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PROGRESS REPORTS

Task Group on Data Support for Climate Change Assessments

(Prepared by the Co-Chairs of the Task Group on Data Support for Climate Change Assessments)

(Submitted by the Secretary of the IPCC)

PROGRESS REPORTS

Task Group on Data Support for Climate Change Assessments

This report describes the activities undertaken by the Task Group on Data Support for Climate Change Assessments (TG-Data) since the last update presented during the Sixtieth Session of the IPCC (IPCC-60, Istanbul, Türkiye, 16 – 19 January 2024).

1. Salient activities since last report

Meetings

- Thirteenth TG-Data Teleconference held on 29 February 2024.
- Fourteenth TG-Data Teleconference held on 13 May 2024.
- Monthly IPCC Data Distribution Center (DDC) Managers' meetings.

Outreach

Poster, event and presentation at the 2024 General Assembly of the European Geosciences Union (EGU):

- Pascoe, C., Stockhause, M., Parton, G., Fisher, E., MacRae, M., Kreuss, B., and Sitz, L.: A pragmatic approach to complex citations, closing the provenance gap between IPCC AR6 figures and CMIP6 simulations, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-20519, <https://doi.org/10.5194/egusphere-egu24-20519>, 2024.
- Best practices in data management and data traceability in the IPCC, M. Stockhause, EGU ESSI Division, ESIP, AGU. EGU Open Science and Data Help Desk exhibition booth #X212, EGU General Assembly 2024, Vienna, Austria, 2024-04-16.
- Stockhause, M., Mizielinski, M., Pirani, A., Sitz, L., Spinuso, A., Abdallah, M., Baidya, J., Durack, P., and Ellis, D.: How do the CMIP7 infrastructure plans support the implementation of the IPCC data guidelines?, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-17356, <https://doi.org/10.5194/egusphere-egu24-17356>, 2024.

TG-Data IPCC web page

With help from the IPCC Secretariat, a new version of [TG-Data IPCC web page](#) was released in January 2024. This new web page includes TG-Data composition, TG-Data activities and products from the IPCC 6th Assessment Cycle. It also includes some basic TG-Data guidance material like the FAIR guidelines and Licensing guidance documents. It is expected that the web page will be continuously updated for next IPCC cycles.

Expert Meeting

A proposal for an Expert Meeting on Earth Observation data accessibility for climate studies is included in Appendix 1. The meeting aims to improve the discoverability, accessibility and usability of global satellite information in order to strengthen the assessment over regions with sparse data coverage. We expect that this proposal is discussed in coordination with the list of EM and Workshop proposals that will be presented by Working Group Co-Chairs.

Webinars

A special webinar on the role of Artificial Intelligence (AI) in the IPCC process was held March 1st 2024. Invitations were sent to Bureau members, WG Co-Chairs, TG-Data members and Heads of TSUs, and attracted around 30 participants.

This webinar, hosted by Alessandro Spinuso and featuring speakers Alaa Al Khouradjie, Dina Babushkina and Athanasios Votsis, explored the potential benefits and risks of using AI tools, such as large language models (LLMs) coupled with a chatbot, in conducting comprehensive climate science assessment and effectively communicating assessment findings. Talks investigated the extent to which current AI approaches can facilitate communication of scientific knowledge to different audiences, and introduced major epistemic (e.g., correctness, truth-value of results; verifiability; accuracy) ethical (e.g., responsible decision-making) and legal (e.g., the new EU AI Act) dimensions of current AI approaches in connection to climate science.

DDC funding status

At the IPCC-60, following the presentation of TG-Data’s progress report, a budget proposal for DDC activities over the next three years was presented to the Financial Task Team. This budget, shown in Table 1, was accepted conditionally to the Panel’s approval of the TG-Data work plan for AR7 (see proposal in Table 4). The 2024 budget presented at [IPCC-60](#) is being allocated to current DDC members (MetaDataWorks, CIESIN, DKRZ, CEDA). MetaDataWorks and CIESIN have both sent their letters of agreement to the Secretariat, while DKRZ and CEDA have yet to send theirs. The 2025 and 2026 budgets are presented in Table 5.

Table 1 Budget for DDC activities approved at IPCC-60.

Year	Expenditures (CHF)	In-kind (CHF)	Cash (CHF)
2024	430,000	230,000	200,000
2025	600,000	200,000	400,000
2026	930,000	200,000	730,000

For the upcoming years, an open Call for Participation (CFP) will be launched. The objective of the call is to invite organisations to offer their expertise and resources to the DDC, either as in-kind contributions or contracted services, or a mixture of both. One single call will cover the entire duration of the AR7 cycle and all DDC activities, to facilitate the coordination and planning of activities. Indeed, all DDC activities, data storage, cataloging, user training and data access are interconnected, and splitting them into targeted calls would increase the risks of inconsistencies across DDC activities and practices. Also, TG-Data’s membership is expected to be renewed in 2025. It would be preferable to have the DDC membership set-up at the beginning of their tenure, rather than asking incoming co-chairs to go through other calls for proposals mid-cycle when TSU staff and WG co-chairs are busy working on the reports.

