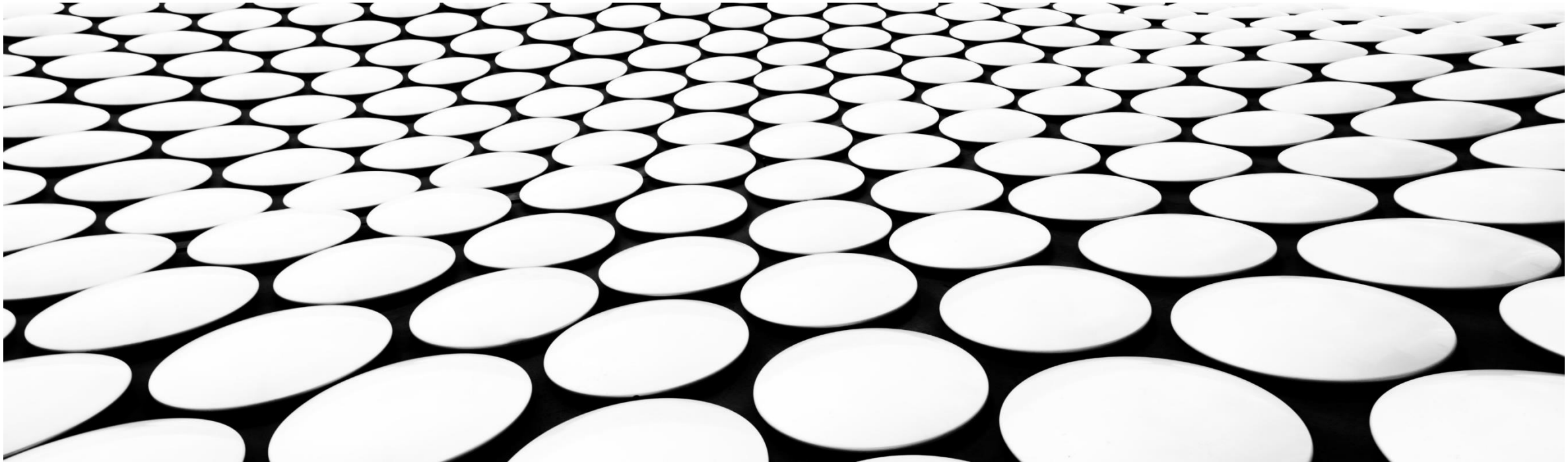
IRDR
Integrated Research on Disaster Risk

CBAS
INTERNATIONAL RESEARCH CENTER OF BIG DATA FOR SUSTAINABLE DEVELOPMENT GOALS
可持续发展大数据国际研究中心

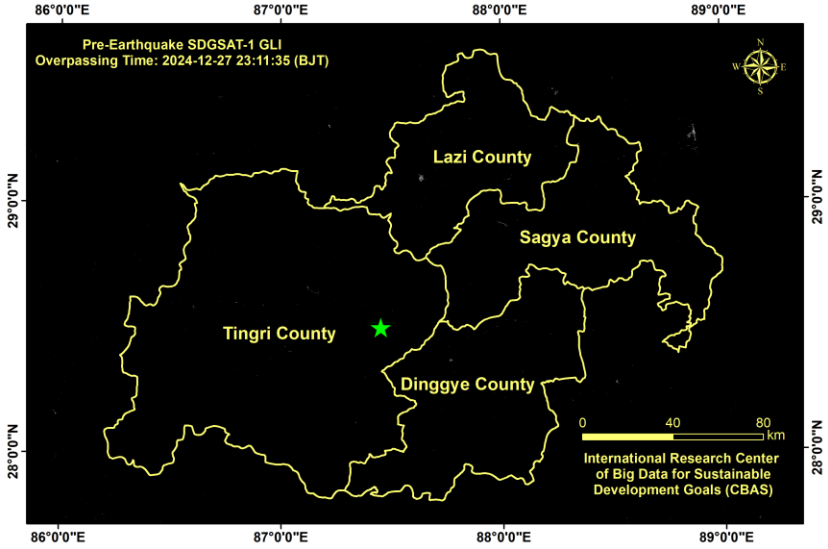
ASSESSMENT OF TIBET EARTHQUAKE BASED ON HIGH SPATIAL REMOTE SENSING DATA



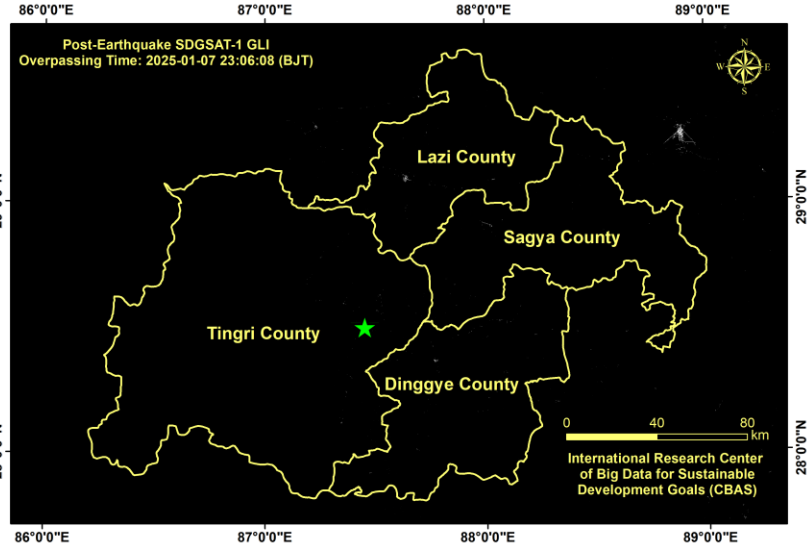
2025-01-14

INTRODUCTION

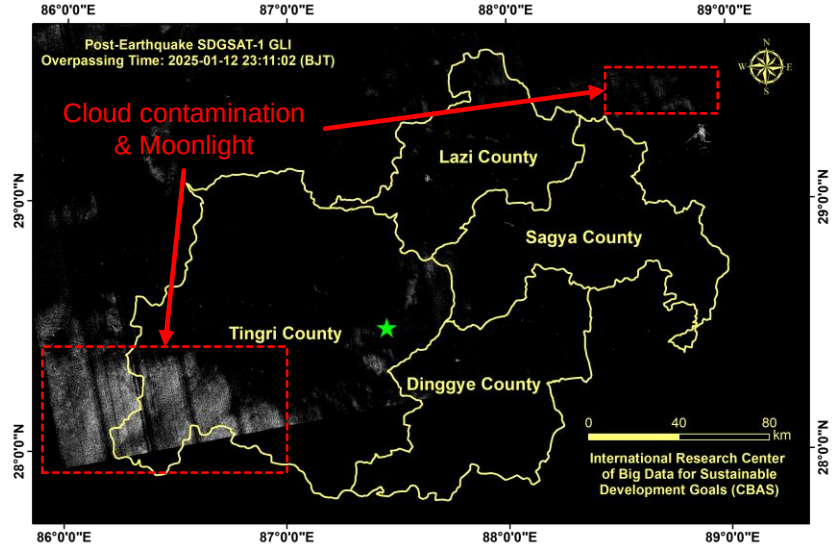
- **At 09:05 (Beijing Time, hereafter, BJT) on 7 January 2025, a 6.8 magnitude earthquake struck Tingri County, Shigatse City, Tibet. As of 19:00 (BJT) on 7 January, 126 people had been killed, 3,609 houses had collapsed, and 188 people had been injured to varying degrees.**
- **The International Research Center of Big Data for Sustainable Development Goals (CBAS) activated its emergency framework to capture the post-disaster GLI images of the affected area (7 January and 12 January 2025). The comparisons between the post-disaster images and the pre-disaster archived GLI images (27 December 2024) were made.**



Pre-Earthquake
2024-12-27 23:11:35 (BJT)

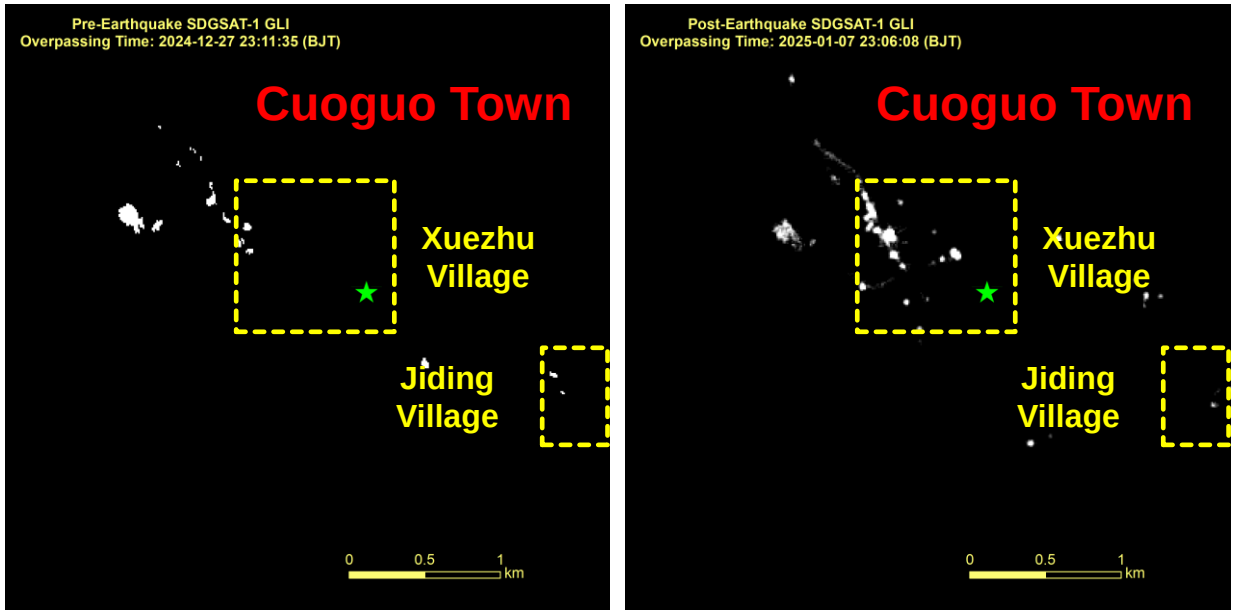


Post-Earthquake
2025-01-07 23:06:08 (BJT)



Post-Earthquake
2025-01-12 23:11:02 (BJT)

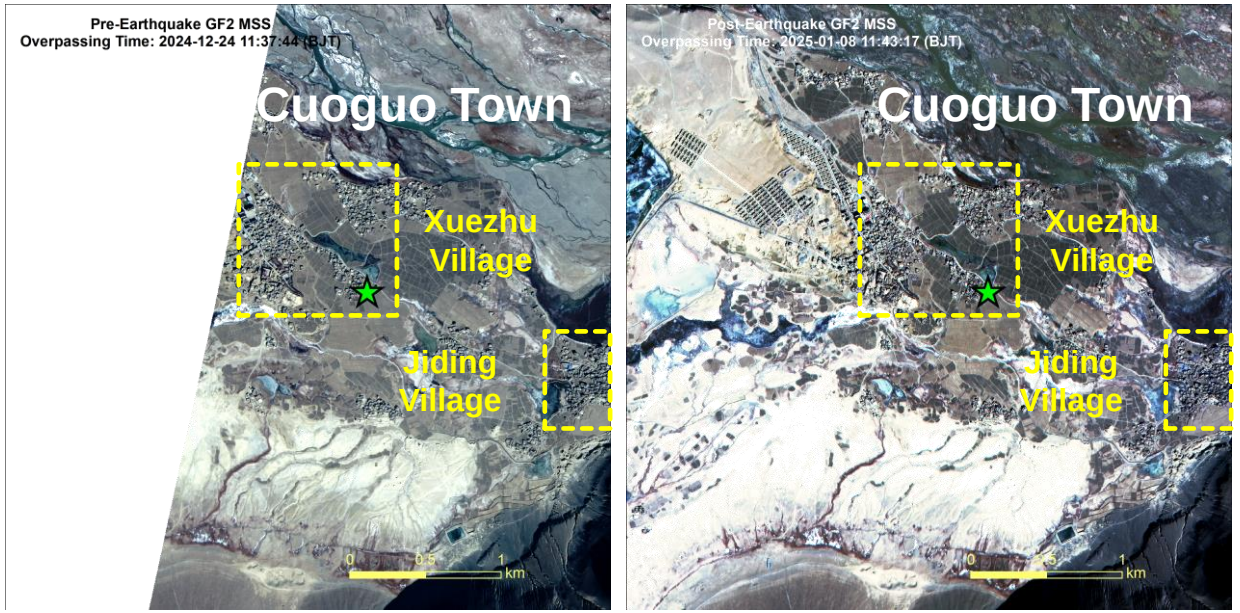
ANALYSIS-CUOGUO TOWN



Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m



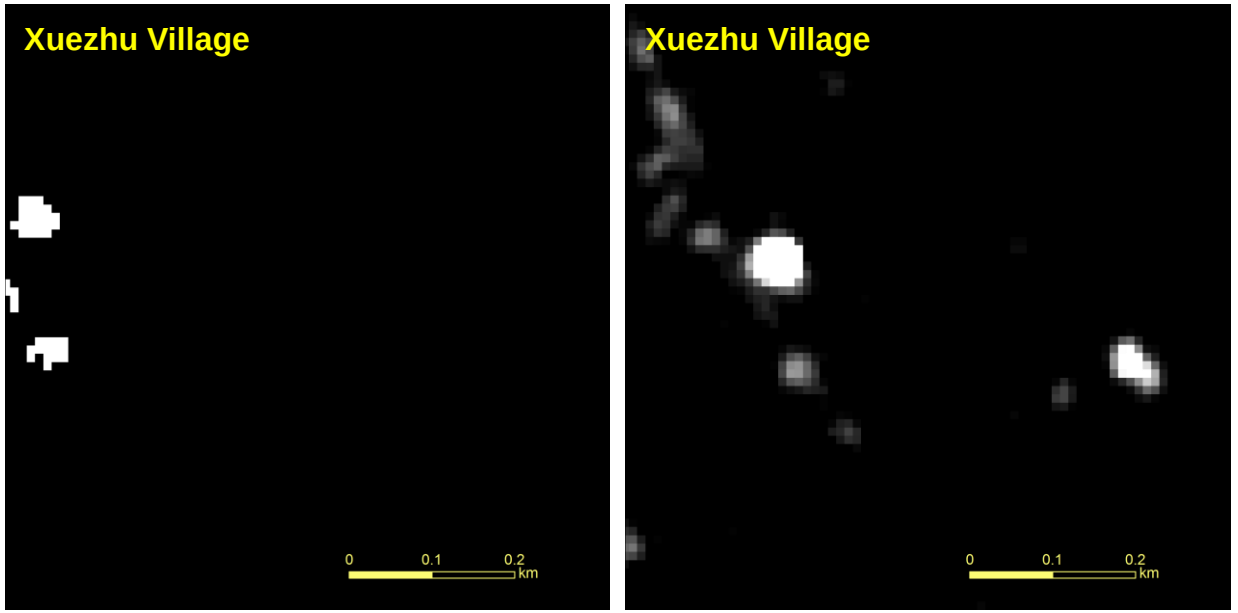
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, there was an overall increase in nighttime lights in Cuoguo Town, with lights in Xuezhu Village and Jiding Village rising significantly

ANALYSIS



Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m

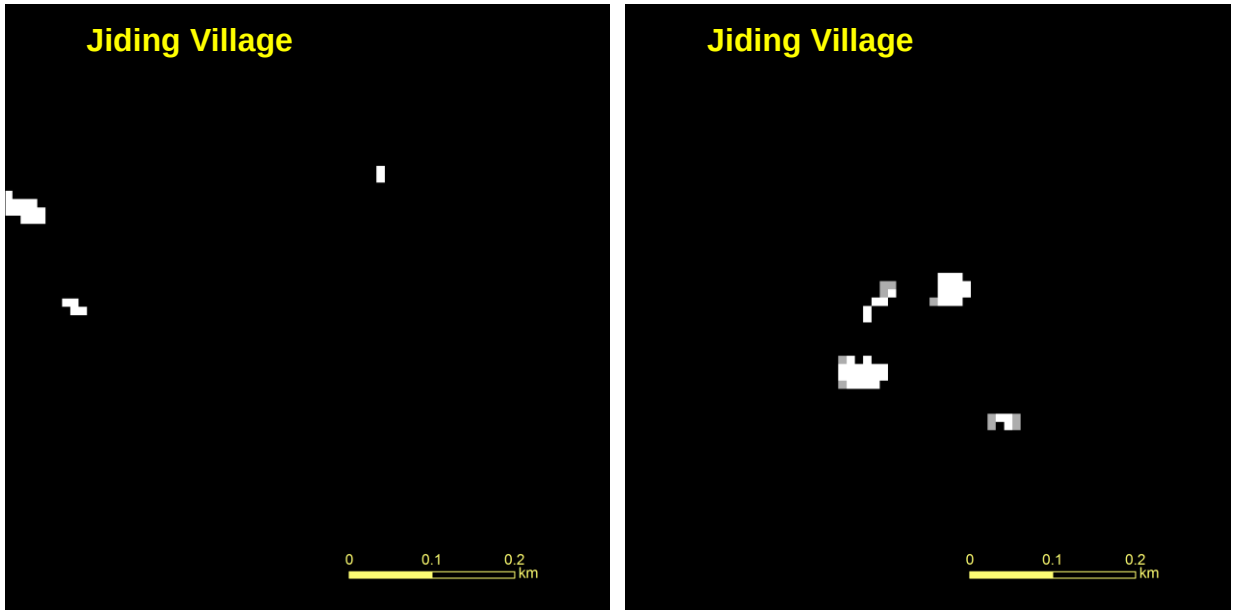
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Xuezhu Village rising significantly

ANALYSIS



Pre-Earthquake
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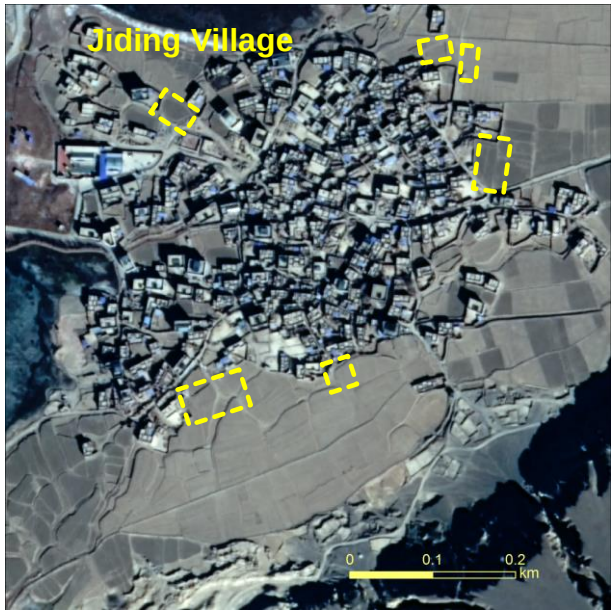
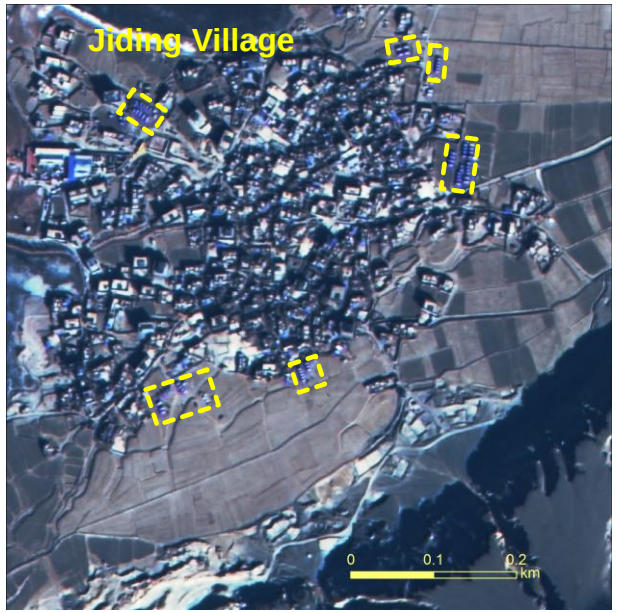
Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m





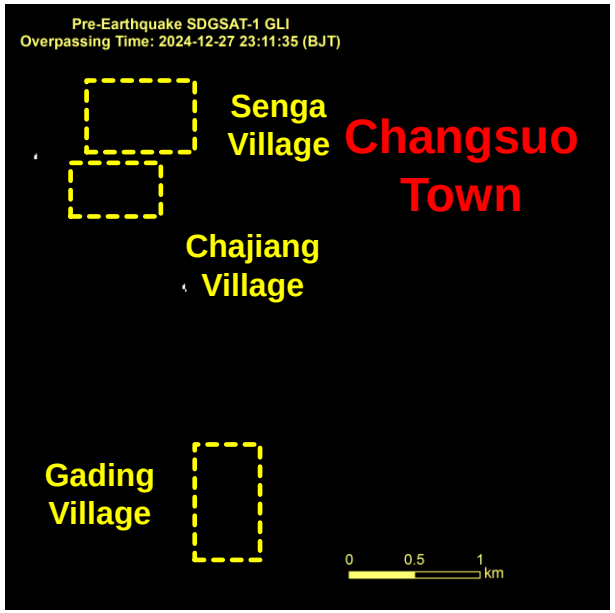
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

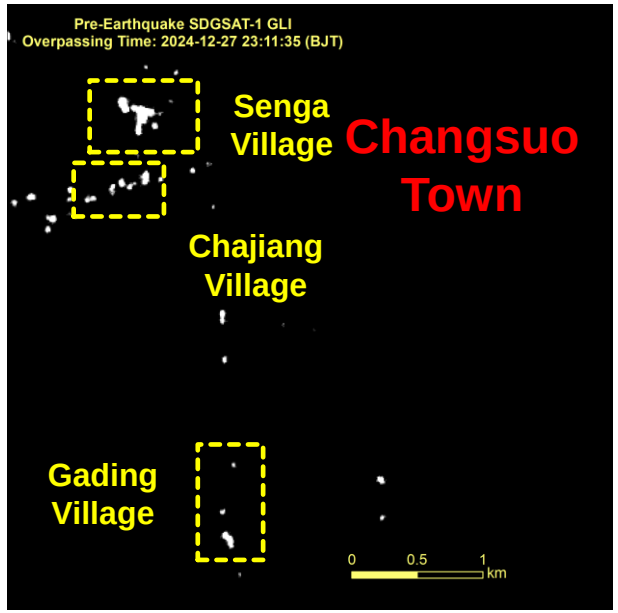
Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Jiding Village rising significantly

