

1. Record Nr.	UNINA9910820254203321
Autore	Galvin J. F. P
Titolo	An Introduction to the Meteorology and Climate of the Tropics
Pubbl/distr/stampa	Chicester : , : John Wiley & Sons, Incorporated, , 2015 ©2016
ISBN	9781119086239 9781119086222
Edizione	[1st ed.]
Descrizione fisica	1 online resource (488 pages)
Disciplina	551.50913
Soggetti	Tropical meteorology Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Title Page -- Table of Contents -- About the Author -- Preface -- Acknowledgements -- 1 Setting the Scene -- 1.1 Introduction -- 1.2 What do we mean by 'the tropics'? -- 1.3 The geography of the tropics -- 1.4 The tropical troposphere -- 1.5 Climate and population in the tropics -- 1.6 Question -- 2 The Energy Balance and the Dynamics of Weather in the Tropics -- 2.1 The tropical 'heat engine' -- 2.2 Absorption, reflection and apparent solar elevation -- 2.3 Emission from the surface -- 2.4 The radiation balance and the tropical zone -- 2.5 The dynamics of weather systems in the tropics -- 2.6 Questions -- 3 Winds, Temperature and Weather in the Tropical Zone -- 3.1 Winds -- 3.2 Temperature -- 3.3 The weather patterns and climates of the tropics -- 3.4 Clouds and fog in the tropics -- 3.5 Questions -- 4 The Subtropical Jet Streams -- 4.1 The formation of jet streams at the margins of the tropics -- 4.2 Weather associated with the subtropical jet stream -- 4.3 Folds and bifurcations in the flow -- 4.4 Clear-air turbulence -- 4.5 Questions -- 5 Synoptic-scale Weather Systems -- 5.1 Introduction -- 5.2 Convection in the tropics -- 5.3 The inter-tropical convergence zone -- 5.4 The depth of convective clouds -- 5.5 Layer clouds and shallow convection -- 5.6 The effects of heavy rainfall in the tropics -- 5.7 Atmospheric teleconnections -- 5.8 Questions -- 6 Climate, Flora and Fauna -- 6.1 The relationship of climate to plants

