

## Lessons Learned in Mongolia, Vietnam, etc.

Lima, Peru

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# GlobalAgRisk Involvement Index Insurance Programs

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Early work on weather index insurance for the World Bank in Nicaragua, Morocco, Ethiopia and India

1. Mongolia – Index Based Livestock Insurance using Gov't estimates of mortality rate
2. Vietnam – Drought using rainfall station data in the early season as a form of business interruption for extra irrigation cost for coffee in the Central Highlands
3. Vietnam – Flood using a river gauge on the Cambodian border
4. Peru – El Nino Forecast Insurance using NOAA Nino 1.2 sea surface temperatures to trigger early payments before flooding begins in Northern Peru
5. Indonesia – Earthquake index insurance using USGS intensity mapping

# Index-based Livestock Insurance Project, Mongolia





# Mongolia — Index-based Livestock Insurance

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## The Risk

Severe livestock losses due to *dzud* (harsh winter weather)

## Target Users

Herders

## Contract Structure

Payments based on livestock mortality rates at the soum (county) level

## Mongolia Parliament Passed IBLI Law in 2014

The structure was institutionalized in 2014

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# IBLI Experience

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- Started in 2005 – 3 aimags
- IBLI Law passed in 2014
- 2010 Major event (maybe 1 in 50) payout avg about USD 360 on premium of USD 50
- Herders largely understand the product

Year	Herders	Premium		Average	
2013	19,445	¥	1,799,000,000	¥	92,517
2014	14,331	¥	1,374,000,000	¥	95,876
2015	10,346	¥	1,317,000,000	¥	127,296

# Layering Risk

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There are two thresholds that are fixed for each aimag (province)

T1 is Threshold 1 (5, 6, or 7 percent)

T2 is Threshold 2 (25 or 30)

Layer 1: Below T1 –Herder assumes all losses

Layer 2: From T1 to T2 –Risk is fully priced and premium is used to fund payments from Mongolian Insurance Companies via a Livestock Insurance Pool

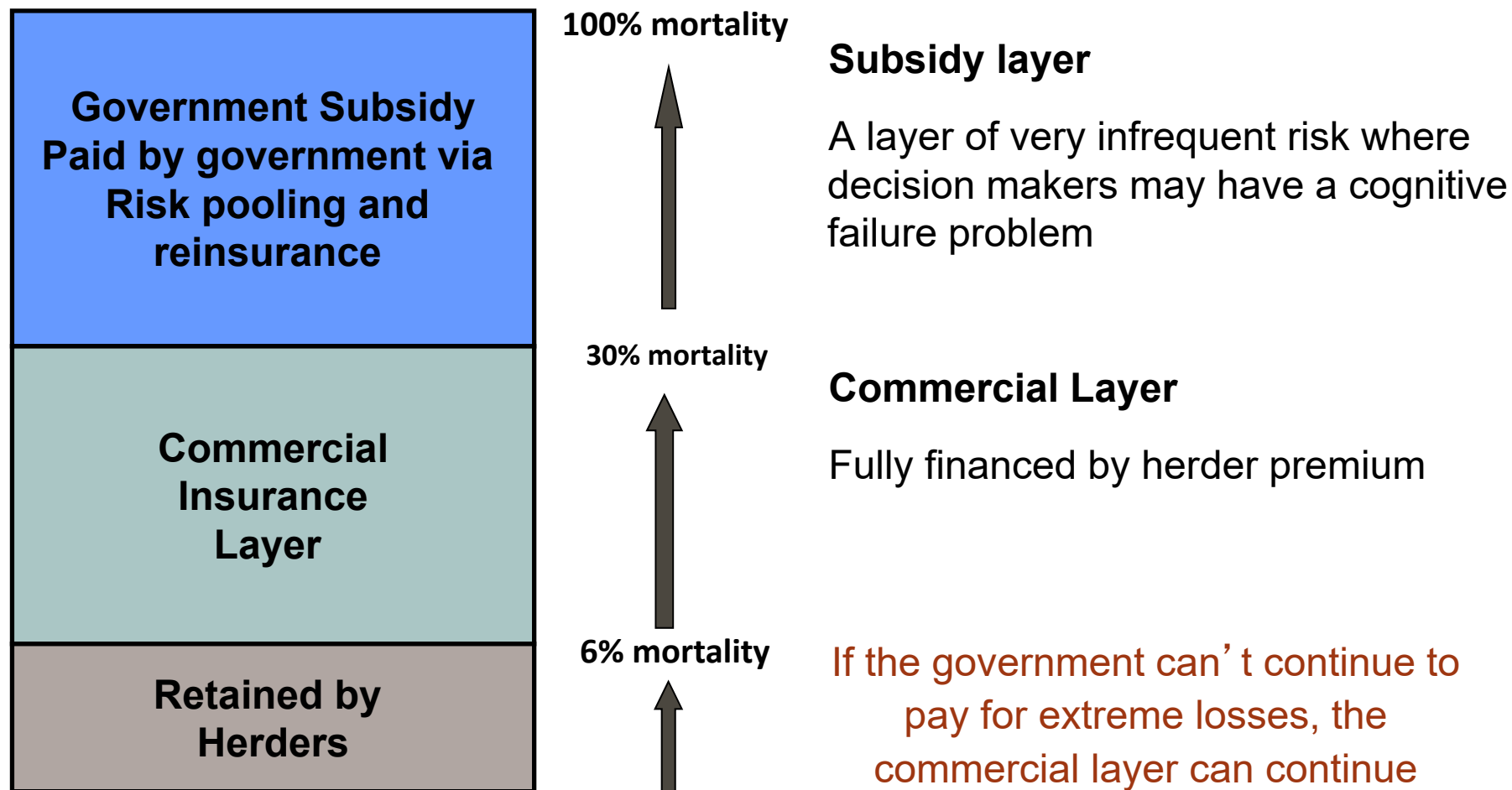
Layer 3: Above T2 – Gov't pays for the catastrophic layer as a subsidy