The proposed text for the CFP is included in Appendix 2 for the Panel’s consideration.

DDC catalogue

From January 1st, 2024 up to June 1st, 2024, ~10,000 users have visited the DDC Catalog website, and made around 1,700 downloads. During the month of May, the most downloaded dataset was for SPM Figure 5, with 27 downloads. Four service desk tickets were opened and nine resolved. See Figure 1 showing the country of origin of DDC catalogue users.

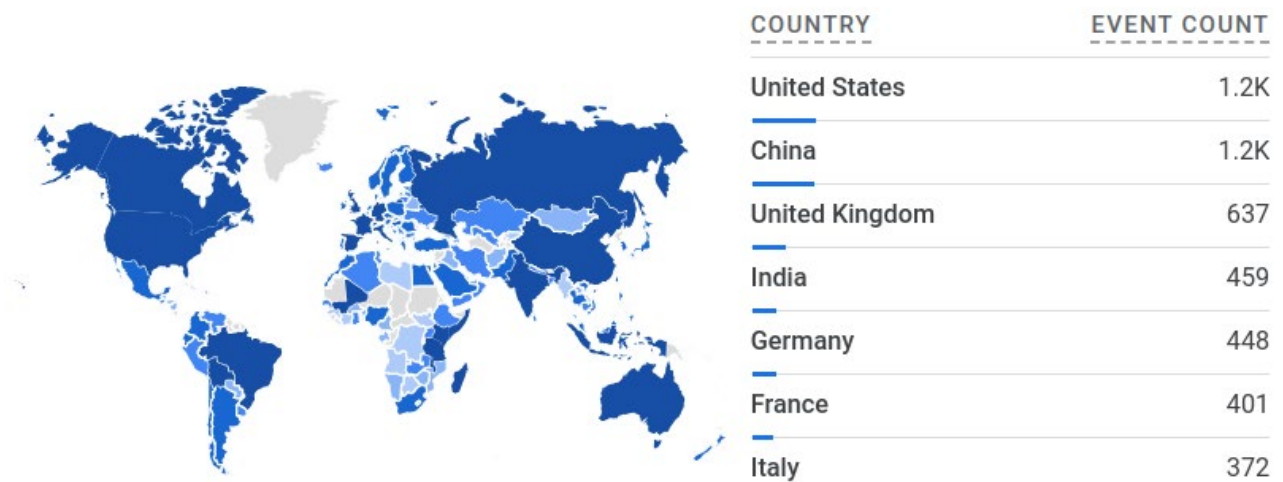


Figure 1 Country of origin of DDC Catalog users from January 1st 2024 to June 1st 2024. Source: MetaDataWorks.

Data curation

So far, 324 AR6 datasets have been published (see Table 2). The distribution of datasets across WG and SYR report chapters is presented in Figure 2. Four datasets initially planned for archival remain outstanding and will require DDC to contact authors directly. CIESIN contacted authors of missing datasets, with priority given to SYR material.

Table 2 DDC final data curation status. Source: MetaDataWorks.

WG I	226
WG II	41
WG III	39
Synthesis Reporting (SYR)	16
TOTAL	322

The DDC catalogue counts 2,466 input and intermediate datasets (see Table 3), including datasets from previous cycles.

Table 3 Input and intermediate datasets available from the DDC Catalogue. Source: MetaDataWorks.

Group	In Progress	Live
DKRZ (Previous Assessments)	0	1,693
DKRZ (Intermediate AR6)	0	6
DKRZ (AR6 CMIP6)	0	730
DKRZ (SR1.5 - HAPPI project)	0	5
CIESIN (Previous Assessments)	0	8
CIESIN (AR6 JRC)	0	1

STUTTGART WRI Published in Zenodo	1	0
Historical Emissions Database published in Zenodo	0	1
Interactive Atlas Collection	0	2
WGI Historical CEDA	0	22
TOTAL	1	2,468

