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# Service Provider of Chinese Earth Observation Satellite Data & Application

-- **BSEI**

# About BSEI

## ***Beijing Space Eye Innovation Tech Co. Ltd.*** (BSEI)

- Established in 2005, with more than 10 years experience of distributing satellite imagery and world leading image processing software in China
- Headquarter in Beijing and branch in Guangzhou, currently over 60 employees with specialized, advanced degrees in the fields of Remote Sensing and GIS
- Provides professional image processing services, information systems integration and related technical training for more than 1,000 users
- Became the exclusive international distributor for the TH-1 series mapping satellites in beginning of 2013

# About BSEI

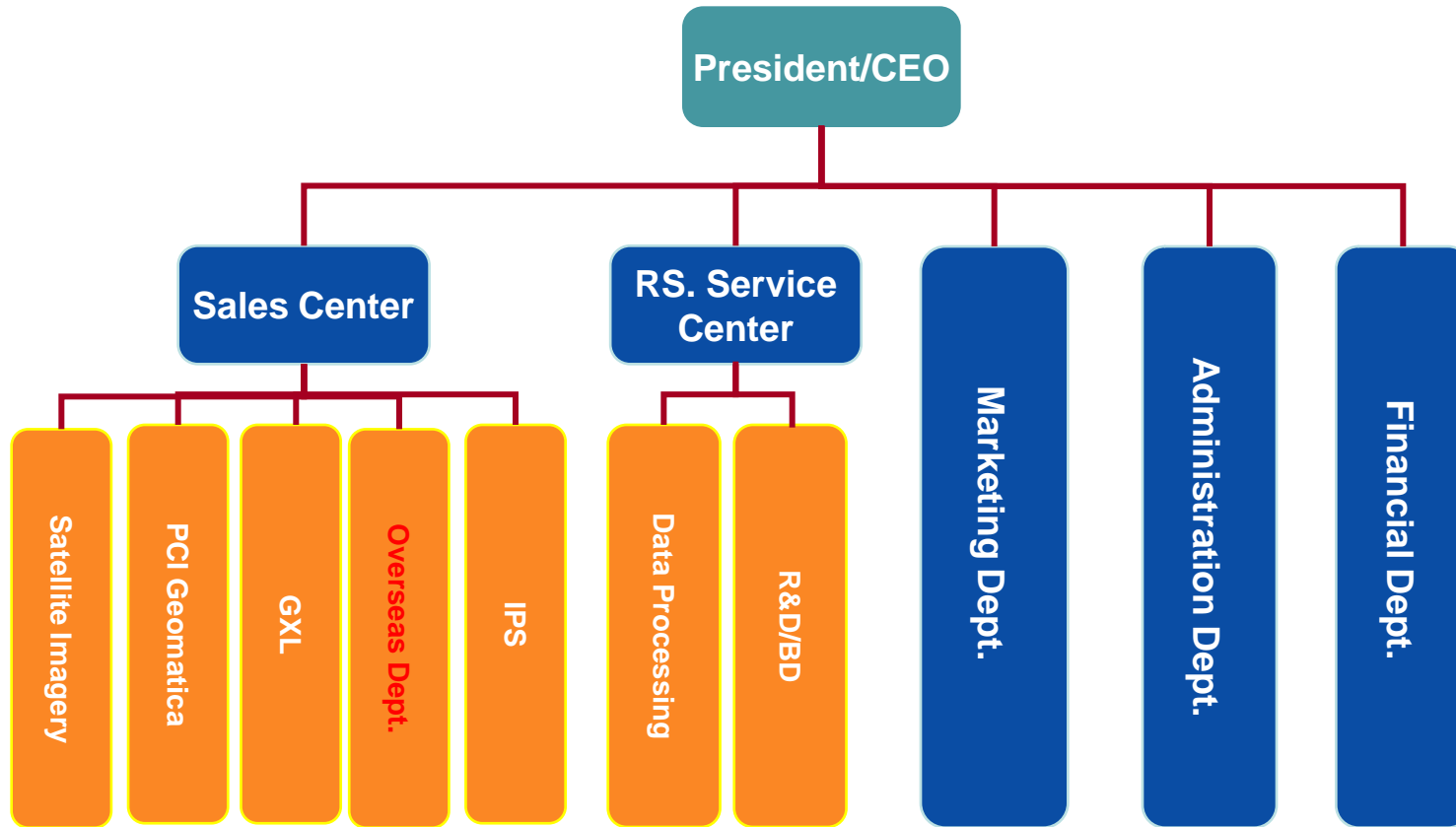


Headquarter in Beijing, have  
branche in Guangzhou.



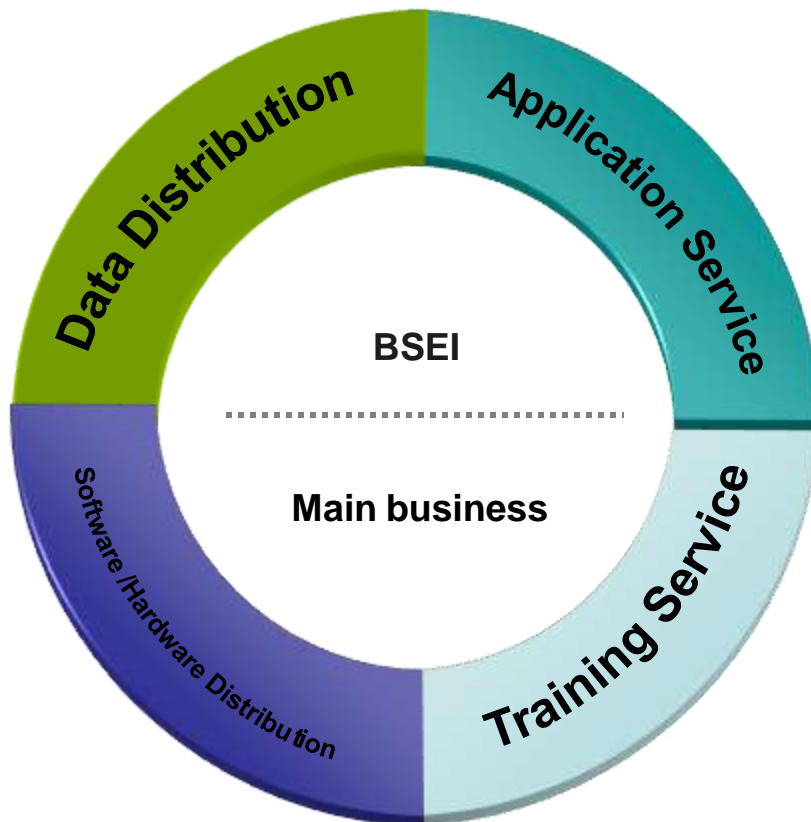
Data Center

# Company Structure







# Main Products and Services

# Main Business



## Main Business

-  Data Distribution
-  Software/Hardware Distribution
-  Application Service
-  Training Service

# Main Business

## ➤ Data Distribution

- Foreign Satellite Imagery distribution partner in China (ALOS/KOMPSAT, etc.)
- Global channel partner of Chinese High Resolution Satellites TH-1
- Other Chinese Satellites Imagery (GF/ZY and new coming satellite ...)

## ➤ Software/Hardware Distribution

- Exclusive distributor of PCI Solutions: Geomatica / GXL
- Distributor of LizardTech – GeoExpress, and 3D solution - Skyline
- Exclusive distributor of photogrammetry software - ICAROS IPS
- Distributor of W200, and looking for UAV partner from Russia

## ➤ Application Service

- Diversified imagery online services ([www.mapenjoy.com](http://www.mapenjoy.com))
- RS Image Mall (on-line imagery ordering system)




## ➤ Training Service

# Main Products and Services



Mapenjoy® Image library online and hosting services



The screenshot displays the Mapenjoy website interface. At the top, there is a search bar and navigation links. The main content area features a satellite map of Beijing, centered on the National Stadium (Bird's Nest). To the left of the map, there is a sidebar with a table listing image metadata.

时间	分辨率	颜色	卫星
2009-02-15	0.5	全色	YV01
2009-01-25	0.5	全色	YV01
2009-01-25	0.5	全色	YV01
2009-01-09	0.6	多光谱	Q802
2009-01-09	0.6	多光谱	Q802

At the bottom of the interface, there is contact information: 电话: 010-82257180, 在线时间: 周一至周五 9:00-18:00, and a copyright notice: ©2009 Mapenjoy [京ICP证070215号].



# Main Products and Services

## RS Image Mall (On-line imagery ordering system)

影像超市\_国内首家卫星遥感影像电子商务网站 - 世界之窗浏览器极速版

image.3snews.net

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**影像超市** Beta (工作时间:周一至周五9:00--18:00) **服务热线: 010-88980864** **QQ: 1479970910**

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- 豫鄂湘 >
- 粤桂琼台港澳 >
- 鲁皖苏赣浙闽沪 >
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客服1 客服2 客服3

工作时间: 周一到周五 9:00-17:30

**组合搜索**

**订单流程**

1 注册账户 → 2 查找商品 → 3 放入购物车 → 4 提交订单

开始 6 Microsof... 北京天目创... 图享受logo 图享受 路萌 影像超市\_国... 18:25

# Main Products and Services

## ● TH Image library (China)

Product Type	DOM、 DEM, a variety of products meet various needs.
Coverage Area	seamless connection nationwide, customized products in any region worldwide
Data Source	single data source from TH-01&02, guaranteed sensor accuracy.
Projection	WGS84, flexible transformation of different projection.
Update	continuous updates from 2014, two times a year.
Resolution	2m, 10m DOM; 25m DEM.
Color and Band	DOM: 3 bands, true color; 4 bands featured products
Value Added products	featured and customized data products, applicable to any industrial software.

