

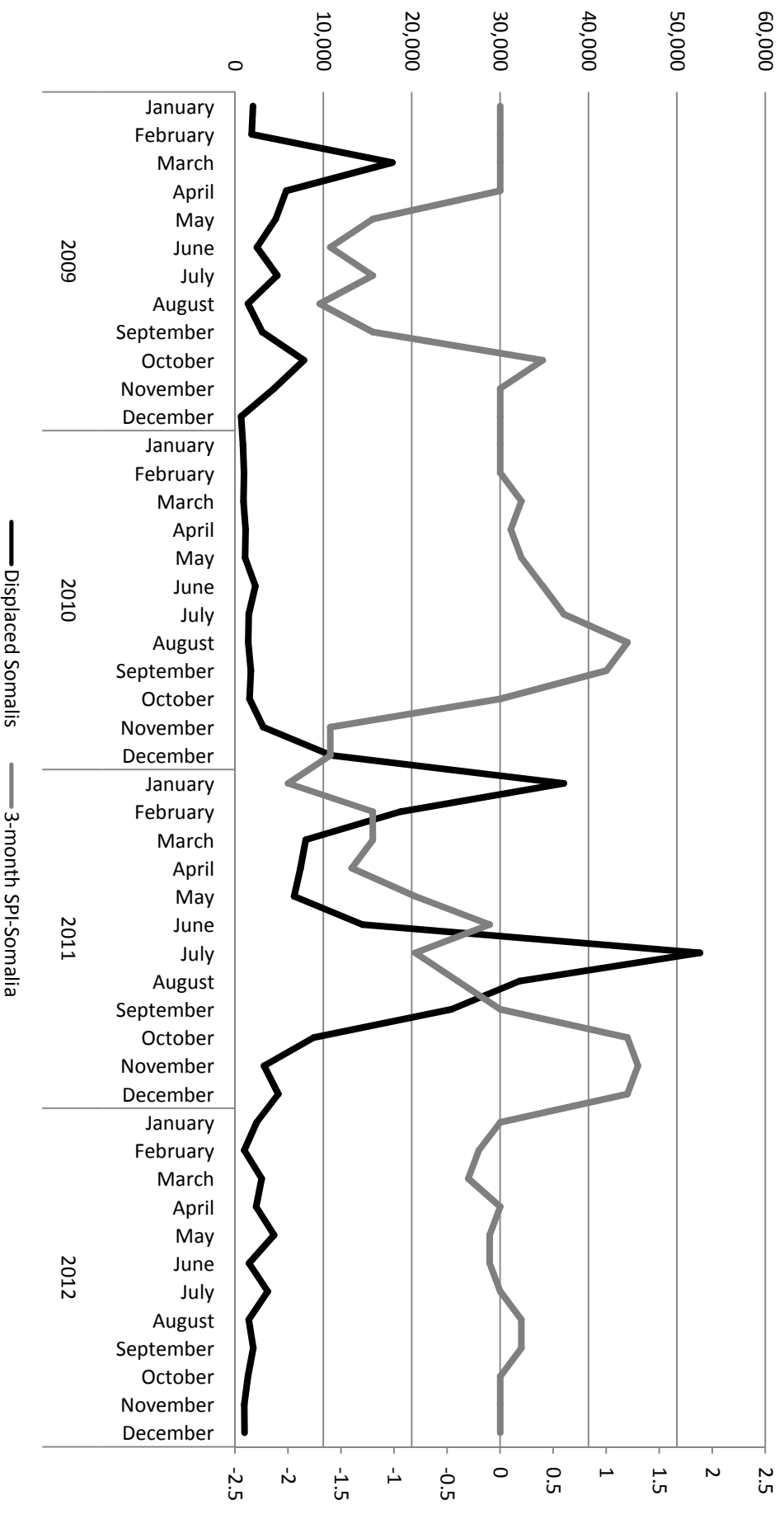
Slow-onset events and population mobility

UNFCCC Expert Meeting on Slow-onset Events
Nadi, Fiji, 12–14 September 2013



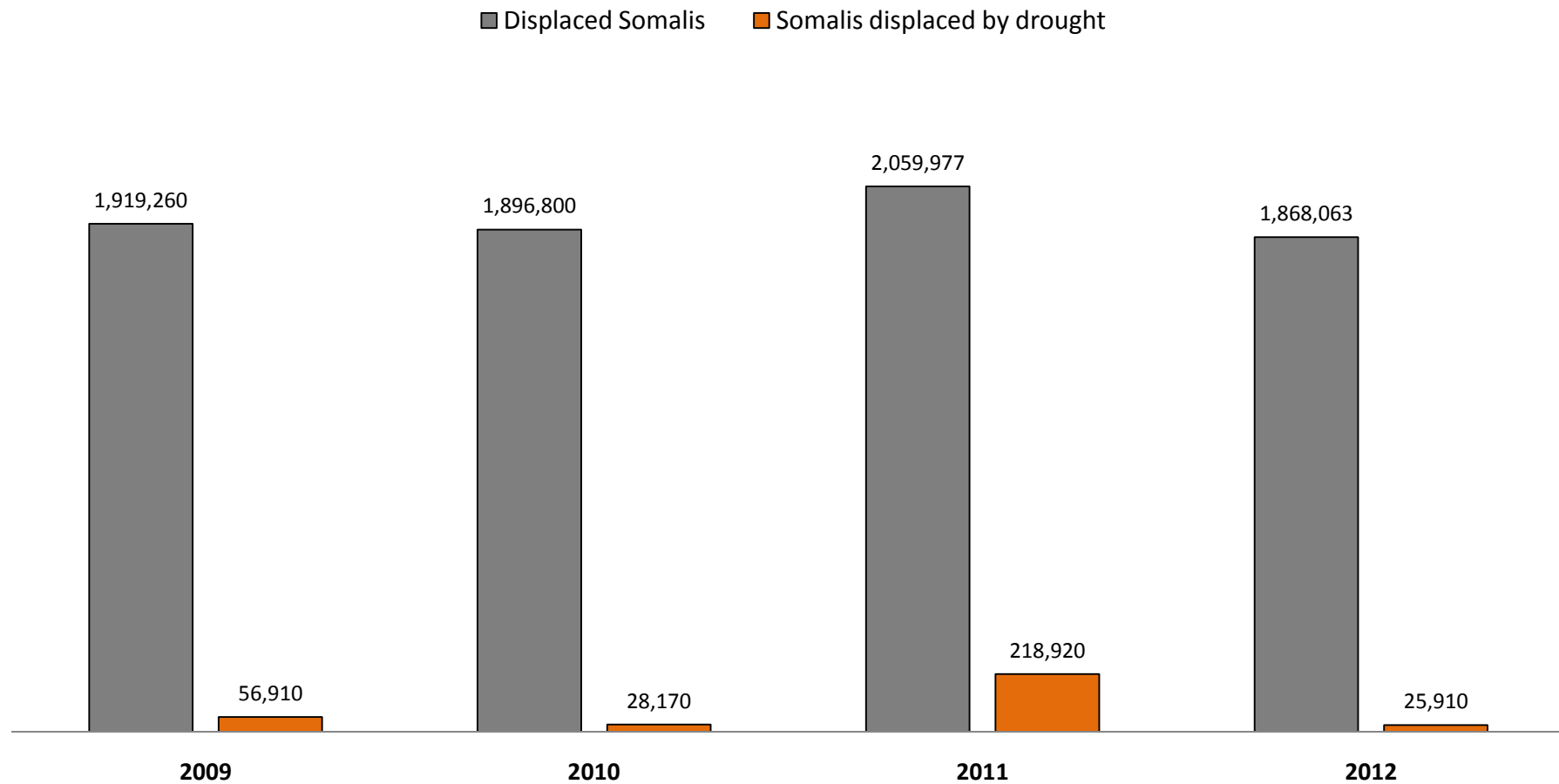
1. What we know: Example of displacement associated with the 2010–2011 drought in East Africa

Somalis displaced by drought 2009–2012



2. Gaps and challenges related to slow-onset events and population mobility

Number of displaced Somalis compared to number of Somalis displaced by drought



3. Model intro

The model currently focuses on:

- Drought impacts
- Kenya's North Eastern Province
- Short-term dynamics associated with slow-onset events

We are expanding the model to address:

- Flood impacts
- More of Northern Kenya as well as Southern Ethiopia and Southern Somalia
- Longer-term impacts (looking back to 1990 and forward to 2050)

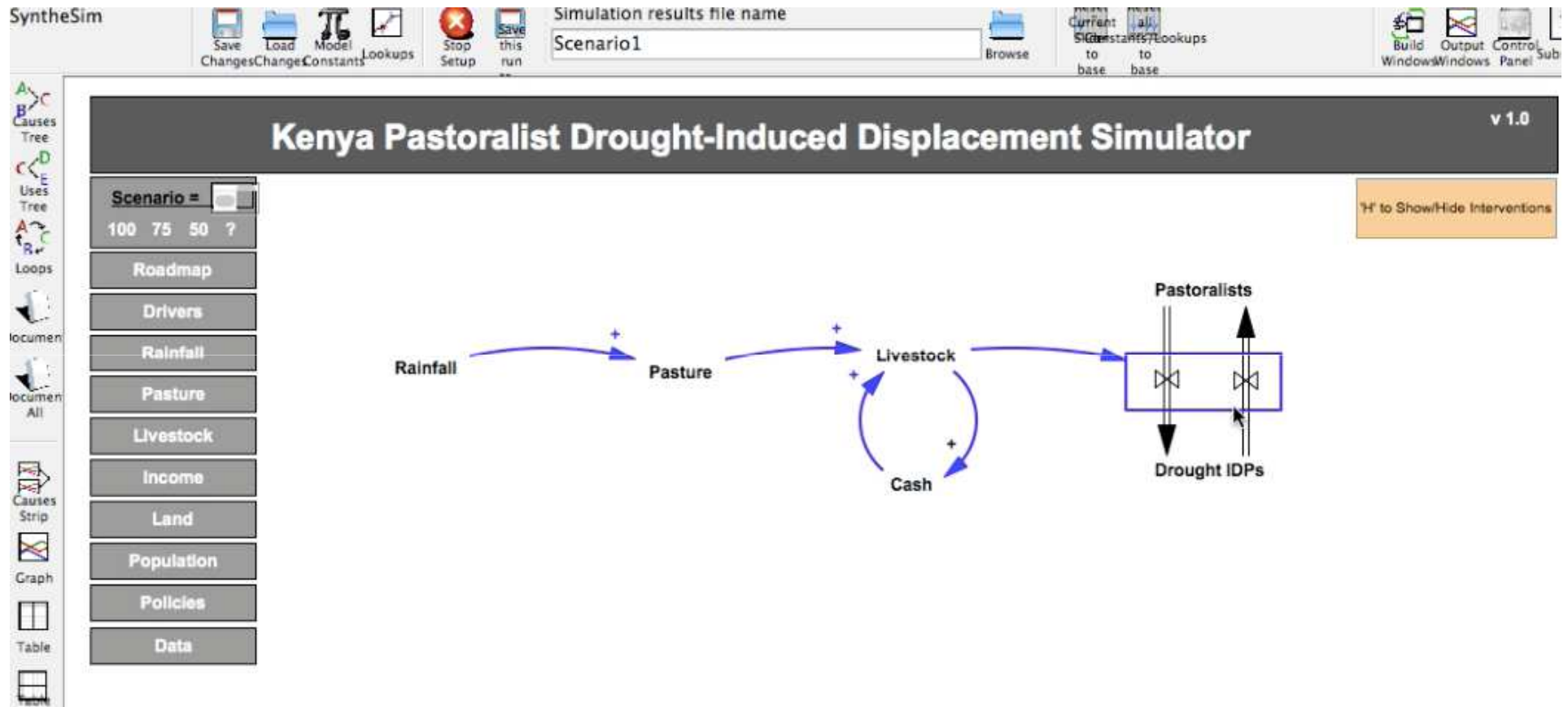
The model **can** be used for:

- Monitoring drought-induced displacement
- Real-time scenario development to simulate the impacts of climate change, development policies, humanitarian interventions and adaptation strategies
- Identifying measures that have the greatest impact in terms of livelihoods and resilience

