



Dynamical behavior of multifractals in typhoons

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We investigate the dynamical behavior of multifractals in typhoons. A significant and fascinating feature of this behavior is that it provides a proper interpretation for the pattern of a typhoon in terms of the numerical values of its generalized dimension and scaling exponent. For our case, these statistical quantities can be estimated numerically from four meteorological factors, i.e., the moving speed, the central pressure, the strong wind radius, and the maximum wind speed, before and after the landing of a typhoon. We perform a computer simulation by using a 5-year typhoon data covering 2008 to 2012 in the East Asian region. The result from the multifractal structure allows us to calculate a definite and reliable fractal dimension. In particular, we discover the strength of the multifractal structures from the four meteorological factors obtained from five years of typhoon data. The multifractal strength in the moving speed is a relatively large compared to the other meteorological factors in three time intervals.

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