ANALYSIS-CHANGSUO TOWN

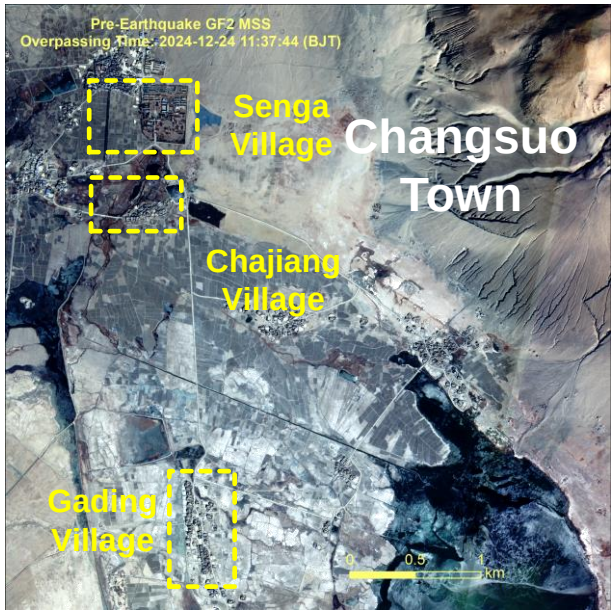


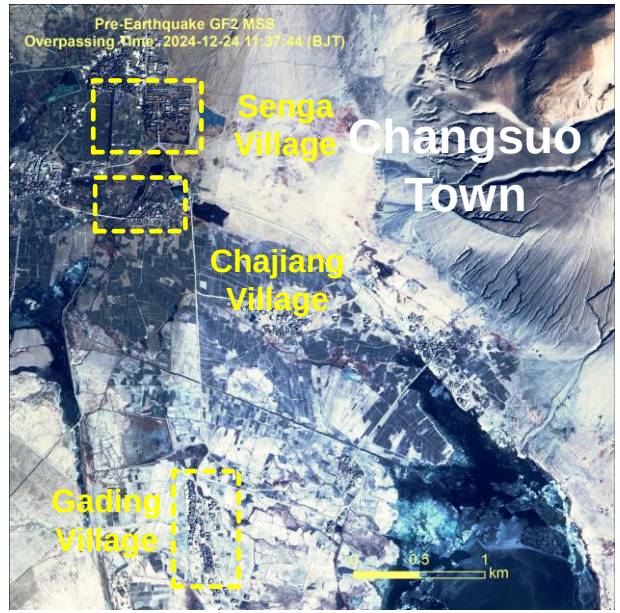


Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m





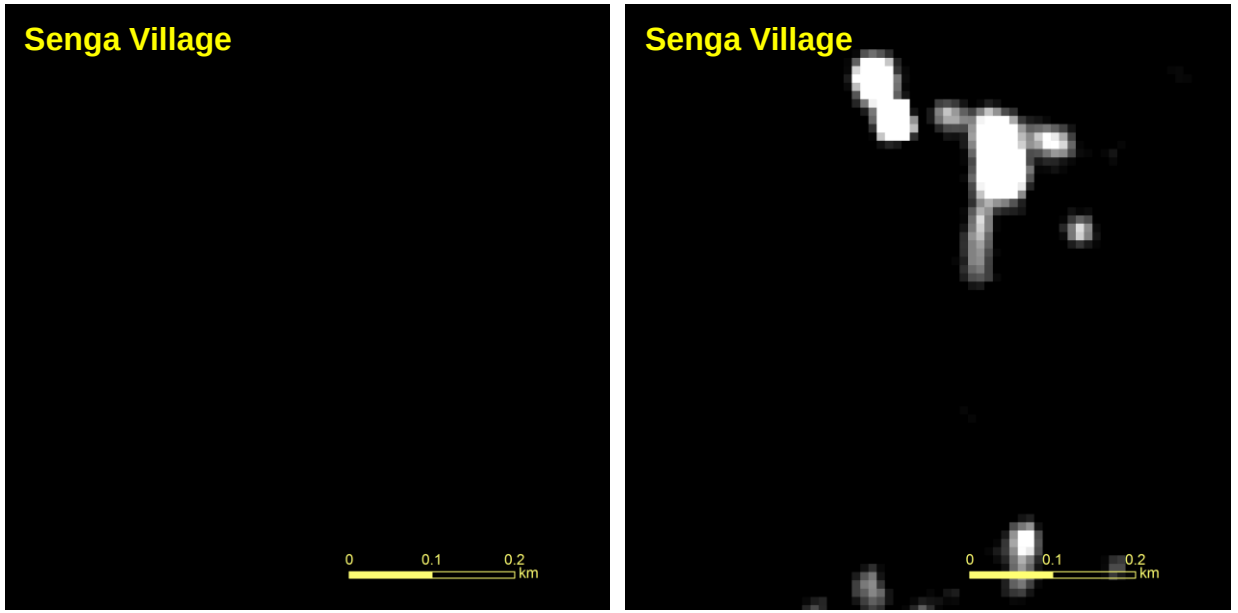
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, there was an overall increase in nighttime lights in Changsuo Town, with lights in Senga Village, Chajiang Village, and Gading Village rising significantly

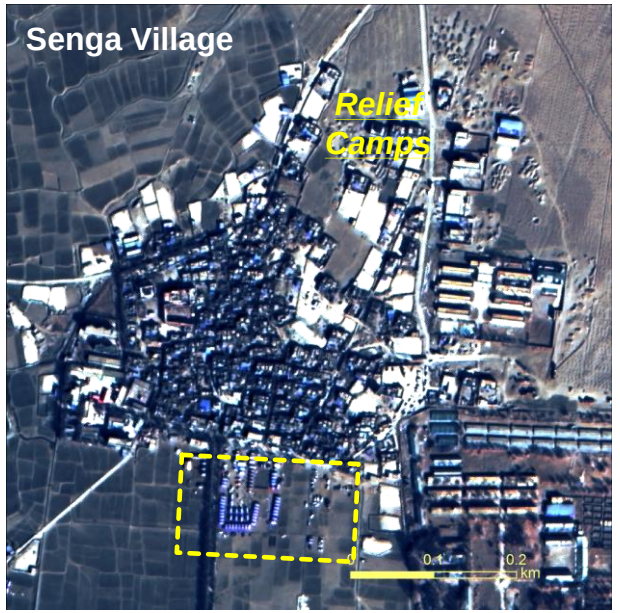
ANALYSIS



Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m



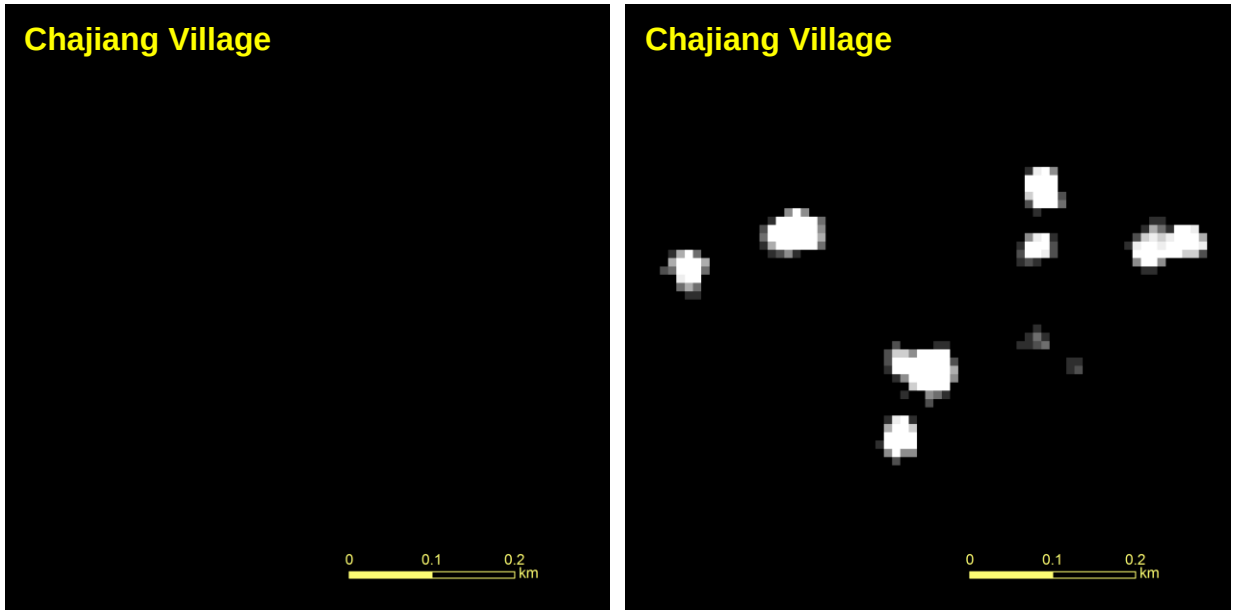
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Senga Village rising significantly