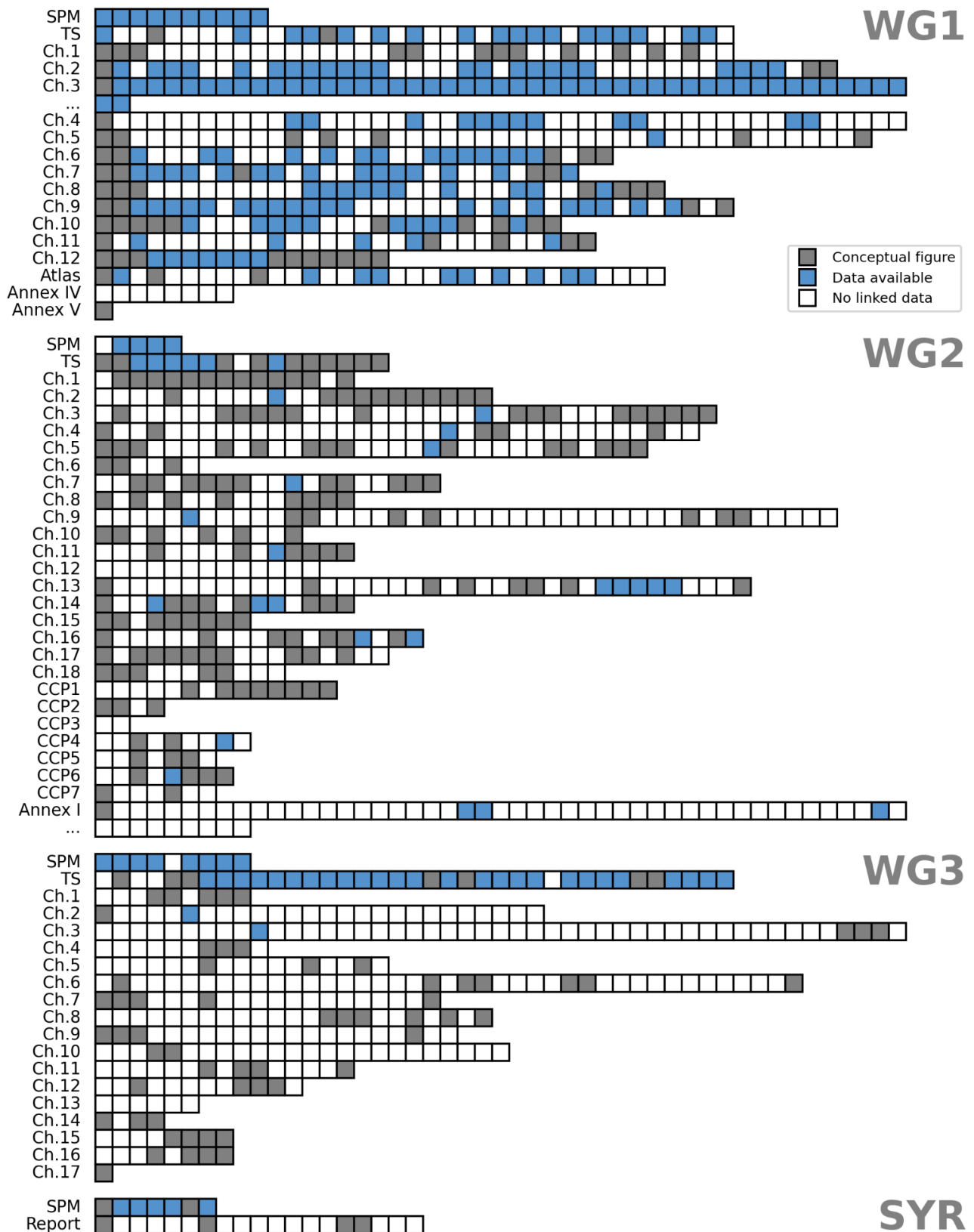


Figure 1 Data availability per report and chapter. Each square stands for a graphic, and is colored gray if it is conceptual, blue if its underlying data is available at the DDC, and white if it's not linked to a data source.

2. TG-Data work plan for AR7

As requested at the IPCC-60, TG-Data has prepared a work plan for AR7 covering the 2024-2026 period. The work plan, presented in Table 4, was prepared with the following assumptions and considerations:

- According to TG-Data terms of reference, the activities included in this work plan refer to:
 - TG-Data Administrative work
 - Author support
 - DDC oversight from TG-Data
 - DDC Support
 - Outreach activities
 - TG-Data activities
- A basic understanding of the timing of the different products of the 7th cycle (necessary for planning of author and DDC support activities) was built considering the timeline approved at IPCC-60.
- For the 2024 DDC activities, we used the DDC work plan and budget presented at TG-Data progress report for IPCC-60.
- In terms of engagement with authors, we have considered that figure development might be expected to develop with more intensity and definition after LAM2. In this regard, we are considering an introductory activity for LAM1 to make sure authors are aware of FAIR process data needs, and more in-depth training at LAM2.
- In terms of DDC activities we are considering
 - The transition between AR6-AR7, including updating workflows, protocols and connecting with data providers.
 - DDC/TSU connections and training happening at the beginning of the cycle. An important milestone will be our F2F meeting to be held in Singapore and coordinated with WGII Co-Chairs and TSU.
- In terms of TG-Data-DDC governance, we are considering potential changes in DDC composition because of the CFP.

More precise information regarding the 2025 and 2026 budgets of DDC activities will be available following responses to the DDC CFP. In the meantime, we produced estimated costs of these activities based on the following assumptions:

- DDC activities are consistent with *Option 3: Continuity of current service* of the “options document” provided at IPCC-57, and included in Appendix 3.
- Expected timeline of effort:
 - 2024: Finalizing AR6 data curation and preparation of AR7 work;
 - 2025: AR7 author training and updated protocols for data curation;
 - 2026: AR7 data curation and ingestion in catalog.
- CHF estimates are based on a conversion rate of 1 FTE = 167 CHF and includes organizations’ overhead costs.

Table 5 presents the budget associated with DDC activities for years 2025 and 2026. We are assuming in-kind contributions from DDC members consistent with previous years.

Table 4. TG-Data Draft Work plan 2024-2026.

