

# Challenges of Managing a Global Crop Portfolio – A Case Study of China

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# Agenda

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- Crop insurance programs around the world
- China market background
- Challenges faced in the China market
- Future of the market and model solution

# Crop Insurance Premium Volumes Align with Crop Production

## Major Crop Production Countries – Millions of Metric Tons (2013-2014 Estimated)

	Corn	Soybean	Wheat	Rice	Cotton	Rapeseed	Sugarcane
U.S.	<b>351.27</b>	<b>91.39</b>	58.1	6.1	12.9	1	8
China	<b>218.49</b>	12.2	<b>121.9</b>	<b>142.5</b>	<b>32.8</b>	<b>14.46</b>	14.5
Brazil	79.3	<b>86.7</b>	5.3	8.3	8	-	<b>37.5</b>
India	24.19	9.5	<b>93.5</b>	<b>106.5</b>	<b>31</b>	7.3	25.5
Canada	14.19	5.36	37.5	-	-	<b>17.97</b>	-
Russia	11.64	1.64	52.1	0.6	-	1.39	5
France	14.7	-	38	-	-	4.37	-
Argentina	25	51.5	10.5	1	1.22	-	2.1
Mexico	22.96	-	3.4	-	-	-	6
Ukraine	30.9	2.77	22.3	-	-	2.35	-
Australia	0.5	-	58.1	0.6	4.1	3.76	4.5

**Bold indicates first or second largest in market**

Sources: USDA Foreign Agricultural Service

<http://www.fas.usda.gov/psdonline/circulars/production.pdf>

# Crop Insurance Premium Is Significant and/or Growing in the Major Agricultural Countries

Country	Crop Insurance Premium (USD Millions)
United States	11,000*
China	5,290*
Canada	1,900*
EU	1,350**
Japan	1,100**
Latin America	600**
India	500**
Russia	250**

\*Data from 2014

\*\*Data from 2012

Sources: Risk Management Agency, USDA; Munich Re

# Global Crop Portfolio Management Is Challenging

- Data availability and uncertainty
- Systematic changes by the regulators
- Human behavior

