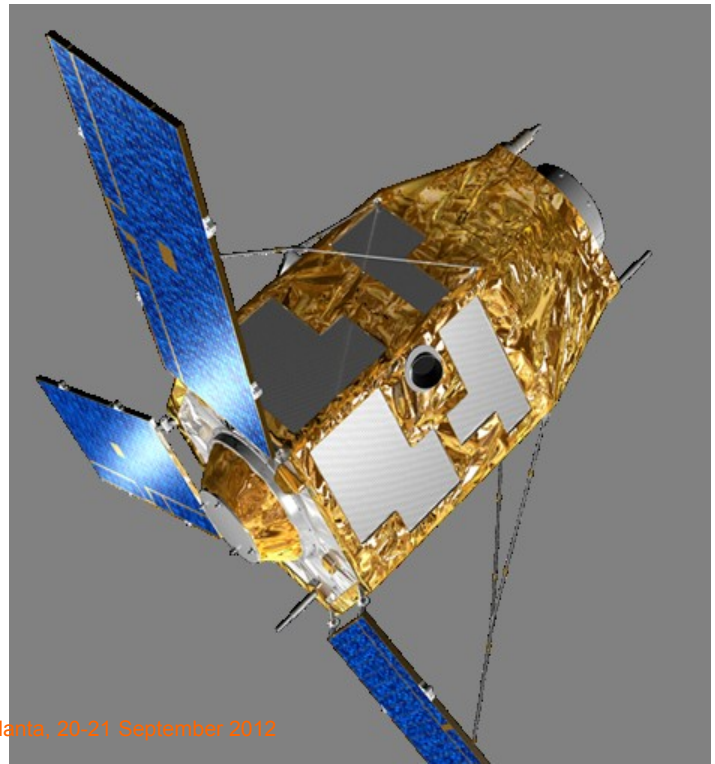
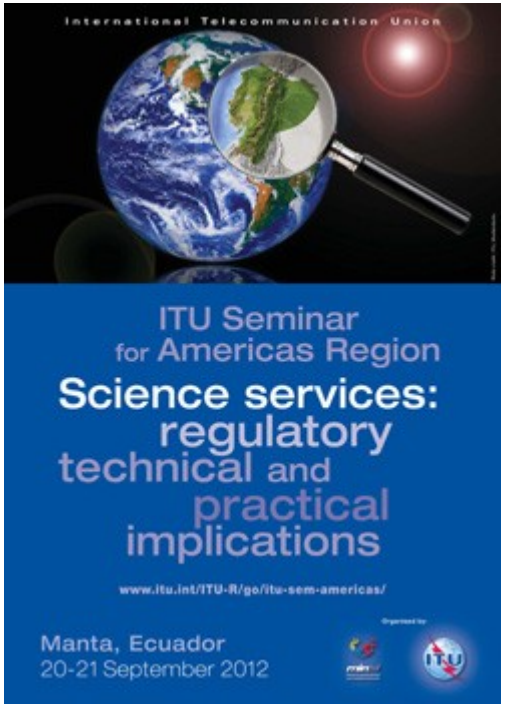
# Space Science activities in the ITU-R