If  $MR > T1$  payment rate =  $(MR1 - T1)$

# Index-based Livestock Insurance — Risk Layering

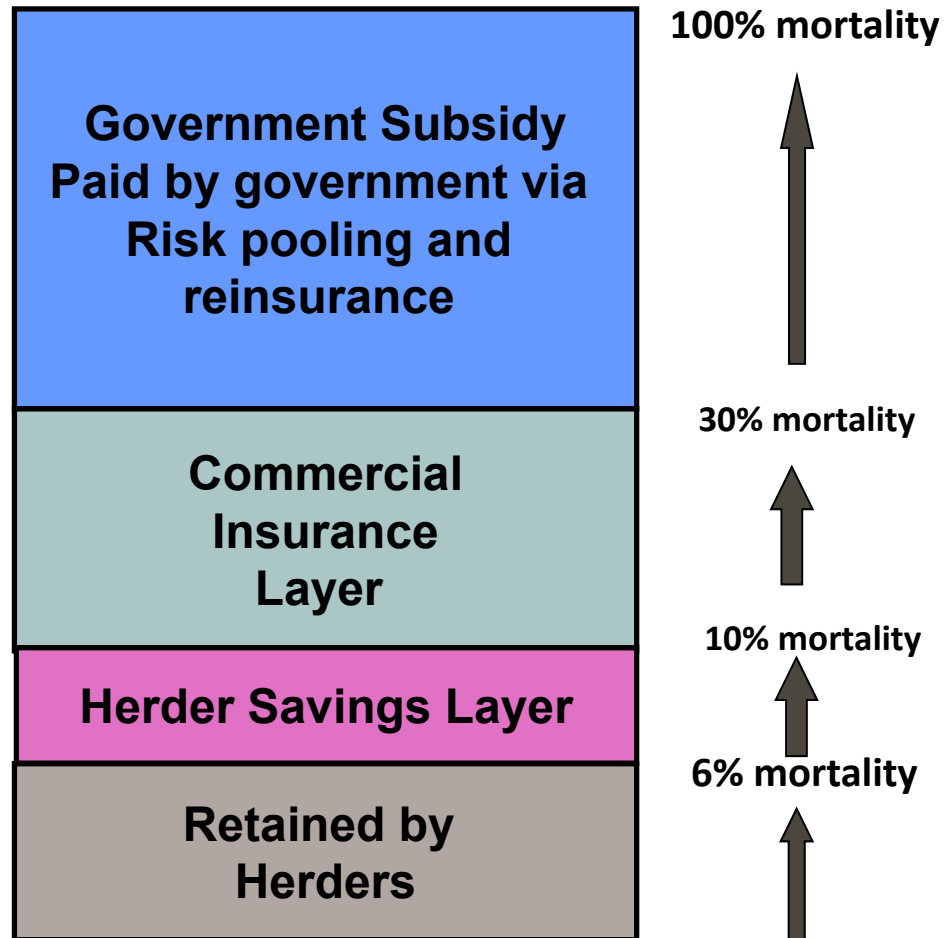
## A New Model for Public-Private Partnerships

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# Adding a Savings Layer to Motivate Renewals

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The layer from 10 to 30 would have reduced premiums approximately 1/3. This would be used for savings in a 3 year contract.