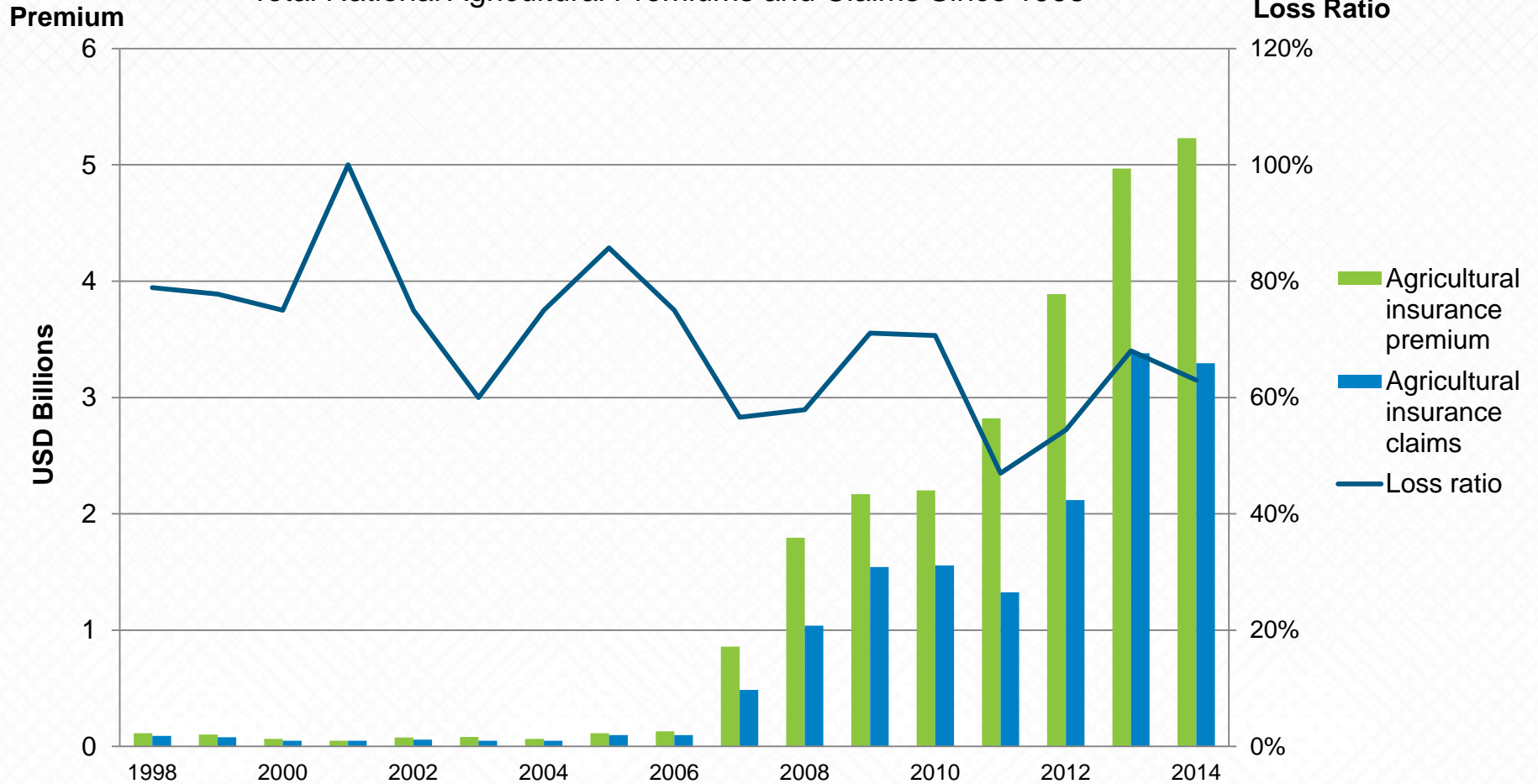


# Challenges of a Global Market: Using China as an Example



# China National Premiums Have Grown Tremendously

Total National Agricultural Premiums and Claims Since 1998



Source: National Bureau of Statistics of China and CIRC

# Several Potential Areas for Premium Growth

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- Current Product Offered
  - MPCl
  - Forestry
  - Livestock
  - Aquaculture
- Index (weather) product
- Revenue product



# Both Domestic and International Companies Participate in the Market

## Primary Companies



# Both Domestic and International Companies Participate in the Market

## Reinsurers

PartnerRe



Swiss Re

*hannover re*<sup>®</sup>



EVEREST.

*RenaissanceRe*



CHINA RE  
中国再保险



TOKIOMARINE  
T M R



Transatlantic Re

Munich RE

SCOR

Global P&C



ASPEN RE



ALLIED  
WORLD  
REINSURANCE



VALIDUS  
GROUP



CAPITAL



Reinsurance



Montpelier Re

PeakRe >

# Both Domestic and International Companies Participate in the Market

## Brokers



# Governments (Central and Provincial) Play a Significant Role in the Market

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- Issue insurance license
- Set policy conditions
- Subsidize premium
- Set up the structure for reinsurance market



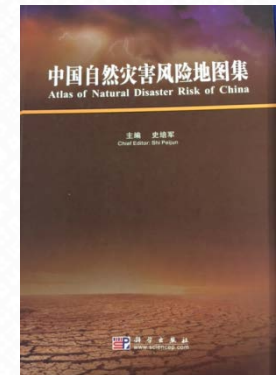
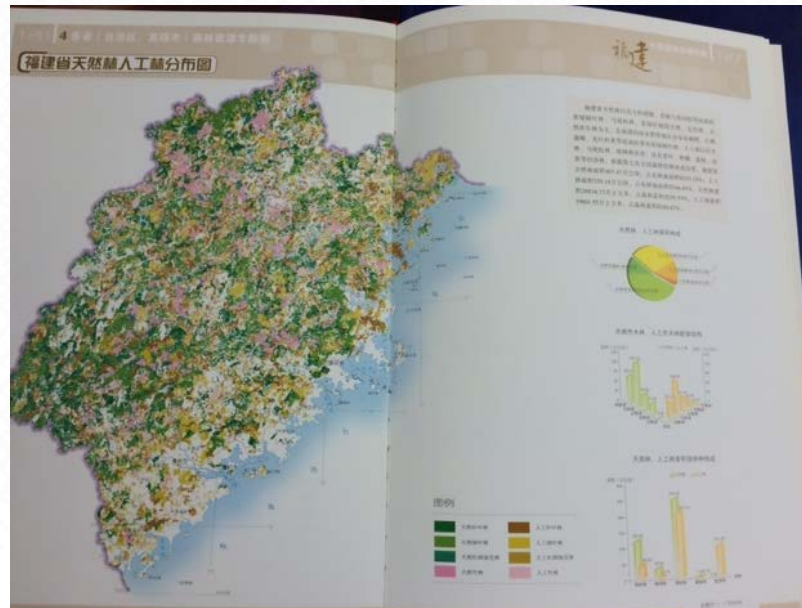
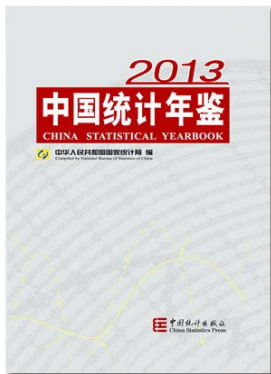
# 2014 Brought a New Trend into the Marketplace – China Agriculture Reinsurance Pool

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- Established November 21, 2014
- 24 members
- Managing organization is supervised by the Chinese Insurance Regulatory Committee (CIRC) and managed by China Re for the first year

# A Big Challenge Is Finding Reliable Data

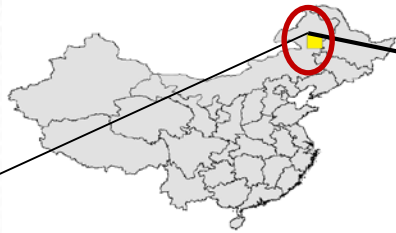
- Available public data
- Underlying exposure changes
- Client data – human behavior



