Synergy Using the Space Collaborative Initiatives for Better Disaster Emergency Support

Suju LI

National Disaster Reduction Center of China

lisuju@ndrcc.gov.cn/lisujuff@sina.com

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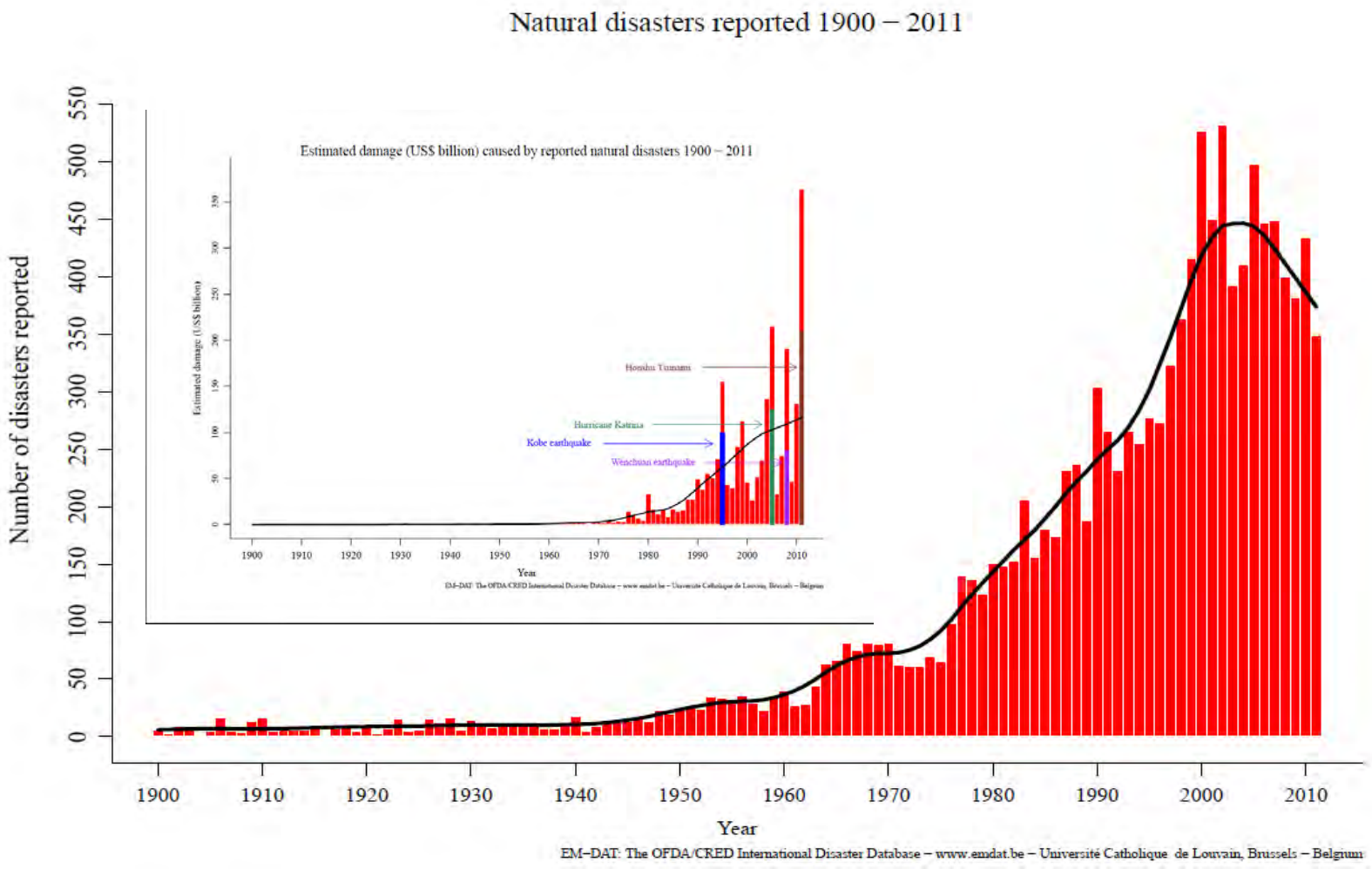
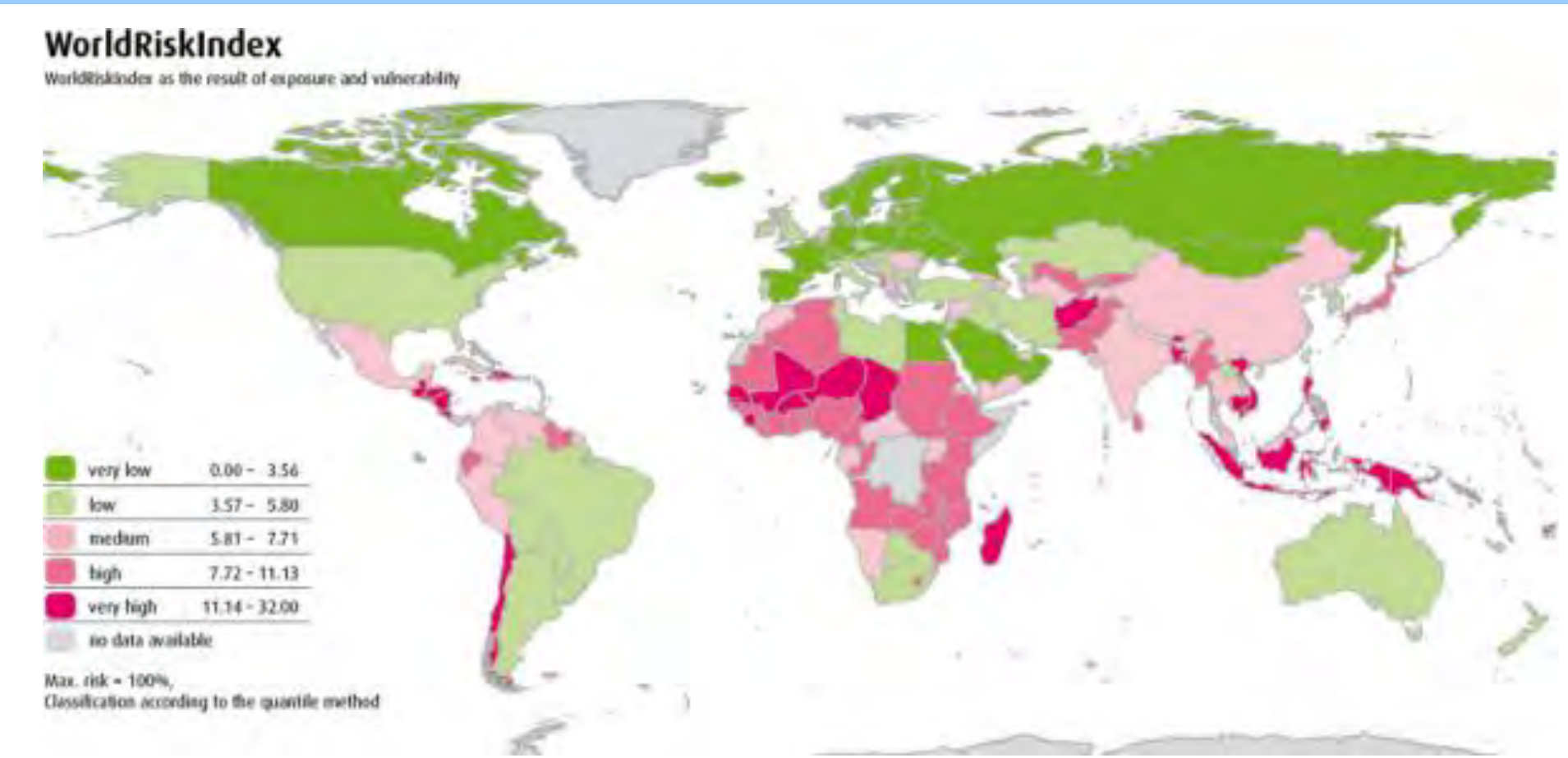
- Natural Disasters and Space Technology
- Space-based Information Collaborative Initiatives for Disaster Management
- Way Forward for Better Collaboration

