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Data Analysis for Atmospheric, Oceanic and Climate Science

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Contents

Chapter 1
Introduction

This book is intended for graduate students and professionals working in atmospheric and oceanic sciences or closely related fields.

It has been prepared by Professord Dennis L. Hartmann and Elizabeth A. Barnes with the idea of publishing it, but we here make it available for use by all.

It is very helpful if the reader has a background that includes elementary statistics, probability and matrix algebra, but an attempt is made to provide some basic background in these subjects, so that the book is largely self-contained.

The focus of the book is on using some standard methods for practical purposes intelligently, rather than providing a deep and complete theoretical analysis of these methods. Examples are shown of appropriate uses of the techniques in atmospheric and oceanic sciences.

The choice of topics reflects the experience of the authors in doing research in the atmospheric and oceanic sciences over an extended period. Some of the examples presented are of historical interest, while many of the techniques are very applicable today and in the future.

Most of the figures and examples in this book were done using Python and Jupyter Notebooks. The notebooks we used can be found in the GitHub page for this book.