

# Research Data Repositories in perspective of climate change: India to lead the world in Big Data analytics with G-20 summit.

by

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# Introduction

## Data analytics in mitigating Climate change

Climate issues are today not a local scenario but a global concern.

- World Health Organization (2021)
  - taking the help of technology “Integrated monitoring systems allowing collection and analysis of data on environmental hazards, socio-economic factors and health outcomes are established”(WHO, 2021).
- Parth and others (2019) in a study :
  - the power of information can mitigate the effects of climate change

# Objective of the study

To know the status of different climate change related data repositories available across the world.

To explore the status of Indian data repositories related to climate change.

To propose and prepare a roadmap for global unified data repositories with the G20 presidency of India

# Methods

- Both browsing and searching technique
- Available data repositories registered in the Registry of Research Data Repositories ([re3data.org](http://re3data.org)) related to climate issues
- Lithosphere, Atmosphere, Hydrosphere and Biosphere.

**Data repository in  
perspective of climate  
change:**

**Global scenario**

<b>Name of the Country/Region</b>	<b>Number of Repositories identified</b>
<b>United States</b>	<b>96</b>
<b>Germany</b>	<b>27</b>
<b>Canada</b>	<b>25</b>
<b>Australia</b>	<b>12</b>
<b>United Kingdom</b>	<b>11</b>
<b>*India</b>	<b>11</b>
<b>France</b>	<b>8</b>
<b>Netherland</b>	<b>4</b>
<b>European Union</b>	<b>4</b>
<b>Japan</b>	<b>3</b>
<b>*International</b>	<b>3</b>
<b>Norway</b>	<b>2</b>
<b>South Africa</b>	<b>2</b>
<b>Sweden</b>	<b>2</b>
<b>Austria</b>	<b>1</b>
<b>China</b>	<b>1</b>
<b>Finland</b>	<b>1</b>
<b>Italy</b>	<b>1</b>
<b>Luxembourg</b>	<b>1</b>
<b>Spain</b>	<b>1</b>
<b>Switzerland</b>	<b>1</b>

- 217 data repositories are registered by the institutions, organizations or the discipline of twenty-one countries and unions related to environment and climate change discipline.
- The United States is found to have the highest number of data repositories
- Germany (27) and Canada (25) have approximately equally registered data repositories.
- Australia (12), the United Kingdom (11) and **India (11)** also have approximately equally registered data repositories.

**Data repositories on climate change domain  
created with the cooperation and leadership  
among the countries and region.**



Sl. No	Name of the Country/Region	Number of Repositories considered
1	*European Union / Others	18
2	*United States / Others	11
3	*International / Others	10
4	*Germany and others	4
5	*France and others	4
6	*Australia and others	2
7	Canada /United States	2
8	International / Germany	2
9	China / International	1
10	Italy / International	1
11	Indonesia / Netherland	1
12	Spain / Germany	1
13	Switzerland / International	1
14	Belgium /Germany / United Kingdom/ France	1
15	Burkina Faso /Germany /Ghana	1
16	Russia Federation / Japan	1
17	Cyprus / European Union	1

62 data repositories identified which are registered with the help of cooperation of the institutions, organizations or the disciplines.

European Union, United States, International, Germany and France provide the leadership to different countries of the world

Australia, Canada, the Netherland, Switzerland, and Belgium are also coordinating

**Indian Scenario of  
Data Repository from  
the Perspective of  
Climate Change**

- the National Information System for Climate and Environment Studies (NICES) maintains the national-level climate database
- National Remote Sensing Centre (NRSC) is maintaining the satellite data (NRSC, n.d). Meteorological and Oceanographic Satellite Data Archival Centre
- India- Water Resource Information System
- India- Water Resource Information System
- IMD
- India Environment Portal
- ENVIS

**Status of different data repositories created or participated in by India relating to Climate Change**

Sl. No	Name of the Repository	Last Updated	Access to Data Repository	As Individual country/Cooperation with others
•	India Environment Portal	2021-11-16	Open	Individual
•	<a href="#">India</a> Water Portal	2021-12-22	Open	Individual
•	<a href="#">Open Government</a> Data Portal of Tamil Nadu	2023-02-14	Open	Individual
•	KRISHI	2022-03-24	Open	Individual
•	National Data Repository	2019-05-15	Open	Individual
•	NER Databank	2019-11-18	Open	Individual
•	Biosearch	2021-08-25	Open	Individual
•	India Biodiversity Portal	2021-11-16	Open	Individual
•	World Data Centre for Geomagnetism, Mumbai	2018-12-19	Open	Individual
•	Indian National Centre for Ocean Information Services	2023-05-26	restricted	Individual
•	Indian Space Science Data Center	2021-10-06	restricted	Individual
•	TropFlux	2022-02-07	Open	Cooperation
•	M-TROPICS	2023-06-02	Open	Cooperation
•	WorldClim	2022-01-18	Open	Cooperation
•	International Ocean Discovery Program	2022-12-20	Open	Cooperation

51 repositories registered for India,

- there are 11 data repositories registered for India in the Registry of Research Data Repositories registry, which provide data on the domain of climate change.

India is a participating nation for the 4 numbers of data repositories (i.e. two repositories each led by the United States and France).

**G-20 and Presidency of  
India for Unified Global  
Data Repository- A  
Proposed Roadmap**



- G-20
  - holding the G20 presidency
  - The G20 in its 2023 vision has mentioned
    - “One Earth One Family One Future”  
which further expressed its concern towards the global problem related to climate change faced by the nations.

	G-20 Members data repository related to issue of climate change in Registry of Research Data Repositories	Status of Repository in Registry of Research Data Repositories on climate change as Leading Nation
•	Argentina	*Yes
•	Australia	Yes
•	Brazil	*Yes
•	Canada	Yes
•	China	Yes
•	France	Yes
•	Germany	Yes
•	India	Yes
•	Indonesia	#Yes
•	Italy	Yes
•	Japan	Yes
•	Mexico	*Yes
•	Republic of Korea	*Yes
•	Russia	*Yes
•	South Africa	Yes
•	United Kingdom	Yes
•	United States of America	Yes
•	European Union	Yes

90 per cent of the G-20 members are having registered repositories.

G-20 member countries are playing a leading role in maintaining different types of data related to the climate change domain.

# Proposed Roadmap

India may propose a model with its G-20 presidency for a global unified data repository with the participation and contribution of all the G-20 member countries.

Lithosphere, Atmosphere, Hydrosphere and Biosphere

A common policy on data submission, its use and budgetary provisions may be proposed by India for all the G-20 member countries

Ministry of Environment, Forest and Climate Change,  
Government of India.

the experiences of the G-20 members who have a rich history and experience in managing the data repository can also be utilized

G-20 members may be requested to update their data repository before the start of the G-20 summit every year.

Equal storage of data to be stored in all the G-20 member countries.

Every year the country or region that will hold the G-20 presidency may lead the global unified data repository on climate change

# Findings

- 279 data repositories identified, 217 repositories are registered in the category of an individual country
- 62 data repositories identified (related to climate change) which were created or contributed with the cooperation of different nations or unions
- 11 individual data repositories registered for India in the Registry of Research Data Repositories related to domain of climate change

# Suggestions

- A proposed roadmap for creating a unified global data repository under the G-20 presidency of India.



# Conclusion

- The theme of World Environment Day of 2022, i.e. “Only One Earth” clearly demands that all the countries of the world need to be united while dealing with environmental issues.
- Any kind of global unified data repository can only be possible if the cooperation of the international countries is acquired.