



Foreword

I consider it a great privilege to write this Foreword to this extremely timely and useful book on “Basics of Atmospheric Science” by Prof. A. Chandrasekar. There are many introductory books in the market on Atmospheric Science that are very attractive with coloured illustrations, but lack in depth. On the other hand, there are books that deal in depth only on certain aspects of Atmospheric Science. During my long teaching career, I felt the need of a book on Atmospheric Science that will not only introduce the different aspects of the field with some depth, but also highlight the exciting challenges. This book by Prof. Chandrasekar is going to fill the much needed gap for such an introductory textbook for undergraduate and postgraduate students in Atmospheric Science.

The book does a great job of laying the foundation of all aspects of atmospheric science related to weather and climate. While the first few chapters (Chapters 1–5) discuss the fundamental processes such as the origin of the atmosphere, atmospheric thermodynamics, atmospheric radiation and cloud and precipitation, the next few chapters (Chapters 6–8) lay the foundation for theoretical understanding of weather and climate. The following few chapters (Chapters 9–11) deal with large scale systems such as waves and synoptic disturbances in both tropics and extra-tropics, while the driving factors for the observed climate and the general circulation are introduced in Chapters 12 and 13. Finally, the book ends with discussing advanced numerical modelling of the atmosphere and the challenging problem of deterministic limit on weather predictability.

Today, the atmospheric science has emerged as a highly quantitative science. I am very happy to see that Prof. Chandrasekar’s book attempts to make the learning quantitative by introducing questions at the end of every chapter together with some model solutions. Also for any student of meteorology, it is fundamental to learn and understand the differences between the tropical and extra-tropical systems. I am happy to see that the book introduces the students to both tropical and extra-tropical systems.

I was responsible for introducing atmospheric science to Prof. Chandrasekar. After completion of his Ph.D. in Applied Mathematics, we worked together for a couple of years at the Centre for Atmospheric and Oceanic Sciences, IISc Bangalore. He then joined IIT Kharagpur and taught Atmospheric Science for nearly two decades. I am very happy to see that he took time off to write this book that will be extremely valuable for the students.



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