

An Agent Based Model of Climate Change and Conflict among Pastoralists in East Africa

Hailegiorgis, A.B., Balan, G.C., Bassett, J.K., Gulden, T., and Kennedy, W.G.

Climatic variability plays determinant role in shaping the socioecological dynamics of most pastoral area. As pastoral livelihood is highly dependent on available pasture and water, climate variability affects the amount and distribution of pastures and water points. We develop an agent based model to gain a better understanding of the complex social-ecological interaction exists in Mandera triangle, an area where Somalia, Kenya, and Ethiopia borders meet, of East Africa. The inhabitants of Mandera exhibit socio-natural evolution in the adoption of pastoralism as a response to their sparse and seasonally changing environment. Furthermore, the herders of Mandera have also constructed an elaborate social alliance structure to cope with various environmental shocks such as drought or flooding. However, increased seasonal rainfall variability and occurrence of frequent drought create tremendous stress on pastoralists groups. It undermines the delicate balance on which their livelihood is based on and challenges their long term resilience and adaptive response mechanisms. Over the last few years, disputes over land, water, grazing rights and theft of livestock increased and has led to escalation of conflict between rival pastoralists groups and farmers. Our model focuses on the emergence and continuance of conflict triggered by climatic change among various pastoral groups and farmers.

Key words: Agent Based model, Climate Change, conflict, Pastoralist, Mandera