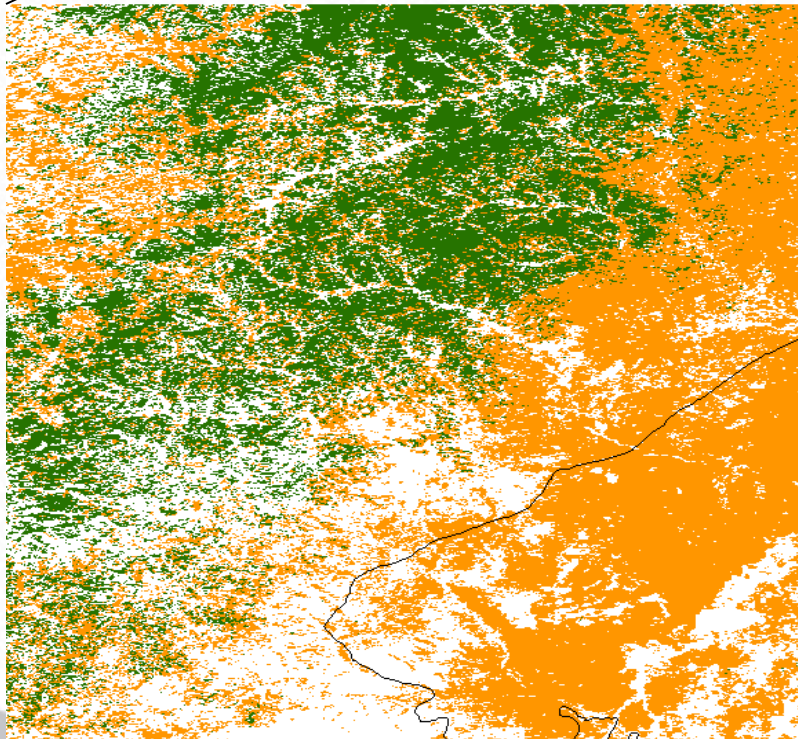


# ...And the Age of the Data Is Critical – Exposure Can Change Dramatically

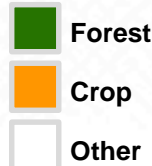
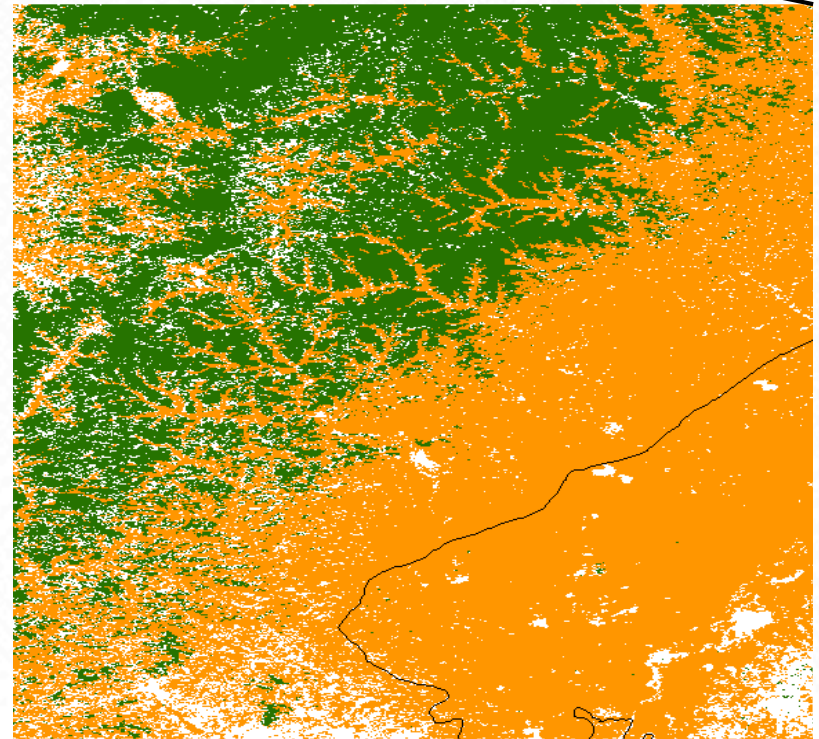
As China's economy has grown, both crop and forest exposures have consolidated and expanded



2001



2012



Satellite land cover imagery of border between Inner Mongolia and Heilongjiang in 2001 (left) and 2012 (right).

# Data Uncertainties Caused by Claims Practices Provide an Additional Challenge

- Current claim practice
- Claims fraud
  - Fake policy
  - Counterfeit claims
- New technology for claims management
  - GPS
  - Remote supervision with cellular technology
  - Remote sensing



