WORLD METEOROLOGICAL ORGANIZATION

WIGOS Implementation Activities in RA VI

Joint RA II / RA VI Workshop on WIGOS

12-14 September 2017, Minsk-Belarus

ERCAN BÜYÜKBAŞ
Chair/TT-WIGOS

WORLD METEOROLOGICAL ORGANIZATION

CONTENT

- A few words on observations
- WIGOS in General
- WIGOS Activities in RA-VI
- Conclusion

WORLD METEOROLOGICAL ORGANIZATION

OBSERVATIONS

Observations

- Requirement based
- Accurate
- Reliable
- Continuous
- Timely
- Accessible/Usable

Essential and indispensible input for any process of meteorological products and services

WORLD METEOROLOGICAL ORGANIZATION

OBSERVATIONS

Observations

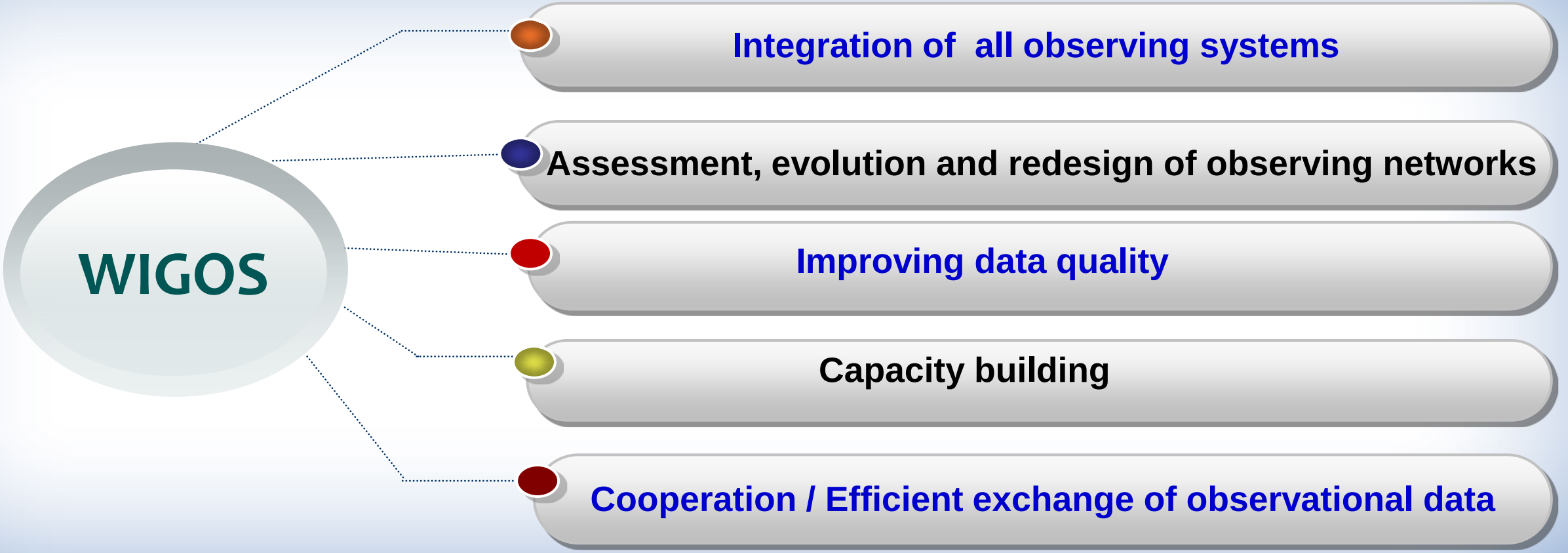
- Where?
- Why and Which parameters?
- What type of instruments?
- How to transmit the data?
- How to operate/ maintain the network?

Information Technology Cooperation

WORLD METEOROLOGICAL ORGANIZATION

WIGOS in General

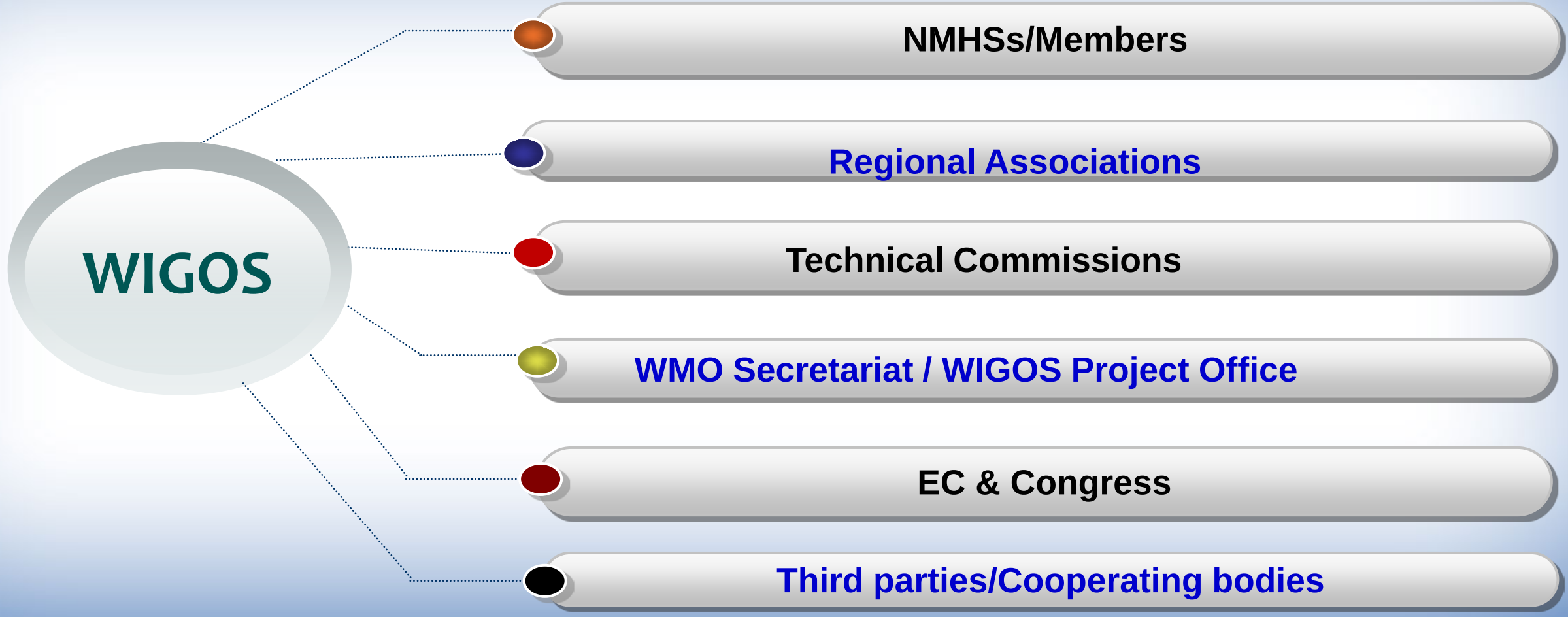
Conceptual Framework



WORLD METEOROLOGICAL ORGANIZATION

WIGOS in General

Key Players



WIGOS in RA-VI

R-WIP-VI

- Regional WIGOS Implementation Plan for RA-VI (R-WIP-VI) was prepared during a workshop held in Madrid, May 2013
- R-WIP-VI was discussed and adopted by RA-VI session in September, 2013 for the implementation by the Members
- As a living document, R-WIP-VI is subject to review and update in regular basis based on the requirements of the Region and the Members
- R-WIP-VI partly updated during WIGOS workshop in November 2015, in Belgrade
- Ongoing process for update of R-WIP-VI by considering the requirements, and ensuring the consistency with global WIGOS Framework Implementation Plan (WIP)

WORLD METEOROLOGICAL ORGANIZATION

WMO INTEGRATED GLOBAL OBSERVING SYSTEM
(WIGOS)

REGIONAL WIGOS IMPLEMENTATION PLAN

FOR

REGIONAL ASSOCIATION VI (EUROPE)

(R-WIP-VI)

Version 1.0

(17/09/2013)

WIGOS in RA-VI

TT-WIGOS

- **By considering the importance of WIGOS for the Members, Task Team for WIGOS Implementation (TT-WIGOS) was established under WG-TDI to carry out tasks related to WIGOS Implementation as being a main priority for next intersession period.**

Name	Country	Name	Country
Dr.Olaf Schulze	Germany	**Özden Tüten**	Turkey
Simon Gilbert	UK	**Dr. Fernando Belda Esplugues**	Spain
Stefan Klink	Germany/ EUMETNET	**Kemal Sehbajraktarevic**	Bosnia and Herzegovina
Linih Tatiana	Moldova	**Ines Srzic**	Crotia
Dr. Alexander Gusev	Russian Federation	**Wiam Kordab**	Lebanon
İstvan Sebok	Hungary	**Julijana Nadj**	Serbia
Alper Çubuk	Turkey	**Cihan Gözübüyük**	Turkey

