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Nota di contenuto	; 1. Introduction / P. Alpert -- ; 2. The Factor Separation Methodology and the fractional approach / T. Sholokhman and P. Alpert -- ; 3. Investigation of the Factor Separation features for basic mathematical functions / T. Sholokhman and P. Alpert -- ; 4. Factor Separation Methodology and paleoclimates / A. Berger, M. Claussen and Q. Yin -- ; 5. Meso-meteorology: Factor Separation examples in atmospheric meso-scale motions / P. Alpert -- ; 6. Using the Alpert-Stein Factor Separation Methodology for land-use land-cover change impacts on weather and climate process with the Regional Atmospheric Modeling System / A. Beltran-Przekurat, R.A. Piekle Sr., J.L. Eastman, G.T. Narisma, A.J. Pitman, M. Lei, and D. Niyogi -- ; 7. Application of Factor

Separation to heavy rainfall and cyclogenesis: Mediterranean examples / R. Romero -- ; 8. Experience in applying the Alpert-Stein Factor Separation Methodology to assessing urban land-use and aerosol impacts on precipitation / S.C. van den Heever, C. Rozoff, and W.R. Cotton -- ; 9. Free and forced thermocline oscillations in Lake Tanganyika / O. Gourgue, E. Deleersnijder, V. Legat, E. Marchal, and L. White -- ; 10. Application of the Factor Separation Methodology to quantify the effect of waste heat, vapor and pollution on cumulus convection / G.W. Reuter -- ; 11. The use of the Alpert-Stein Factor Separation Methodology for climate variable interaction studies in hydrological land surface models and crop yield models / D. Niyogi, R. Mera, Yongkang Xue, G. Wilkerson, and F. Booker -- ; 12. Linear model for the sea breeze / T. Sholokhman and P. Alpert -- ; 13. Experience and conclusions from the Alpert-Stein Factor Separation Methodology: Ensemble data assimilation and forecasting applications / D. Rostkier-Edelstein and J.P. Hacker -- ; 14. Tagging systematic errors arising from different components of dynamics and physics in forecast models / T. N. Krishnamurti and Vinay Kumar -- ; 15. Some difficulties and prospects / P. Alpert and T. Sholokhman -- ; 16. Summary / P. Alpert -- Appendix: References employing the Alpert-Stein Factor Separation Methodology.

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#### Sommario/riassunto

Modeling atmospheric processes in order to forecast the weather or future climate change is an extremely complex and computationally intensive undertaking. One of the main difficulties is that there are a huge number of factors that need to be taken into account, some of which are still poorly understood. The Factor Separation (FS) method is a computational procedure that helps deal with these nonlinear factors. In recent years many scientists have applied FS methodology to a range of modeling problems, including paleoclimatology, limnology, regional climate change, rainfall analysis, cloud modeling, pollution, crop growth, and other forecasting applications. This book is the first to describe the fundamentals of the method, and to bring together its many applications in the atmospheric sciences. The main audience is researchers and graduate students using the FS method, but it is also of interest to advanced students, researchers, and professionals across the atmospheric sciences.

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