Activities	Sub-activities	Start date	End date	Deliverables
Administrative	Preparation of the TG-Data document for IPCC/Bureau meetings	2024-01	Tuned to WG cycle IPCC and Bureau meetings	Updated report on activities
	Refine work plan to present at IPCC P61	2024-06	2024-07	Finally TG-Data work plan
	Update TG-Data membership	2025-07	Tuned to WG cycle	New TG-Data membership
	Refining the draft work plan after new TG-Data composition	2025-07	Tuned to WG cycle	Finished work plan
Author support	Review FAIR guidelines	2024-08	2025-03	Updated FAIR guidelines, reviewed by TG-Data, endorsed by bureau and published
	Organize introductory sessions at LAM1 SR Cities and AR7 (all WGs)	2025-01	Tuned to WG cycle	Sessions at LAM1
	Organize training workshops at LAM2 (SR Cities and AR7) for authors and chapter scientists on DDC services and FAIR guidelines	2026-01	Tuned to WG cycle	Training workshops at LAM2
DDC Oversight	Discuss DDC annual report and provide recommendations		Every year	Recommendations to DDC
	New DDC Structure for AR7. Includes preparation of open call for DDC participation, Q/A sessions, selection of bids, integration of new DDC members	2024-03	2025-03	DDC for AR7 in operation - Updated MOU
DDC Support	Maintain DDC Catalog	2024-04	2025-03	DDC Catalog
	AR6 data status and gap report	2024-03	2024-10	Data status and gap report
	DDC - TSU (all WGs) Training on DDC services and FAIR guidelines	2024-10	2024-10	Training workshops
	Early engagement (DDC liaison) with input data providers (e.g. IIASA or CMIP). Includes signing MoUs with data providers to clarify licensing conditions.	2024-10	2025-12	Minutes / MoUs

	Update and harmonize IPCC data curation workflow and metadata schema for long-term preservation of datasets.	2024-10	2025-06	Updated workflow
	Development of tools for authors (e.g. provenance tracking tools, automated metadata compliance checks)	2024-04	2025-12	New tools
	In collaboration with WG TSU, identify datasets to be curated and relay to DDCs	2026-01	Tuned to WG cycle	Live queue of datasets to be archived by DDC
	Liaise between IPCC TSUs and DDC to assist authors and harmonize metadata requests across WGs and DDC Partners	2026-01	Tuned to WG cycle	Improved efficiency in data curation
Outreach	DDC outreach activities	2024-11	Tuned to WG cycle	AGU/EGU/World Data Week/UN WDF, etc. demos/presentations/workshops
	Prepare proposals for establishment of partnerships for outreach activities	2026-01	Tuned to WG cycle	MoU with external organizations
	Prepare proposals for expert meetings	2024-03	2024-10	Expert meeting proposal
	Organize outreach activities from IPCC AR7 products	2026-01	Tuned to WG cycle	Training workshops
TG-Data Activities	Collaboration between WGs-DDC-TG-Data in FAIR data processes	2024-03	2025-03	Minutes
	F2F		Every year	Report
	TelCos		2-3 per year	Minutes

Table 5. Budget for 2025 and 2026 DDC activities. Cash columns refer to IPCC funds disbursed to DDC members, while in-kind columns refer to DDC members' in-kind contribution to IPCC activities.

Activities	2025		2026	
	Cash (CHF)	In-kind (CHF)	Cash (CHF)	In-kind (CHF)
Data management <ul style="list-style-type: none"> ● Maintain DDC catalog and web site ● Maintain archived data and digital products from past ARs and SRs ● Archive and provide access to data for new input and intermediate data ● Archival, data access services for final data used to generate figures ● Data stewardship, quality control of DOIs, Errata Protocol requirements 	90,000	35,000	375,000	50,000
Coordination <ul style="list-style-type: none"> ● Coordinate with TSUs, IPCC Secretariat IT services and TG-Data ● Coordinate with external input data providers ● Share and discuss IPCC data curation practices with external partners 	60,000	45,000	80,000	45,000
User support and tooling <ul style="list-style-type: none"> ● Operate DDC help desk ● Prepare training material on FAIR practices for IPCC authors ● Design and maintain interoperable data and software curation workflows ● Develop tools to help authors submit datasets, metadata and software ● Offer authors guidance and support regarding best practices ● Improve data access over regions with sparse data coverage ● Provide virtual workspaces for IPCC authors 	200,000	60,000	190,000	45,000
Thought Leadership	35,000	30,000	35,000	30,000

<ul style="list-style-type: none"> ● Develop recommendations for best practices in climate data management ● Contribute to IPCC TG-Data activities and initiatives ● Communicate IPCC data and software curation needs to domain experts 				
Respond to new needs arising	15,000	10,000	50,000	30,000
Total	400,000	200,000	730,000	200,000

3. Expected Outcome

The Panel is invited to:

- Consider the proposal for an Expert Meeting in coordination with the list proposals presented by Working Group Co-Chairs and agree that the financial implications should be presented to the FiTT for approval.
- Agree that TG-Data launches the open call for organizations to participate in DDC work and provide additional guidance as appropriate.
- Consider the proposed TG-Data work plan for AR7 and agree that the associated financial implications should be discussed by the FiTT at its next meeting.

