

Index Insurance & Financial Instruments

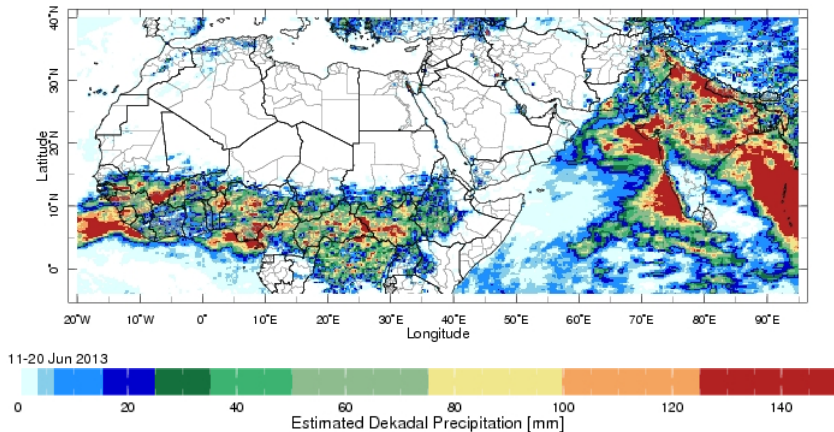
Improving the Science and Design behind
Weather Index Insurance

Geoff McCarney & Dan Osgood

IRI Review
June 24th, 2013

Climate Science Applications

Rainfall Estimates for Remote Regions



Climate Risk for Poor Farmers in Developing Countries

The risk presented by frequent drought can prevent poor farmers from investing to improve their livelihoods

- ▶ Farmers in many developing countries face the threat of drought 1 in 5 years.
- ▶ Need for strategies to reduce risk to help unlock productivity in good years.



Climate Risk for Poor Farmers in Developing Countries

The risk presented by frequent drought can prevent poor farmers from investing to improve their livelihoods

- ▶ Farmers in many developing countries face the threat of drought 1 in 5 years.
- ▶ Need for strategies to reduce risk to help unlock productivity in good years.



- ▶ **Need to get the science and design behind weather index insurance right:**
 - ▶ To give payouts when needed
 - ▶ To ensure products are sustainable
 - ▶ To enable farmers to improve livelihoods

What is (Weather) Index Insurance?

Index Insurance:

- ▶ Pays out based on the value of an 'index'.
- ▶ Index Examples:
 - ▶ Regional variables (e.g. area-yields, livestock mortality).
 - ▶ Weather-related variables (e.g. rainfall, temperature).
 - ▶ Climate-related variables (e.g. El-Nino).

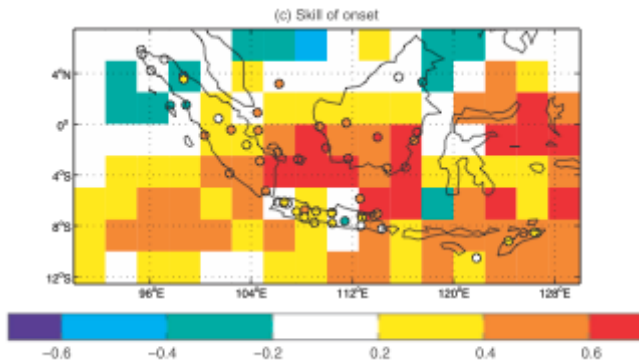


Conventional Crop/Agricultural Insurance:

- ▶ Pays based on verifiable losses.

Linking Weather Index Insurance & Forecast Information

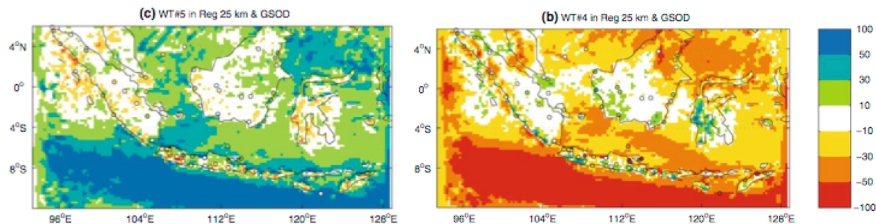
How can improved forecast skill be combined with weather index insurance to improve livelihoods?



Moron, Robertson & Boer (2009)

Linking Weather Index Insurance & Forecast Information

Targeted Research to Enable Forecast Skill to Assist Farmer Decision-Making



Moron, Robertson & Qian (2010)

Linking Weather Index Insurance with Credit

Use Game Theory Models:

- ▶ How might index insurance affect lending/borrowing decisions?
- ▶ Developed from nobel prize winning economic models of risk in credit markets.



How does index insurance affect rural credit markets?

- ▶ Reduces risk that farmers cannot repay loans.
- ▶ Affects incentives to improve productivity.
- ▶ Implications for key insurance design questions such as who should hold the insurance.

Weather Index Insurance Program Evaluation: Ethiopia

Horn of Africa Risk Transfer for Adaptation (HARITA) Project – now R4

Insurance designed for low income farmers in remote region :

- ▶ Simple, targeted index insurance design using NOAA ARC2 satellite-based remote sensing rainfall data
- ▶ Has reached ten of thousands of farmers in over 80 villages



Weather Index Insurance Program Evaluation: Ethiopia

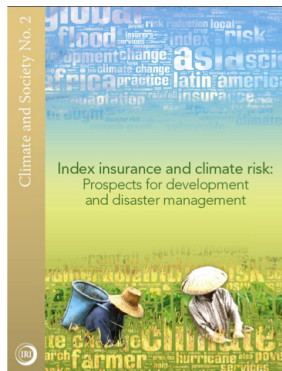
Horn of Africa Risk Transfer for Adaptation (HARITA) Project – now R4

Econometric Evaluation based on Panel Dataset: Preliminary evidence of important development impacts:

- ▶ Investment in land planted, seed use, and fertilizer application
- ▶ Households adopting new income diversification strategies



Weather Index Insurance & IRI



- ▶ Some index insurance project locations:
 - ▶ Ethiopia, Ghana, Honduras, Indonesia, Kenya, Malawi, Mali, Nicaragua, Rwanda, Senegal, Tanzania, Uganda
- ▶ Some index insurance partners:
 - ▶ CRED, Ethiopian NMA, ILO, IPB/CCROM, ORDA, Oxfam America, Syngenta Foundation, REST, Rockefeller Foundation, SwissRe, USAID, WFP, World Bank

Thank You

Geoff McCarney: mccarney@iri.columbia.edu

Dan Osgood: deo@iri.columbia.edu

