

# **Volcanic eruptions : Zipf, time series, el Nino**

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If short range prediction of volcanic eruptions is possible, long range prediction is far from obvious. The freely available data list of world eruptions is studied through modern time series analysis techniques, as those used in exotic physics fields like econophysics and sociophysics. The events are rare but drastic. Not much data is available. The rank Zipf-like plot of so called eruption magnitudes is first used. The distribution of time intervals between eruptions is studied. The question of a Poisson or not distribution is investigated. Taking into account the magnitude of flow a Gutenberg-Richter like law known for earthquakes is attempted. Recurrence plot analysis is introduced. Several specific cases, e.g. Etna is considered in more detail. The case of oceanic eruptions is also discussed. Relations to el Nino events, and the role of the Chandler wobble are studied. Other intrinsic modes are also looked for. Some statistical modelisation is attempted along the lines of a Hamiltonian formalism, and of a Langevin-like diffusion equation.