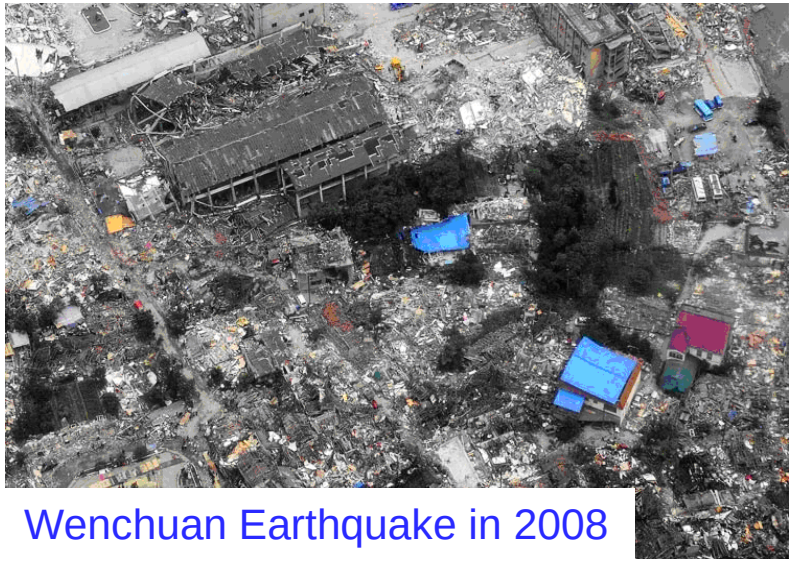
Natural Disasters in the World





Source UNU-EHS, hased on the PREVIEW Global Risk Data Platform, CReSIS, SIESIN and global databases; detailed information at www.WeltRisikoBericht.de. The World Risk Report 2011 ranks countries based on their level of exposure and vulnerability to natural disasters

Natural Disasters in China



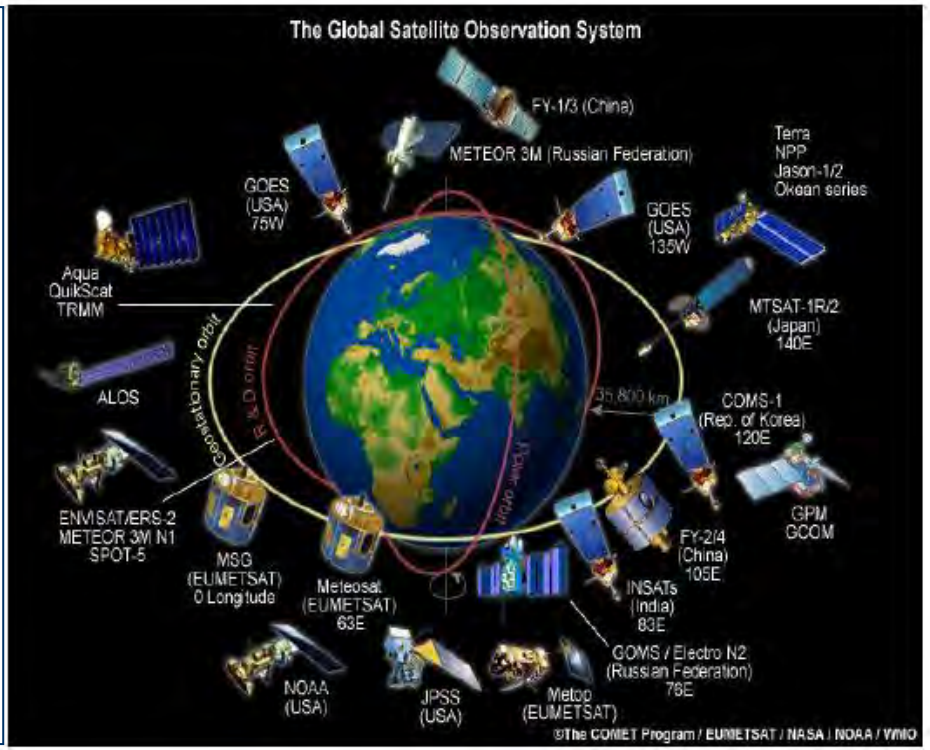
Wenchuan Earthquake in 2008

Yushu Earthquake in 2010

Flood in Northeast Part in 2013

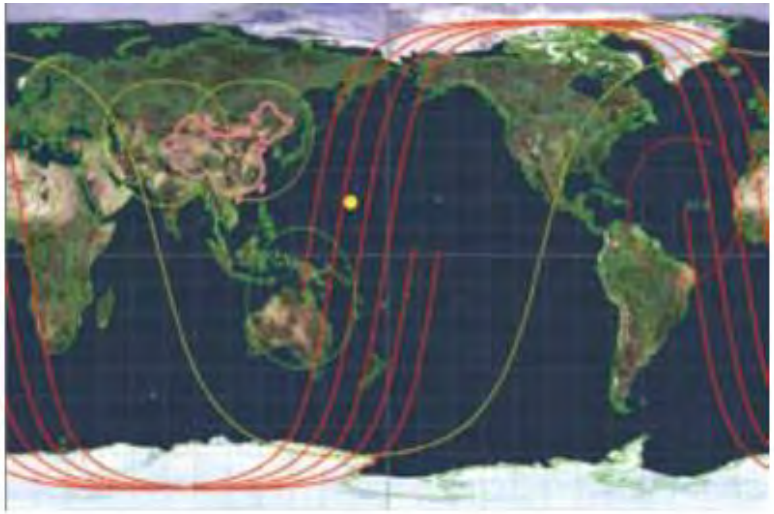
Zhouqu Mud Flow in 2010

Space resources is growing fast, especially in the next decade.