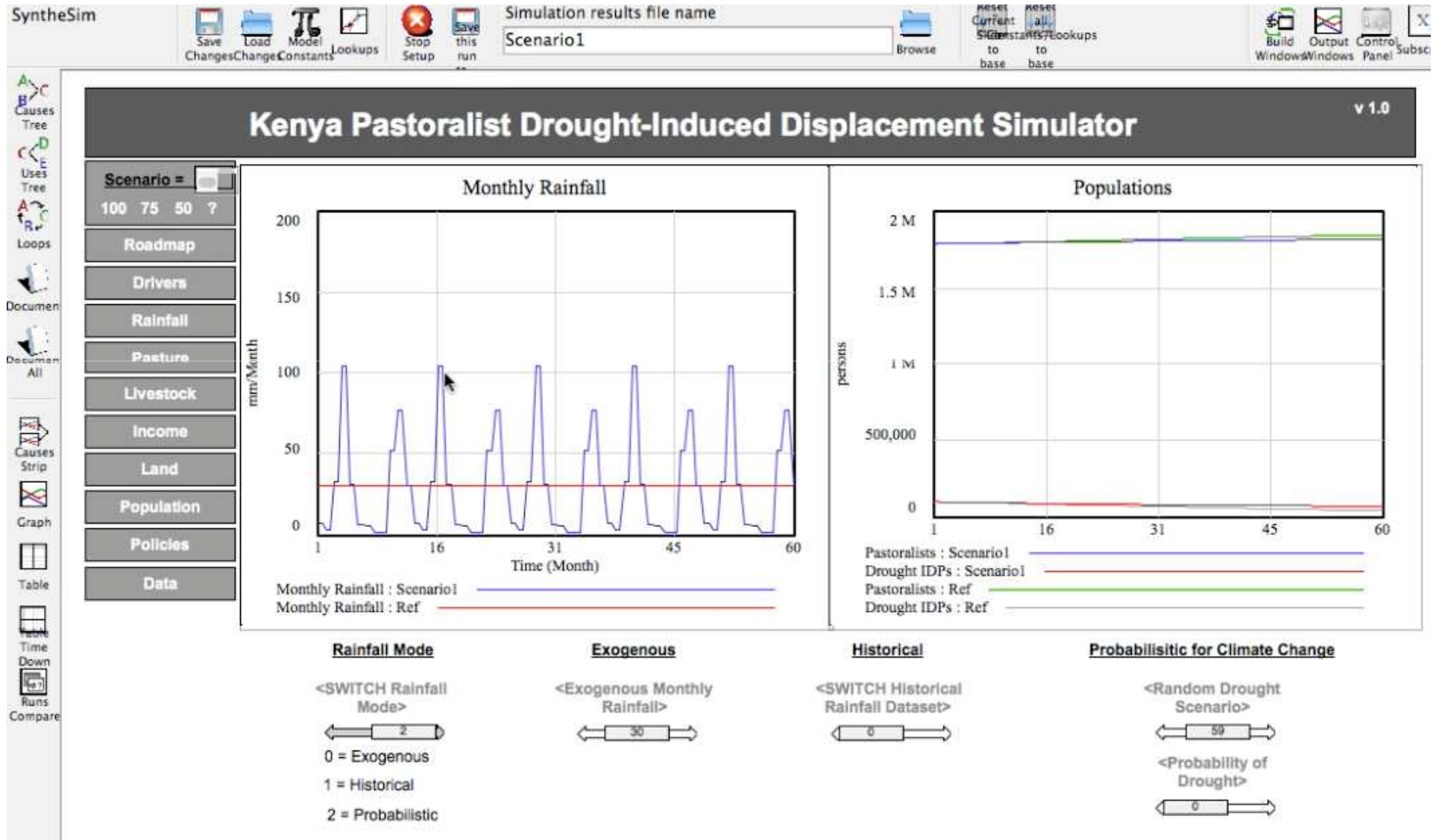
The model is **not** precise enough to:

- Predict displacement
- Indicate exactly how much money to invest on one strategy or another

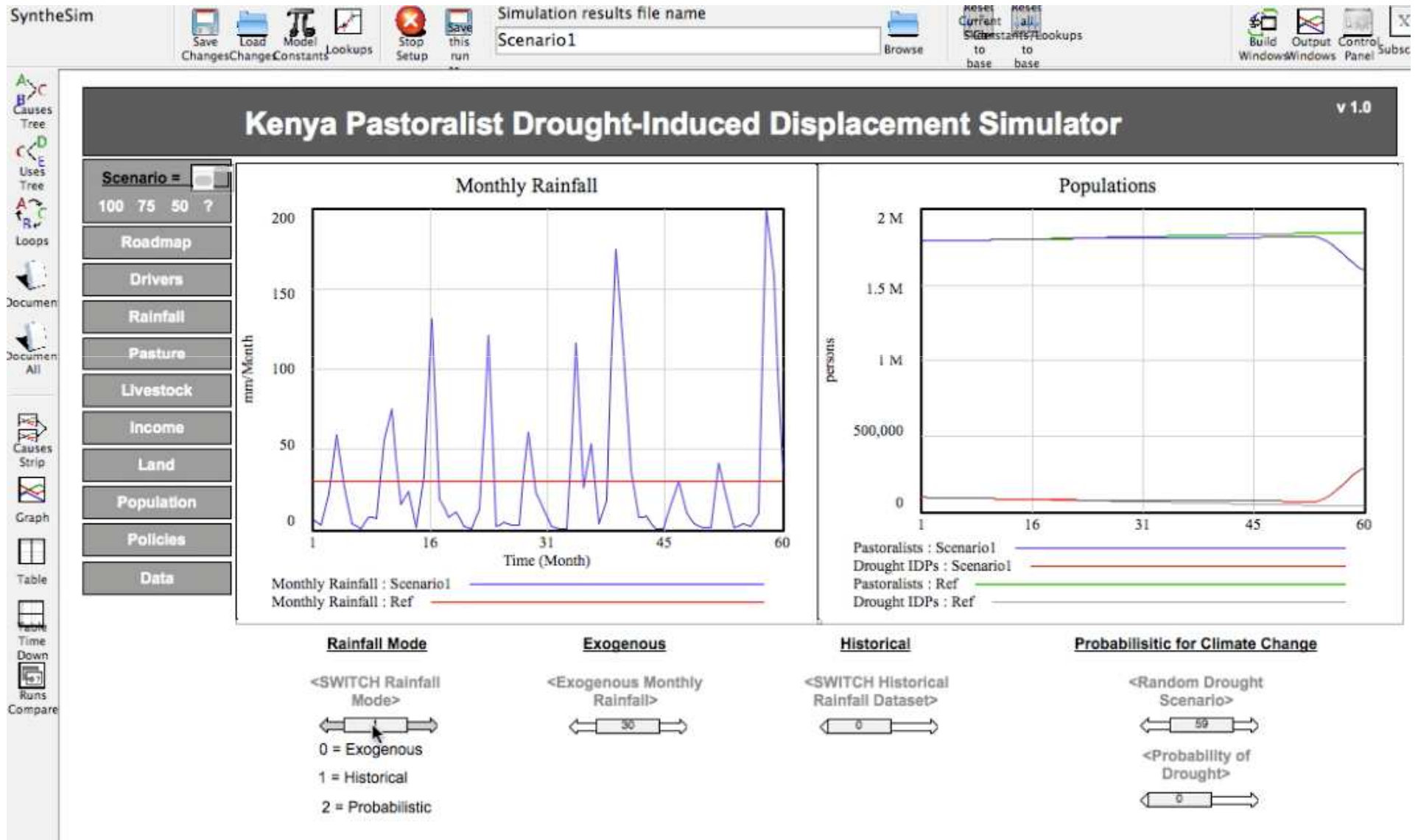
Simulation of 2009–2011 drought in NE Kenya



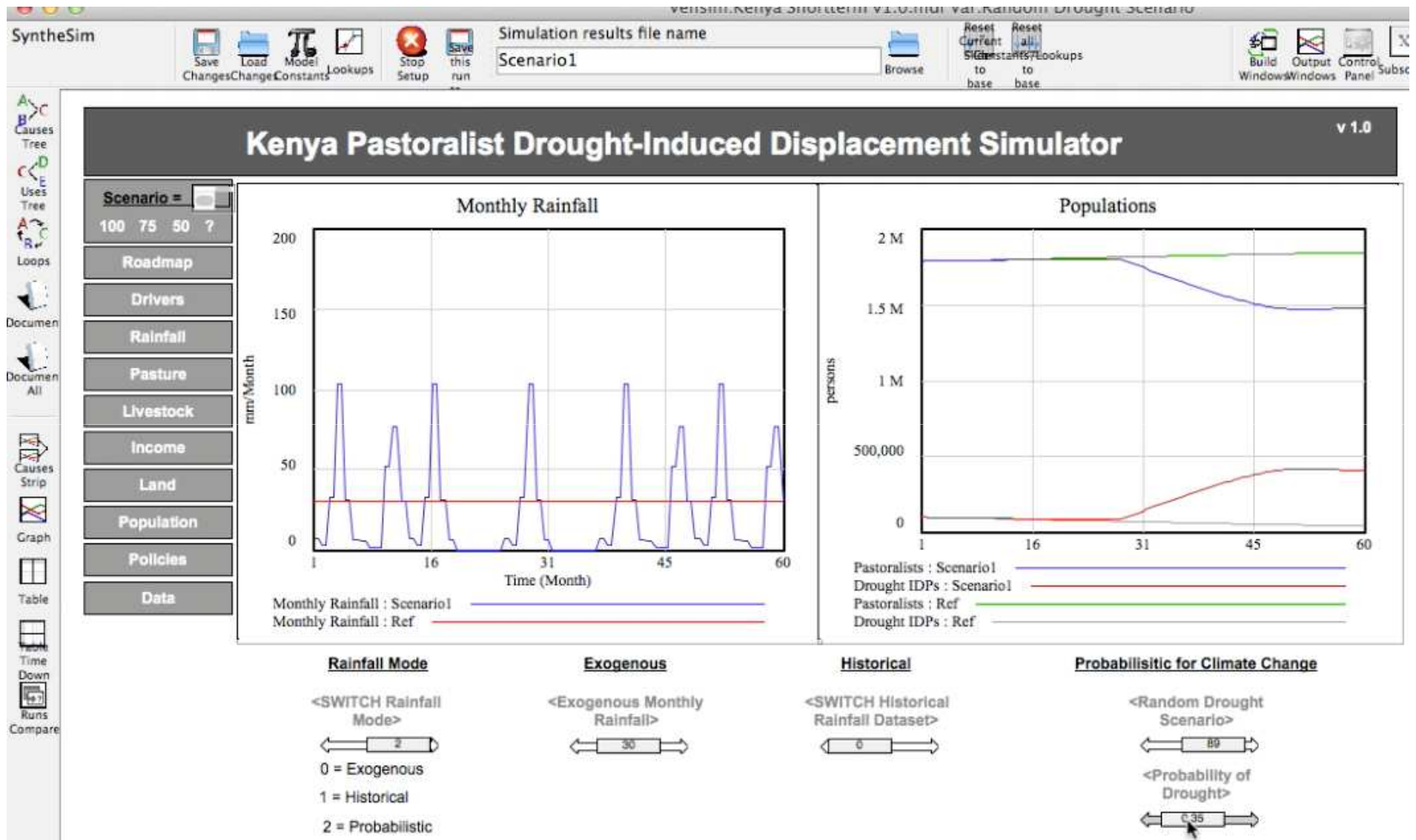
Simulation of 2009–2011 drought in NE Kenya



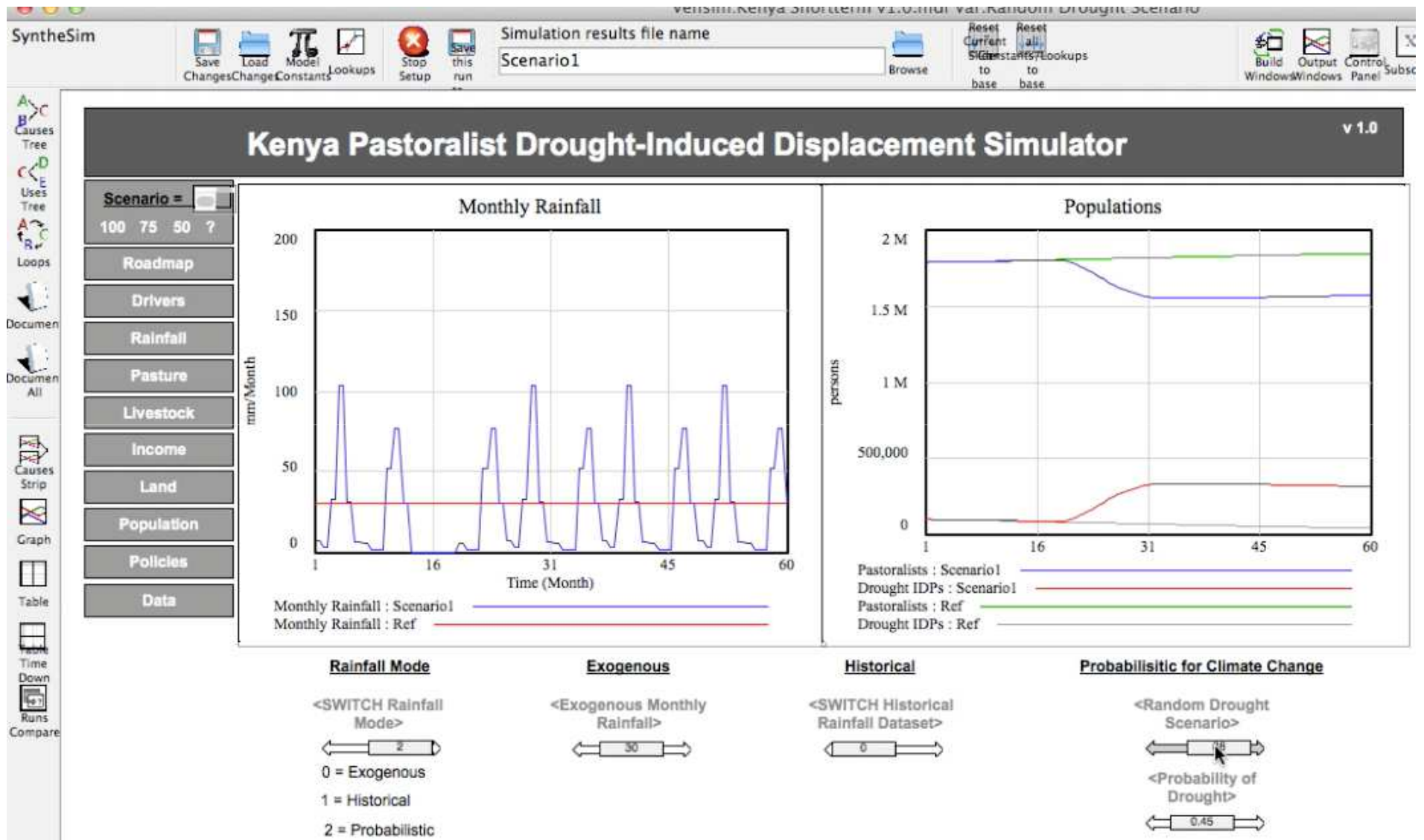
Simulation of 2009–2011 drought in NE Kenya



