MCRN Newsletter

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MCRN Colloquium Webinar

<u>Monday, April 18, 2016, 10am EDT</u>: Joint presentation by **Mary Silber** (University of Chicago) and **Karna Gowda** (Northwestern University)

Vegetation patterns in mathematical models, and vegetation patterns in Somalia [Webinar Link](#)

Abstract: Visually striking large-scale spatial patterns of vegetation have been observed in semi-arid regions in the Americas, Africa and Australia. These have led to suggestions by theoretical ecologists that certain characteristics of the patterns may serve as early-warning signs of desertification. This is an attractive idea since these patterns can be monitored through satellite imaging of the globe.

A number of conceptual mathematical models of water-vegetation interactions, of advection-reaction-diffusion type, have been developed to explore the process of vegetation collapse as annual mean precipitation decreases. We probe one of these early warning sign proposals, within the context of varying parameters of a mathematical model of vegetation patterns, to assess its robustness. This leads to the identification of the key modeling assumptions that support the early warning sign scenario within this mathematical model. At the same time, we have become very interested in the potential of the satellite data to identify directly possible early warning signs, and towards this end, we are focusing on images of Somalia vegetation patterns, over many decades, to assess changes. The first part of this talk, presented by Mary Silber, will highlight the results of our PDE model analysis, and the second part of this talk, presented by Karna Gowda, will describe our proposed and preliminary investigations of satellite image data of Somalia.

The following colloquium will be by **Erik Van Vleck** (University of Kansas) on Monday, April 25, 2016, 4pm EDT.

In case you missed it...

View [Data assimilation for extreme ionospheric events](#) by **Juan Durazo**. Please [email Juan](#) with questions.