

MULTIPLE SCALES ASYMPTOTICS FOR ATMOSPHERIC FLOWS

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One important activity of theoretical meteorology involves the development of simplified model equations that describe selected scale-dependent phenomena observed in atmospheric flows.

This lecture will begin by explaining examples of such simplified models and of the related phenomena. A unified mathematical approach to the derivation of these and similar models, based on multiple scales techniques, will be discussed.

The lecture closes by reporting on recent projects, pursued jointly with A.J. Majda, N. Botta, G. Carque, E. Mikusky, and A. Owinoh, which take advantage of this approach and which range from the development of new systematic multiscale models to improved numerical methods for atmospheric flow applications.