RELATIVE MOTION: DIAGNOSIS OF WEATHER SYSTEMS AND STORMS USING MULTISPECTRAL GEOSTATIONARY SATELLITE IMAGERY

James F.W. Purdom

Cooperative Institute for Research in the Atmosphere, Colorado State University, Fort Collins, Colorado

ABSTRACT

One of the basic utilizations of geostationary satellite imagery is the animation of sequences of imagery to aid in diagnosing weather systems and storms. When viewing weather systems that are moving while evolving, it often becomes a near impossible task to diagnose and understand the system development and evolution. An exceptionally useful tool for cloud motion, storm and weather system analysis is the use of storm, or system relative motion. This presentation will show the user how relative motion may be used to analyze the pertinent flow fields into storms and storm systems that support their development and evolution. Furthermore, it will be shown how many organized convective systems that appear to have randomly interspersed convection are actually very well organized, and that by viewing in a storm relative mode their seemingly random nature can be seen to be very well organized and therefore forecastable on appropriate time frames (the nowcast void between two and six hours). It will be further shown how using storm relative motion can lead to a better understanding of mesoscale weather through the formulation of conceptual models for various types’ weather systems.