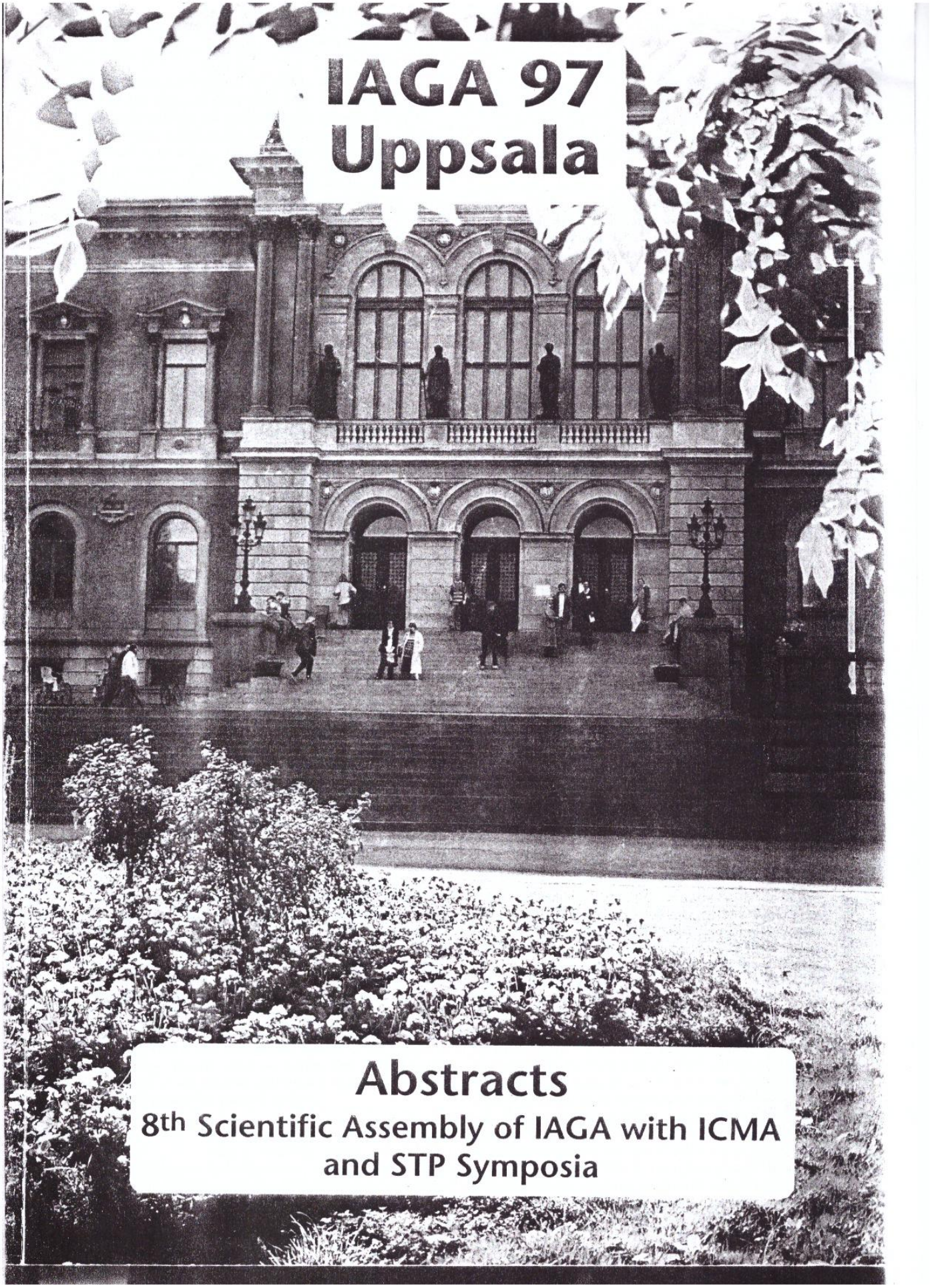

IAGA 97 Uppsala

Abstracts

8th Scientific Assembly of IAGA with ICMA and STP Symposia

in São José dos Campos, SP (230 S, 450 W). The analysis of 106 nights of data, from 1993 to 1995, shows that the temperatures are systematically lower in the stratosphere and higher in the mesosphere, as compared with the CIRA-86 model. Daily measurements were carried out during the 1995 winter to study the variability of the profile. In 21 nights of measurements we observed 9 with temperature inversion between 55 and 70 km. The persistence of the inversion layers was not observed in two consecutive days, indicating a time scale of less than 24 hours for these structures.