The idea was rejected for its complexity.

My view remains that this is something worth pursuing when there is a public-private partnership.

Savings for frequent events is superior to insurance



## Layering the and risk pooling proved to be more efficient

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MR Layer	Expect loss	Loaded Prem	% of 5 to 30
5 to 10	0.76%	1.06%	34.3%
10 to 30	0.68%	2.03%	41.7%
5 to 30	1.44%	3.09%	100.0%
5 to 100	1.63%	4.87%	157.6%

Notes: Saving Layer is about 1/3 cost of the commerical layer: Had IBLIP offered cover to 100% the cost would have been about 50 percent more. The Gov't pool for 30 to 100 was reinsured at a cost of about 10% of commerical layer





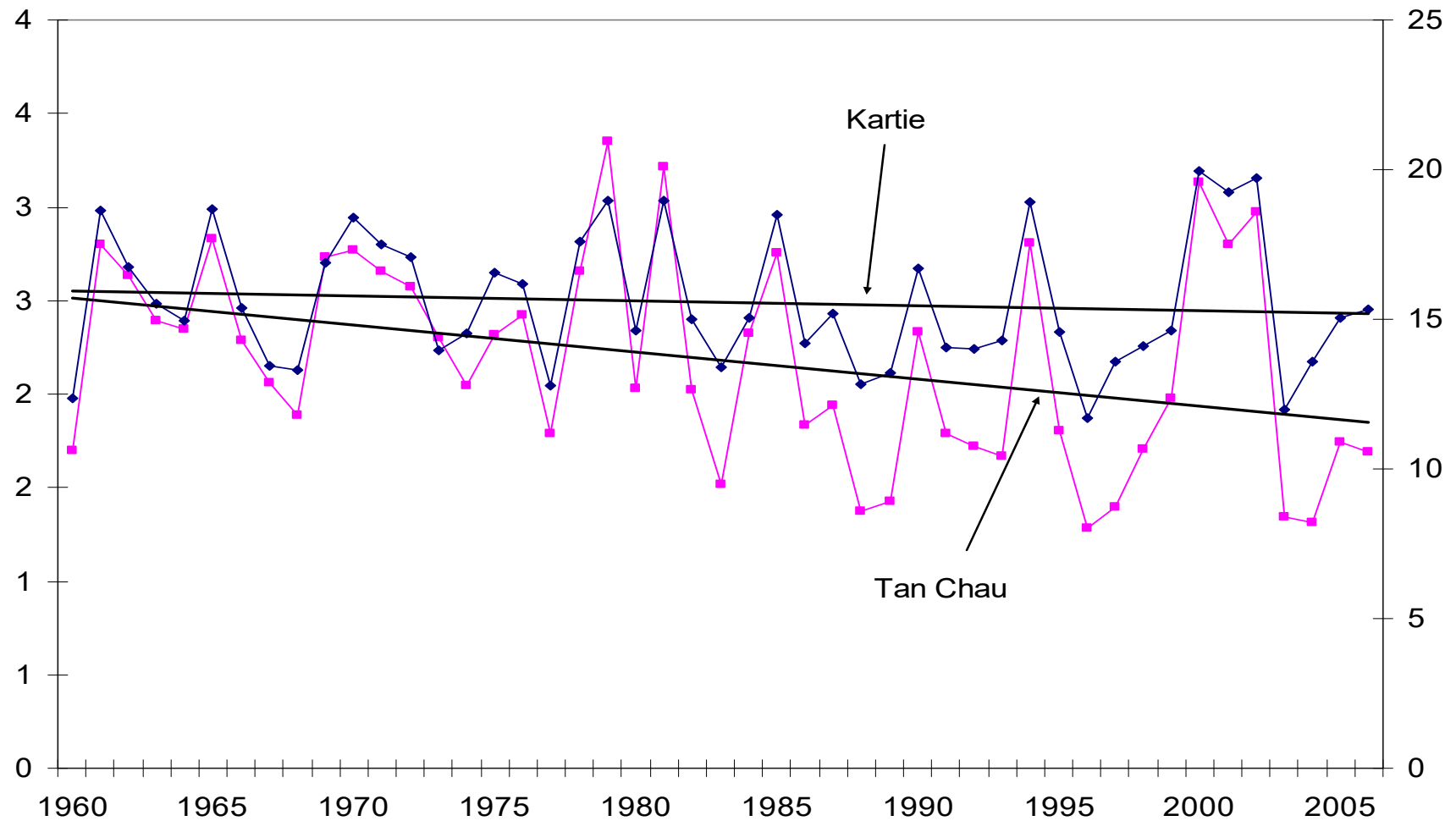
# Vietnam: Early Flooding on Mekong Using Tan Chau