and animals -- 6.2 Tropical rainforest -- 6.3 Seasonal tropical forest -- 6.4 The savannas -- 6.5 Tropical deserts and scrublands -- 6.6 Mountain climates -- 6.7 Tropical oceans and coasts -- 6.8 Climatic variability -- 6.9 Questions -- 7 Dry Environments -- 7.1 Background -- 7.2 Wind and weather in the deserts -- 7.3 Fog and low cloud -- 7.4 Severe weather in the dry tropics -- 7.5 The effects of desert weather. 7.6 Settlement and the over-use of scarce water supplies -- 7.7 Questions -- 8 Monsoons -- 8.1 Introduction -- 8.2 The summer monsoon over southern Asia -- 8.3 The summer monsoon over East Asia -- 8.4 Variations of rainfall in the Asian summer monsoon -- 8.5 The Asian winter monsoon -- 8.6 The West African summer monsoon -- 8.7 The West African winter monsoon -- 8.8 Rainfall and the monsoons in East Africa -- 8.9 The South American-Caribbean 'monsoons' -- 8.10 The Australian summer monsoon -- 8.11 Variable broad-scale factors affecting the monsoons -- 8.12 Questions -- 9 Tropical Revolving Storms -- 9.1 Broad-scale convection and the development of tropical storms -- 9.2 Tropical storm development and decline -- 9.3 The effects of tropical revolving storms -- 9.4 Storm tracks in the Pacific Ocean -- 9.5 The formation and tracks of hurricanes in the North Atlantic-Caribbean -- 9.6 Tropical cyclones in the Indian Ocean -- 9.7 Tropical revolving storms in the south-west Pacific -- 9.8 Variability in the development of tropical storms -- 9.9 Extra-tropical transition -- 9.10 Conclusion -- 9.11 Questions -- 10 Mesoscale Weather Systems -- 10.1 Introduction -- 10.2 Mesoscale convective complexes -- 10.3 Sea- and land-breeze convergence zones -- 10.4 Easterly waves and squall lines -- 10.5 Mesoscale convective systems in northern India -- 10.6 Depressions in north-west India, north Pakistan and Afghanistan -- 10.7 Cross-equatorial flows -- 10.8 Mesoscale convective systems in the Gulf of Guinea -- 10.9 Local convection -- 10.10 Extra-tropical interaction with moist tropical air masses -- 10.11 Conclusion -- 10.12 Questions -- 11 Forecasting Clouds and Weather -- 11.1 Background -- 11.2 Distribution of significant cloud -- 11.3 The effect of high ground as an elevated heat source -- 11.4 Tropical upper-tropospheric troughs. 11.5 Effects of severe convection on aviation -- 11.6 Questions -- 12 The Variability of Weather and Climate Change in the Tropics -- 12.1 Introduction -- 12.2 El Niño-La Niña -- 12.3 The Madden-Julian Oscillation -- 12.4 The quasi-biennial oscillation -- 12.5 A discussion of anthropogenic climate change -- 12.6 How is climate likely to change in the tropical zone? -- 12.7 Modelling climate change -- 12.8 Conclusion -- 12.9 Questions -- 13 Tropical Agriculture -- 13.1 Agricultural productivity and tropical environments -- 13.2 Agriculture in the humid tropics and the effects of forest clearance -- 13.3 Agriculture in the savannas -- 13.4 Dry-land agriculture -- 13.5 Weather and locust swarms -- 13.6 The effects of agriculture in the tropics -- 13.7 Agriculture and climate change -- 13.8 Question -- 14 The Importance of the Tropical Ozone Layer -- 14.1 Background -- 14.2 The role of the tropics in replenishing extra-tropical stratospheric ozone -- 14.3 The effect of 'global warming' on stratospheric ozone destruction in the tropics -- 14.4 The effects of exposure to short-wave radiation -- 14.5 Current state of the stratospheric ozone layer -- 14.6 Question -- 15 Remote Sensing of Tropical Weather -- 15.1 Background -- 15.2 Satellite remote sensing -- 15.3 Precipitation -- 15.4 Wind profilers -- 15.5 Thunderstorm observation -- 15.6 Monitoring surface cover, fires and volcanic eruptions -- 15.7 Question -- 16 Tropical Weather and Health -- 16.1 Introduction -- 16.2 The effects of tropical sunshine and warmth -- 16.3 Lifted dust and its effects on health -- 16.4 Industrial and smoke pollution -- 16.5

Parasitic and infectious diseases -- 16.6 Response of the meteorological community -- 16.7 Questions -- 17 Conclusions and a Look to the Future -- 17.1 A summary -- 17.2 Forecasting the weather -- 17.3 Questions -- Appendix 1 Observations from the Tropics. Appendix 2 Named Winds of the Tropics -- Appendix 3 An Introduction to Cloud Types, Cloud Species and Precipitation -- A3.1 Introduction -- A3.2 The high clouds -- A3.3 The medium-level clouds -- A3.4 The low clouds -- A3.5 Cloud species and varieties -- Appendix 4 An Introduction to Meteorological Diagrams, Stability, Instability and Aviation Weather Charts -- A4.1 Temperature-pressure graphs -- A4.2 Stability and instability -- A4.3 Aviation-significant weather charts -- Appendix 5 Snow in the Desert: A Case Study -- A5.1 Introduction -- A5.2 Development of a depression over the desert -- A5.3 The weather features associated with the upper low -- A5.4 Summary -- Appendix 6 A Climatic Summary for Tropical Countries and States -- Appendix 7 Two Easterly Waves in West Africa in Summer 2009: A Case Study -- A7.1 Introduction -- A7.2 The wave of 28 August to 5 September 2009 -- A7.3 The wave of 2-11 September 2009 and the development of Hurricane Fred -- A7.4 A model for the development of squall lines in the Sahel -- A7.5 Conclusion -- References -- Glossary -- Index -- End User License Agreement.