ANALYSIS



Pre-Earthquake
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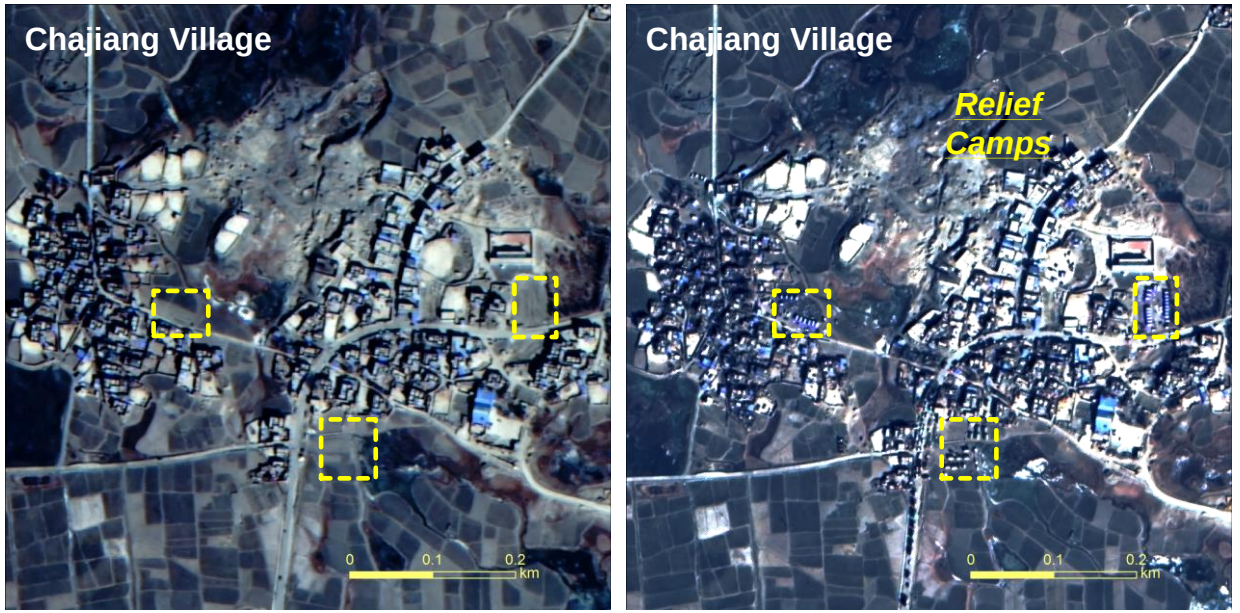
Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m



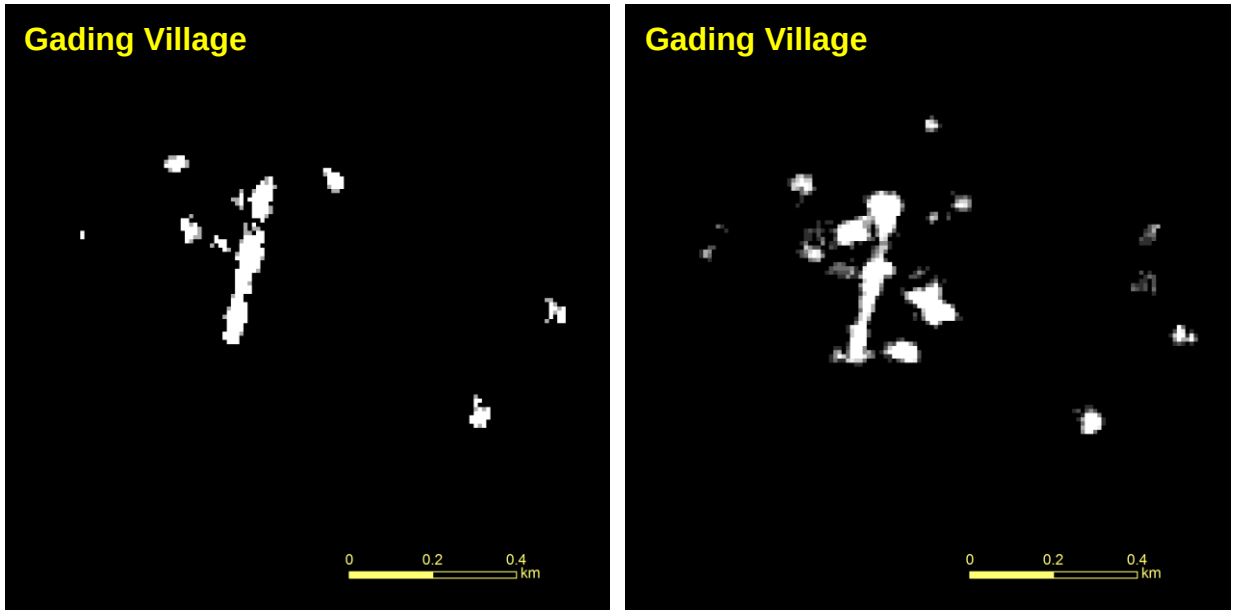
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Chajiang Village rising significantly

ANALYSIS



Pre-Earthquake
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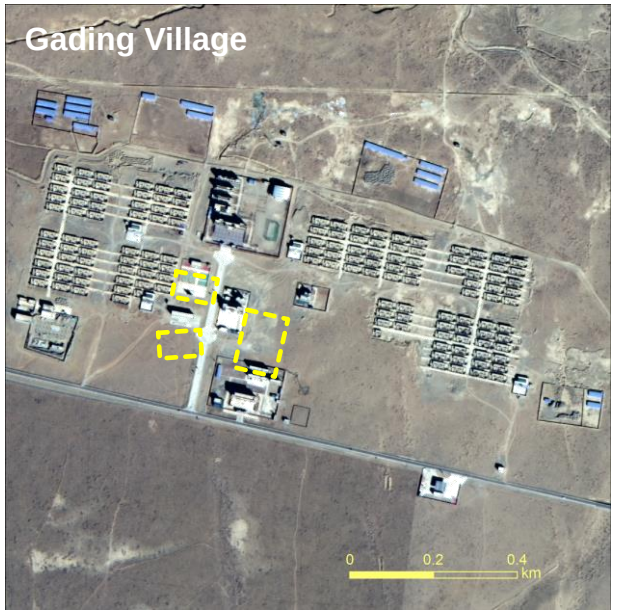
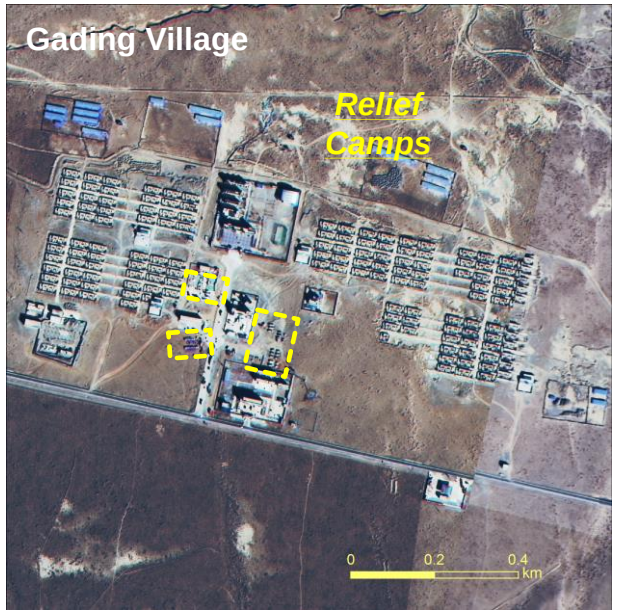
Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m





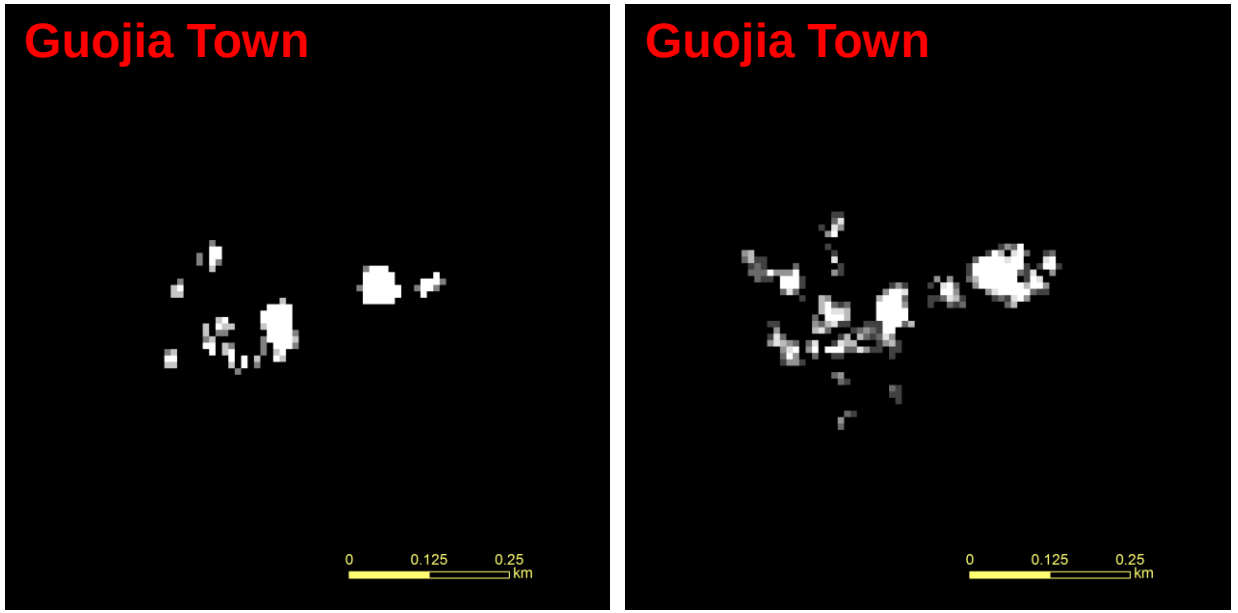
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Gading Village shows a small increase

ANALYSIS-GUOJIA TOWN



Pre-Earthquake
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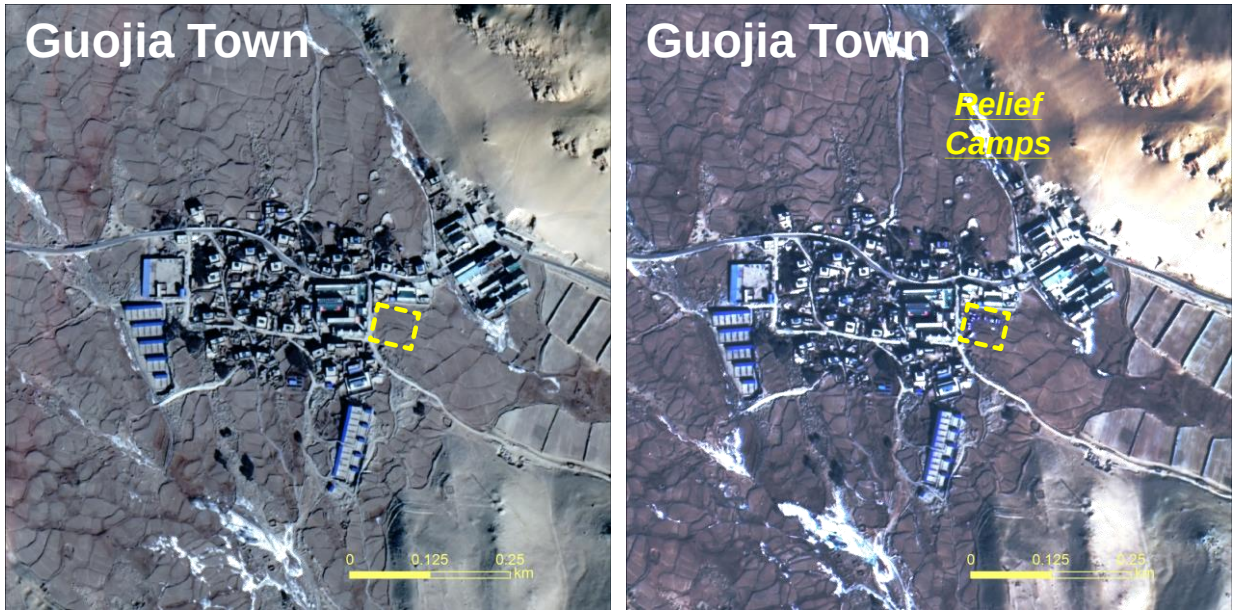
Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m



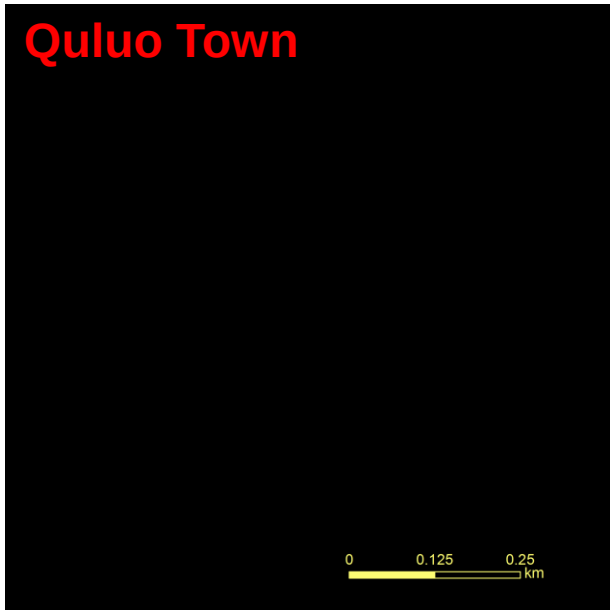
Pre-Earthquake
2024-12-27 23:11:35 (BJT)

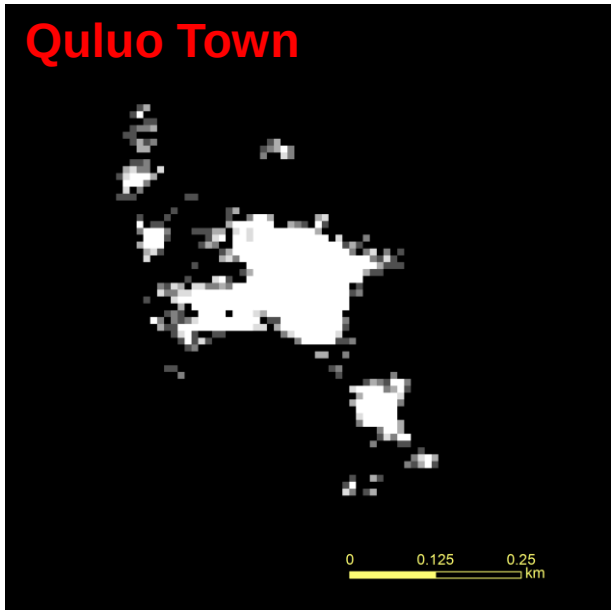
Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Guojia Town shows an increase

ANALYSIS-QULUO TOWN





Pre-Earthquake
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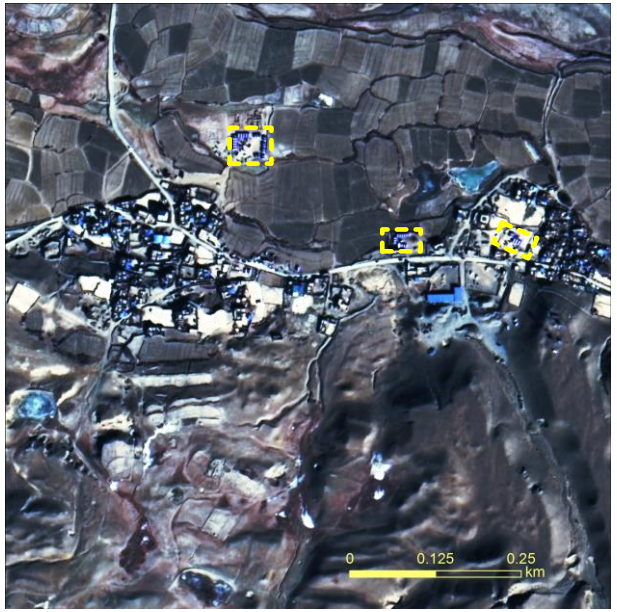
Post-Earthquake
2025-01-07 23:06:08 (BJT)

SDGSAT-1 GLI 10m



Post-Earthquake
2025-01-07 23:06:08 (BJT)

GF2 MSS 0.8m (Pansharpening)

As a result of timely relief, especially for the establishment of relief camps, lights in Quluo Town rising significantly

SUMMARY

- **The establishment of relief camps in response to the earthquake on January 7, 2025 at Tingri County, Shigatse City, Tibet, has introduced more light sources in affected towns, i.e., Cuoguo Town, Changsuo Town, Guojia Town, and Quluo Town**
- **Illumination level in the affected villages, including Xuezhu, Jiding, Senga, Chajiang, and Gading, has significantly raised**
- **The increasing light in the affected Towns and Villages can be attributed to the timely relief**
- **SDGSAT-1/GLI, with 10m high spatial resolution, is of great importance for natural disaster management**
- **Continuous observations have been planned for full assessment of power recovery**

SOURCES

(1) Satellite Images

Satellite Data: SDGSAT-1 GLI
Imagery Date: December 27, 2024, January 7, 2025, and January 12, 2025
Resolution: 10 m
Copyright: International Research Center of Big Data for Sustainable Development Goals (CBAS)
Source: International Research Center of Big Data for Sustainable Development Goals (CBAS)

Satellite Data: GF2 MSS
Imagery Date: December 24, 2024 and January 8, 2025
Resolution: 0.8/3.2 m (0.8m after pansharpening)
Copyright: Earth Observation System and Data Center, China National Space Administration (CNSA)
Source: Earth Observation System and Data Center, China National Space Administration (CNSA)

(2) Analysis & Production

Analysis: International Research Center of Big Data for Sustainable Development Goals (CBAS)
Production: International Research Center of Big Data for Sustainable Development Goals (CBAS) & Integrated Research on Disaster Risk (IRDR)

The author wants to express gratitude to the Earth Observation System and Data Center (EOSDC), CNSA and the usage of China Platform of Earth Observation System for the great help in data collection.

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