

Capacity Building Workshop for Small Island Developing States:

Leveraging Big Earth Data to Evaluate the SDGs Progress

Global SDG Products and Applications Based on Big Earth Data

Operation Manual

2025 年 9 月

Global SDG Products and Applications

Based on Big Earth Data

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1. Registration and Login of Website

(1) The website of Data sharing service

<https://data.casearth.cn/>



(2) Create account

User login

Username
sunying01@aircas.ac.cn

Password
••••••••

Login

[Forget your password?](#) [Create account](#)

Or

Enter the information of the account

Sign up

Email **Enter Email**

Email verification code **Verification Code**

Password (including at least two types of arrays, letters, and special characters, 6-20 digits) **Enter Password**

Confirm password Please enter your password again.

Name Please enter your name **Enter Username**

Company Please enter the company you work for **Work Unit (Opt.)**

Phone Please enter the you phone **Contact Phone (Opt.)**

(3) Login in

User login

Username sunying01@aircas.ac.cn

Password

[Forget your password?](#) | [Create account](#)

2. Search the products

(1) Search by “key words”

The screenshot shows the 'Data Sharing and Service Portal' interface. At the top, there is a search bar with the keyword 'water' entered. Below the search bar, the results are displayed in a grid format. On the left side, there are filters for 'CASEarth Category' (Insect, Land Use, Land Cover, Vegetation, Satellite remote sensing), 'SDGs' (SDG2.4 Sustainable food, SDG15.1 Terrestrial and inland, SDG13.1 Climate-related), and 'File Type' (grid, Raster, point, 栅格, vector). The main grid contains 12 items, each with a thumbnail image and a title. The titles include 'Nutrient status of inland water in key regions of the world in 2018', 'Xinjiang water resources bulletin (2006-2012)', 'Nutrient status of inland water in key regions of the world in 2017', 'Global 8-day/250-m surface water extent dynamics from 2000 to 2020...', 'The data of intensity of water resources utilization in the area along the Belt and Road', 'Dynamic dataset of surface water in the Belt and Road region from 2000 to 2020', 'Global 1-km cropland water-use efficiency from 2001 to 2020...', 'Water resources data of the Qinghai Tibet Plateau (1990-2010)', 'Supply and demand dataset of agricultural water resources in Central Asian...', '10m datasets of remote sensing monitoring in Hainan Island inland water ecology...', 'Matching zone of water and soil resources from 1995 to 2015 (v1.0)', and 'Temporal and spatial matching pattern data and maps of water and soil...'. Each item also shows the date of the data or the research institution.

(2) Search by “The Thematic DataSet”

The screenshot shows the 'Data Sharing and Service Portal' interface. At the top, there is a search bar with the keyword 'The Thematic DataSet' entered. Below the search bar, the results are displayed in a grid format. On the left side, there are filters for 'CASEarth Category' (Insect, Land Use, Land Cover, Vegetation, Satellite remote sensing), 'SDGs' (SDG2.4 Sustainable food, SDG15.1 Terrestrial and inland, SDG13.1 Climate-related), and 'File Type' (grid, Raster, point, 栅格, vector). The main grid contains 12 items, each with a thumbnail image and a title. The titles include 'DeepBone', 'DATABANK 遥感数据引擎', '海洋科学大数据 OCEANOGRAPHY BIG DATA', 'BioOYE', '时空三级环境大数据平台', 'Monitoring and evaluation...', 'UN 2023 Water Conference', 'The Sustainable Develop...', 'CBAS Global Data Produc...', and 'Sustainable development...'. Each item also shows the date of the data or the research institution.

CASEarth
thematic data system

Return

HOME >> Global Water Reso...

English

Global daily 1-km actual evap...

Global 1-km cropland water-...

Global 30-m annual maximu...

Global 8-day/250-m surface ...

Global 500-m Forel-Ule Index...

Global 250-m algal bloom fre...

Monthly 0.5°groundwater sto...

