

Geomagnetism and aeronomy in Croatia, 1991–1994

*Report to the International Association of Geomagnetism and
Aeronomy of the International Union of Geodesy and Geophysics*

Several institutions were involved in the geomagnetic and aeronomical investigations in Croatia during the period 1991–1994 (Andrija Mohorovičić Geophysical Institute and Department of Physics, both of the Faculty of Sciences, University of Zagreb, Ruđer Bošković Institute, Zagreb, and Marine Meteorological Centre, Split).

Efforts are made to establish the geomagnetic observatory in Croatia. The primary goal of the observatory would be to monitor the geomagnetic field components involving the scientific research, related to the measuring program. During 1993 and 1994 preliminary geomagnetic measurements were made in the Middle Adriatic area (Hvar Island and city of Makarska) in order to determine the place suitable for location of the geomagnetic observatory.

Special attention was paid to the visual observations of the polar light (aurora) phenomena during the last maximum of solar activity. The phenomenon was observed twice (November 1 and 8, 1991) over coastal, and once (November 8 and 9, 1991) over the continental area in Croatia (Miljak, 1991; Martinolić, 1992). According to 23 published papers related to the aurora, observed earlier from Croatia, and to several original reports about the phenomenon, an auroral calendar is composed. It lists some 30 cases of aurora described in detail, seen during the last 200 years over the Croatian territory. The calendar contains the description of the shape, colour, light intensity and the position on the sky. The statistics of the data show some characteristics unique for the area and indicate the extension of the auroral oval towards the lower latitudes on the northern hemisphere.

The instructions and a questionnaire for visual observations of the auroral phenomena was prepared for the expedition Arctic–Antarctic, organized by the Croatian Yachting Club (whose crew was in Canadian waters in the beginning of 1995), with a plan to prepare collected data for publication. The expedition team should make such observations when the ship enters the hemispheric polar oval zone.

On the February 6, 1990 the surface ozone volume fractions exceeded significantly the normal values at the monitoring measuring station in Zagreb (180 m a. s. l.) and at the elevated site on the mountain observatory Puntijarka (980 m a. s. l.) Such simultaneous concentration rise is very atypical during the winter season. It was shown that the meteorological conditions in

the troposphere and in the lower stratosphere were favourable for a stratospheric ozone intrusion into a boundary layer near Zagreb (Lisac et al, 1993).

During 3.5 years a survey of the radon concentration in Zagreb has been performed. The measurements were taken in an open area, inside the buildings, and in the ground. The data measured in the ground show seasonal periodicity and a correlation with meteorological data and the ground water balance (Turk et al, 1992).

Some efforts were also made to make possible the establishment of an UV radiation monitoring experimental station, very likely to be situated on the Hvar Island.

References

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