Harnessing Digital Technology to Empower SDGs Implementation

Huadong Guo

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CBAS Scientific Capacity for SDGs

SDG Implementation through Open Science

Infrastructure
- SDG Big Data Platform

Data & Products
- Data Products
- SDGSAT-1

Knowledge
- Scientific Reports

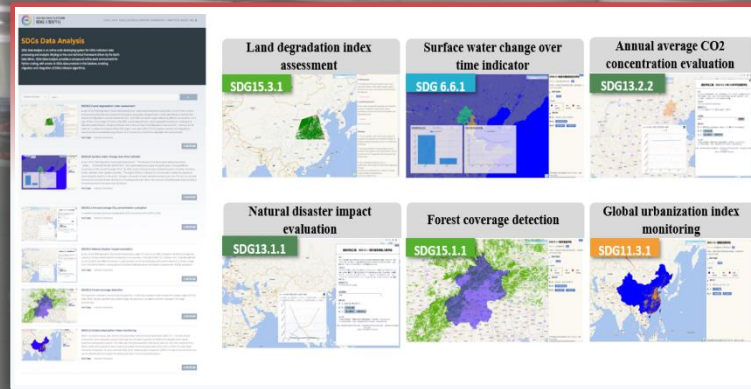## Partnership
- Engagement with UN
- Key Platforms

SDG 2 — Zero Hunger · SDG 6 — Clean Water and Sanitation · SDG 11 — Sustainable Cities and Communities · SDG 13 — Climate Action · SDG 14 — Life below Water · SDG 15 — Life on Land

SDG data cloud storage and computing

Tailored Tools to Produce Specific SDG Datasets

Online Assessment Tools for SDG Indicators

Service Request Distribution (from 136 countries)

Domestic User Distribution

1000 Virtual Machines
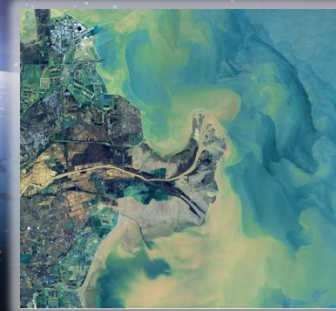
1000 TFLOPS

50 Petabytes

1200+ Gbps

Data & Products | SDGSAT-1 Scientific Satellite

Launched on 5 Nov 2021, depicting anthropic interaction with Earth's environment.