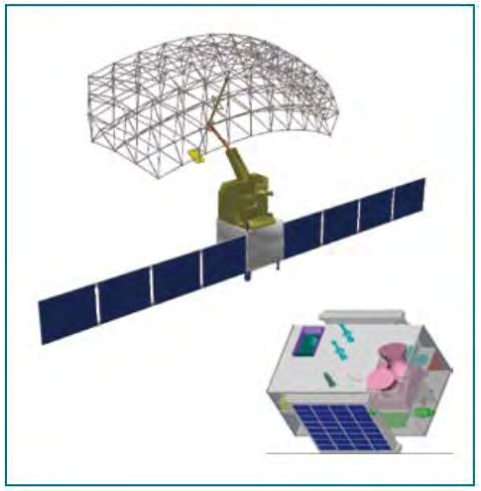


Remote Sensing Satellites in China

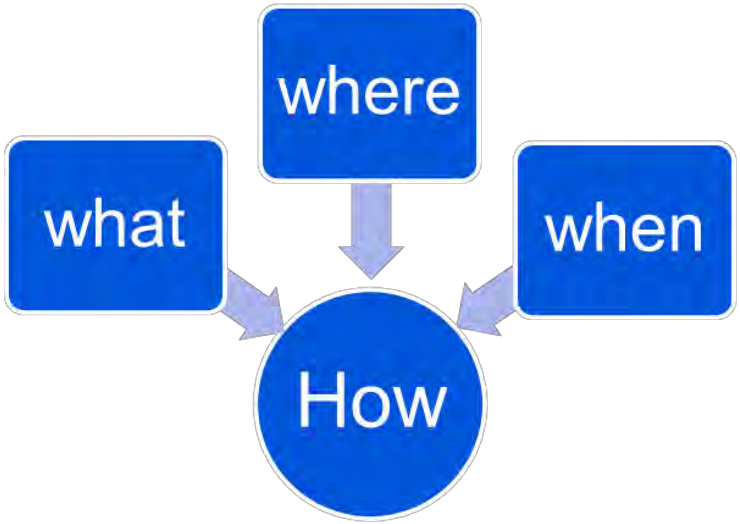
- Meteorological satellite series
- Ocean satellite series
- Resources satellite series
- Environment and Disaster Monitoring and Forecasting Small satellites constellation