Appendix 1

Expert meeting on Earth Observation data accessibility for climate studies

Background

The IPCC Task Group on Data Support for Climate Change Assessments (TG-Data) is, inter alia, mandated to:

- Provide expert information on data and scenarios in support of the implementation of the work programme of the IPCC.
- In cooperation with the Co-Chairs or their representatives of the three WGs, develop and update good practice guidance materials related to data and scenarios, targeting IPCC authors who lack familiarity with the IPCC process and/or the relevant data and scenarios.
- Contribute to building capacity in the use of data and scenarios for climate-related research, particularly in developing and transition-economy regions and countries e.g. through encouraging activities such as expert meetings and liaison with relevant academic institutions to address the requirements of developing countries. To achieve this, TG-Data may work with organizations and activities that have training as their core mandate but would not develop training programmes on their own.

The IPCC Bureau at its 64th Session (Geneva, Switzerland, 16 – 17 February 2023), suggested that TG-Data should consider proposing an Expert Meeting within a wider portfolio of propositions in collaboration with the Working Groups.

Context

In many regions around the globe, access to comprehensive and timely climate data remains limited, hindering the accurate assessment and understanding of climate change impacts. Particularly in areas with sparse climate data availability, such as remote or underdeveloped regions, traditional observational methods struggle to provide adequate information for robust analyses. This is reflected in turn in the geographic coverage of the scientific literature addressing climate change, and the strength of the evidence assessed by IPCC reports.

Earth Observation (EO) data from satellites presents a promising solution to enhance data access in these challenging regions. Satellites equipped with advanced monitoring technologies have the capability to collect vast amounts of environmental data over large geographic areas, offering a valuable source of information for climate studies. By leveraging EO data, researchers and scientists can overcome the limitations of ground-based observations and significantly improve the availability and quality of climate data in regions with sparse coverage, ultimately empowering more informed decision-making and effective climate change mitigation strategies.

The Global Climate Observing System (GCOS) “regularly assesses the status of global climate observations of the atmosphere, land and ocean and produces guidance for its improvement.” It also maintains definitions for 55 Essential Climate Variables (ECVs), systematic observations describing climate variations, change and their impacts. Of these, about 60 percent can be estimated from satellite data.

However, Espinosa et al. (2019) find that “ECV data discovery and access is difficult and time consuming due to the lack of common data and metadata catalogs. In addition, the selection of fit-for-purpose data records by end-users requires the implementation of interoperable standards and scalable data infrastructures to allow the generation of tailored applications and data-driven information products in support of decision-making processes.” This evaluation, together with the broad agreement about the need for IPCC to draw more data from developing nations and the strong interest within the EO community to see more EO data assessed by IPCC, underlines the need for an IPCC-led effort to improve access to EO data.

Gaps and challenges

Billions of dollars have been invested in extensive Earth Observation systems which provide uniform near global coverage. Yet access to the data remains problematic in much of the global South, impeding research on climate change impacts and adaptation. In a paper investigating the accessibility of ECVs, Espinosa et al. (2019) have identified a number of issues:

- No centralized data and information discovery platform;
- No search interface for the complete list of GCOS ECVs;
- Lack of unique identifiers and naming conventions, hampering comparisons across datasets,

And some recommendations:

- Create a comprehensive catalog and index of ECVs;
- Develop standard data and metadata schemas;
- Publish robust product documentation and user guidelines;
- Implement analysis-ready data catalogs that would let end-users perform analyses without first downloading data.

The knowledge gaps and proposed priorities for further work have been highlighted in the most recent report commissioned by the European Commission that involved IPCC AR6 authors. Core challenges persist in development and utilization of diverse datasets particularly of the EO data. International collaborative efforts are essential to the scientific advancement of the development, use and interoperability of such data (Bednar-Friedl, B., Berndes, G., Drabicka, K. et al., 2024).

Reporting on an earlier IPCC EM, IPCC (2016) recommended that TG-DATA and the DDC should seek measures “easing access [to climate data] for users from developing countries”. Despite many successes during the 6th assessment cycle, aided by the excellent advice from the 2016 EM meeting, progress on this recommendation has been limited.

Aims of the Expert Meeting

Bring together experts in the provision and use of EO data in climate change impacts and adaptation with researchers familiar with the challenges of working in the global south to make practical and realizable recommendations for improving data discoverability, accessibility, and usability in the context of IPCC Assessment Reports (AR).

Outcomes

The expert meeting should discuss and propose answers to the following questions:

What mechanisms are needed to develop and maintain international standards around ECV data and metadata that would facilitate assessments and intercomparisons of products from different agencies?

What measures would allow IPCC authors and scientists from the global south to discover, access and analyze global satellite records and ECVs more specifically?

How can IPCC authors tap into existing EO datasets to strengthen the assessment in data sparse regions?

Participation

We envision a meeting with around 50 participants, including satellite data experts from all space agencies, boundary organizations hosting portals and data-analysis platforms, climate scientists experienced in EO data analysis, as well as climate scientists who have tried to use EO data but faced barriers.