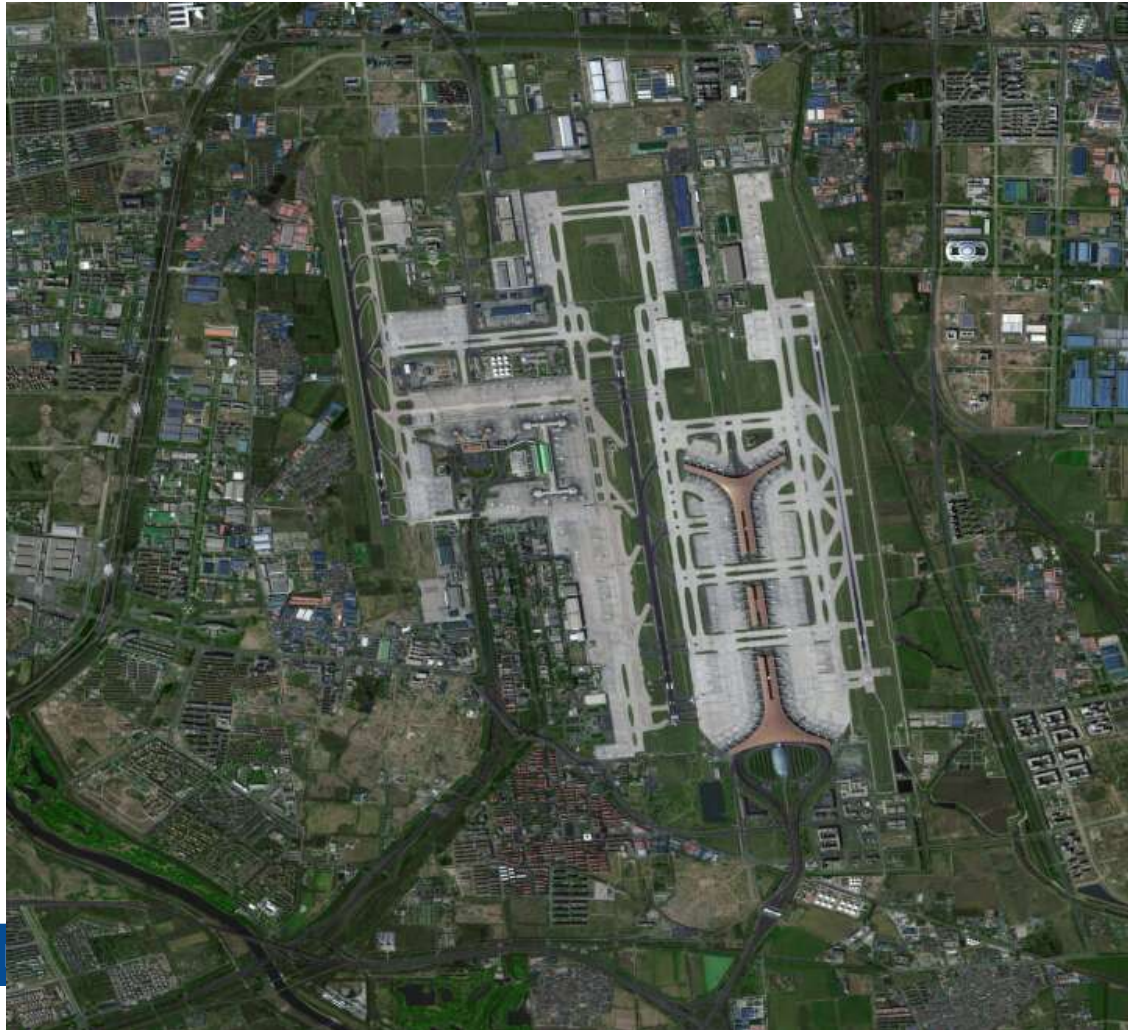
# Main Products and Services

- TH Image library (China)--Shanghai



# Main Products and Services

- TH Image library (China)—Beijing Airport T3 Terminal



# Main Products and Services

- TH Image library (China)—Beijign Huairou



# Key Partners



# Key Clients in China



# Main products and services for overseas market:

- Satellite imagery:  
TH-1, ZY-3, GF-1, GF-2
- Data processing, Value added products  
DEM/DSM, DOM, DLG, etc.
- Remote sensing application service for
  - Imagery Access Service on GIS
  - Industrial application in monitoring changes, on-line/offline imagery service for portals website
  - For navigation information extraction
  - For navigation equipment, etc.



# Introduction of Chinese High Resolution Satellite TH-1

# TH-1 Profile

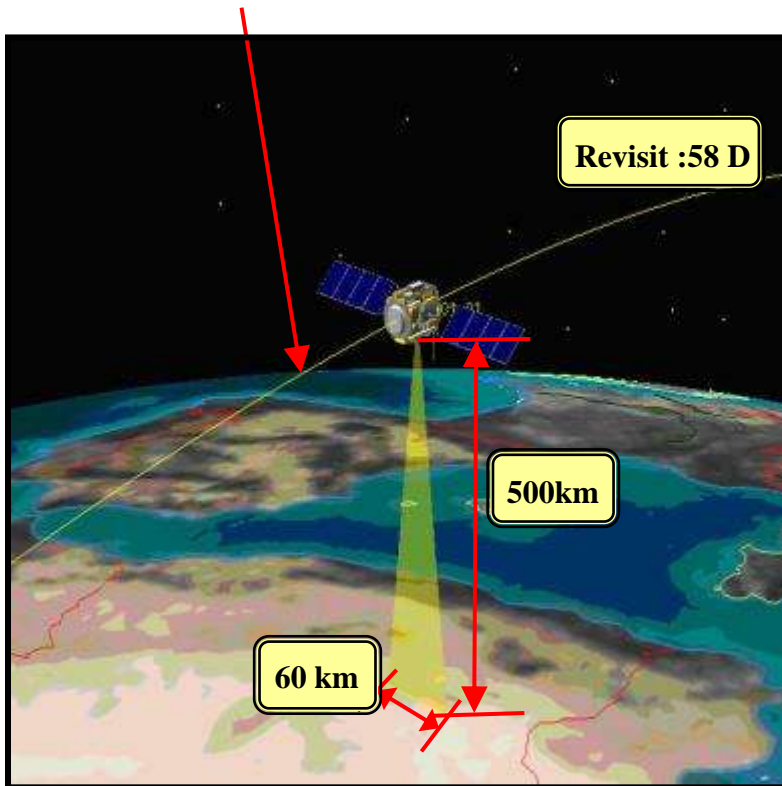


Satellite TH-1-01 was launched in 24<sup>th</sup>, Aug., 2010, and TH-1-02 was in 5<sup>th</sup>, June, 2012, they currently working as a network.

**The TH-1-03 will be launched in 2015, the 3<sup>rd</sup> satellite will use dual frequency GPS receiver and more stable, higher precision sensor for higher quantitative multiples and less data compress multiples.**

