

Volume 10
Number 6
1990

Advances in Space Research

ISSN.0273-1177

UPPER ATMOSPHERE MODELS AND RESEARCH

Edited by M. J. Rycroft
G. M. Keating
D. Rees



Pergamon Press

CONTENTS

Chapter 1 — UP-DATING OF CIRA 1986 (Workshop X)

Monthly Mean Global Climatology of Temperature, Wind, Geopotential Height and Pressure for 0–120 km	3
<i>S. Chandra, E. L. Fleming, M. R. Schoeberl and J. J. Barnett</i>	
Mean Temperature Fields in the Lower Thermosphere	13
<i>Yu. P. Koshelkov</i>	
Middle Atmosphere Density Data and Comparison with Models	17
<i>K. S. W. Champion</i>	
Comparison of the Thermosphere Total Density Model TD 88 with CIRA 86	27
<i>L. Sehna</i>	

Chapter 2 — TRACE CONSTITUENTS OF THE MIDDLE AND UPPER ATMOSPHERE (Workshop XI)

Preface	35
Improved Reference Models for Middle Atmosphere Ozone	37
<i>G. M. Keating, M. C. Pitts and C. Chen</i>	
An Interim Reference Model for the Variability of the Middle Atmosphere Water Vapor Distribution	51
<i>E. E. Remsberg, J. M. Russell III and C.-Y. Wu</i>	
Reference Model for CH ₄ and N ₂ O and Trends	65
<i>F. W. Taylor and A. Dudhia</i>	
A Search for Trends in Measurements of Stratospheric Nitric Acid, Hydrochloric Acid and Methane	71
<i>H. Fast and W. F. J. Evans</i>	
First Results of RASMUS: Source Gases in the Mesosphere	77
<i>H. Duschka, R. Borchers, P. Fabian and W. Bischof</i>	
Numerical Simulations of the Seasonal/Latitudinal Variations of Atomic Oxygen and Nitric Oxide in the Lower Thermosphere and Mesosphere	83
<i>D. Rees and T. J. Fuller-Rowell</i>	
Reference Models for Thermospheric NO	103
<i>C. A. Barth</i>	
Some Comments on the CIRA-86 Model	117
<i>M. Ya. Marov and O. P. Krasitsky</i>	
Simulation of Odd Nitrogen Distribution in the Thermosphere	123
<i>M. Ya. Marov and Yu. B. Pavlyukov</i>	

<i>Chapter 3 — LOCALIZED RESPONSE OF THE LOWER THERMOSPHERE AND IONOSPHERE AT HIGH LATITUDE (Mtg C1)</i>	
Preface	131
Response of the Ionosphere–Thermosphere System to Magnetospheric Forcing <i>R. W. Schunk</i>	133
Comparing Numerical Simulations of the High-Latitude Ionosphere to an Empirical Mean Model Based on EISCAT Data <i>A. D. Farmer, T. J. Fuller-Rowell and S. Quegan</i>	143
Microinstabilities Driven by Non-Thermal Plasma in the High-Latitude F-Region <i>K. Suvanto</i>	149
Model Simulations of the Electrodynamics of the High Latitude Thermosphere and Ionosphere with the Magnetospheric Input Defined by Statistical or Empirical Models <i>T. J. Fuller-Rowell</i>	153
The UV Auroral Distribution: Its Impulsive Nature <i>L. L. Cogger and J. S. Murphree</i>	167
E- and F-Region Measurements at Saint-Santin During the September 1987 LTCS Campaign <i>M.-L. Duboin and M. Lafeuille</i>	179
Classification of Auroral Precipitation Fluxes by Characteristic Parameters and their Effects on the Coupling of the Precipitation to the Ambient Ionosphere <i>E. G. Fontheim, S. F. Fung and J. D. Winningham</i>	183
Lower Thermospheric Wind Measurements near 60° Λ from 5577 Å Doppler Interferometry <i>A. S. Rodger and R. D. Stewart</i>	187
Characteristics of the High-Latitude Trough <i>G. O. L. Jones, P. J. S. Williams, K. J. Winser and M. Lockwood</i>	191
Modelling of E-Region Auroral Winds <i>D. Rees and T. J. Fuller-Rowell</i>	197
Modelling the Response of the Thermosphere and Ionosphere to Geomagnetic Storms: Effects of a Mid-Latitude Heat Source <i>T. J. Fuller-Rowell, D. Rees, B. A. Tinsley, H. Rishbeth, A. S. Rodger and S. Quegan</i>	215
Electron Heating by Plasma Waves in the High Latitude E-Region and Related Effects: Observations <i>J.-P. St. Maurice, W. Kofman and E. Kluzek</i>	225
Electron Heating by Plasma Waves in the High Latitude E-Region and Related Effects: Theory <i>J.-P. St. Maurice</i>	239
The Lower Thermospheric Coupling Study of the CEDAR and WITS Programs <i>J. M. Forbes</i>	251
Lower-Thermospheric Neutral Winds at High Latitude Determined from Incoherent Scatter Measurements: A Review of Techniques and Observations <i>R. M. Johnson</i>	261

High Resolution Observations of the Lower Thermosphere at Millstone Hill During the September 1987 LTCS Campaign <i>D. Tetenbaum, J. M. Holt and J. E. Salah</i>	277
Ion-Neutral Dynamics: Comparing Fabry-Perot Measurements of Neutral Winds with those Derived from Radar Observations <i>A. D. Farmer, K. J. Winser, A. Aruliah and D. Rees</i>	281
Numerical Simulations of the Seasonal Response of the Thermosphere to Propagating Tides <i>H. Parish, T. J. Fuller-Rowell, D. Rees, T. S. Viridi and P. J. S. Williams</i>	287
Equatorial Electrojet Reversals and their Relation to Polar Cusp Movements During Geomagnetic Storms <i>V. Alamelu, R. Sethuraman and M. Mukunda Rao</i>	293
Vertical Plasma Transport due to Electric Fields and Neutral Winds in the Auroral Ionosphere <i>T. Nygrén</i>	297
Author Index	307