Timeline

M1: Convene the steering committee

M2: Identify location and supporting organization

M3: Draft programme and identify keynote speakers

M4: Send invitations to participants identified by the SSC

M5: Plan activities and meeting logistics

M6: Prepare and send travel information

M7: Final scientific program
M9: EM meeting
M11: Draft meeting report circulated to delegates
M13: Final report

Financial resources

We estimate a budget of about CHF 100,000. This would include travel expenses for 20 participants from developing countries and EITs.

Scientific steering committee (preliminary)

Bruce HEWITSON, University of Cape Town, South Africa, Regional Information for Society
Alex RUANE, NASA GISS, New York
Xiaoshi XING, Columbia University, New York, IPCC TG-Data (DDC)
Sebastian Vicuña, Pontificia Universidad Católica de Chile, Chile, IPCC TG-Data co-chair
David HUARD, Ouranos, Canada, IPCC TG-Data co-chair
Silvan SOLMAN, Institute of the University of Buenos Aires UBA, National Council for Scientific and Technical Research, Argentina
Sarah CONNORS, European Space Agency (ESA), Italy
Michio KAWAMIYA, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan
Jose Manuel GUTIERREZ, Spanish Research Council (CSIC), Spain
Muhammad ARIF GOHEER, Global Change Impact Studies Centre (GCISC), Pakistan
Group of Earth Observations (GEO) Climate Change WG
Richard JONES, Met Office Hadley Centre, University of Oxford, UK
Riko OKI, Earth Observation Research Center, JAXA (Japan Aerospace Exploration Agency)
Thelma KRUG, Group of Climate Observing System, WMO (GCOS), Brazil
Virginia BURKETT, Group of Earth Observations (GEO) Climate Change WG Co-chair, USGS
TBD, NASA GSFC, JPL, or Headquarters
Martin Jukes, National Centre for Atmospheric Science (NCAS), and Oxford University, UK

References

- Miranda Espinosa, M. T., Giuliani, G., & Ray, N. (2019). Reviewing the discoverability and accessibility to data and information products linked to Essential Climate Variables. *International Journal of Digital Earth*, 13(2), 236–252. <https://doi.org/10.1080/17538947.2019.1620882>
- European Commission, Directorate-General for Research and Innovation, Bednar-Friedl, B., Berndes, G., Drabicka, K. et al., The next frontier for climate change science – Insights from the authors of the IPCC 6th assessment report on knowledge gaps and priorities for research, Drabicka, K.(editor), Mousson, M.(editor), Ruiz Ramos, M.(editor), Markowitsch, R.(editor), Pirani, A.(editor), Publications Office of the European Union, 2024, <https://data.europa.eu/doi/10.2777/34601>
- IPCC, 2016: Expert Meeting on the Future of the Task Group on Data and Scenario Support for Impacts and Climate Analysis (TGICA) [Shongwe M., A. Tall, D. Wratt, T. R. Carter, B. Hewitson, C. Gordon, C. Hewitt, A. Klein-Tank, R. Moss, J. Omumbo, K. Riahi, C. Rosenzweig, R. Schaeffer, B. Stewart, M. van Aalst, and C. Vera (eds.)], World Meteorological Organization, Geneva, Switzerland, 57pp.

Appendix 2

CALL FOR DDC PARTICIPATION

The IPCC seeks proposals from established, reputable institutions working in the field of research data curation and archival to join and contribute expertise and facilities to the IPCC Data Distribution Centre (DDC).

1. Background

The DDC, established in 1997, provides long-term access to data in support of the broad IPCC community. It operates under the oversight of the Task Group on data support for climate change assessments (TG-Data), itself accountable to the Bureau. For over 20 years, contributions to DDC activities have been provided in-kind by institutions within the UK, USA and Germany. In the previous AR6, the Spanish National Research Council joined the DDC, offering data and expertise related to the Working Group (WG) I Interactive Atlas.

With the growing volume of data assessed by the IPCC, and the additional responsibilities stemming from the implementation of the FAIR guidelines proposed by TG-Data, expectations towards DDC have considerably increased. At the same time, national and institutional in-kind commitments have either stayed constant or decreased. In view of the DDC's ongoing funding needs, TG-Data emphasized the need for donations, and consequently requested the Panel to include the DDC in the IPCC budget, to ensure the sustainability of DDC services and be able to plan resources and activities through a full assessment cycle, in fulfilment of the mandates given to the DDC and TG Data.

At P-60, the Panel agreed to include DDC activities in its annual budget. The budget for 2024 (CHF 200,000) has been allocated to current DDC members to complete activities related to the curation of AR6 data. Budgets for 2025 (CHF 400,000), 2026 (CHF 730,000) and for the years until the end of AR7 will be allocated through this open call for participation. Resources required to meet objectives are thought to be greater than the total budget, and proposals are expected to include a mixture of in-kind contributions and contracted services.

