

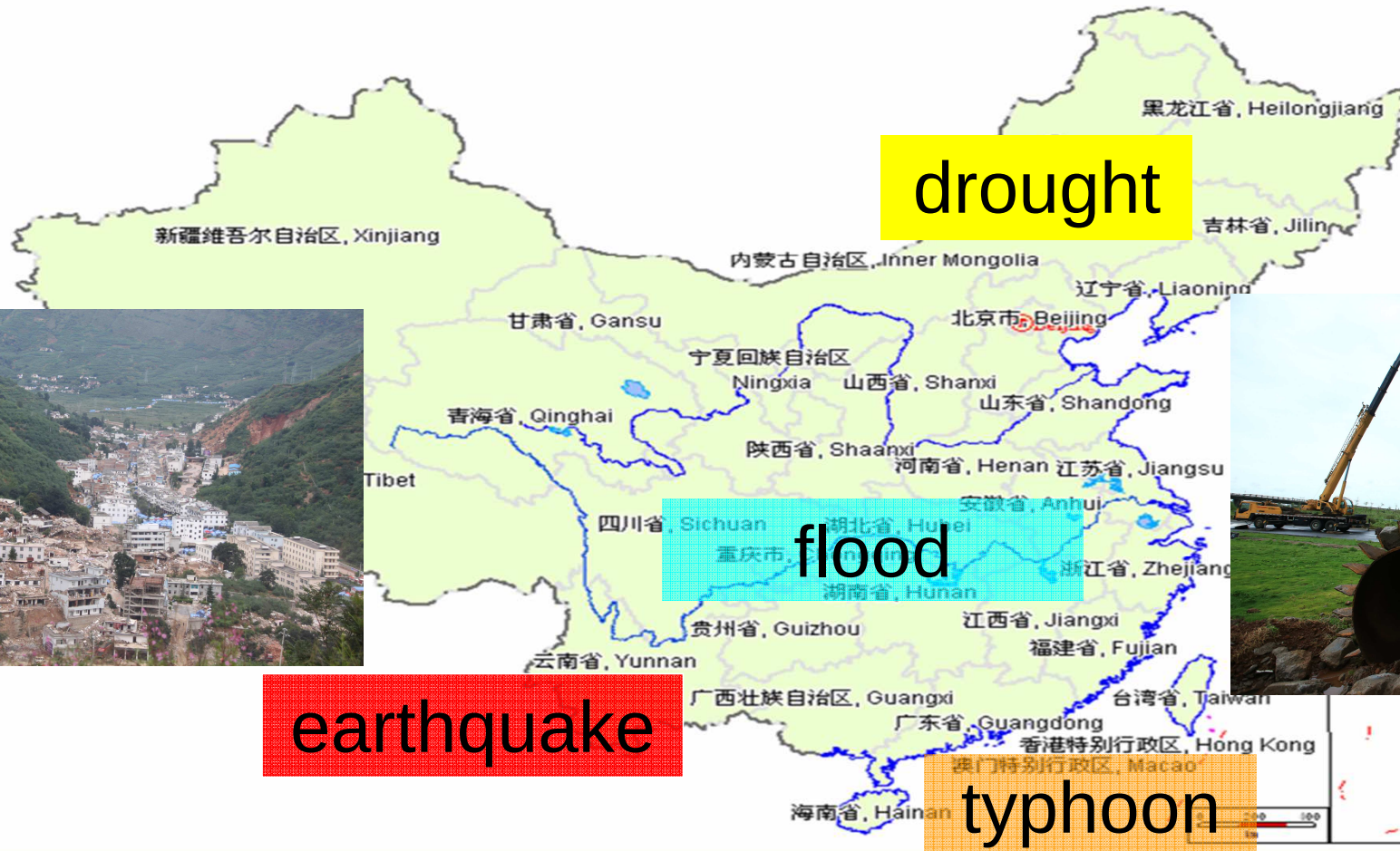


Progress of Space Technology Application for Disaster Management in China

LI Qun
Department of Disaster Relief
Ministry of Civil Affairs of P.R.China



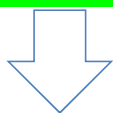
Background



Progress



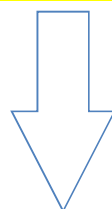
disaster monitoring



disaster early-warning



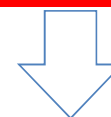
risk assessment



emergency relief



loss assessment



reconstruction decision



Disaster Monitoring and Assessment



Snow Cover Monitoring

Based on HJ and NOAA satellites, the nationwide snow coverage was monitored every week.

