World Meteorological Organisation

Use of Radio Spectrum for Meteorology:
Weather, Water and Climate Monitoring and Prediction

Jean-Michel Rainer

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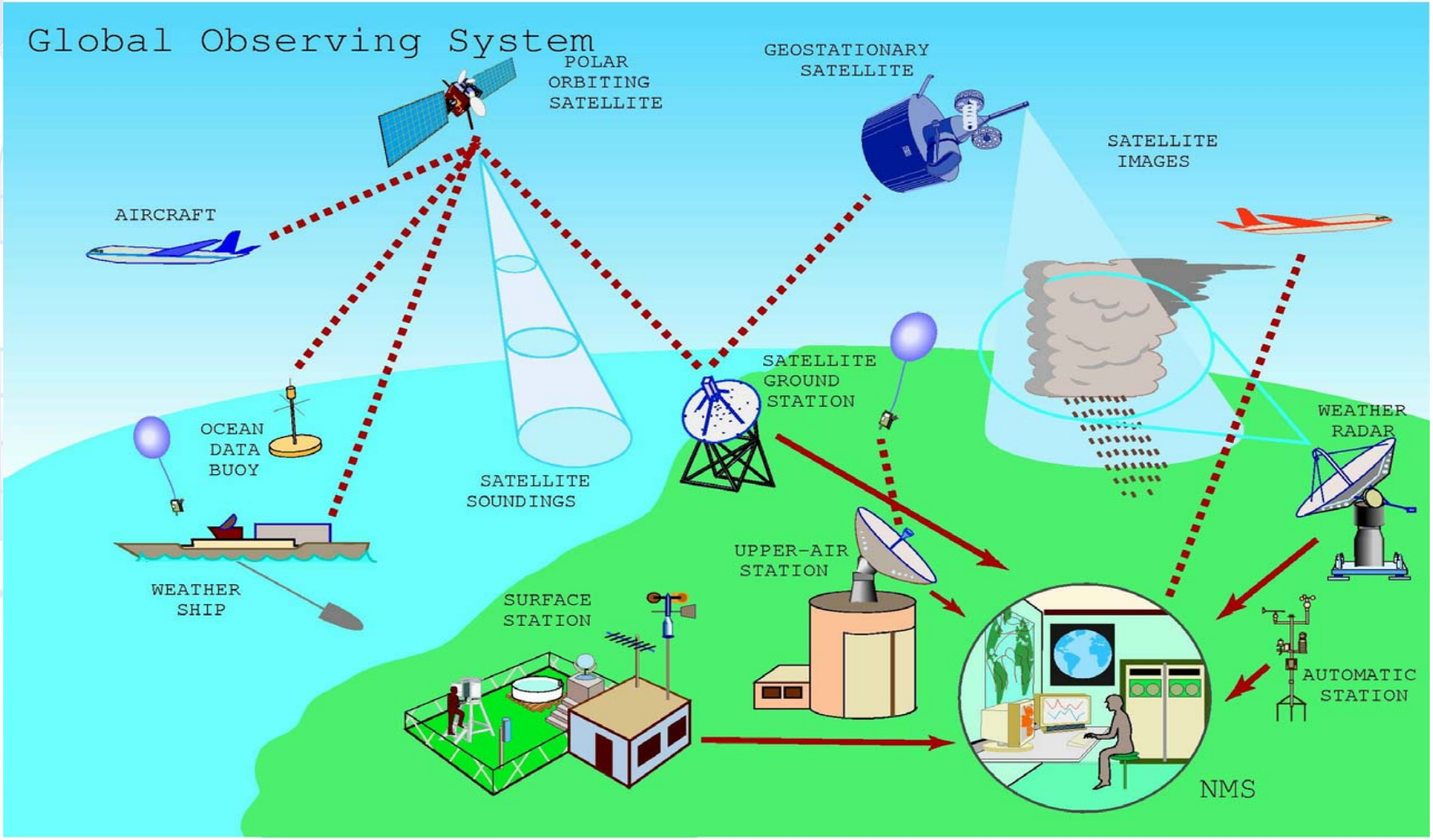
Importance of radiocommunications for meteorological operation and research



