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ICT COST Action 271

Effects of upper Atmosphere on terrestrial and Earth-space Communications. Chair: B. Zolesi, Italy

Descriptions are provided by the Actions directly via e-COST.

This Action's objectives were to perform studies to influence the technical development and the implementation of new communication services, to develop methods and algorithms to predict and to minimize the effects of ionospheric perturbations and variations on communications and to ensure that the best models over Europe are made available to the ITU-R, to collect additional and new ionospheric and plasmaspheric data for now-casting and forecasting purposes and to stimulate further cooperation in the domain of ionospheric and plasmaspheric prediction and forecasting for terrestrial and Earth-space communications, including interactive repercussions on the corresponding standards in this field, taking into account users present and future need.

COST Action 271 was the third in a series of very successful actions in the field of radio wave propagation in the ionosphere. The expanding need for new communications services, especially those involving ionospheric HF communications, satellite communications and navigational systems, imposes increasing demands for the continuous monitoring and better understanding of propagation effects imposed by the Earth's upper atmospheric that play important roles in determining the characteristics and reliability of radio systems. In this respect, specific needs have been identified and dealt with in detail, the results include:

Development of several databases and real-time, near real-time and historical broadcasting data facilities (EISCAT at the University of Grenoble, France, ionospheric forecasting and newcasting at the regional Warning Centers at Warsaw and RAL, United Kingdom, TECADA at DLR, Germany, etc.).

Development of models for other communities of users (Ionospheric model developed by DLR for the GNSS EGNOS Test Bed, NeQuick model developed by the University of Graz, Austria, and the Abdus-Salam Institute of Trieste, Italy, for Galileo ionospheric corrections, and others).

The occurrence of gravitational waves due to in-situ effects (such as those with solar terminator origin) follows a relatively regular pattern and could be included in future prediction models for users.

The transmission of information, such as images, using the ionospheric channel has been significantly improved and tested.

An important part of the work dealt with the relevant, i.e. ionospheric, aspects of Space Weather. As a consequence, close contact has been maintained with Action 724 of the COST Meteorology domain (Developing the scientific basis for monitoring, modelling and predicting Space Weather), in order to avoid duplication and, at the same time, to use the obvious synergy effects.

The results have been widely disseminated. More than 150 scientific papers have been published in international journals with impact factor. The proceedings of three international workshops have been published separately. The Final Report of the Action has been printed as a supplement to the key Journal "Annals of Geophysics" with a wide distribution.

In summary, COST Action 271 provided very useful results for the entire field of ionospheric radio wave propagation. Moreover, by means of its collaborative studies it has been very successful in keeping together a large group of researchers who collectively represent most of the available European expertise on upper atmosphere effects with respect to radio systems.

Information and Communication Technologies COST Action 271

Description

Parties



General Information*

Science officer of the Action:
[Mr Ralph STUEBNER](#)

Administrative officer of the Action:
[Ms Aranzazu SANCHEZ](#)

Downloads*

Action Fact Sheet
[Download AFS as .RTF](#)

Memorandum of Understanding
[Download MoU as PDF](#)

Final Report
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Websites*

Domain website:
<http://www.cost.eu/ict>

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