**John Zuzek, Vice-Chairman of Study Group 7**





# Scope of Study Group 7

## Space Science refers to :

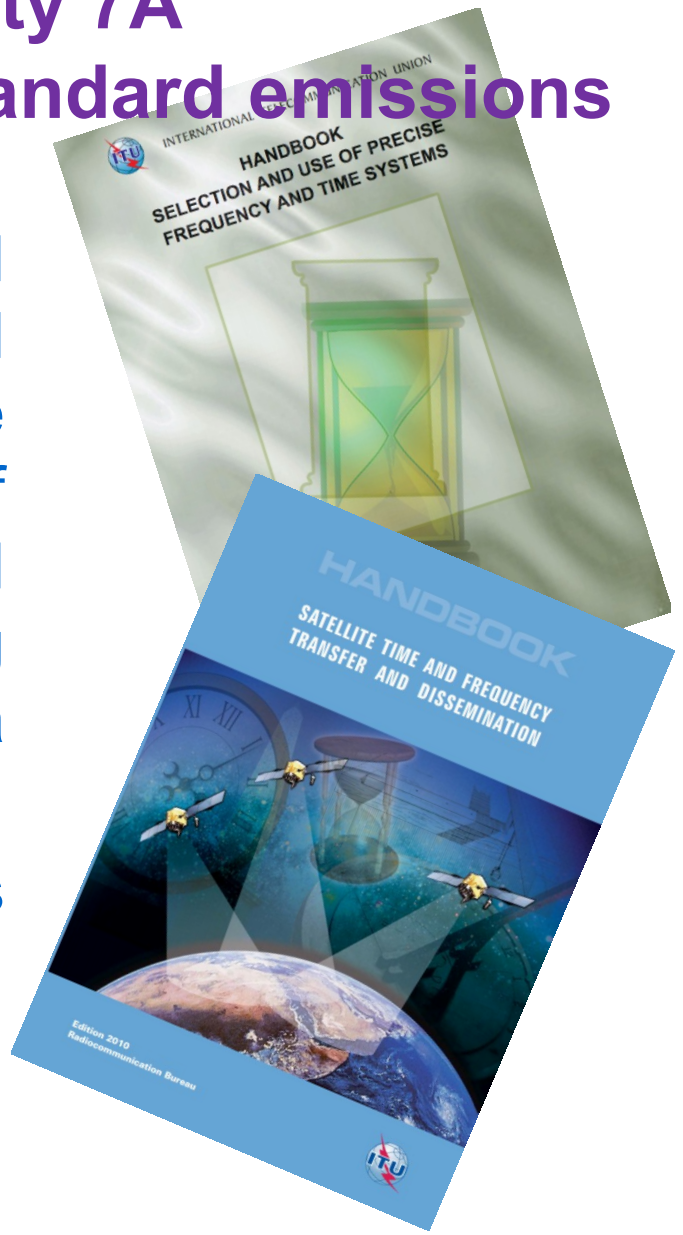
- Standard Frequency and Time Signal
- Space Research
- Space Operation
- Earth Exploration-satellite
- Meteorological-Satellite
- Meteorological Aids
- Radio Astronomy

# Scope of Study Group 7

- Precise frequency and time systems
- Global environment and climate change monitoring (atmosphere, oceans, land surface, biomass, etc);
- Weather forecasting and prediction;
- Detection and tracking of natural and man-made disasters (earthquakes, tsunamis, hurricanes, forest fires, oil leaks, etc);
- Damage assessment and planning relief operations.
- Study of outer space: the sun and all the elements of our solar system;
- Earth and satellite-based radio astronomy to study the universe and its phenomena.

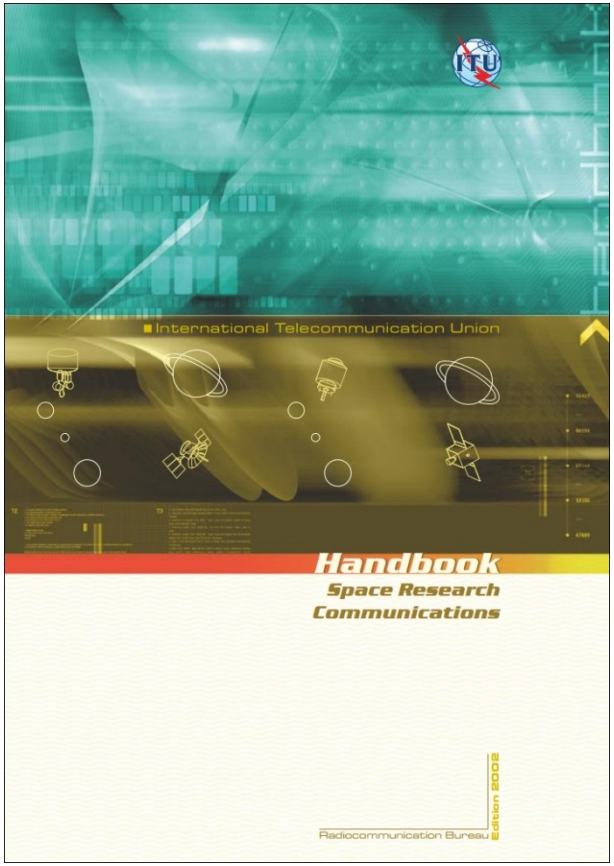
# ITU-R Working Party 7A
# Time signals and frequency standard emissions