➢ **300km wide swatch**, ensuring global data retrieval

➢ Glimmer：**10m/40m** panchromatic & RGB

➢ Thermal：**3 TIS bands**，**0.2K** temp. recognition

➢ Multispectral：**2 deep blue & 1 red edge bands**
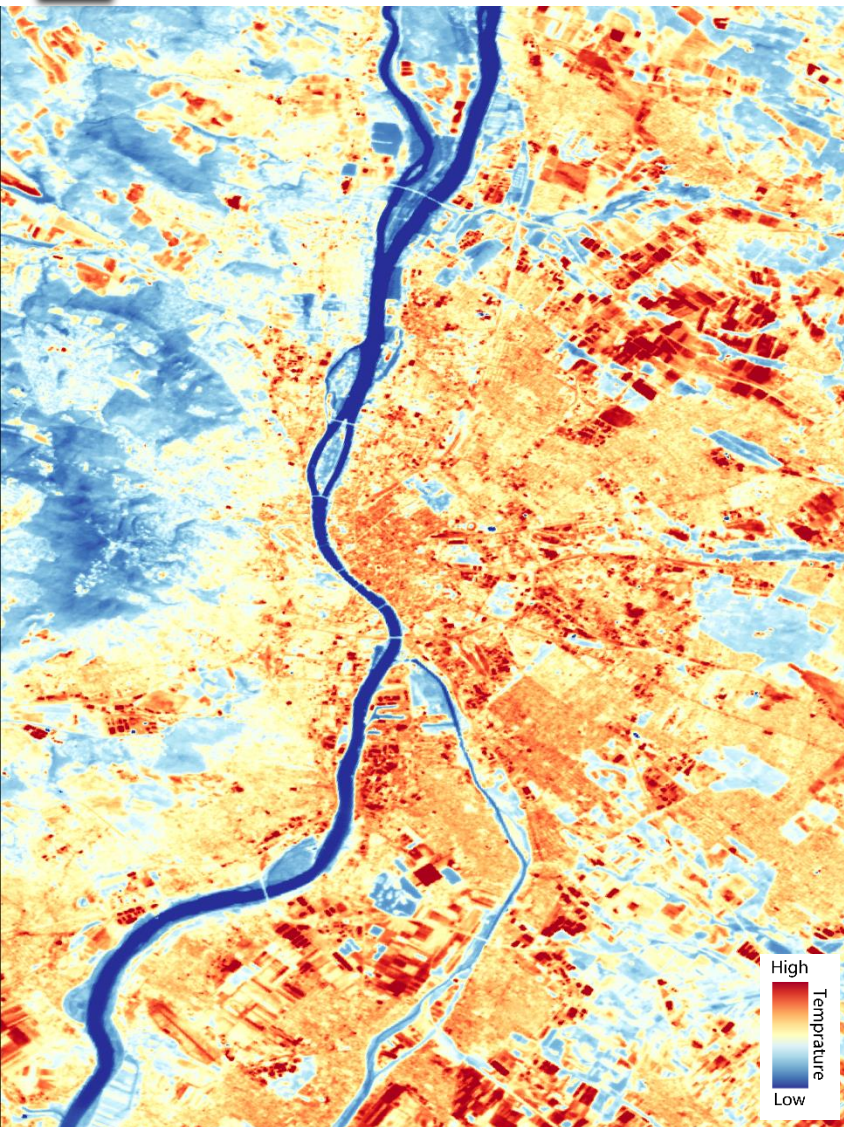
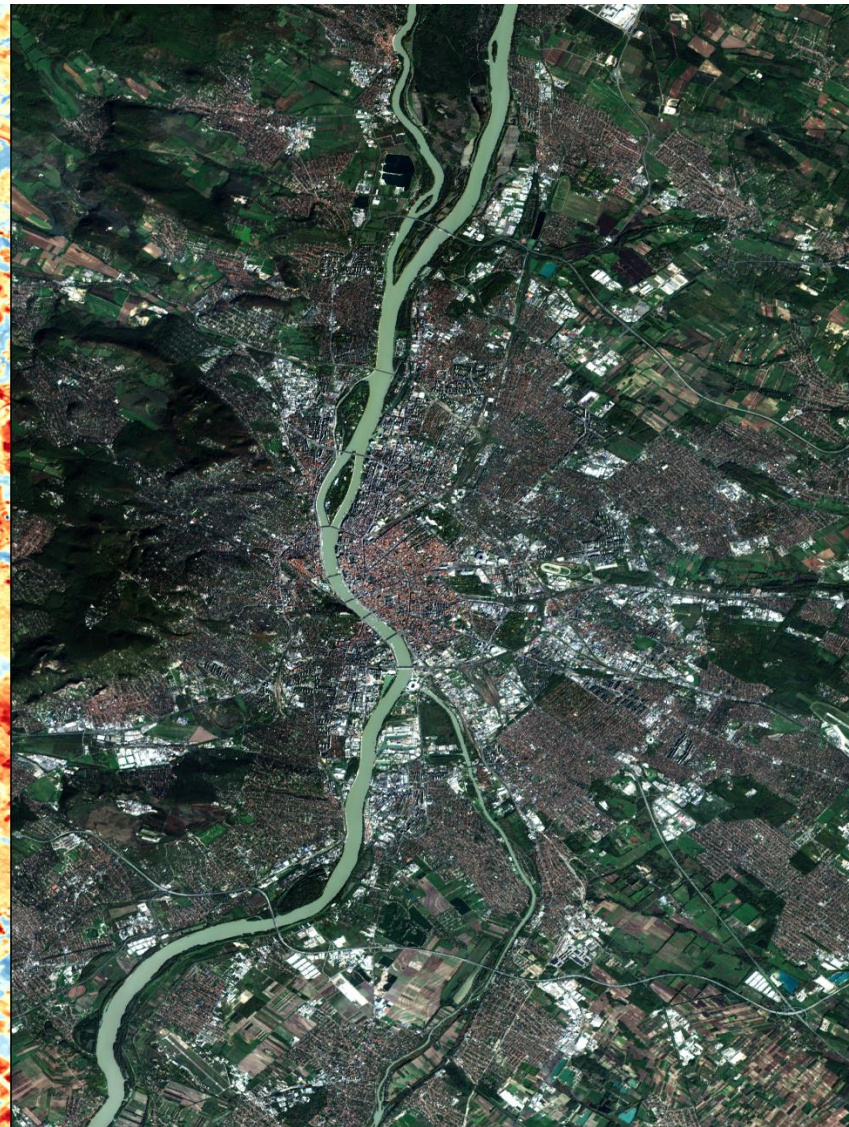**Multispectral**　　**Glimmer**　　**Thermal infrared**

Data available through SDGSAT-1 Open Science Program (www.sdgsat.ac.cn)

