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1.4.5 Commercial passenger or freight aircraft platforms1.4.6 Uninhabited aerial vehicles; 1.4.7 Rocket platforms; 1.4.8 Satellites and other space-borne platforms; 1.5 Analytical methods not covered elsewhere in this book; 1.5.1 LIDAR methods; 1.5.2 Matrix isolation electron spin resonance (MIESR); 1.5.3 Solid-state and electrochemical sensors; 1.5.4 Far-infrared and microwave absorption and emission spectroscopy; 1.5.5 Measurement of fluxes of trace gases and aerosols; 1.6 Quality assurance and quality control; 1.6.1 Precision and accuracy; 1.6.2 Calibration of instruments
1.6.3 Intercomparison of instruments1.7 Atmospheric chemistry and policy; 1.7.1 Health effects and environmental policy; 1.7.2 Monitoring networks; 1.8 Major field campaigns for measurement of atmospheric composition; 1.8.1 The design of field campaigns; 1.8.2 Case study of a field campaign: The 2002 NAMBLEX campaign; 1.9 Instrumented chambers for the study of simulated atmospheres; 1.10 Future directions; Acknowledgements; Further reading; References; 2 Infrared Absorption Spectroscopy; 2.1 Introduction; 2.2 Fundamentals of infrared absorption spectroscopy
2.2.1 Electromagnetic radiation in the infrared2.2.2 Molecular interactions in the IR; 2.2.3 Vibrational bands and rotational lines in the IR; 2.2.4 Vibrational bands of atmospheric spectral features in the mid-IR; 2.2.5 Vibrational-rotational spectral line intensities; 2.3 Quantitative trace gas measurements employing IR absorption spectroscopy; 2.3.1 IR absorption lineshapes and linewidths; 2.3.2 Beer-Lambert absorption law and absorbance; 2.4 Trace gases in the atmosphere; 2.5 Measurement approaches employing IR absorption spectroscopy; 2.5.1 In situ measurements; 2.5.2 Remote measurements
2.6 Advances in atmospheric studies employing IR absorption measurements and future directions

Sommario/riassunto

Almost all of the breakthroughs in understanding the atmosphere have been initiated by field observations, using a range of instrumental techniques. Developing or deploying instruments to make further observations demands a thorough understanding of the chemical and spectroscopic principles on which such measurements depend.Written as an authoritative guide to the techniques of instrumental measurement for the atmospheric scientist, research student or undergraduate, Analytical Techniques for Atmospheric Measurement focuses on the instruments used to make real time measurements of atmo