Public Meteorological Service Delivery and Disaster Risk Management For the Farming Community of China

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Outline

- Public Meteorological Information and Service Delivery in Rural Areas of China
  - features and impacts of weather and climate extremes
  - dissemination of early warnings
  - agrometeorological services and rural informationization

- Disaster Risk Management For the Farming Community of China
  - risk analysis and mapping, disaster ready community
  - agricultural insurance for risk transfer
  - public awareness enhancement on DPM
  - adaptation to climate change
China experiences the most severe weather-induced disasters

- Various disasters such as typhoon, torrential rain (snow), lightning, drought, high wind, hail, thick fog, haze, dust storm, high temperature and heat wave, and low temperature and freezing occur from time to time, and weather-induced landslide, debris flow, flash flood, as well as marine disasters, biological disasters and forest and prairie fires are considerably serious, which have significant impacts on economic and social development, people’s life, ecosystems and environment.

- According to latest statistics, over 70% of natural disasters are induced by weather in China. Economic losses caused by meteorological disasters account for 1-3% of GDP per year.
The average annual death toll as result of various meteorological disasters was **3973**

Death tolls caused by meteorological disasters
The drought affected extent in northern China became enlarged;

Drought severity and extent showed most evidently an increasing trend in China.

**Frequency of Drought Occurrence**

**annual drought index (CI) (1951-2006)**

*Source: National Climate Centre, CMA*
**Meteorological early warning Information Dissemination in Rural Areas**

- Rural Areas are most vulnerable to Hydro-meteorological and various induced secondary disasters. Problem in outreaching the disaster early warning messages to local farmers in the remote countryside — So-called “last-mile bottleneck”

- Rural areas have always been the important but difficult targets for meteorological disaster prevention and preparedness. — high priority of CMA and governments at all levels

- Focus on setting up local weather information dissemination networks that combine the indigenous repercussion instruments (e.g. Gongs & drums), loudspeakers with modern means of communication like automatic alarming devices, electronic display screens, mobile-phone SMS messages, telephones, TV and radio broadcast. — Capacity building on dissemination network
Expanding the coverage of forecasting and warning information

More than 375,000 Volunteers have been certified and trained for warning dissemination and met service delivery. 1 million targeted within 2-3 years.
New technology: Cell Phone SMS

- SMS weather service is another major approach for meteorological information delivery and an important component of emergency disaster prevention system.
- The nationwide SMS users reach over 90 million;
- SMS farmers users reach over 30 million;
- In 2009, more than 40 million pieces of warning information were released, with over 900 million people-time receiving information;
Traditional: Dedicated loudspeaker and electronic display screens installed

In case of evacuation home visits with beating gong and drum

wired loudspeakers and electronic display screens are based on SMS technology, and become important supplements to SMS weather information service platform.
Agrometeorological services and rural informationization

Agrometeorological observation

-- 631 Agrometeorological observation stations

-- 1600 soil moisture observation stations

-- In-situ investigation
Agrometeorological forecast

- Evaluating the effect of the weather on the agricultural production
- Crop yield forecast
- Crop growing period forecast
- Plant diseases and insect pests forecast
Comprehensive Information Services at grass-root level

- Established 15,400 rural meteorological information service stations at township level
- “five requisite” establishment standard
- Sponsored by the Government, hosted by the Met Service, providing different kinds of information needed by farmers
CMA has established the Agromet websites nationwide based on its information network resources. Agromet websites covered comprehensive information interested in rural areas.

- **31 province**: have opened their Agromet websites.
- **270 cities and 1,300 counties**: have opened Agromet websites.
- **More than 9,700 townships and 4,400 villages**: have set up the information service stations at grass-root level.

Anhui Agronet website
Guizhou Province has opened 97 information websites at provincial, prefecture and county levels, which are accessible by 313 townships. Since the opening of the websites in 2000, about 2,090,000 pieces of information have been disseminated, leading to online transactions of 321,000,000 RMB Yuan, and promoting agricultural product sales and investments of 850,000,000 Yuan.

Altogether 171 websites at all levels are opened in Sichuan Province alone, outreaching 2249 townships. Since the launch of the websites in 2000, about 180,000 pieces of information have been disseminated, with online turnover amounting to 900 million Yuan.

The Agromet website in Anhui Province has contributed to an online turnover of 300 million Yuan.
World Bank pilot project on rural informationization initiated

Workshop was held on June 12-14, 2010 at Guizhou Province
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Disaster Risk Management

- A real time collection system on disaster information has been put into operation.
- Survey on historical disaster initiated.
- Risk analysis based on GIS and other emerging technologies.
- Financial risk transfer — Agriculture Insurance mechanism on a trial manner, catastrophe risk insurance on typhoon, flood, earth quake...
- Preparedness planning — Disaster ready community building, public awareness enhancement on DPM, adaptation to climate change...
Met Disaster Risk Maps
Nationwide

Heavy Rain-induced Flood Risks

Heavy Rain-induced Flood Risks for Agriculture
Met Disaster Risk Maps

Provincial level

Typhoon risk map in Zhejiang

Typhoon risk classification by counties in Zhejiang
County-Level Met Disaster Risk Maps

Met Disaster Risk Maps for Drought, Flood, Typhoon, Strong Wind Respectively
Risk analysis has been applied in agricultural planning in Deqing County
Service for Met Disaster Risk Transfer
--Agricultural Insurance

Integrated Risk Index for Rice in Zhejiang Province

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Insurance Index</th>
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<tbody>
<tr>
<td>I</td>
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<td>II</td>
<td>1.3</td>
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<tr>
<td>III</td>
<td>1.0</td>
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Insurance Index for Rice Based on Met Disasters Risk
Scientific Outreach of DPM

- Nearly 200 Museums and 117 national-level scientific knowledge outreach sites have been set up, having received more than 8.5 million visitors in total;
- 500 thousand books on science outreach have been published;
- 1.4 million display screens and wall charts for scientific outreach have been set up;
- 4000 scientific outreach exhibitions have been organized;
- 130 thousand person-times attended scientific outreach activities.

Donated books on disaster prevention to pupils
Adaptation to Climate Change

Climate zoning for agriculture - more than 2100 projects conducted in recent years at national, provincial and county levels, Providing scientific inputs for on-farming decision

Climate mapping for orange production in Wan-an, Jiangxi province

Climate zoning for lichée planting in Maoming, Guangdong Province
Integrated Adaptation in Northeast China: Adjust planting areas for winter wheat and rice to improve yield according to climate zonation, meanwhile the protection of wetland and farmland, preparedness for extreme weather events were considered.

The boundary for winter wheat moved northward
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The boundary for winter wheat moved northward

climate zoning updated
Summary

Early warning dissemination and agrometeorological service delivery play a key role to reduce the disaster risks and improve the living standards of farming community.

A satisfaction survey made in 2009 showed that the satisfaction rate was 89.1 in rural areas, and 85.6 in urban areas.

We still have a long way to go to addressing livelihood crisis for farmers!
Thanks for your attention!

Acknowledgement: