



Radiocommunications and climate changes

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ITU Overview

SINCE
17 May 1865

193 Member States
+700 Sector Members

ITU

Helping the World Communicate

ITU-T

Standardisation of telecommunication/ICTs, regulation of numbering, international tariffs



ITU-D

Assisting implementation and operation of telecommunications in developing countries

ITU-R

Radiocommunication standardization and global radio spectrum management





ITU activity

Radiosystem	Task
Earth/space observation	Solar and planetary observation programs. Land/sea/atmosphere parameters (e.g. vegetation biomass, ocean salinity, subterranean reserves of fresh water and cloud relief and etc.) Detection and tracking of earthquakes, tsunamis hurricanes, typhoons, forest fires, oil leaks etc. Providing warning information. Assessment of damage and planning relief activities
Amateur	Receiving and distributing alert messages Assisting in organizing relief operations in areas
Broadcasting	Disseminating alert messages, coordination of relief activities and advice to public
Telecom networks (terrestrial and satellites)	Delivering alert messages and instructions to telecommunication centers, exchange of information between different teams/groups for planning and coordination relief activities

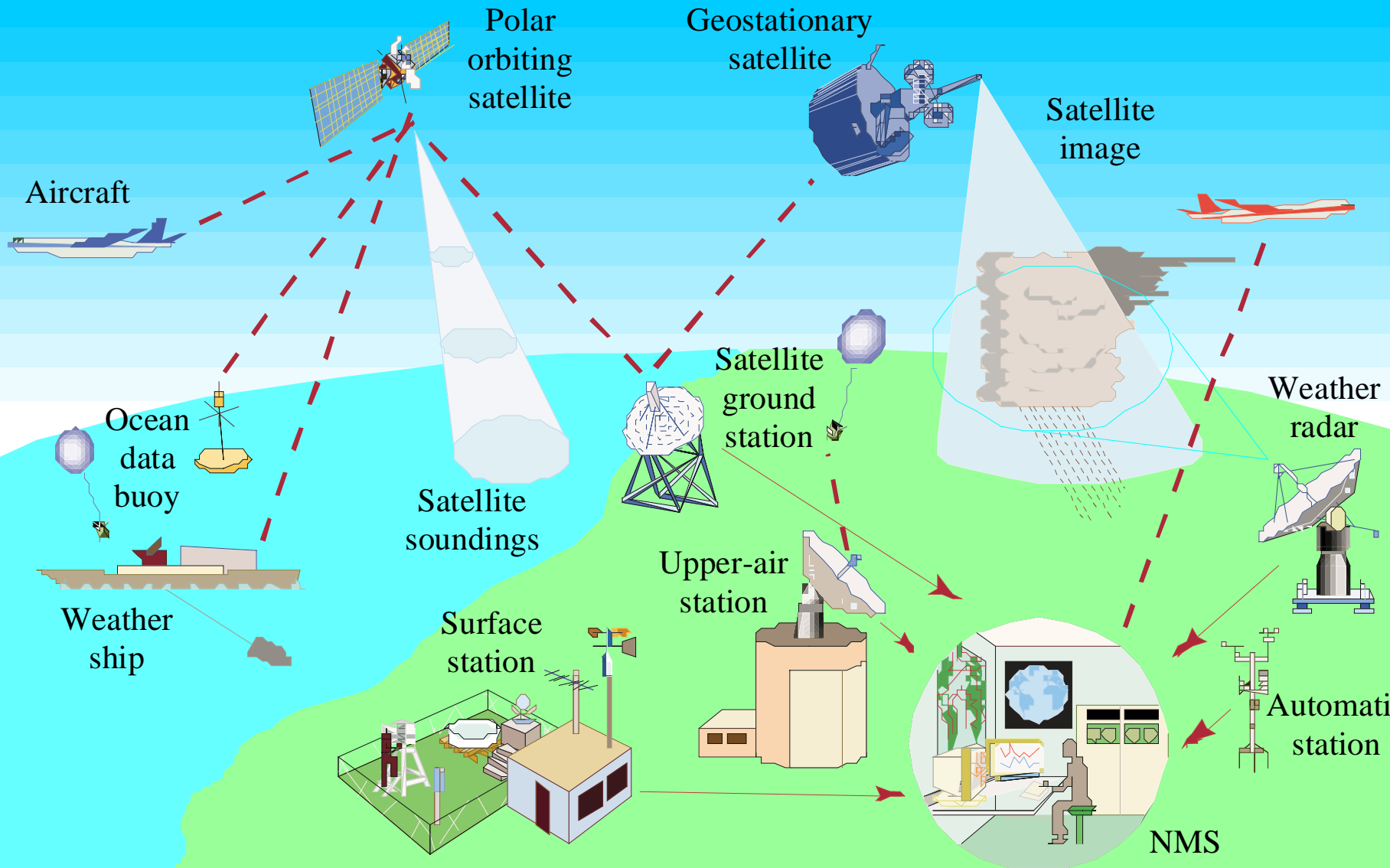


UN and earth monitoring

- “United Nations agencies have acknowledged the importance of spacebased technologies for monitoring the Earth’s climate system” (Ban Ki-Moon, UN SecGen)
- WSIS action plan: Establish monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters.



Global Observing System





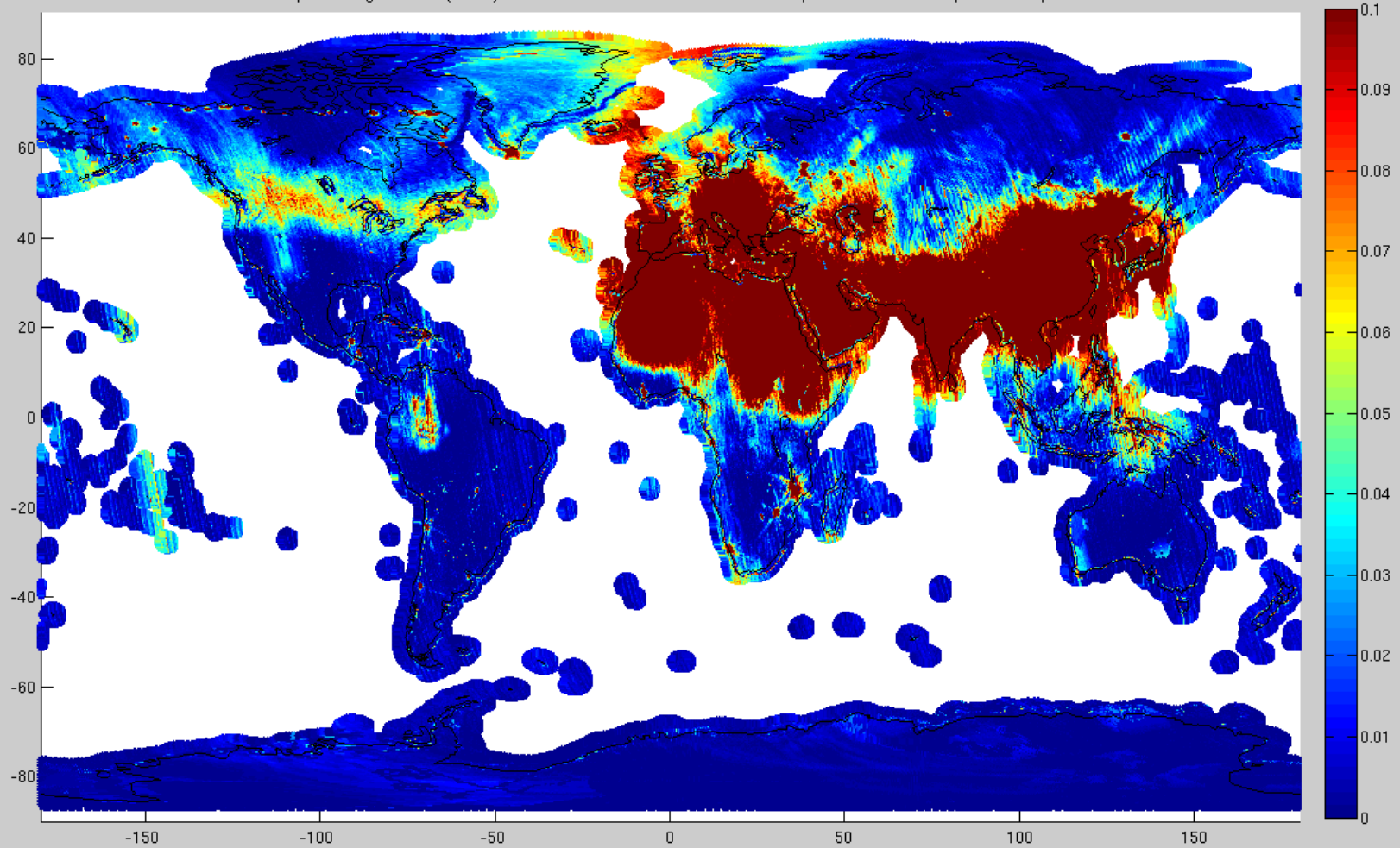
- Most people know that Meteorology and Earth observations are important ...

... but but they are much less aware that these activities are fully dependent on radio-frequencies

“No spectrum, no global observations!”

(ITU Statement in a side event during Cancun UNFCCC)

Probability map of sustained hard-only (no outliers detection) RFI occurrences for January period (20100108 - 20100201 => 570 half orbits)
from BB processing of DPGS (OPER) SML2 UDP & DAP - ASCENDING ONLY passes - Dual & Full polarization products



Example of interference on passive sensors (1.4 GHz)



World Radio Conference-12 (23/01-17/02)

- lightning detection systems;
- spectrum allocation for meteorological satellite systems and for Earth exploration satellite service;
- spectrum allocation for oceanographic radars;
- new provisions in the RR urging Members State :
 - to recognize the importance of Earth observation
 - promote the introduction of new applications to address issues such as emerging technologies, climate change, disaster management and other socio-economic matters



Economic aspects of Earth observation

- Earth observation satellite-based application worldwide- 6.7 billion US \$ in 2008
- Meteosat Third Generation in Europe- about 2.8 billion Euros
- 90's: an efficient warning system could have decreased the economic impact of natural disasters by 240 billions US \$
- economic benefits to US agriculture (by altering planting decisions)- US \$ 265-300 million/year
- savings in the electricity and natural gas in US 512 million US \$ in 2015 and 2.56 billion US \$ 2015-27



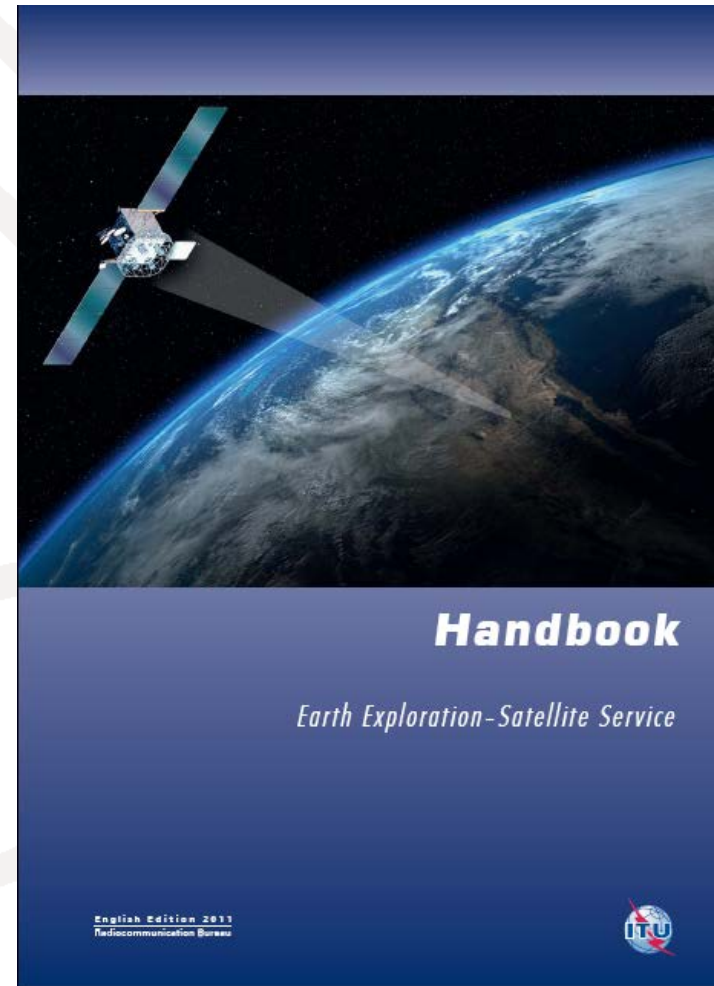
Application aspects of Earth observation

- fundamental data to our understanding of the planet and the effects of climate change
- guidelines on the provision of satellite-provided remote sensing data for the purpose of studying climate change
- summary of status of major climate variables and forcing factors
- Disaster Management Database

