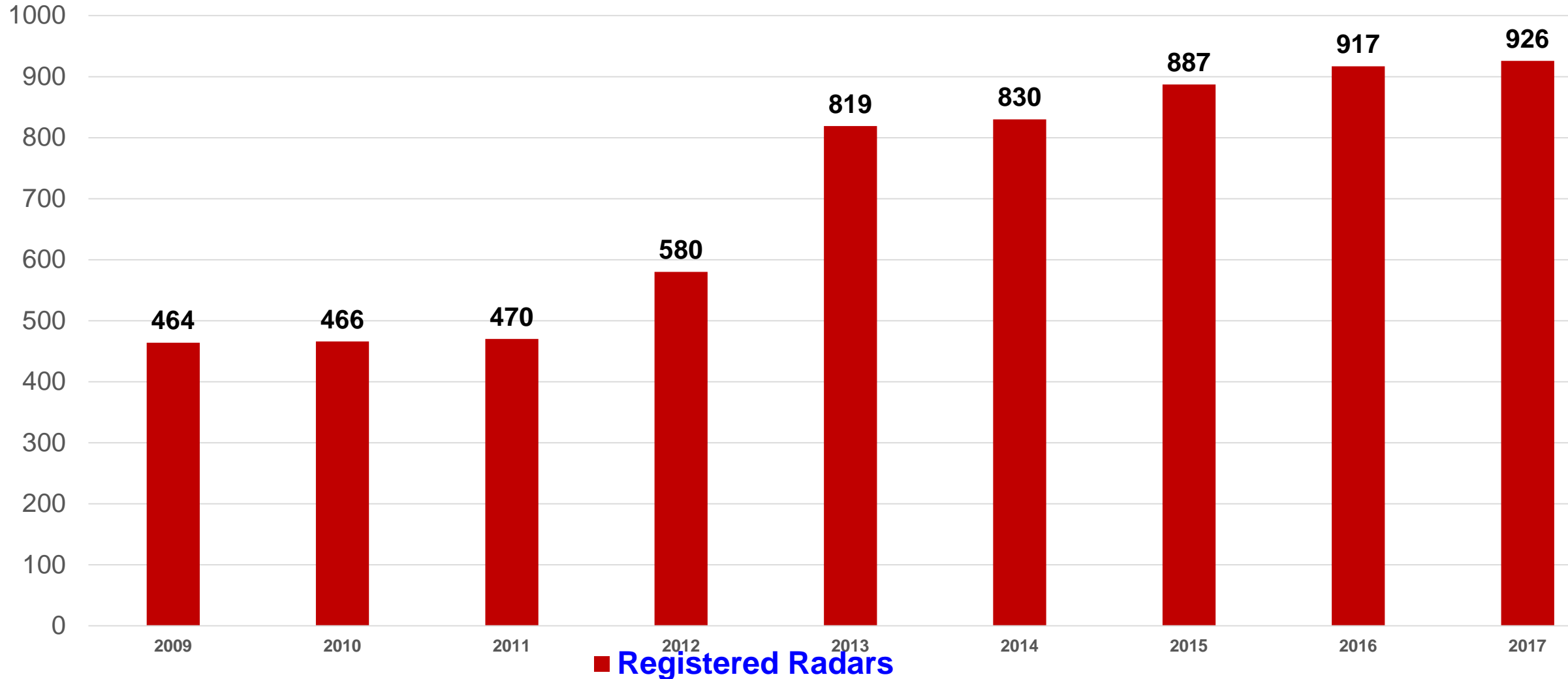
Maps



Links

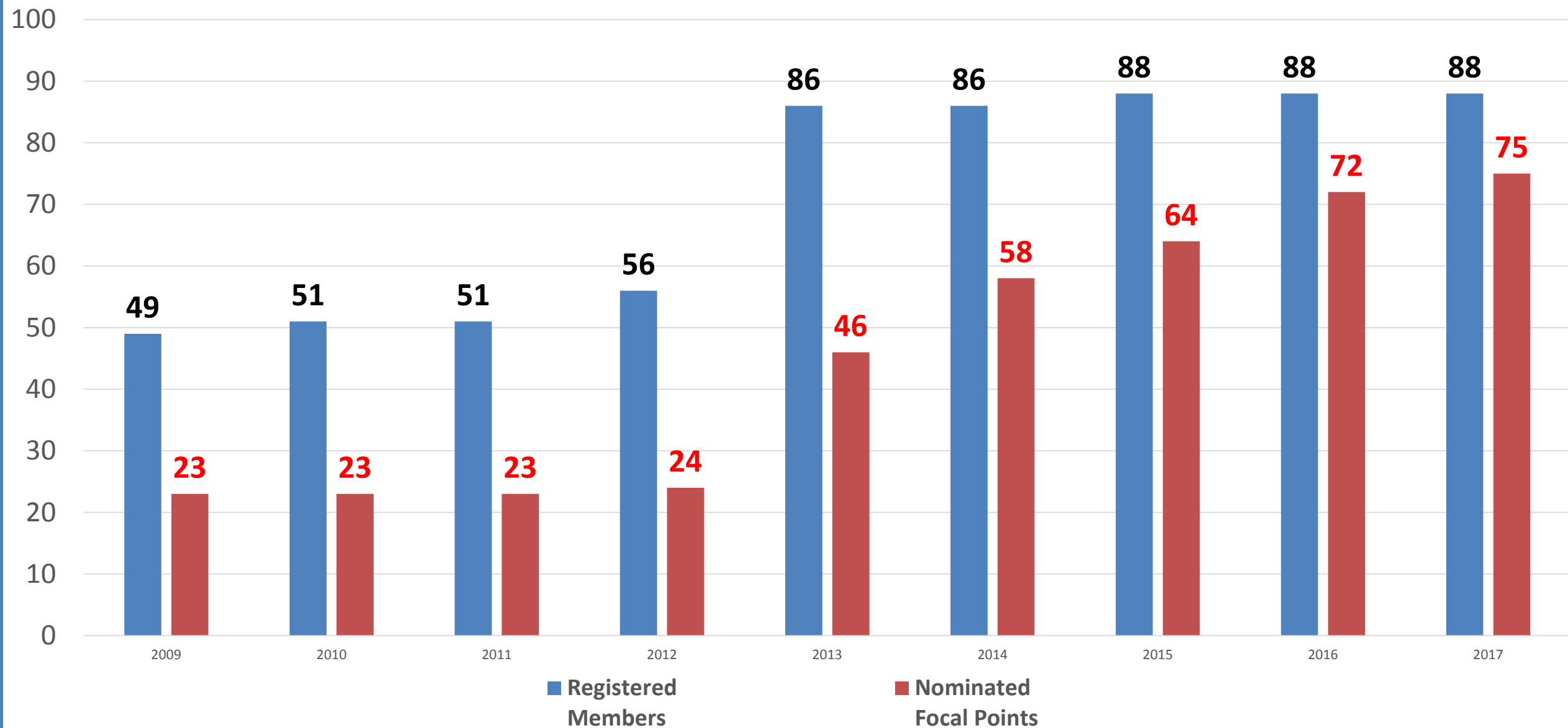
| | |
|---------------------|-----------------------|
| Signal Processor | LEMZ, Russia |
| TX Type | Klystron |
| Power | kW |
| RX Type | Digital |
| Polarization | Dual |
| Manufacturer | - |
| Lowest Angle | 0.1° |
| Highest Angle | 85° |
| Task Cycle Time Min | 10 min |
| Task Cycle Time Max | 10 min |
| MDS | , -10 Dbz |
| ZR Summer | Z=200R ^{1.6} |
| ZR Winter | Z=200R ^{1.6} |