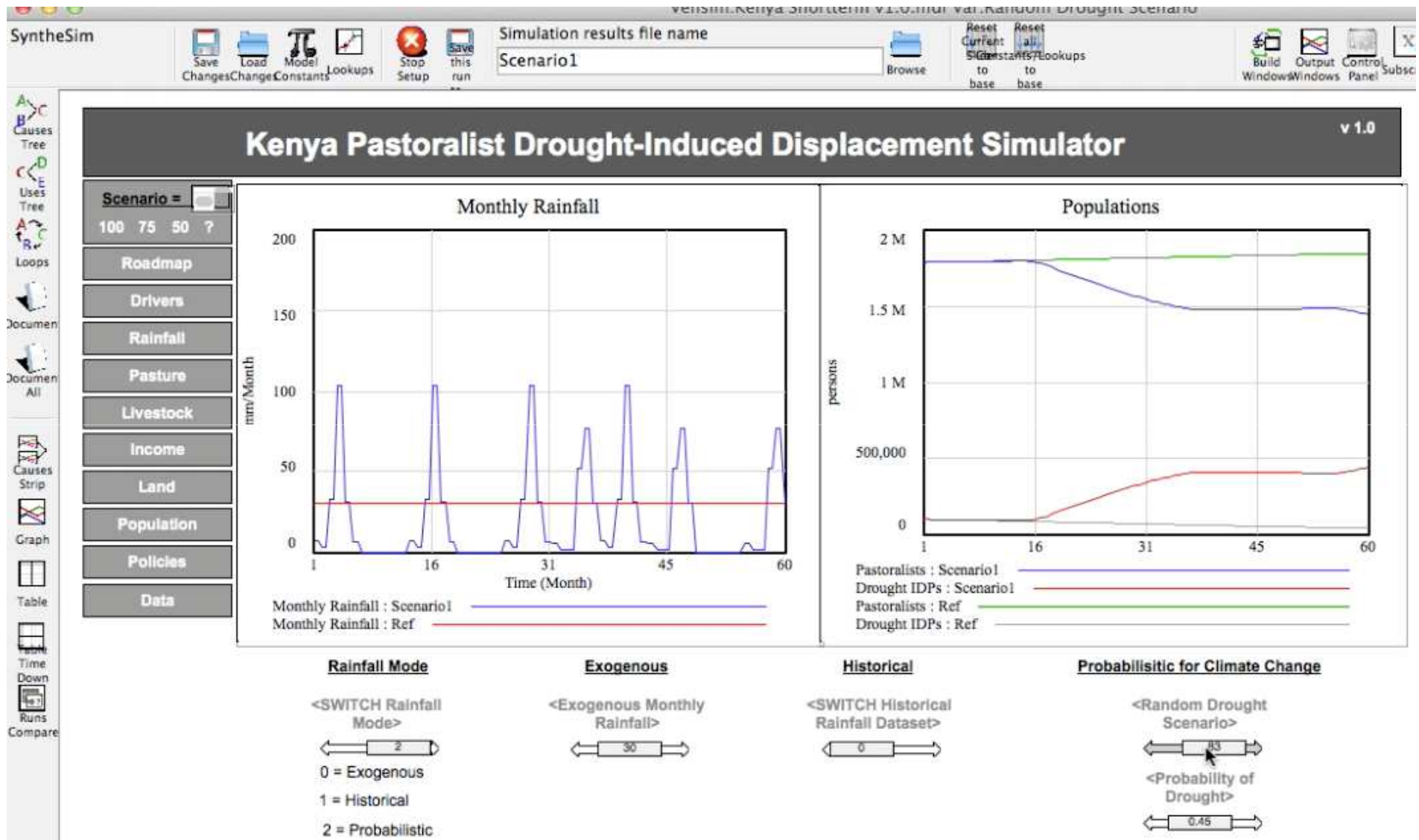
Climate change scenarios



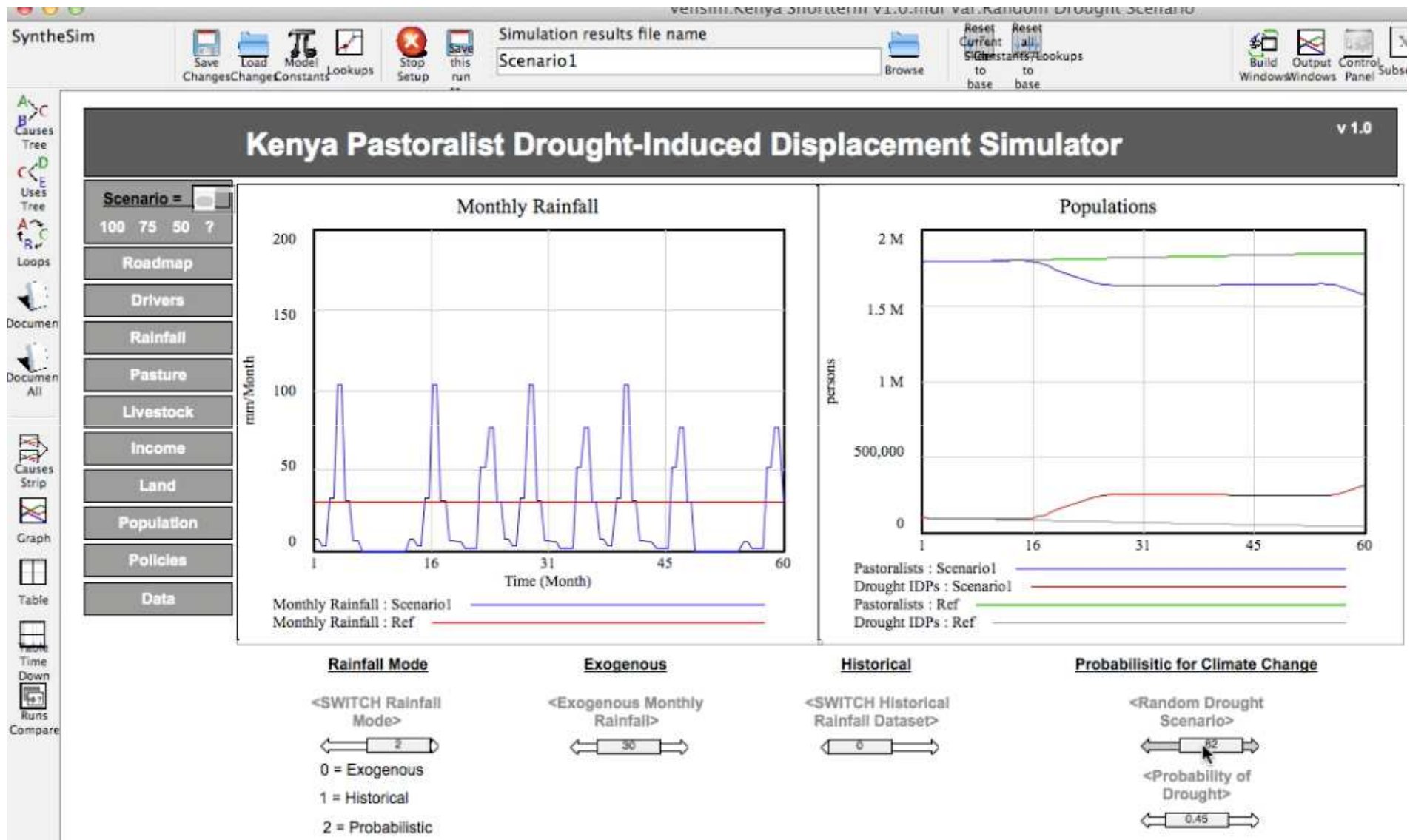
Climate change scenarios



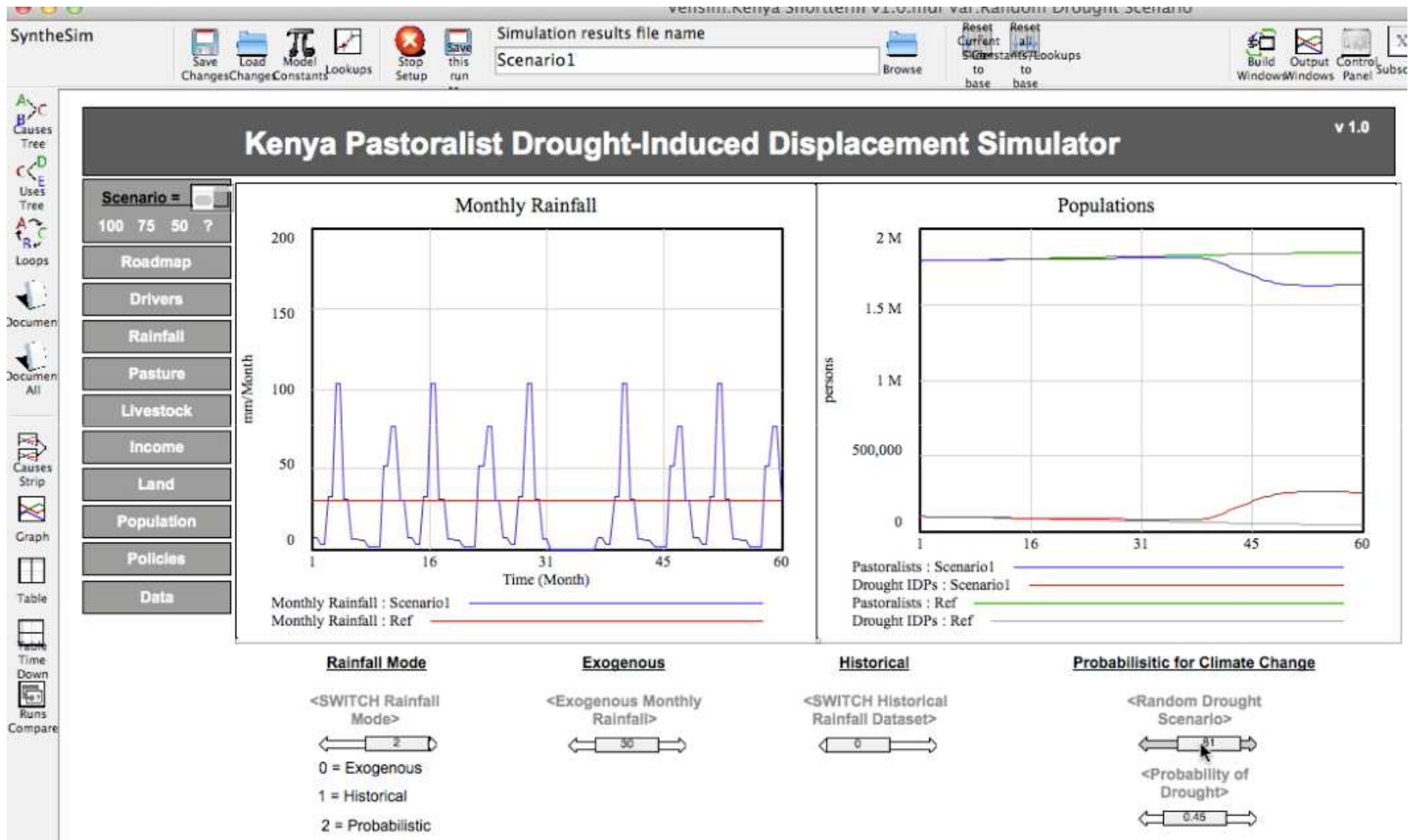
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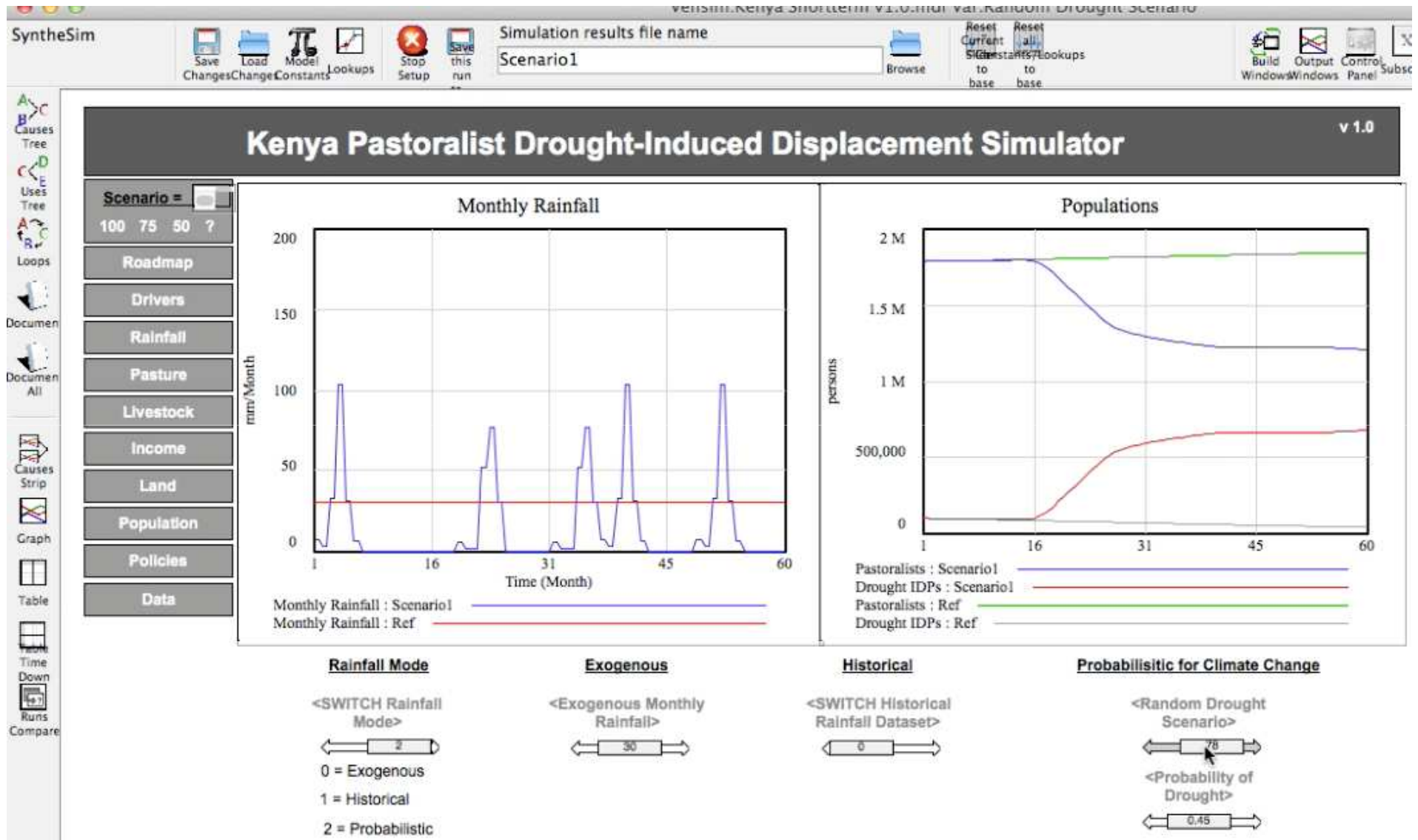
Climate change scenarios