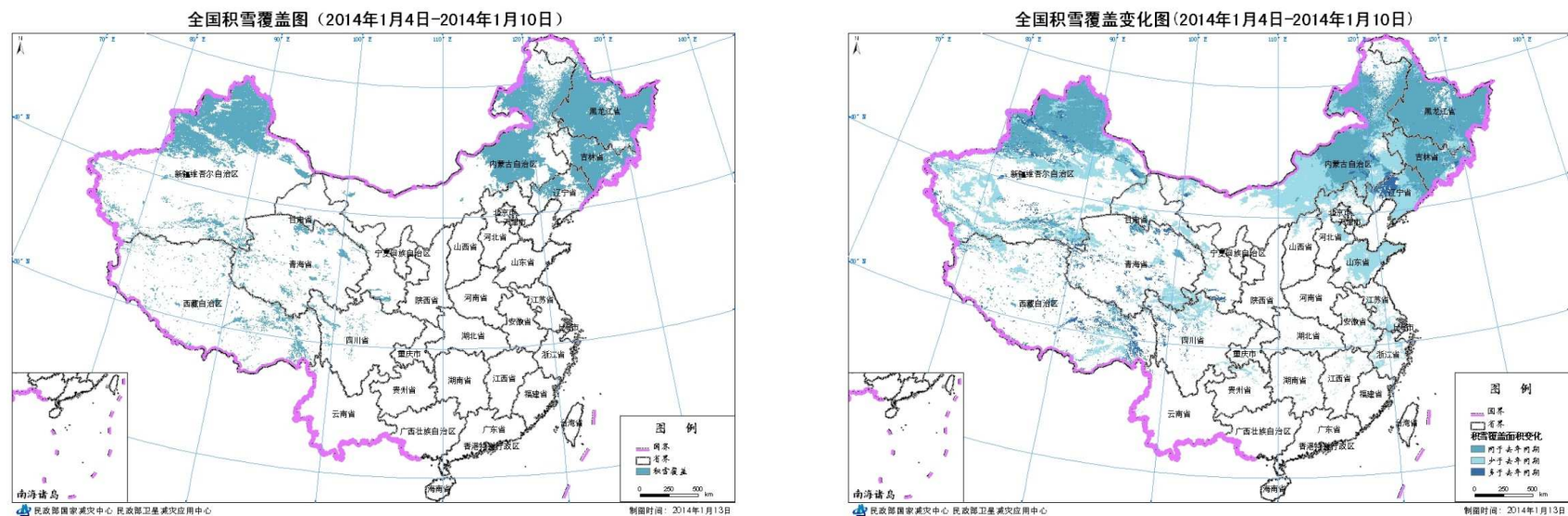


Fig 1 Nationwide snow coverage

HJ: Huangjing-Jianzai (Chinese: 环境减灾, literally: "Environment and Disaster Reduction", abbreviated "HJ")
NOAA: National Oceanic and Atmospheric Administration satellites.

Disaster Monitoring and Assessment

Drought Monitoring

- Using multi-scale domestic and international remote sensing data such as HJ and MODIS, carry out continuous of drought monitoring based on vegetation condition index, water index and other methods