Number of Weather Radars in WRD

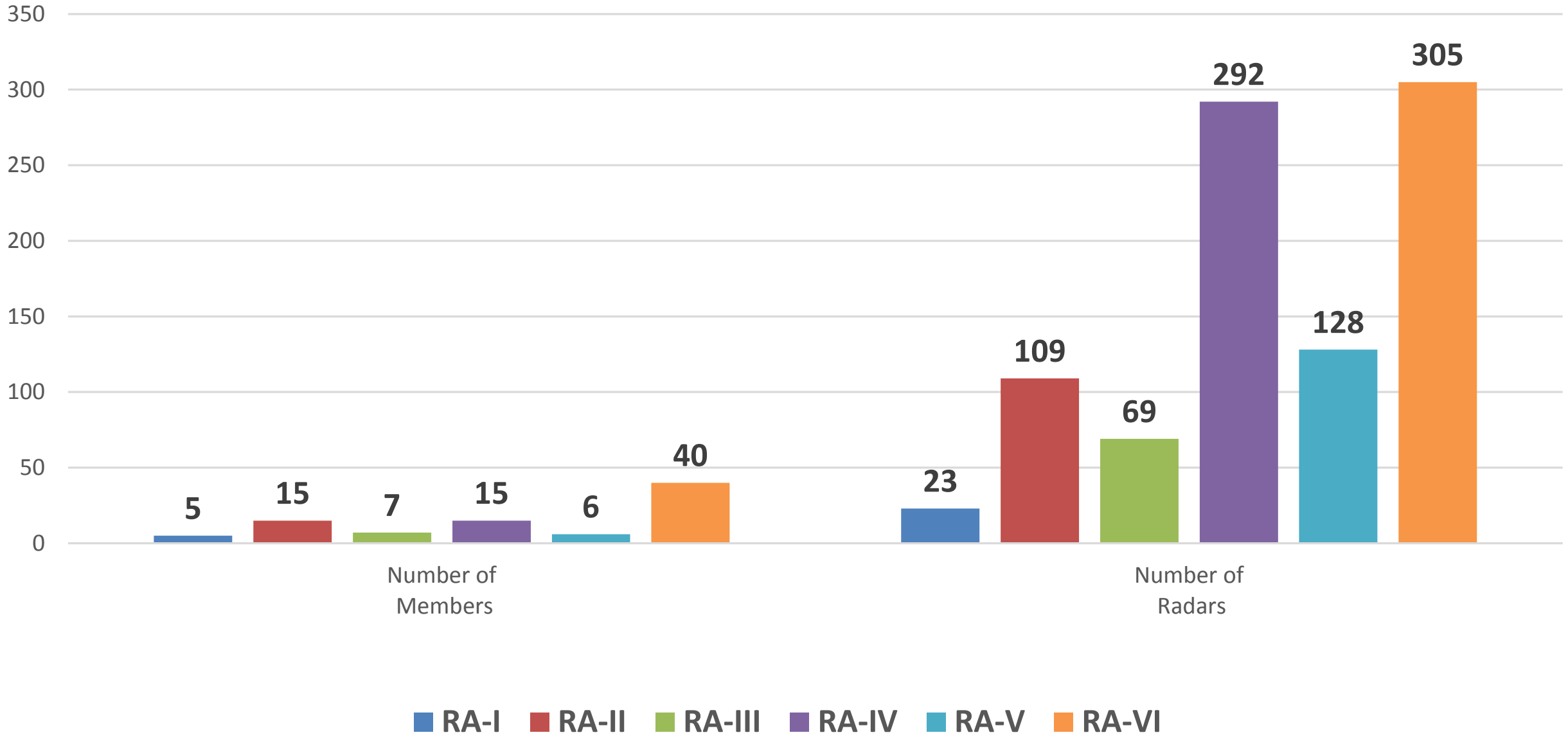


WRD Statistics

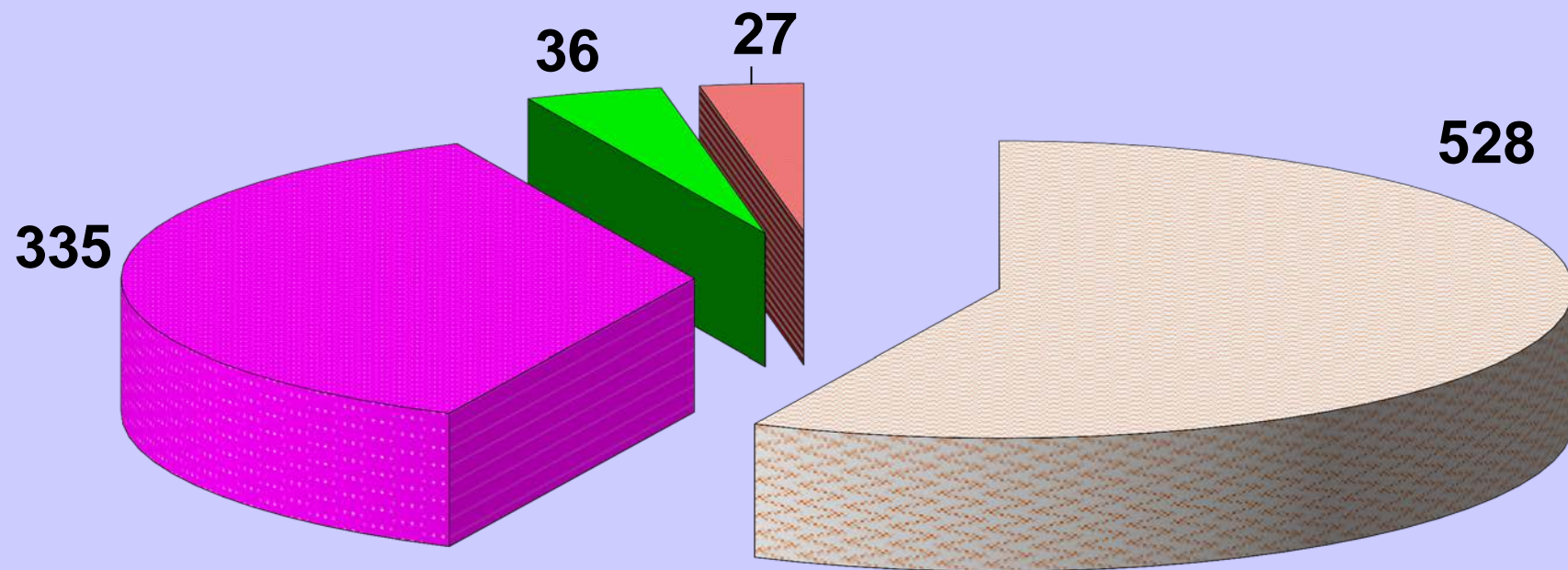
Number of Members in WRD



Regional Distribution of Members in WRD



Distribution of Radar Frequencies