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Mail: luyy@aircas.ac.cn
Released by: International Research Center of Big Data for Sustainable Development Goals

全球水资源数据产品(2023版)
Global Water Resources Data Products(2023 edition)

The Global Water Resources Data Products (2023 edition) reflects the extensive and in-depth research conducted at the CBAS in the areas of drinking water safety, water quality improvement, water efficiency and the water-related ecosystems conservation, as well as the practice of assessing the progress toward SDG 6 at global and regional scales. It includes 7 datasets, such as global cropland water-use efficiency and the Forel-Ule Index of large lakes, among others. These products were created and validated using open data sources, and data disclosure is in line with international conventions on scientific data sharing in the field. It is expected to provide data support for understanding the sustainable use of global water resources, and contribute to the forthcoming Global Water Information System of the United Nations.

[Global water resources data products \(2023 edition\).pdf](#)

[Data Use Policy.pdf](#)

(3) Search by “CASEarth Category”

Filter by
Land Use /Land Cover
Clear All

CASEarth Category

Insect(46)

Land Use /Land Cover(44)

Land Surface Parameter(31)

Vegetation(25)

Satellite remote sensing(24)

Show More...

SDGs

Other (Terrestrial, Biology)(87)

SDG2.4 Sustainable food p...(42)

SDG15.1 Terrestrial and inl...(36)

Other (human)(34)

SDG13.1 Climate-related h...(33)

Show More...

Tags

Human dimensions/Natur... (73)

Tibetan Plateau(68)

Desert locusts(66)

2020 Urban Functional Land Use Data of Hubei Province
International Research Center o...
2025-06-25

2020 Hubei Province Functional Land Suitability Dataset
International Research Center o...
2025-06-25

Dataset of Multi-Scenario Optimization Results in Hubei Province, 2030 and...
International Research Center o...
2025-06-25

Data of Multi-Scenario Simulation Results in Hubei Province for 2030 and 2060
International Research Center o...
2025-06-25

Dataset of Multi-Scenario Managed Carbon Sinks in Hubei Province, 2060
International Research Center o...
2025-06-25

Land Productivity Dynamics Product of Small Island Developing States (30 mete...
International Research Center o...
2025-07-09

GLC_FCS30D: global 30-m land-cover dynamic monitoring product with a...
International Research Center o...
2023-10-09

Data of multi-type driving factors in Hubei Province in 2020
Big Earth Data Center, CAS
2025-06-08

(4) Search by “SDGs”

CASEarth Category

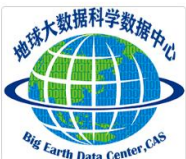
☐ Insect(46)
☐ Land Use /Land Cover(44)
☐ Land Surface Parameter(31)
☐ Vegetation(25)
☐ Satellite remote sensing(24)
Show More...

SDGs

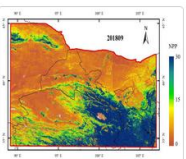
☐ Other (Terrestrial, Biology)(87)
☐ SDG2.4 Sustainable food p...(42)
☒ SDG15.1 Terrestrial and inl...(36)
☐ Other (human)(34)
☐ SDG13.1 Climate-related h...(33)
Show More...

Tags


☐ Human dimensions/Natur...(73)
☐ Tibetan Plateau(68)
☐ Desert locusts(66)



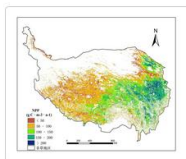
GLC_FCS30D: global 30-m land-cover dynamic monitoring product with a...
International Research Center o...
2023-10-09



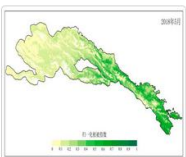
Landsat-based continuous monthly 30m x 30m Land Surface NPP dataset in Qili...
National Tibetan Plateau/Thir...
2022-03-30



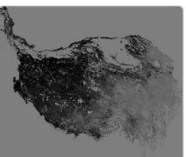
2018 total primary productivity in key global regions
Aerospace Information Research...
2022-03-30



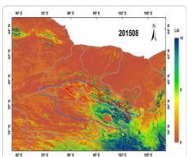
Monthly net primary productivity (NPP) dataset of the Qinghai Tibet Plateau...
National Tibetan Plateau/Thir...
2022-03-30




