

Royal Meteorological Society

I have particularly enjoyed reading this book for its intelligent way of providing a synthetic view of synoptic–dynamic meteorology for the midlatitudes. The 12 chapters follow a logical progression with particular emphasis on application. Every topic, from the governing equations to the human processes behind weather forecasting, is explained in a clear fashion by the author who has dedicated many years of his life to teaching students. This book is definitively a great addition to any library and a useful reference textbook for students and teachers alike.

Chapter 1 is an introduction to variables, units, coordinate systems and to the basic equations. The author clearly states that it is not in the remit of the book to go into details on how to derive the equations of motion or the momentum equations therefore, he gives a simple overview that the interested reader could develop further consulting ad hoc literature on the subject.

Dynamical tools (quasi-geostrophic theory, isentropic analysis and potential vorticity framework) are described in Chapters 2–4. The following five chapters are devoted to phenomena typical of the midlatitudes (extra-tropical cyclones, fronts, cold air damming and winter storms). The author describes them in details providing equations, theories and schemes to visualize better relevant concepts.

The importance of numerical weather prediction is highlighted in one of the chapters of the book (Chapter 10), where the author includes an historical perspective, the description of the dynamical core of an atmospheric model and the parameterization of physical processes, an overview of data assimilation, the basic concepts of ensemble forecasting and a discussion on model configurations and output statistics. The last two Chapters (11 and 12) look at the human role and human processes in weather forecasting.

Review questions and/or problems on various topics introduced in the book are listed at the end of each chapter as well as a comprehensive bibliography for the eager reader who wants to expand further her/his knowledge. The limited discussion on ensemble forecasting and its interpretation is a weakness of the book.

Overall the book is useful for undergraduate students, teachers and for anybody who has a genuine interest for synoptic meteorology and weather forecasting.

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