- **Covered all required expertise?**
- **All sub regions represented?**
- **Need for additional experts?**
- **How to make an efficient communication?**

WIGOS in RA-VI

Meetings/Workshops

- *To make the most important players, Members, more active in the game*
- *To increase the awareness among the Members via NMHSs*
- *To ensure the true understanding of WIGOS concept by the Members*
- *To define and carry out doable activities for R-WIP-VI*
- *To understand the status, gaps and required activities at national level*
- *To bring together the experts from Members to share the experiences and ideas*
- *To introduce the WIGOS Technical Support Platforms/Tools*
- *To discuss the challenges and proper solutions for the WIGOS implementation*
- *To discuss how to assist the Members for national implementation*
- *To discuss how to establish Regional WIGOS Center*

WIGOS in RA-VI

Meetings/Workshops

3 face to face meetings for TT-WIGOS;

1) **10-11 June 2015, Ankara-Turkey**
2) **16-17 September 2015, İstanbul-Turkey**
3) **6-7 June 2016, Belgrade-Serbia**

3 WIGOS workshops for RA-VI;

1) **RA-VI WIGOS Workshop,**
   24-27 November 2015/Belgrade-Serbia

2) **WIGOS Workshop on Marine Meteorological and Oceanographic Observing Requirements,**
   5-7 September 2016, Split-Croatia,

3) **Joint RA II / RA VI Workshop on WIGOS, 12-14 September 2017, Minsk-Belarus**

WIGOS in RA-VI

Activities

- **Nomination of focal points for WIGOS *(37 out of 50 Members)***
- **Nomination of focal points for OSCAR *(42 out of 50 Members)***
- **Nomination of focal points for WRD *(25 out of 50 Members)***
- **Submission of Self-assessment check lists *(20 out of 50 Members)***
- **Evaluation of the submitted self assessment check lists by TT-WIGOS**

  (readiness level for WIGOS implementation is 67/100 in general)

- **Establishment of a web based forum as a communication mechanism among the focal points**

WIGOS in RA-VI

Activities/ R-WIP-VI

- **Review and Update of R-WIP-VI**

-under progress by the next RA-VI session

-ensuring the consistency with global WIP

-with a view to be more applicable and solving practical problems at Member level rather than to be a generic plan

-by considering the existing practices examples of the WIGOS implementation by Members

-assessment of the failed activities in the existing plan

WMO INTEGRATED GLOBAL OBSERVING SYSTEM
(WIGOS)

REGIONAL WIGOS IMPLEMENTATION PLAN

FOR

REGIONAL ASSOCIATION VI (EUROPE)

(R-WIP-VI)

Version 1.2.1

(24/04/2017)

WIGOS in RA-VI

Activities/N-WIPs

- **Assisting Members to develop their N-WIPs in line with R-WIP-VI**

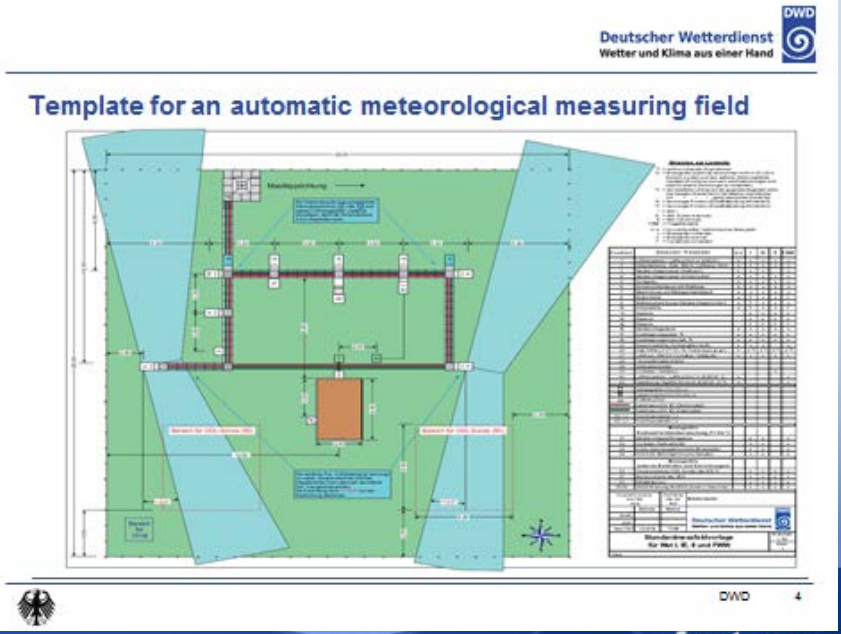
  -Development of a template of N-WIP for Members as a guidance tool is under progress (by reviewing some N-WIPs developed by Germany, Switzerland, Turkey, etc.)

  -How to integrate the synoptical and climatological stations into one national WIGOS network

  -How to integrate radiosonde stations, remote sensing systems, observing systems operated by third parties into the national WIGOS network

  -How to achieve the standardisation of technology and stations

  -Template for a standard automatic obs station / measure field



WIGOS in RA-VI

Activities/RWCs

- **Preparation of a concept document for the establishment of RWCs**
  - ***-Virtual centre concept***
  - ***-Real centre concept***

- **Virtual RWC concept in RA VI**

  - ***-Considering the lack of the required sources (financial and staff)***
  - ***-Sharing the functions and tasks of RWCs by the Members***
  - ***-Considering the sub-regional RWCs based on the geographical or linguistic conditions within the Region***
  - ***-Establishment of networking and efficient cooperation among the Members***
  - ***-More utilizing from EUMETNET activities for proposed RWC functionalities at the WMO level***

WIGOS in RA-VI

Activities/RWCs Proposed functionalities of RWC

Coordination

Overarching coordination and communication with;

- all RWCs in the Region,

-WMO Regional Office,

-relevant RA Working Groups and Task Teams RA,

-WMO Secretariat, WIGOS PO

Communication … and more (Problem Management).

- **Act as Regional information resource for Members regarding WIGOS implementation**
- **Collect and document regional experience with WIGOS implementation and its benefits**
- **Support for education & training in WIGOS implementation, especially concerning**

-Establishment of partnerships

-WIGOS metadata management (OSCAR/Surface)

WIGOS in RA-VI

Activities/RWCs Proposed functionalities of RWC

Technical Support

- **Regional network management (network design and coordination)**
- **Regional data monitoring & data quality management (WDQMS)**
- **Regional metadata management (OSCAR/Surface)**
- **National data management (integration to OSCAR/Surface)**

Linking WIGOS to external entities/ establishing partnerships

- ***Establishing and maintaining links with other related bodies, in particular;***
  - ***Regional Oceanographic Groups***
  - ***Regional Climate Centres***
  - ***Regional Instrument Centres***
  - ***Regional Hydrological Groups***
  - ***Regional Training Centres***

WIGOS in RA-VI

Activities/RWCs **RA VI RWC "in a nutshell" (as a real RWC)**

Coordination (TT-WIGOS Chair)

Communication

-acting as Regional information resource for Members (COMM_1/ TT-WIGOS Chair)

-documenting regional experience on WIGOS implementation (COMM_2/ TT-WIGOS Chair)

-education & training in WIGOS implementation (COMM_3/ TT-WIGOS;ROE)

Technical Support

- to support the regional network management (including redesign of RBON) (TECH_1/EUMETNET; TT-WIGOS)