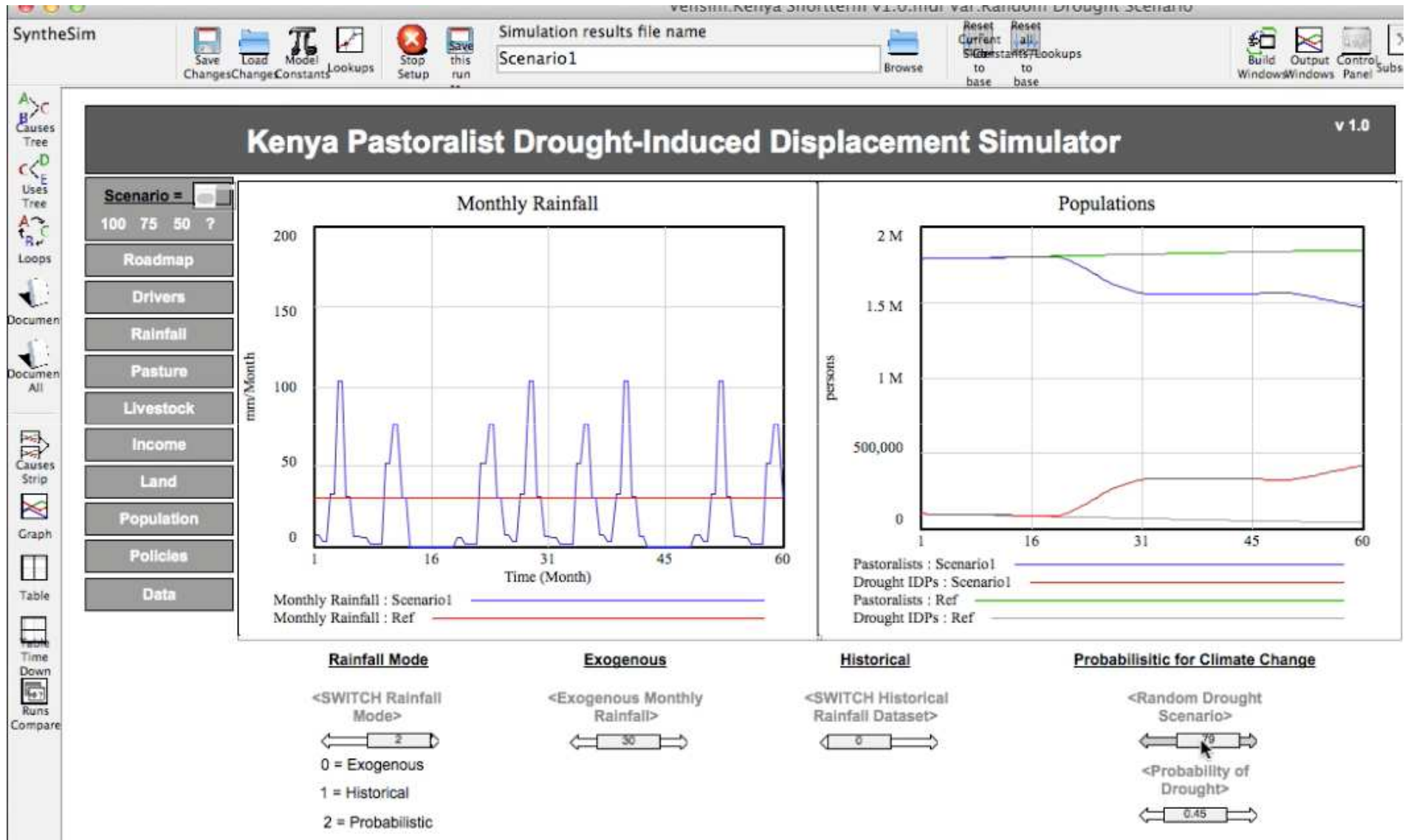
Climate change scenarios



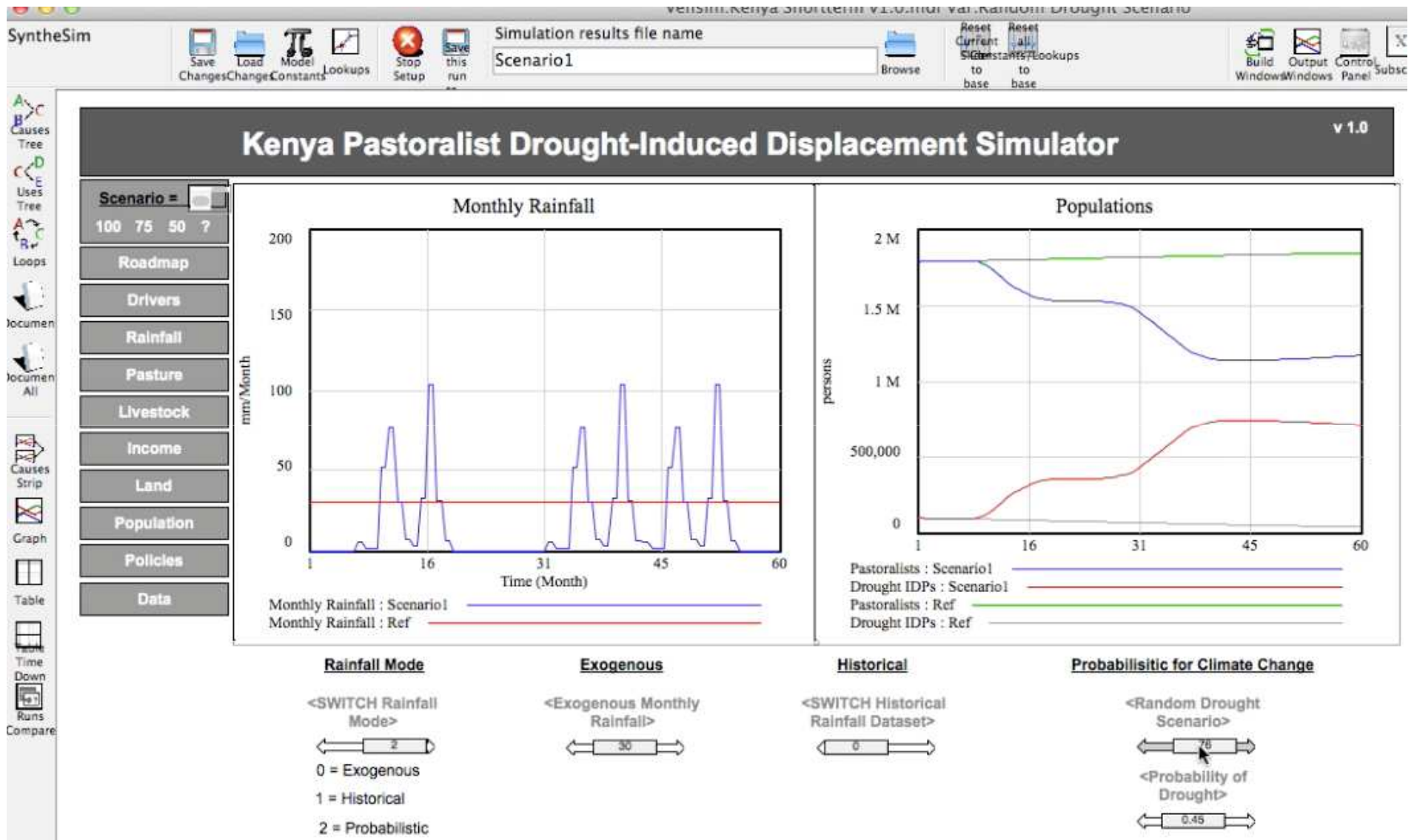
Climate change scenarios



Climate change scenarios



Climate change scenarios



Land use policy scenarios

Synthesim

Save Load Model Lookups Stop Setup Save this run Scenario1 Browse Current State to base All States to base Build Output Control Subsc

Kenya Pastoralist Drought-Induced Displacement Simulator v 1.0

Scenario = 75 50 ?