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Radiocommunication Services used for meteorology

- Specific radiocommunication services:
  - Meteorological Aids Service
  - Meteorological-Satellite Service
  - Earth Exploration-Satellite Service (passive)
  - Earth Exploration-Satellite Service (active)

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Radiocommunication Services for meteorology

- As special systems of generic radiocommunication services:
  - Meteorological weather radars and Wind-profiler radars of the Radiolocation Service

- As users of Radiocommunication Services:
  - Fixed Service, Mobile Service, etc.

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XV World Meteorological Congress

By Resolution 4:

- Re-affirmed the importance of information provided by the Earth exploration systems and the crucial importance of RF bands for operation of surface-based and space-based observing systems
- Stressed that some RF bands are a unique natural resource for passive sensing that deserve absolute protection
- Urged all Members to do their utmost at national, regional and international levels to ensure the availability and protection of suitable RF bands
- Appealed ITU and its Administrations to ensure the absolute protection of the passive sensing RF bands, and to give due consideration to the WMO requirements for RF allocations and regulatory provisions

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Commission for Basic Systems

- CBS has been actively involved in radio frequency matters since early 90s, with the increasing pressure on frequency bands for meteorological activities
- CBS decided in 1994 to establish a group on Radio Frequency Coordination to review, coordinate and support all frequency matters pertaining to meteorological activities
- CBS XIV (March 2009) re-established the Steering Group on Radio Frequency Coordination

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CBS/Steering Group on Radio Frequency Coordination

a) Keep under review allocations of radio-frequency bands and assignments of radio-frequencies to meteorological activities for operational requirements (telecommunications, instruments, sensors, etc.) and research purposes, in coordination with other technical commissions, especially CIMO and the CBS/IOS-OPAG;

b) Co-ordinate with WMO Members, with the assistance of the WMO Secretariat, to:

- ensure the proper notification and assignment of frequencies used for meteorological purpose;
- determine their future use of the radio spectrum for meteorological purpose.

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CBS/Steering Group on Radio Frequency Coordination

c)Keep abreast of the activities of the Radio communication Sector of the International Telecommunication Union (ITU-R), and in particular of the Radio communication Study Groups, on frequency matters pertaining to meteorological activities, and assist the WMO Secretariat in its participation in ITU-R work;

d)Prepare and co-ordinate proposals and advice to WMO Members on radio-regulation matters pertaining to meteorological activities with a view to ITU Radio communication Study Groups, Radio communication Assembly, World Radio communication Conferences and related regional/global preparatory meetings;

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CBS/Steering Group on Radio Frequency Coordination

e)Facilitate the coordination between WMO Members for the use of frequency bands allocated to meteorological activities with respect to:

- Coordination of frequency use/assignments between countries;
- Coordination of frequency use/assignments between various radio communication services (e.g. meteorological aids and DCPs) sharing the same band.

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CBS/Steering Group on Radio Frequency Coordination

f) Facilitate the coordination of WMO with other international organizations which address radio-spectrum planning, including specialized organizations (e.g. CGMS, SFCG) and regional telecommunication organizations (e.g. CEPT, CITEL, APT);

g) Assist WMO Members, upon request, in the ITU coordination procedure of frequency assignment for radio communication systems sharing a frequency band with meteorological radio communication systems.

