

Integrating National Household Survey Data and Climate Change Analysis

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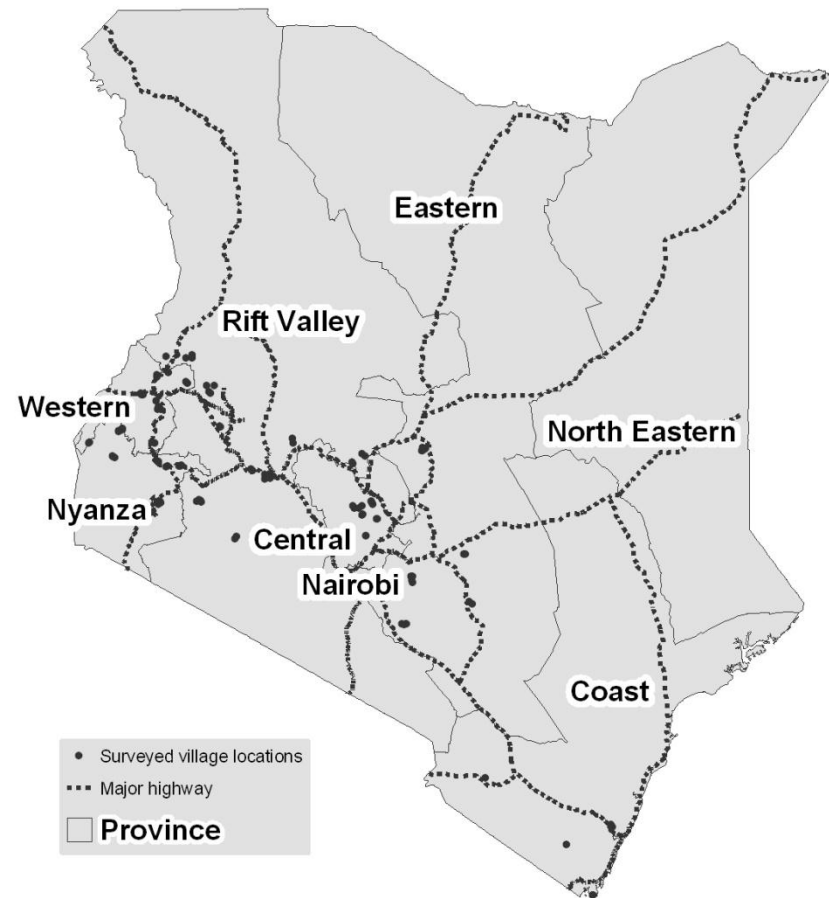
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FROM THE AMERICAN PEOPLE

Outline of presentation

- Survey data available
- Topics covered by surveys
- Mapping and analysis to date
- “Adding economics”—Strategy for integrating food security dimension with modeling of climate, crop, land use, and water resources
- “Adding nutrition” . . .

Kenya

- Nationally representative rural household survey
 - Partners: Tegemeo Institute, Kenya Bureau of Statistics
- 5 waves: 1997, 2000, 2004, 2007, 2010
- 1243 households in all 5 panel waves



Types of data included

- Household demographics; assets
- Land use; land transactions for last 10 years
- Soil, water, environmental conservation practices
- Crop/livestock production; amt + cost of inputs
- Hired and family labor use
- Crop/livestock sales and purchases
- Selected dry food items purchased
- Food security (use of relief food; coping mechanisms)
- Nonfarm activities
- Weather patterns; climate change since 10 years

Include map of Kenya
regional summary
statistics here
(perhaps juxtaposed
with map of
rainfall...)

Maps of Kenya Data

- Maize production and sales (needs to link to Flash file that animates the display of production and sales by year)

Mozambique

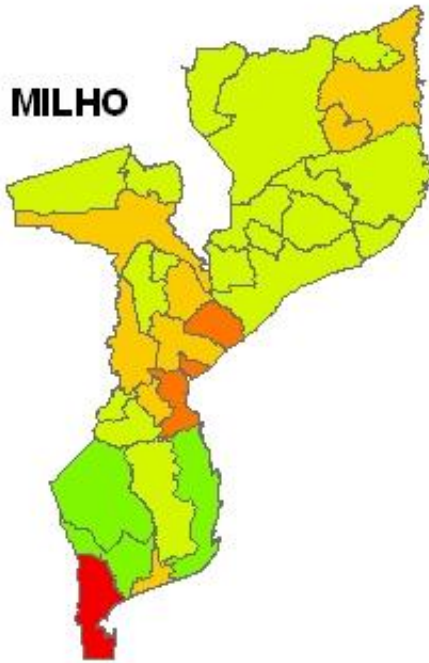
- National Agricultural Household Survey
 - Partners: Ministry of Agriculture
- 2002, 2003, 2005, 2006, 2007, 2008
 - Panel component: 2002 & 2005
- 4,059 households in panel

Include map of TIA household locations here...

