OPEN DATA & OPEN KNOWLEDGE Workshop
Jilin-1 constellation and its contribution to GEO communities

Dr. Zhong Xing
CGSTL
About Jilin-1 Constellation

- Aiming timely, high resolution remote sensing services
- Chinese Largest Commercial Satellite Constellation
- Built, Owned & Operated by CGSTL
Overview of CGSTL

- Founded in 2014
- The leader of Chinese new space companies
- The only All-Industry-Chain Satellite Company in China

Payloads & satellites' manufacturing
Remote sensing images delivery
Value added information services

04/07/2023
Overview of CGSTL

Young Company, with a Long History

CIOMP Developed the very first Chinese Space optical payload, in Chinese Academy of Science.

Started development of payload-centered satellite

2006

2007-2014

Satellite development

2014.12

2015.10

First 4 satellites launched

Founding of CGSTL

NOW

Jilin-1 Constellation Construction
Overview of CGSTL

Young & highly educated team

- Total number of employees: >600
- Masters and PhDs >85%
- Under 30 years old >62%

Total number of employees: >600
Masters and PhDs >85%
Under 30 years old >62%

Number of Employees
Overview of CGSTL

Payload Developing
- Advanced mass production line of aspheric mirrors:
  - Spec: RMS < 6nm, Ra < 2nm
- Grinding, Polishing, Ion Beam Figuring
- Precise Optical Alignment
- Optical Imaging Quality Test
- Pre-launch Calibration

Satellite Production Line
- A mass satellite production line has been initially formed, with an annual capacity of 100 satellites

Satellite AIT
- Table test & Simulated Flight Test
- All Environmental experiments
- Solar panel deployment test
- Inertia characteristic test
- Radio Test
- EMC Test
- Magnetic test
- ......
Satellites R&D Achievements

1st generation:
Payload Centered

2nd generation:
Payload Integrated

3rd generation:
Platform-less

4th generation:
Deep fusion of all components

More compact, More low-cost, More powerful
Satellites R&D Achievements

2015
Optical A
420kg

2019
Jilin-1GF03
<45 kg
10% COST
Satellites R&D Achievements

Image of CGSTL’s 45kg satellite

JL1GF03D02 image  Kalama Mine, July 3, 2021
GF04A

April 30th, Namibia
(Imaging at 7 hours after launch)

World's lightest Operational VHR satellite
With only 92kg
Satellites R&D Achievements

Typical submeter satellites’ swath 20km

Swath of KF01 150km

World’s largest Swath submeters satellite
Data Products

Standard Push-broom Data Product

- VHR, <0.5m
- 0.5m
- 0.75m
- 1m
- 5m Multispectral (20 channel)

Characteristic Data Product

- Video
- Nighttime
- DSM
In China, CGSTL is the dominated VHR data contributor to GEO disaster activities.
GEO Related Actions

Turkey-Syrian Earthquake 2023
GEO Related Actions

Floods Disaster in Africa 2023
Images from 20+satellites, 13 scenes archived, 58 scenes newly acquired
Dataset Development & Sharing

User needs:
- Dataset Resource
- Persistent Quality
- Sharing Service

Current status:

Low resolution
Lacking Bands
Difficult data access
Lack of quantification
Low efficient servicing

Technical considerations:

- Dynamic updating system
- Data sets for quantitative applications
- International comparison and efficient service

Combining higher resolution with more spectral channels

The resolution is inversely proportional to the number of bands

Low

GSD (m)

High
Developed by CGSTL leading team
Developed using data from Jilin-1GP multispectral satellites
The first 5-meter wide-coverage dataset with 20 multispectral bands
Provided to all communities through ChinaGEOSS
Dataset Development & Sharing

Dataset Application

Thematic Map of Forest Tree Species Distribution in Huadian City, Jilin Province

Legend:
- Species
- Natural forest
- Cultivated
- Other areas
- River
- Road
- Village
- Other economic forests

Satellite type: Jilin-02
Shooting time: May 23, 2019
Chang Guang Satellite Technology Co., LTD

Local zoomed-in

KANTHARAROM DISTRICT, SI SA KET PROVINCE

04/07/2023
Dataset Development & Sharing

Introduction page of JLS-5M dataset

Welcome to register to download!

https://www.chinageoss.cn/datasharing/theme/viewThemeById?id=JLS5M
Suggestions

- Official Ranking & Encouragements for Emergency Data Contributors
- Improved Public Calibration Services under GEO Cooperative Framework
- Communication Mechanisms and Channels Between Data Contributors and the End Users
- Supporting Project of Outdated Archived Data Sharing for Research
Thank for your attention
CONTACT DETAILS

EMAIL ADDRESS

ciomper@163.com

PHONE NUMBER

+86 0431 86008558