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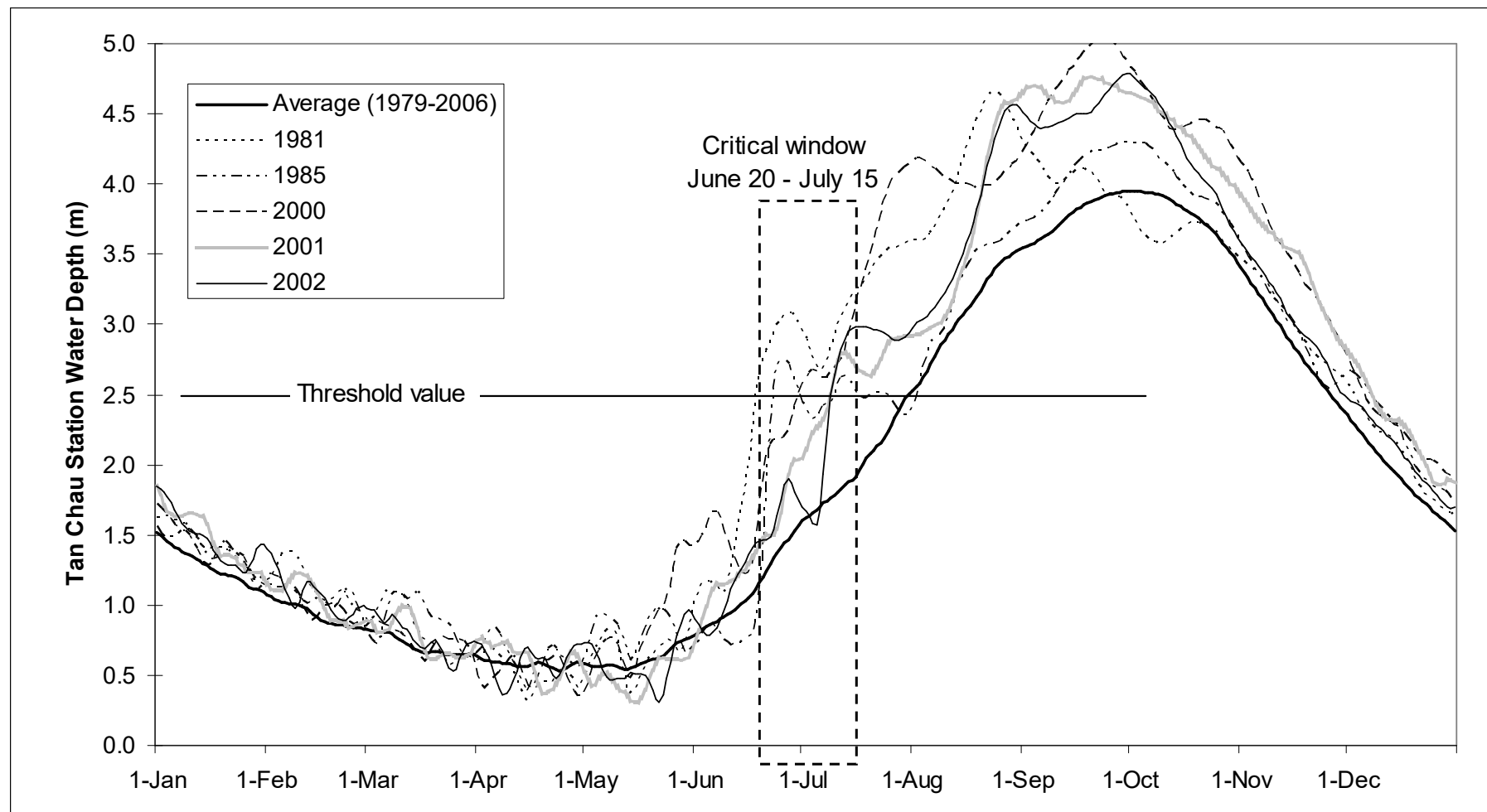


