



# Integrating “Space” in DRR in China: from Policy to Practice

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# Content



- ❖ **Natural Disaster Management in China**
- ❖ **Integrating “Space” in DRR Decision Making**
- ❖ **Way Forward**





# Natural Disasters in China

China is one of the countries suffering most by natural disasters in the world with the following characteristics:

- ❖ Diverse types
- ❖ Wide scope of distribution
- ❖ High frequency
- ❖ Huge losses

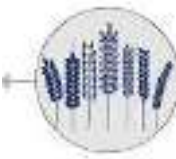
## Disaster information of the first three quarters of 2017 in China



**126** million affected , **799** dead, **90** missing, **4.65** million relocated



**139** thousand collapsed, **1.5** million destroyed



**18.1** million hectares damaged





# National Disaster Management



**Organization** system: China National Commission for Disaster Reduction;

**Legislation** system: Natural disaster Relief Regulation and others;

**Policies:** Guidelines of CPC Central Committee and the State Council regarding disaster prevention, reduction and relief work.

**Planning** Systems: Comprehensive National Disaster Prevention and Reduction Plan; National Emergency Plan on Natural disaster Relief and others;

**Mechanisms, working procedures and standards** at different levels.



## China National Commission for Disaster Reduction





# National Disaster Emergency Response in 2017



As of Oct. 15, 2017, there are 14 IV level national activations, 1 III level national activation, 1 II level national activation and 3 early warning response activations



# National Disaster Management



- ❖ Opinions of the CPC Central Committee and the State Council on Promoting the Institutions and Mechanisms Reform of Disaster Prevention, Reduction and Relief on December 19, 2016.
- ❖ Comprehensive National Plan on Disaster Prevention and Reduction (2016-2020) issued by the State Council on December 29, 2016 for . There are 5 basic rules, 9 projected objectives, 10 major tasks, 5 major projects and 4 implementation measures.





# Guiding Principles of National Disaster Prevention, Reduction and Relief



- ❖ Accurately deal with the relation between disaster prevention, reduction and relief and social-economic development. Focusing on **people-centered development**. Take the prevention as major priority combining the rescue work with relief together. Normal disaster reduction and abnormal disaster rescue work should be linked to transfer the priority **from post-disaster rescue to pre-disaster prevention, from single-type disaster to comprehensive disaster reduction, from disaster losses reduction to disaster risk reduction**. Increase comprehensive nature disaster prevention capacity in all-round manner for the whole society, finally to safeguard people's life and property security to be the firm foundation for building well-being society.



# Content



- ❖ **Natural Disaster Risk Management in China**
- ❖ **Integrating “Space” in DRR Decision Making**
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# “Space” for DRR- Earth observation



## HJ-1 constellation



HJ-1A

HJ-1B

HJ-1C

## CHEOS satellites

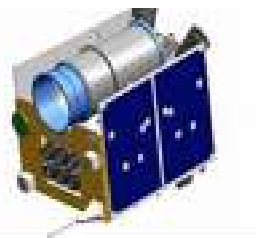


GF-1

GF-2

GF-3

GF-4

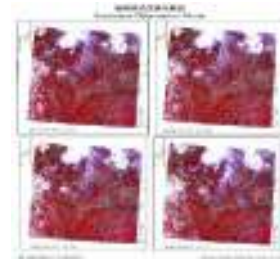
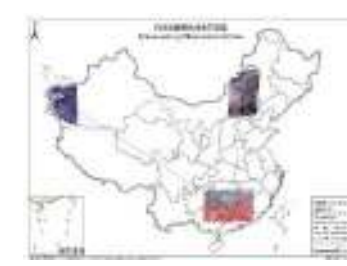
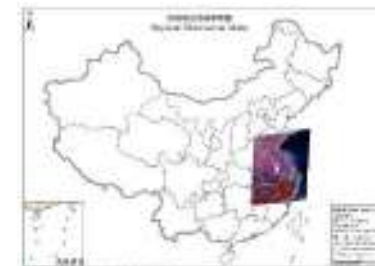


HJ-2

## Domestic Sharing Mechanism



## CHARTER





# Integrating "Space" in DRR- information

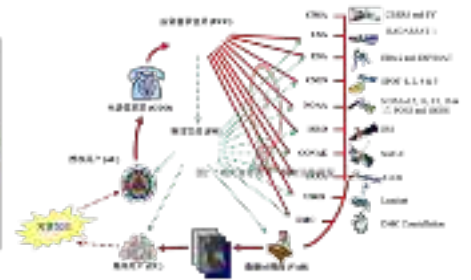
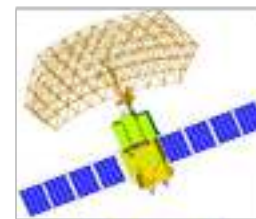
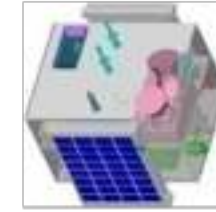


Information accessing  
**Multi-source disaster information access and transmission**

Information management  
**Distributed disaster information database management**

Information analysis  
**Risk analysis, damage assessment and value-added product making**

Information service  
**disaster information service based on traditional and new media**



space-based



airborne based



ground reporting

field investigation



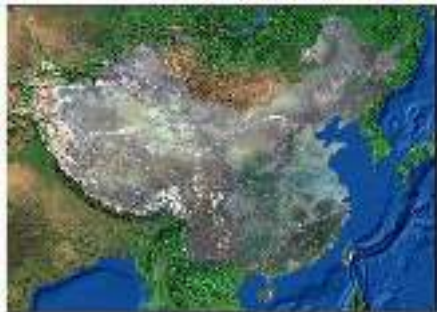
database



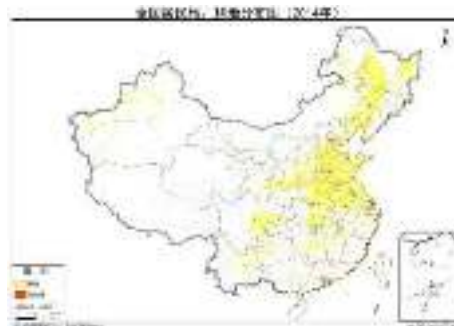


## Dynamic Disaster Monitoring

RS Imagery Products



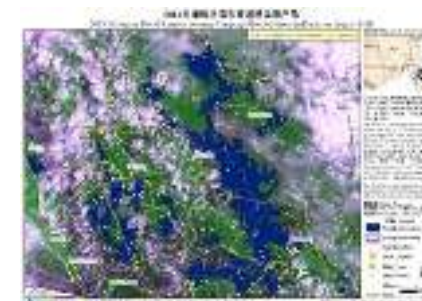
Element Monitoring



Risk Assessment



Emergency Monitoring



Recovery & Reconstruction





# Routine Monitoring

## Satellites

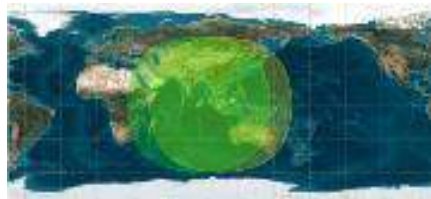
HJ-1



GF Series

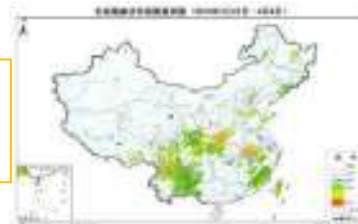


FY, MODIS, NOAA

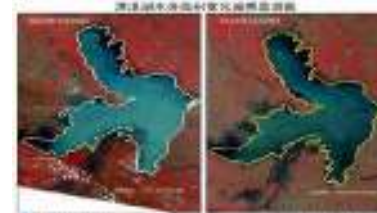


## Routine Monitoring

Disaster Element

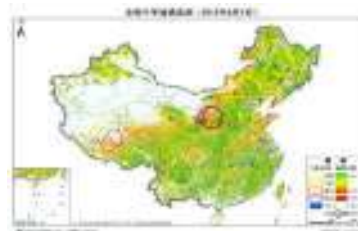


Vegetation



Water

Risk Assessment



Drought



Flood

Recovery & Reconstruction

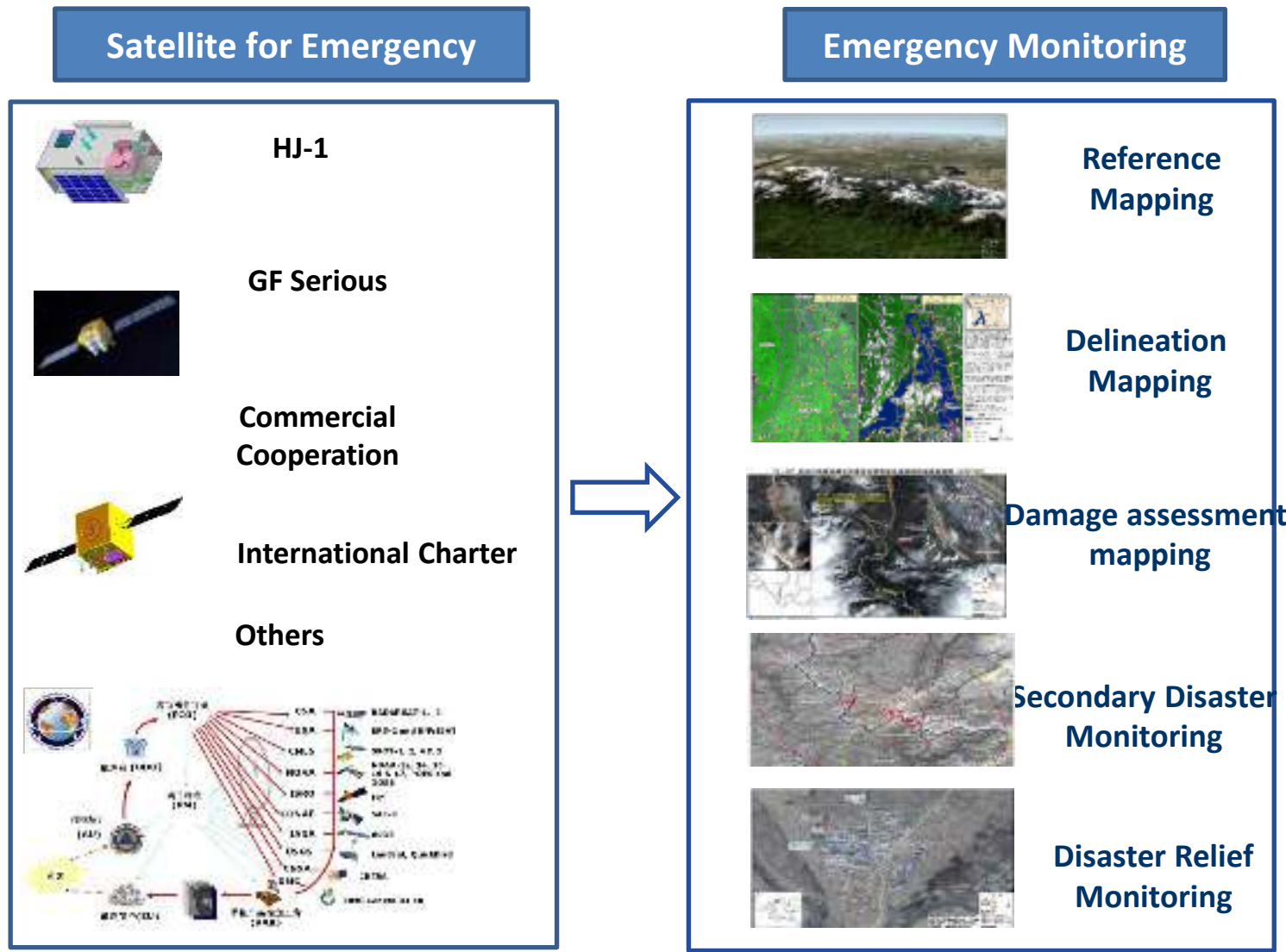


- **3** kinds of Routine Monitoring products



# Emergency Monitoring

- Within **24** hrs --Get the 1<sup>st</sup> post disaster RS data
- **5** kinds of disaster monitoring and loss assessment products





# Practices in 2017

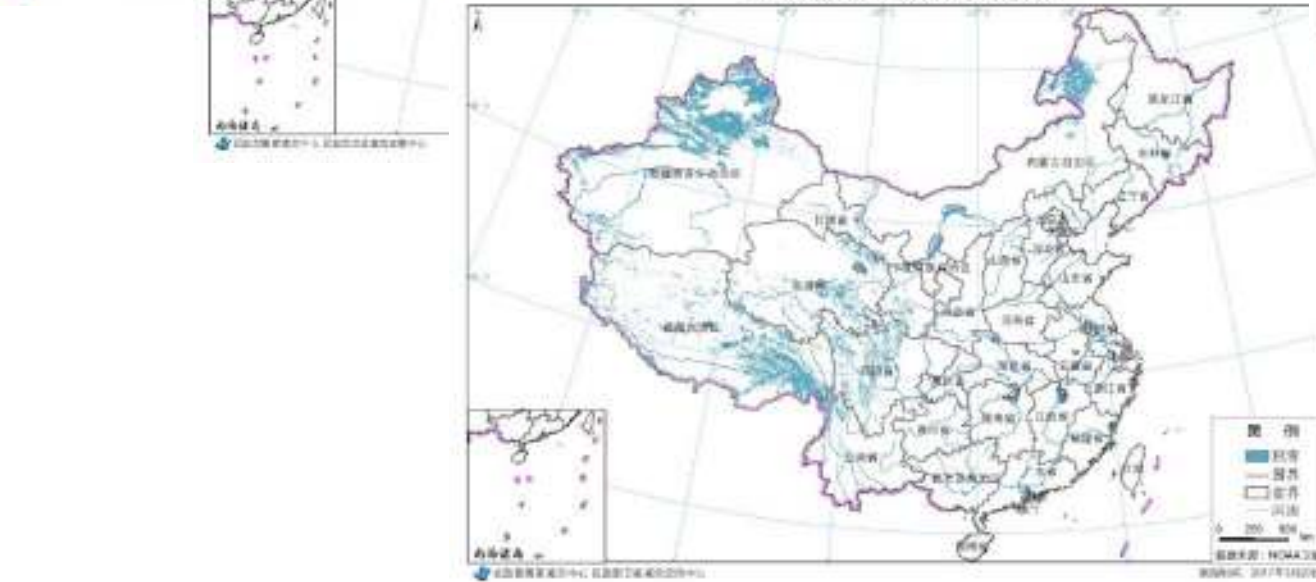
全国积雪覆盖图 (2017年1月3日)



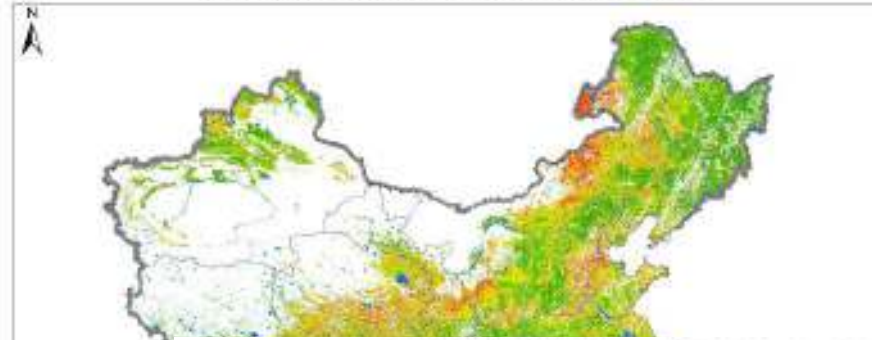
全国积雪覆盖图 (2017年2月28日)



全国积雪覆盖图 (2017年3月23日)



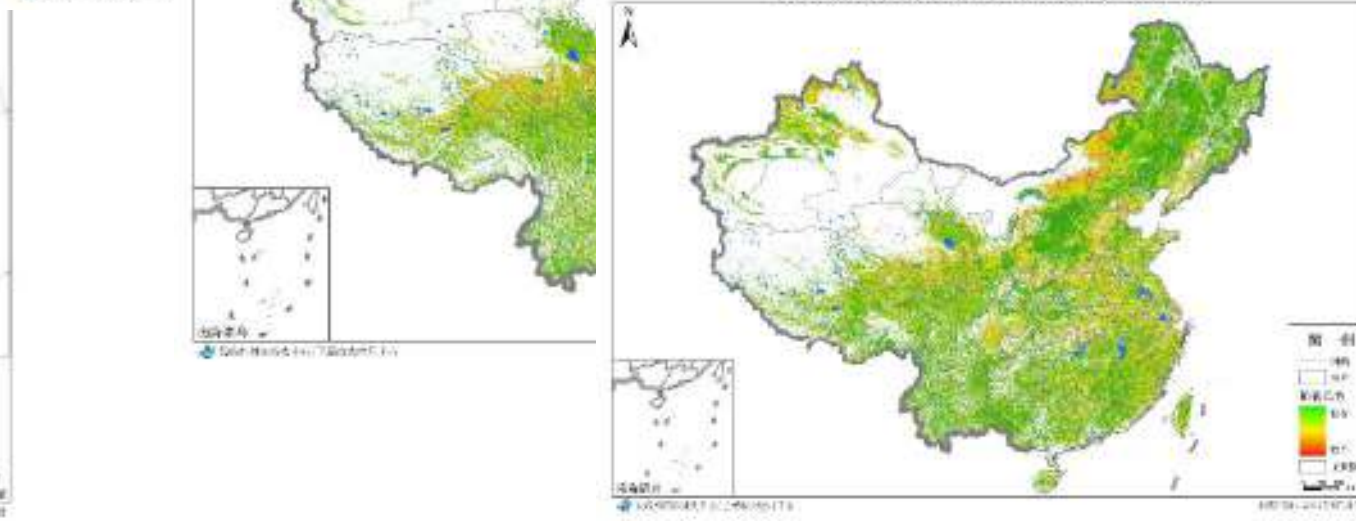
全国植被状态指数监测图 (2017年7月12日-7月27日)



全国植被状态指数监测图 (2017年7月28日-8月12日)



全国植被状态指数监测图 (2017年8月13日-8月28日)



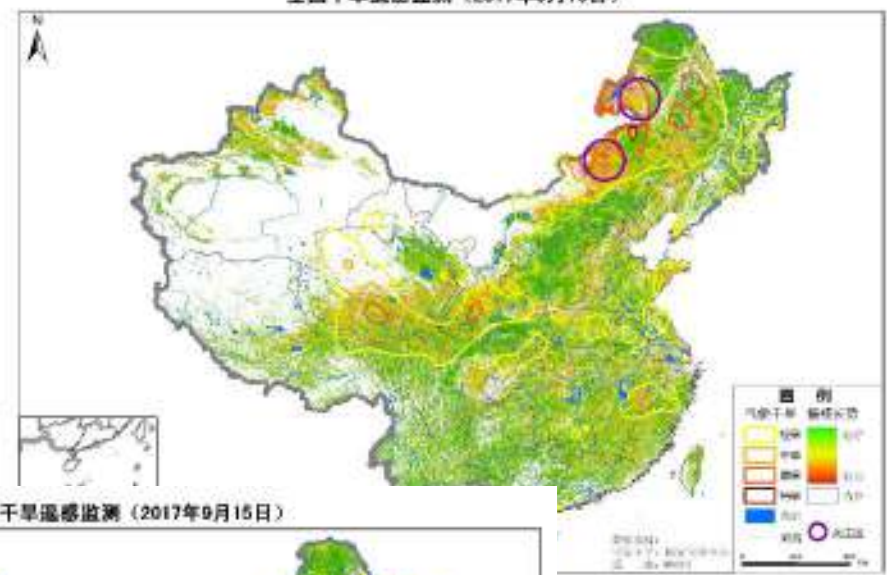
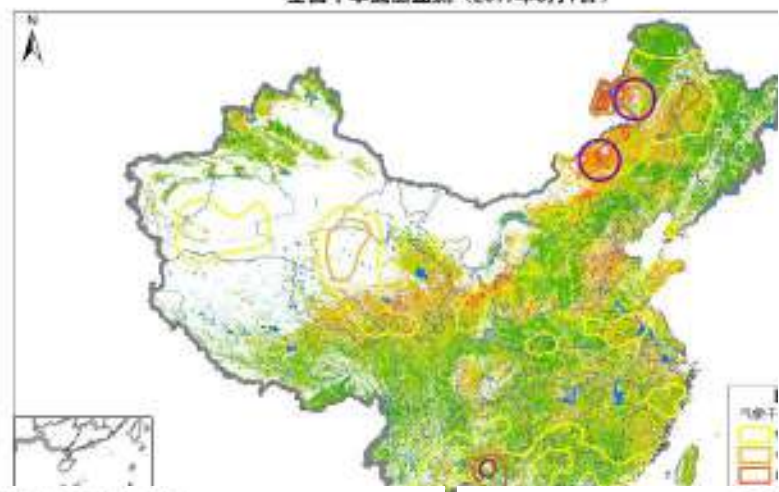
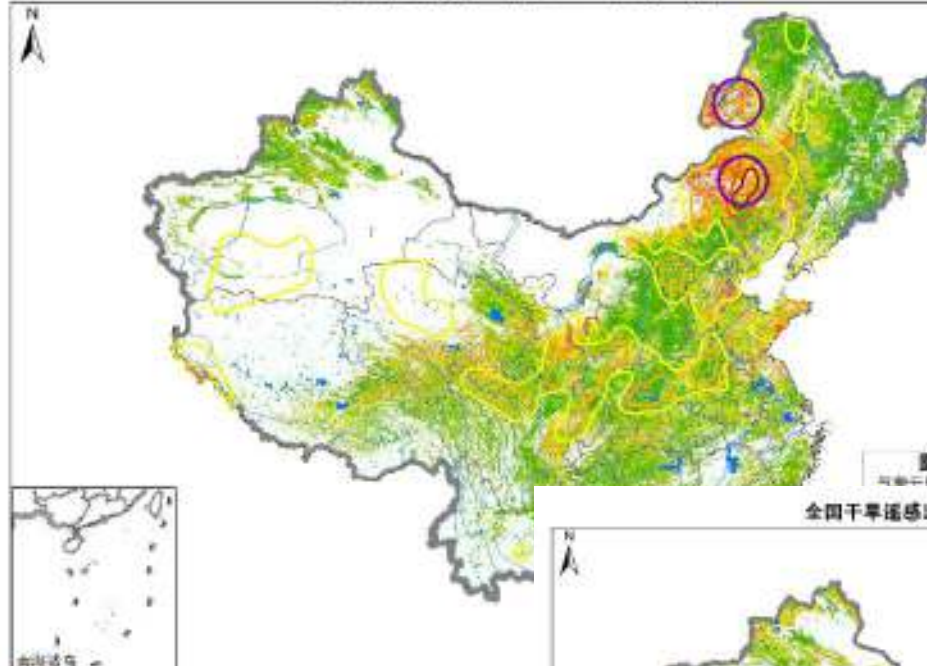
# Practices in 2017



全国干旱遥感监测 (2017年7月11日)

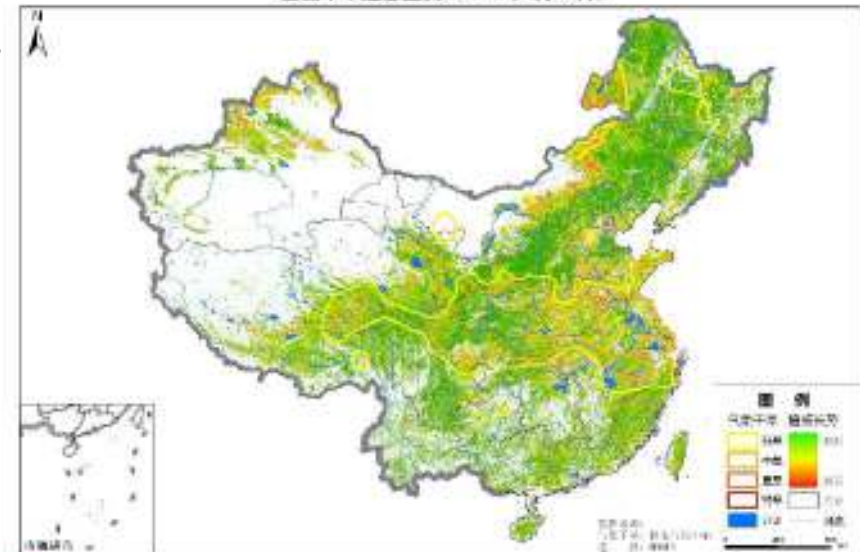
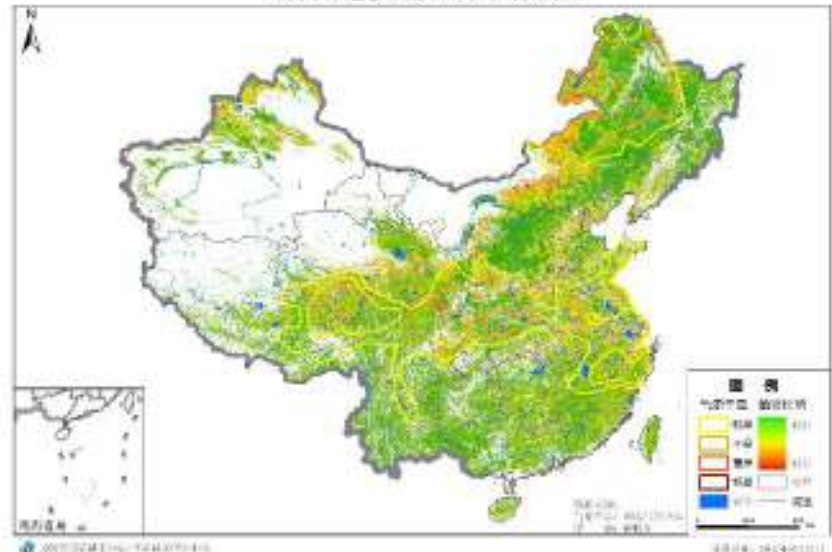
全国干旱遥感监测 (2017年8月1日)

全国干旱遥感监测 (2017年8月16日)



全国干旱遥感监测 (2017年8月31日)

全国干旱遥感监测 (2017年9月15日)

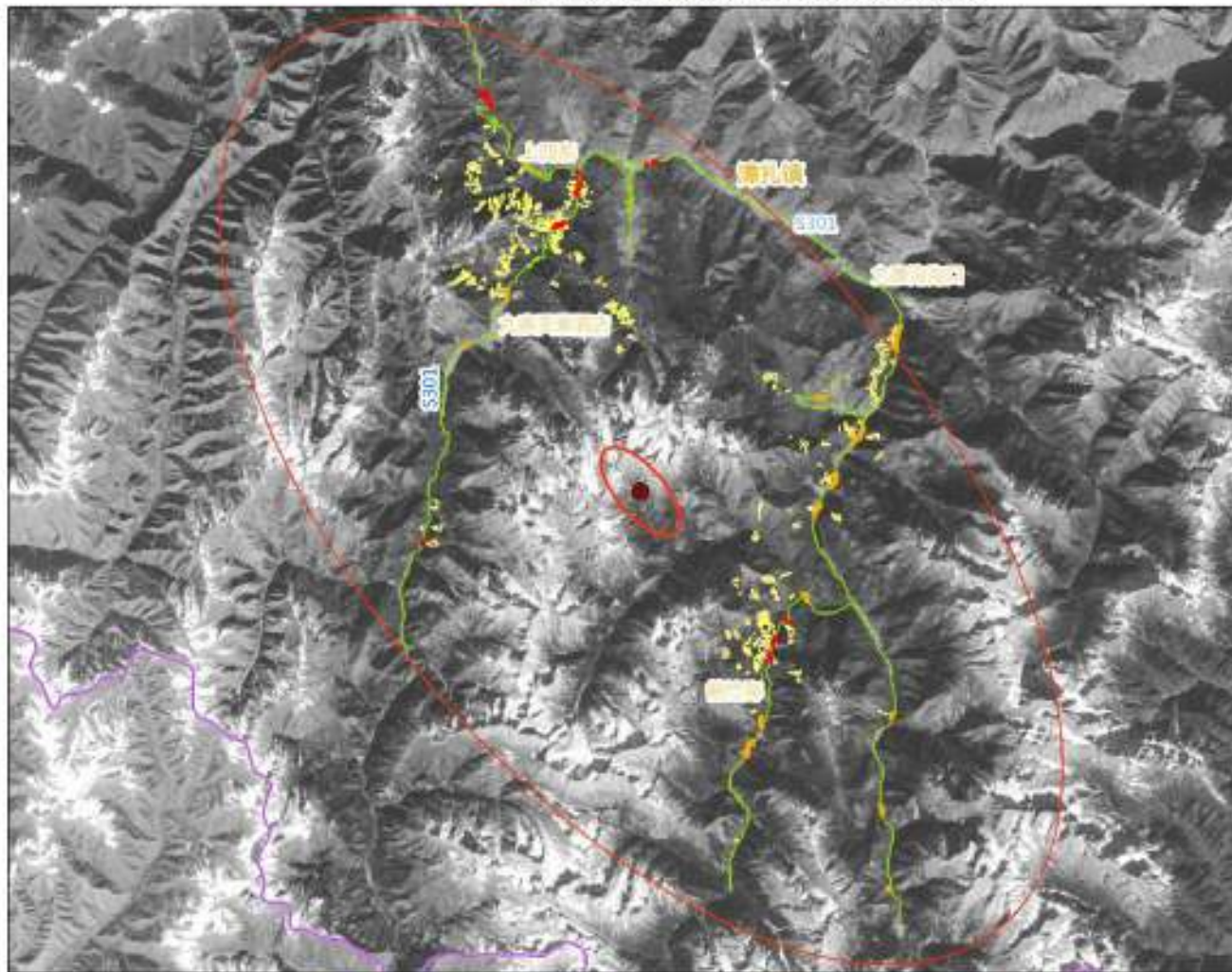




2017年8月9日四川九寨沟县7.0地震国家III级救灾应急响应遥感监测产品  
VIII度区滑坡及受损道路遥感监测图



2017年8月9日四川九寨沟县7.0地震国家III级救灾应急响应遥感监测产品  
九寨沟景区五花海至树正海周边山体滑坡及受损道路遥感监测图



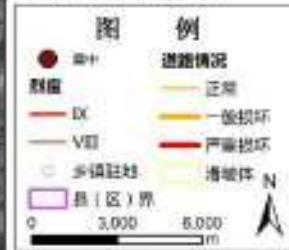
**监测信息**

受地震影响，VIII度区内出现300余处滑坡，主要分布于S301九寨沟酒店至上四寨村段、九寨沟景区沟口及箭竹湾周边，造成S301省道及景区主整道路40余段受损。

**数据源**

遥感数据：  
高分二号、北京二号卫星  
遥感系列卫星  
2017年8月9日  
高分三号卫星  
2017年8月10日

地理信息：  
地图出版社（1:25万）



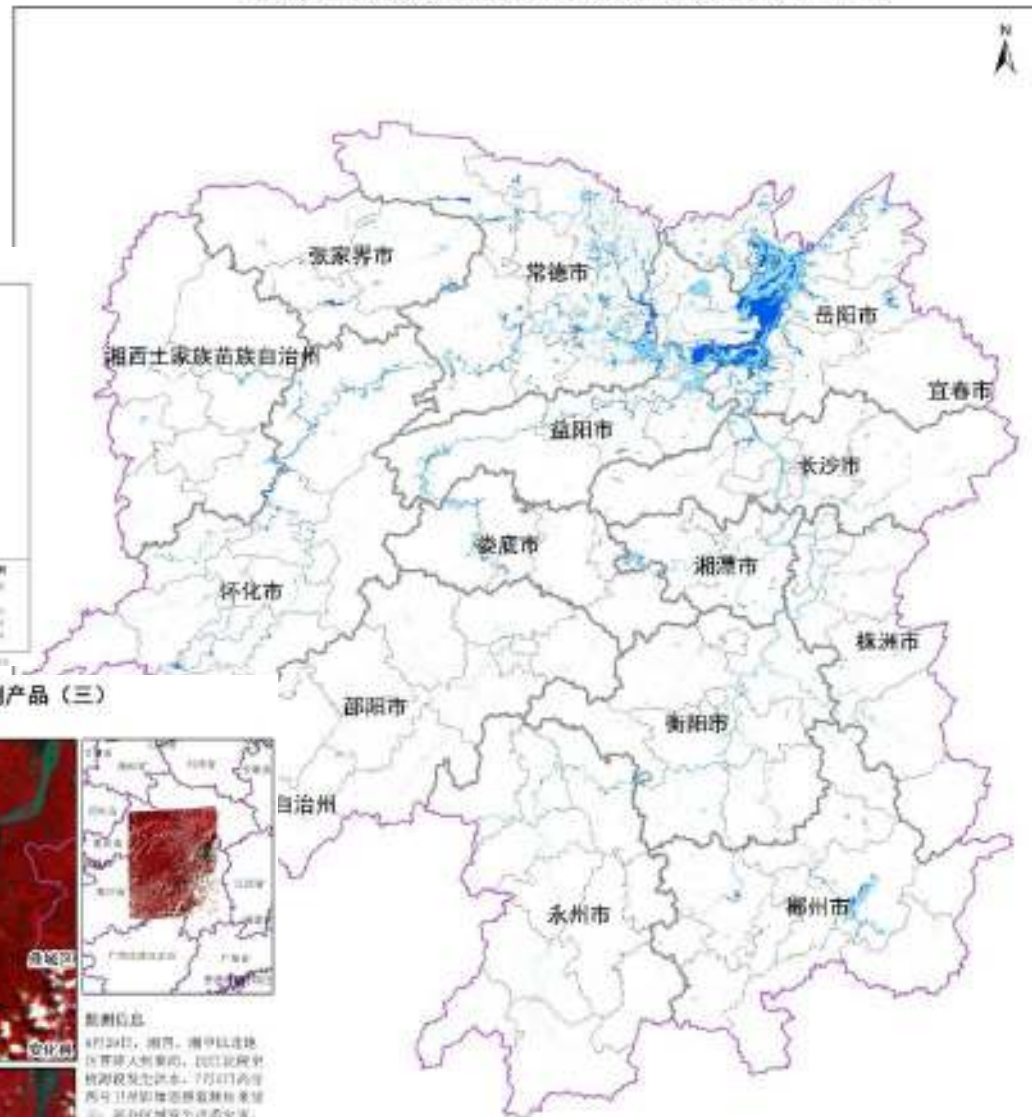


# Flood

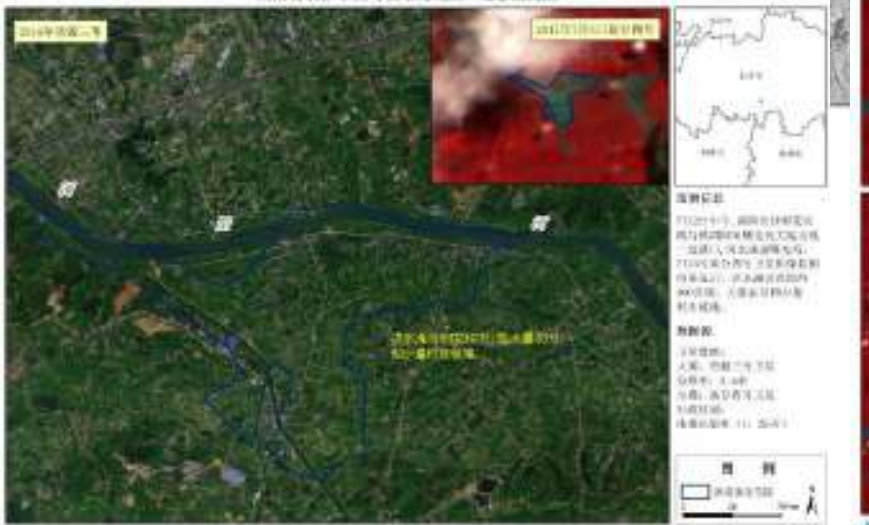
2017年6月26日湖南洪涝国家IV级救灾应急响应遥感信息监测产品  
湖南省长沙市岳麓区洪涝灾害范围情况遥感监测图



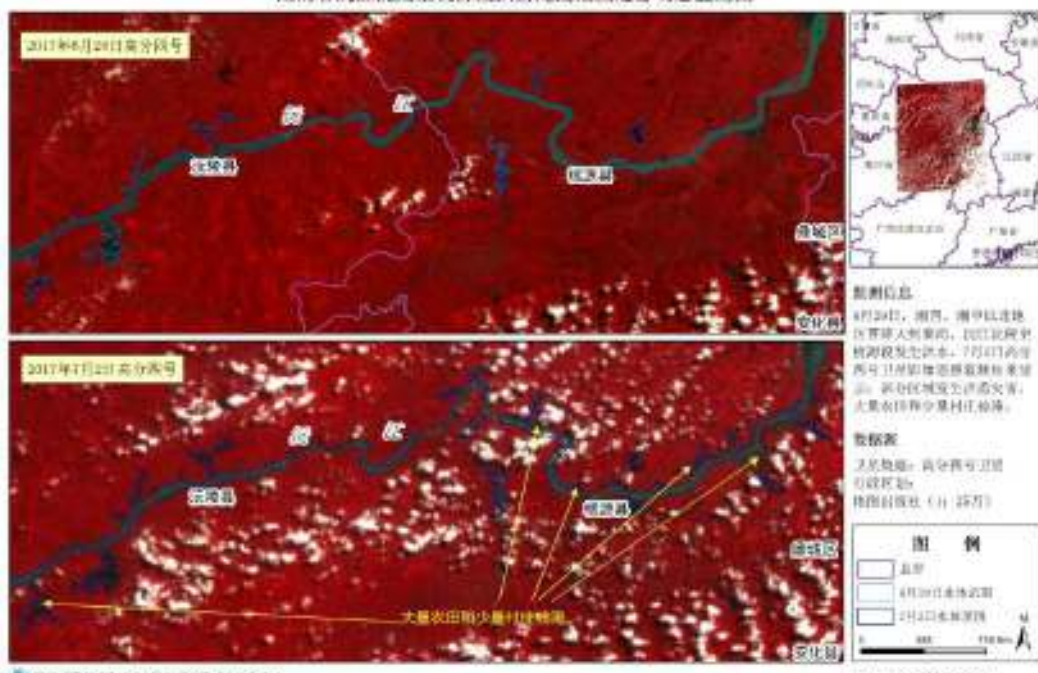
2017年6月26日湖南洪涝国家IV级救灾应急响应遥感信息监测产品(十一)



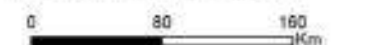
2017年6月26日湖南洪涝国家IV级救灾应急响应遥感信息监测产品(二)  
湖南省长沙市岳麓区与宁乡县交界口处洪涝监测图



2017年6月26日湖南洪涝国家IV级救灾应急响应遥感信息监测产品(三)  
湖南省沅江沅陵至桃源段洪涝淹没范围遥感动态监测图

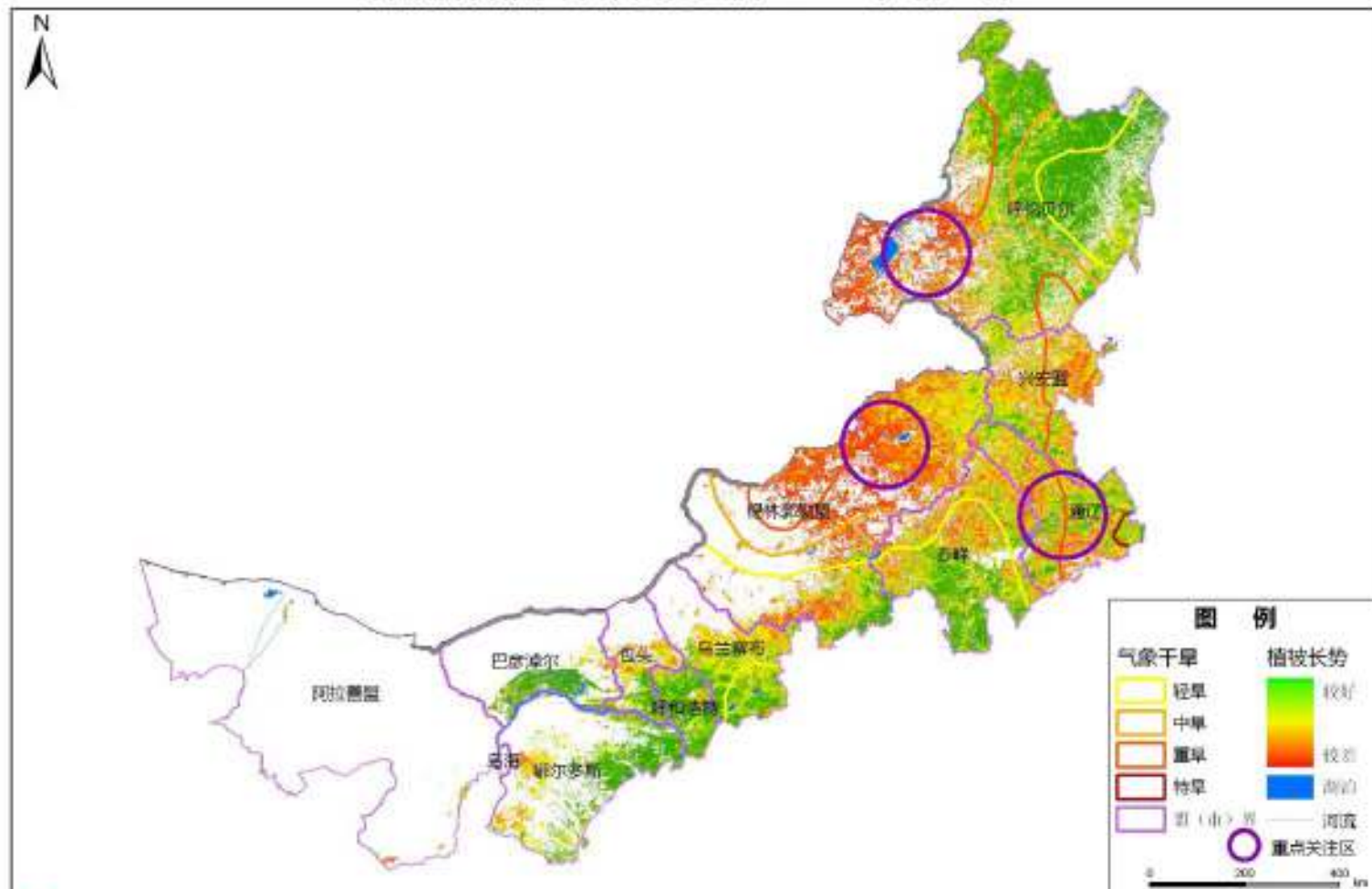


数据源  
遥感数据：高分四号、三号、一号  
获取日期：2017年7月2日、3日、5日、9日  
地理信息：地图出版社(1:25万)

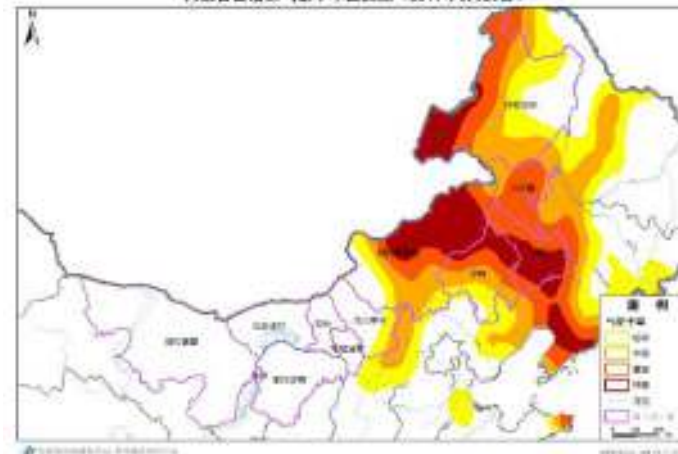




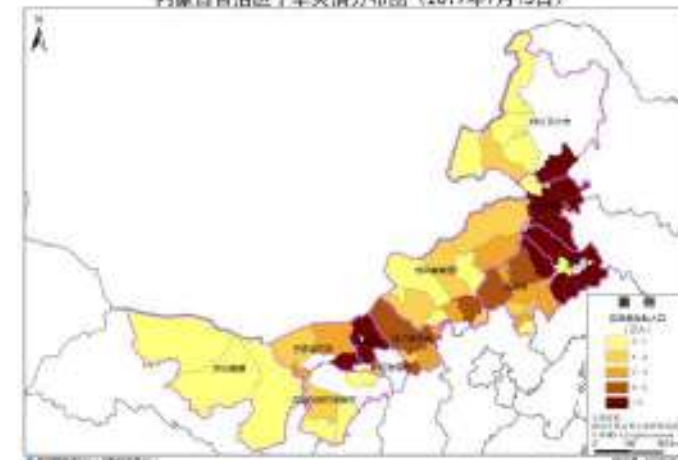
内蒙古自治区干旱遥感监测 (2017年7月13日)