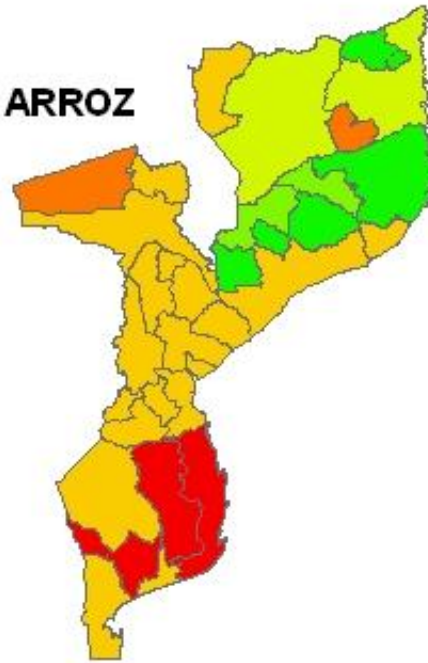
Types of data included

- (to be added; may not be significantly different than Kenya data)

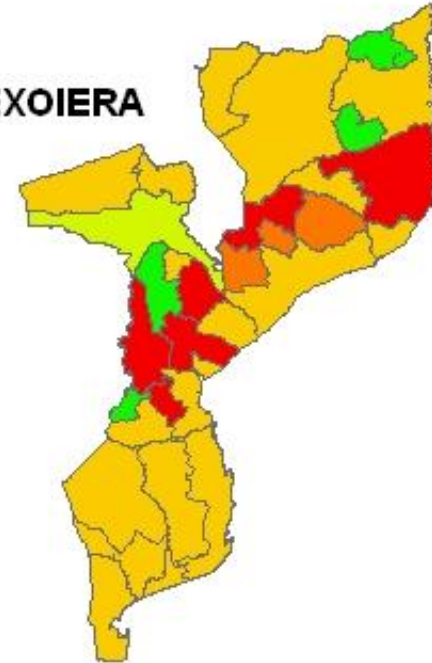
MILHO



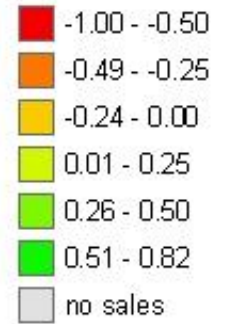
ARROZ



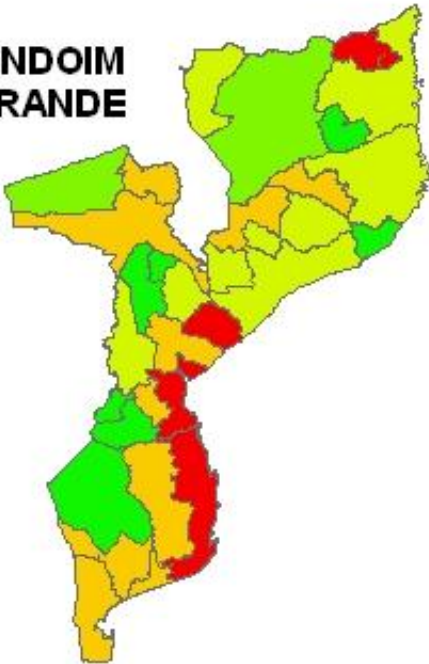
MEXOIERA



Change in marketed share of hh production 2002-2006*



AMENDOIM GRANDE



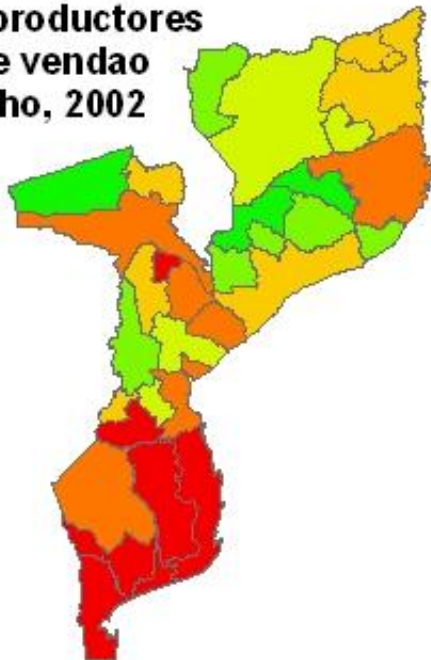