The vegetation parameter in the key area of Qilian Mountain (2018)
National Tibetan Plateau/Thir...
2022-03-30



FVC dataset of remote sensing for ecological assets assessment in Qinghai-Tibe...
National Tibetan Plateau/Thir...
2022-03-30



Landsat-based continuous monthly 30m x 30m land surface LAI dataset in Qili...
National Tibetan Plateau/Thir...
2022-03-30

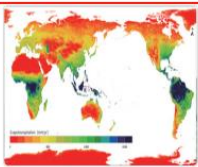


Meteorological observation data in an alpine steppe site of Shenzha Station...
National Tibetan Plateau/Thir...
2022-03-30


(5) Search by “Most Popular” & Latest

Latest

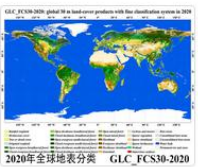
Most Popular



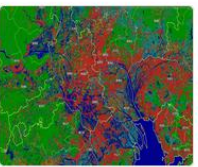
Global daily 1-km actual evapotranspiration from 20...
International Research Center of...
2023-03-21




GLC_FCS30D: global 30-m land-cover dynamic...
International Research Center of...
2023-10-09



2020 global 30m surface coverage fine classification...
Aerospace Information Research...
2022-03-30



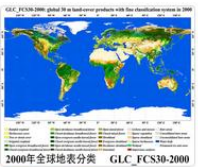
2015 land use classification data set of Beijing Tianjin...
Aerospace Information Research...
2022-03-30



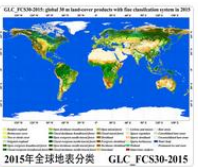
China meteorological forcing dataset (1979-2018)
National Tibetan Plateau/Thir...
2022-03-30



1985 global 30m surface coverage fine classification...
Aerospace Information Research...
2022-03-30



2000 global 30m surface coverage fine classification...
Aerospace Information Research...
2022-03-30



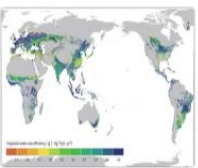
2015 global 30m surface coverage fine classification...
Aerospace Information Research...
2022-03-30



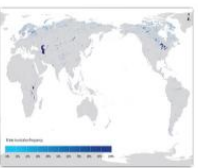
2010 global 30m surface coverage fine classification...
Aerospace Information Research...
2022-03-30



Global 500-m Forel-Ule Index product of large lakes from...
International Research Center of...
2023-03-21



Global 1-km cropland water-use efficiency from 2001 to...
International Research Center of...
2023-03-21



Global 8-day/250-m surface water extent dynamics from...
International Research Center of...
2023-03-21

3. Download the products


(1) Simple case

Use the button of download ,get the files.

Land Productivity Dynamics Product of Small Island Developing States (30 meters Resolution)

☆ Star ✎ Download ➦ Share

Post on: 2025-07-09, Author(s): Xiaosong Li, Tong Shen



The production is based on Landsat-8 and MODIS series remote sensing image data, combined with gap-filling and SG filtering algorithm, and spatio-temporal filtering optimization algorithm to obtain high-quality annual 30m NDVI dataset from 2000 to 2023. Based on the NDVI dataset, the 30-meter land productivity dynamics product of Small Island Developing States was produced by using the FAO-WOCAT land productivity dynamics calculation method. This product is the land productivity dynamics product for Small Island Developing States in three phases: 2000-2015, 2004-2019, and 2008-2023. It covers Small Island Developing States with a spatial resolution of 30 meters. Pixel values 1 to 5 respectively represent the declining, early signs of decline, stable but stressed, stable and not stressed, and increasing land productivity dynamics.