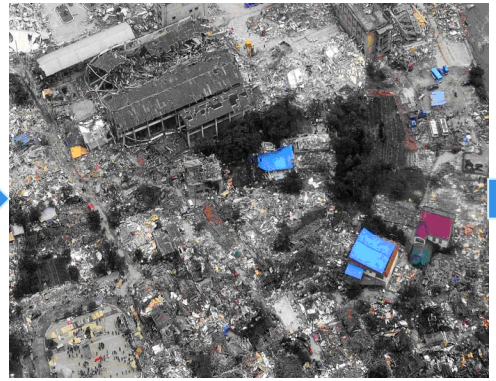


Orbit Monitoring Map for HJ-1-A and HJ-1-B



Space-based Information for Disaster Management






汶川地震灾害危险评估图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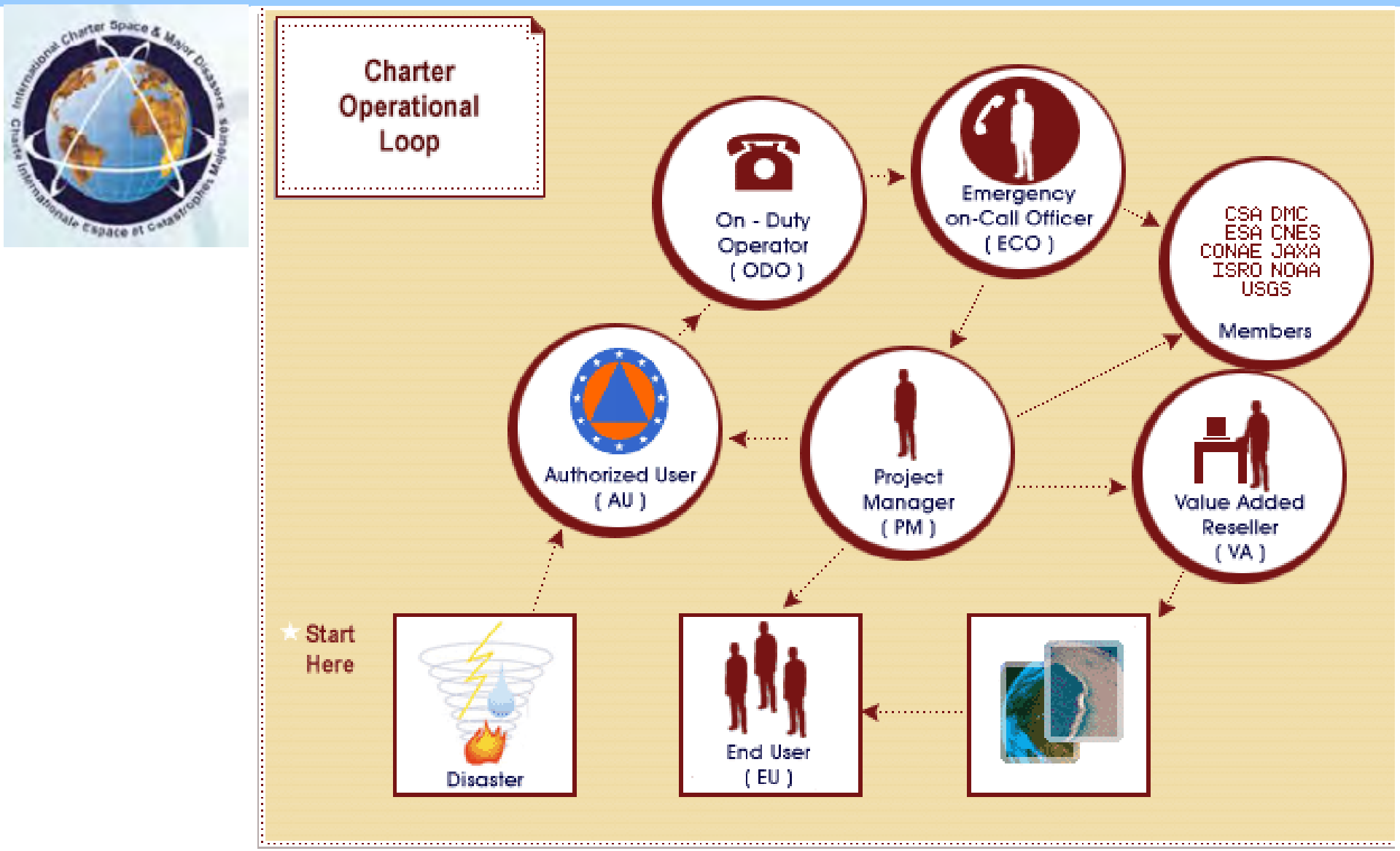
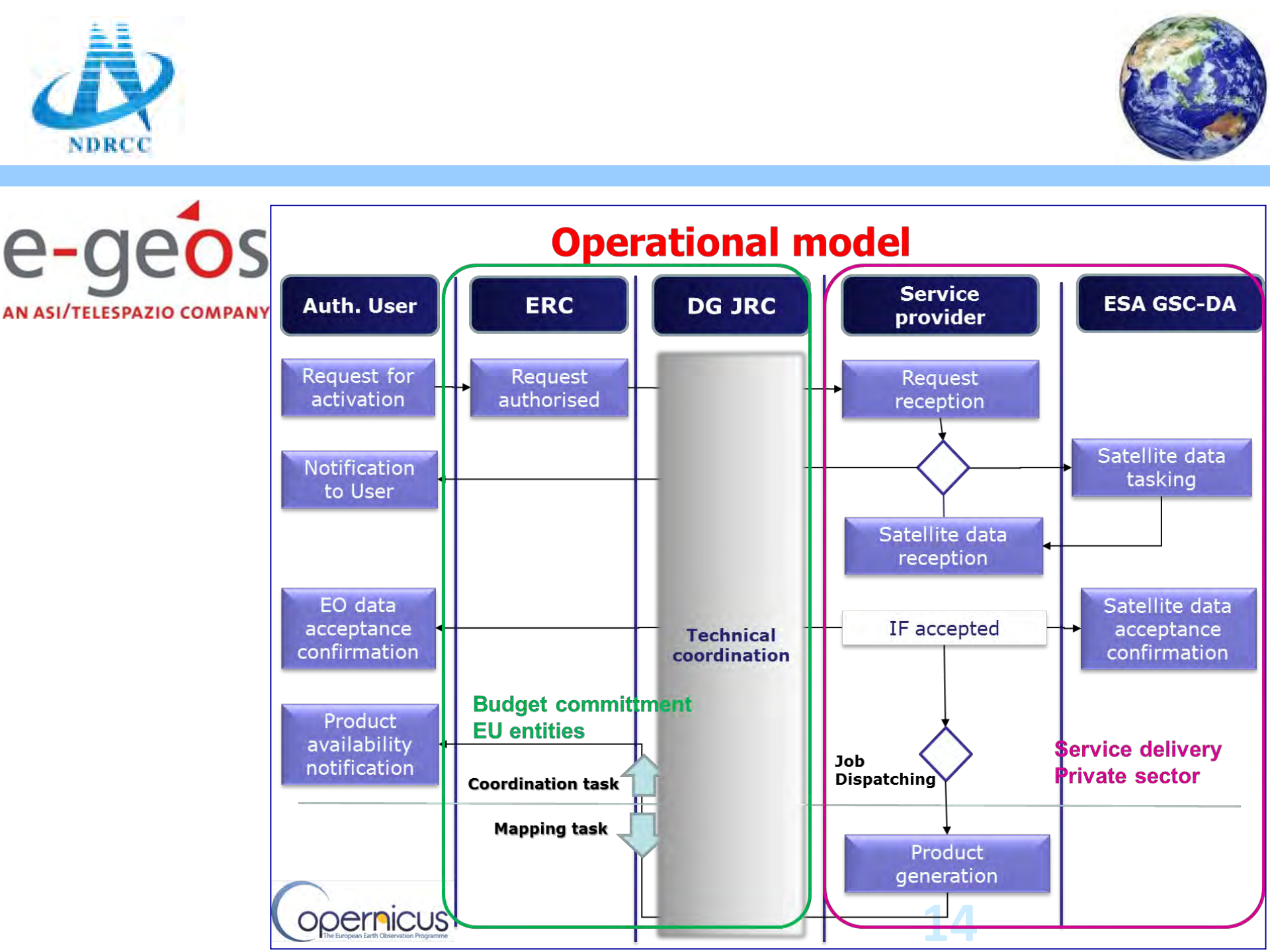
- Natural Disasters and Space Technology
- Space-based Information Collaboration for Disaster Management
- Way Forward for Further Collaboration

Why Collaboration

- All the countries in the world are facing disaster risks. A few countries have their own space resources
- Space resources could be more effective for collaborative using based on the different spatial, temporal and spectral characteristics
- There’s no boarder for earth observation coverage and disaster affected area


Charter
Operational
Loop
On - Duty
Operator
(ODO)
Emergency
on-Call Officer
(ECO)
CSA DMC
ESA CNES
CONAE JAXA
ISRO NOAA
USGS
Members
Authorized User
(AU)
Project
Manager
(PM)
Value Added
Reseller
(VA)
Start
Here
Disaster
End User
(EU)


Operational model
Auth. User
ERC
DG JRC
Service provider
ESA GSC-DA
Request for activation
Request authorised
Request reception
Notification to User
Satellite data tasking
Satellite data reception
EO data acceptance confirmation
Technical coordination
IF accepted
Satellite data acceptance confirmation
Budget committment EU entities
Product availability notification
Coordination task
Mapping task
Job Dispatching
Service delivery Private sector
Product generation
opernicus
The European Earth Observation Programme

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European Commission

COPERNICUS EMERGENCY MANAGEMENT SERVICE

GIO EMS - Mapping

Home

Home | What is Copernicus | The Emergency Management Service

GIO EMS - MAPPING

- EMS - Mapping service
- Who can use the service
- How to use the service
- Products: Rush mode
- Products: Non-rush mode
- Quality control / Feedback
- User guide

RUSH MODE

- List of Activations
- Map of Activations
- GeoRSS Feed

NON-RUSH MODE

- List of Activations
- Map of Activations
- GeoRSS Feed

OTHER

- Citations
- EFAS - European Flood Awareness System
- Current event alerts

Map of EMS - Mapping Rush Mode Activations

Event Type

Forest fire, wild fire
Flood
Wind storm
Earthquake
Industrial accident
Other

Event Date (UTC)