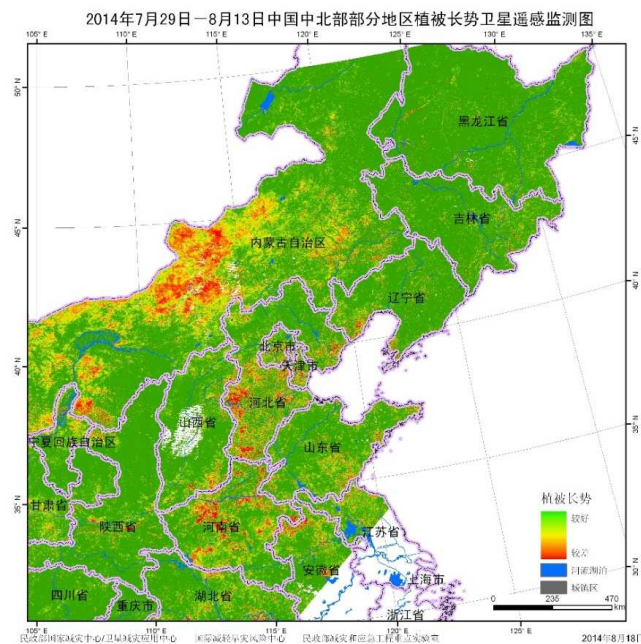


Fig 2 Vegetation growth condition in northern China

河南省平顶山市白龟山水库水体面积变化监测图

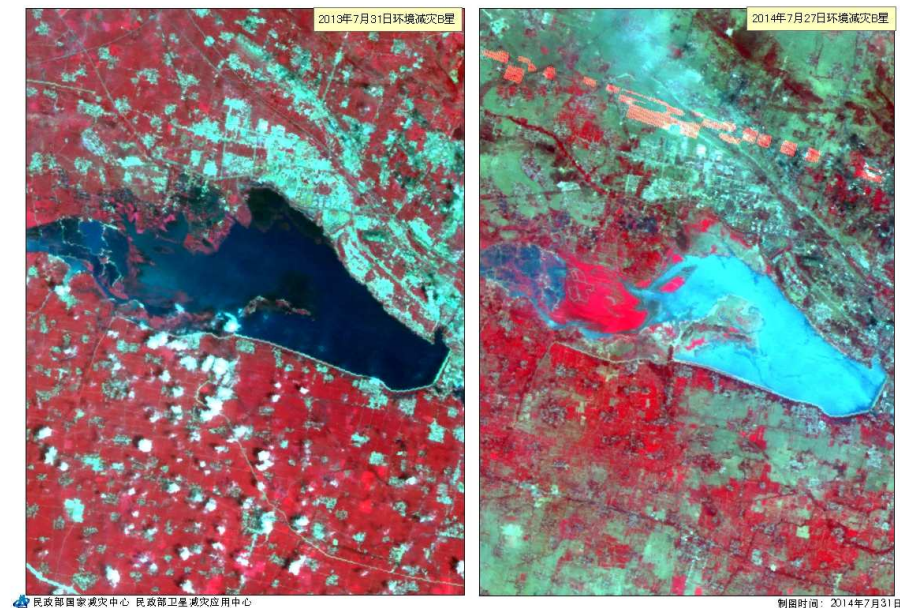


Fig 3 The change of water area of Baiguishan Reservoir in Pingdingshan, Henan.

MODIS: Moderate-resolution imaging spectroradiometer中分辨率成像光谱仪

Disaster Monitoring and Assessment

drought & flood Risk Assessment

- Based on HJ, FY satellites data, combined with land use, population distribution, observed and predicted rainfall data, nationwide drought and flood risk were assessed every week.