- Tan Chau—on the Mekong close to Vietnam/Cambodia border
- Water levels between Kratie and Tan Chau are 95% correlated during our critical time period
  - ▶ Proxy and data check

# Water Levels at Kratie to Tan Chau

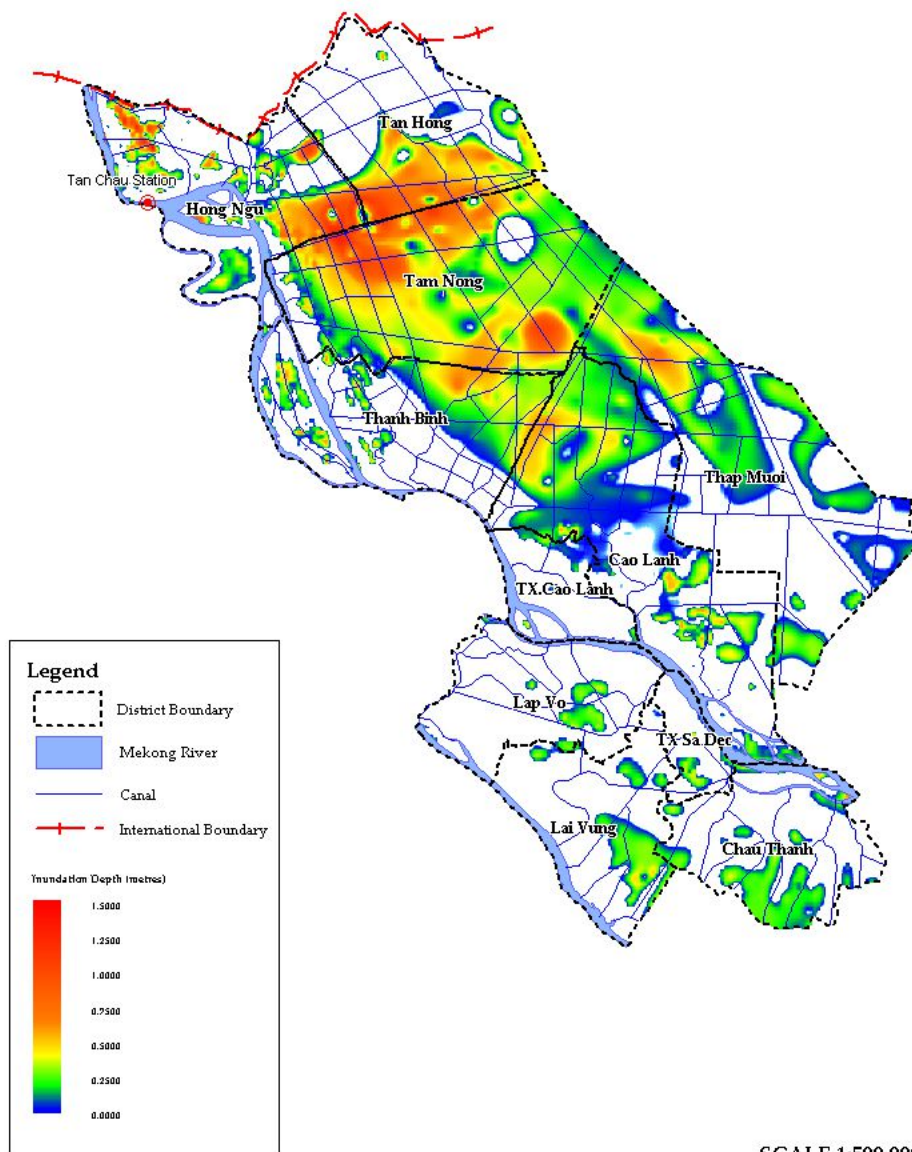


## Three Day Centered Moving Average of Daily Average Water Levels during Six Extreme Water Level Years (June 20–July 15)