SDGSAT-1 Image of Budapest

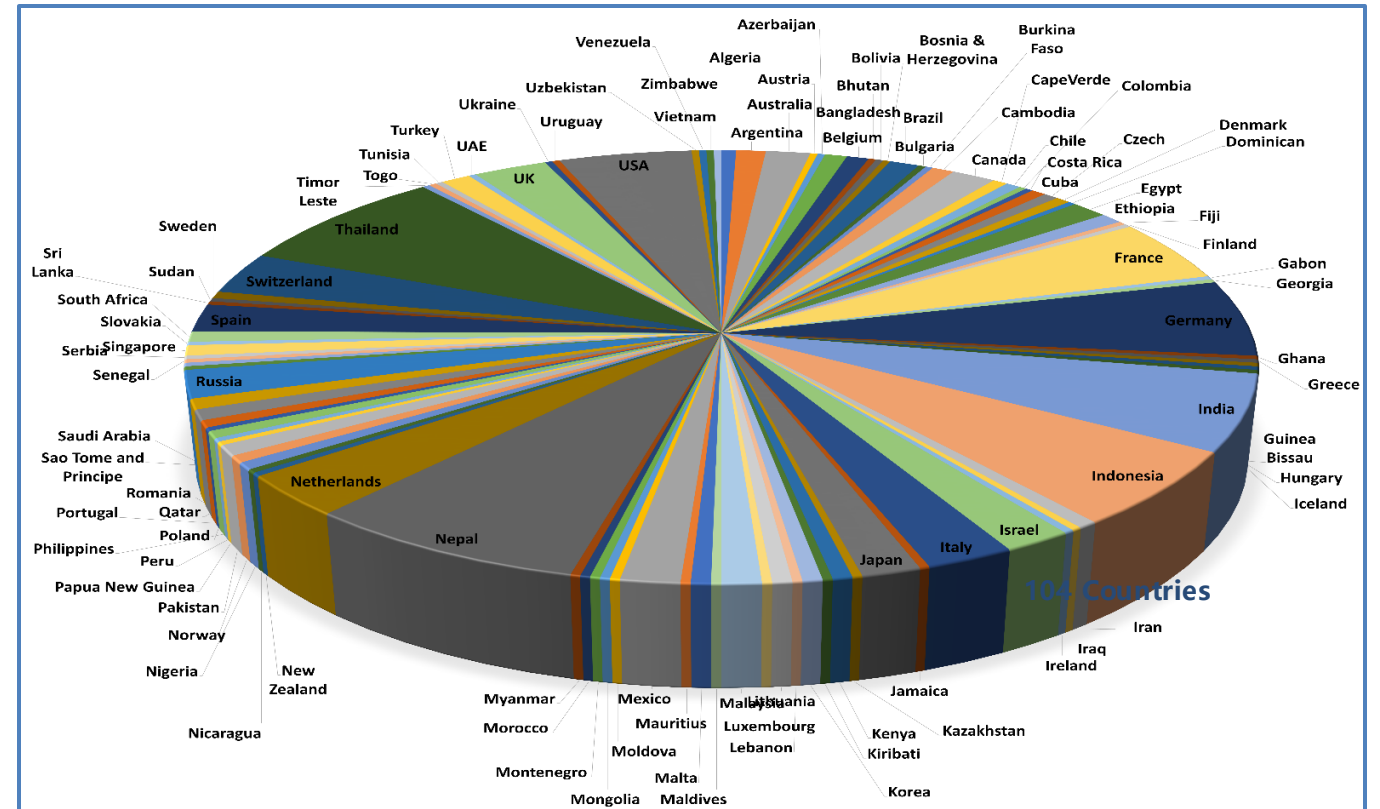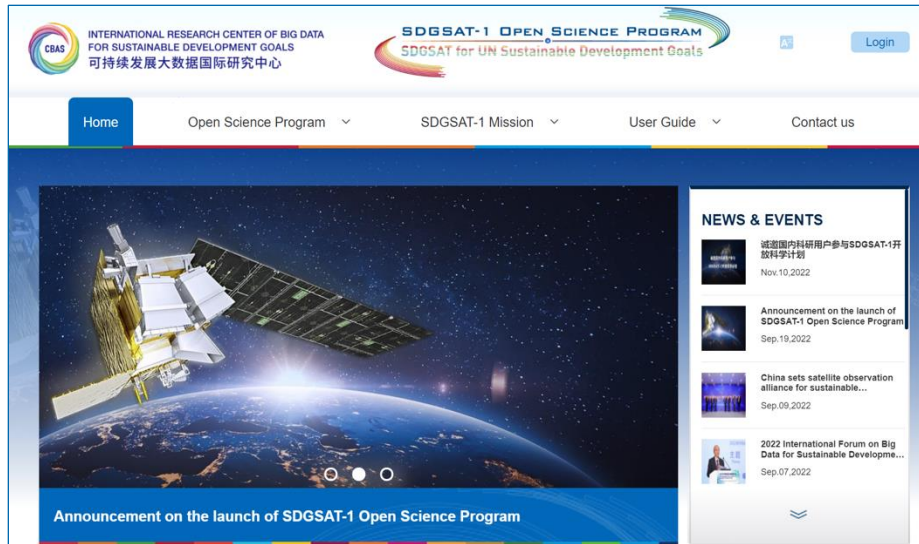Daytime TIR Image of Budapest. (Aug. 29th, 2024)Stretching Band: B2

Multispectral Image of Budapest (Oct. 21st, 2024)Bands: 5(R) 4(G) 3(B)

Glimmer Image of Budapest (Jan. 19th, 2022)Bands: 3(R) 2(G) 1(B)

Data & Products | SDGSAT-1 Open Science Program

More than 380,000 SDGSAT-1 images shared with scientists from 104 countries.

- ◆ SDGSAT-1 Open Science Programme launches in September 2022
- ◆ SDGSAT-1 data globally freely available to users
- ◆ A data sharing MOU signed with UNOSAT

Data & Products | Sharing Sustainable Development Data Products

Presenting 6 Global SDG Data Products to the United Nations

- SDG 2: cropping intensity & cropland； SDG 6 & 14: mangroves；
  SDG 11: impervious-surface； SDG 13： burned areas； SDG 15：
 forest cover
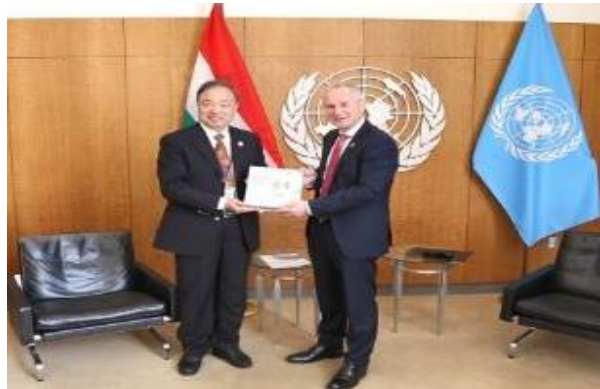
Presenting 7 Global Water Resource Data Products to the 77th UNGA President

- Evapotranspiration
- Cropland water-use efficiency
- Land surface water cover
- Surface water extent dynamics
- Forel-Ule Index of large lakes
- Algal bloom frequency of large lakes
- Groundwater storage change in Africa

Release of the 4 Sustainable Development Data Products for BRICS Countries

- Data Product of SDGSAT-1 Satellite for BRICS countries
- Global 30-m impervious-surface dynamic dataset in 2000-2020
- Spatial distribution of core urban built-up areas in BRICS cities
- Global 30-m spatial distribution of forest cover in 2020

Brazil

Mumbai

Moscow

Johannesburg
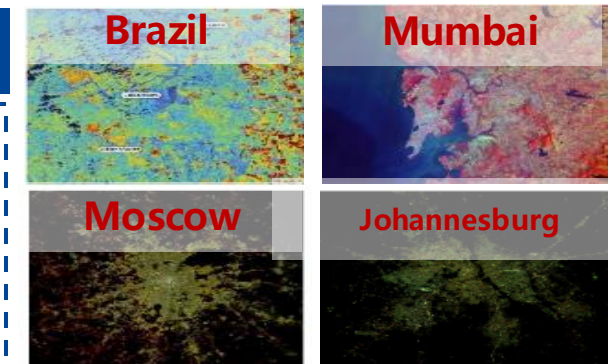
The Big Earth Data in Support of SDGs Reports were released by Chinese Government since 2019

◎ **7 SDGs** in diverse geographical scales

◎ **147 Case Studies** to provide decision support

◎ **116 Data Products** to fill in data gaps

◎ **79 Innovative Methodologies** to monitor SDG progress

**Big Earth Data in Support of SDGs
(2019, 2020, 2021, 2022, 2023 , 2024)**

https://sdgs.un.org/events/big-earth-data-strengthening-potential-digital-technologies-sdgs-post-covid-world-52849

Only 52.8% of global large and medium-sized lakes and reservoirs had good water quality

Spatial pattern of water quality status of large and medium-sized lakes and reservoirs worldwide
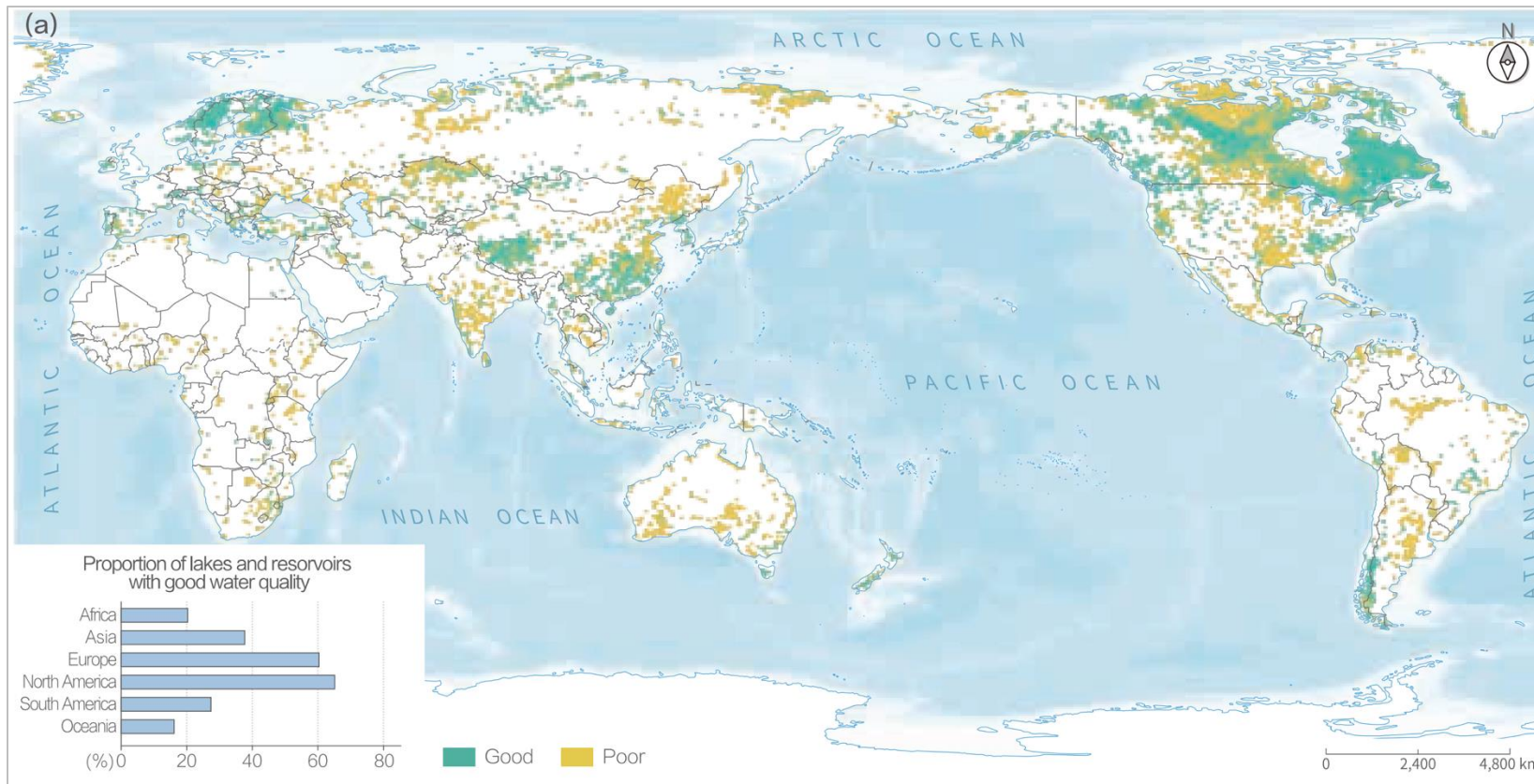
- From 2019 to 2022, **46.0%** of global large and medium sized lakes and reservoirs were eutrophic；

- From 2019 to 2022, only **52.8%** of large and medium sized lakes and reservoirs worldwide had good water quality, with an average of **44.0%** of lakes and reservoirs in each country having good water quality.

Change in Urban Environment in the World

➢ **From 2010 to 2023, PM$_{2.5}$ concentration decreased in 83.18% of global land areas. At the current rate of change only 20.5% of global cities would meet WHO air quality guidelines by 2030.**
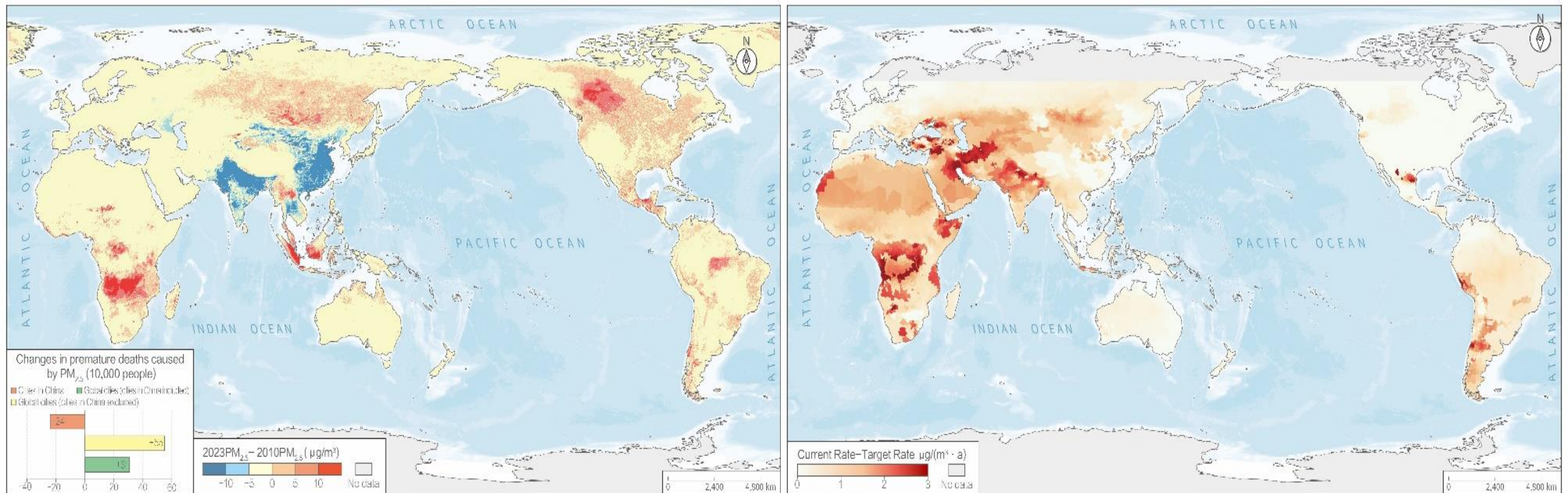
CO_2 and CH_4 real time Emissions

> By utilizing multiple sources of information such as statistical data, satellite remote sensing data, and field observation data, a method based on sector activity levels was developed to quantitatively estimate **near real-time** global carbon (CO_2) and methane (CH_4) emissions since 2019.

> The emissions of CO_2 and CH4 have returned to an **upward trend** after the pandemic, and have both reached new peaks. If the world maintains the emission levels of 2022, the remaining carbon budget under the 1.5 ℃ warming limit will be depleted within the next **2 to 7** years (with a 67% likelihood).
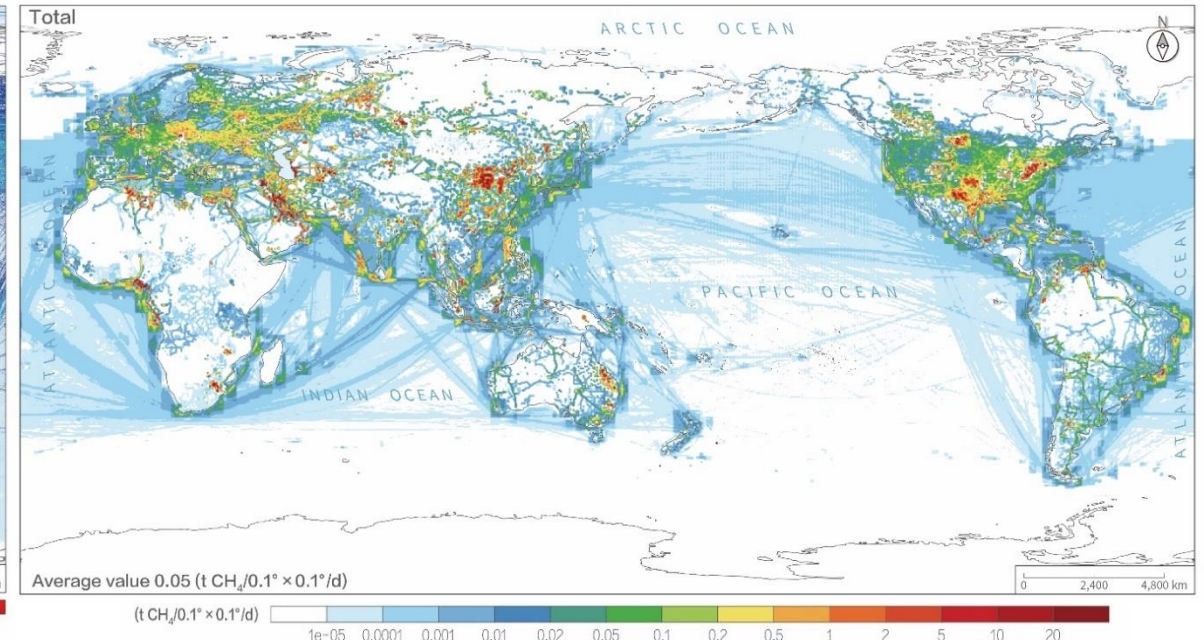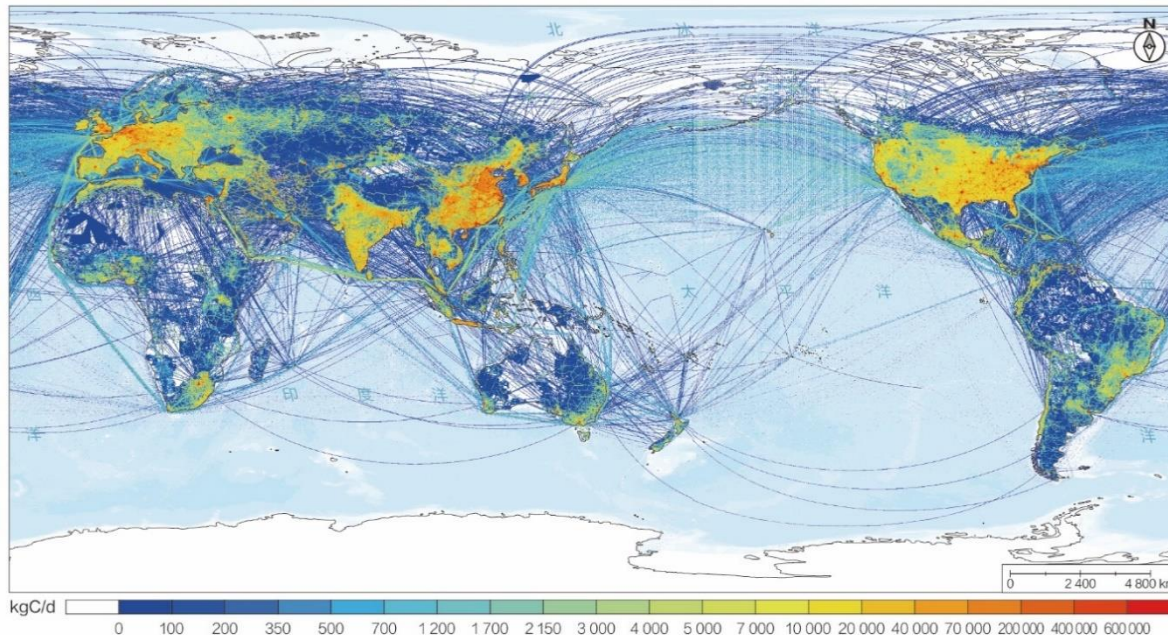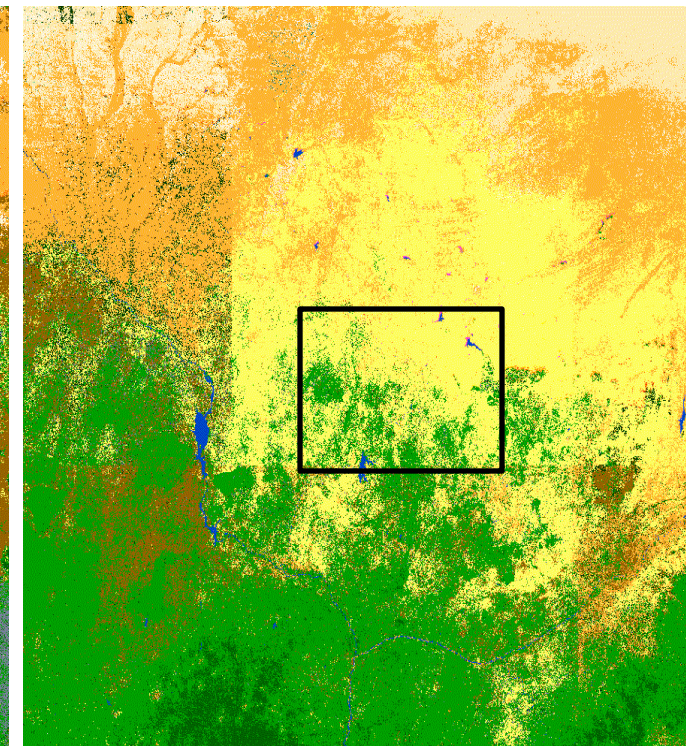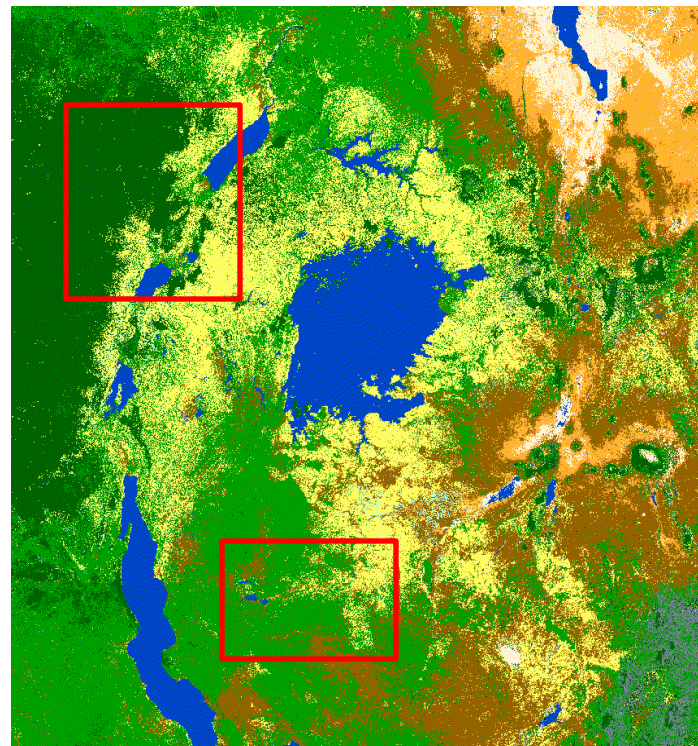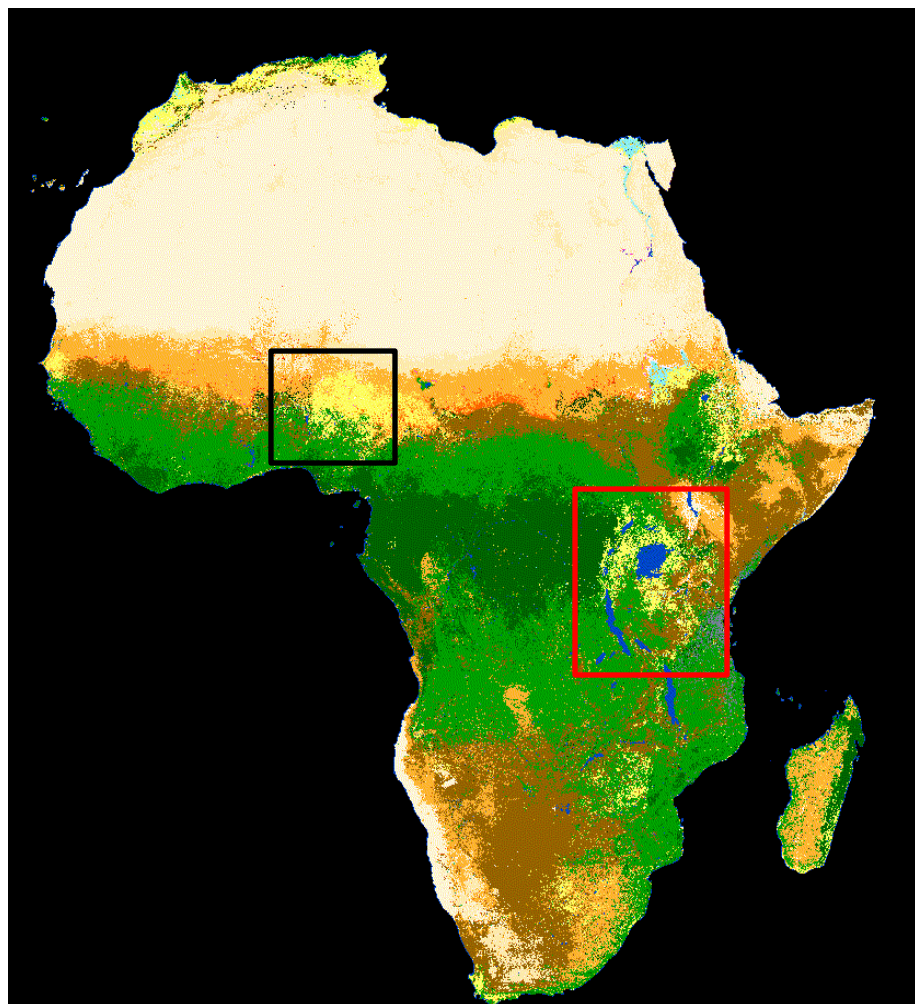
SDG 15 Life on Land