# TH-1 Profile

Synchronous nearly round the sun



## Specification

Revisit period : **58 days**

Height : **500 km**

Single satellite coverage : **60 km**

2 satellite network revisit interval:  
**1 day**

Position Accuracy without GCP :  
**25 m Horizon / 10 m Verticle**

# TH-1 Profile

## Specification

**2 m**

**PAN**



**5 m triplet**



**10 m MSI**

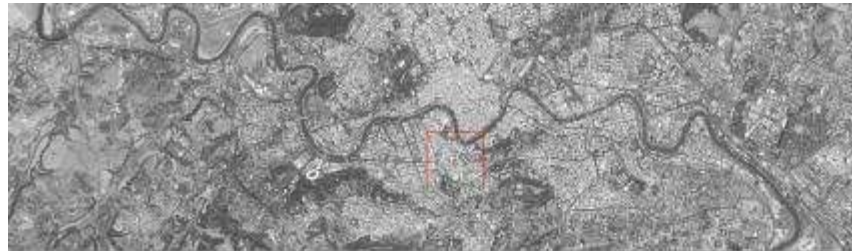


**Seattle, USA**

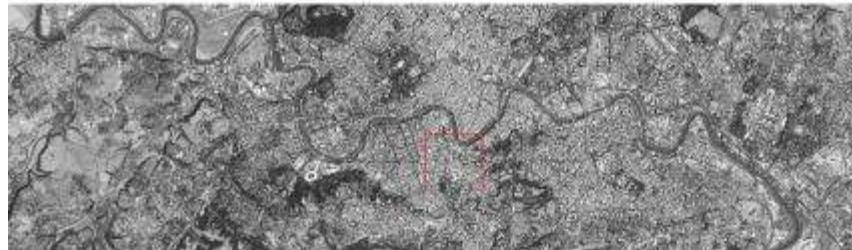
# TH-1 Profile

## Specification

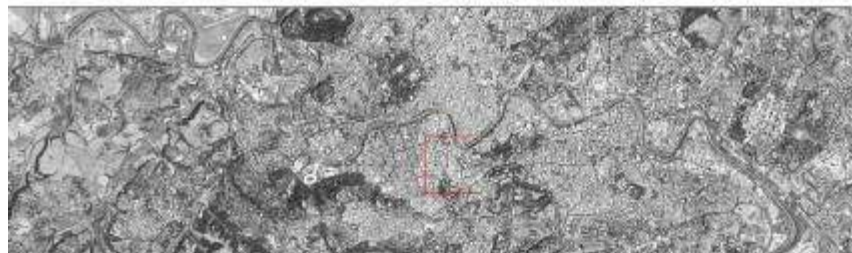
width: 60 km  
5 m Triplet image



Forward



Nadir



Backward

**Vatican, Rome, Italy**

# TH-1 Profile

## Specification

**Red**

**0.61-0.69um**

**Green**

**0.52-0.61um**

**Blue**

**0.43-0.52um**

**Near  
infrared**

**0.76-0.90um**

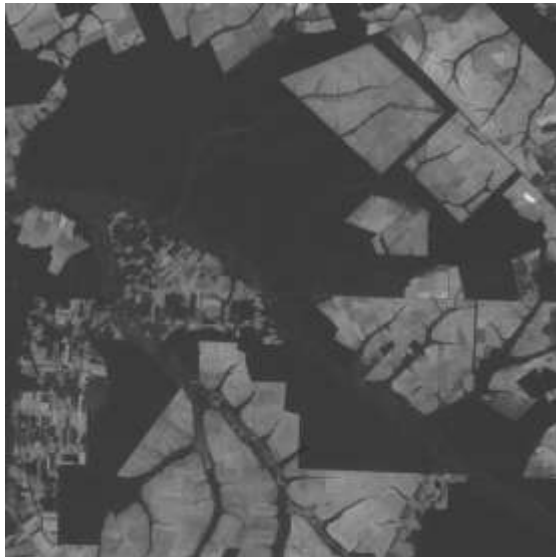
**MSI, Tianjin, China**

# TH-1 Profile

## Specification

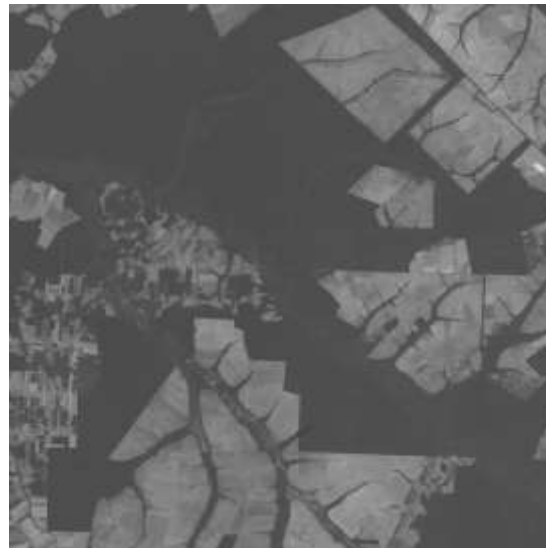
Coverage with better than 60 km

64km



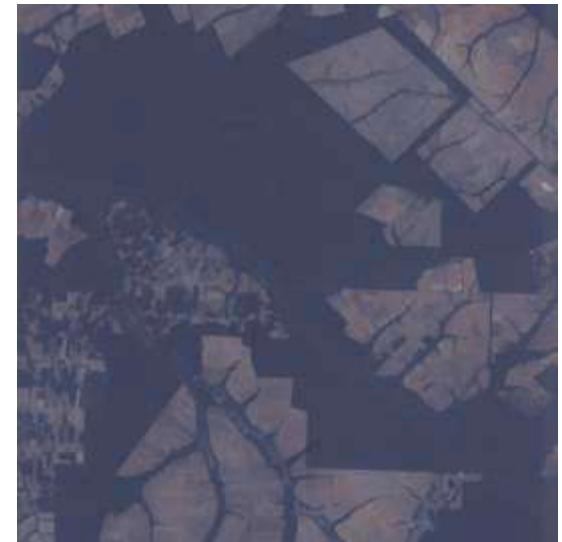
**2 m PAN**

60km



**Triplet**

60km



**MSI**

# TH-1 Capability

## Data acquirement

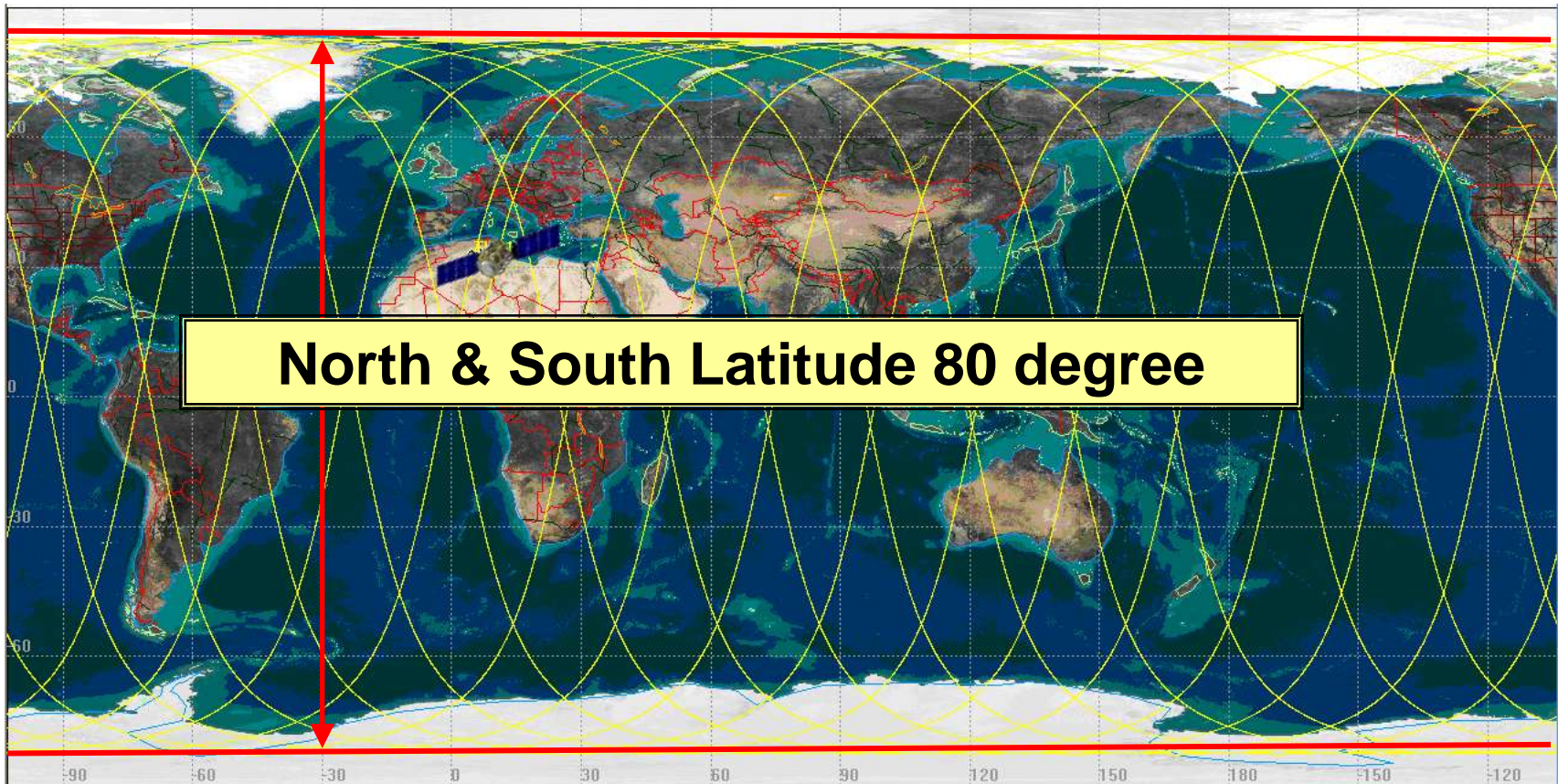
**Every single satellite could take 300,000 sq km images (of PAN, MSI and triplet) once and 1,500,000 sq km everyday.**

**3,000,000 sq km could be taken everyday by 2 satellites.**



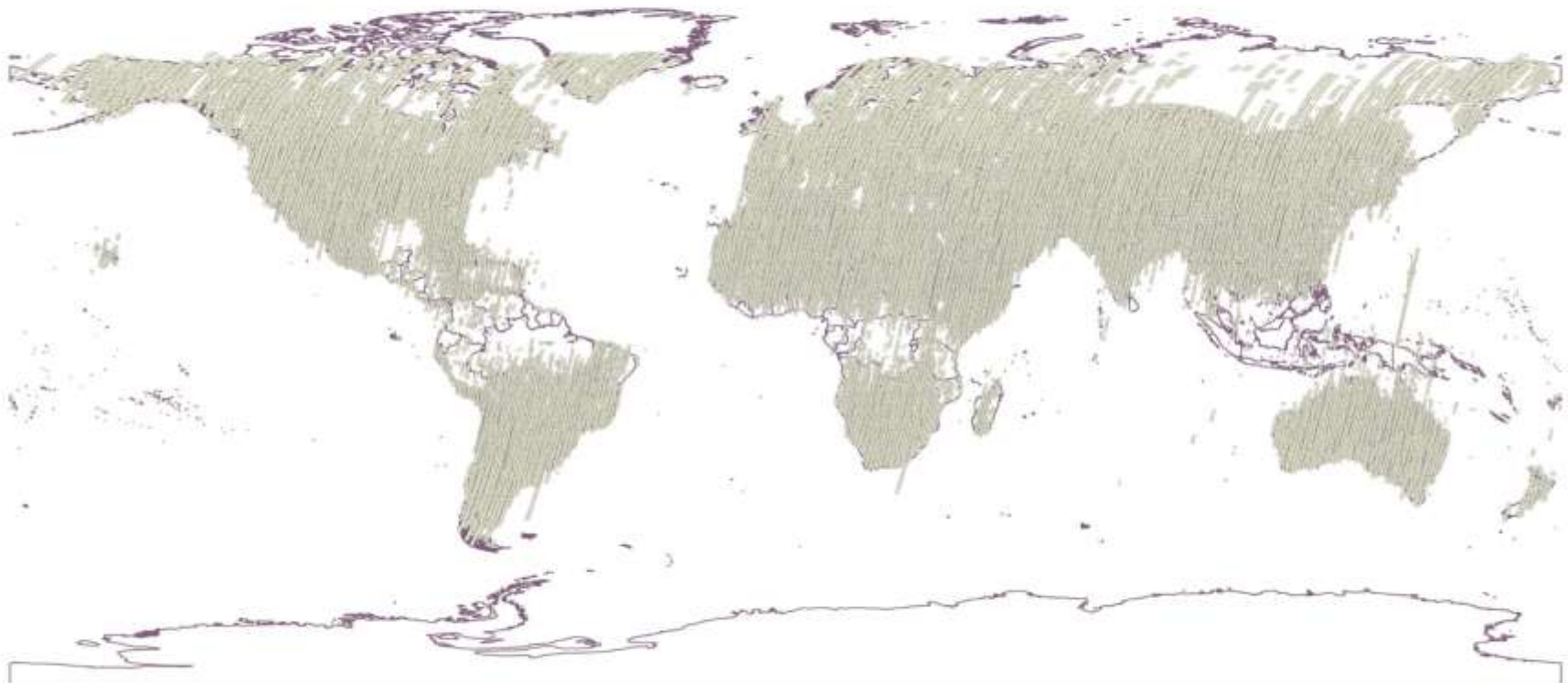
# TH-1 Characters

## Data acquirement



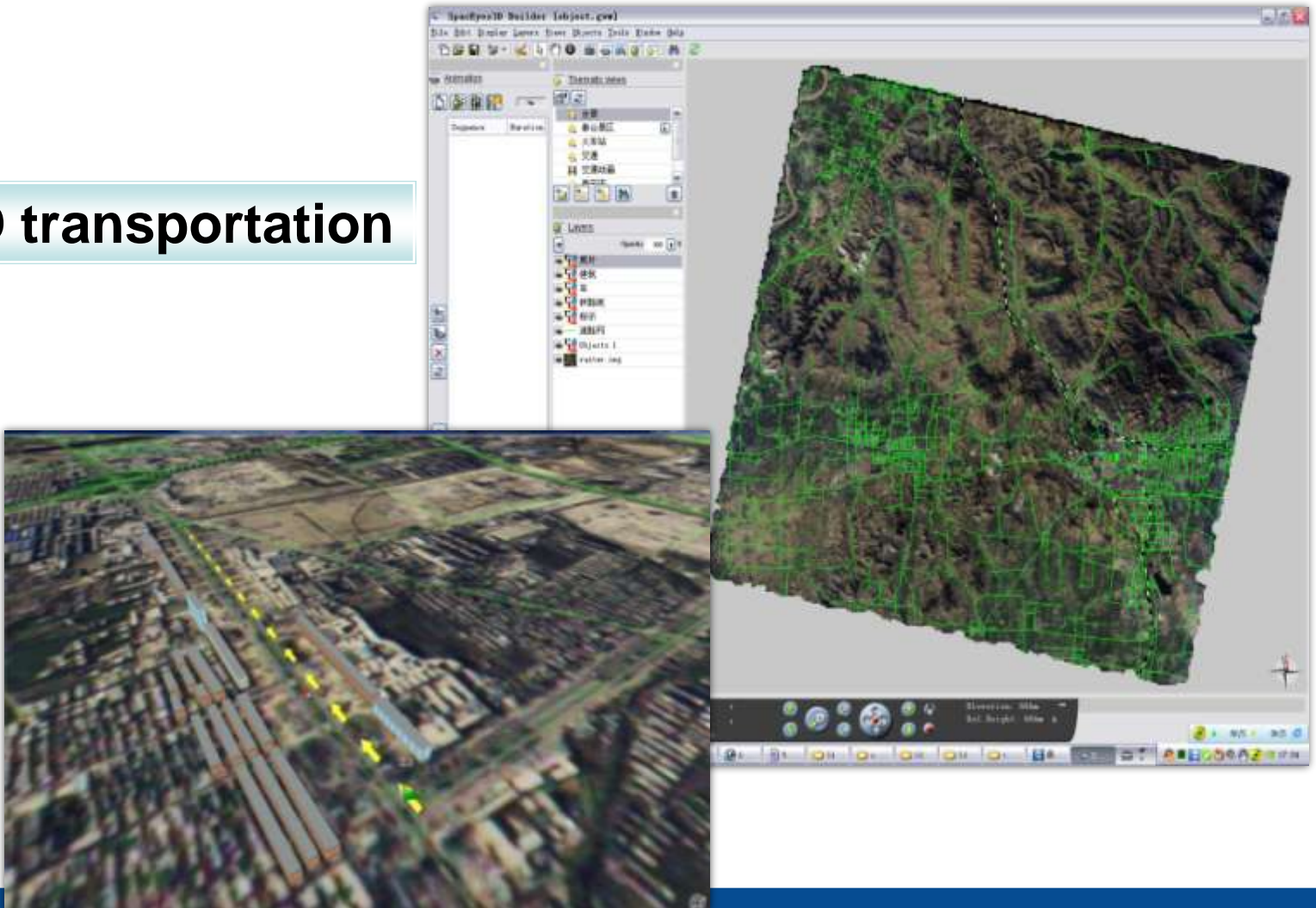
## Chinese High Resolution Satellite TH-1 Global Coverage

*Mar. 25th, 2015*

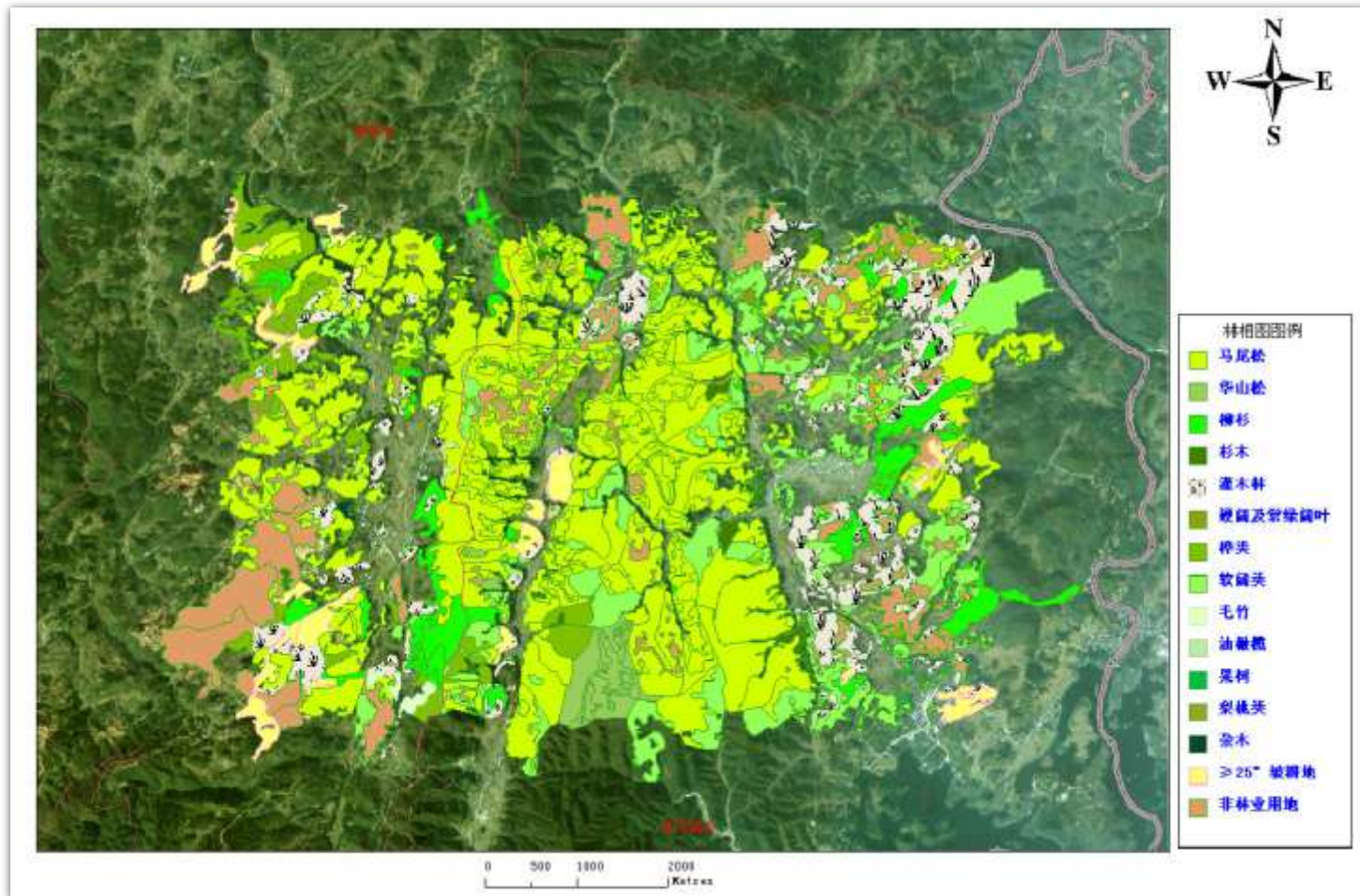


# TH-1 Application

3D transportation

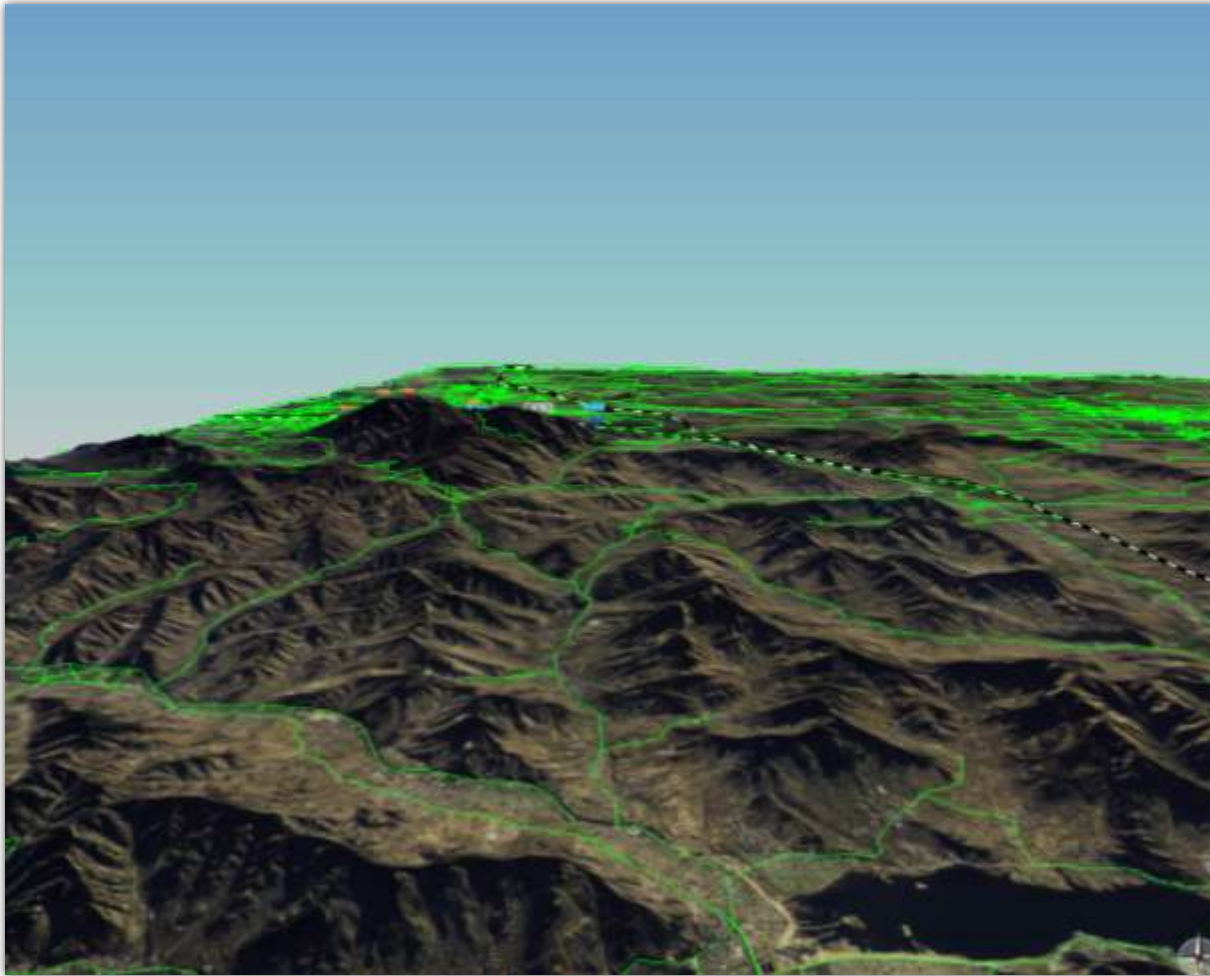


# TH-1 Application



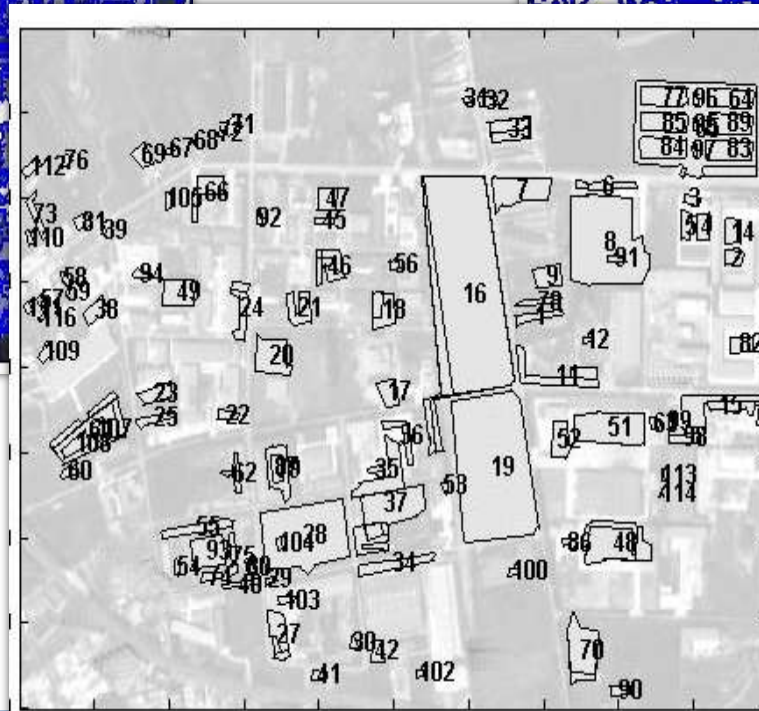
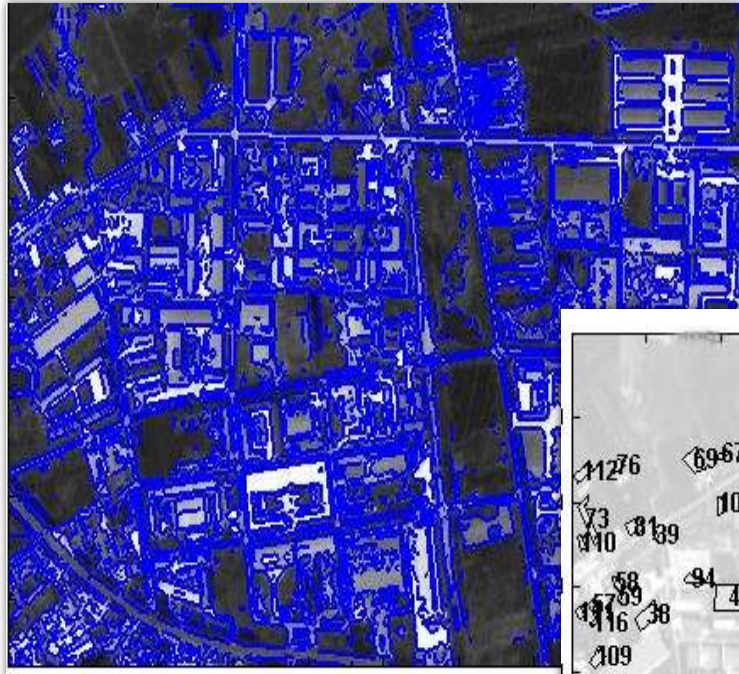
**Forest phase diagram of Guizhou Province, China**