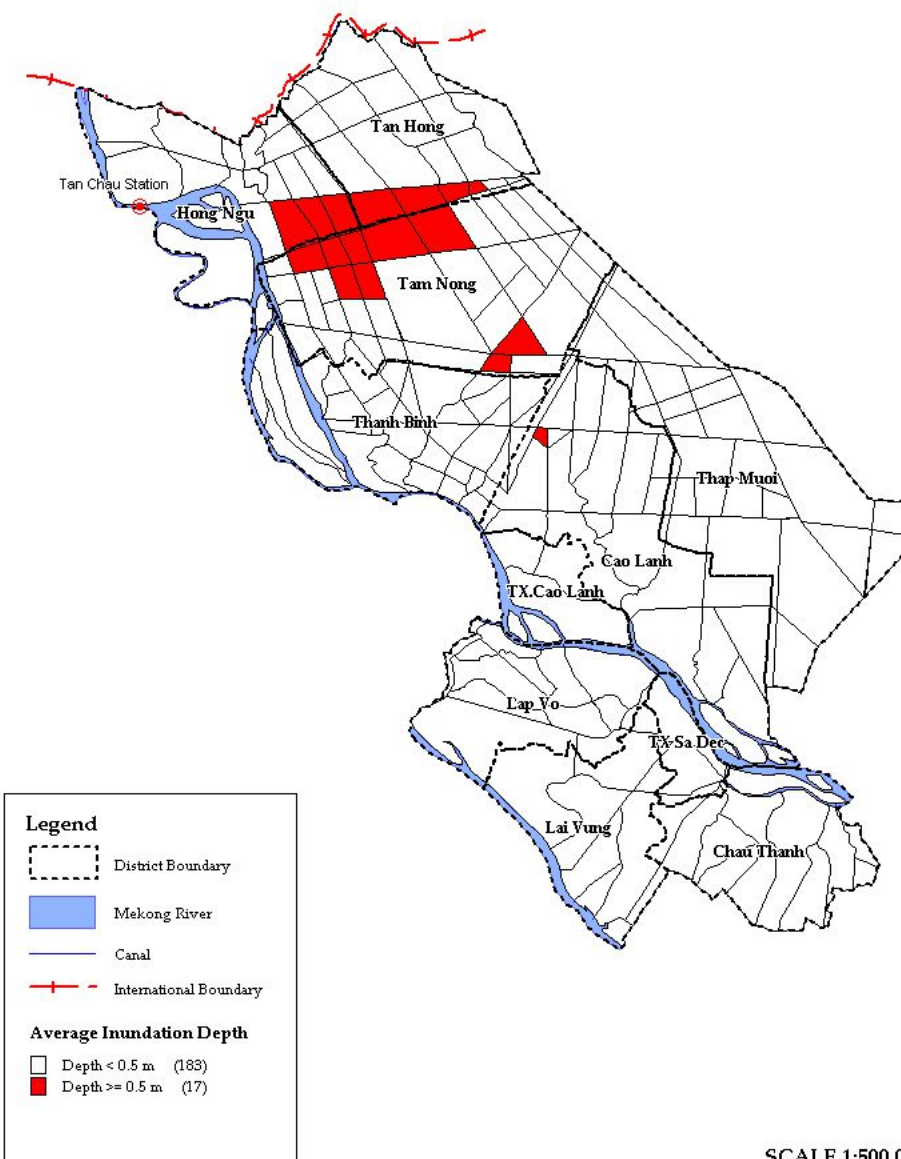
## Map 23 - Scenario 21 (Sc30\_1)