Roadmap Drivers Rainfall Pasture Livestock Income Land Population Policies Data

Productive Pasture in NE Kenya

Pasture Land Area of NE Kenya : Scenario1 —

Pasture Land Area of NE Kenya : Ref —

Pastoralists, Drought IDPs, and Monthly Rainfall

Pastoralists : Scenario1 — persons

Drought IDPs : Scenario1 — persons

Monthly Rainfall : Scenario1 — mm/Month

Initials

<Initial Pasture Area>

87446

Land Degradation

<Annual Rate of Land Degradation>

0

Land Access

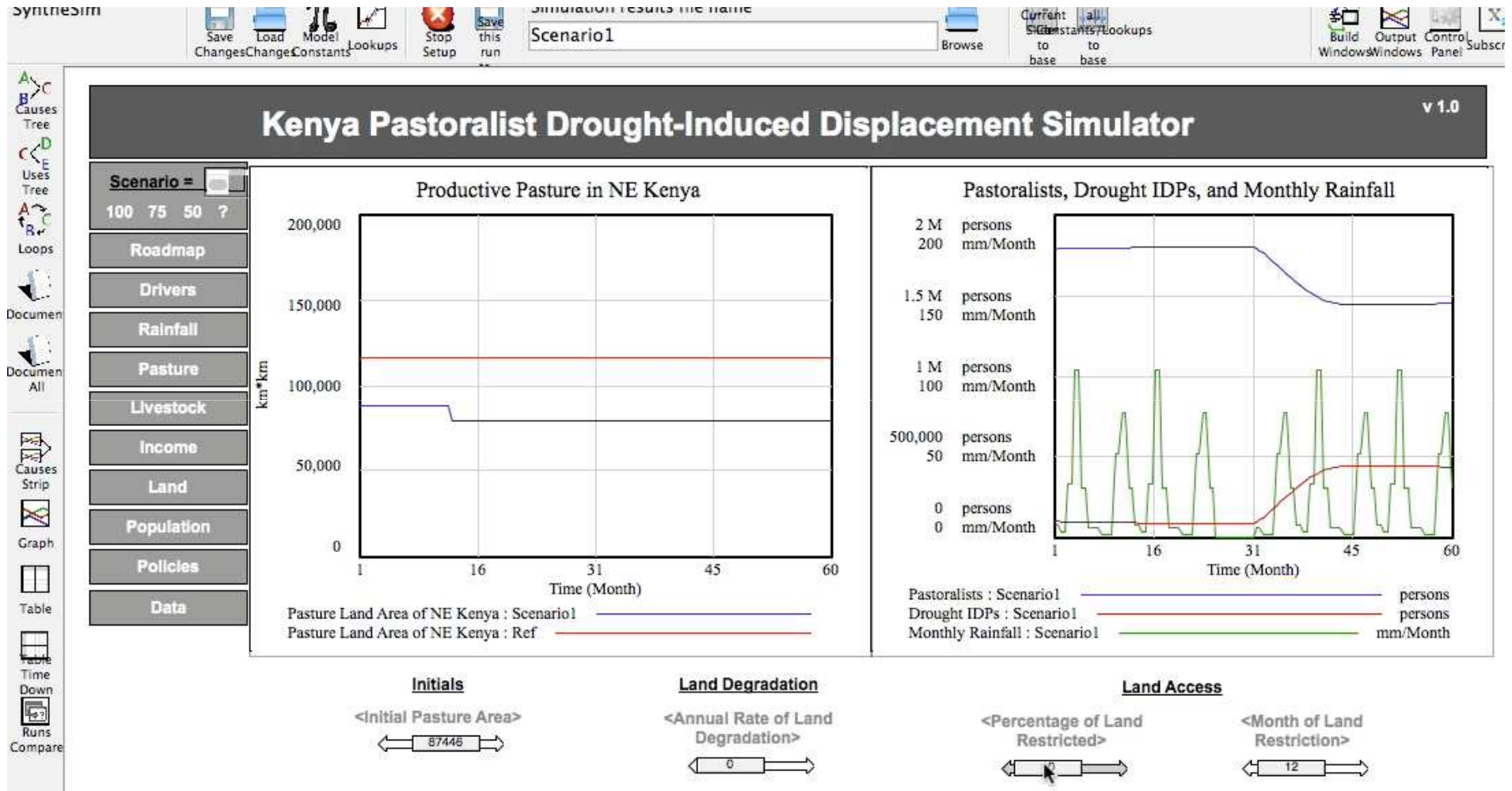
<Percentage of Land Restricted>

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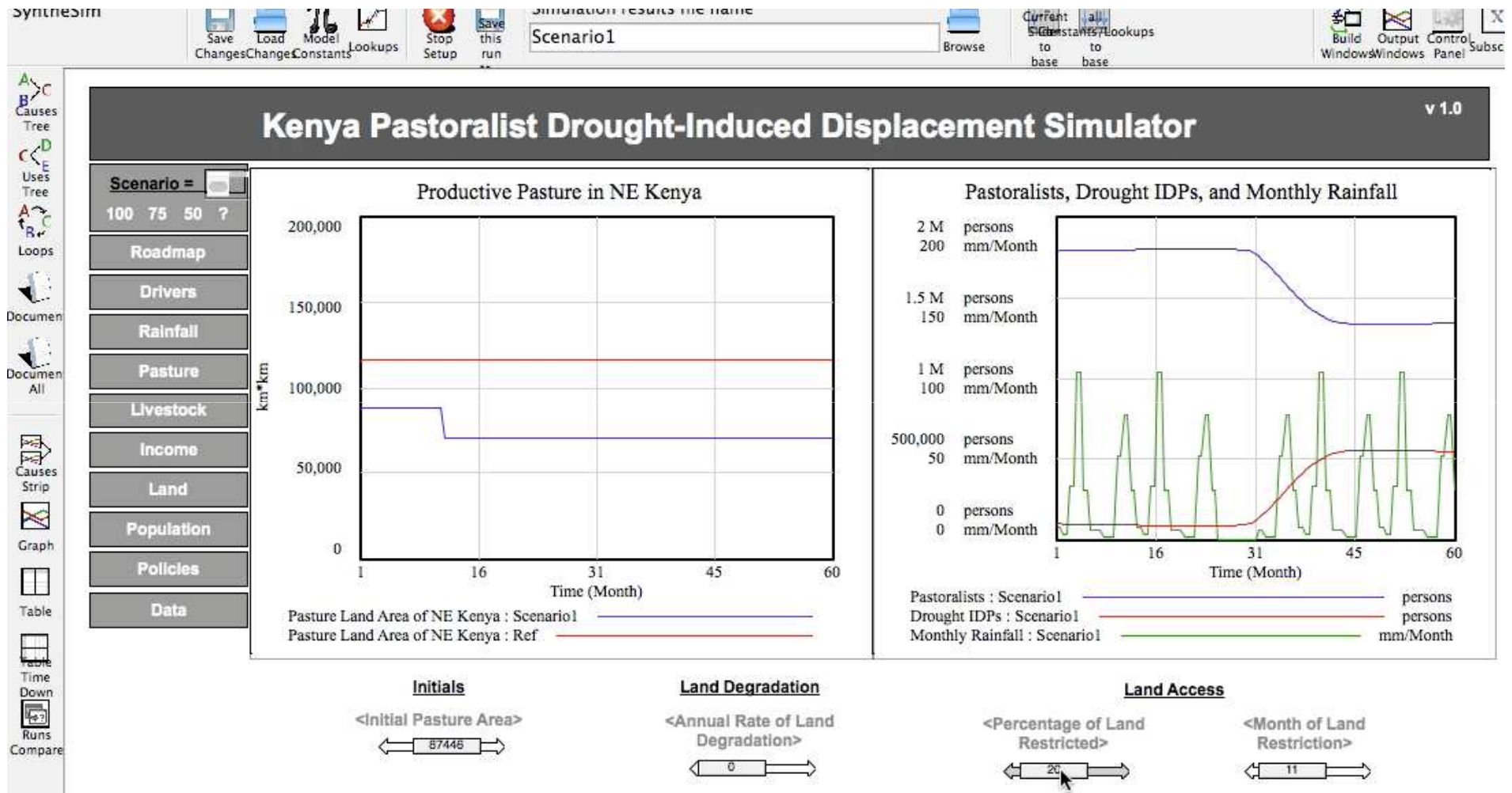
<Month of Land Restriction>

12

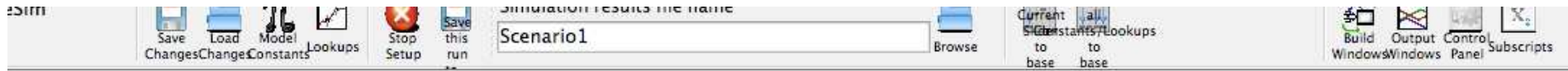
Land use policy scenarios



Land use policy scenarios

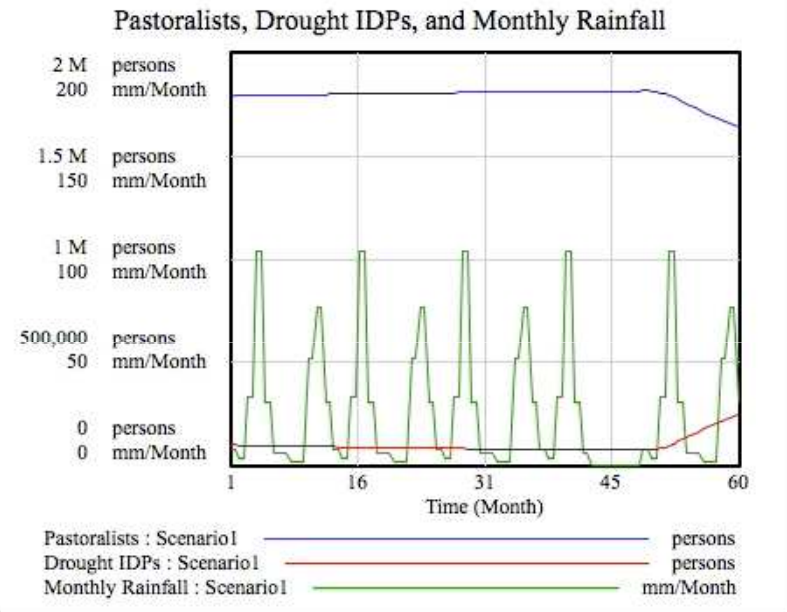
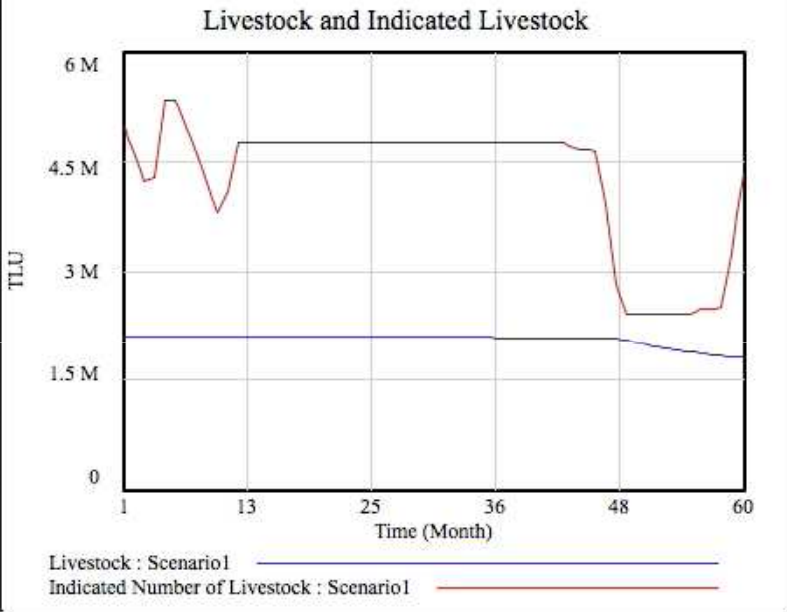


Pasture and herd composition interventions



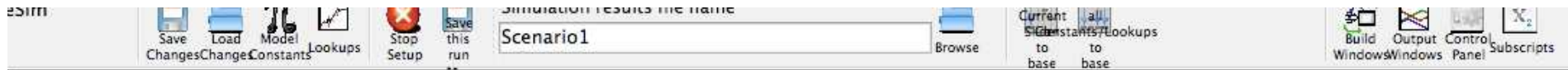
Kenya Pastoralist Drought-Induced Displacement Simulator v 1.0

- Scenario =
- 100 75 50 ?
- Roadmap
 - Drivers
 - Rainfall
 - Pasture
 - Livestock
 - Income
 - Land
 - Population
 - Policies
 - Data



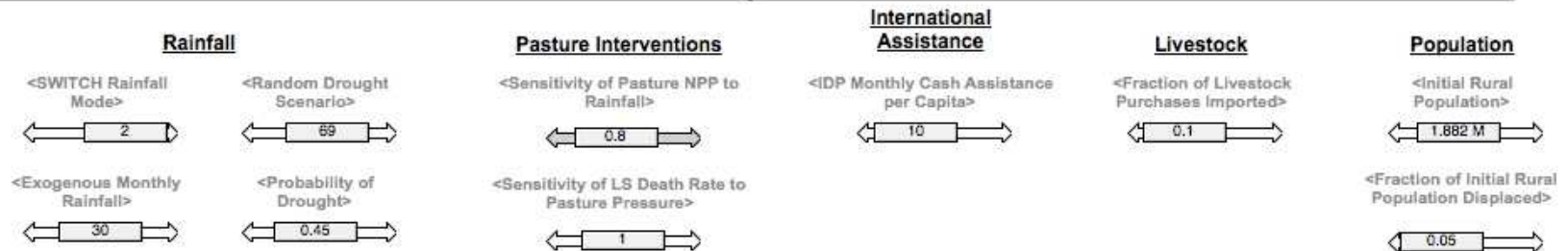
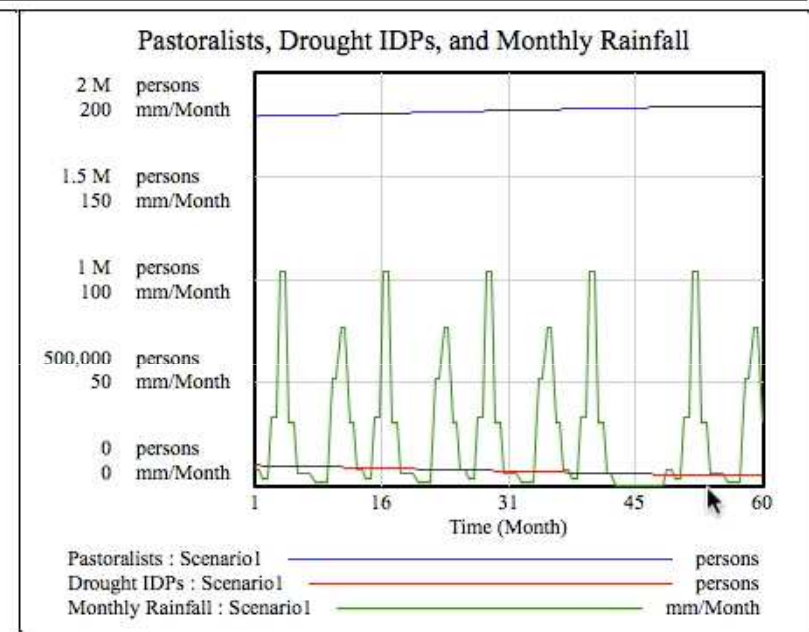
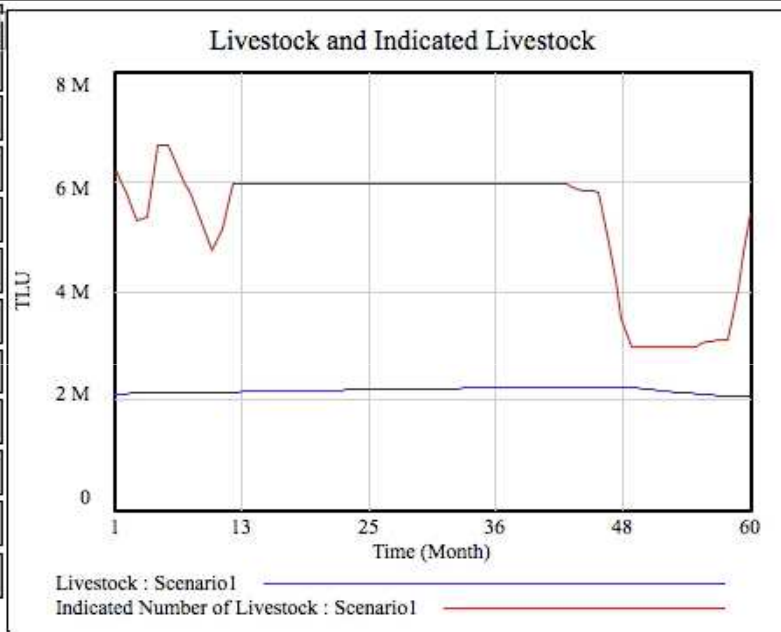
Rainfall		Pasture Interventions		International Assistance	Livestock	Population
<SWITCH Rainfall Mode>	<Random Drought Scenario>	<Sensitivity of Pasture NPP to Rainfall>	<Sensitivity of LS Death Rate to Pasture Pressure>	<IDP Monthly Cash Assistance per Capita>	<Fraction of Livestock Purchases Imported>	<Initial Rural Population>
2	69		1	10	0.1	1.882 M
<Exogenous Monthly Rainfall>	<Probability of Drought>					<Fraction of Initial Rural Population Displaced>
30	0.45					0.05

