1128-35-12 **Hong-Ming Yin*** (`hyin@wsu.edu`), Department of Mathematics and Statistics, Washington State University, Pullman, WA 99164, **Xinfu Chen** (`xinfu@pitt.edu`), Department of Mathematics, University of Pittsburgh, Pittsburgh, PA 15260, and **Lihe Wang** (`lihe-wang@uiowa.edu`), Department of Mathematics, University of Iowa, Iowa City, IA 52242. *On a Cross-Diffusion System Modelling Vegetation Spots and Strips in a Semi-arid or Arid Landscape.* Preliminary report.

In this paper we study a model which describes the pattern formation of vegetation spots and strips in a semi-arid or arid landscape. The mathematical model consists of a nonlinear cross-diffusion system with evaporation and absorption sources. Global existence and uniqueness in classical sense for the system are established. Some asymptotic behaviors of the solution are derived for a linearized system. It is shown that the solution of linearized system is asymptotically stable near the steady-state solution. Moreover, we show that the Turing phenomenon occurs for the linearized cross-diffusion system and the cross-diffusion destabilizes the ecosystem.

This is a joint work with Professor Xinfu Chen at University of Pittsburgh and Professor Lihe Wang at University of Iowa. (Received November 19, 2016)