内蒙古自治区气象干旱监测图 (2017年4月26日)



内蒙古自治区干旱灾情分布图 (2017年7月13日)

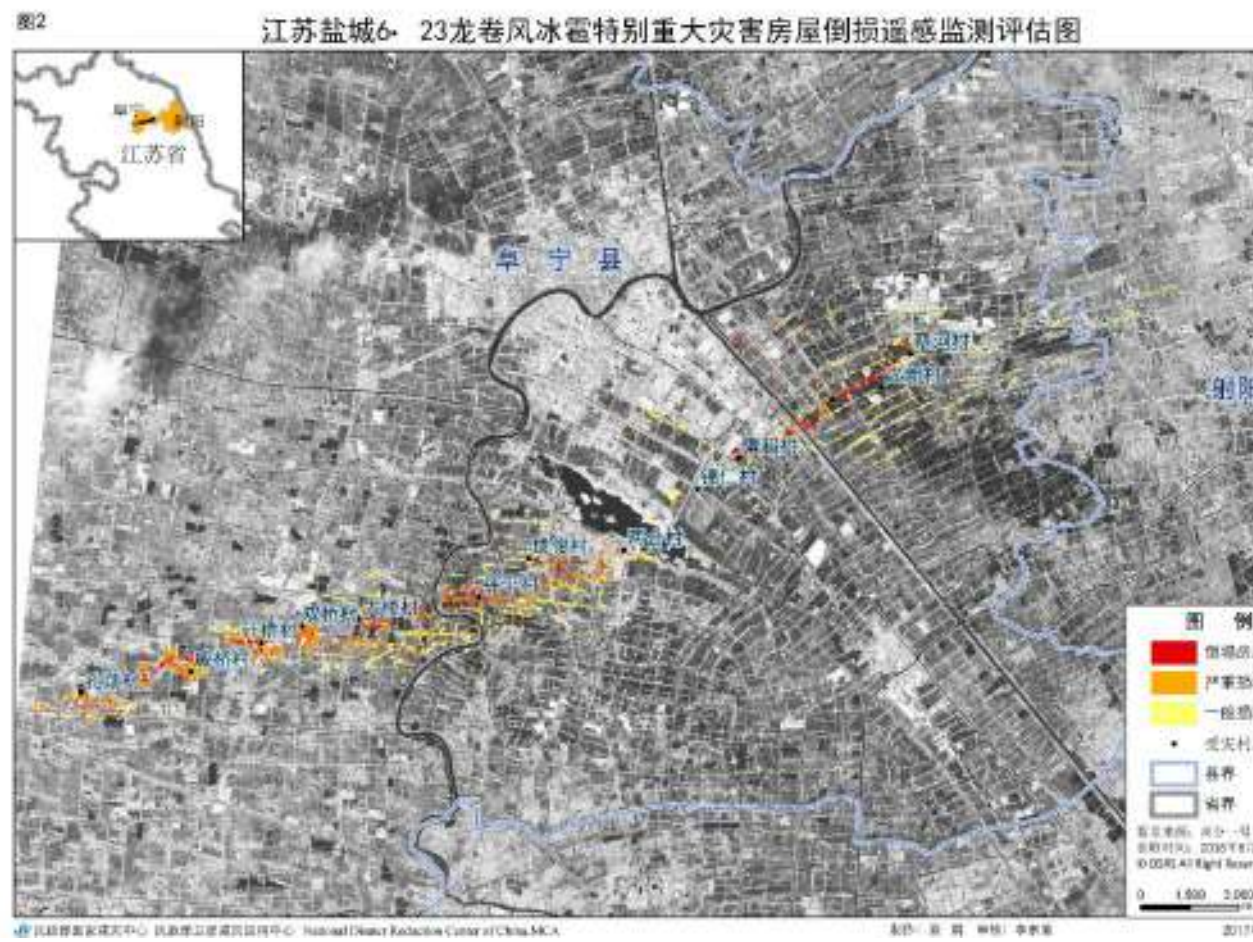




# Landslide

2017年8月28日贵州滑坡国家IV级救灾应急响应遥感监测产品  
纳雍县张家湾镇普洒社区山体滑坡范围遥感监测图







## 灾害遥感专题产品

(2017年第20期 总第1537期)

民政部国家减灾中心


2017年8月11日

### 2017年8月9日新疆博尔塔拉州精河县6.6级地震灾害卫星遥感监测

2017年8月9日7时27分,新疆维吾尔自治区博尔塔拉州精河县(北纬44.27度,东经82.89度)发生6.6级地震,震源深度11千米。震及邻国俄罗斯为中心紧急启动国内外卫星应急监测机制,利用多颗卫星对地震灾区背景、震后地面损毁情况进行监测。监测发现:

1. 灾区土地覆盖以林地、草地和耕地为主,居民地主要集中在城镇和河谷附近,面积较小(见图1、图2)。地震烈度VII度区内有居民地27处,地震烈度VI度区内有263处(见图3);
2. 震后震中最近时行状道路为托里乡乡级道路(36公里)和精河县县级道路(37公里),两起地内均未发现集中成片损毁房屋(见图4、图5)和明显滑坡迹象;
3. 监测范围内发现30处受损堤岸,其中,地震烈度VIII度区内有3处, VII度区内有20处, VI度区内有7处(见图6);

全国灾情分布图(2017年9月29日)

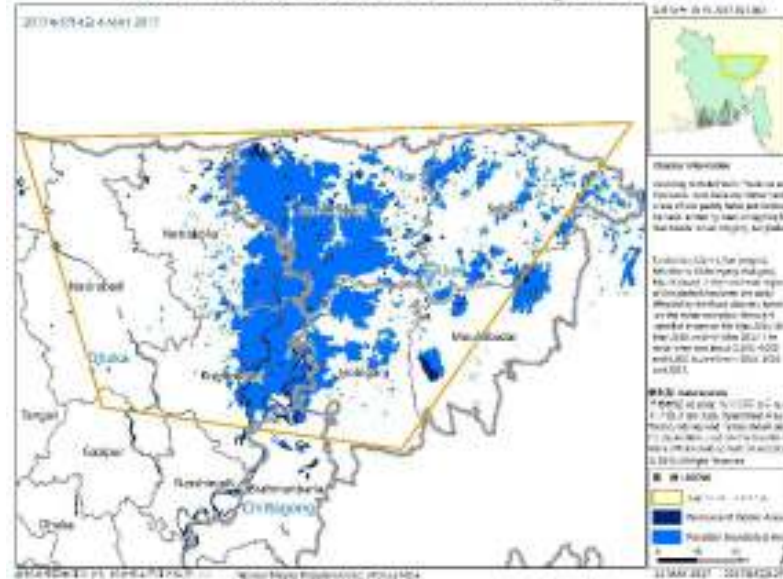


2017年5月4日孟加拉东北部高分四号卫星遥感影像图  
GF-4 Satellite image of the northeastern region of Bangladesh (04 MAY 2017)



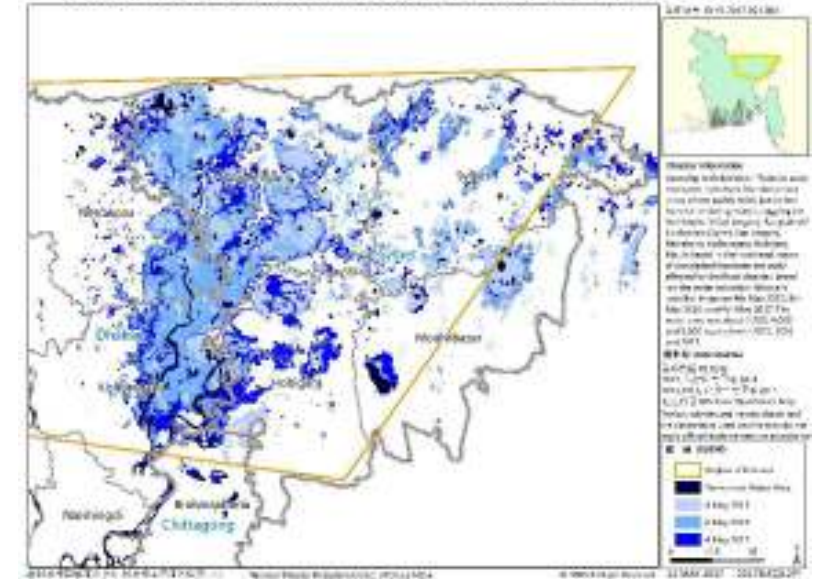
Imagery Product

2017年5月4日孟加拉东北部洪涝遥感监测图  
Possible Inundated Extent Extracted from GF-4 Satellite Image on 04 MAY 2017