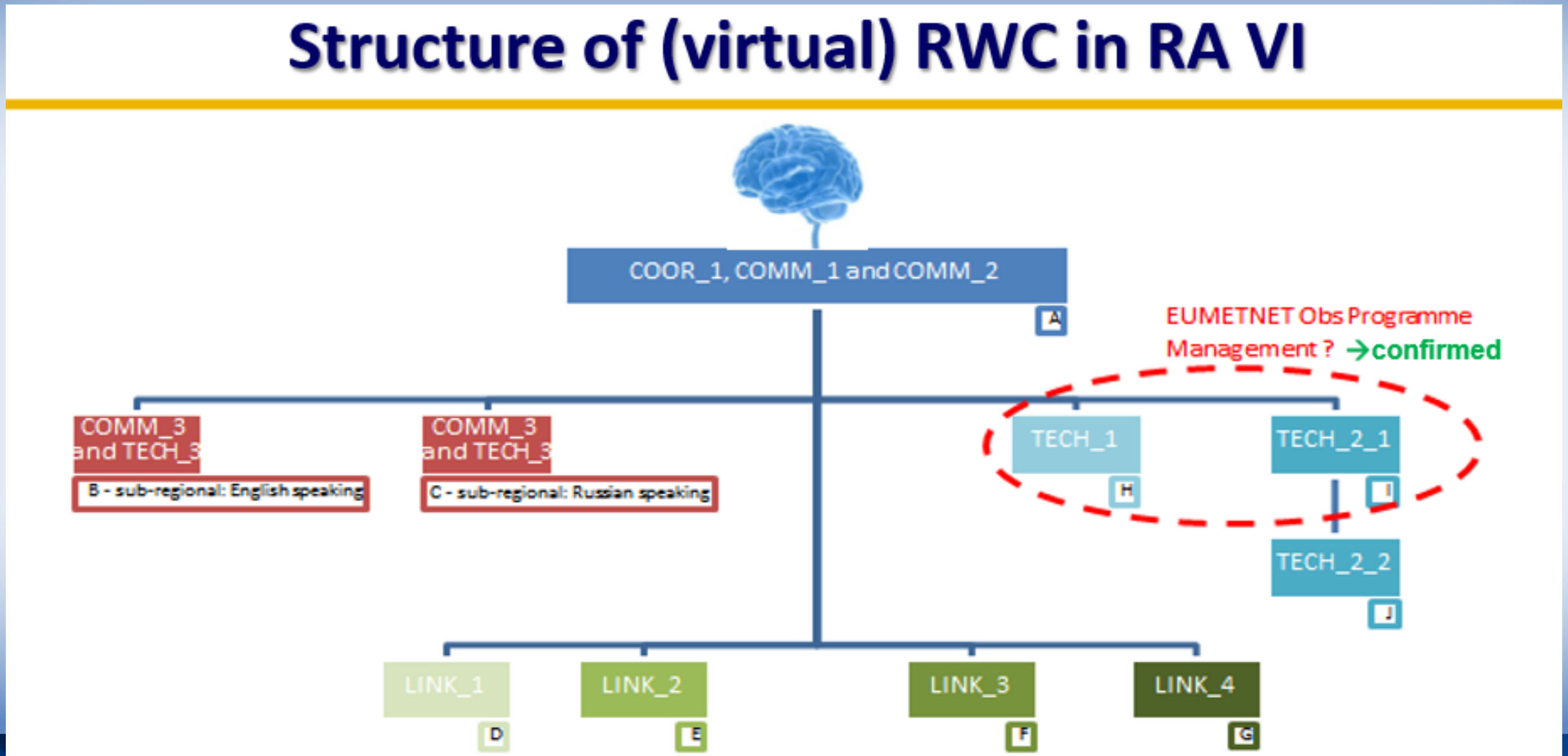
- to extend the list of monitored stations to a subset of the non-EUMETNET RA VI Members (TECH_2_1/EUMETNET)

- to conduct and act on the day to day monitoring (TECH_2_2/TT-WIGOS);

-improving contents of OSCAR/Surface (OSCAR/Surface metadata management) (TECH_3/DWD;TT-WIGOS)

WIGOS in RA-VI

Activities/RWCs



WIGOS in RA-VI

Activities/RWCs

RA VI RWC "in a nutshell" (as a real RWC)

-TSMS, EUMETNET, DWD, UKMO, Bosnia-Herzegovina, Serbia, Lebanon

-Filling "OSCAR/Surface" (data base) with metadata of RA VI

-WIGOS Quality monitoring

-Extent the AMDAR Program to aircrafts of Turkish Airlines

WIGOS in RA-VI

Activities/RWCs

Nutshell Task 1: Filling OSCAR surface data base

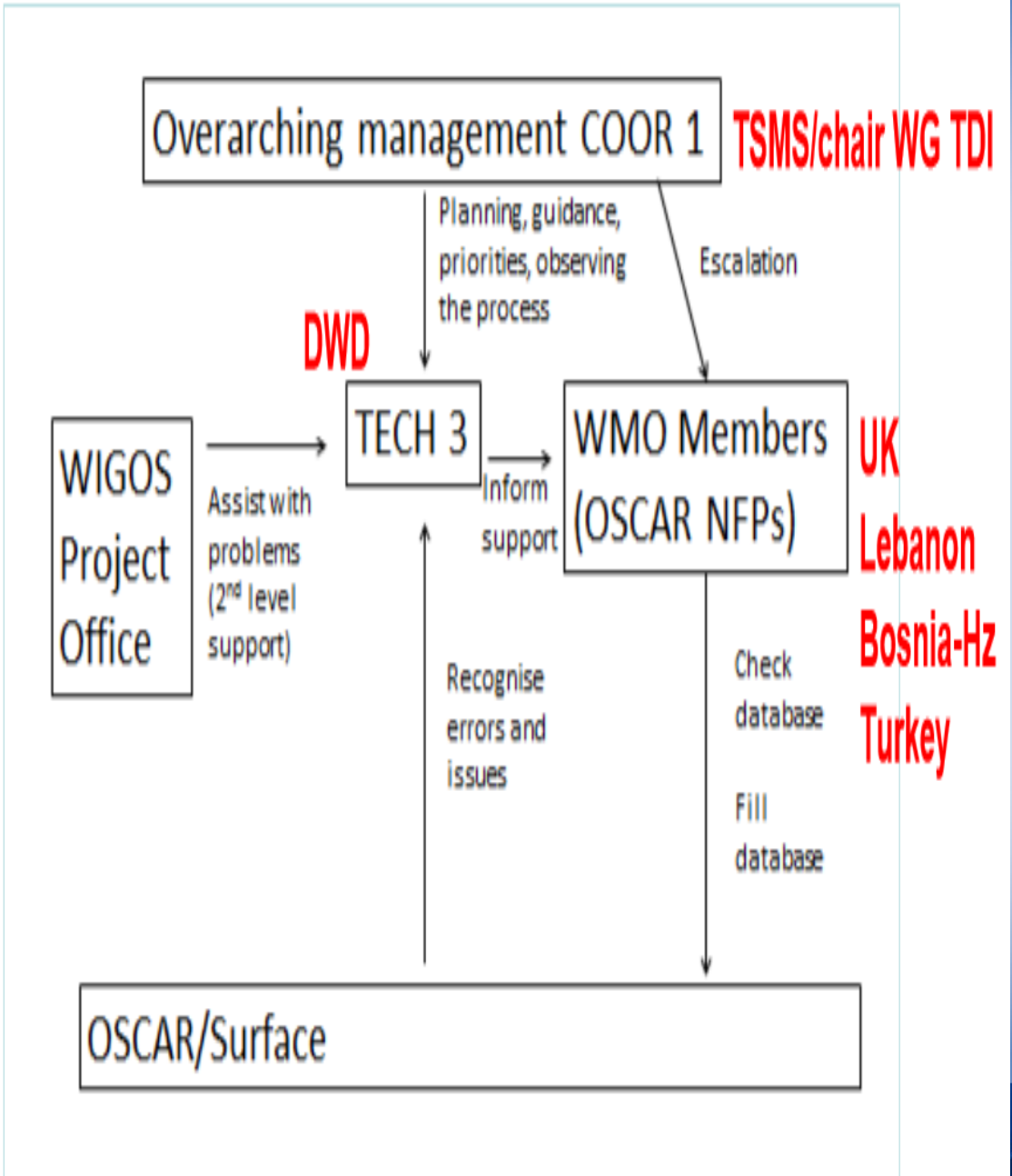
Improvement of OSCAR/Surface stations in RA VI

-Continuous import and comparison with local DWD database (locating significant differences in name/lat/lon/elevation)

-Detecting stations which are not listed in OSCAR but report via GTS (up to 100 at present)

-Using WMO forum to communicate results and offer assistance Volunteers: Bosnia and Herzegovina, Turkey and Lebanon

