# Relationships Between Crop Grain Yields, Soil Electrical Conductivity and Topography Studied With Joint Multifractal Theory. (S01-kravchenko102548-Poster)

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## Abstract:

Quantification of spatial aspects of yield affecting factors is an important issue in precision agriculture. We applied joint multifractal theory to analyze variability of crop yields and relationships between yields, terrain elevation, and soil electrical conductivity (EC). Corn and soybean yield data from 1996 to 2001 and soybean yield data from 1997 and 1999 were collected from two agricultural fields in Illinois and from one field in Michigan, respectively, along with elevation and soil EC measurements. Joint multifractal theory allowed successful delineation of the ranges of elevation and EC values that were of particular influence on crop yields. It was found to be an efficient tool for analysis of the yield spatial variability and the relationships between scaling properties of two and more variables.

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