# TH-1 Application



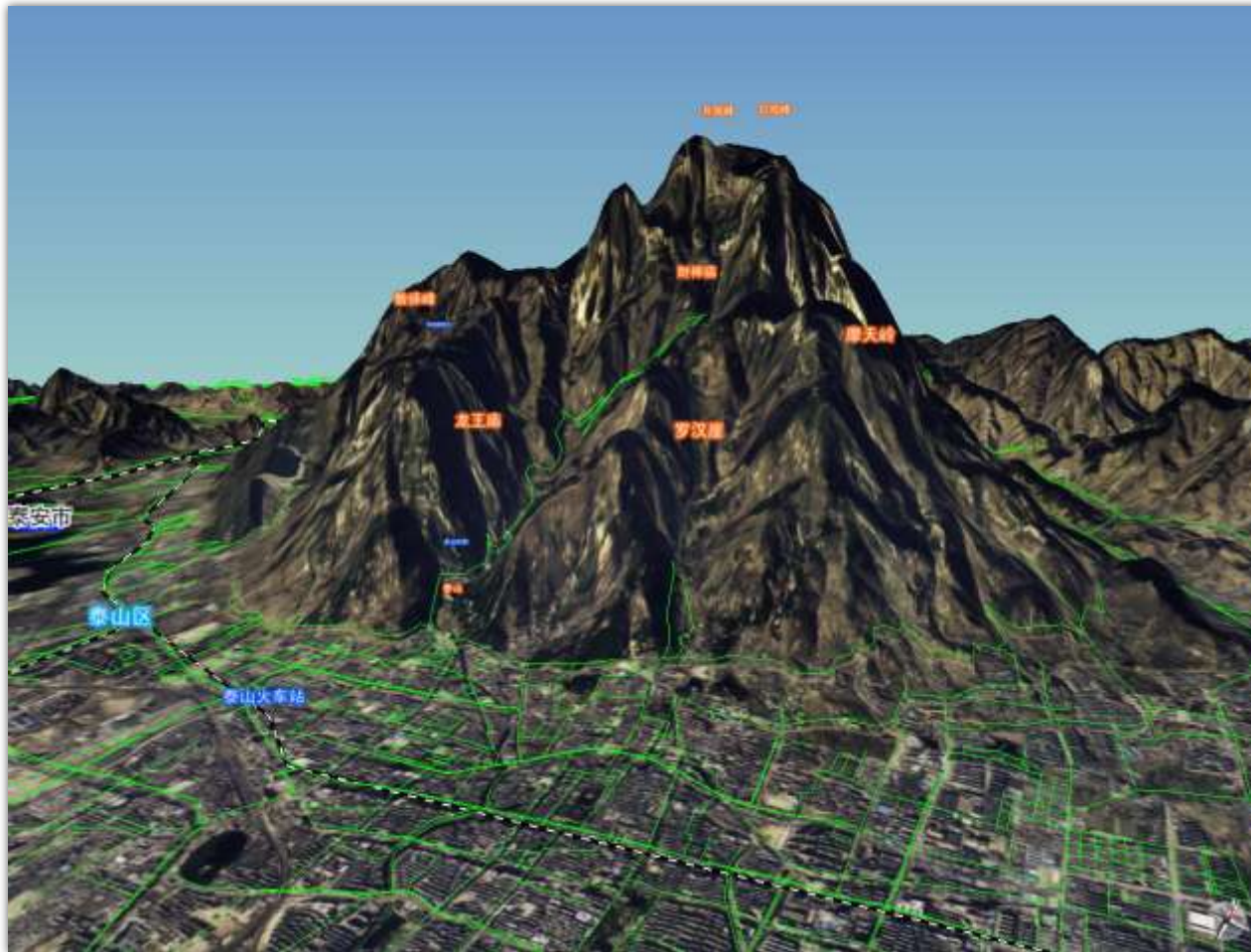
Electric route  
design

# TH-1 Application



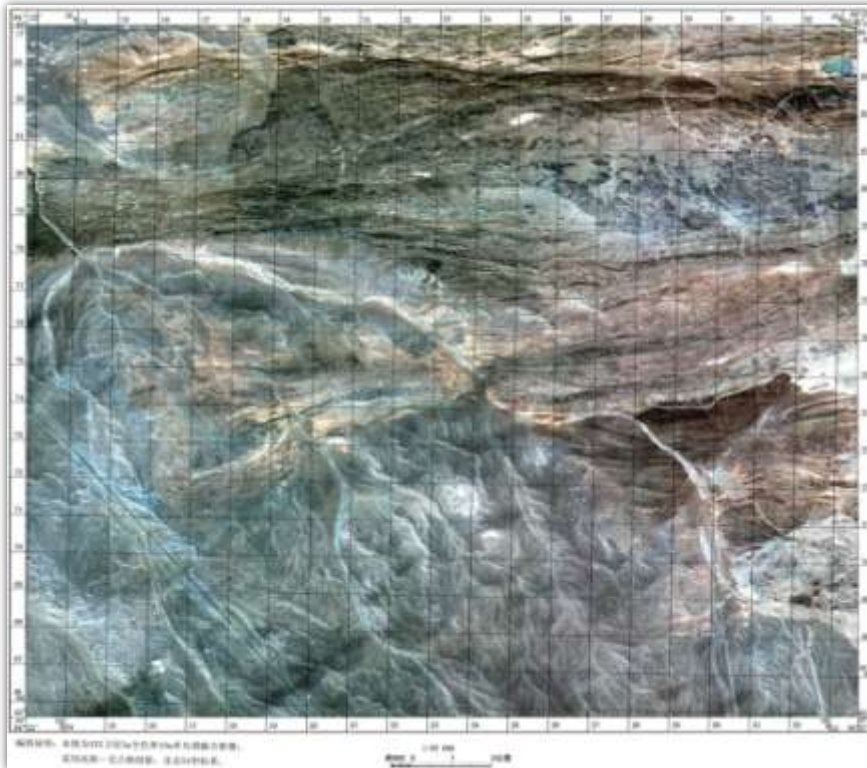
Automatic footprint

# TH-1 Application

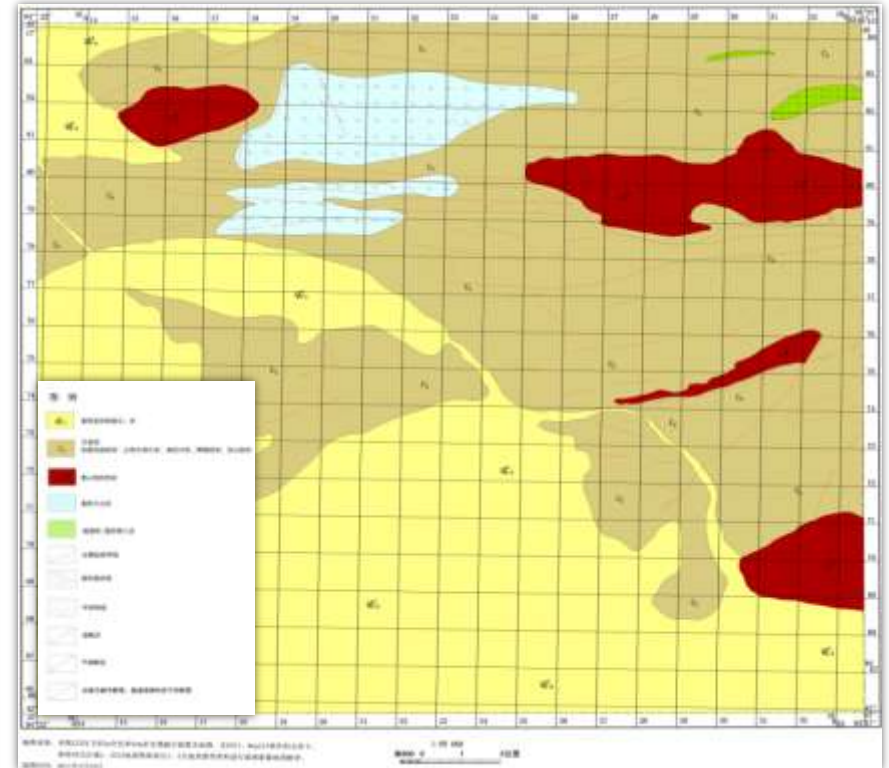


**3D image of tourist spot**

# TH-1 Application



**Image of Xinjiang**



**Geological interpretation**

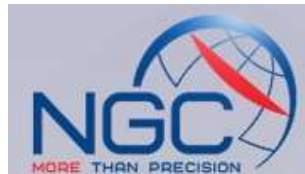


# Development Programming

Other satellites have been in planning to launch which includes Sub-meter, INSAR, gravity, laser altimeter, magnetism, gravity gradient and ocean surveying to meet the multiple data needs.



# TH-1 Global Resellers



# TH-1 Global Resellers



# Introduction of Satellite ZY-3

# ZY-3 Satellite Specifications

Launch Vehicle	CZ-4B carrier rocket
Launch Site	Taiyuan Satellite launching Center
Launch time	9 <sup>th</sup> Jan. 2012
Spacecraft launch mass	2630 kg
Designed Life	5 years
Revisit Time	5days
Orbit Altitude	506 km
ECT	10:30am
Orbit Inclination	97.421°
Orbit Type	Sun synchronous

# ZY-3 Sensor Specifications

<b>GSD (Ground Sample Distance) at nadir</b>	<b>2.1m PAN (Nadir Camera)/ 5.8m MS</b> <b>3.6m PAN(Forward/Backward Camera)</b>
<b>Spectrum range</b>	Blue:450nm-520nm   Green:520nm-590nm Red:630nm-690nm   Infrared:770nm-890nm
<b>Swath Width</b>	Panchromatic:50 km (Nadir camera)
<b>Collection Capacity</b>	<ul style="list-style-type: none"><li>•Panchromatic: Around 1,000,000 km<sup>2</sup> /day</li><li>•Multispectral: Around 1,000,000 km<sup>2</sup> /day</li></ul>

## ZY-3, 2.1m Pansharpened - Luoyang, Henan China



## ZY-3, 2.1m Pansharpened - Munich Airport, Germany





## ZY-3, 5.8m MS - Khartoum Sudan



# Introduction of Satellite GF-1

# GF-1 Profile

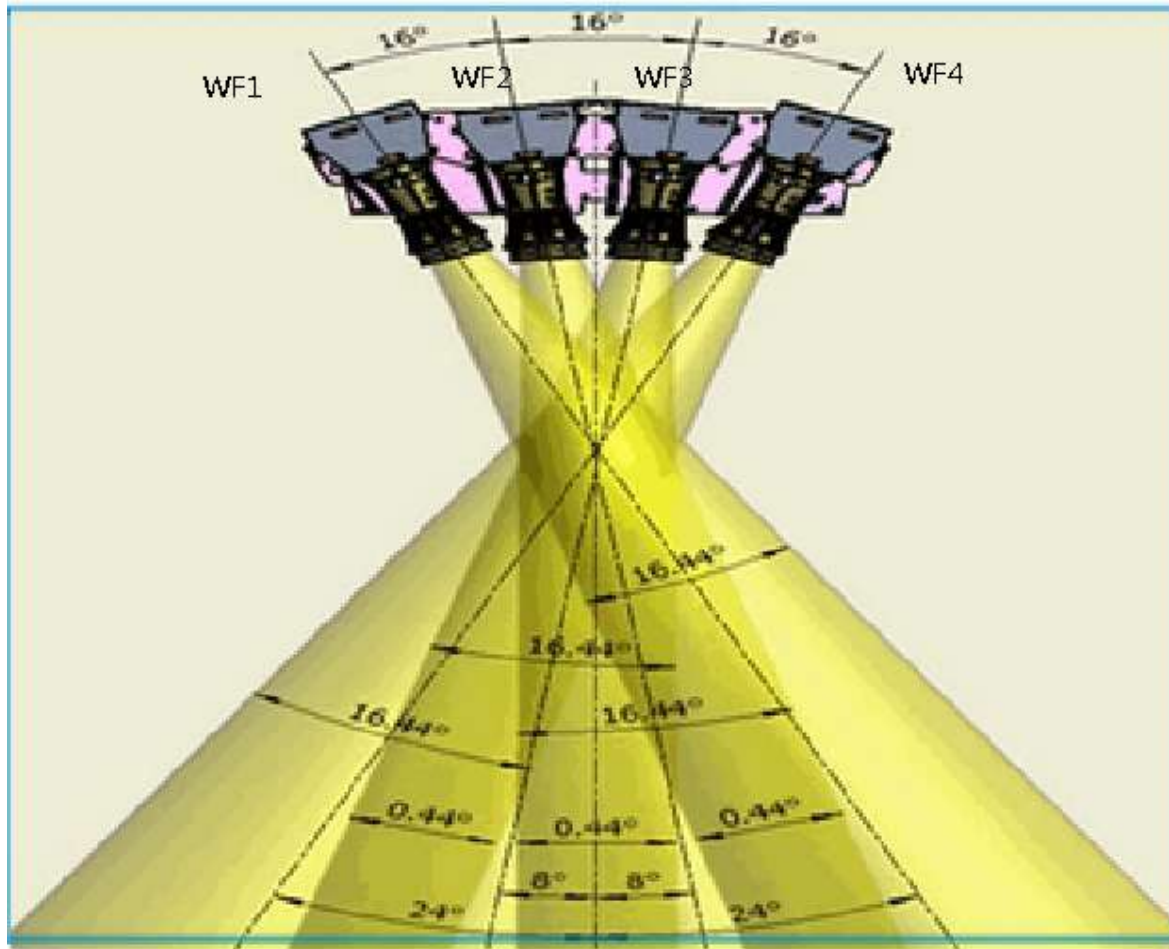


- GF-1 launched 26<sup>th</sup> April 2013
  - 5-8 years design life
  - 2m Panchromatic, 8m Multispectral
  - 16m Wide Swath Multispectral, 800km swath (4 cameras)
- 
- **Main Users in China:**  
**Ministry of Land and Resources**  
**Ministry of Agriculture, China**  
**Meteorological Administration**  
**Ministry of Environmental Protection**

