

International Telecommunication Union (ITU)

Radio Spectrum for Earth Observation and Sustainable Development

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Veronique Glaude

veronique.glaude@itu.int

Space Radio Regulations Senior Engineer
ITU Representative to COPUOS
ITU Radiocommunication Bureau




United Nations
Global
Service Centre




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Office for Outer Space Affairs

Earth Observation
↓ uses data from satellite

↑ **Satellites** needs telemetry from Earth



Radiocommunication systems
are fundamental to Earth Observation Applications



ITU and its diverse global membership:

- **ensure availability of radio frequency bands** that are free from harmful interference for the effective operation of all Earth-observation systems,
- **encourage greater coordination** between national meteorological and hydrological services, disaster management authorities, and development agencies.

Who is ITU?



The International Telecommunication Union is the United Nations forum for ICTs

Our members

193

MEMBER
STATES



+800

INDUSTRY &
INTERNATIONAL
ORGANIZATIONS



+100

ACADEMIA
MEMBERS





Doreen Bogdan-Martin
ITU Secretary-General



Tomas Lamanauskas
ITU Deputy Secretary-General



Mario Maniewicz
Director of the ITU Radiocommunication Bureau



Seizo Onoe
Director of the ITU Telecommunication Standardization Bureau



Cosmas Zavazava
Director of the ITU Telecommunication Development Bureau

WRC-23



AI for Good - space

EW4all

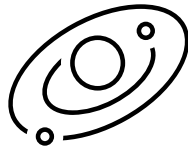
ITU leads Warning dissemination and communication

Which treaties at ITU?



ITU Constitution (Art.44) Radio Regulations

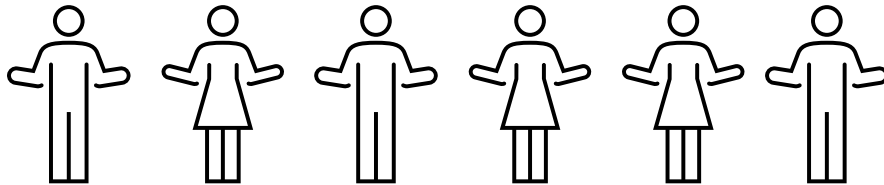
Radio frequencies & satellite orbits are limited natural resources



Rational
Use

Efficient
Use

Economical
Use



Equitable Access

RADIO REGULATIONS

- Evolutive Treaty
- It is a combination of **technical and regulatory** mechanisms to coordinate satellite projects
- Recording the satellite networks in the Master International Frequency Register (MIFR) provides international recognition of **operation free of signal interference**



How does ITU enable Earth Observation?



Radio Regulations

Articles

Edition of 2020

1

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4

40+ Treaty Conferences since 1906

Resources: the spectrum is regulated from 8.3kHz to 3'000GHz in the Table of Frequency Allocation from the associated orbits Geostationary and Non-geostationary

For 40+ radio services: terrestrial, maritime, space and Radio Astronomy



“All emissions are prohibited”

---*Radio Regulations Table of frequency allocation*

In the more critical passive sensing frequency bands, in principle the deployment and operation of sensors is enabled with the highest reliability.

- **Art.1.51 Earth exploration-satellite service (EESS)**
- **Art.1.52 meteorological-satellite service (Metsat)**
- **Telemetry, telecommand and control on up link**

Work of Study Group 7 dedicated to Sciences Services

New allocation for Earth Observation = new protection needed

Agenda item 1.12: **Radar sounders around 45 MHz**

Detection of water tables below ground and assessment of ice thickness in polar regions.

→ISSUE: protection of incumbent radiocommunication services is studied while a radar sounder is operating.

Agenda item 1.14: **Adjustments to EESS (passive) allocations in the 231.5-252 GHz frequency band**

Ice clouds, covering +33% of Earth, affect the climate and hydrological cycle.

→ISSUE: Global measurements are urgently needed of ice cloud properties.



20 November to 15 December 2023

Next evolution of the Radio Regulations?



20 November to 15 December 2023

Key issues to be discussed include:

- *Increasing the use of inter-satellite links for downloading Earth-observation data in quasi-real time.*
- *Facilitating the use of space research and Earth exploration-satellite services for climate monitoring, weather prediction and other scientific missions.*



ITU and WMO

A long-standing partnership as weather and climate prediction needs allocation of frequency bands.

Early warning systems and services

To build resilience after extreme weather events, all countries satellite radiocommunication services.

Key climate indicators

Monitoring ocean currents, ocean surface winds, sea conditions, sea ice, and sea surface temperatures, include space assets.

Contact



- Veronique Glaude
 - Space Radio Regulations Senior Engineer
ITU Representative to COPUOS
 - Radiocommunication Bureau
 - International Telecommunication Union (ITU)
 - veronique.glaude@itu.int
 - Headquarters:
Place des Nations
1211 Geneva 20
Switzerland



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DEPARTMENT OF
**OPERATIONAL
SUPPORT**

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