Pasture and herd composition interventions

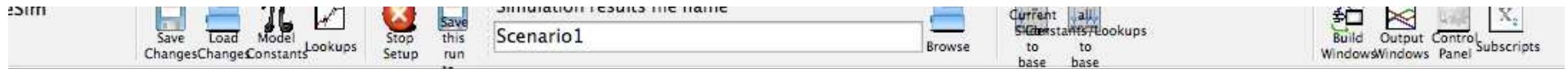


Kenya Pastoralist Drought-Induced Displacement Simulator v 1.0

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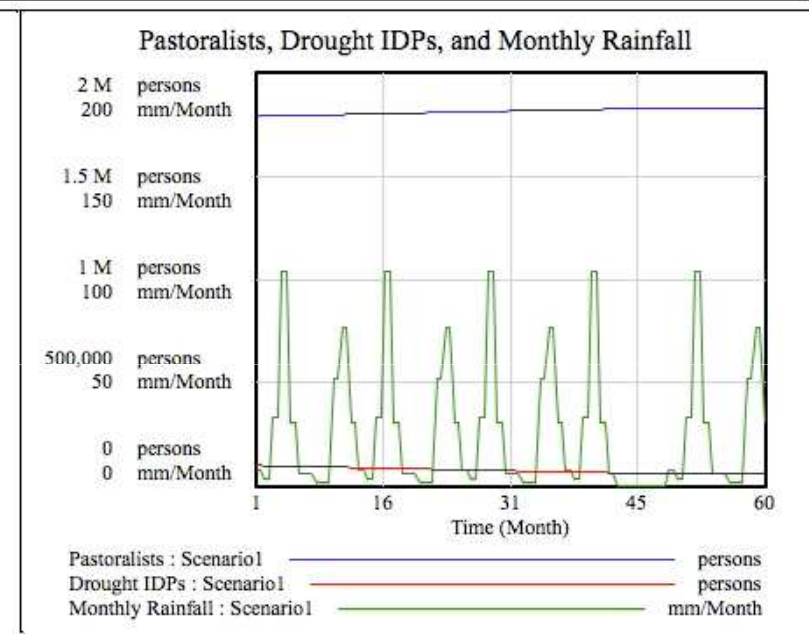
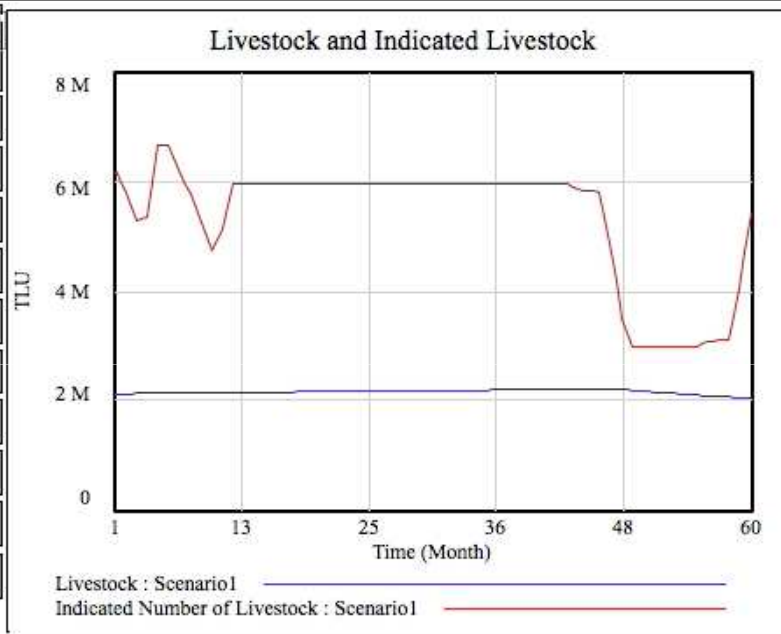


Pasture and herd composition interventions



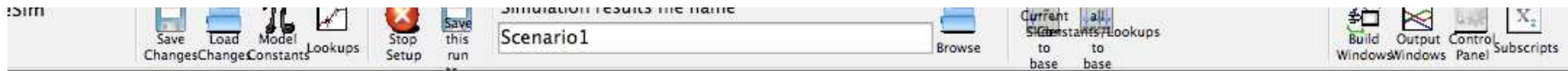
Kenya Pastoralist Drought-Induced Displacement Simulator v 1.0

- Scenario =
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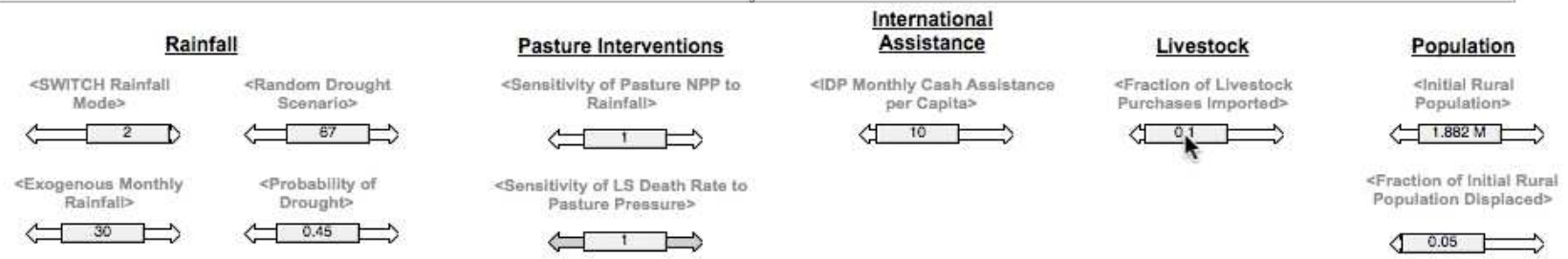
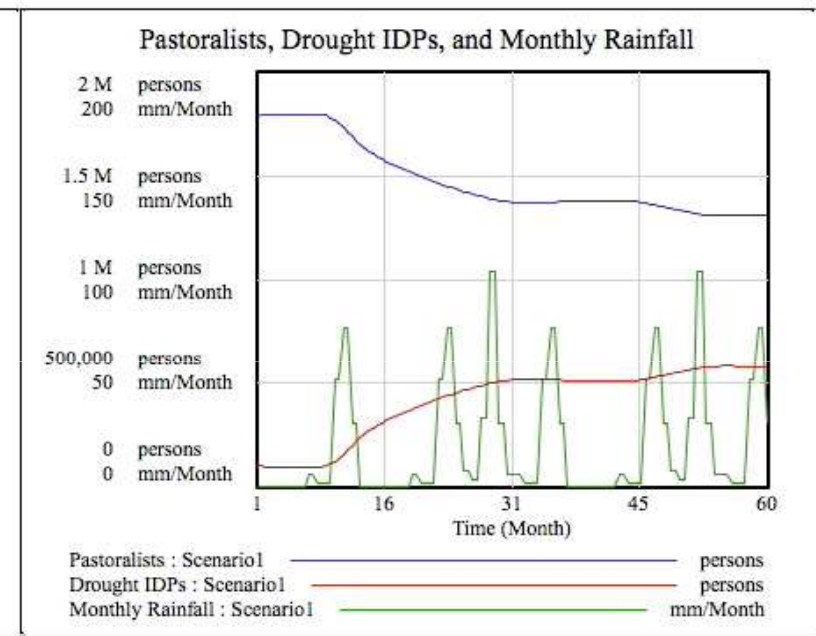
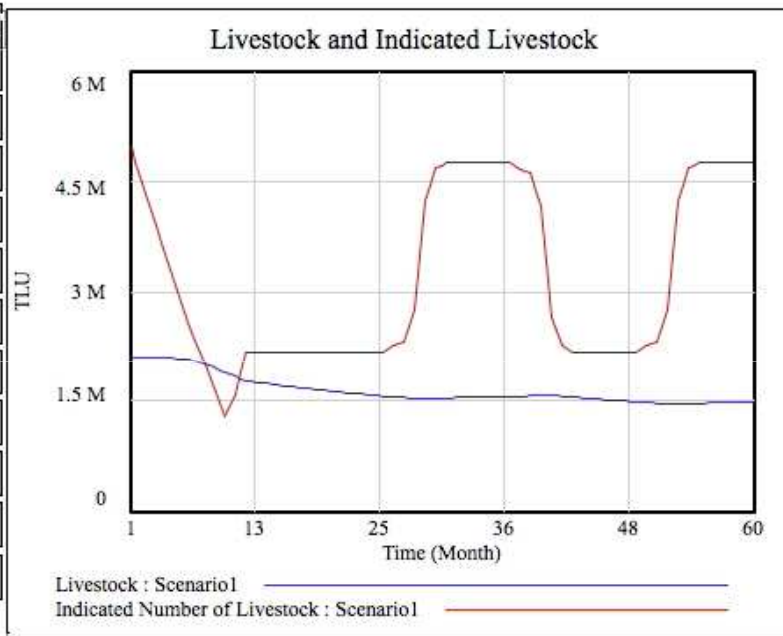
Rainfall		Pasture Interventions		International Assistance	Livestock	Population
<SWITCH Rainfall Mode>	<Random Drought Scenario>	<Sensitivity of Pasture NPP to Rainfall>	<IDP Monthly Cash Assistance per Capita>	<Fraction of Livestock Purchases Imported>	<Initial Rural Population>	
2	69	0.8	10	0.1	1.882 M	
<Exogenous Monthly Rainfall>	<Probability of Drought>	<Sensitivity of LS Death Rate to Pasture Pressure>			<Fraction of Initial Rural Population Displaced>	
30	0.45	0.7			0.05	

Marketing intervention

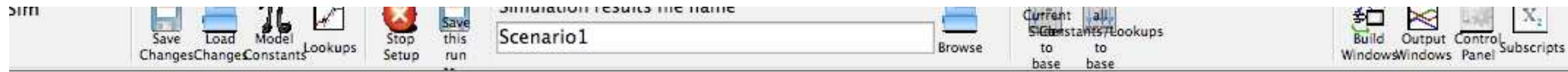


Kenya Pastoralist Drought-Induced Displacement Simulator v 1.0

- Scenario =
- Roadmap
- Drivers
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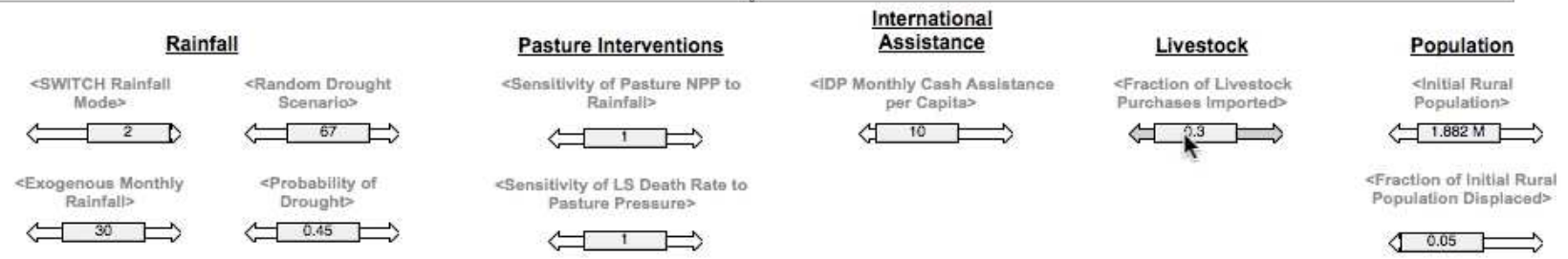
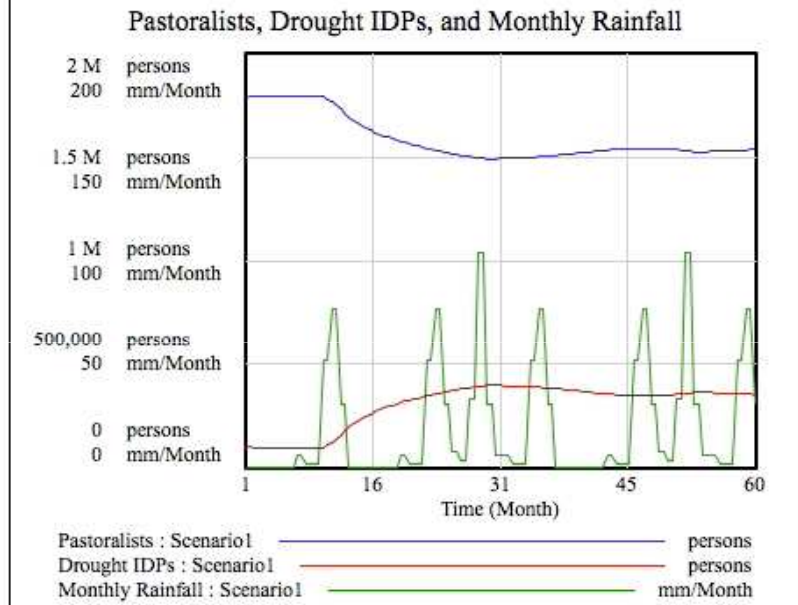
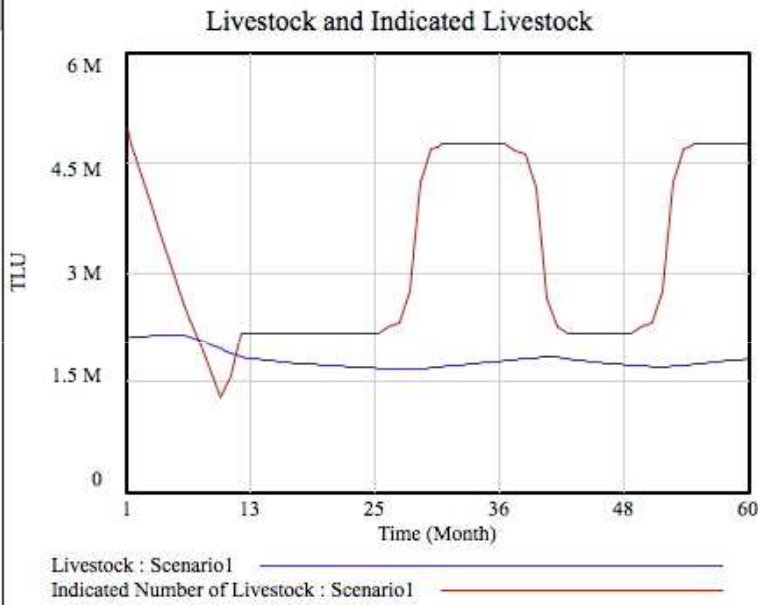