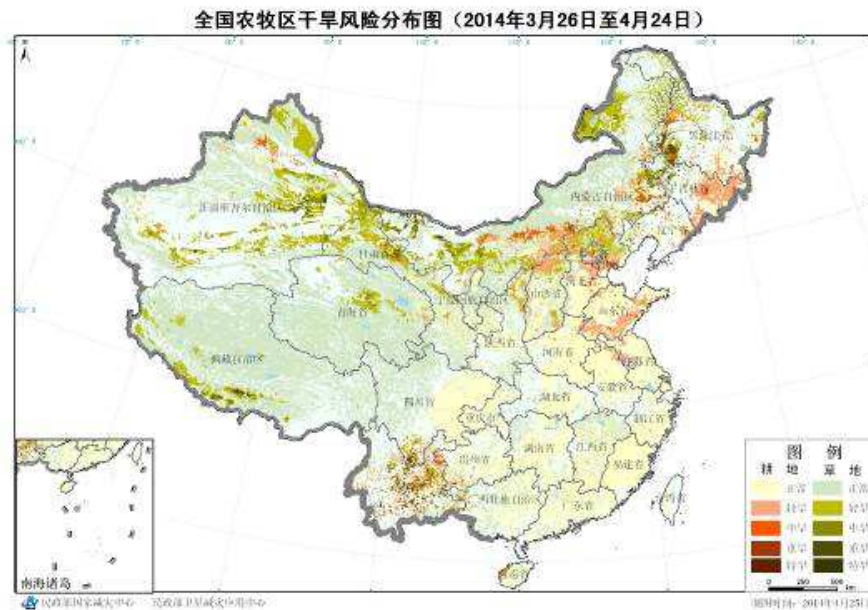


Fig 4 Drought Risk Assessment

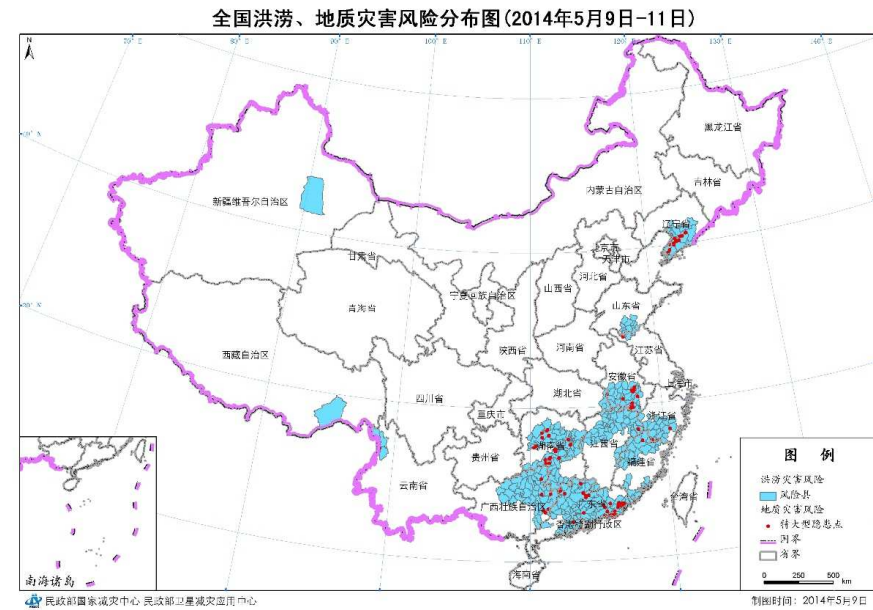


Fig 5 Flood Risk Assessment

FY: FengYun satellite (Chinese: 风云, literally: "wind cloud", abbreviated "FY")

Space Technology Application in Major Disaster Events

Flood in Southern China (May 21st-26th)

Southern China has experienced heavy rainfall in late May, which has resulted in flash flood in the northern part of Guangdong province. Based on HJ satellite image, the flood impact area and loss was assessed by the water area monitoring.