<https://www.sfcgonline.org/Remote%20Sensing/default.aspx>

Technical aspects of Earth observation

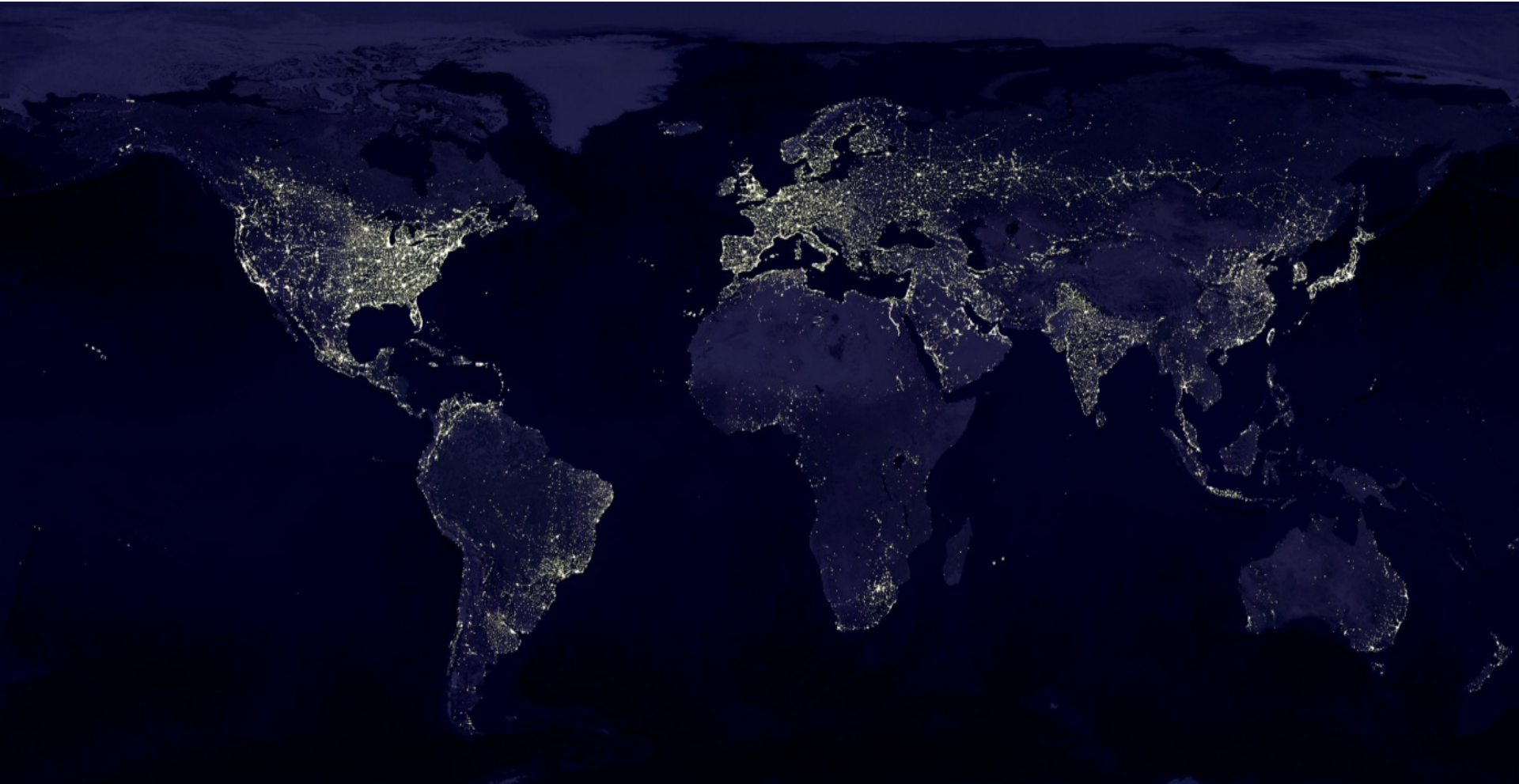
- development of EESS systems. Basic definitions, technical principles and applications
- to assist States in spectrum planning, engineering and deployment aspects





Conclusions

- **ITU** is committed to working with other organizations in combating climate change
- Earth observations are totally relying on **radio-frequencies** to be harmonised and protected
- Earth observation value can not be measured **in only financial terms**, as it prevents large losses of lives or promotes sustainable development



Thank you for your attention!