2. Objectives

Make IPCC FAIR

The primary objectives of this call for participation is to provide the DDC with the expertise and resources necessary to ensure data assessed by authors are preserved in secure, long-term archives, and that the data generated throughout the IPCC process comply with FAIR principles (Findable, Accessible, Interoperable, Reusable). Archiving assessed data sets from the literature, intermediate data sets created by IPCC authors, and data underlying key figures, graphics and tables has the benefits of increasing the transparency of IPCC assessments, facilitating the application of the IPCC error protocol, and giving authors of future assessments the material and tools needed to build on previous reports.

Improve data access

A secondary objective is to improve the accessibility to climate change related data for IPCC authors. Some areas of the globe are sparsely instrumented, which can lead to under-representation in the scientific literature. In some regions, scientists lack the compute, network and storage facilities necessary to assess large volumes of data. One aim of this call is to solicit proposals to broaden the pool of data accessible to IPCC authors, and lower technological barriers to conduct the data analysis required for the assessment.

3. Activities

All organisations submitting proposals will be expected to contribute to core DDC activities:

A. Core activities

1. Coordinate with WG Technical Support Units (TSUs), the IPCC Secretariat and TG-Data through virtual and annual in-person meetings;
2. Provide data science expertise and support to TSUs;
3. Help answer user questions from the support desk;
4. Assist in the development of author guidelines and training material;

In addition, organisations are invited to contribute to one or more activities listed below, in pursuit of the call's objectives:

B. Make IPCC FAIR

1. Offer long-term data storage facilities to archive many (~1,000) relatively small data sets (~MB) created by authors for AR7, including maintenance of data from AR6;
2. Offer long-term data storage facilities for snapshots of key assessed datasets (~100s TB) for AR7, including maintenance of data from previous cycles;
3. Perform quality-control for metadata submitted by authors and TSUs;
4. Mint Digital Object Identifiers for new datasets;
5. Strengthen linkages between IPCC reports, underlying data and metadata;
6. Maintain an online catalogue of IPCC related datasets and a support desk, extend search capabilities to external catalogues;
7. Develop a common data architecture, common vocabularies and tooling to help authors record and visualise data provenance throughout their analyses.
8. Design and implement good practices around the preservation of code and libraries used in the AR and its digital products.

C. Improve data access

1. Provide IPCC authors virtual desktops, collaborative data analysis environments, storage space and CPU time to ease access to large data sets;
2. Facilitate access to climate change relevant data sets for IPCC authors;
3. Improve the accessibility of data sets from regions with sparse data coverage.

4. Eligibility

The IPCC welcomes proposals from organisations active in the curation of scientific data, the development of good practices and standards related to data sharing and interoperability, or the provision of storage or high-performance computing infrastructures. Organisations should be financially stable, have redundancy for key staff positions, and be able to coordinate activities in English. All organisations will be subject to a due diligence review, in alignment with applicable UN/WMO guidelines and best practices. There can be no benefit, direct or indirect, to staff of the IPCC, WMO, UNEP or hosting institutions of TG-Data.

Organisations that wish to offer storage space for IPCC data should hold a valid certification, such as CoreTrustSeal or an equivalent, and be ready to host IPCC data in excess of a 10 year minimum.

5. Selection process

The IPCC Bureau will establish a selection committee to evaluate the proposals. The committee will select multiple organisations with complementary contribution offers, so as to meet the objectives outlined above within budgetary constraints. Organisations might be contacted for clarifications.

Proposals will be judged on criteria including value-for-money, quality of response, experience, capacity to deliver, motivation, ability to communicate in official United Nations languages, and

geographic diversity. All proposals are subject to due diligence for compliance with applicable UN/WMO guidelines and best practices.

The terms of the contracts will be negotiated to ensure complementarity and spread key responsibilities across multiple institutions. The DDC has always been an international collaboration, and this call is meant to strengthen and expand the network. Contract extensions will be negotiated during the cycle to adjust for IPCC budgets and new needs as they may arise. Selected organisations will be expected to update and sign a Memorandum of Understanding ([MoU](#)) related to the joint operation of the DDC.

6. Timeline

Call for participation - August 2024

Q&A sessions - September 2024

Submission deadline - December 1st

Enquiries & negotiations

Selection notification - February 2024

Start of activities - May 2025

7. Content of proposals

Proposals shall follow the outline described in Appendix 1 and be forwarded to Mxolisi Shongwe (mshongwe@wmo.int) at the IPCC Secretariat as a single PDF document before November 1st. The size of the document should be under 15 Mb and 10 pages.

All communication, material and enquiries regarding this call shall be directed in English to Mxolisi Shongwe (mshongwe@wmo.int). Unless stated otherwise, questions and replies will be posted publicly on the Call web page.

Appendix 1 - Expression of interest template

Prepare a PDF document in English including the following sections, not exceeding the number of pages indicated.

1. Cover page with the name and contact of the legal representative of the organisation submitting the proposal (1 page)
2. Vision and strategy regarding the role of the organisation in the DDC (1 page)
3. Description of the organisation (2 pages)
 - a. History
 - b. Staff
 - c. Funding
 - d. Key achievements
 - e. Capacity to deliver services to the DDC
4. Benefits for the organisation to participate in the DDC (1 page)
5. Proposed contribution to the DDC (4 pages)

Indicate how your organisation would contribute to the activities listed above. Include additional ideas to improve IPCC FAIR practices, traceability and compliance with data handling best practices.
6. Five year budget for in-kind contributions and contracted services, itemized by activity (1 page)

If an activity includes in-kind contributions but also requires IPCC funding, include this activity in the two budget sections.