# GF-1 Payload Specifications

Payload	Band no.	Spectral range (μm)	Swath width (km)	Side-looking ability	Repetition cycle (days)	Spatial resolution(m)	Global-mode Coverage Ability
Panchromatic Camera	-	0.45~0.89	68 (2 cameras)	±25°	3~5	2	41 Days
Multi-spectral Camera	B01	0.45~0.52	68 (2 cameras)	±25°	3~5	8	41 Days
	B02	0.52~0.59					
	B03	0.63~0.69					
	B04	0.77~0.89					
Wide Swath Multi-spectral Camera	B01	0.45~0.52	800 (4 cameras)	±25°	2	16	4 Days
	B02	0.52~0.59					
	B03	0.63~0.69					
	B04	0.77~0.89					

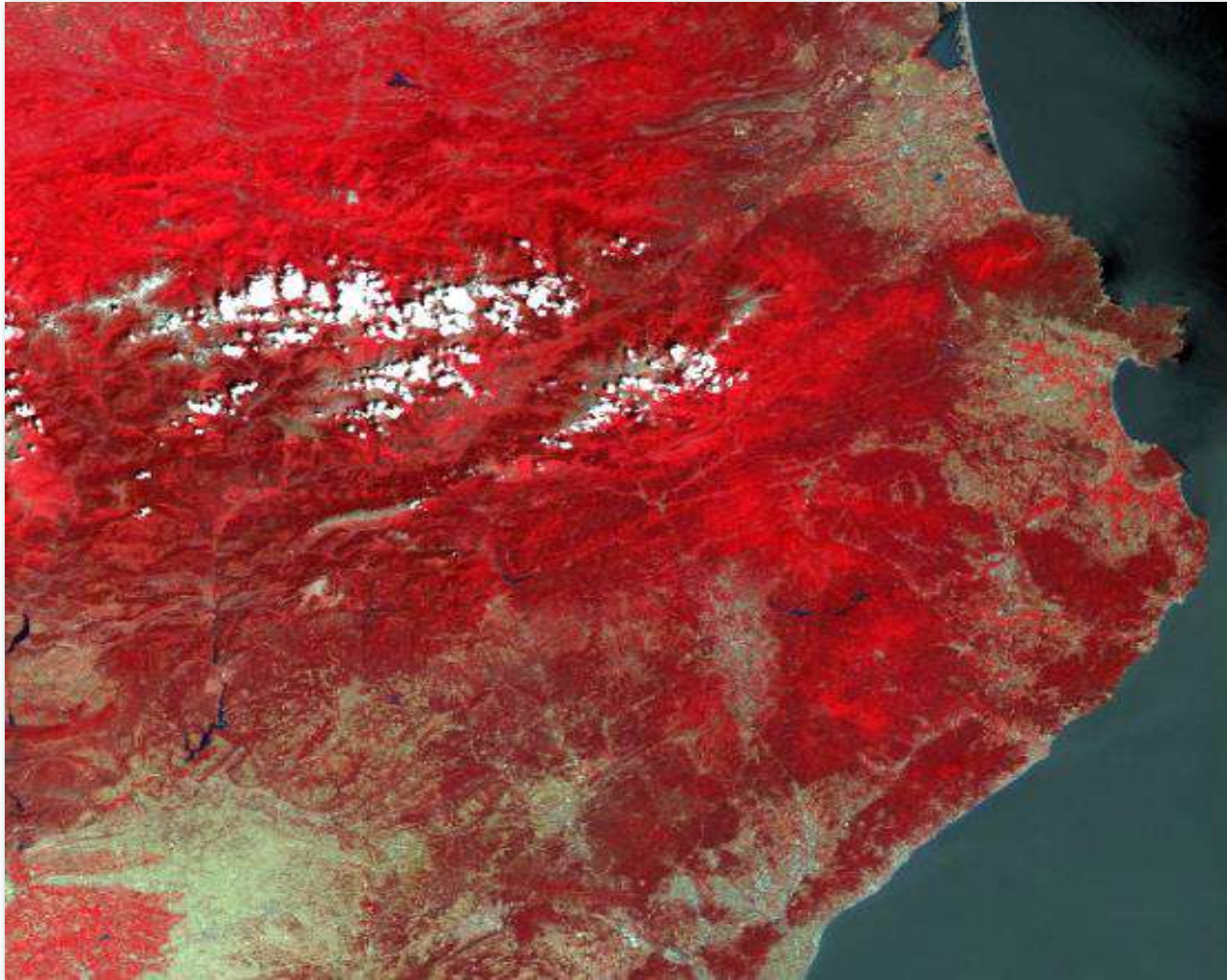
# Layout of GF-1 Four Wide Swath MS Cameras



# GF-1, 2m Pansharpened example – Kunming City



# GF-1, 16m Multispectral Image – SW France



## Chinese High Resolution Satellite GF-1 and ZY-3 Global Coverage

*Mar. 25th, 2015*





# Introduction of Very High Resolution Satellite GF-2

# GF-2 Profile

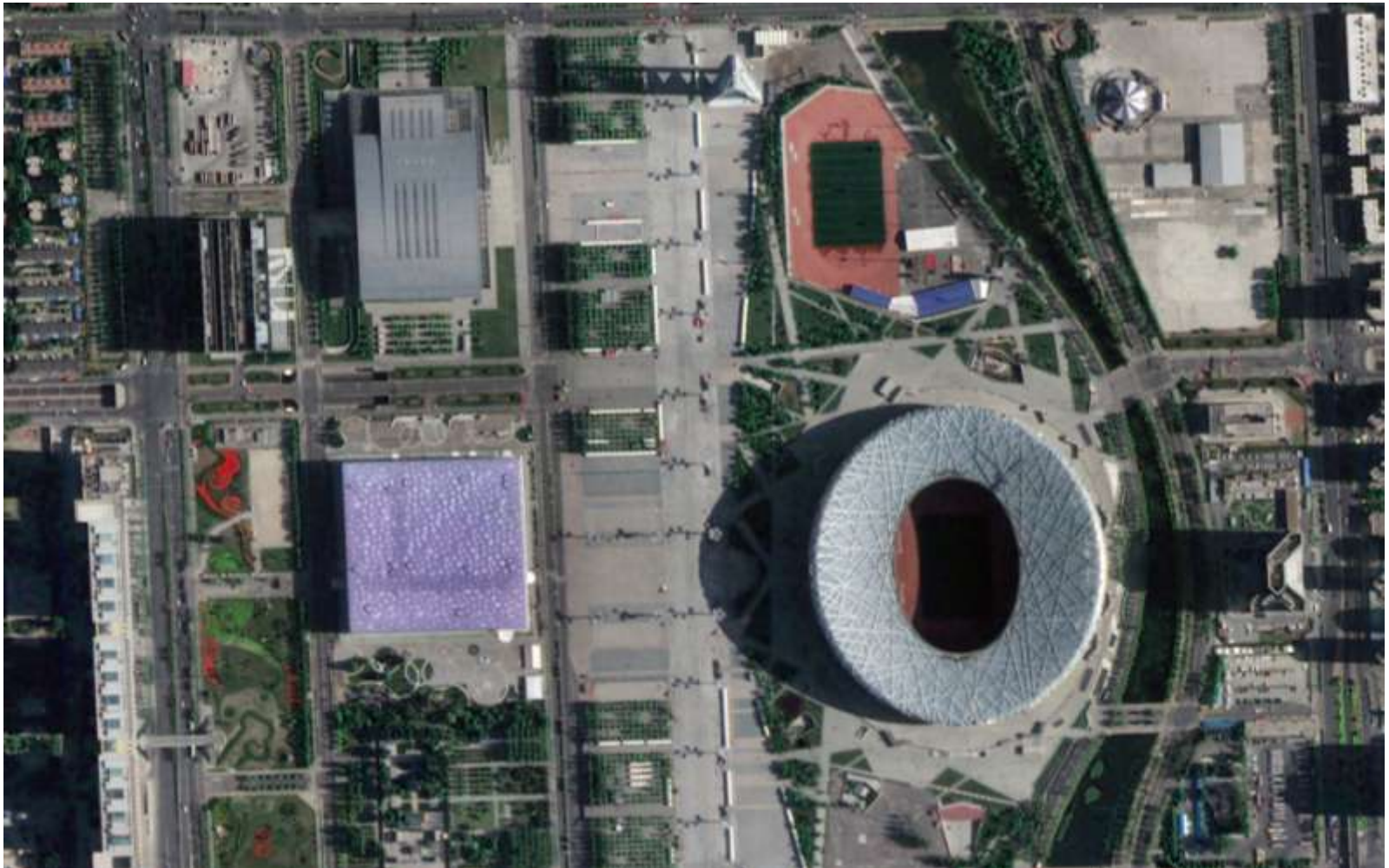


- GF-2 launched 19<sup>th</sup> August 2014
- 5-3 years design life
- Sub-meter resolution
- Higher Radiometric precision, Higher Positional accuracy
- **Main Users in China:**
  - Ministry of Land and Resources**
  - Ministry of Housing and Urban Development**
  - Ministry of Environmental Protection**
  - State Forestry Administration.**