-Informing local NFP in case of differences



WIGOS in RA-VI

Activities/RWCs

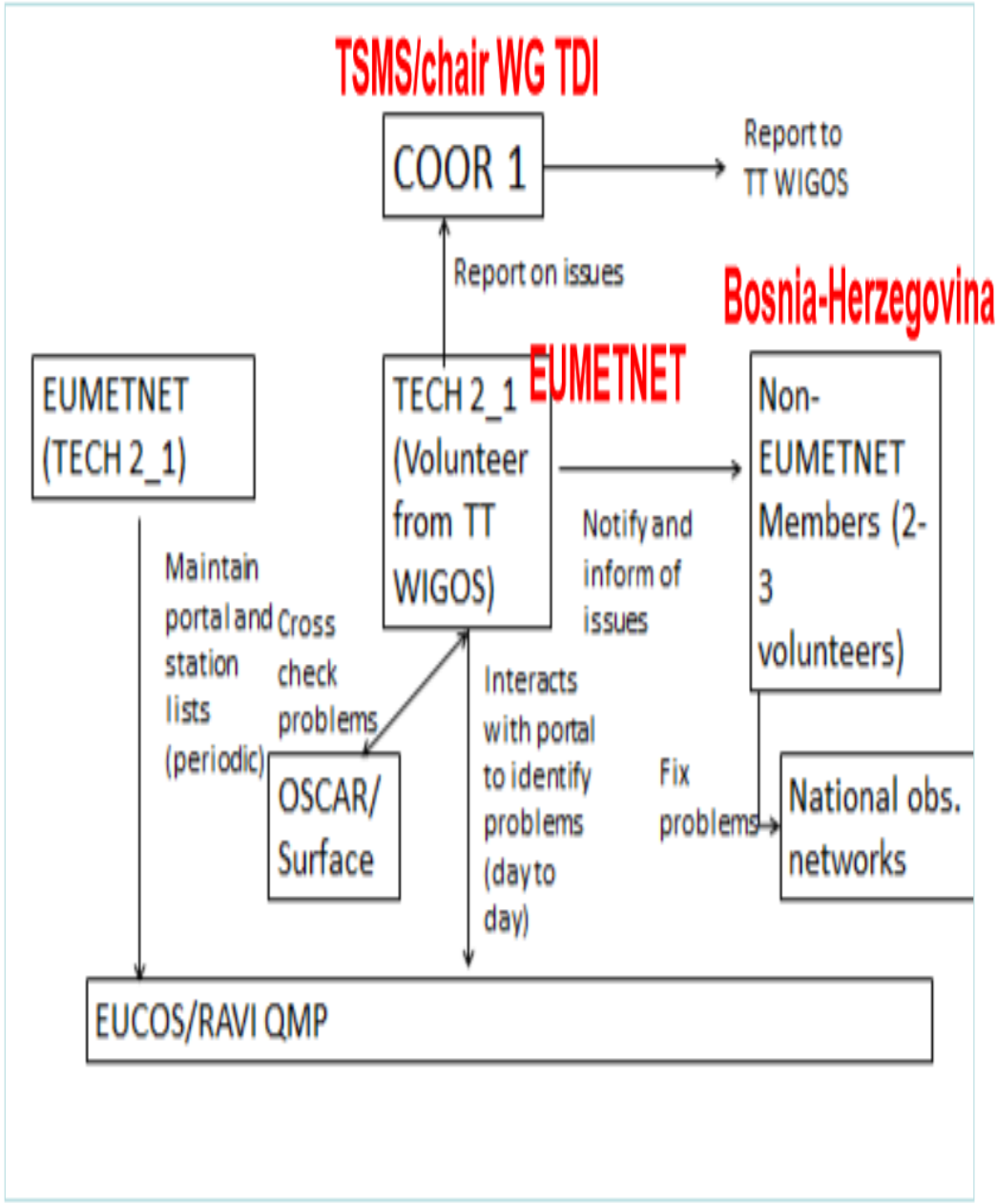
Nutshell Task 2: WIGOS Data Quality Monitoring

Improvement of WIGOS Data Quality

- EUMETNET Obs Programme runs operationally the RA VI QM portal, displaying information on SYNOP and radiosonde data

-EUMETNET Obs Programme Management Team provided training to staff member (Kemal S.) of Federal Hydrometeorological Institute of Bosnia and Herzegovina in December 2016

-FHI BH staff member carried out the monitoring tasks - Countries monitored: Bulgaria, Bosnia and Herzegovina, Serbia, Turkey - Focus on availability ('silent stations'), timeliness and SYNOP stations with permanently high sea level pressure RMS errors



WIGOS in RA-VI

Activities/RWCs

Next steps foreseen …are too ambitious

- ***"RWC in a nutshell" will operate until next RA VI session***
- ***Progress report will be prepared and submitted***
- ***Draft document for discussion in RA-VI session will be prepared***
- ***Depending on the decision of RA-VI session a RWC designation process for RWC in RA VI should be prepared***

WIGOS in RA-VI

Activities/RBON

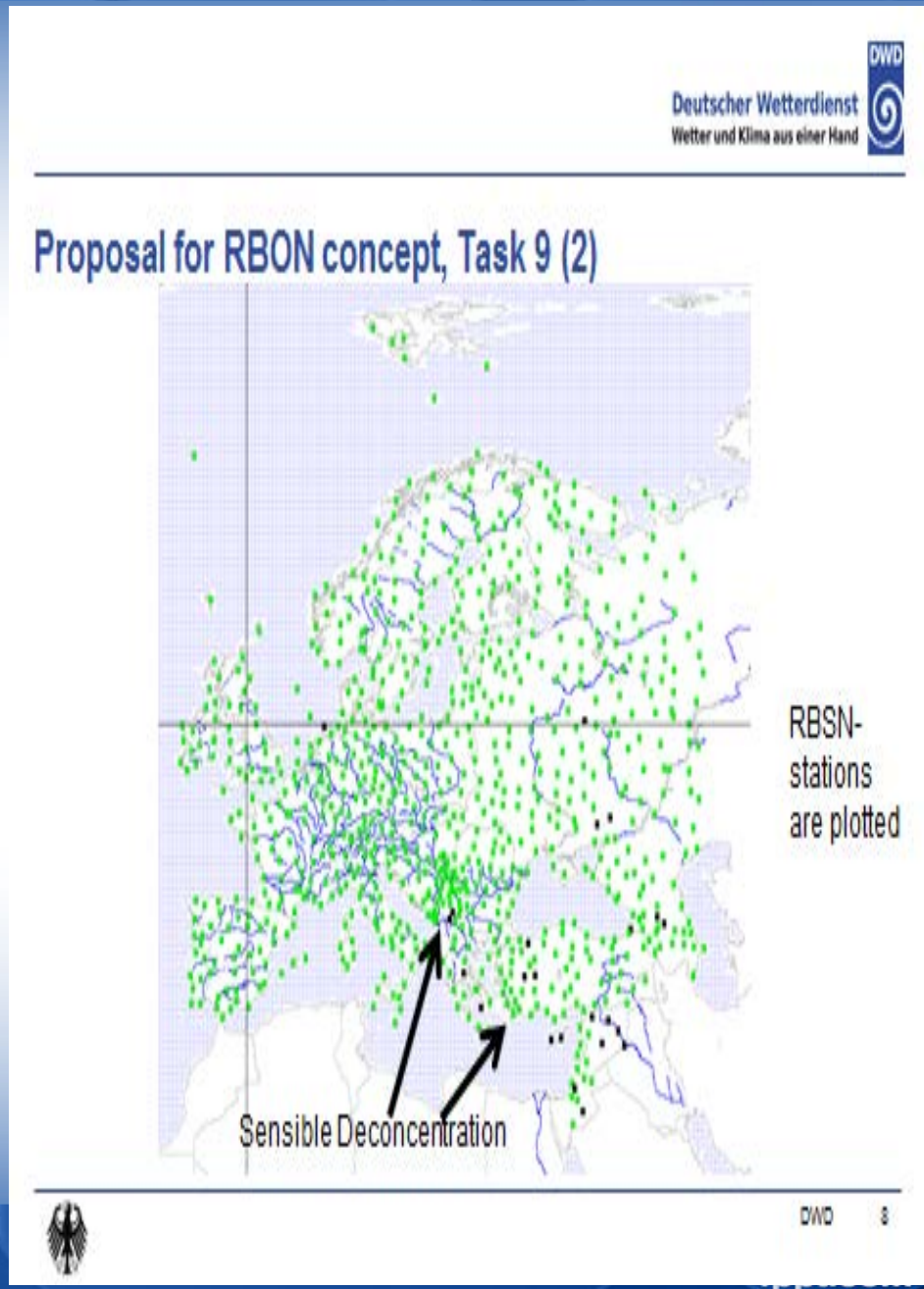
- **Preparation of a proposal for RBON concept**

-In line with the RBON concept document prepared by WMO Secretariat

-Combined network of RBSN and RBCN

-Institutional meteorological network in RA VI

- ***Homogeneous distribution of the observation stations in a country***
- ***Standardized measurement technique***
- ***If possible RBON-stations with CIMO classification number 1 till 3***
- ***Transmission of high frequency observation data***
- ***Future: 10 minutes transmission in BUFR***



WIGOS in RA-VI

Activities/ Radar Networking

- **Preparation of a proposal for the establishment of sub-regional radar networks to exchange radar data**

Proposal for 2 sub-regional radar networks was prepared

-Integrate the existing sub-regional networks with the new ones to cover whole Region in line with the Regional WIGOS Implementation Plan

-Contribution towards the development of platforms, software and data formats for radar data exchange

-Exchange the weather radar data for generating and distributing the composite products

-Improving radar data quality for more accurate and reliable products

WIGOS in RA-VI

Activities/ Radar Networking

- **Preparation of a proposal for the establishment of sub-regional radar networks to exchange radar data**

-Improve the cooperation among the Members

-Assist the Members to get benefit from the capacities and experiences of each other on weather radar operations

-Provide contribution for the proper and cost effective operation of the weather radars

-Providing high-quality weather radar products for the users

-Guidance for the Members for overcoming the problems regarding weather radar operations (e.g. wind turbines, radio frequency protection, etc.)