Marketing intervention



Kenya Pastoralist Drought-Induced Displacement Simulator v 1.0

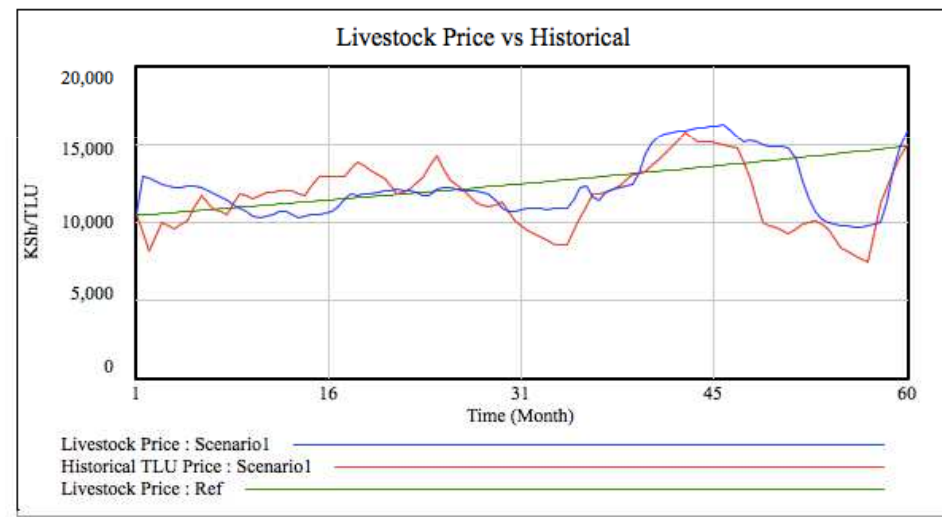
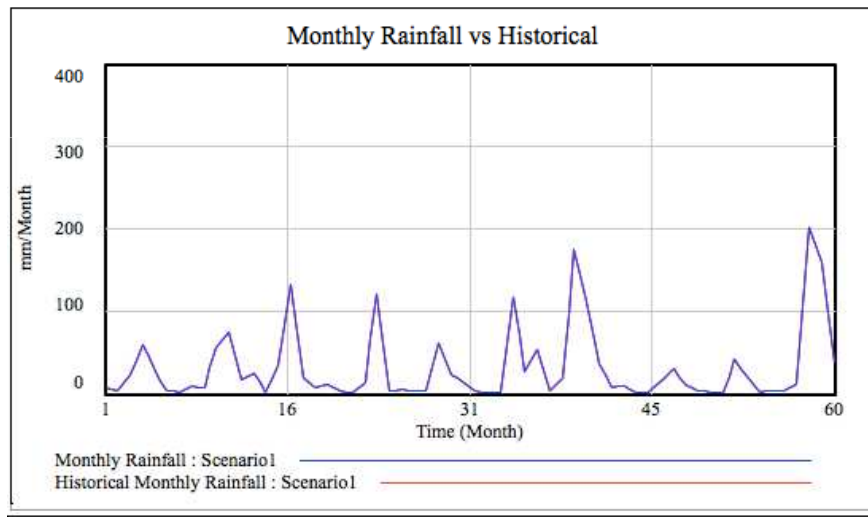
- Scenario =
- 100 75 50 ?
- Roadmap
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Calibration

v 1.0

Kenya Pastoralist Drought-Induced Displacement Simulator

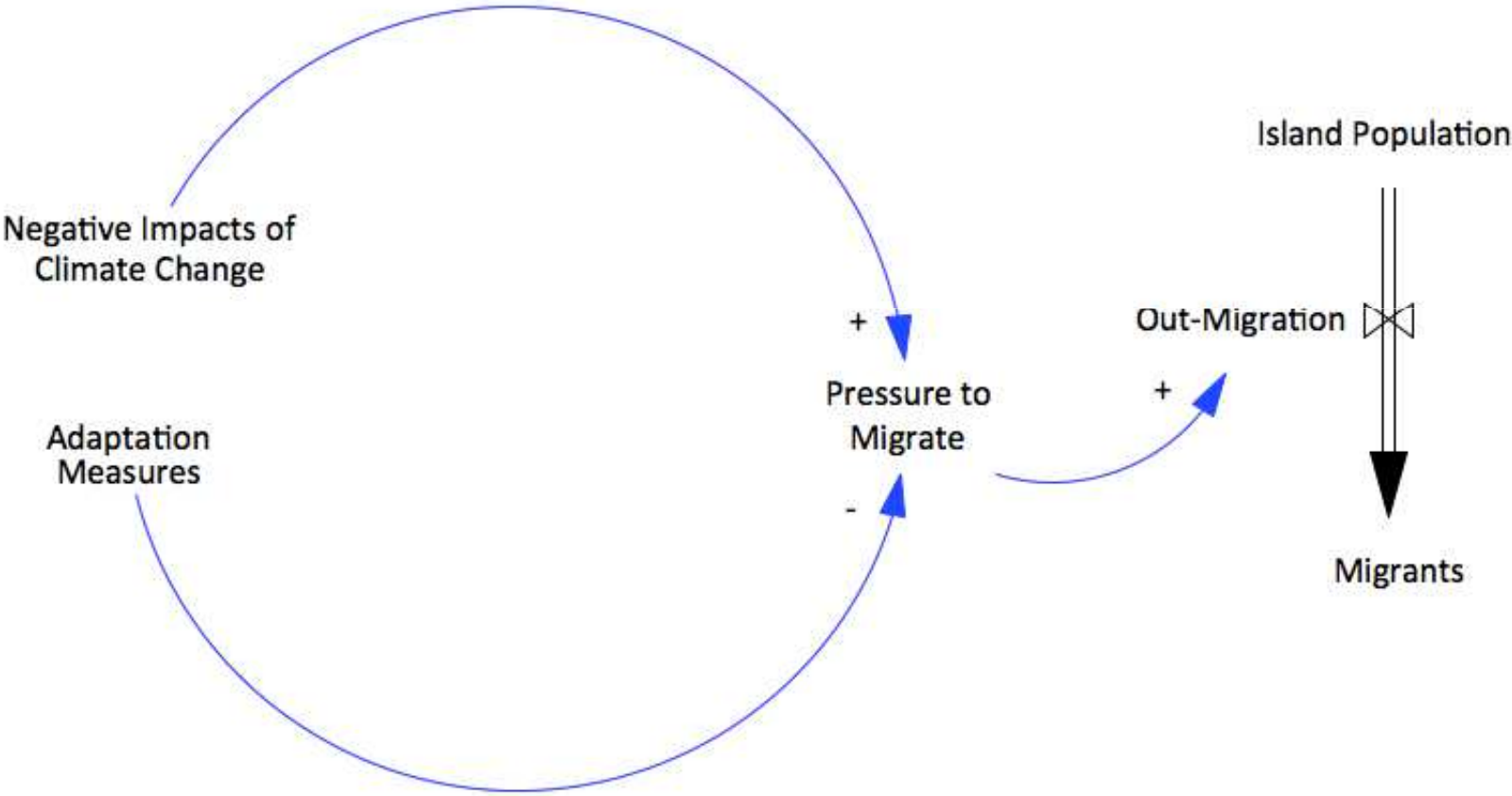


4. Opportunities

How Parties could apply system dynamics and other models to help understand and assess risk of climate/socio-economic changes, including slow-onset events

Example: small island states

High-level diagram



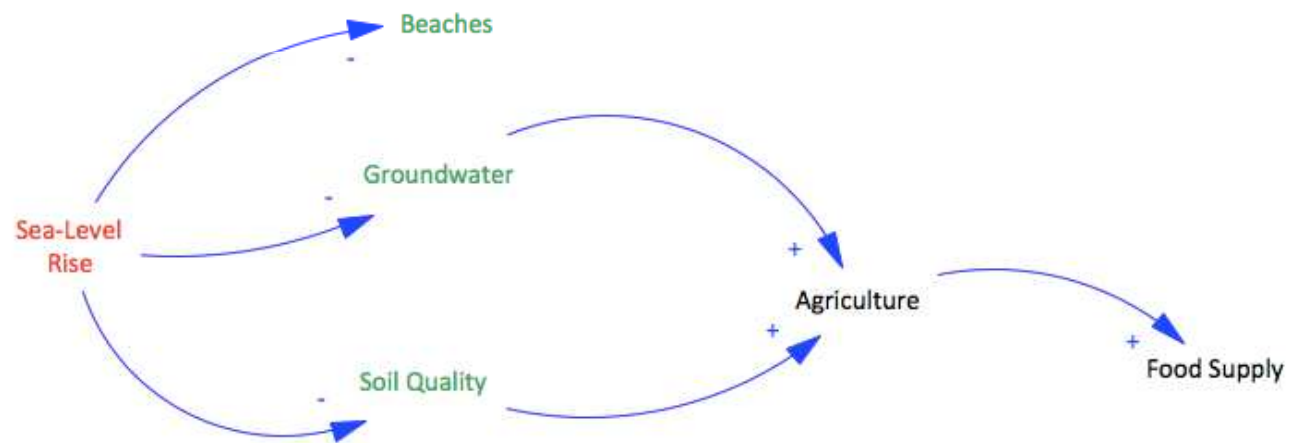
1: Effects of sea-level rise on natural resource base



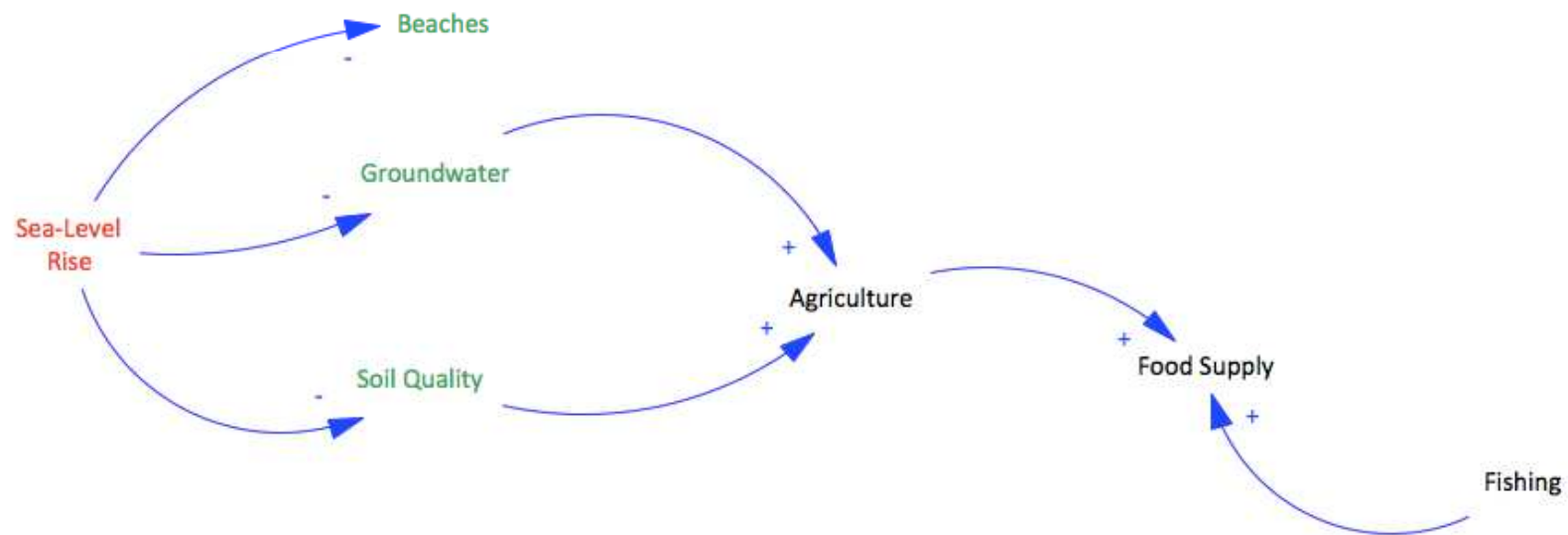
2: Knock-on effect on agriculture



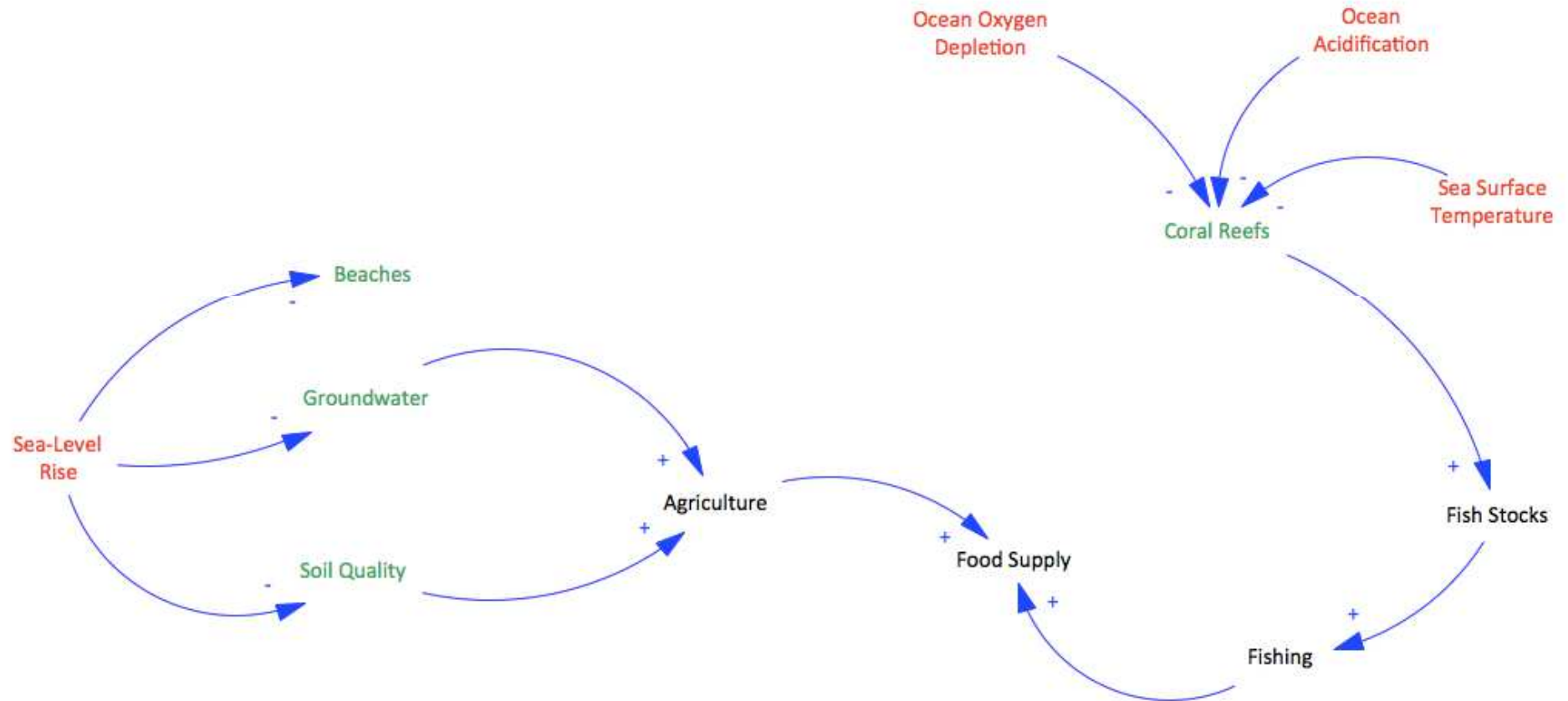
3: Effects of agricultural impacts on food supply



