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Chapter 6. The Radio-Aurora; 6.1. Observed Characteristics; 6.2. Theory of Auroral Reflections; Chapter 7. Physical Processes in the Auroral Atmosphere; 7.1. Proton Bombardment; 7.2. Electron Bombardment; 7.3. Atmospheric Electrons; 7.4. Theory of the Auroral Spectrum; Chapter 8. Auroral Particles in Space; 8.1. Interplanetary Space; 8.2. Auroral Particles in the Geomagnetic Field; Chapter 9. The Airglow Spectrum; 9.1. Nightglow; 9.2. Twilight and Day Airglow; Chapter 10. Analysis of Twilight Observations for Emission Heights 10.1. Apparent Heights  $z_s$ : The Shadow of the Solid Earth; 10.2. Height Measurements with Atmospheric Screening; 10.3. Height and Vertical Distribution of Observed Emissions; Chapter 11. Theory of the Twilight and Day Airglow; 11.1. Resonance Scattering and Fluorescence for an Optically Thin Layer; 11.2. Excitation of  $N_2^+$  First Negative Bands; 11.3. Photon Scattering by Atmospheric Sodium; 11.4. Photochemistry and Ionization of Atmospheric Sodium; 11.5. Theory of the Oxygen Red Lines; 11.6. Excitation of Other Emissions; Chapter 12. Spectral Photometry of the Nightglow 12.1. Methods of Height Determinations; 12.2. Spectroscopic Temperatures; 12.3. Intensities, Polarization, and Geographic and Time Variations; Chapter 13. Excitation of the Nightglow; 13.1. Introduction: Mechanisms of Nightglow Excitation; 13.2. Excitation by Recombination in the Ionosphere; 13.3. Excitation by Particle Collisions; 13.4. Photochemical Reactions in an Oxygen-Nitrogen Atmosphere; 13.5. Excitation of Emissions from Minor Constituents; Appendixes; APPENDIX I: A Table of Physical Constants; APPENDIX II: The Rayleigh: A Photometric Unit for the Aurora and Airglow; APPENDIX III: A Short List of Airglow-Aurora Observing Stations

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### Sommario/riassunto

For advanced undergraduate and beginning graduate students in atmospheric, oceanic, and climate science, Atmosphere, Ocean and Climate Dynamics is an introductory textbook on the circulations of the atmosphere and ocean and their interaction, with an emphasis on global scales. It will give students a good grasp of what the atmosphere and oceans look like on the large-scale and why they look that way. The role of the oceans in climate and paleoclimate is also discussed.

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