- WP 7A covers standard frequency and time signal services, both terrestrial and satellite. Its scope includes the dissemination, reception and exchange of standard frequency and time signals and coordination of these services, including the application of satellite techniques on a worldwide basis.
- It maintains the ITU-R Recommendations of the TF series



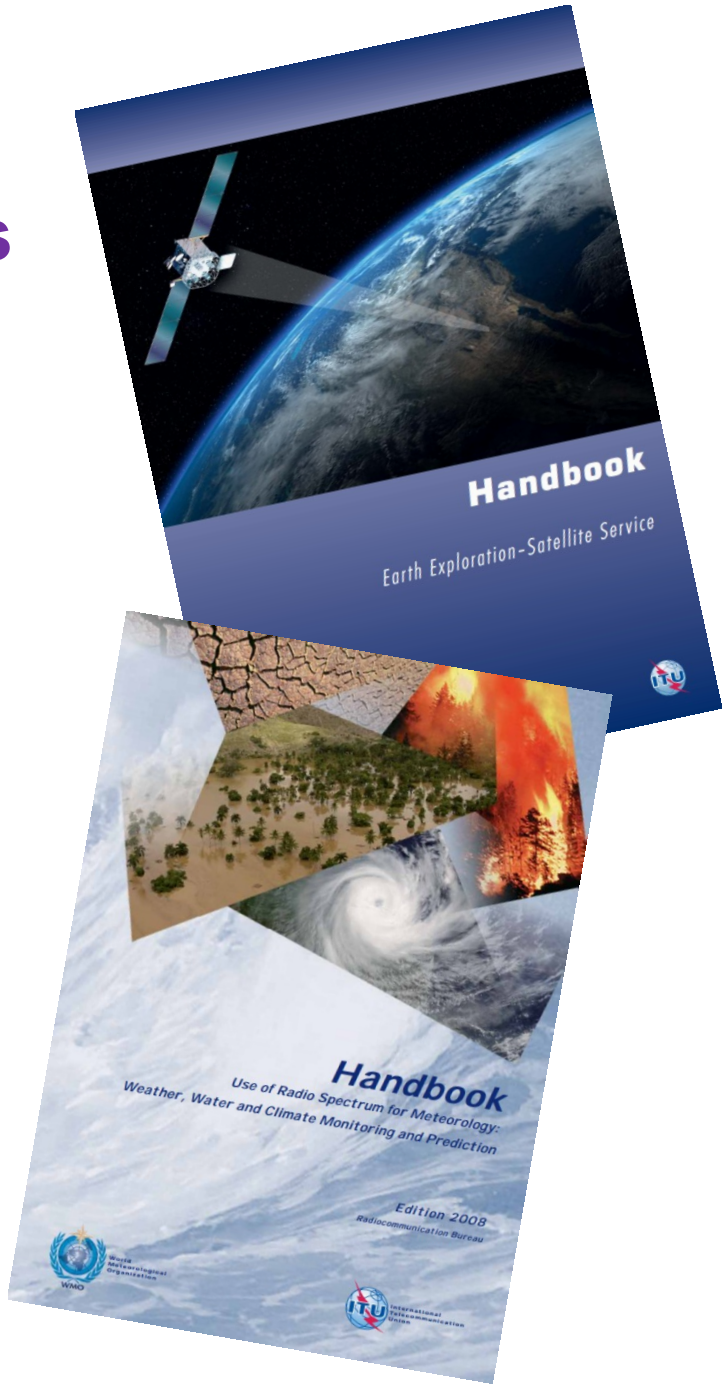
# ITU-R Working Party 7B
# Space radiocommunications applications

- WP 7B is responsible for the transmission and reception of telecommand, tracking and telemetry data for space operation, space research, Earth exploration-satellite, and meteorological satellite services. It studies communication systems for use with manned and unmanned spacecraft, communication links between planetary bodies and the use of data relay satellites.
- It maintains the ITU-R Recommendations and reports of the SA series