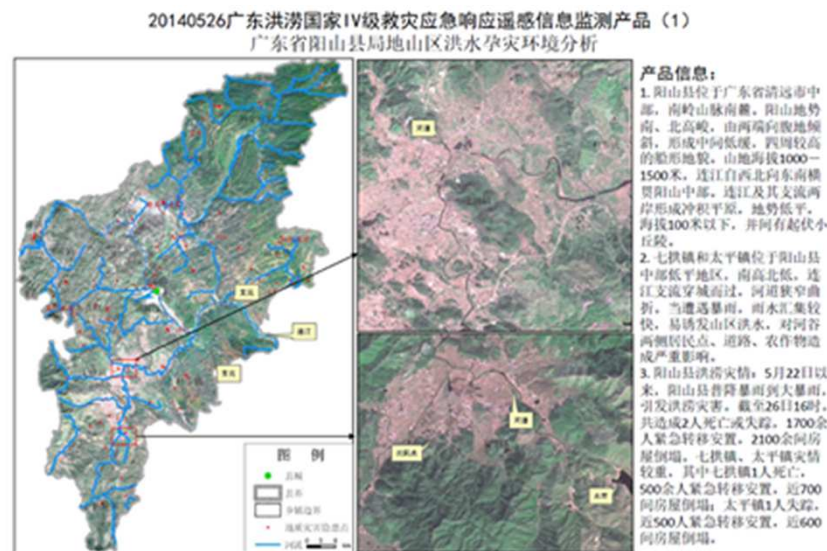


Fig 6 Disaster Environment Analysis in northern Guangdong

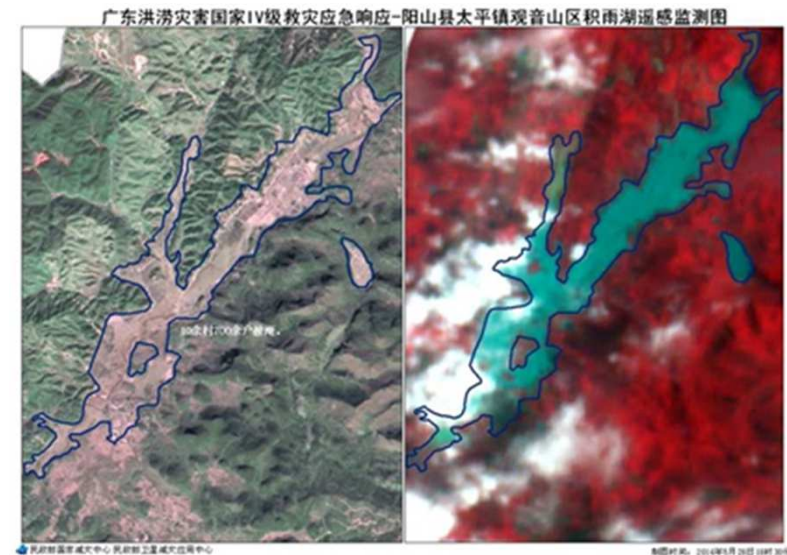


Fig 7 The flood area monitored by HJ-1 satellite

Space Technology Application in Major Disaster Events

Typhoon Rammasun

- On July 17, Typhoon Rammasun raked Wenchang City on the island province of Hainan with strong winds and heavy rains, which is the strongest typhoon affected southern China since 1973.
- In order to assess the impact of Typhoon Rammasun, 90 frames of image from domestic and international satellites (by CHARTER) were acquired to monitor the change of water area and impact on vegetation.

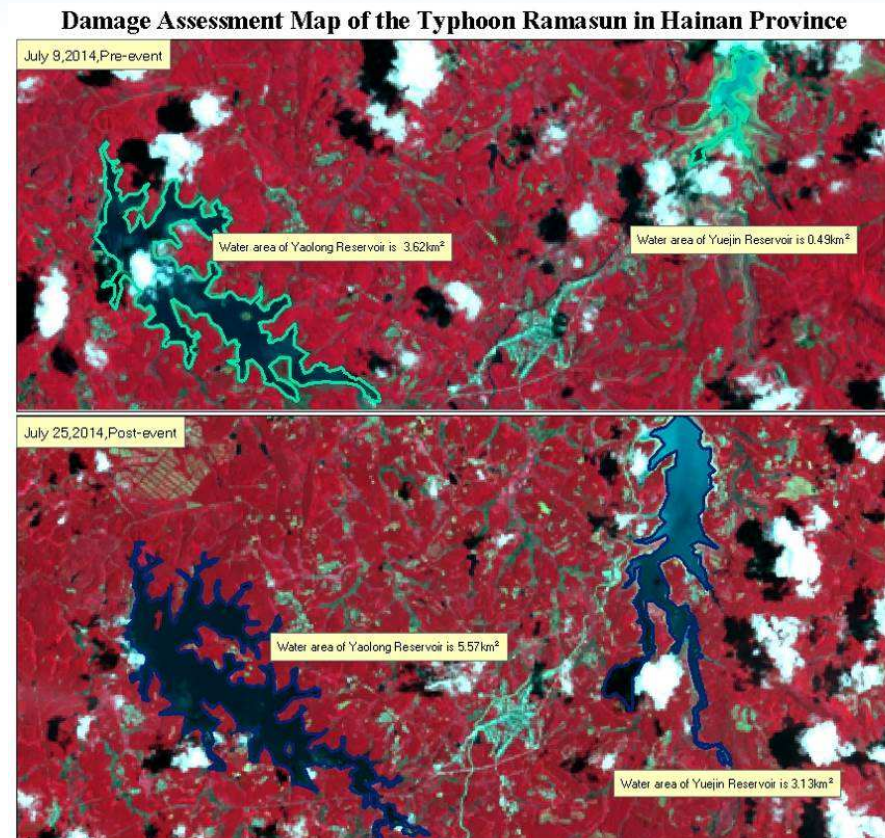


Fig 8 The change of water area by Typhoon Ranmasun

CHARTER: An international cooperation between space agencies, making their resources available to emergency and rescue operations.



Events

Ludian Earthquake in Yunnan Province

- The Ludian earthquake with a magnitude of 6.5 occurred at 16:03 (Beijing time) on 3 August, 2014, which killed at least 600 people.
- 167 frames of image (including 71 frames of pre-disaster and 96 frames of post-disaster) have been acquired from CHARTER for disaster loss assessment.

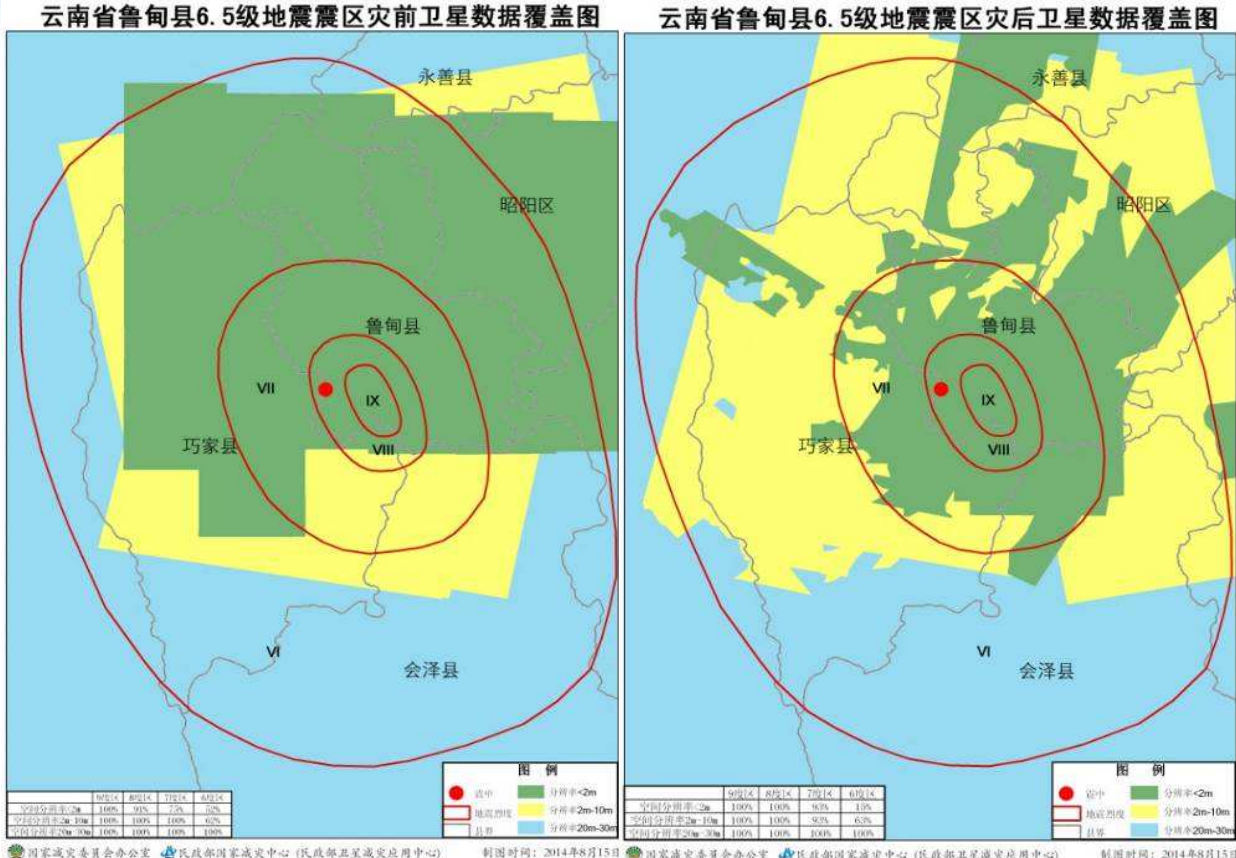


Fig 9 Coverage of RS images(left: Pre-disaster; Right: Post-disaster)