WORLD METEOROLOGICAL ORGANIZATION

WIGOS in RA-VI

Activities/Radar Networking

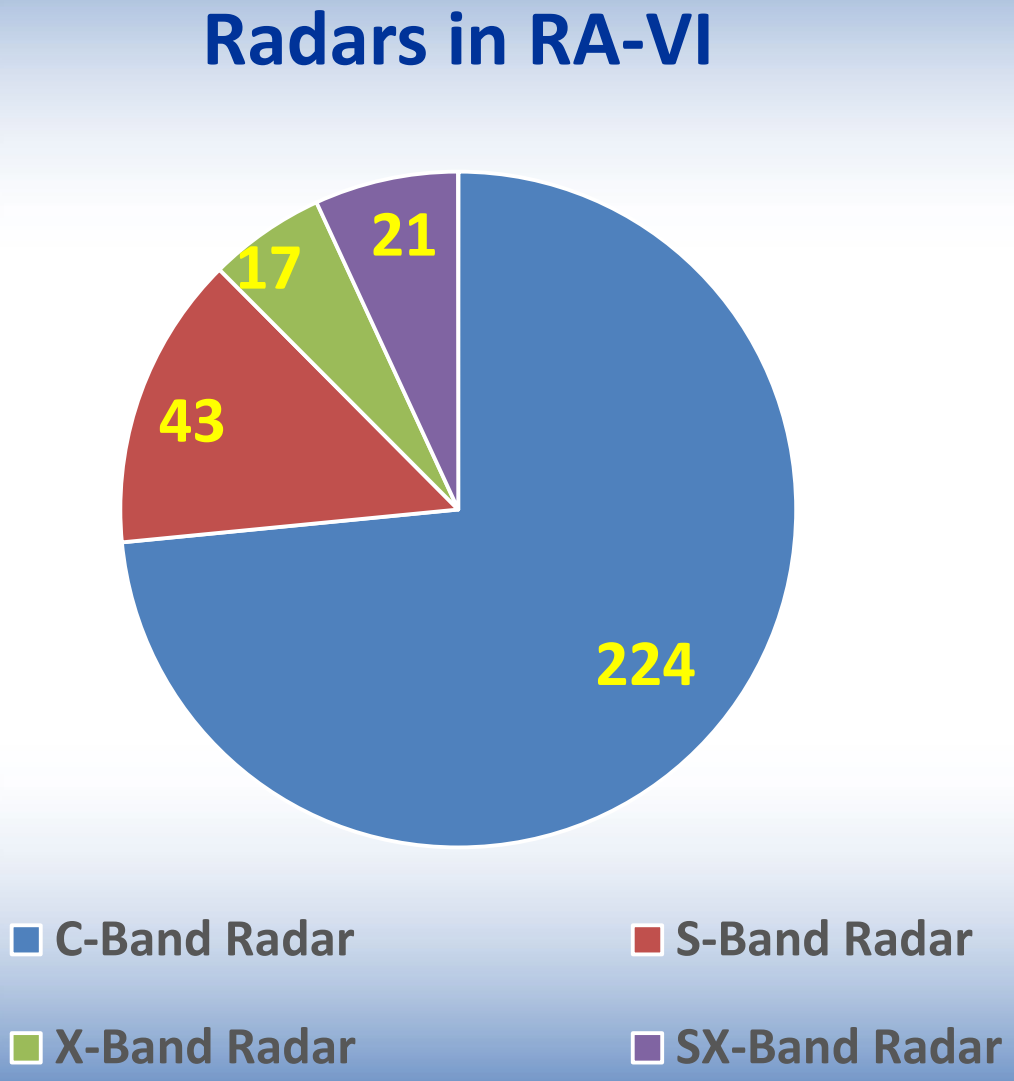
Existing Radars in RA-VI

Albania	Czech Republic	Ireland	Monaco	Slovakia
Armenia	Denmark	Israel	Montenegro	Slovenia
Austria	Estonia	Italy	Netherlands	Spain
Azerbaijan	Finland	Jordan	Norway	Sweden
Belarus	France	Kazakhstan	Poland	Switzerland
Belgium	Georgia	Latvia	Portugal	Syrian Arab Republic
Bosnia and Herzegovina	Germany	Lebanon	Republic of Moldova	The Former Yugoslav Republic of Macedonia
Bulgaria	Greece	Lithuania	Romania	Turkey
Croatia	Hungary	Luxembourg	Russian Federation	Ukraine
Cyprus	Iceland	Malta	Serbia	United Kingdom of Great Britain and Northern Ireland

No Radar | WRD | Opera&WRD | Opera_w/o WRD | Radar w/o WRD and Opera

WIGOS in RA-VI

Activities/Radar Networking



42 out of 50 members in RA-VI operating weather radars

40 members registered in WRD

Lithuania and Malta operating radars but not registered in WRD

Total number of radars registered in WRD by RA-VI members are 317

- **Active radars: 305**
- **Removed radars: 8**
- **Passive radars: 2**
- **Planned radars: 2**

WIGOS in RA-VI

Activities/Radar Networking

Regional Radar Networks in RA-VI

- OPERA
- BALTRAD
- NORDRAD

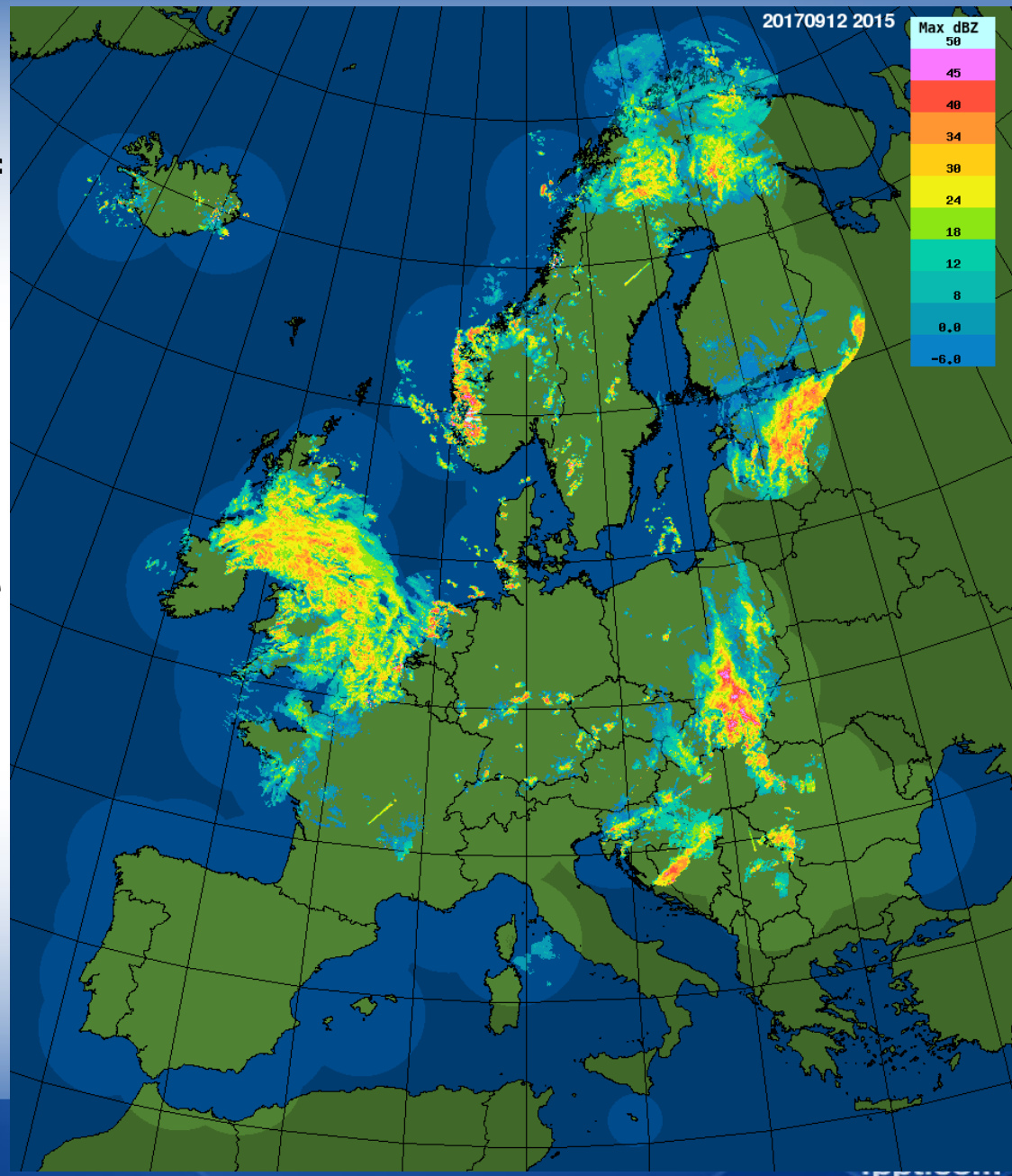
WORLD METEOROLOGICAL ORGANIZATION

WIGOS in RA-VI

Activities/Radar Networking

Operational Programme for the Exchange of Weather Radar Information (OPERA) /(224 Radars)

- **EUMETNET members or co-operating institutes**
- **Not all of them are included in the international data exchange**
- **177 are C-band, 31 S-band, 16 X-band.**
- **16 radars as non-Doppler**
- **122 radars with dual polarization capability**