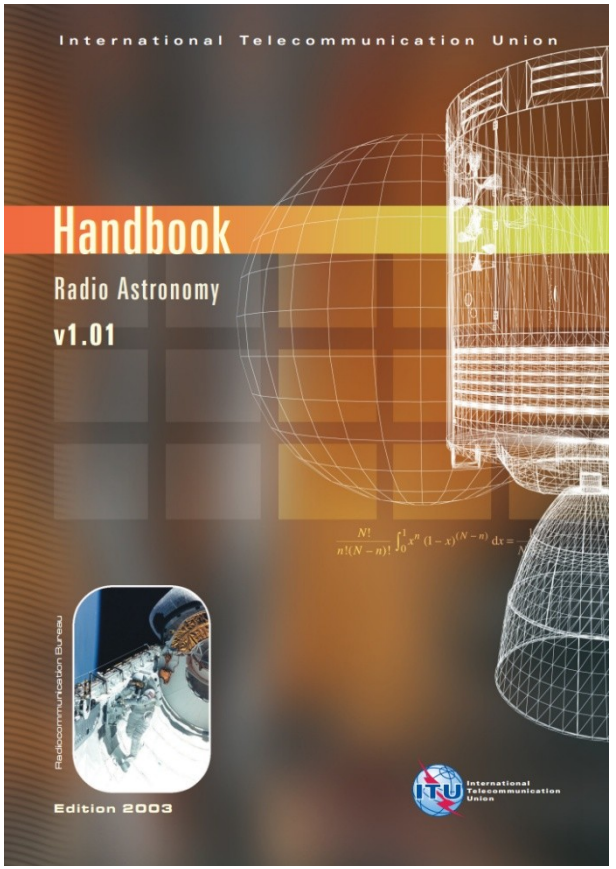
# ITU-R Working Party 7C
# Remote sensing systems

- WP 7C covers remote sensing applications in the Earth exploration-satellite service (EESS), both active and passive, systems of the MetAids service, as well as space research sensors, including planetary sensors.
- It maintains the ITU-R Recommendations and reports of the RS series



# ITU-R Working Party 7D
# Radio astronomy

- WP 7D covers the radio astronomy service. Its scope includes radio astronomy and radar astronomy sensors, both Earth-based and space-based, including space very long baseline interferometry (VLBI).
- It maintains the ITU-R Recommendations and reports of the RA series



# SG 7 Working Parties responsible for WRC-15 agenda items

**1.11** Primary allocation for the Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range – **7B**

**1.12** Extension of the current worldwide allocation to the Earth exploration-satellite (active) service in the frequency band 9 300-9 900 MHz by up to 600 MHz within the frequency bands 8 700-9 300 MHz and/or 9 900-10 500 MHz – 7B, **7C**, 7D

**1.13** Examining the possibility for increasing the 5 km distance limitation and allowing space research service (space-to-space) use for proximity operations by space vehicles communicating with an orbiting manned space vehicle in the band 410-420 MHz – **7B**

**1.14** Feasibility of achieving a continuous reference time-scale, whether by the modification of coordinated universal time (UTC) or some other method – **7A**

**9.1.8** Regulatory aspects for nano- and picosatellites – **7B**

# SG 7 Working Parties contributing for WRC-15 agenda items

- **1.1** Additional spectrum allocations to the mobile service – 7B, 7C, 7D
- **1.6** Additional primary allocations to the fixed-satellite service between 10 and 17 GHz – 7B, 7C, 7D
- **1.9** New allocations to the fixed-satellite service and the maritime-mobile service around 7 and 8 GHz – 7B
- **1.10** Additional spectrum allocations for the mobile-satellite service from 22 GHz to 26 GHz – 7A, 7B, 7C, 7D
- **1.17** Possible spectrum requirements to support wireless avionics intra-communications (WAIC) – 7B, 7C, 7D
- **1.18** Primary allocation to the radiolocation service for automotive applications in the 77.5-78.0 GHz frequency band – 7B, 7C, 7D
- **9.1.1** Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz – 7B, 7C

# Any Questions ?