

Geomagnetism and aeronomy in Croatia, 1995–1998

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

At the Faculty of Science the students are acquainted with the geomagnetism and with aeronomy by listening to the courses "Terrestrial magnetism" and "Aeronomy" before graduation, and by the course "Anthropogene changes in the atmosphere" on the postgraduate studies. Measurements of the geomagnetism are conducted only for the educational purposes. Objective circumstances prevented to present days, however, strong efforts to establish geomagnetic observatorium.

Earlier aeronomical investigations are continuing further (analysis of aurora observations, relation of phenomena frequency to the eleven year solar cycle and to secular sequences of meteorological data, analysis of the first erythemally effective UV radiation data collected in Zagreb, and preparations for the next total solar eclipse).

Data on more than 200 observations of polar light – auroral phenomena show strong relation to the solar 11-year cycle and also indicate a secular 80-year cycle. Colour of the light is mostly red what can be understand since from our geographical position more visible are high parts of the auroral oval (the metastable oxygen atoms are excited at the height of 500 km).

Lot of efforts was done in preparations to measure total ozone and UV radiation. Study of these elements is interesting because of aeronomical investigation of the middle atmosphere (stratosphere and mesosphere), especially the investigation of physico-chemical and dynamical processes what is our scientific goal as soon as the conditions allow it. Data on these processes are scarce over our country. Investigation is stimulated by the intentions of WMO related to the recent antropogenic activities which influence changes in troposphere and stratosphere. World network of ozonometric and UV-radiometric stations is not supported by the stations in our part of the world and data necessary for the study of mesoscale phenomena in Croatia are missing.

We estimate sufficiently to establish in Croatia one station for measuring the total ozone, and 3–4 stations for measuring UV and short-wave Solar radiation. Since the consolidation of such network requires time for planning, for soliciting funds, and for prospecting the best convenient sites, this is considered as a long-term project. One UV-erithemal sensor, obtained by a sponsorship, was already in use from the beginning of the last summer at the location of the Geophysical Institute in Zagreb. Comparison of the peak daily values of UV with the satellite data on the total ozone led to a preliminary conclusion, that 1% of decrease in the ozone lead to 1,45% increase of the UV erithemaly effective radiation.

Preparations for the observations of total Solar eclipse on 11th August 1999 ar in due course.

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