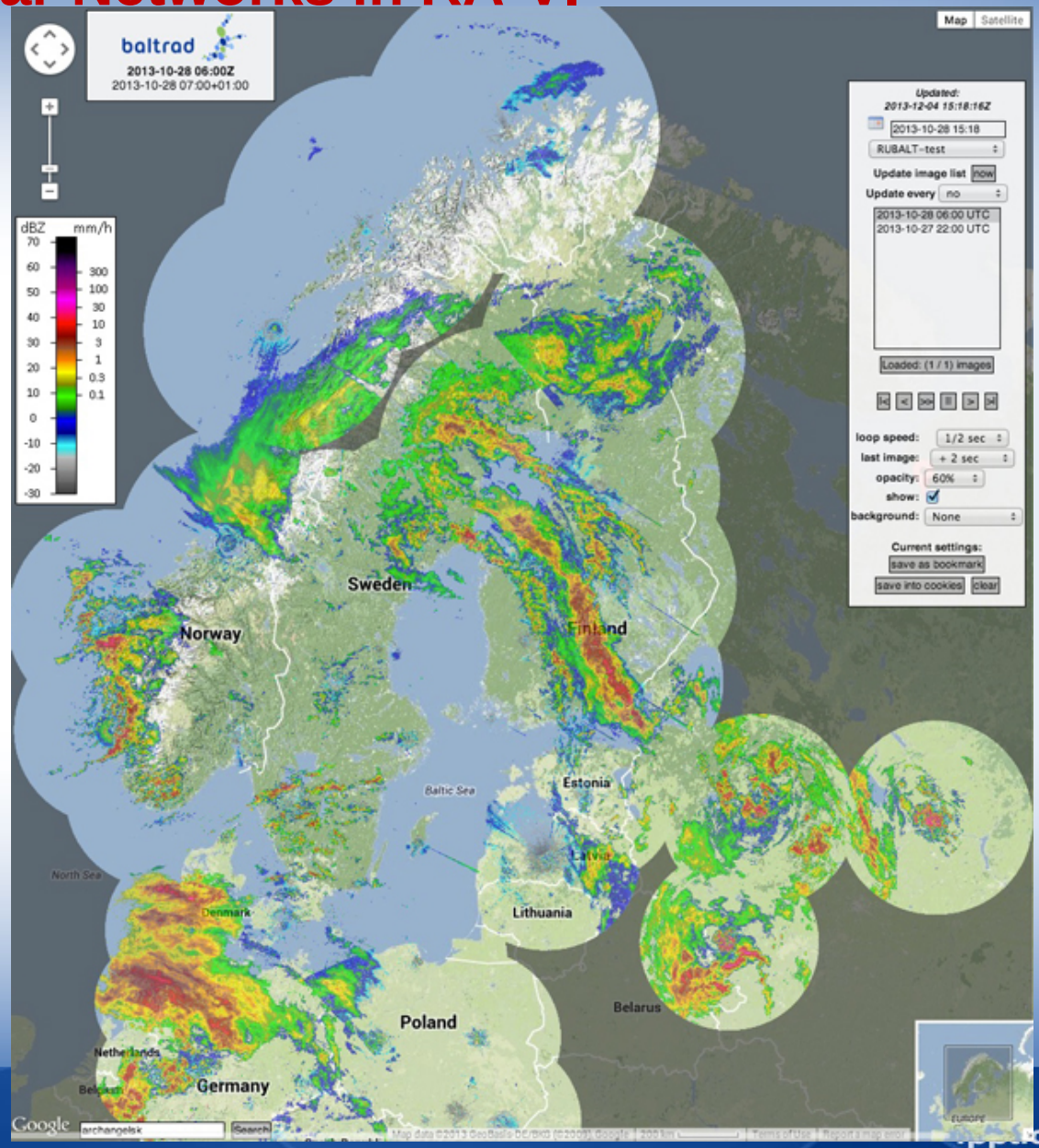
WIGOS in RA-VI

Activities/ Radar Networking Regional Radar Networks in RA-VI

- **Baltic Sea Radar Network (BALTRAD)**

(116 Radars)

- Sweden (12)
- Finland (12)
- Poland (8)
- Latvia (1)
- Denmark (4)
- Belarus (3)
- Estonia (2)
- Germany (17)
- Lithuania (1)
- Russia (47)
- Ukraine (9)



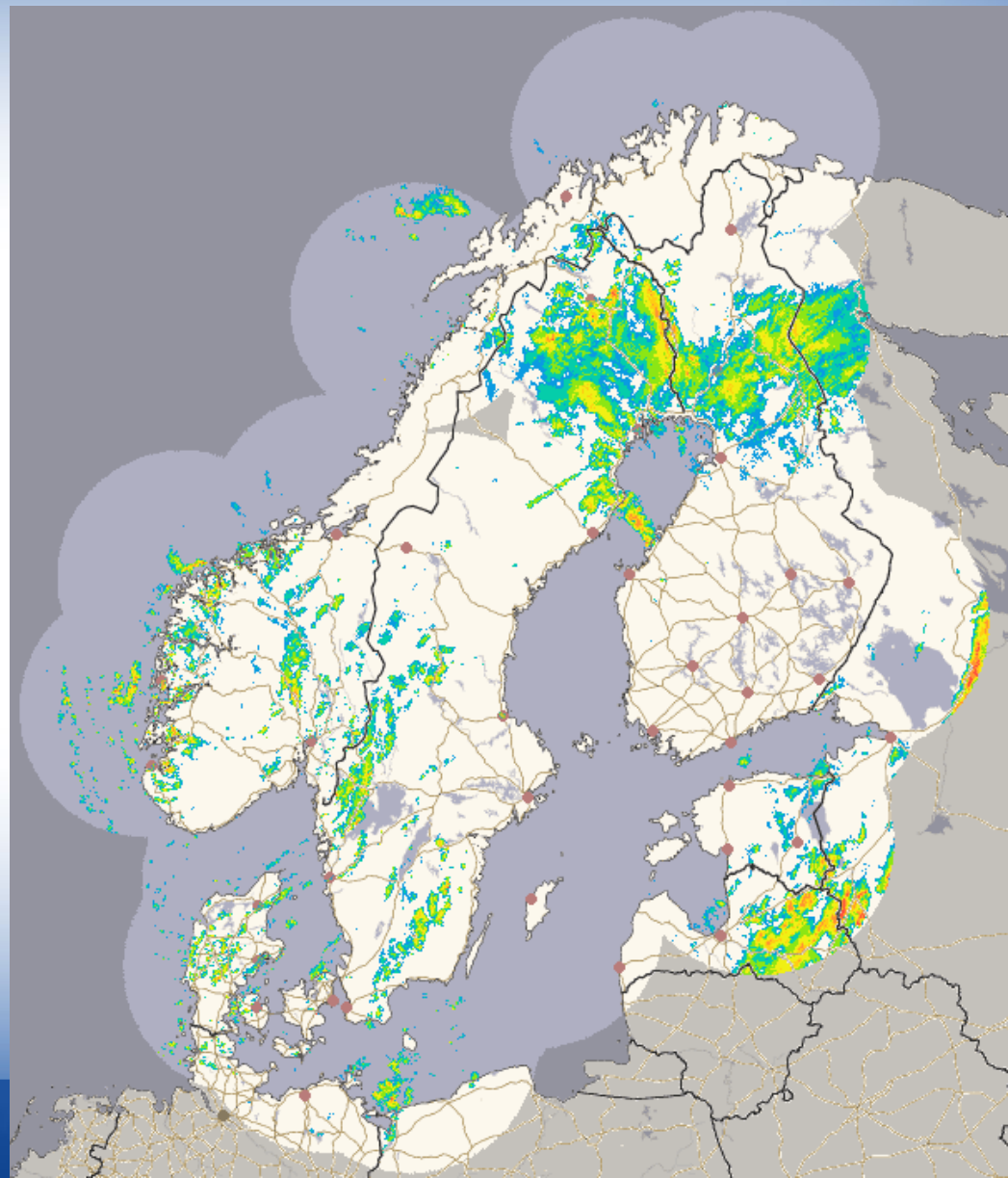
WIGOS in RA-VI

Activities/ Radar Networking

Regional Radar Networks in RA-VI

- **Nordic Weather Radar Network (NORDRAD)**
  (42 Radars)

- **Finland (12)**
- **Norway (11)**
- **Sweden (12)**
- **Denmark (4)**
- **Estonia (2)**
- **Latvia (1)**