Possible Inundated Extent  
Extraction by GF-4

孟加拉东北部2015 - 2017年5月上旬水体范围遥感监测图  
Possible Inundated Extent Extracted from GF-4 Satellite on 04/05/2015, 08/05/2016 and 04/05/2017



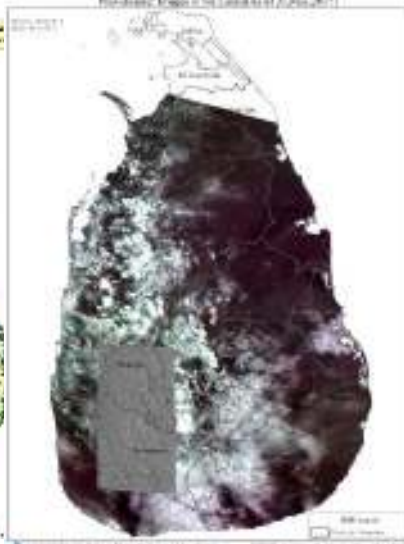
Water Area Extraction during the  
some period from 2015 to 2017



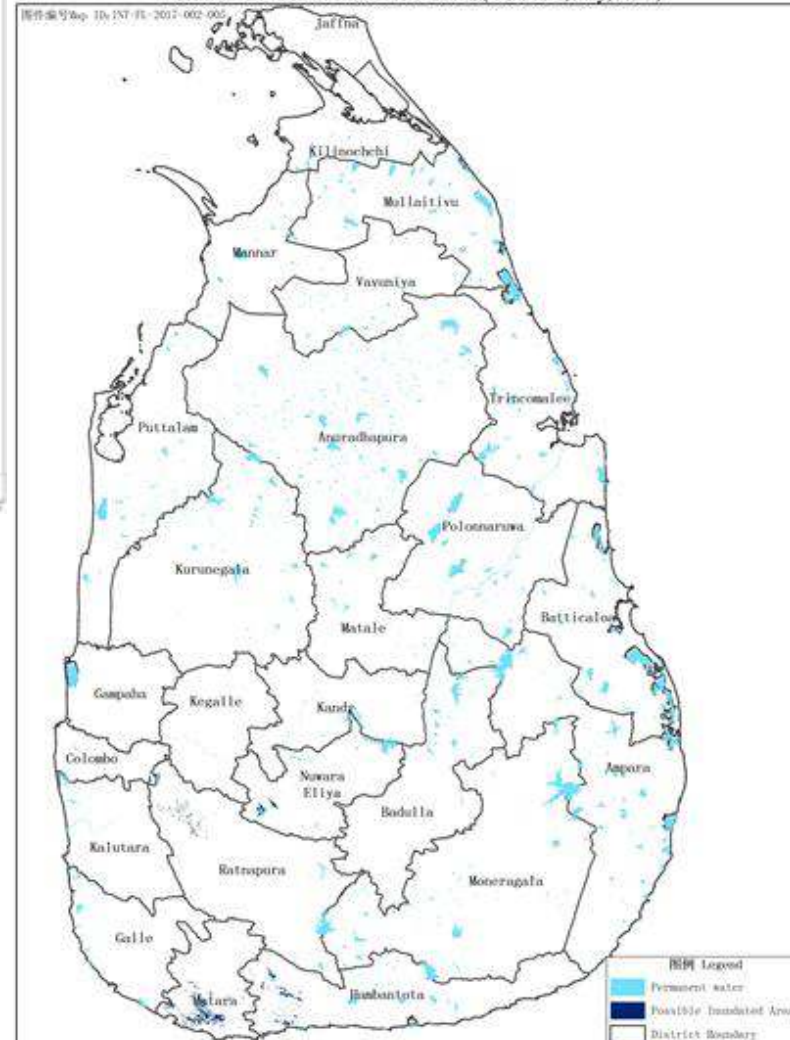
2017年斯里兰卡洪灾灾区植被影像图  
2017 Sri Lanka Flood Disaster Area Vegetation Image



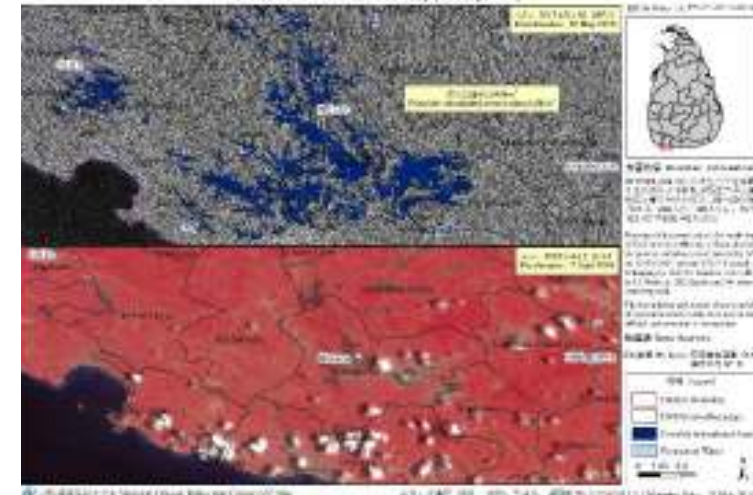
斯里兰卡灾后遥感影像分析图(截至2017年5月31日)  
Post-disaster Remote Sensing Analysis Map of Sri Lanka (As of 31 May 2017)



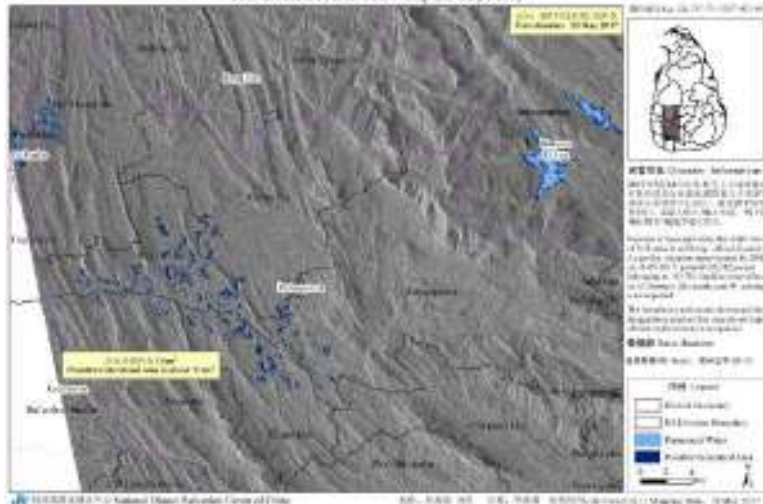
斯里兰卡洪涝范围分布图(截至2017年5月31日)  
Possible Inundated Area in Sri Lanka (As of 31 May 2017)



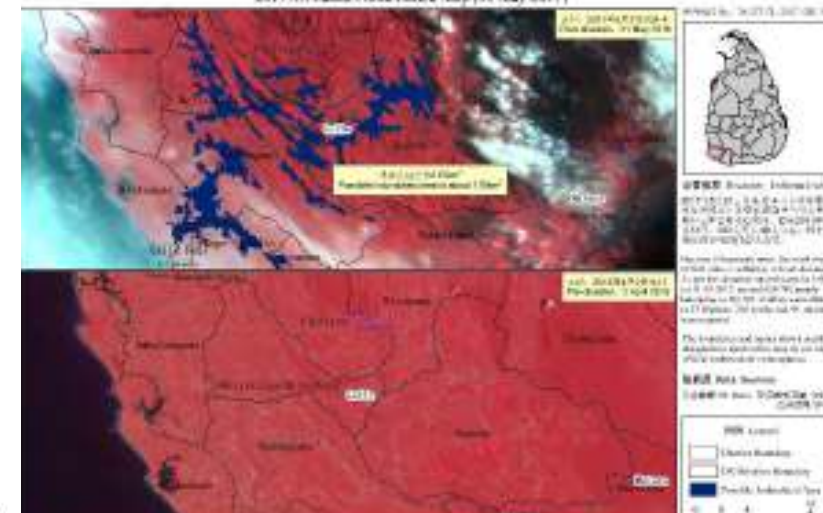
2017年斯里兰卡洪灾灾区遥感监测图(2017年5月30日)  
2017 Sri Lanka Flood Disaster Remote Sensing Map (30 May 2017)



2017年斯里兰卡洪灾灾区遥感监测图(2017年5月30日)  
2017 Sri Lanka Flood Disaster Remote Sensing Map (30 May 2017)



2017年斯里兰卡洪灾灾区遥感监测图(2017年5月31日)  
2017 Sri Lanka Flood Disaster Remote Sensing Map (31 May 2017)





# Content



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# Major Project: Disaster Reduction Application System of Civil Space Infrastructure



## Integrated Observation

- ❖ Build the satellites constellation application system, realize data integration for utilization from military and civil satellites.
- ❖ Develop the capacity of comprehensive monitoring and analyses covering total factors of disasters and whole process.

