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The number comb for a soil physical properties dynamic measurement

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We propose the prime numbers distribution extracted from the soil digital multiscale images and some physical properties time series as the precise indicator of the spatial and temporal dynamics under soil management changes. With this new indicator the soil dynamics can be studied as a critical phenomenon where each phase transition is estimated and modeled by the graph partitioning induced phase transition. The critical point of prime numbers distribution was correlated with the beginning of Andosols, Vertisols and saline soils physical degradation under the unsustainable soil management in Michoacan, Guanajuato and Veracruz States of Mexico. The data banks corresponding to the long time periods (between 10 and 28 years) were statistically compared by RISK 5.0 software and our own algorithms. Our approach makes us able to distill free-form natural laws of soils physical properties dynamics directly from the experimental data. The Richter (1987) and Schmidt and Lipson (2009) original approaches were very useful to design the algorithms to identify Hamiltonians, Lagrangians and other laws of geometric and momentum conservation especially for erosion case.

References:

Richter, J., 1987. The soil as a reactor. Catena Verlag, 192p.

Schmidt, M. And Lipson, H., 2009. Distilling free-form natural laws from experimental data. Science, vol. 324:81-85

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