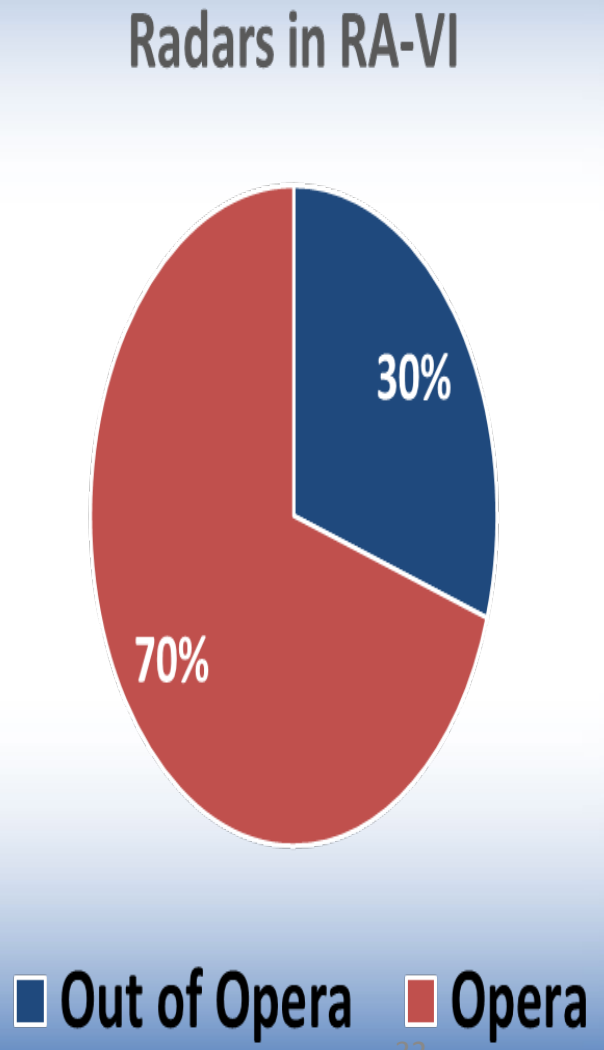


WIGOS in RA-VI

Activities/ Radar Networking Regional Radar Networks in RA-VI

- **The number of weather radars operated by the members out of OPERA is minimum 89 for today, as 30% of weather radars in Region VI.**

- **Furthermore, there are still ongoing projects for enhancing the radar networks in some of those countries such as Turkey and Russian Federation.**



WORLD METEOROLOGICAL ORGANIZATION

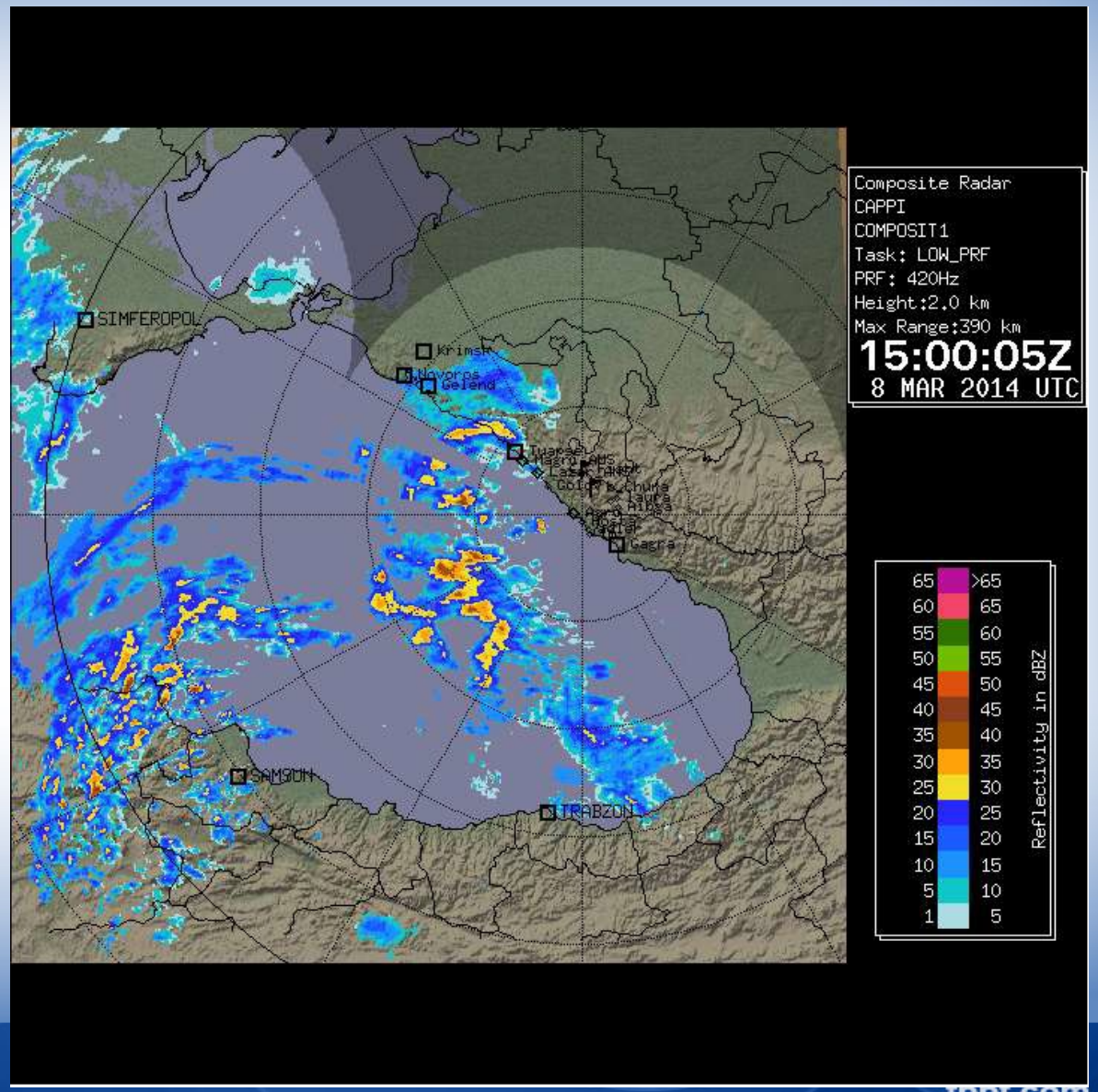
WIGOS in RA-VI

Activities/ Radar Networking

Cooperation Initiatives in RA-VI

- **Turkey shared the radar data of the radars in Black Sea Region with Russian Federation during Sochi Olympic Games.**

- **Russian Federation generated composite products very successfully by using the data provided by Turkey and Ukraine.**



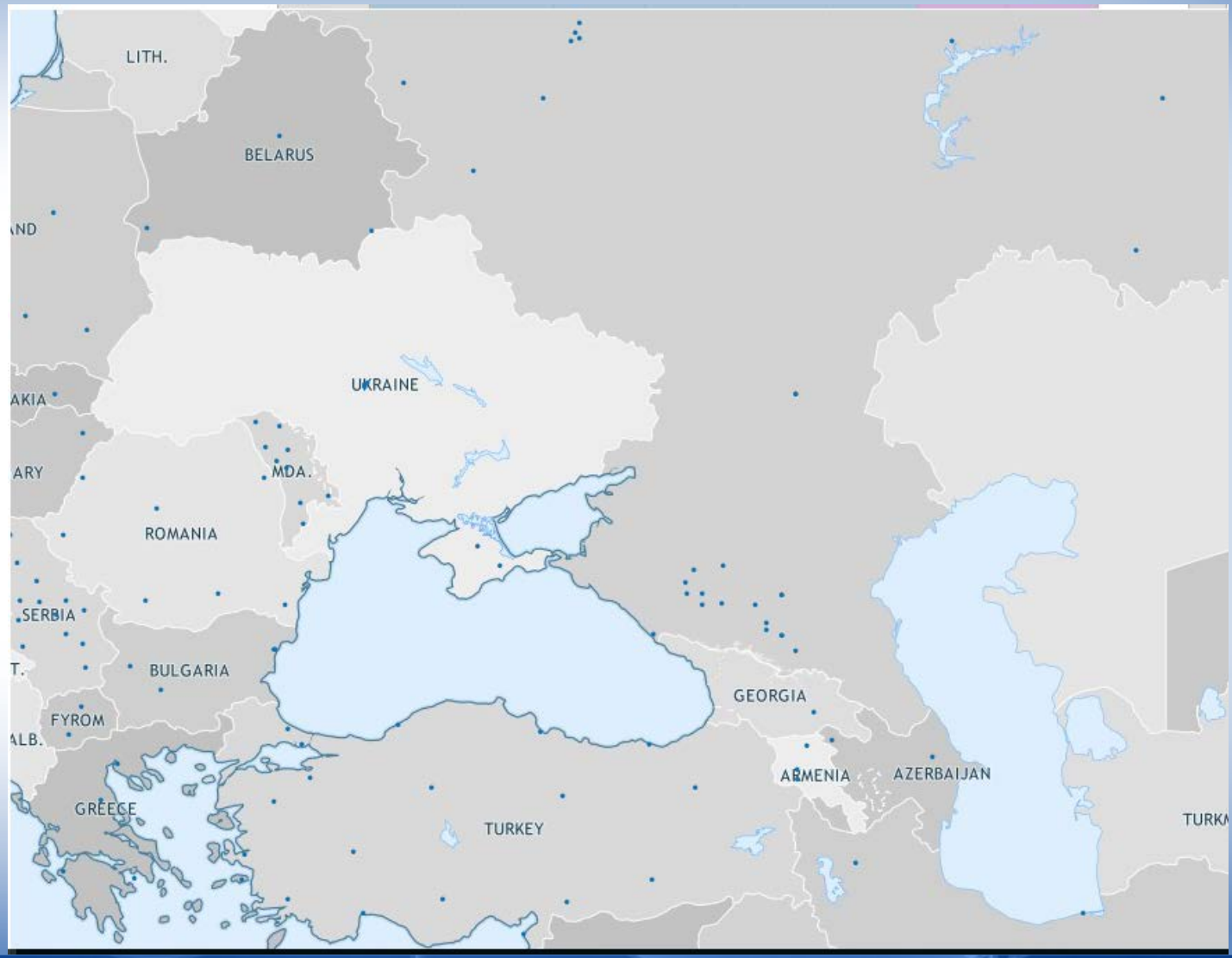
WORLD METEOROLOGICAL ORGANIZATION

WIGOS in RA-VI

Activities/ Radar Networking

Potential Members for Black Sea Radar Network (BLACKRAD)