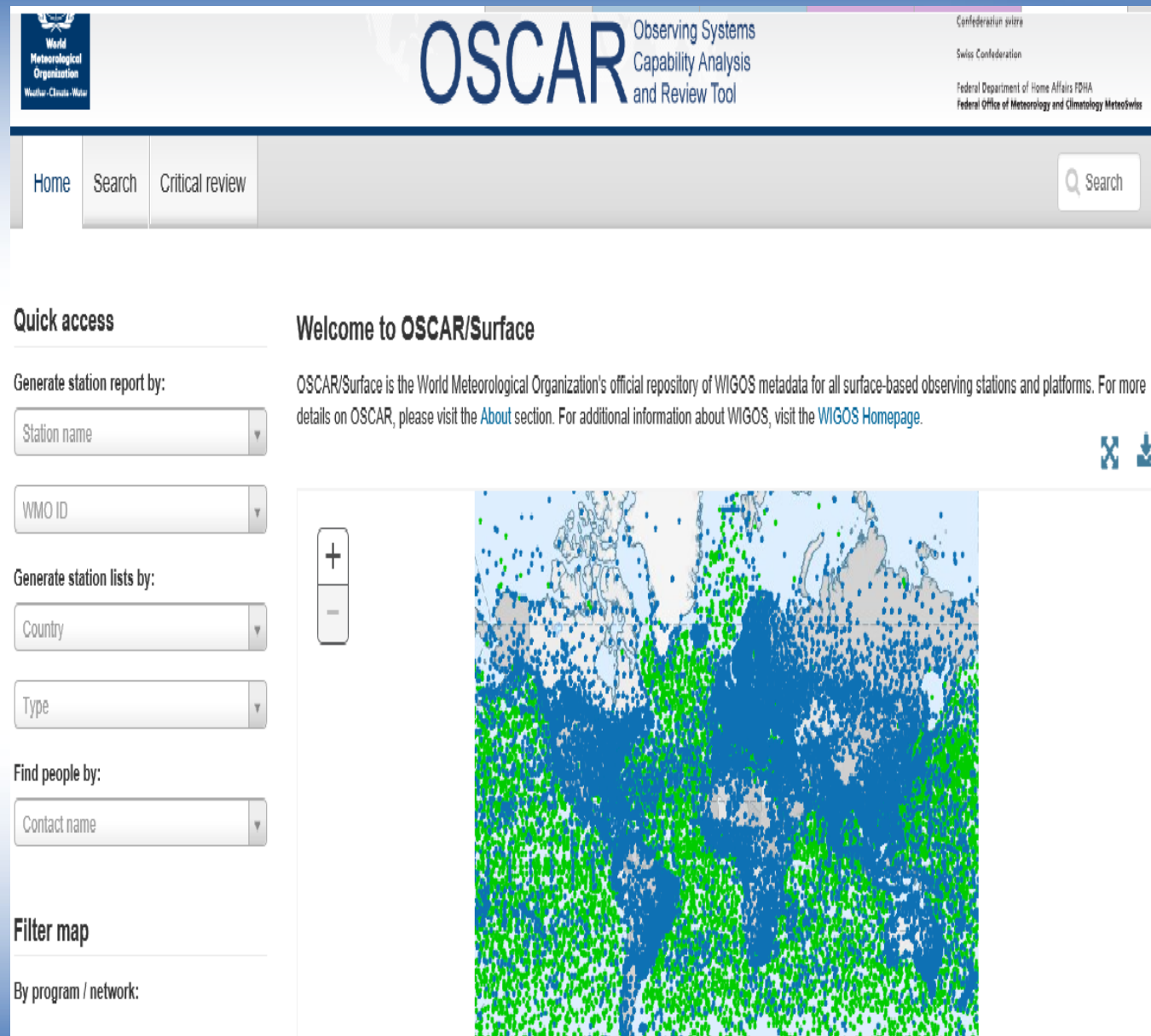
C Band 57%

S Band 36%

X Band 4%

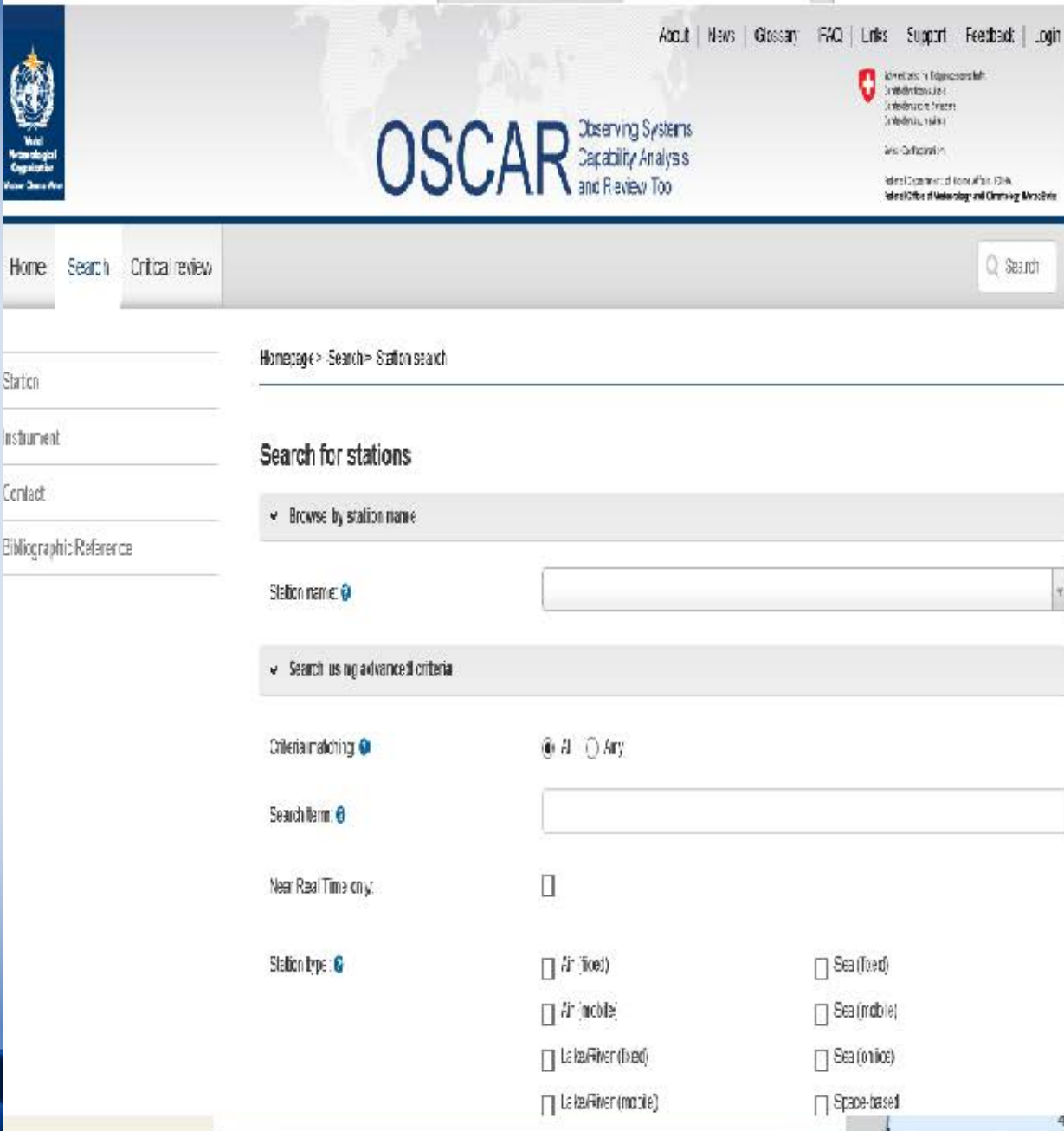
SX Band 3%

- Developed by MeteoSwiss and WMO, as one of the components of the WIGOS Information Resources (WIR).
- Officially in operation since May 2, 2016.
- Replaces WMO Publication No. 9, Volume A.
- A primary national stations database for the Members to store and record WIGOS metadata.
- Metadata from a number of co-sponsored observing systems are also maintained in OSCAR/Surface.