CHARTER: An international cooperation between space agencies, making their resources available to emergency and rescue operations.

Space Technology Application in Major Disaster Events

Ludian Earthquake in Yunnan Province

- Secondary disasters such as landslide and barrier lake and their impact on traffic lines were monitored by remote sensing.



Fig 10 Barrier Lake monitored by RS

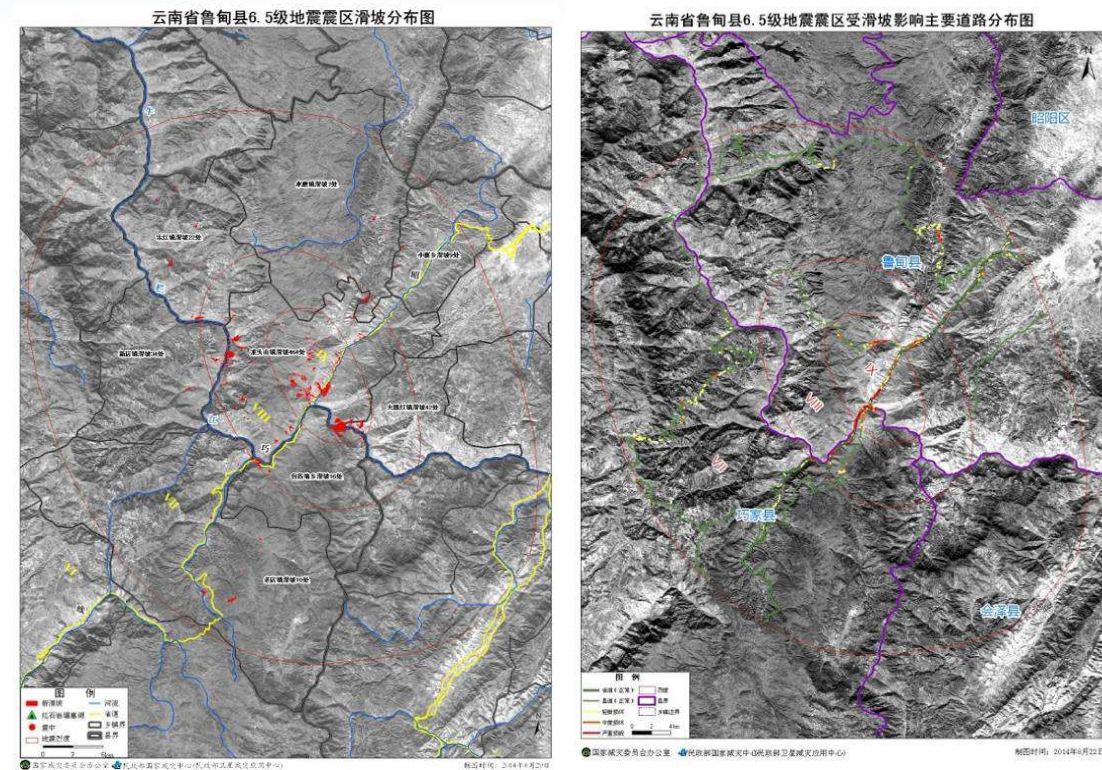


Fig 11 Landslides and their impacts on traffic lines

Space Technology Application in Major Disaster Events

Ludian Earthquake in Yunnan Province

- The images were also used to monitor the tent distribution so as to evaluate emergency evacuation and settlement in the disaster area.



Fig 12 Tent distribution monitored by RS in the disaster area



THANK YOU!

Email: liqun@mca.gov.cn