Calculated Flood Inundation Depth  
Dong Thap Province - 25 June



## Map 47 - Scenario 21 (Sc30\_1)

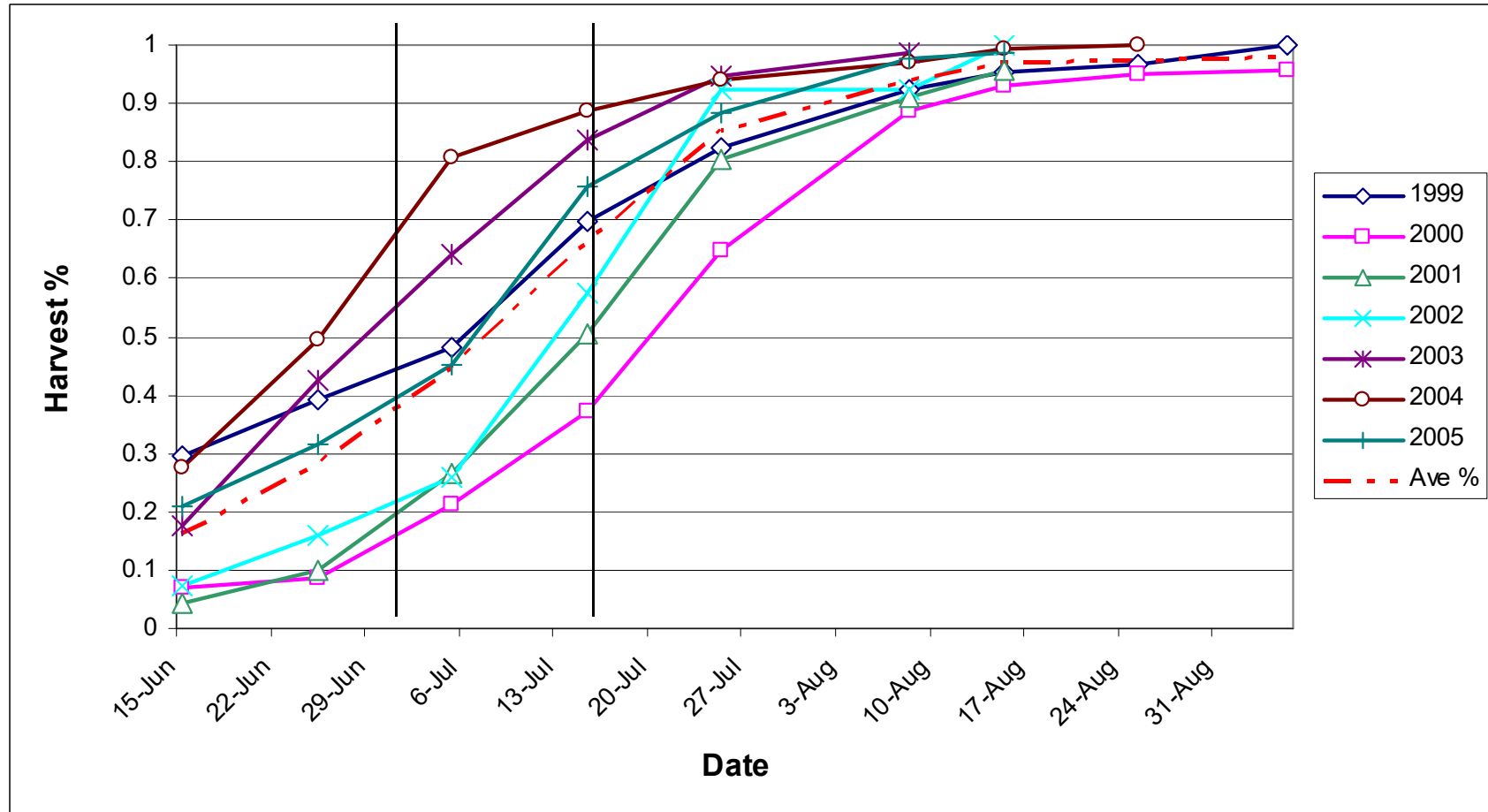
Identified Flood Risk Areas  
Calculated By Average Inundation Depth  
Dong Thap Province - 25 June





# Rice Harvest Progression, 1999-2005, Dong Thap

## Business Interruption in Slowing Rice Harvest



# Lessons Learned

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- Weather stations are not well suited for index insurance
- Basis Risk Matters
- The regulatory environment is important / index insurance is contingent claim
- Delivery systems can be costly
- Reinsurance for first efforts can be costly
- Demand is challenging
- Pilot programs are difficult to scale
- Developing products that pay frequently is ill-advised

# Index Insurance to Facilitate Financing Needs

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- By framing Index Insurance as a form of contingent claims insurance, the legal and regulatory risk can be mitigated and issues tied to basis risk can be presented in a better fashion
- Contingent claims is similar to life insurance or insurance for a surgeon to protect loss eye sight – given an event that is well described, the burden is on the insured to select the financing needs (or level of coverage)
- Mongolia – Herders who work to save their animals also incur significant expense
- Vietnam – Rainfall insurance was presented to cover extra costs of irrigation that came prior to the onset of rain after coffee bloomed
- Vietnam – Early flooding was identified as a condition that greatly slowed the harvest