Start date

E.g., 2013-09-20

End date

E.g., 2013-09-20

Act. Status

- Any -

Apply Reset

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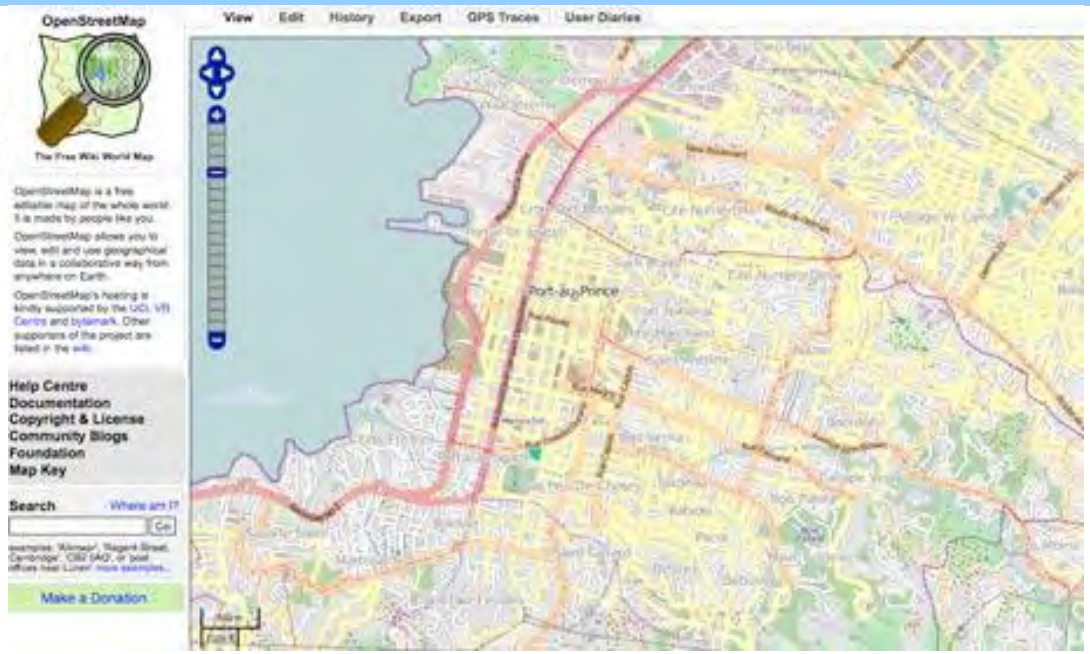

Ushahidi

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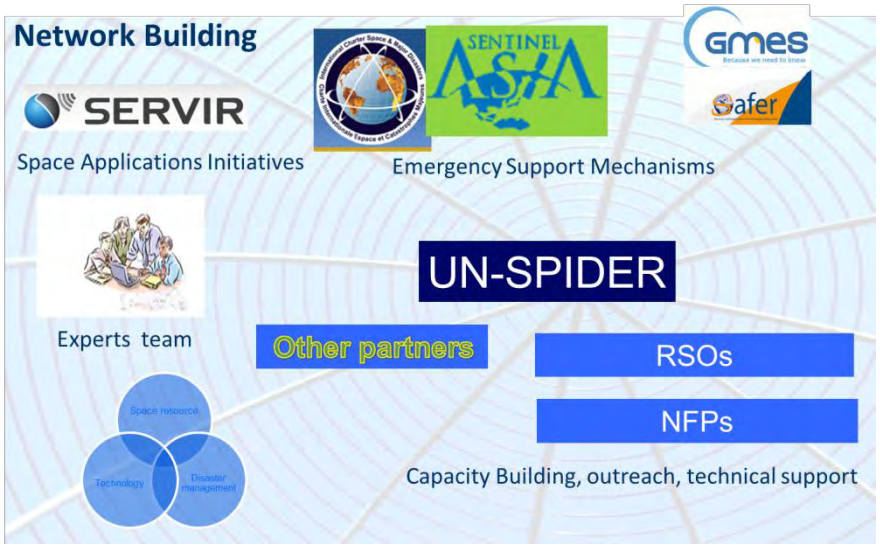
SERVIR

SENTINEL ASIA Sentinel Asia

APSCO



Open Data

Data Resource	Analysis and Mapping	Users
EO Partner Agency	Designated	Authorized
ESA and Open Data	Designated	Authorized and Public
Open or Volunteered	V&TC	Public
Designated	Designated	Designated

Bilateral Cooperation

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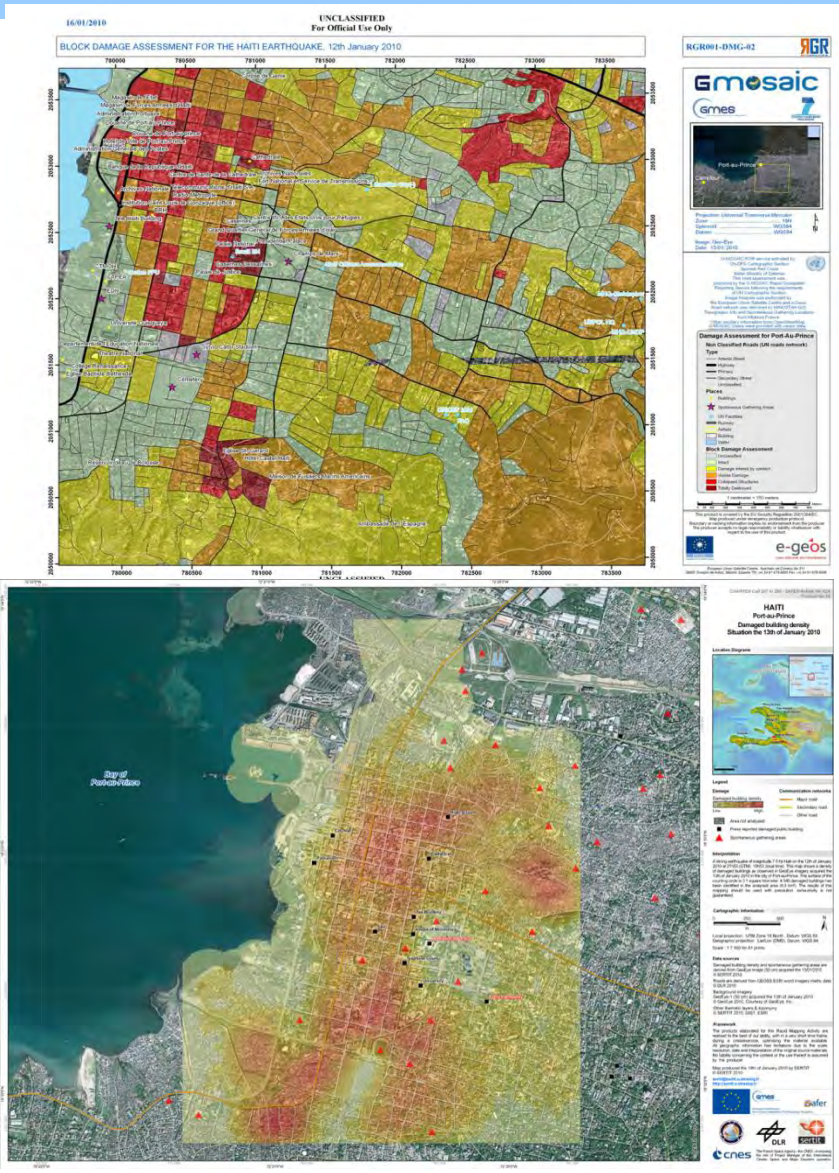
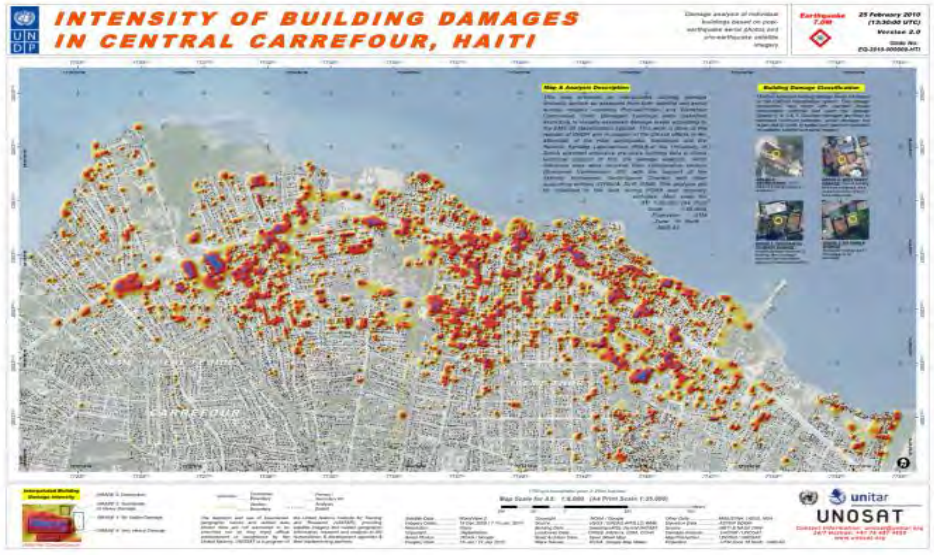
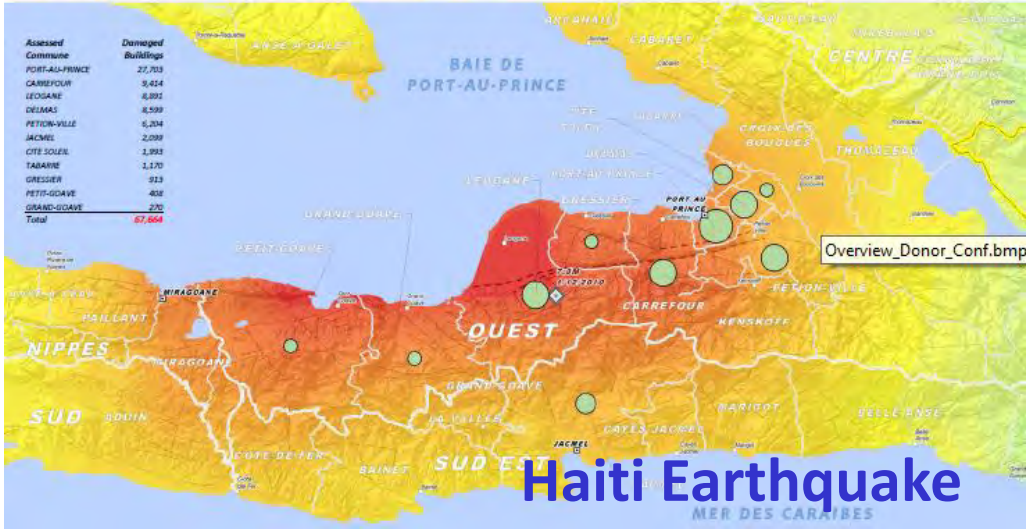


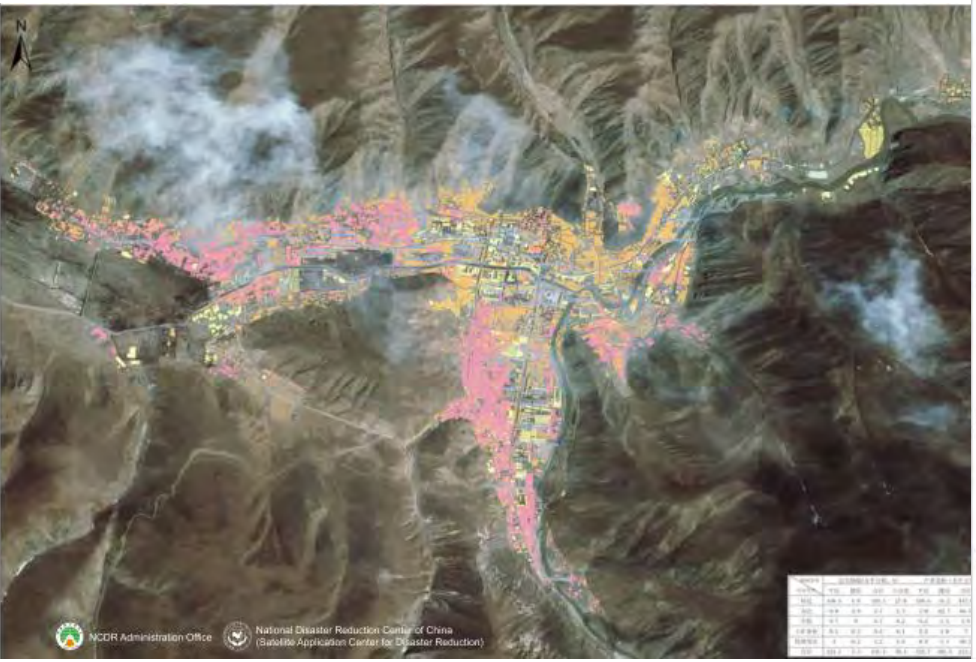


Total Imagery-Detected Building Damages by Assessed Commune



Haiti Earthquake

Yushu Earthquake



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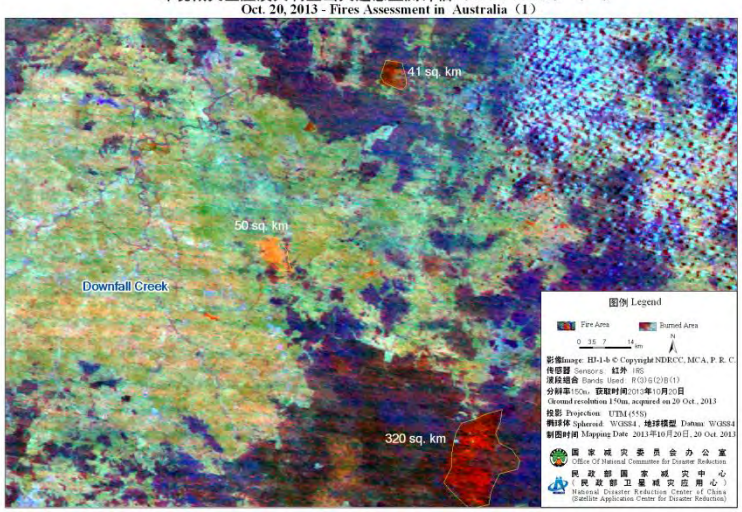
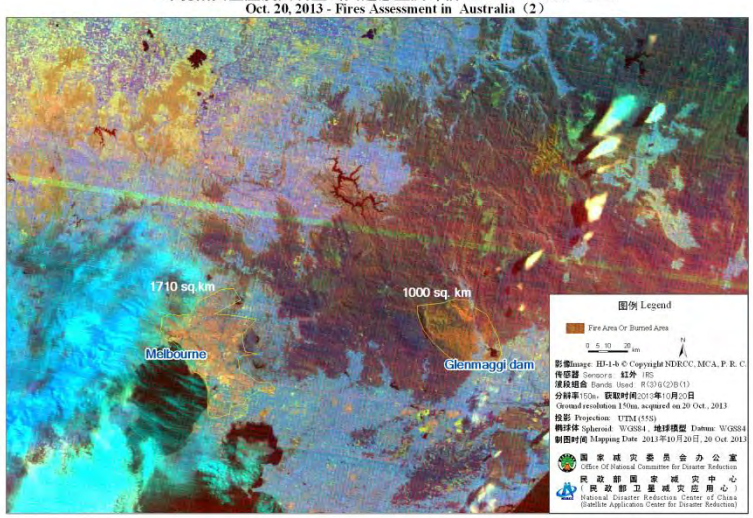
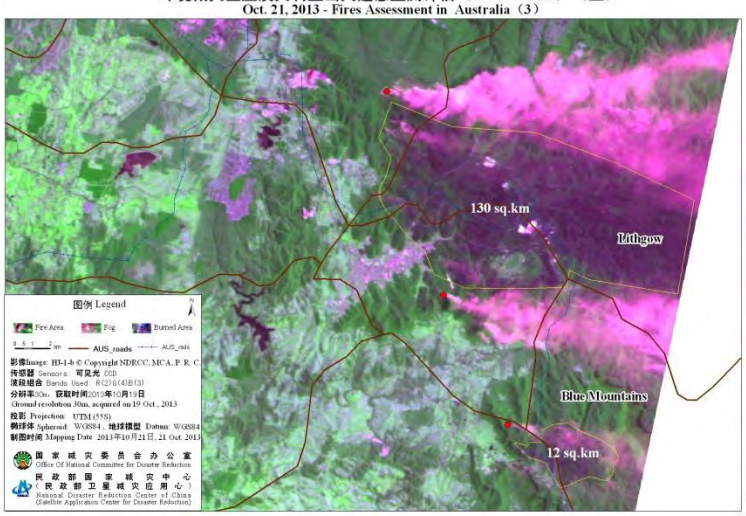
环境减灾星座澳大利亚山火遥感监测评估（2013. 10. 20）（一）
Oct. 20, 2013 - Fires Assessment in Australia（1）



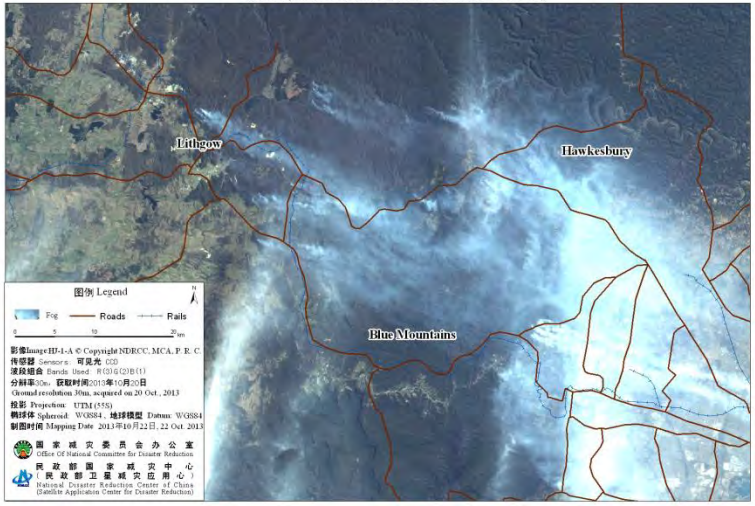
环境减灾星座澳大利亚山火遥感监测评估（2013. 10. 20）（二）
Oct. 20, 2013 - Fires Assessment in Australia（2）



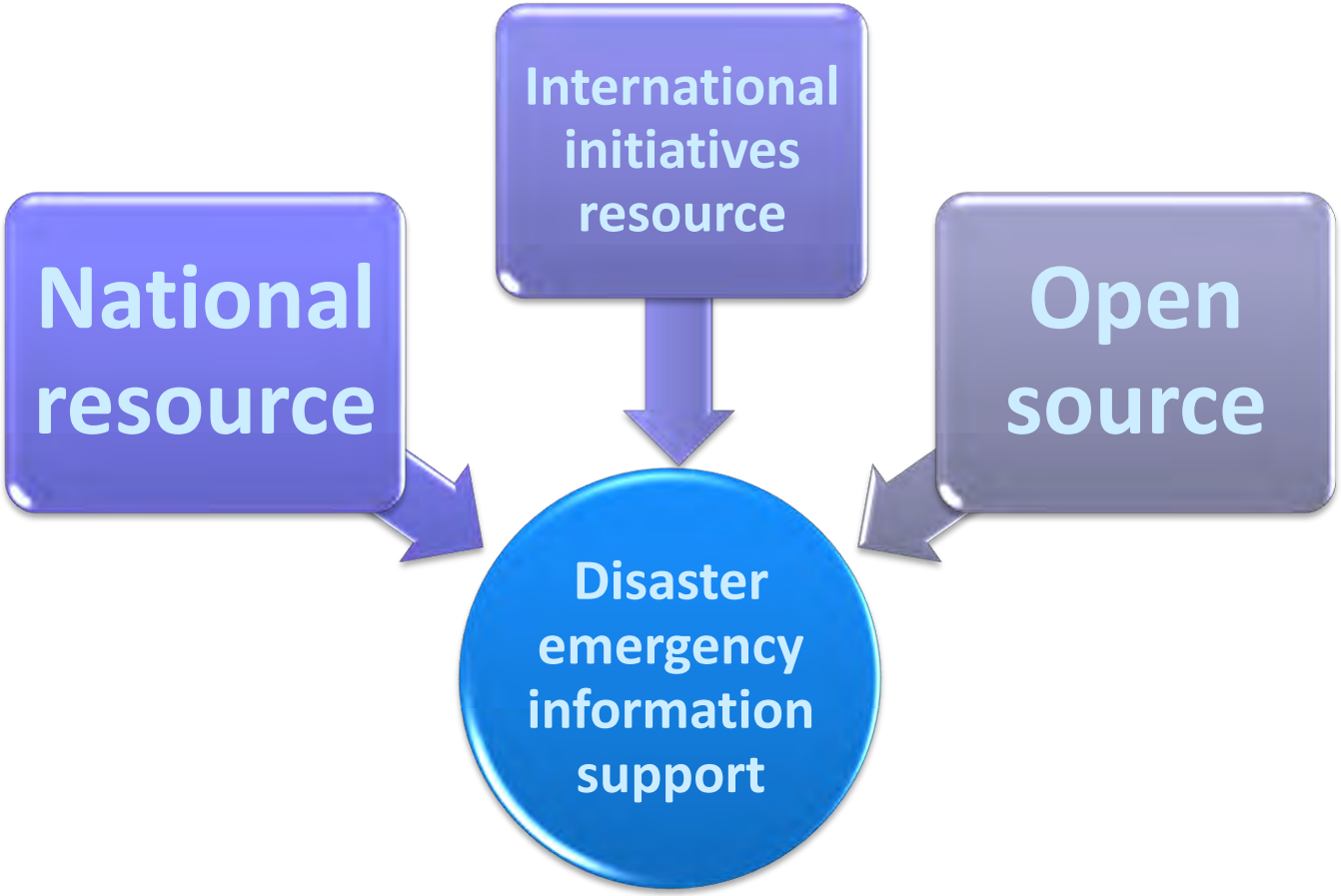
环境减灾星座澳大利亚山火遥感监测评估（2013. 10. 21）（三）
Oct. 21, 2013 - Fires Assessment in Australia（3）



环境减灾星座澳大利亚山火遥感监测评估（2013. 10. 22）（四）
Oct. 22, 2013 - Fires Assessment in Australia（4）



Data/information resources at national level



	Level 1	Level 2	Level 3
Technical capacity	Well expertized operational technology and personnel	With Scientific and research basis but no operational level	Rely on external expertise to produce national assessments
Space-based Data Access	National operated space imageries	Limited ground station data and space-based data	Only data exchanged internationally
Infrastructure	Well equipped	Limited equipped	No space infrastructure, rely on alternatives
Collaboration	Mainly rely on national capacity International initiatives as supplementary	National capacity and International initiatives	Rely on international cooperation

Challenges facing

Lack of high imageries just after the disaster for using	⟷	Accumulate lots of imageries after some time of major disaster without being used
Lack of products covering the whole disaster affected area and whole disaster cycle	⟷	Duplicated maps for some hotpots during short emergency period
Lack of reliable information for decision making support	⟷	Lots of maps and massive information are available for users

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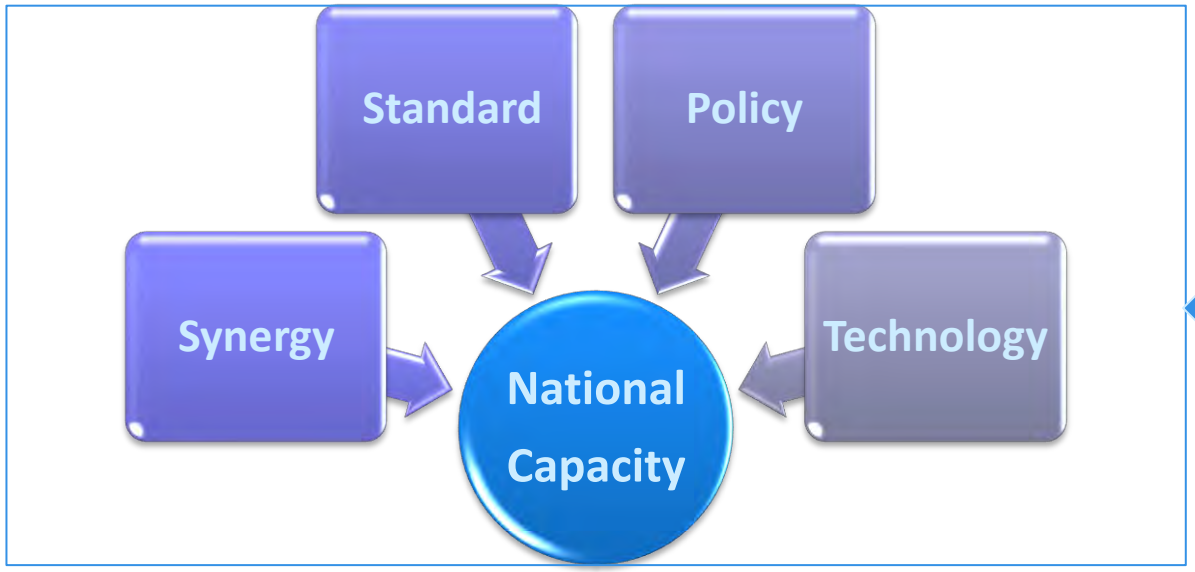
Ways for Coordination



- National Resource
- International Resource
- Open source

Coordination Mechanism

Information platform

Synergy

- User request synergy – area covered, observation frequency, information content
- Observing planning synergy among different satellites
- Data processing and information analysis synergy based on different satellite image and information
- Products service synergy based on different stage and users

Standard

- Data standard (data format, processing level and classification)
- Product standard (product classification based on different disasters and management cycles, mapping standard)
- Technology standard (method or procedure used for different information extraction based on different space imageries)

Policy

- Data policy (in terms of copyright, acquisition, delivery, sharing and using)

- Product policy (in terms of product copyright, intellectual property right and dissemination policy for interim product and final product)

Research Exploration

- Transfer emergency response support to emergency preparation, such as emergency scenario and simulation of different disasters based on pre –disaster data

- Information integration based on social, historical, statistical, investigated and remote sensing data

- Risk assessment analysis based on space-based information

Tomorrow will be full of hope based on better preparation.

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Thanks for your attention!