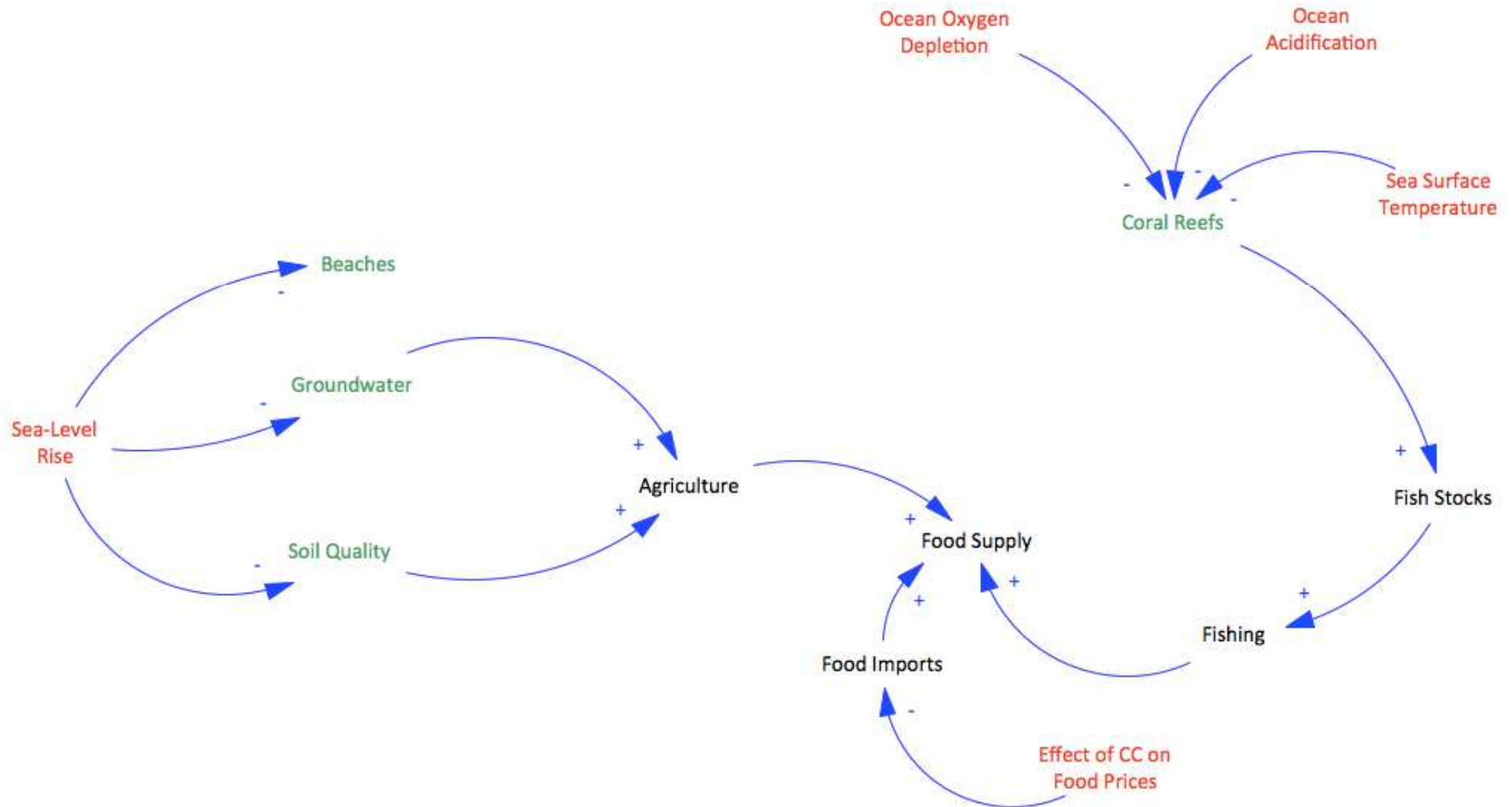
4: Impact of fishing on food supply



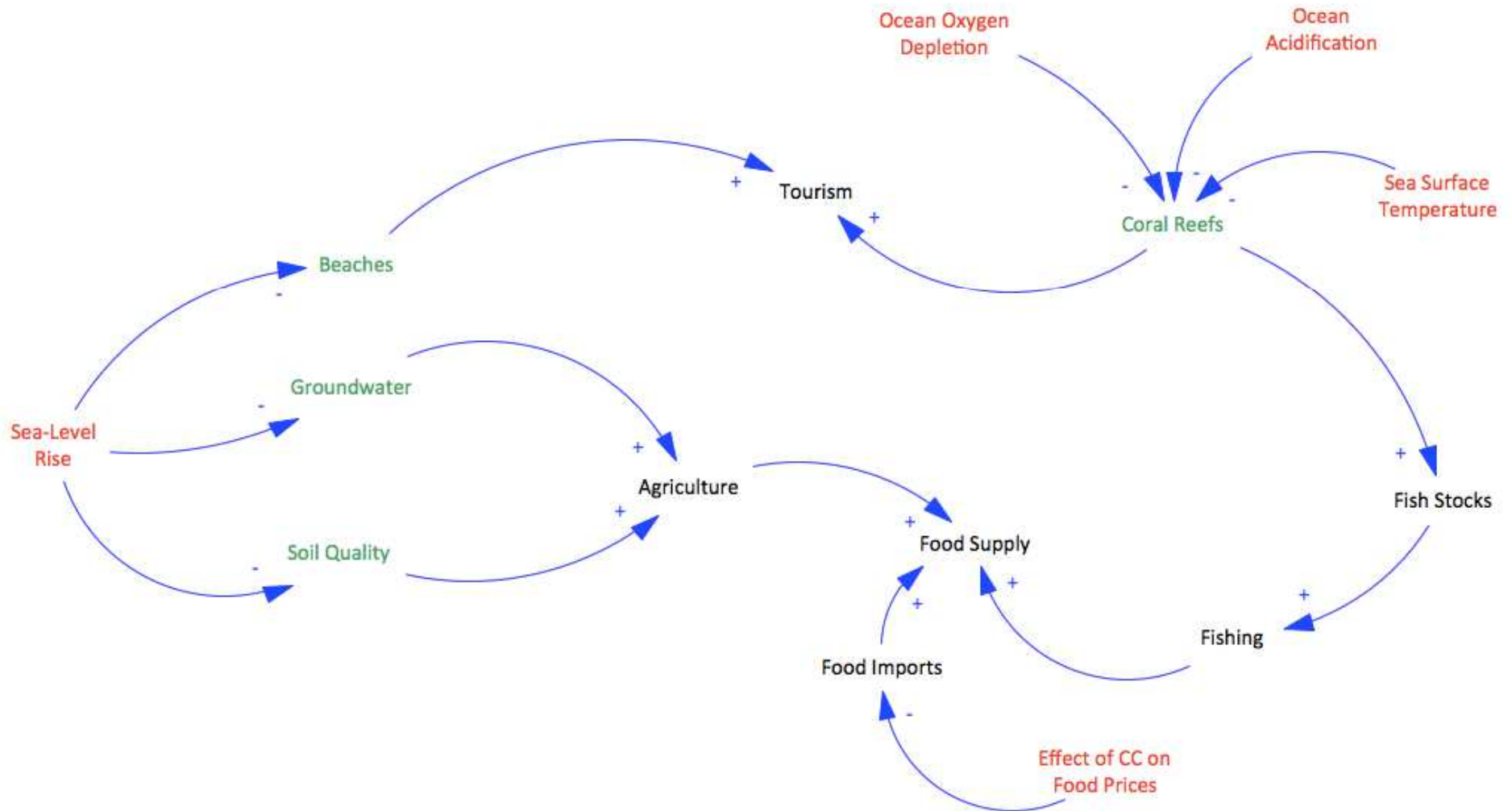
5: Effects of climate change on coral reefs and fishing



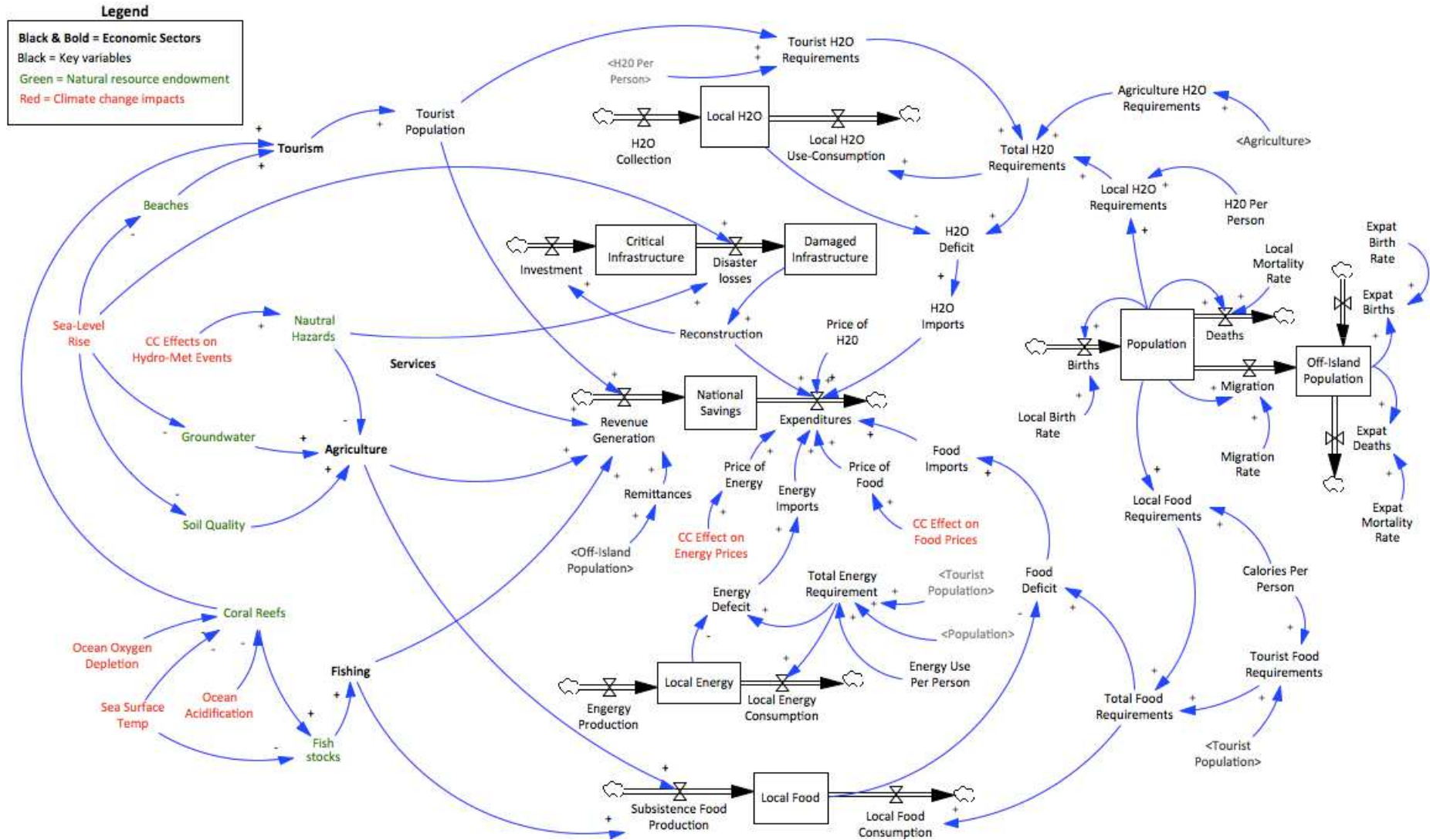
6: Effect of climate change on food prices and food supply



7: Additional effects on tourism



Detailed diagram



THANK YOU

Contact:

Justin Ginnetti

justin.ginnetti@nrc.ch