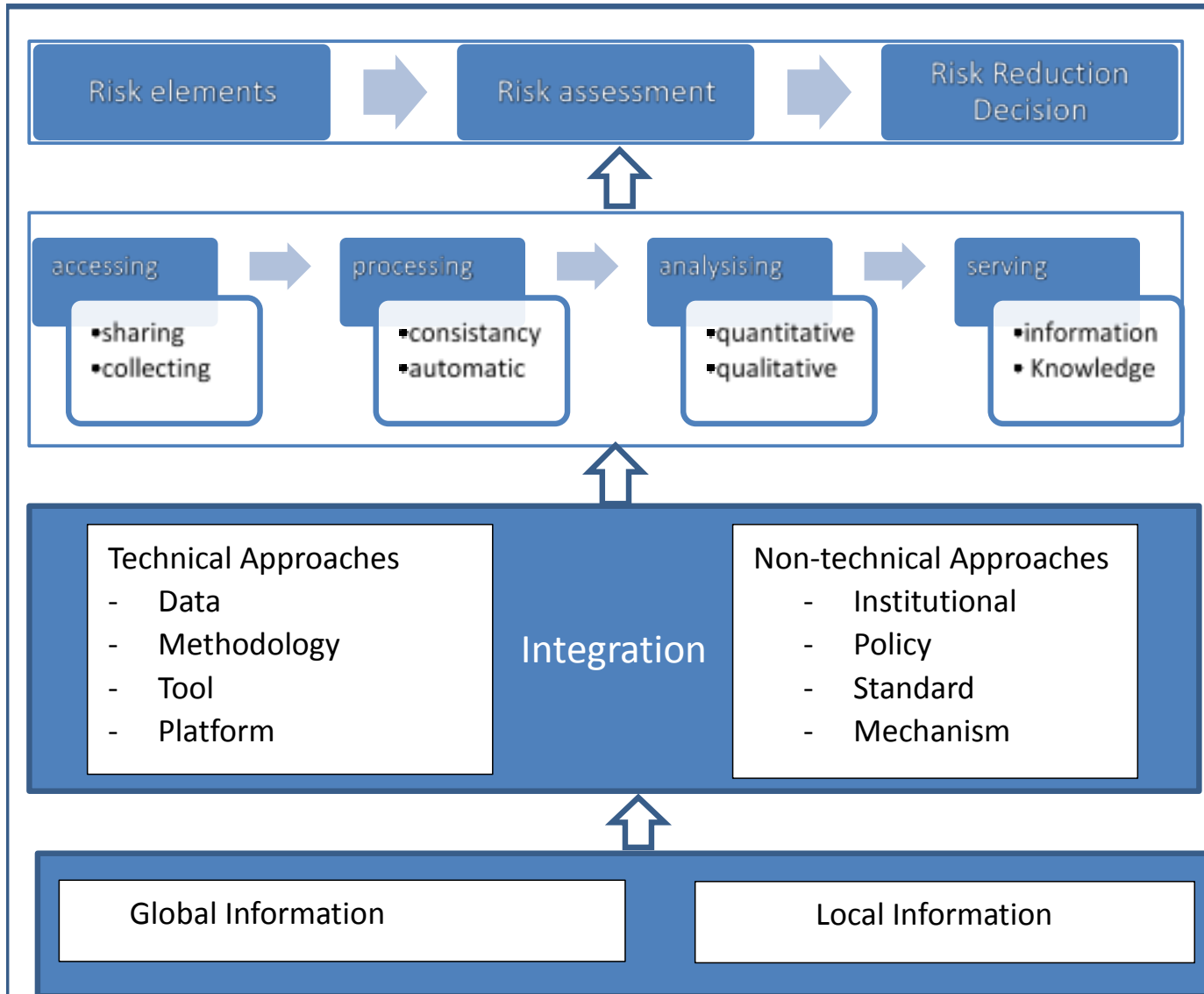
## Integrated Application

- ❖ To undertake the “sky-space-ground” integrated comprehensive application demonstration work in key areas to drive the satellite application for disaster reduction at the provincial and regional levels.

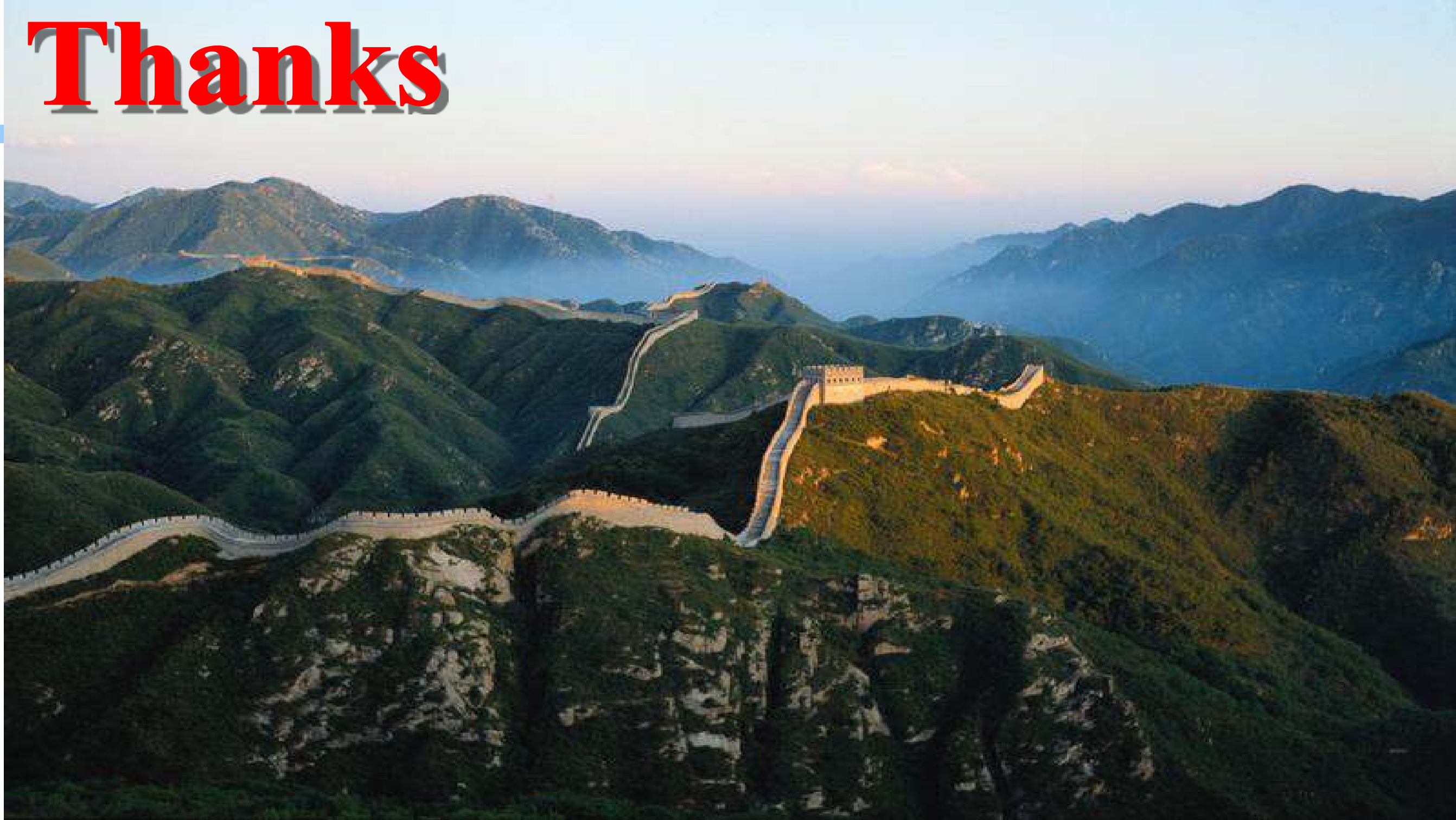
## Integrated Service

- ❖ Set up satellite application for disaster reduction comprehensive information service platform providing space-based information service for neighboring countries and countries covered by the “One Belt and One Road Initiative”.

# Integration for DRR



- ❖ Covering total elements and whole process of risk assessment
- ❖ Improving the level of automation, quantification and accuracy
- ❖ Serving for decision makers and other stakeholders



**Thanks**