ABSTRACT

Gies, Lauren M.S., Purdue University, August 2013. Drought Policy Development and Assessment in East Africa Using Hydrologic and System Dynamics Modeling.
Major Professor: Venkatesh Merwade

Drought is a natural epidemic that affects millions of people across the globe. Lack of rainfall reduces crop yields and in turn, food availability. Combined with a diminishing water supply, long periods of drought can lead to catastrophic conditions. As droughts become more frequent, mitigation is a fundamental concern for countries and their policy makers. This paper aims to establish a framework for policy implementation that illustrates the interdependencies between water availability, land degradation, food availability, social welfare, and policy options in an attempt to mitigate the effects of drought. Hydrologic and system dynamics models were prepared for a region in the Horn of Africa for a 10 year period, to demonstrate these interdependencies and the impact new mitigation policies can have on the region. The Horn of Africa is well-known for frequent droughts due to unpredictable rainfall and high temperatures, often leading to a point of crisis for most of the population. The system dynamics framework was able to show how alternate policies can alleviate the effects of drought by increasing water availability and encouraging a more resilient population.