Quote Address
Xiaosong Li, Tong Shen. Land Productivity Dynamics Product of Small Island Developing States (30 meters Resolution). International Research Center of Big Data for Sustainable Development Goals (CBAS) ; Big Earth Data Center, CAS, 2025. doi:10.12237/casearth.686dc91f24e15709b381ae4e

Copyright Notice
Users of this data product shall clearly indicate the source and the authors of "Land Productivity Dynamics Product of Small Island Developing States (30 meters Resolution)" in all forms of their research output (including, but not limited to, published and unpublished papers/reports, theses, monographs, data products, and other academic output) generated by using this data product, and shall cite the corresponding references. The data producers shall not be liable for any loss arising from the use of this data product. The boundaries and masks used in the maps do not represent an official opinion or endorsement by the data producers.

Data Identification
DOI: 10.12237/casearth.686dc91f24e15709b381ae4e CSTR: 31104.11.casearth.686dc91f24e15709b381ae4e
PID: 21.86109/casearth.686dc91f24e15709b381ae4e

Serial Number CBAS-2025-ST5-1

Storage Capacity	13.2 GB	File Count	3
Data Type	栅格	Data Format	Geotiff
Time Resolution	2000-2015; 2004-2019; 2008-2023	Spatial Resolution	30m
Geographical Scope	Small Island Developing States, N28°-S23°, W180°-E180°	Data Category	遥感数据
Product Type	Remote sensing data		

Metadata Detail

File List

File Name	File Type	Size	
LPD_2004_2019_SIDS.tif	tif	4.46 GB	Ⓜ ⓧ
LPD_2008_2023_SIDS.tif	tif	4.27 GB	Ⓜ ⓧ
LPD_2000_2015_SIDS.tif	tif	4.47 GB	Ⓜ ⓧ

International Research Center of Big Data for Sustainable Development Goals (CBAS) ; Big Earth Data Center, CAS
✉ datasharing@aircas.ac.cn
☎ 010-82177601

Usage Metrics
50 Views 0 Downloads

Categories
• Land Use /Land Cover
• Satellite remote sensing
• SDG11.3 Sustainable urbanization

Keywords
Land Productivity Dynamics
Small Island Developing States

Sharing Method

(2) Select the aoi area, and download the corresponding files


数据共享服务系统
 Data Sharing and Service Portal

Browse

语言
 主题

Data
20.30 PB

Files
0.125 Billions

Views
165,718,715 Times

Downloads
3,366,938 Times

6 清洁饮水和卫生设施

11 可持续城市和社区

13 气候行动

14 水下生物

15 陆地生物

2 零饥饿

Keywords:
 土地利用
土地覆盖
人口
青藏高原
地表覆盖
美丽中国

CASEarth Category

- ☐ Insect(46)
- ☐ Land Use /Land Cover(44)
- ☐ Land Surface Parameter(31)
- ☐ Vegetation(25)
- ☐ Satellite remote sensing(24)

 Show More...

SDGs

- ☐ Other (Terrestrial, Biology)(87)
- ☐ SDG2.4 Sustainable food p... (42)
- ☐ SDG15.1 Terrestrial and inl... (36)

Distributed Data Sharing Platforms

Thematic Dataset

Global 30-m spatial distributi...

Global 30-m impervious-surf...

Global 30-m burned area dist...

Global 30-m spatial distributi...

Global 30-m cropping intensi...

Global 30-m spatial distributi...

Contact Information

Contact Name: Data Sharing Office
 Tel: + 86-010-82177601
 Mail: datasharing@cbas.ac.cn
 Released by: International Research Center of Big Data for Sustainable Development Goals (CBAS)

Global 30-m spatial distribution of forest cover in 2020 (GFC30_20...)

Dataset Overview

Based on Landsat series satellites, China GF-1, GF-6 and other satellite images, GFC30_2020 achieved a spatial resolution of 30m, using machine learning algorithms with global ecological geographic partitioning and crowd source sample data. The data source uses the 2020 global forest vegetation growth season images, and when the data quality cannot meet the requirements due to cloud coverage or other reasons, data with similar time will be selected. The overall accuracy of the product is higher than 85%.

