Geophysical Research Abstracts,
Vol. 10, EGU2008-A-04419, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-04419
EGU General Assembly 2008

The remarkable wide range space-time scaling of TRMM reflectivities and radiances: implications for satellite rain

S. Lovejoy (1), D. Schertzer (2), V. Allaire (1), J. Pinel (1)

(1) Physics dept., McGill U., 3600 University st., Montréal, Canada (lovejoy@physics.mcgill.ca (2) CEREVE, Ecole Nationale des Ponts et Chaussées, 6-8, avenue Blaise Pascal, Cité Descartes, 77455 MARNE-LA-VALLEE Cedex, (1) Physics dept., McGill U., 3600 University st., Montréal, Canada (lovejoy@physics.mcgill.ca/1-514-398-6537)

Numerous studies have shown that over various ranges, atmospheric fields are scaling. However the key question as to the large scale space-time limits of scaling has not been empirically established. Does the scaling extend up to planetary scales? What are the corresponding long time scales? Is space-time differentially stratified or roughly isotropic? In this presentation we answer these questions using the first truly global scale analysis of satellite radiances examining 14 passive channels ranging from visible to infra red to passive microwave as well as (active) radar reflectivities. The spatial resolutions depend somewhat on wavelength but are from several kilometers up to planetary scales (20000km), and from (typically) 2- 4 days in time up to 10 years. We discuss the implications for satellite rain estimating techniques.