FEIJÃO NHEMBA



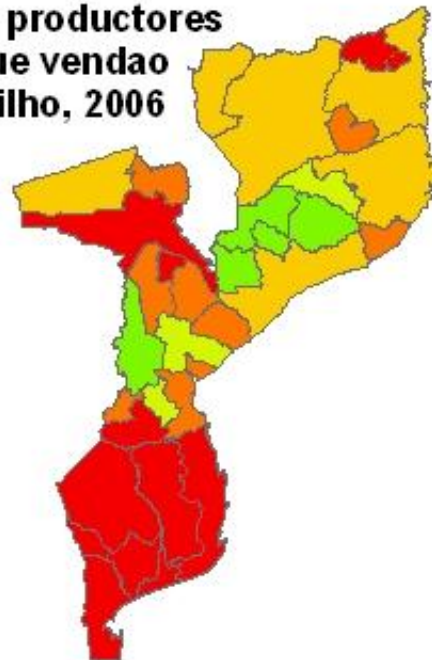
FEIJÃO MANTEIGA



% produtores que vendão milho, 2002



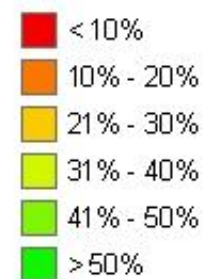
% produtores que vendão milho, 2006



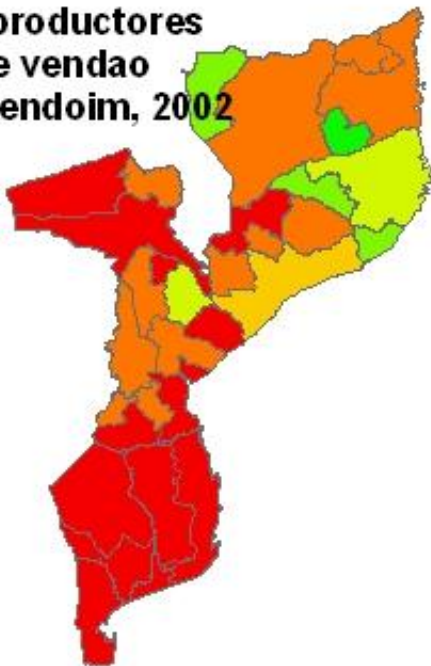
crecimento 2002-2006



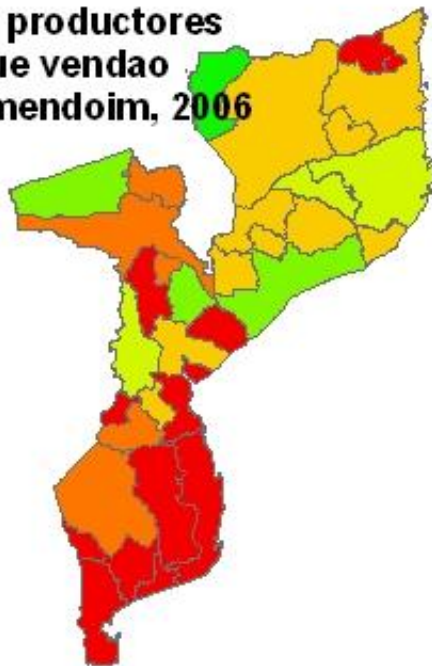
% que vendão



% produtores que vendão amendoim, 2002



% produtores que vendão amendoim, 2006