# Market Conditions Change from Year-to-Year

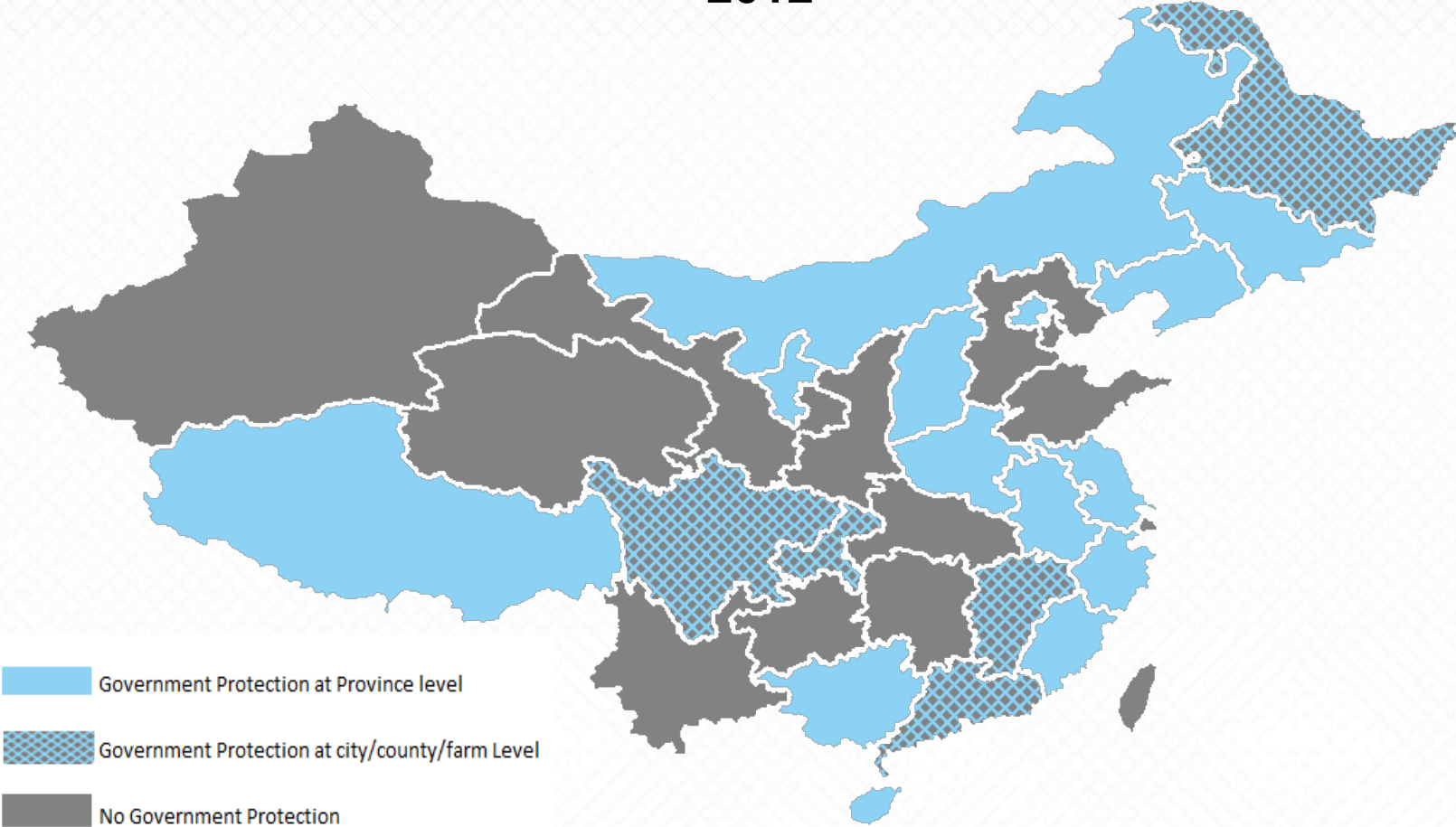
- Policy conditions
- Covered liability

Beijing Corn	2011	2012	2013	2014
Planted Area (1,000 hectares)	141	132	NA	NA
Sum-insured per mu (CNY)	400	500	500	600
Franchise deductible (%)	0	0	50	50
Premium rate (%)	8	7	7	7
Drought coverage	No	No	Yes	Yes

- Loss caps

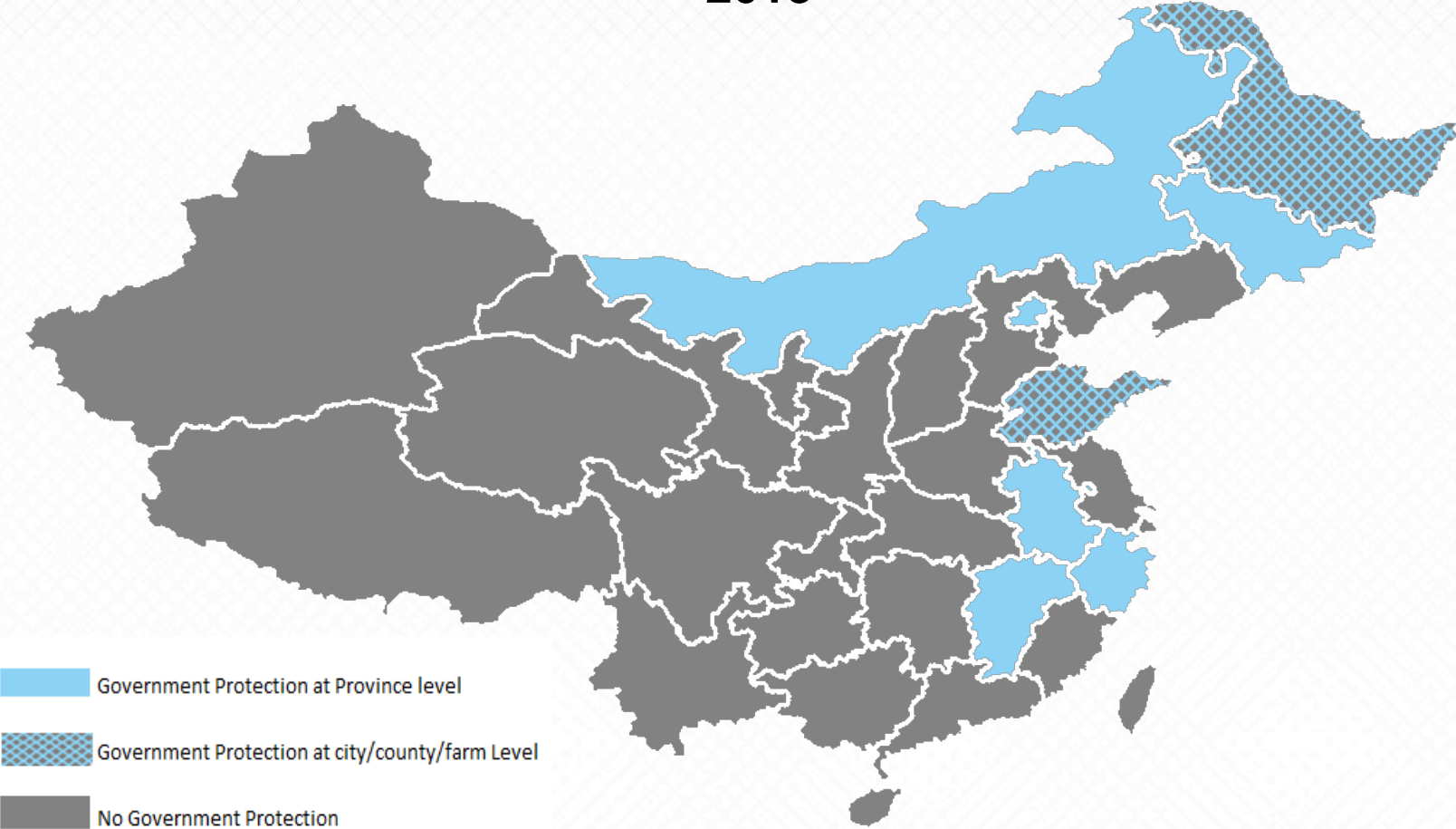
# Government Role Is Changing: Loss Caps in 2012

