



## Wavelets and Fractals: A Geosciences Perspective

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Wavelets and fractals have been increasingly finding their way in a variety of applications in various branches of science and engineering, such as geophysics, geomagnetism, atmospheric sciences, ocean science, meteorological studies, climate change studies, materials science and engineering, electrical engineering, among others. While wavelet analysis helps to represent the signals in a time-scale or space-scale plane for better understanding of the spatio-temporal behaviour of signals, fractals and multifractal studies facilitate to understand the intrinsic self-similarities and singularities present in the signals with the help of scaling exponents. Signals depicting fractal and/or multifractal behaviour are largely generated from nonlinear and dynamical systems. The thorough mathematical formalism and their ability to provide an additional dimension to unravel the hidden information in various kinds of signals, make these novel analyses techniques very unique, in the contemporary understanding of signals and systems. In this colloquium, I will follow a more pedagogical approach to the theory of wavelets and fractals and emphasize their applications in the field geophysics and geomagnetism. I will also discuss, how wavelets and fractals are related?

**Talk open to all**

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