The screenshot shows the OSCAR/Surface website interface. At the top, there is a header with the WMO logo and the text "OSCAR Observing Systems Capability Analysis and Review Tool". Below the header is a navigation bar with "Home", "Search", and "Critical review" links, and a search box. The main content area is divided into two columns. The left column, titled "Quick access", contains several dropdown menus for generating reports and lists based on "Station name", "WMO ID", "Country", "Type", and "Contact name". The right column, titled "Welcome to OSCAR/Surface", contains a welcome message and a map showing a distribution of stations over a geographical area, with a zoom control on the left side of the map.

WRD & OSCAR/Surface



OSCAR Observing Systems Capability Analysis and Review Tool

Home Search Critical review Search

Station
Instrument
Contact
Bibliography-Reference

Homepage > Search > Station search

Search for stations

Browse by station name

Station name:

Search using advanced criteria

Criteria matching: All Any

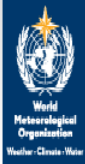
Search term:

Near Real Time only:

Station type:

| | |
|--|---------------------------------------|
| <input type="checkbox"/> Air (fixed) | <input type="checkbox"/> Sea (fixed) |
| <input type="checkbox"/> Air (mobile) | <input type="checkbox"/> Sea (mobile) |
| <input type="checkbox"/> Lake/River (fixed) | <input type="checkbox"/> Sea (moice) |
| <input type="checkbox"/> Lake/River (mobile) | <input type="checkbox"/> Space-based |





OSCAR

Observing Systems
Capability Analysis
and Review Tool

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology MeteoSwiss

[Home](#)
[Search](#)
[Critical review](#)

- [Station](#)
- [Instrument](#)
- [Contact](#)
- [Bibliographic Reference](#)

[Homepage](#) > [Search](#) > [Station search](#) > Station report details

[Edit](#) [Download](#)

RADAR Brest №8452 (Belarus)

Last updated: 2016-04-29

in WMO Region VI - Europe

▼ Station characteristics

Station name: RADAR Brest №8452

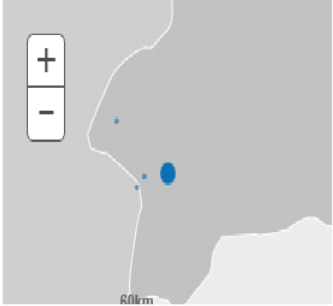
Station alias:

Date established:

Station type: Land (fixed)

Station class(es):

| Class | From | To |
|-----------------------|------|----|
| RADAR (Weather radar) | | |



WMO region: VI - Europe

Country / Territory: > Belarus

Coordinates: > 52.13055555556°N, 23.90277777778°E, 12m

Time zone:

Climate zone:

Station URL:

Other link (URL):

Predominant surface cover:

Surface roughness:

Topography or bathymetry:

Population in 10km / 50km (in thousands):

Supervising organization:

Site information:

Event at station / platform:

Photo gallery

WRD & OSCAR/Surface

- Integration of WRD and OSCAR/Surface is under progress
- New features and capabilities to be added to WRD based on the recommendations by IPET-OWR
- The contribution of the WRD and OSCAR/Surface for the international radar data exchange
- The contribution of the WRD and OSCAR/Surface for the evolution and redesign of the observing networks at national, regional and global level.

CONCLUSION

- **Members should understand the benefits of the OSCAR/Surface and WRD for them.**
- **Nomination of focal points by Members are critical to maintain up-to-date metadata of observing systems.**
- **Members should use and support OSCAR/Surface and WRD**
- **Beside the web interface for providing metadata, M-2-M interface is under consideration to be developed to submit the metadata directly to OSCAR by the Members.**
- **Training activities on OSCAR including WRD should be arranged for the Members;**
 - **to increase the awareness**
 - **to understand guidance material**
 - **to use and support OSCAR and WRD efficiently**

THANK YOU FOR YOUR ATTENTION