2012



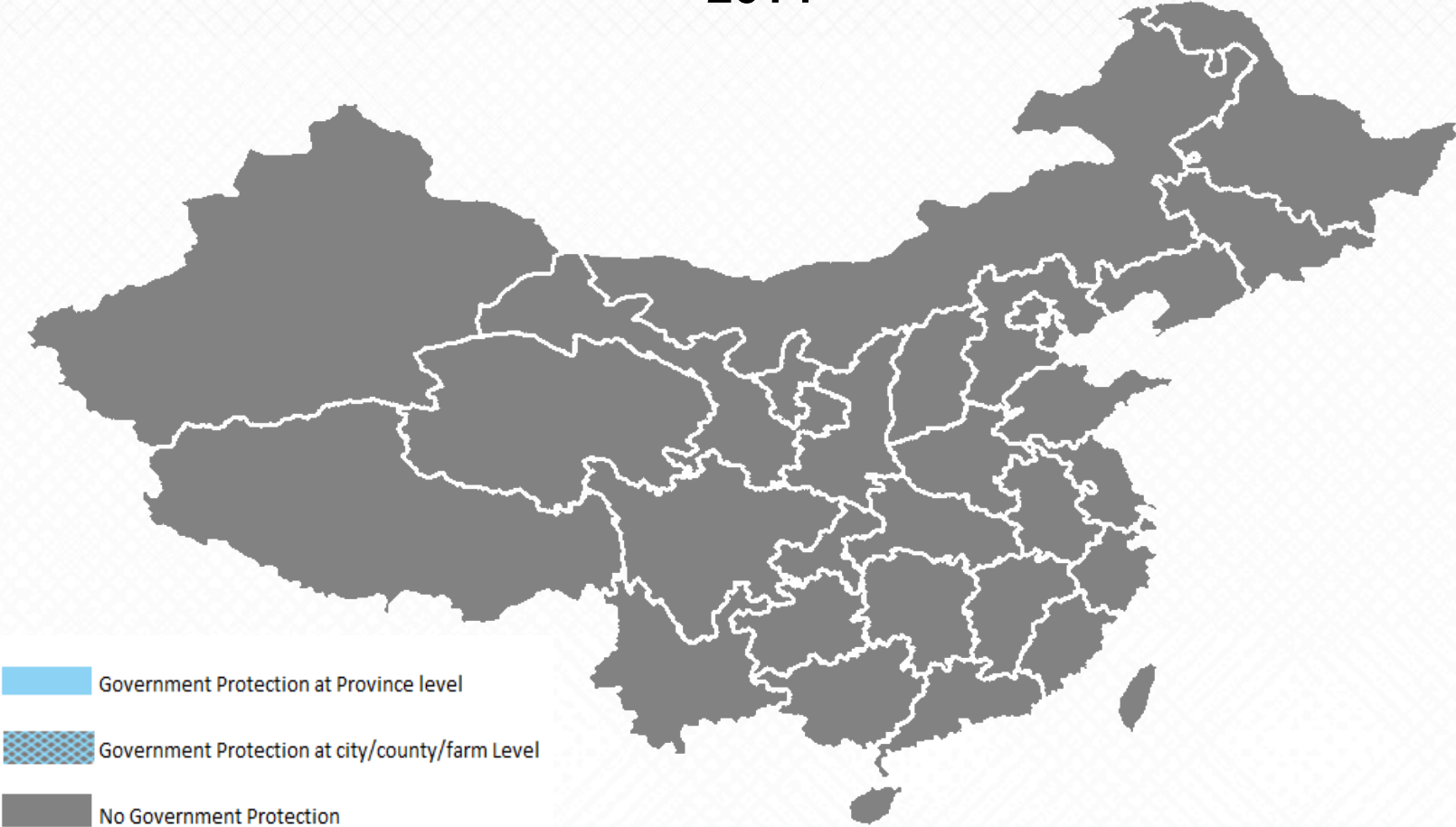
# Government Role Is Changing: Loss Caps in 2013