Dataset Details

Digital Earth Viewer

Download

Spatial Resolution: 30m	Time Resolution: 2020
Product Number: XDA19090301_002	Create Institution: International Research Center of Big Data for Sustainable Development Goals
Created By: Xiaomei Zhang; Guojin He; Tengfei Long	Creation Date: 2022-04-25T16:00:00.000Z
File Size: 1010	
Data Format: GeoTiff	Type Of Data: grid
Data Label: <div> Global forest cover 30 m resolution Satellite remote sensing </div>	

Naming Convention





The product was projected in a geographic (Lat/Long) projection at 0.00025o (approximately 30-m resolution), with the WGS84 horizontal datum and the EPSG:4326 vertical datum. The results consist of 504 tiles of 10°×10°, and each tile contains about 40,000×40,000 pixels. The data format is GeoTIFF. Each tile is coded according to the latitude and longitude shown in the upper left corner, with latitude in the front and longitude in the back. Latitude is two digits, with a prefix of N/S; longitude is three digits, with a prefix of E/W, where N is used at 0° latitude, and E is used at 0° longitude. Each tile file contains a layer in which the value of 1 represents forest and the value of 0 represents non-forest area.

For example: Cuba

Latitude and longitude coordinates range :19°N to 23°N, 74°W to 85°W

We search N20W080

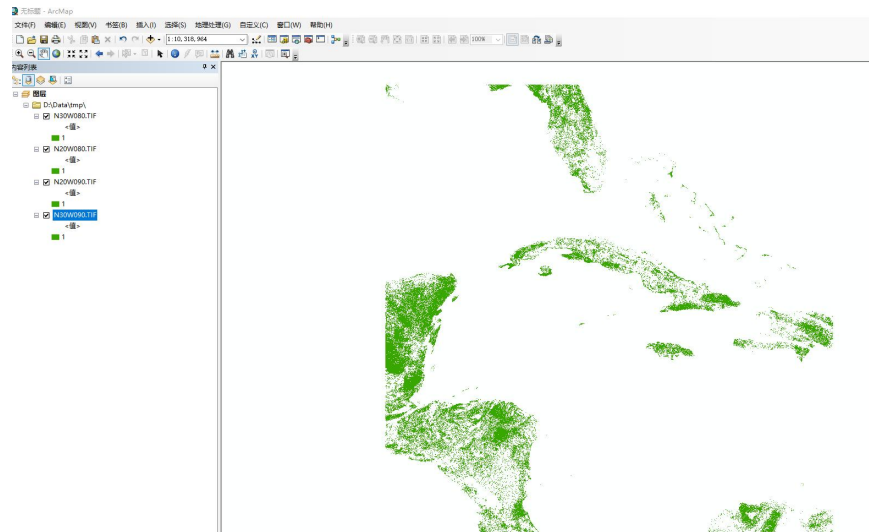
File List Save all files to my personal center

File Name	File Type	Size	
N20W080.TIF	TIF	20.02 MB	 
N20W080.TIF.ovr	ovr	7.89 MB	 

So the files we need just like this:



Open the files



(3) Download the data files in batches

Bulk downloads are available through API integration, using programming languages such as Python or Java. A sample Python code snippet is provided below.

```
data= requests.get(f'https://data.casearth.cn{Get File List By ID}').json()['data']


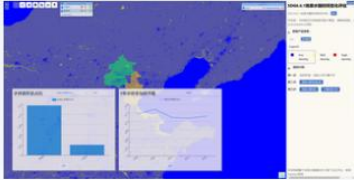


os.makedirs('./downloads', exist_ok=True)
```

4. SDGs Data Analysis

(1) Introduction

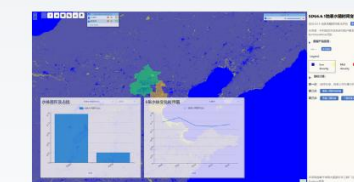
SDGs Data Analysis is an online code developing system for SDGs indicators data processing and analysis. Relying on the core technical framework driven by the Earth Data Miner, SDGs Data Analysis provides a compound online work environment for Python coding, with access to SDGs data products in the Databox, enabling migration and integration of SDGs indicator algorithms.