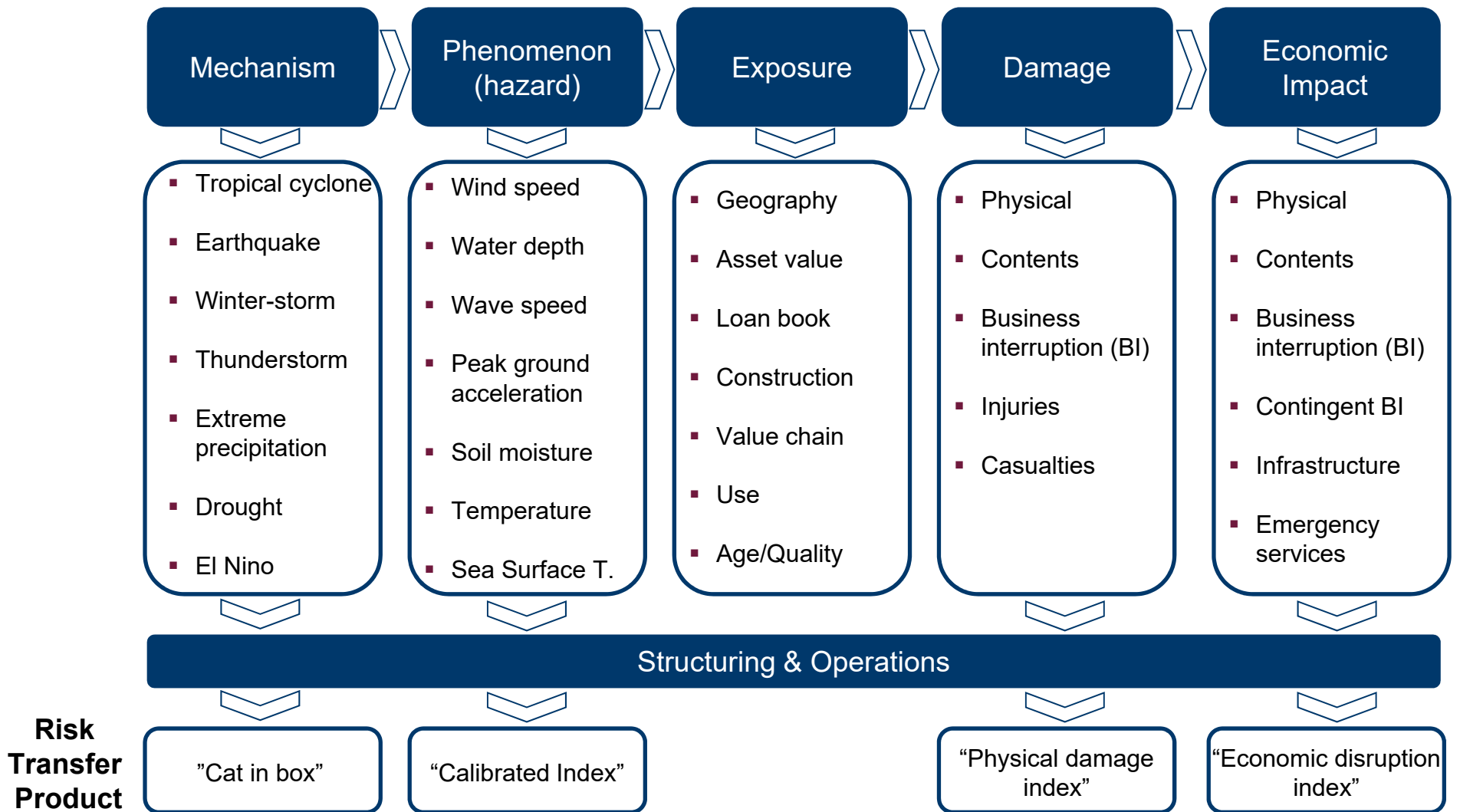
# Lesson's Learned Fit for Overcoming Market Barriers

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CHALLENGE	GP'S APPROACH
<b>Inadequate Data</b>	Proprietary risk hazard platform tailored to market needs
<b>Immature Legal &amp; Regulatory Frameworks</b>	Target risk aggregators domiciled in developed markets
<b>High Cost of New Products</b>	Build risk management solutions that provide efficient balance of risk transfer and risk retention for clients; Work with meso-level clients that have scale and geographic diversity
<b>Insufficient Demand/Familiarity with Insurance</b>	"High-touch" partnership approach that focuses on comprehensive strategies for managing business interruptions from extreme events

**Global Parametrics is designed to crowd the market in**

# Data: GP will use Global Circulation Models (GCMs)



# GP's Value Proposition

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