Aug. 6, POSTER #09

On Distribution of Aerosols in Temperature Stratified Middle Atmosphere

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At investigation of distribution of aerosols in the middle atmosphere the developed by authors stationary model of aerosol particles distribution in northern hemisphere was used. This model bases on the theory of suspended particles sedimentation in a turbulent temperature-stratified media and on monthly-averaged model of the main meteorological parameters of the earth's atmosphere in the points of standard geographical lattice. On the base of calculations from the model the altitude factors, seasonal and geographical ones, which influence on distribution of aerosol particles concentration, were investigated. Following laws were found: In the layers of atmosphere higher than 30 km seasonal variations of month-averaged values of aerosol particles concentration are more than in troposphere and in bottom stratosphere. These variations are more significant in polar areas than in equatorial ones. Concentration of aerosols is maximal in June and minimal in January. The summer's concentrations are in two times more than winter's ones.

Aug. 6, POSTER #10

An Overview on the Theoretical Aspects of Elastic Collisions for Aeronomy

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The essential aspects of the elastic collision theory are outlined and an analysis is made of their relevance to the transport equations used in aeronomy. The presentation starts with low speed flows and progresses towards high speed flows. Attention is called, in particular, to the alternative forms used in the theory to approximate the mathematical approach to the actual physical characteristcs. We also emphasize the physical meaning of each collisional parameter, to provide the reader with a clear notion of the relaxational feature of the upper atmosphere. Elastic collisions appear then as the natural response of the medium attempting to restore the equilibrium broken by external actions.

Aug. 6, POSTER #11

Experimental Investigations of Frequency Variations of Electron/Neutral Collisions in the Ionospheric D-Region

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of electron/molecule collisions,v(z), in the ionospheric D-region at middle latitudes are presented. The investigations were made by a partial reflection thechnique in the vicinity Kharkiv under different heliogeographical conditions (v(z)-changes for periods of ionospheric disturbances having different natures are not considered here) during 10 years. Variations ofv(z) at z<70 km and z>70 km were investigated separately. In the first case, there was used the known methods of obtaining of (J.S.Belrose, M.J.Burke, J.Geophys.Res.,1,2799-2818,1964), when at z<70 km the differential absorption for the "x" and "o" magnetoionic components of partial reflection signals was small, and the ratio of their averages over a series of measurements (10-12 min) of intensities was related to by a(z)=R(v). Here R(v) is the ratio of reflection coefficients for these components. The total number of a(z)-records (whith the signal/noise ratio being >5) was about 300. In the second case (z>70 km), v(z)-values were calculated by the methods (Benediktov E.A.,Grishkevich L.V., Ivanov V.A., Izvestija vuzov. Radiofizika,15, 695-701,1972,in russian) using simultaneous measurements of a(z) and correlation coefficient of Ao,Ax(z), (the total number of records in this case was more than 100). The errors of obtaining v(z) do not exceed 30% in both cases.

The following main features in the v(z)-behaviour were found: 1. Variations of v(z) in the middle latitude D-region over a daylight period do not exceed 30%; 2. Within the whole D-region, v(z)-values differ seasonally (winter-summer) 1.5-2.5 times.

On the basis of the experimental data obtained and the results taken from other authors, there was constructed an empirical model for v(z)-variations in the middle latitude ionospheric D-region, which describes the observed v(z)-changes in a satisfactory way.

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Aug. 6, POSTER #13

Features of Interannual Variations of Intensity Sporadic-E Layer

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Interannual variability of occurrence of intensity sporadic-E layer is above 100 %. Using ionospheric data from a 32-years period (1958-1990) for ionospheric stations within the European Part of Russia these variations was investigated. As the intensity of the sporadic-E layer the daily mean of parameter dfoEs= foEs-foEme for every month was used (where foEs - hourly limiting frequency sporadic-E layer, foEme - median value of critical frequency). Values of dfoEs were calculated for 8 mid-latitudes ionospheric stations on territory of former USSR (50-60 N, 20-130 E). Using of this parameter dfoEs allows to suppress of this parameter the influence of changes of background ionization in daily average values. Using method of spectral analysis the regularity cycles with long period between 10 and 13 years and with quasibiennial period between 2 and 3 years was investigated. These oscillations is particularly observed in the summer, because the large amplitude variations of limiting frequency sporadic-E layer in this period. Long-term