

# **VOLUME III**

## TABLE OF CONTENTS

### VOLUME III

*Page*

#### CHAPTER 12 ASSESSMENT MODELS

12.0	INTRODUCTION .....	649
12.1	ON THE COMPARISON OF MODELS AND DATA .....	649
12.2	1-D MODELS: FORMULATION AND INTERPRETATION—RECENT DEVELOPMENTS .....	654
12.3	1-D MODELS: INTERCOMPARISON OF NO <sub>y</sub> DIFFERENCES .....	658
12.4	TWO-DIMENSIONAL MODELS—SOME THEORETICAL IDEAS .....	662
12.5	CURRENT MODELS .....	670
12.6	A COMPARISON OF TWO-DIMENSIONAL MODELS .....	681
12.7	CHEMISTRY IN THREE-DIMENSIONAL MODELS .....	711
12.8	ON THE USE OF MODELS FOR ASSESSMENT STUDIES .....	714
12.9	CONCLUSIONS .....	719

#### CHAPTER 13 MODEL PREDICTIONS OF OZONE CHANGES

13.0	INTRODUCTION .....	721
13.1	RESULTS OF MODEL CALCULATIONS .....	722
13.2	DISCUSSION OF CURRENT MODEL PREDICTIONS AND ASSESSMENT OF RECOGNIZED UNCERTAINTIES .....	771
13.3	SUMMARY AND CONCLUSIONS .....	786

#### CHAPTER 14 OZONE AND TEMPERATURE TRENDS

14.0	INTRODUCTION .....	789
14.1	OZONE TRENDS .....	789
14.2	TEMPERATURE TRENDS .....	808
14.3	SUMMARY .....	819

## TABLE OF CONTENTS (Continued)

	<i>Page</i>
<b>CHAPTER 15 TRACE GAS EFFECTS ON CLIMATE</b>	
15.0 INTRODUCTION .....	821
15.1 NATURE OF RADIATIVE FORCING .....	829
15.2 THEORY AND MODELS .....	845
15.3 EFFECTS ON ATMOSPHERIC AND SURFACE TEMPERATURES .....	854
15.4 TRANSIENT CLIMATIC EFFECTS OF INCREASING ATMOSPHERIC CO <sub>2</sub> .....	866
15.5 TRACE GAS EFFECTS ON OBSERVED AND FUTURE CLIMATE TRENDS .....	871
15.6 SCIENTIFIC CHALLENGES FOR THE FUTURE .....	885
<b>APPENDIX A KINETICS AND PHOTOCHEMICAL DATA BASE .....</b>	<b>895</b>
<b>APPENDIX B SPECTROSCOPIC DATABASE: INFRARED TO MICROWAVE</b>	
B-0 INTRODUCTION .....	911
B-1 OVERVIEW OF ATMOSPHERIC SPECTROSCOPY .....	911
B-2 QUANTITATIVE HIGH-RESOLUTION ATMOSPHERIC SPECTROSCOPY .....	912
B-3 LABORATORY SPECTROSCOPY BY SPECTRAL ANALYSIS AND PREDICTIONS .....	923
B-4 USE OF SPECTROSCOPIC DATA TO DERIVE ATMOSPHERIC COMPOSITION .....	926
B-5 EXAMPLES OF SPECTROSCOPIC DATA REQUIREMENTS FOR SPACE-BASED REMOTE SENSING OF THE ATMOSPHERE .....	929
B-6 DATABASE ASSESSMENT .....	935
B-7 CONCLUSIONS AND RECOMMENDATIONS .....	938

**TABLE OF CONTENTS (Continued)**

	<i>Page</i>
<b>APPENDIX C INSTRUMENT INTERCOMPARISONS AND ASSESSMENTS</b>	
C-0 INTRODUCTION .....	951
C-1 OZONE (O <sub>3</sub> ) .....	953
C-2 WATER VAPOR (H <sub>2</sub> O) .....	963
C-3 OTHER SPECIES .....	968
C-4 CONCLUSIONS .....	975
C-5 FUTURE RESEARCH NEEDS.....	977
<b>APPENDIX D MONTHLY MEAN DISTRIBUTION OF OZONE AND TEMPERATURE</b>	
D-0 INTRODUCTION .....	981
D-1 DATA.....	981
D-2 REGULAR COMPONENTS: ANNUAL, SEMI-ANNUAL AND QUASI-BIENNIAL WAVES .....	983
D-3 INTERANNUAL VARIABILITY .....	998
D-4 MONTHLY MEAN CHARTS OF TOTAL OZONE, AND OF OZONE MIXING RATIOS AND TEMPERATURES AT SELECTED PRESSURE LEVELS .....	1007
<b>APPENDIX E LIST OF CONTRIBUTORS.....</b>	<b>1033</b>
<b>APPENDIX F LIST OF FIGURES .....</b>	<b>1043</b>
<b>APPENDIX G LIST OF TABLES.....</b>	<b>1077</b>
<b>APPENDIX H MAJOR ACRONYMS.....</b>	<b>1083</b>
<b>APPENDIX I CHEMICAL FORMULAE AND NOMENCLATURE .....</b>	<b>1091</b>
<b>APPENDIX J PRESSURE-ALTITUDE CONVERSION CHART .....</b>	<b>1095</b>
<b>REFERENCES</b>	