In-kind contributions	2025	2026	2027	2028	2029
<i>Activity</i>					
...					
Subtotal (local currency)					
Subtotal (CHF)					
Contracted services	2025	2026	2027	2028	2029
<i>Activity</i>					
...					
Subtotal (local currency)					
Subtotal (CHF)					
Total (CHF)					

7. Incorporation or registration document. Governing documents, e.g. by-laws, must be made available on request.

Appendix 2. Details of DDC Activities associated with Option 3: Continuity of Services

At IPCC-57 the TG Data Progress report presented a paper outlining four different levels of service that the DDC could provide the IPCC in the next AR7 cycle. These options imply different levels of funding required, ranging from 0 to 1,5 million CHF of annual funding required. The Four options include:

- **Retirement of Service:** Retirement of some or all DDC partners and cessation of joint support provided. Given the mandate of the DDC, this option would contradict previous decisions and the majority of the data requirements outlined in the DDC Guidance by the IPCC would be unfulfilled. It is neither recommended nor feasible without a significant transfer of responsibilities or a change to DDC Guidance.
- **Skeleton Service:** Delivery of a 'skeleton service' with reduced support for authors and TSUs. Some DDC Partners will no longer add new data to the DDC and the available data will become increasingly outdated. Reduced support from their current levels would contradict previous decisions and although it would allow the DDC to fulfil a few of the data requirements outlined in the DDC Guidance by the IPCC, 'technical debt' would accumulate and inevitably this would lead to inefficiencies for authors and external users using and managing IPCC data. This is not recommended as there are significant risks to this approach and many of the data requirements outlined by the IPCC would not be fulfilled.
- **Continuity of Current Service:** Maintenance of tools, services and current support for authors/TSUs. This option would allow the DDC to provide continuity of the current service and fulfil the requirements outlined by the IPCC in the DDC Guidance in a sustainable manner.
- **Optimal Service:** Investment to support the future needs of climate data science. This option would allow the DDC to build on the foundations that have already been developed and create a service that not only meets the minimum data requirements outlined in the DDC Guidance by the IPCC, but provides the infrastructure to streamline and improve data management and enhance DDC services in the future for both the IPCC authors/TSUs and external users in the wider community.

Below is the list of activities considered for Option 3: Continuity of current service. The list of activities refer to activities in charge of current DDC members but this doesn't imply these institutions will be in charge of these activities for AR7.

Option 3: Continuity of current service. Maintenance of tools, services and current support for authors/TSUs

DKRZ:

- Long-term preservation of DDC data holdings as part of DKRZ's obligations as Regular Member of the World Data System
- Limited contribution to joint DDC and IPCC tasks
- Enhanced contribution to joint DDC and IPCC tasks:
 - Enhanced contribution to joint service desk, joint DDC catalogue, DDC web pages, maintenance of the Zenodo communities for DDC and TG-Data, and other joint DDC services
 - Enhanced contribution to TG-Data activities including outreach and best practices for IPCC's data handling
 - Enhanced long-term data stewardship including errata treatment according to IPCC Errata Protocol including maintenance of linkages to the digital ARs
- Networking and contribution of expertise:
 - Collaboration with external infrastructure and climate research partners like ESGF, ES-DOC, ENES-RI.
 - Contribute expertise to international fora on best practices in data long-term preservation and data citation as well as domain-specific data and metadata standards Force11, COPDESS, RDA , OGC.

- Coordination of IPCC and DDC requirements for CMIP input data with WCRP on aspects like data request, timelines, and infrastructure requirements
- Archival and long-term preservation of CMIP input data and core and important intermediate data for future cycles up to a volume of 1 PB
- IPCC author support:
 - Provide collaboration platforms with access to selected datasets in the data pool and common software packages
 - Access to compute and disk storage resources
 - Tools and guidance to provide provenance information including CMIP input, intermediate and final data information sufficient for archival in the DDC and supporting a smooth transition of intermediate and final data to the DDC; in collaboration with communities providing software packages used by WGI authors like ESMValtool

CIESIN:

- Archiving and support of broader range of IPCC socioeconomic data and scenarios, and observed impacts data, stemming from IPCC ARs and SRs
- Continued contribution to joint DDC and IPCC tasks, participation in TG-Data, and coordination with external networks

CSIC:

- Continue hosting, user support and maintenance (including errata) for the AR6 WGI Interactive Atlas
- Contribution and support to join DDC and IPCC tasks
- Expanded user support and outreach and enhanced support for improved guidance for IPCC authors and users of the DDC in coordination with the DDC Partners including webinar for authors.

MDW:

- Operation and maintenance of the current DDC website
- Improved user interfaces to make data, scenarios and guidance easier to find, understand and access
- Service desk and wiki for IPCC data to serve the needs of the global community more effectively
- Tool for authors to onboard IPCC data and make it open and FAIR
- Coordination of new partners and existing members