2013



# Government Role Is Changing: Loss Caps Removed in 2014

2014

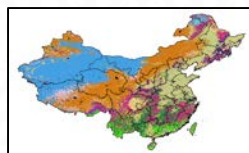
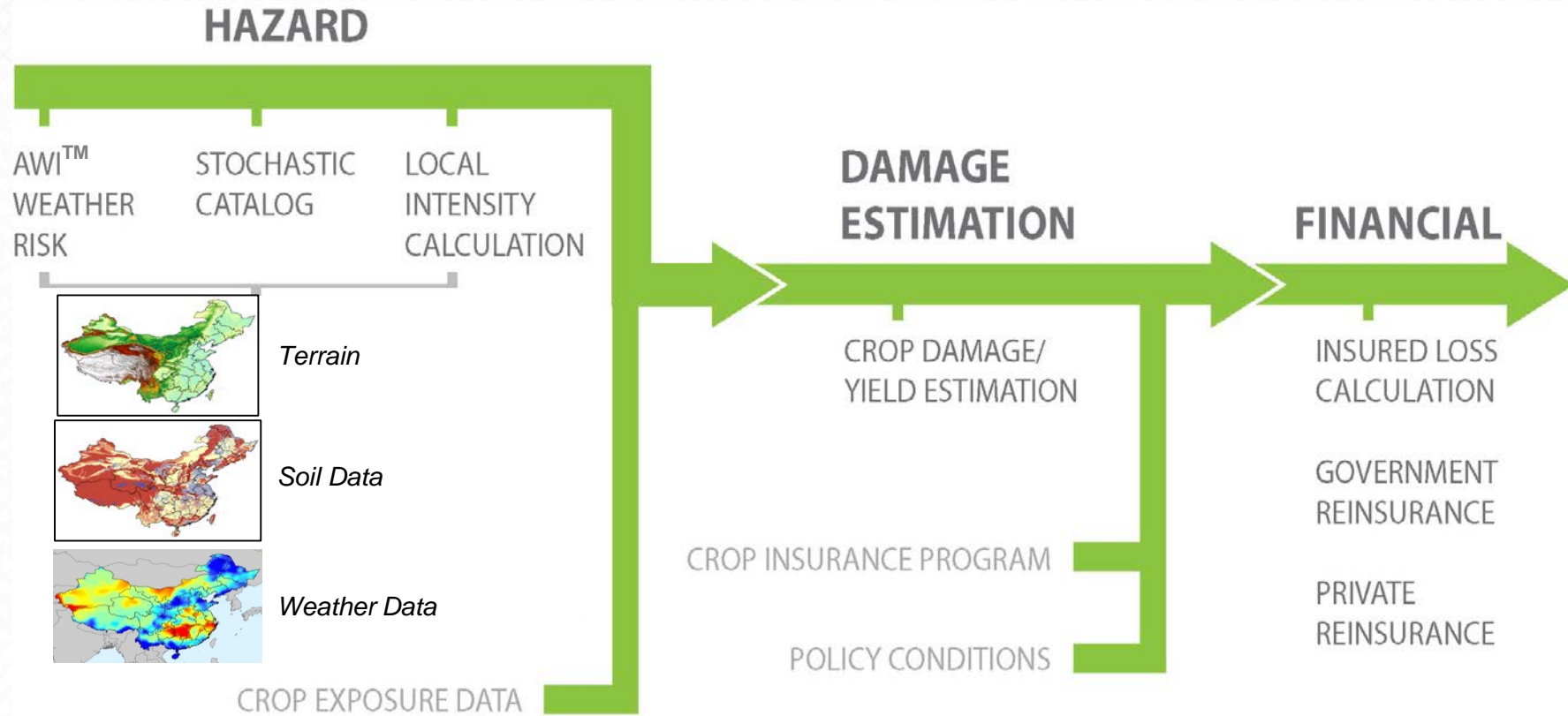




