Geophysical Research Abstracts
Vol. 13, EGU2011-11029, 2011
EGU General Assembly 2011

Investigating savanna domain in parameter planes exploiting a

Francesco Accatino (1), Carlo De Michele (1), Renata Vezzoli (1), and Robert J. Scholes (2)
(1) Politecnico di Milano, DIIAR, Milano, Italy (francesco.accatino@mail.polimi.it), (2) CSIR, Pretoria, South Africa

Tree-grass co-existence in savannas involves multiple and sometimes connected biogeophysical conditions.
The savanna domain, defined in a multi-parameter space, its boundaries, and the type of transitions (gradual or abrupt) to other ecosystems (i.e. grassland or forest), are fundamental for the management of ecosystems in present and future changing scenarios, and for preserving the biodiversity. Here we investigate the savanna domain within different parameter planes (rainfall-fire, fire-grazers, and fire-browsers planes) using a simple ecohydrologic model of tree-grass-soil water dynamics.
The study of stability maps in different parameter spaces will allow to (i) identify savanna domains, (ii) underline the relevance of the parameters, and (iii) show the vegetation changes in composition/functional types along gradients of rainfall, fire, and herbivores. Stability maps interpretation will shade light on possible causes behind vegetation abrupt transitions (e.g., forest collapse and bush encroachment). A comparison between theoretical findings and data collected in 15 african savannas sites is presented and discussed.