

**EUROCAP PROGRAM-EBRE STATION**

6th Interim and final Report

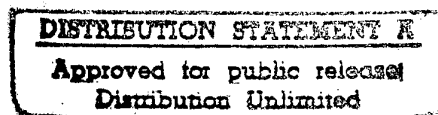
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by

LUIS F. ALBERCA

UNITED STATES ARMY  
EUROPEAN RESEARCH OFFICE OF THE US ARMY  
LONDON, ENGLAND

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OBSERVATORI DE L'EBRE  
43520 ROQUETES (TARRAGONA)  
SPAIN

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## EUROCAP PROGRAM - EBRE STATION

### SOUNDING ACTIVITY

During the last period of the project, there have been no special campaigns. The ARTIST hourly output of the digisonde vertical incidence ionograms have been sent regularly to Fort Monmouth in floppy 5 1/4" HD diskettes.

Oblique soundings have also been made between Ebre station and El Arenosillo station, on South-West Spain. A digisonde was installed recently in El Arenosillo. The distance between both stations is about 750 km. Both, oblique and vertical incidence sounding can be represented in the same ionogram. Therefore it is very convenient to complement and test the inversion methods, since both ionograms, vertical and oblique, are obtained practically at the same time. The oblique ionograms obtained have a very good quality and the echoes can be determined very well.

We produced a CD-ROM with all the ionograms recorded with the digisonde since 1989 and sent a copy to Fort Monmouth. The CD-ROM includes also ionospheric parameters of the manually reduced ionograms, obtained with the Magnetic AB ionosonde for several years, before 1989. We will update the CD-ROM with the data of all the ionograms recorded at the Ebre Observatory since 1957.

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## **EQUIPMENT PERFORMANCE**

During the last period, there have been few failures in the equipment. The air conditioning problems seems to have been settle. The main power supply deficiencies have been fixed also. Nevertheless, the powerful Uninterrupted Power Supply (UPS) produces an interference, specially strong in the lower frequencies of the ionogram. This interference makes difficult or, some times, impossible to measure the critical frequency of the E layer. We decide not to use regularly the UPS, but only when there is a danger of power failure.

There are still difficulties with the receiving antennas. As we said in a previous report, the Lowell engineers recommended us to change the antenna amplifiers to a new model that they are developing. But it seems that this new model is not yet available.

There has been installed in the Observatory a GPS for geodesy determinations. It is a reference station in the international network. We want to use the data to produce ionospheric Total Electron Content (TEC) data. We have done several comparisons of the TEC data obtained from the GPS and TEC data obtained from the vertical incidence sounding and different models of higher ionosphere profile. The results have been presented at several international scientific meetings.

## **RELATED ACTIVITIES**

The last meeting Committee of the PRIME project was held in Brussels in 28 July. On 5-6 October a meeting was held to present the achieved results in the project. The PRIME Operational Computer Program and the

corresponding User's Handbook are already available. The Ionospheric Section of the Observatory contributed to this project, first of all, in the data collection and data base production. All the oblique sounding data of the PRIME data base correspond to oblique sounding between the ionospheric stations of Ebre and Dourbes. On the other hand a careful and deep analysis of the data, looking for quasi-periodic oscillations of quasi-periods of two to thirty days, gave very unexpected and interesting results. The results can be used in the forecasting work. Unfortunately, the PRIME forecasting working package could not be finished. In any case, we produced several papers that have been published in several international scientific journals. The forecasting problem will be addressed in the new COST project, continuation of PRIME.

On July 28 the inaugural meeting of the COST 251 project was held in Brussels. The title of the new project is: "Improved Quality of Service in Ionospheric Telecommunication Systems Planning and Operation (IITS)". The list of the COST Countries that have already signed the Memorandum of Understanding is as follows:

Belgium, Czechia, Germany, Greece, Italy, Slovenia, Spain, Sweden, Turkey and United Kingdom.

The Institutes of non-COST Countries, that have also signed, are:

Geophysical Institute (Bulgaria), Geomagnetic Institute (Serbia) and IZMIRAN (Russia).

Other countries that are going to sign shortly are:

Austria, France and Poland.

As can be seen most of the European Countries will participate in the project. One of the aims of COST 251 is to further develop COST 238 models and expand geographical region to the East (to 60°E) and to the North (70°N) of Europe.

Following the presentation of the PRIME results, a second Management Committee (MC) meeting of the COST 251 project, was held at Abingdon. In this meeting a distribution of the project work, in Working Groups (WG) was adopted. The MC decided to reduce the number of WG to four, with the following headings:

WG.1.- Validation of COST 238 models for terrestrial systems.

WG.2.- Validation of COST 238 models for Earth-Space systems.

WG.3.- Further development of COST 238 models.

WG.4.- System Performance and Spectrum Management.

In principle there are five Spanish research groups interested on collaborating in this project.