

QUESTION ITU-R 201-3/3

Radiometeorological data required for the planning of terrestrial and space communication systems and space research application

(1966-1970-1974-1978-1982-1990-1995-2000-2007)

The ITU Radiocommunication Assembly,

considering

- a) that the characteristics of the tropospheric radio channel depend on a variety of meteorological parameters;
- b) that statistical predictions of radiopropagation effects are urgently required for planning and design of radiocommunication and remote sensing systems;
- c) that, for the development of such predictions, knowledge of all atmospheric parameters affecting channel characteristics, their natural variability and their mutual dependence is needed;
- d) that the quality of measured and suitably analysed radiometeorological data is one of the determinants of the ultimate reliability of propagation prediction methods that are based on meteorological parameters;
- e) that an accurate knowledge of the clear-sky level on a satellite-to-ground link is important in developing the margin required to enable a telecommunications service to operate satisfactorily under adverse propagation conditions;
- f) that the clear-sky level on a satellite-to-ground link can fluctuate significantly both diurnally and seasonally due to solar heating and atmospheric effects;
- g) that interest exists in extending the range of frequencies used for telecommunication and remote sensing purposes;
- h) that propagation conditions should be known as well as possible during the process of bringing into service (BIS) of radio-relay equipment,

decides that the following Question should be studied

- 1 What are the distributions of tropospheric refractivity, its gradients and their variability, both in space and time?
- 2 What are the distributions of atmospheric constituents and particles, such as water vapour and other gases, clouds, fog, rain, hail, aerosols, sand, etc., both in space and time?
- 3 What is the magnitude of the variations in clear-sky level on a satellite-to-ground link that can occur on a diurnal and seasonal basis?

- 4 What model best describes the diurnal and seasonal variations in the clear-sky level on a satellite-to-ground link?
- 5 How do the climatology and natural variability of the rain process affect attenuation and interference predictions, especially for tropical regions?
- 6 What models best describe the relationship between atmospheric parameters and radiowave characteristics (amplitude, polarization, phase, angle of arrival, etc.)?
- 7 What methods based on meteorological information can be used in the statistical prediction of signal behaviour, especially for percentages of time from 0.1 to 10%, taking into account the composite effect of various atmospheric parameters?
- 8 What procedures can be used to evaluate data quality, accuracy, statistical stability and confidence levels?
- 9 What method can be used to forecast propagation conditions during consecutive periods of 24 hours during any season anywhere in the world?

NOTE 1 – Priority will be given to studies relating to § 3, 4, 5, 7 and 9.

further decides

- 1 that the results of the above studies should be included in one or more Recommendations and/or Reports;
- 2 that the above studies should be completed by 2010.

Category: S2