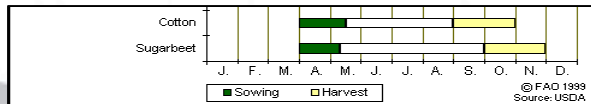
# From Challenges to Solutions



# AIR's Multi-Peril Crop Insurance Model Is Built from the Ground Up

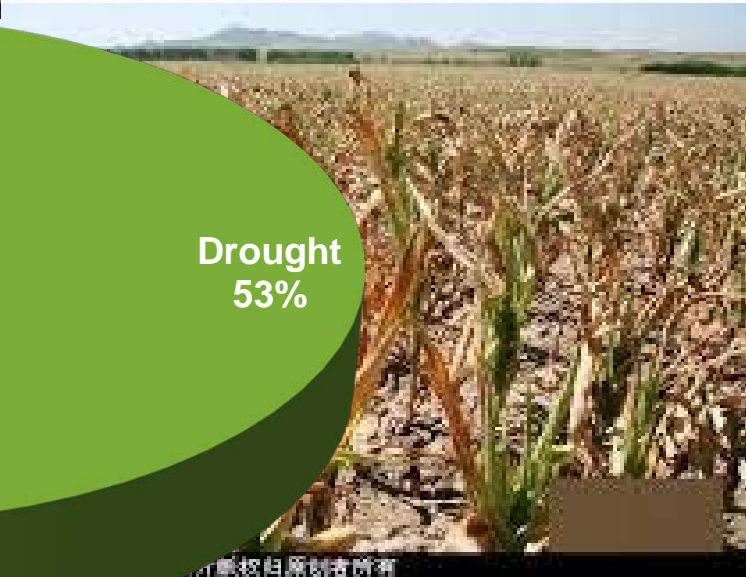
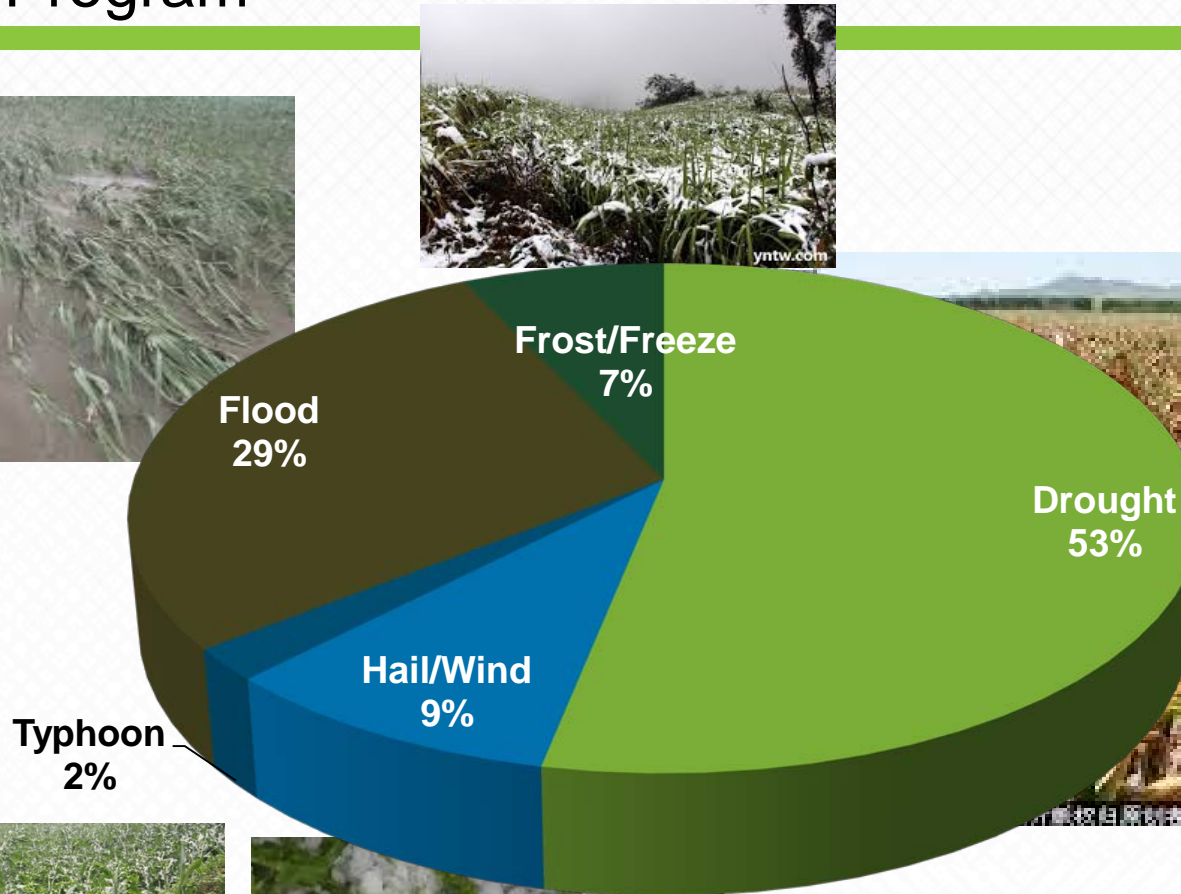