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Use of radio spectrum

ITU Radio Regulations (Frequency bands allocations, procedures, .)
+ ITU-R Recommendations

National Radio Regulations:
National Table of Frequency allocations
procedures and technical/operational regulations

Users & operators, including NMHSs

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Use of radio spectrum
Role of NMHSs

- Inform and coordinate with their respective national Radiocommunication authority to:
  - ensure that ITU-R regulations & recommendations related to meteorological activities are adequately reflected in national regulations in order to
    - meet national meteorological requirements
    - ensure proper operation & planning of international meteorological systems
  - obtain frequency assignments needed for operation
  - notify and register ALL systems operating in radiocommunications services for meteorology, in particular MetSat, MetAids, Met Radars

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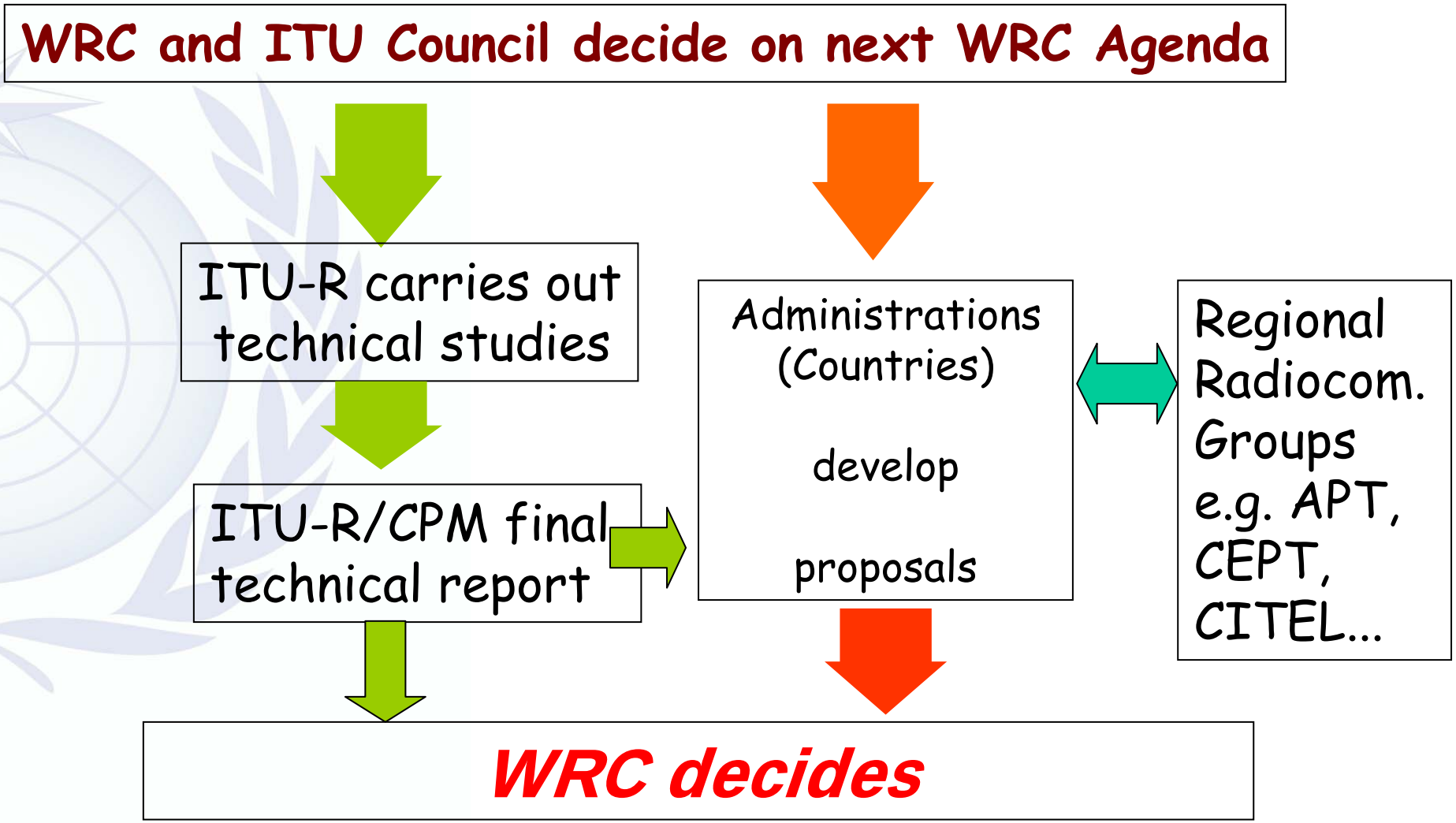
Changes to radio spectrum regulations