crecimento 2002-2006



crecimento de porção de vendedores 2002-2006



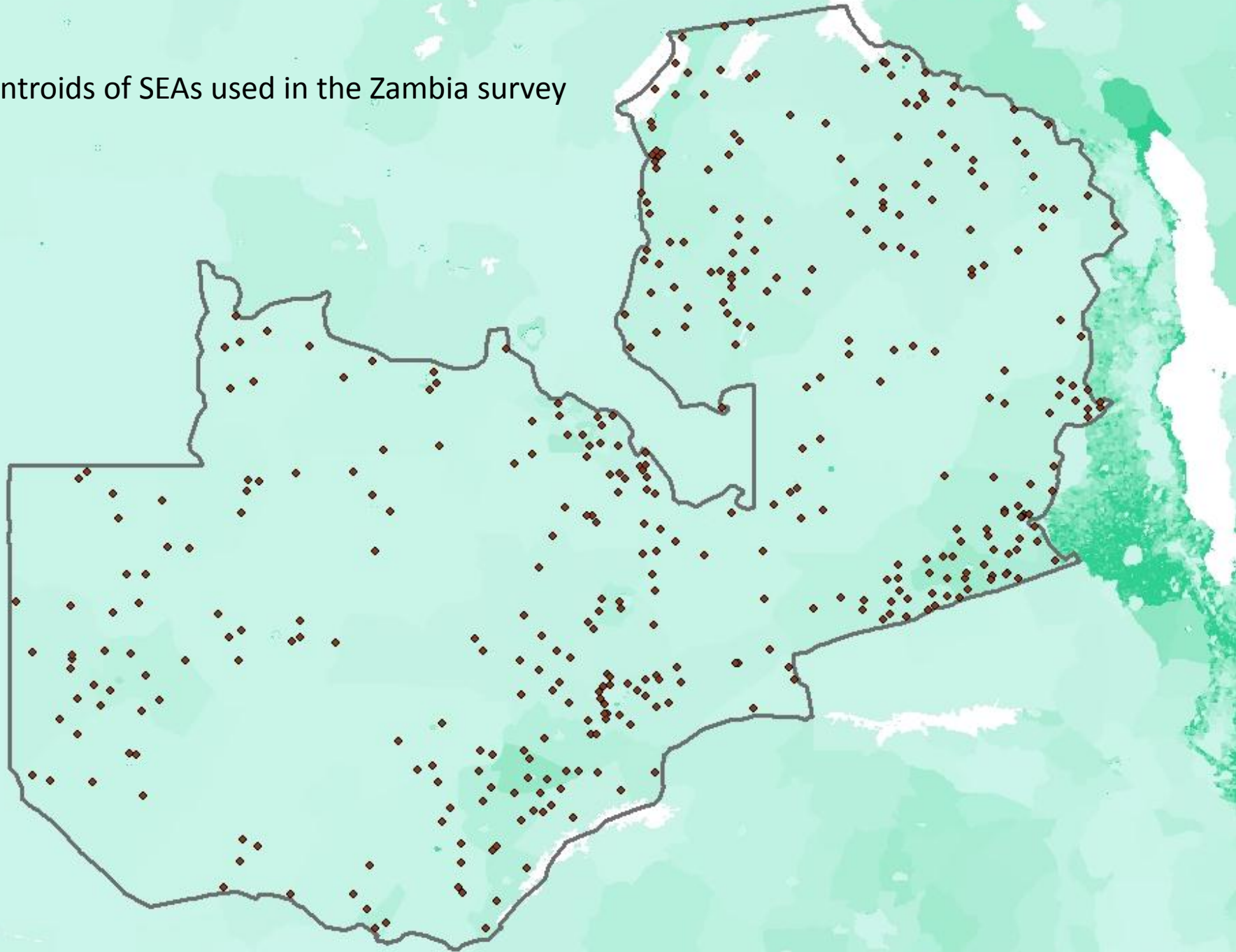
Zambia

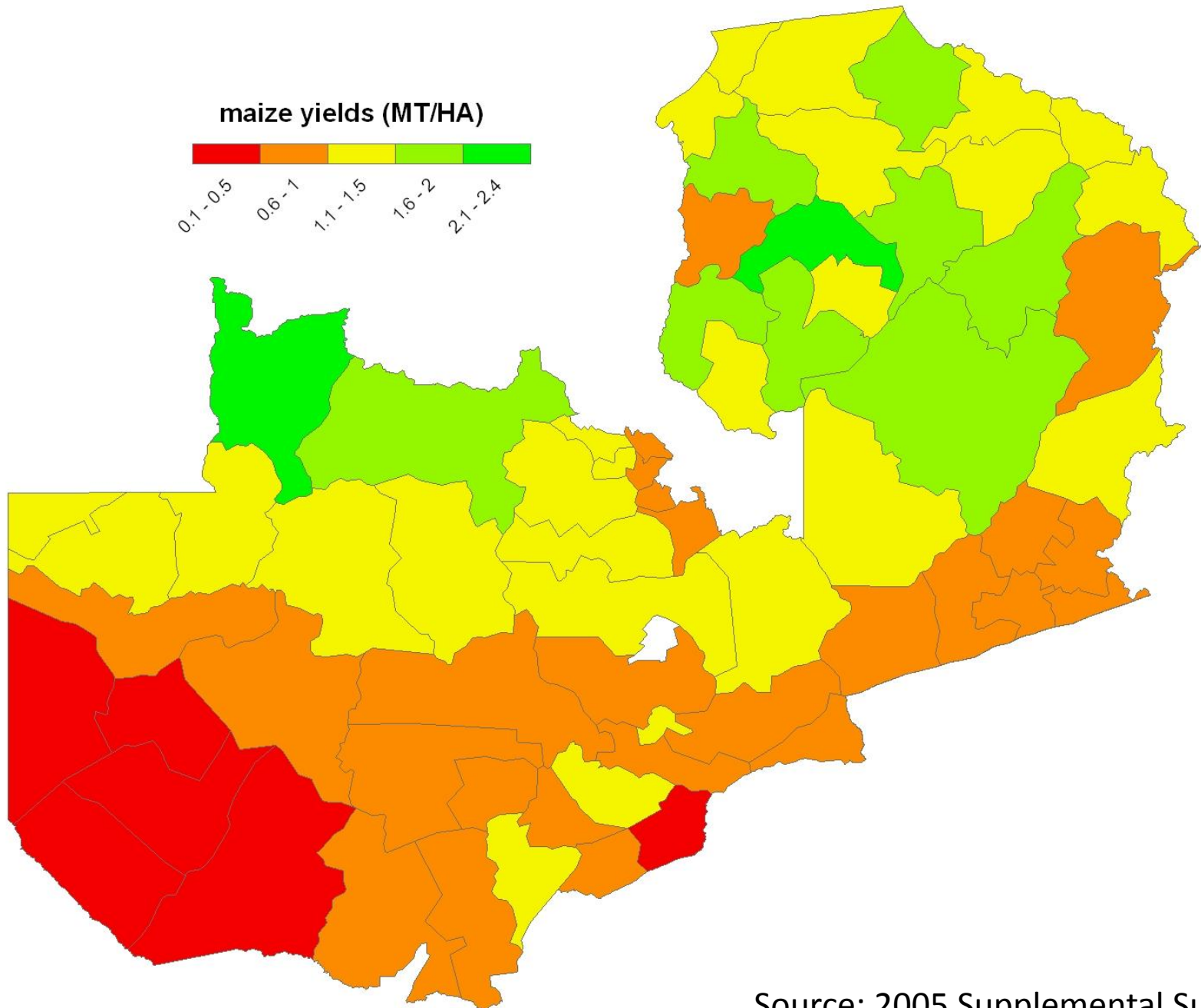
- Nationally representative rural household survey
 - Partners: Central Statistical Office, Ministry of Agriculture and Cooperatives
- 3 waves: 2001, 2004, 2008
- 4,286 households in all 3 panel waves
- 4th wave planned in 2011