Website: <https://sdg.casearth.cn/en/onlineTools/indicatorCalculate>

	SDG15.3.1 Land degradation index assessment As part of the "2030 Agenda for Sustainable Development", Sustainable Development Goal (SDG) 15 is to "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". Each SDG has specific targets addressing different components, in this case, of life on land. Target 15.3 aims to "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world". Indicators will be used then to assess the progress of each SDG target. In the case of SDG 15.3 the progress towards a land degradation neutral world will be assessed using indicator 15.3.1: "proportion of land that is degraded over total land area". Tool Type: Indicator Calculation GO TO USE
	SDG6.6.1 Surface water change over time indicator As part of the "2030 Agenda for Sustainable Development", The 6th goal of The Sustainable Development Goals (SDGs) : "CLEAN WATER AND SANITATION". Each special development goal has specific goals, involving different components of life on land. The target of 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes. The target of SDG 6.6, indicator 6.6.1 will be used to assess the progress of water-related ecosystems in the world: Changes in the extent of water-related ecosystems over time. This tool can calculate the area and total area of water distribution in the designated area. Obtain the proportion of surface water area according to the area/total area of the water body distribution. Tool Type: Indicator Calculation GO TO USE
	SDG13.2.2 Annual average CO2 concentration evaluation It is used to calculate the annual average global CO2 concentration from 2015 to 2018. Tool Type: Indicator Calculation GO TO USE
	SDG13.1.1 Natural disaster impact evaluation As part of the 2030 Agenda for Sustainable Development, target 13.1 aims to: by 2030, Strengthen resilience and adaptive capacity to climate related hazards and disasters in all countries. In the case of SDG 13.1, indicator 13.1.1 has been defined as one of specific and effective indicator to quantitatively monitor and evaluate governments' response to climate change, that is "Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population". Tool Type: Indicator Calculation GO TO USE

(2) surface water change over time indicator

For example: surface water change over time indicator

	SDG6.6.1 Surface water change over time indicator As part of the "2030 Agenda for Sustainable Development", The 6th goal of The Sustainable Development Goals (SDGs) : "CLEAN WATER AND SANITATION". Each special development goal has specific goals, involving different components of life on land. The target of 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes. The target of SDG 6.6, indicator 6.6.1 will be used to assess the progress of water-related ecosystems in the world: Changes in the extent of water-related ecosystems over time. This tool can calculate the area and total area of water distribution in the designated area. Obtain the proportion of surface water area according to the area/total area of the water body distribution. Tool Type: Indicator Calculation GO TO USE
---	---

This tool provides an assessment tool that reflects the change of surface water (water bodies such as rivers, lakes, reservoirs and ponds) over time.

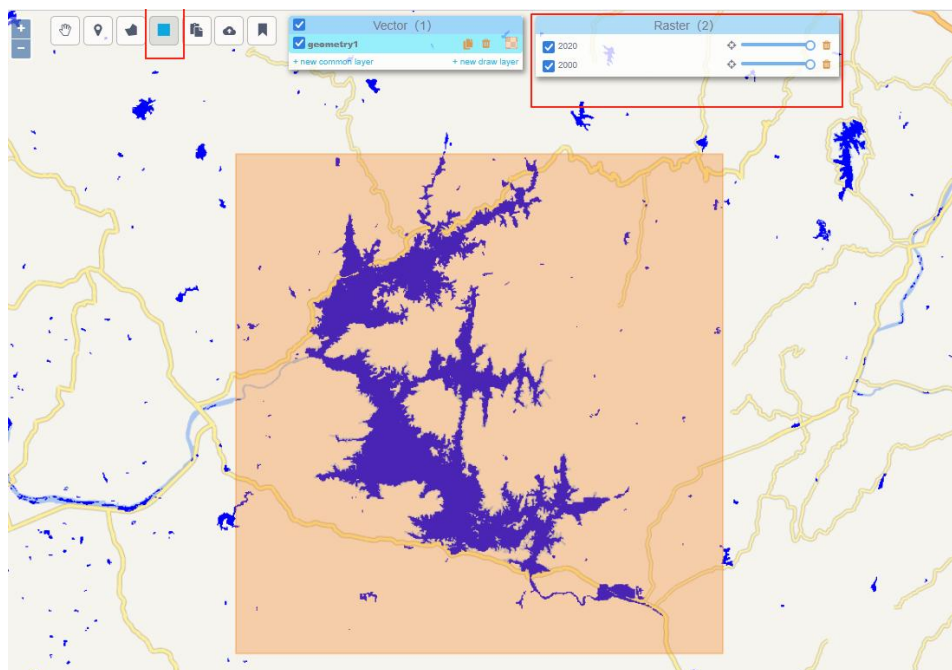
Method:

(1) According to the regional boundary provided by the user, calculate the distribution area of surface water and the total area of the region, and then calculate the ratio of surface water distribution area to the total area in the region; (2) The calculated results in different are compared, and the net change and ratio change of surface water area are used to reflect the change of surface water with time.

Base data product:

The basic data product used in this tool is the 30-meter spatial resolution surface water data set of 2000, 2005, 2010, 2015 and 2020, provided by Professor Shanlong Lu's team from the International Research Center of Big Data for Sustainable Development Goals and the Aerospace Information Research Institute of Chinese Academy of Sciences.

1) Select the AOI areas



2) Indicator compute

Indicator Tool: SDG6.6.1 Assessment of surface water area changes over time

Introduction:
This tool provides an assessment tool that reflects the change of surface water (water bodies such as rivers, lakes, reservoirs and ponds) over time. [More](#)

Method:
(1) According to the regional boundary provided by the user, calculate the distribution area of surface water and the total area of the region, and then calculate the ratio of surface water distribution area to the total area in the region; (2) The calculated results in different are compared, and the net change and ratio change of surface water area are used to reflect the change of surface water with time.

Base data product:
The basic data product used in this tool is the 30-meter spatial resolution surface water data set of 2000, 2005, 2010, 2015 and 2020, provided by Professor Shanlong Lu's team from the International Research Center of Big Data for Sustainable Development Goals and the Aerospace Information Research Institute of Chinese Academy of Sciences.

Product Preview:
2020 [Display layer](#)

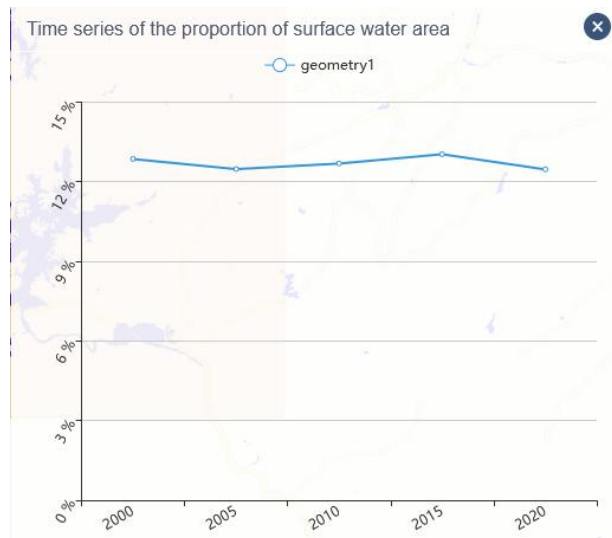
Indicator compute:
Step 1: Please use the button in the upper left corner of the map to select an area, draw a polygon or upload a vector file (China region).

Step 2: [Click to start calculation](#)

Step 3: [View the calculation results](#) [Download the result file](#)

Disclaimer
1. This tool is a display of scientific research results. The indicator calculation results are related to factors such as data products and algorithms. It is for scientific research reference only and does not represent any official release.

3) View the calculation results



4) Download the result file

SDG6.6.1 Surface water change over time indicator

[Click here to download.](#)

5) Open the result file

地点	年份	水体面积	总面积	地表水体面积占比
geometry1	2000	94.12320785537796	326.13903446568935	28.86
geometry1	2005	98.82232703934994	326.13903446568935	30.3
geometry1	2010	116.01929866100294	326.13903446568935	35.57
geometry1	2015	95.51718349137423	326.13903446568935	29.29
geometry1	2020	104.03259808284733	326.13903446568935	31.9