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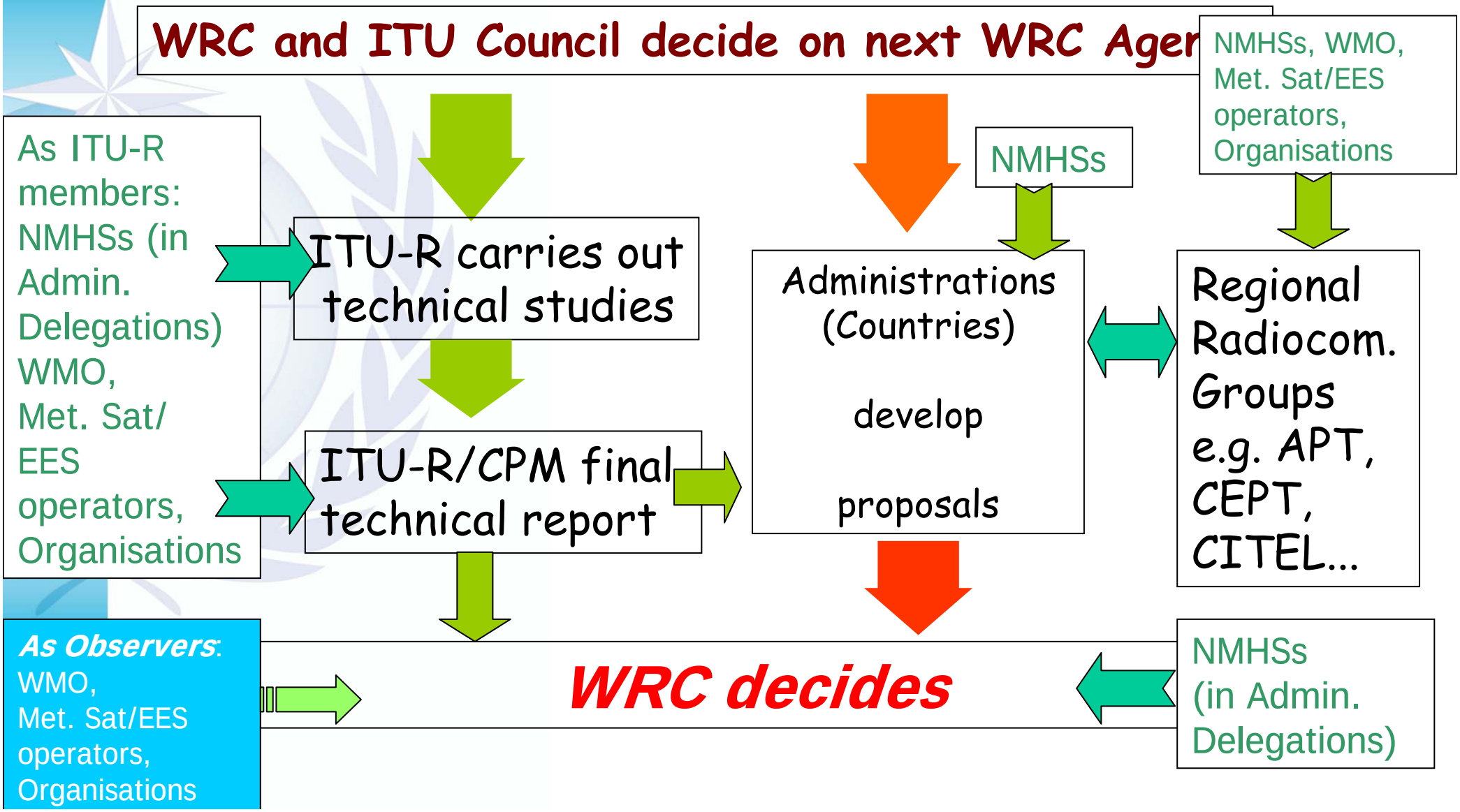
Changes to radio spectrum regulations

Involvement of NMHSs, WMO, Met. Sat/EES operators



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Through the SG-RFC activities, WMO assists and advises its Members by:

- Contributing to the development of relevant ITU-R Recommendations by its participation in ITU-R work (Study Groups, Working Parties, CPM)
- Developing the WMO position on WRC agenda items of interest or concern for meteorological, Earth observation and related activities
- Developing and maintaining, jointly with ITU-R, the ITU-WMO Handbook "*Use of Radio Spectrum for Meteorology: Weather, Water and Climate Monitoring and Prediction*"

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Handbook

- The Handbook provides comprehensive technical and operational information on
  - current observation applications and systems
  - the use of radio frequencies by meteorological and related systems, including meteorological satellites, radiosondes, weather radars, wind profiler radars and spaceborne remote sensing.

- It is intended for the **meteorological** (i.e. weather, water and climate) and **radiocommunication** communities, including governmental institutions, industry as well as the general public

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Handbook

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http://www.itu.int/publ/R-HDB-45/en

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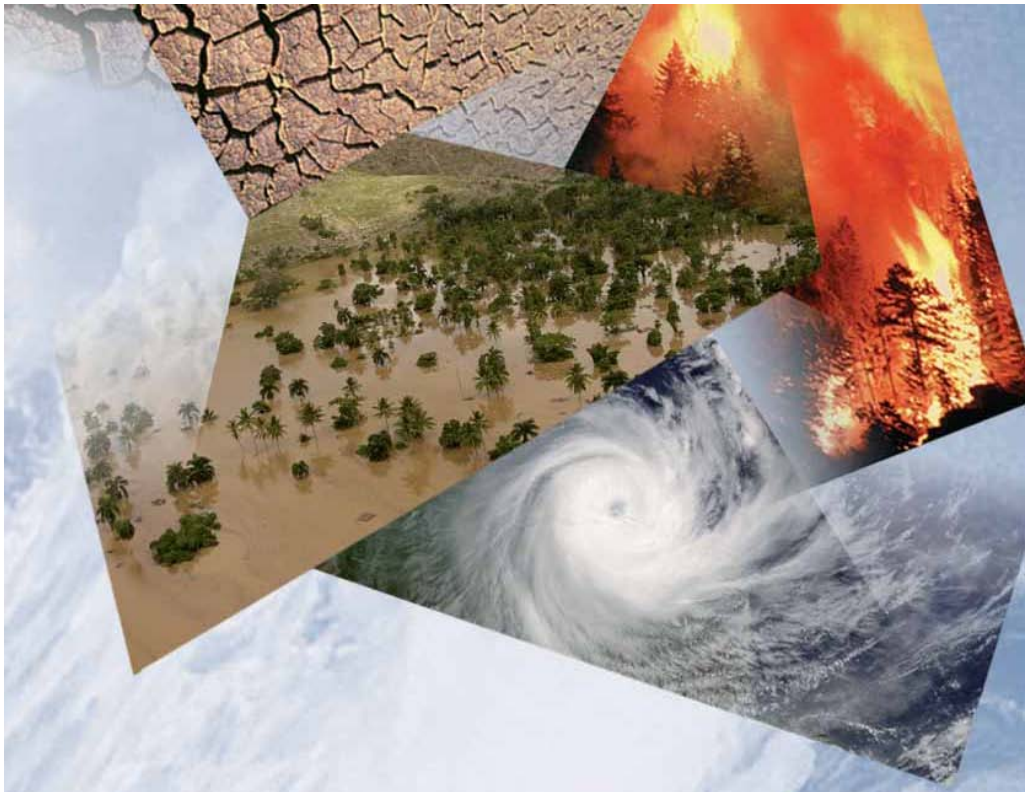

Handbook

Use of Radio Spectrum for Meteorology: Weather, Water and Climate Monitoring and Prediction

Edition 2008

Radiocommunication Bureau

World Meteorological Organization

International Telecommunication Union