Types of data included

- (to be added; may not be significantly different than Kenya and Mozambique data)

Centroids of SEAs used in the Zambia survey



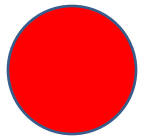


Source: 2005 Supplemental Survey

Mapping surplus and deficit zones

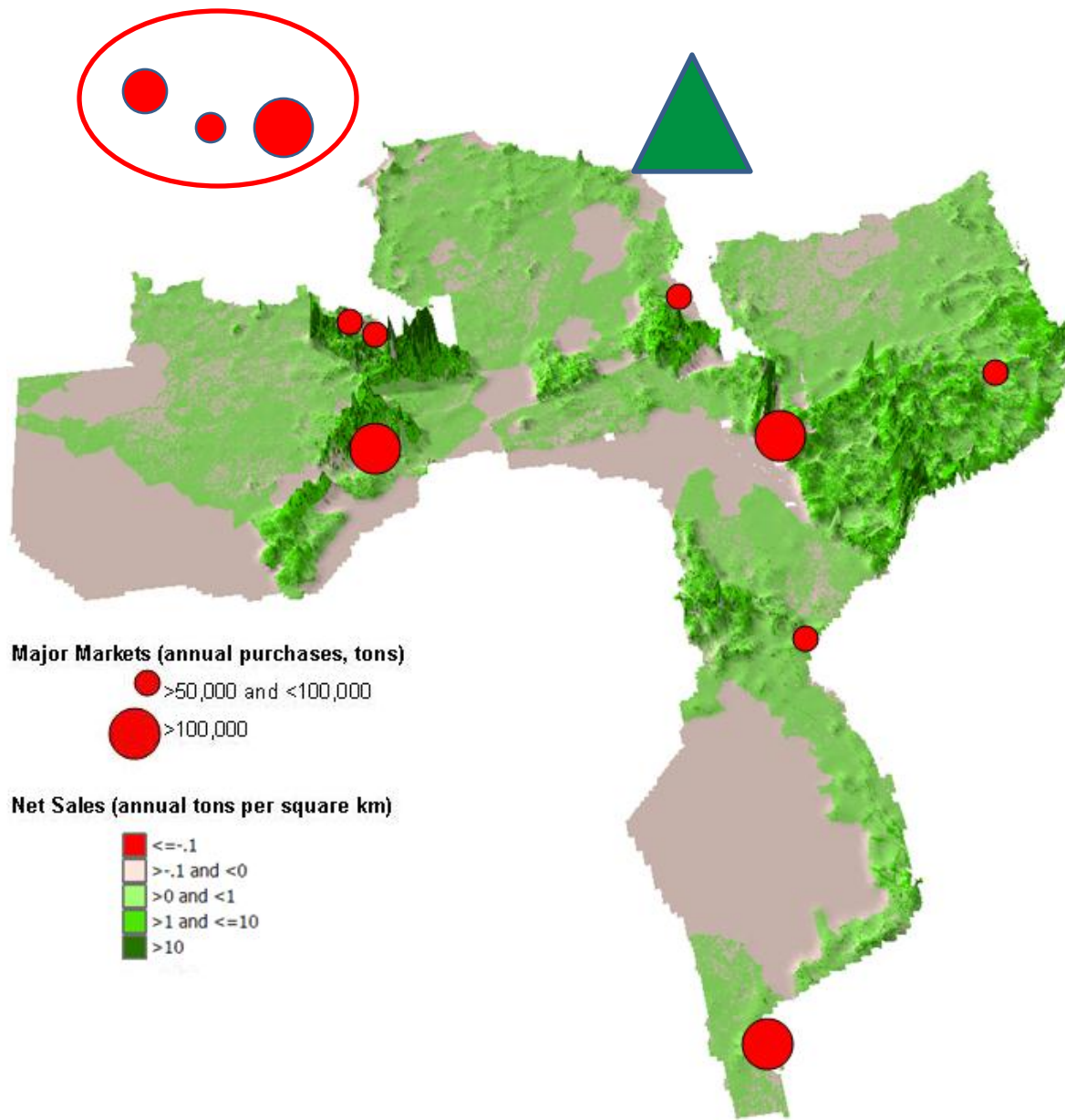


= Surplus zones

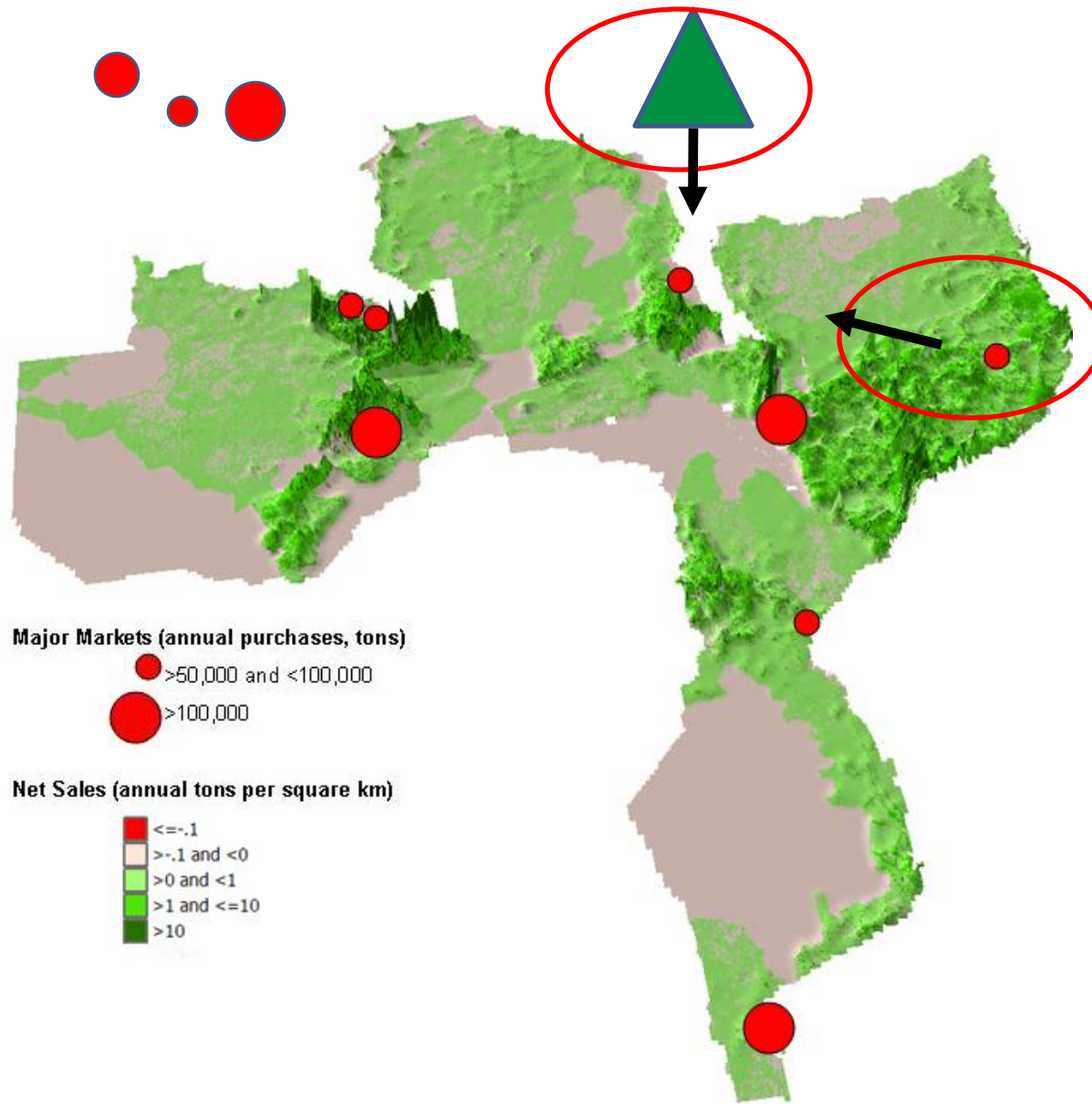


= Deficit zones

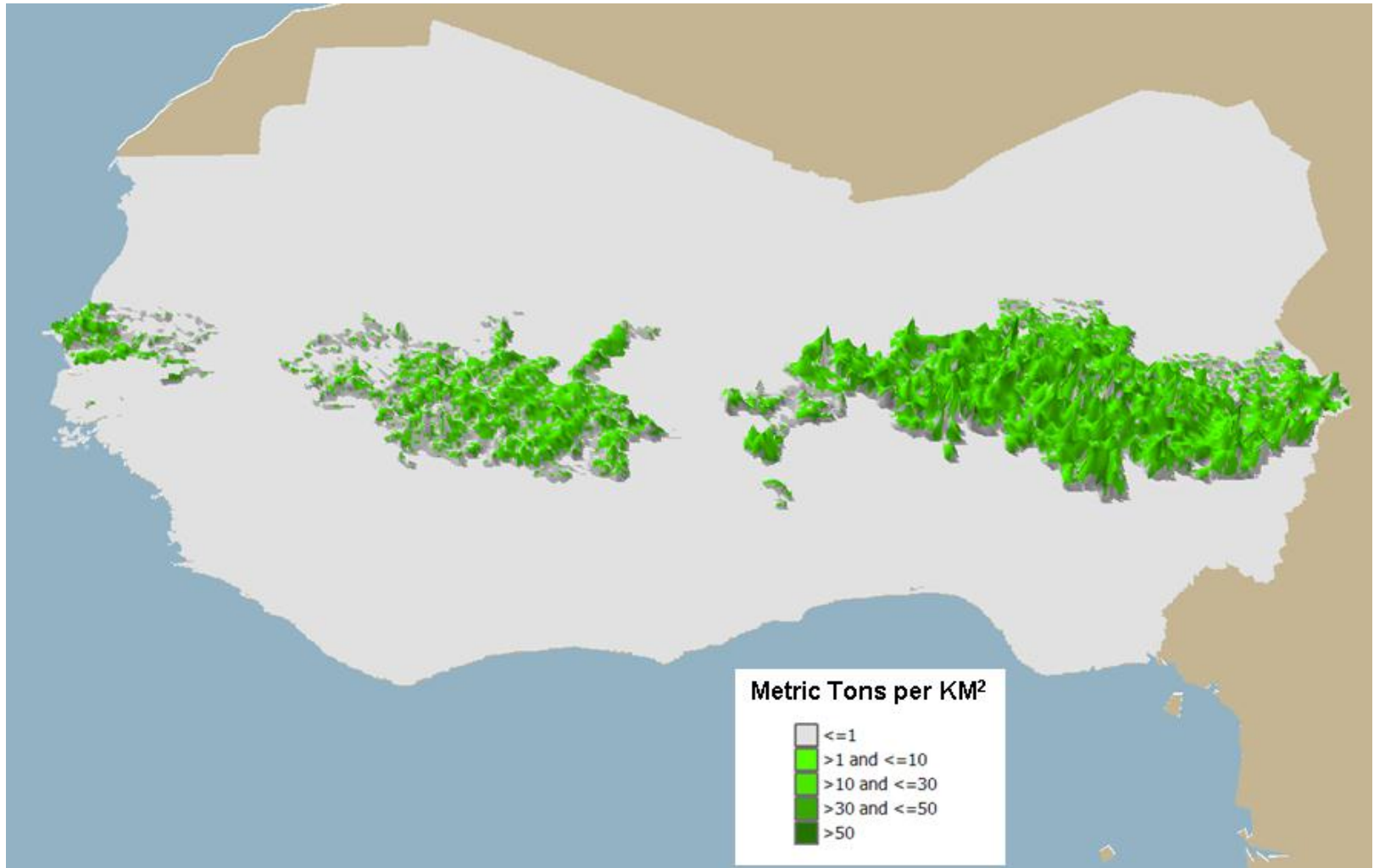
Cross-border proximity of and



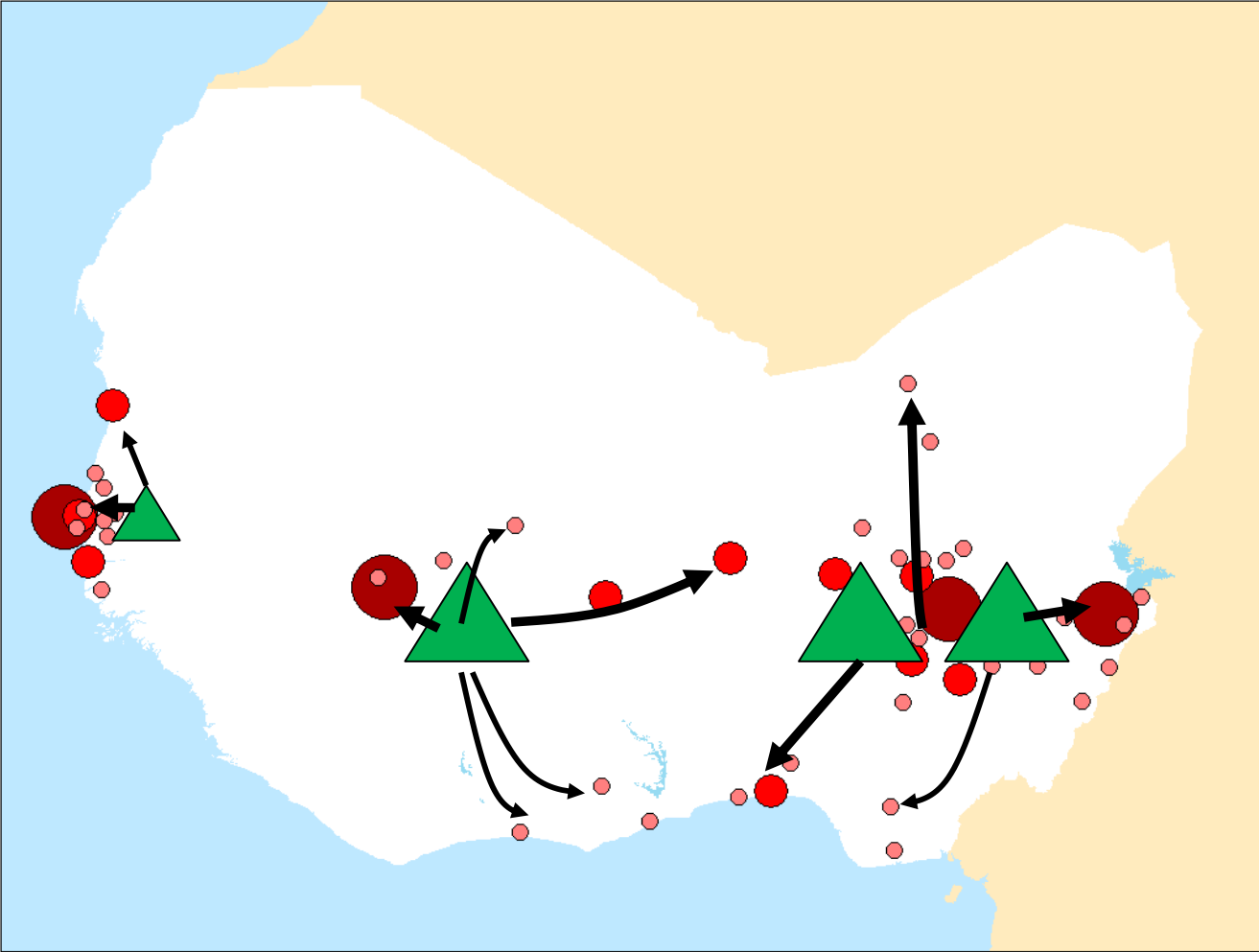
Cross-border proximity of and



Surplus millet and sorghum production in West Africa



Surplus millet and sorghum market flows in West Africa



Adding Economics (1)

- Use household panel data along with high-resolution historical climate data
 - Econometric analysis to estimate relationship between climate variables and:
 - Small farm behavior (crop choice, market participation)
 - Farm household outcomes (levels & variability of yields & income, net calorie availability, other indicators of food security)

Adding Economics (2)

- Use survey data and econometric results to construct farm models to explore responses to projected changes in climate (e.g., length or variability of growing season:
 - LP farm models optimize farm production choices (crop choice, input levels) under defined set of farm constraints and environmental parameters
 - Agent-based models: allow greater diversity of farm type; may not assume optimization
 - Aggregate farm responses give landscape-level responses to climate change scenarios

Adding Economics (3)

- This is a medium/long-term research agenda
 - Econometric work alone may occupy first year
- In principle, would allow for more dynamic and theoretically consistent agricultural responses to climate change scenarios
 - shifting production potentials will drive land use/cover changes and rural resettlement
 - this may in turn feed into climate change modeling
 - will alter spatial location of supply & demand
 - trade responses conditioned by infrastructure & market institutions