# GF-2 Payload Specifications

<b>Payload</b>	<b>Band no.</b>	<b>Spectral range (μm)</b>	<b>Swath width (2 cameras)</b>	<b>Viewing Angle</b>	<b>Repetition cycle (days)</b>	<b>Spatial resolution (m)</b>	<b>Global-mode Coverage Ability</b>
<b>Pan-chromatic Camera</b>	-	<b>0.45~0.89</b>	<b>45 km</b>	<b>±25°</b>	<b>5</b>	<b>0.8</b>	<b>~60 Days</b>
<b>Multi-spectral Camera</b>	<b>B01</b>	<b>0.45~0.52</b>	<b>45 km</b>	<b>±25°</b>	<b>5</b>	<b>3.2</b>	<b>~60 Days</b>
	<b>B02</b>	<b>0.52~0.59</b>					
	<b>B03</b>	<b>0.63~0.69</b>					
	<b>B04</b>	<b>0.77~0.89</b>					

## GF-2 Image – Bird Nest Beijing



# GF-2 Image – Railway Station Beijing



# GF-2 Image – North-west Hebei Province



# GF-2 example image – Guiyang China

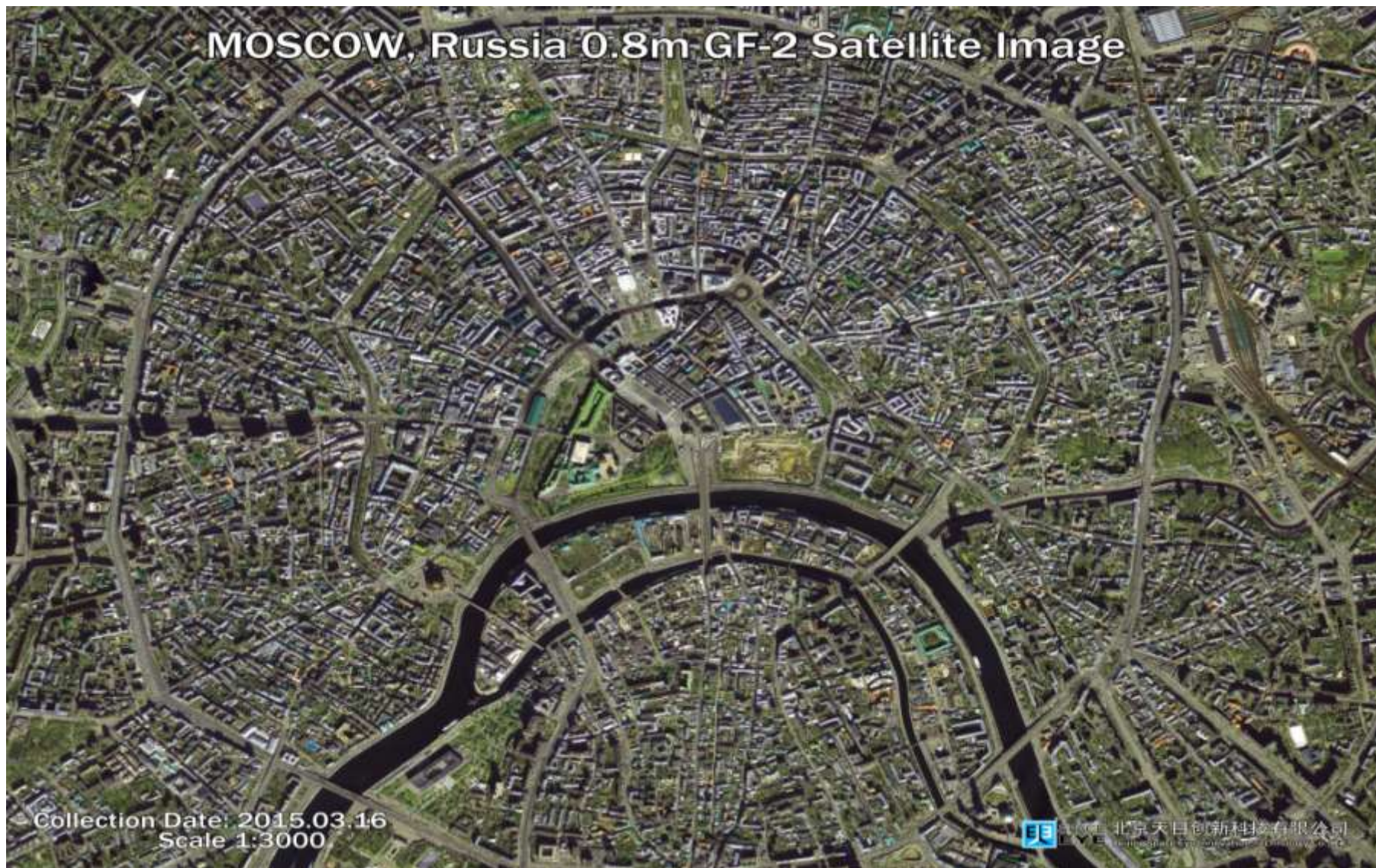


## GF-2 3.2m MS – Rio, Brazil



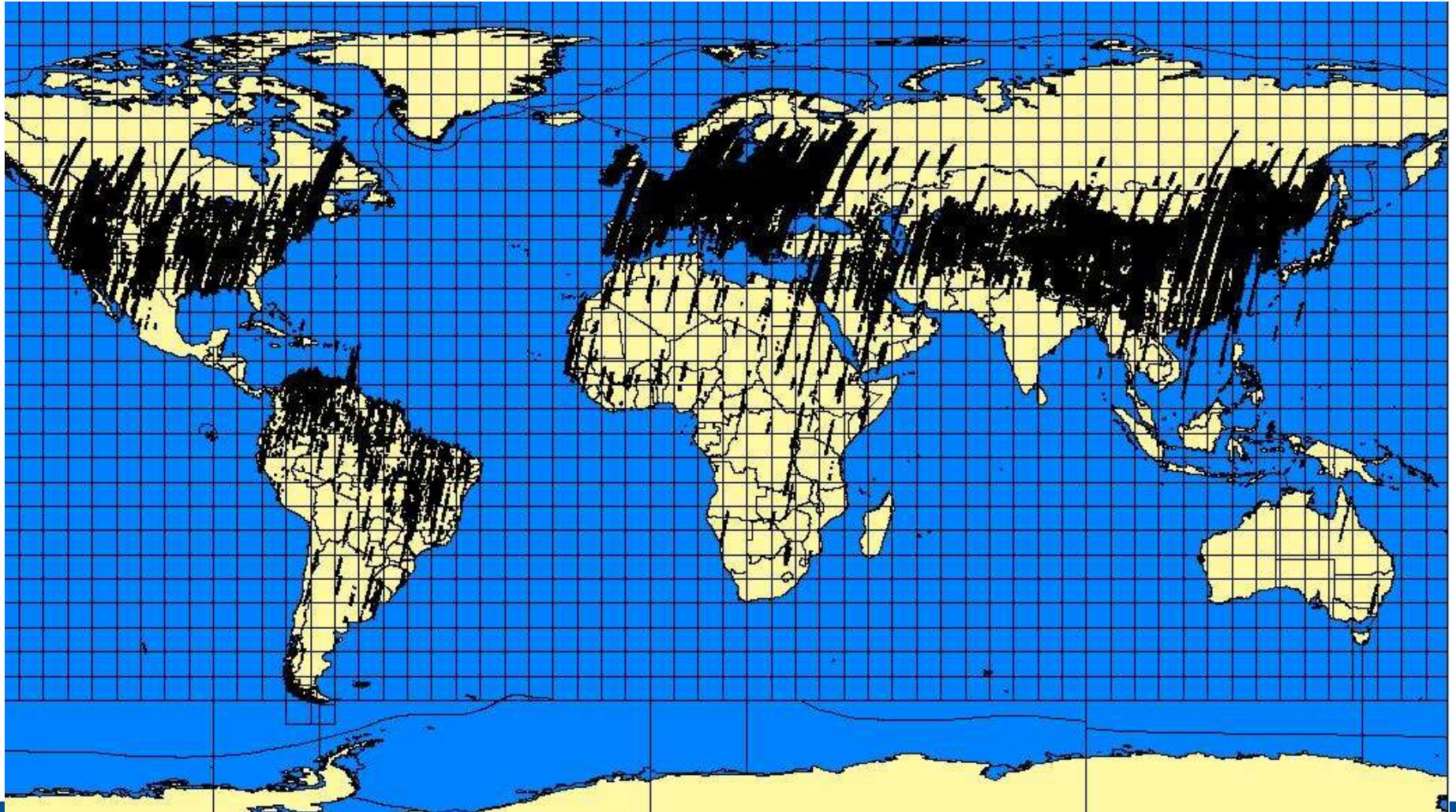


# MOSCOW, Russia 0.8m GF-2 Satellite Image



Collection Date: 2015.03.16  
Scale 1:3000

# GF-2 Global Coverage ( <15% cloud, Jan. 2015)



# GF- Series Satellites Continuity Plan

GF-3: 2015 (plan)  
GF-4: 2015 (plan)  
GF-5: 2015 (plan)

GF-3: 1m Radar satellite  
GF-4: 50m Geo Synchronous Orbit  
Gaze Camera  
GF-5: First Hyperspectral Satellite  
for civil application

GF-6: 2017 (plan)

Continuous of GF-1  
2m Pan, 8m MS, and 16m Wide  
Swath MS

GF-7: 2018 (plan)

Sub-meter Stereo Mapping Satellite



**THANK YOU**