- Armenia,
- Azerbaijan,
- Belarus,
- Bulgaria,
- Georgia,
- Kazakhstan,
- Lithuania,
- Republic of Moldova,
- Romania
- Russian Federation,
- The Former Yugoslav Republic of Macedonia,
- Turkey,
- Ukraine.

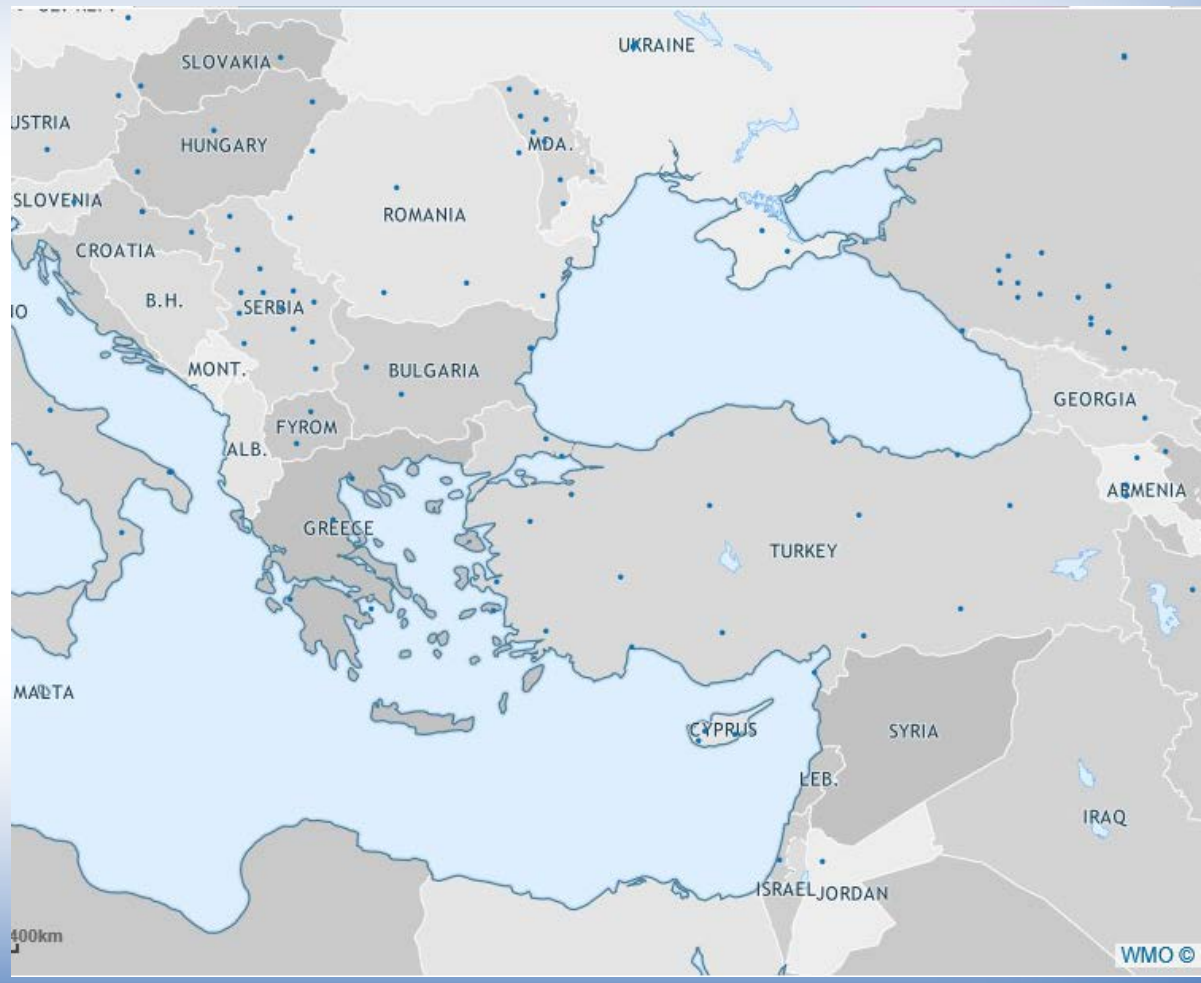


WIGOS in RA-VI

Activities/ Radar Networking

Potential Members for South East Europe Radar Network (SEERAD)

- Albania,
- Bosnia and Herzegovina,
- Bulgaria,
- Croatia,
- Cyprus,
- Greece,
- Israel,
- Jordan,
- Lebanon,
- Montenegro,
- Romania,
- Serbia,
- Slovenia,
- Syrian Arab Republic,
- The Former Yugoslav Republic of Macedonia,
- Turkey.



WIGOS in RA-VI

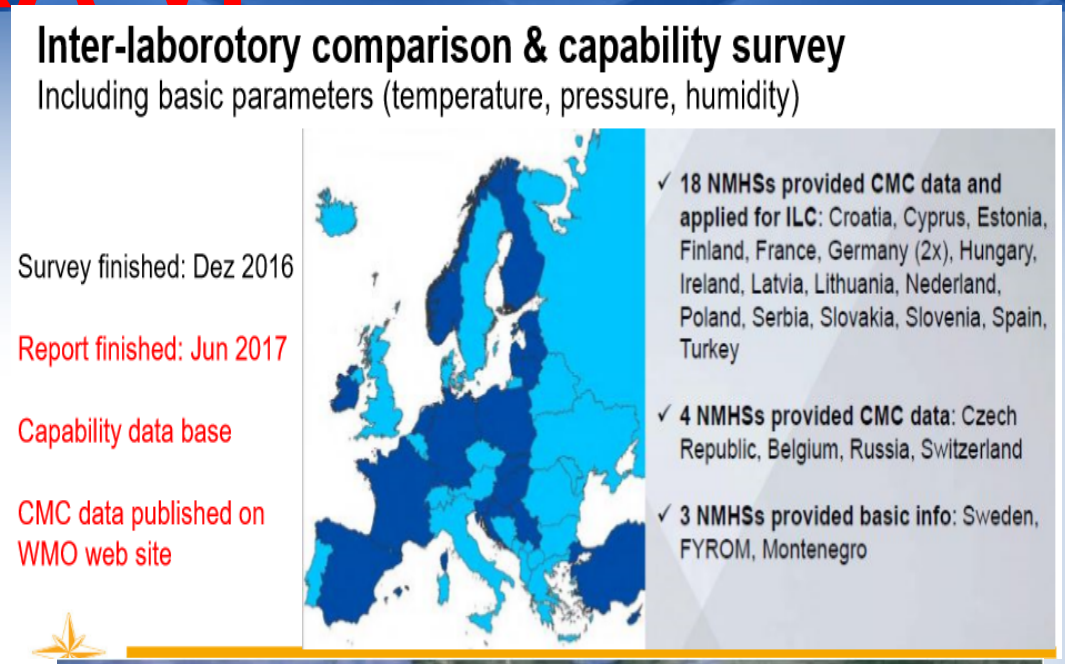
Activities/RICs

- **Assisting Members to utilize from the capabilities of RICs**

-The results of the survey applied by TT-RIC will be evaluated by TT-WIGOS for recommendations Members

-ILC was implemented successfully by participation of 18 Members

-Nomination of 3 new RICs, Ankara, Hamburg, München



WORLD METEOROLOGICAL ORGANIZATION

CONCLUSION

Members (via NMHSs) are expected;

- to develop and implement their National WIGOS Implementation Plan (N-WIP)
- to assest, evolve, redesign and operate observing systems
- to adopt a composite network approach to their observing networks
- to protect the observing sites/observation operations
- to improve the cooperation with third parties (national and/or international level)
- to follow the related regulatory and guidance material for their implementation and operations
- to support and utilize to/from WIGOS information resources (e.g. OSCAR, WRD)

WORLD METEOROLOGICAL ORGANIZATION

WIGOS in RA-VI

THANK YOU FOR YOUR ATTENTION