*Land Use Land Cover*



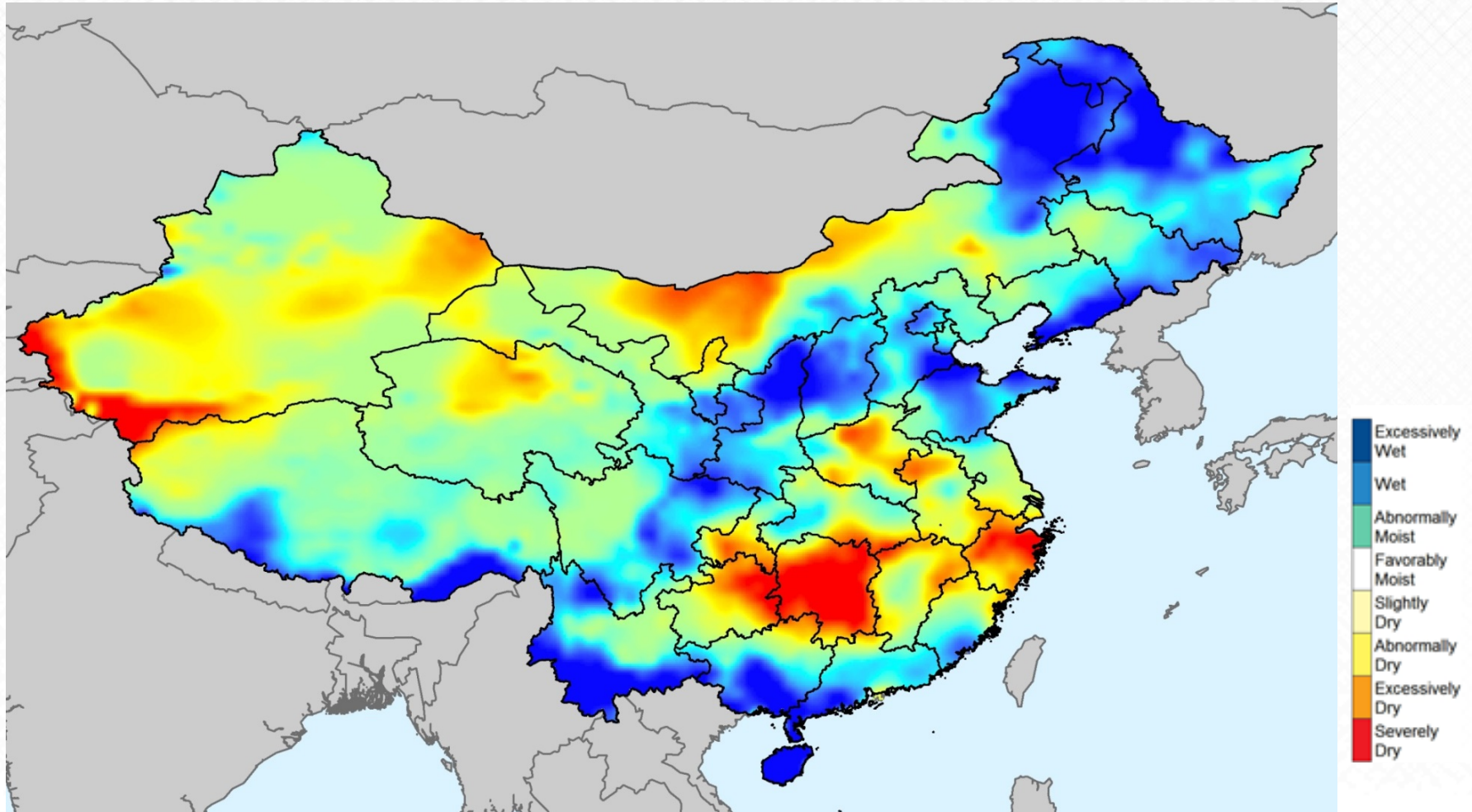
*Crop Calendars*

# The AIR Model Currently Handles Various Perils for the MPCCI Program





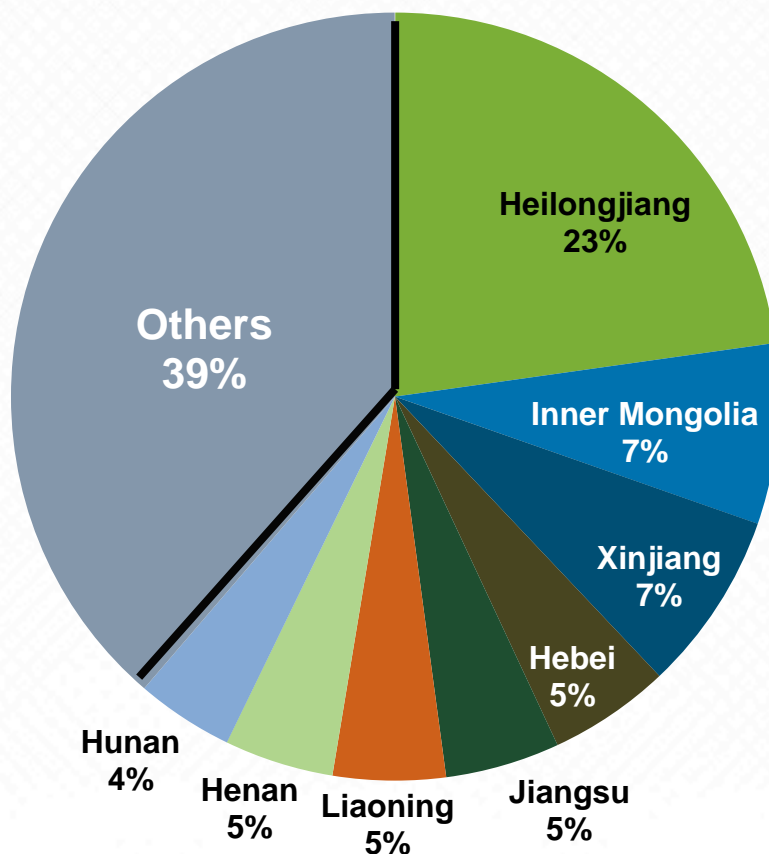
# 2013 Was An Eventful Year: Crop Moisture Map for August 10, 2013





# Top 10 Provinces Account for Over 60% of the 2013 Losses

## Proportion of Losses by Province



# Choosing the Right Portfolio Can Decrease Potential Losses