Africa's land-cover dynamic monitoring using GLC_FCS30D dataset

deforestation　　　　**afforestation**

Rainfed cropland	Closed deciduous broadleaved forest	Closed deciduous needleleaved forest	Grassland
Herbaceous cropland	Open deciduous broadleaved forest	Open deciduous needleleaved forest	Lichens and mosses
Tree cropland	Evergreen needleleaved forest	Mixed forest	Sparse vegetation
Irrigated cropland	Closed evergreen needleleaved forest	Shrubland	Sparse shrubland
Evergreen broadleaved forest	Open evergreen needleleaved forest	Evergreen shrubland	Sparse herbaceous
Deciduous broadleaved forest	Deciduous needleleaved forest	Deciduous shrubland	Wetland

Impervious surface / Bare areas / Consolidated bare areas / Unconsolidated bare areas / Water bodies / Permanent snow and ice

227 SDG indicators were evaluated at Chinese Scale

By integrating Big Earth Data and traditional statistics, integrated evaluation of SDGs can be achieved

- **More than half of the indicators have achieved the 2030 target ahead of schedule：**
Out of the 227 evaluated indicators, 55.5% (126) of China's indicators have already achieved the 2030 Agenda goals ahead of schedule

- **Most SDG indicators have significantly improved:**
Since 2015, 52.4% (119 indicators) have shown significant improvement, while 36.6% (83 indicators) have not shown significant changes.

- **Significant improvement in environmental indicators, but slightly lags behind social and economic indicators：** Out of 92 environmental indicators, 52.2% (48) achieved their targets ahead of schedule, which is 32.2% higher than in 2015 and shows significant progress.
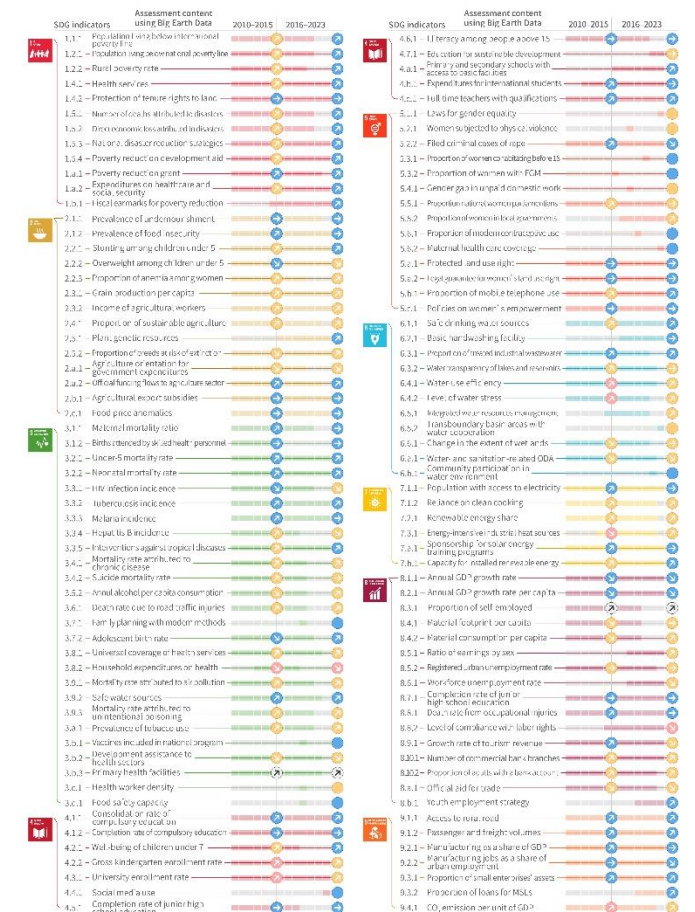
Beijing Declaration

At FBAS 2024, Mr. Csaba Kőrösi, 77th UNGA President, announced the Beijing Declaration on Accelerating Sustainable Development through Digital Technologies, endorsed by all participants.

The Beijing Declaration advocates overcoming pressing challenges and accelerating progress toward the 2030 Agenda By harnessing **digital technologies** and **Big Earth Data**. The specific actions are as follows :

➢ **Co-develop Open Digital Infrastructure and AI Tools.**

➢ **Enhance Global Collaboration.**

➢ **Initiate Big Science Programs.**

➢ **Strengthen Capacity Building.**

➢ **Validate Sustainable Development through Space Technologies.**

➢ **Enhance Stakeholder Engagement.**

➢ **Promote the Universality of Science.**
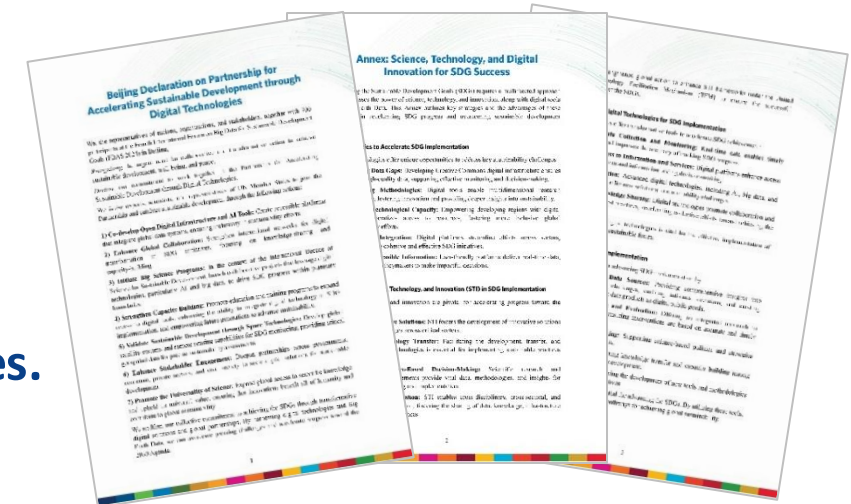
Thanks

No.9 Dengzhuang South Road, Haidian District, Beijing 100094, China
Tel: +86-10-82178985
Fax: +86-10-82178980