

The role of the IPCC Data Distribution Centre in supporting assessments of climate change

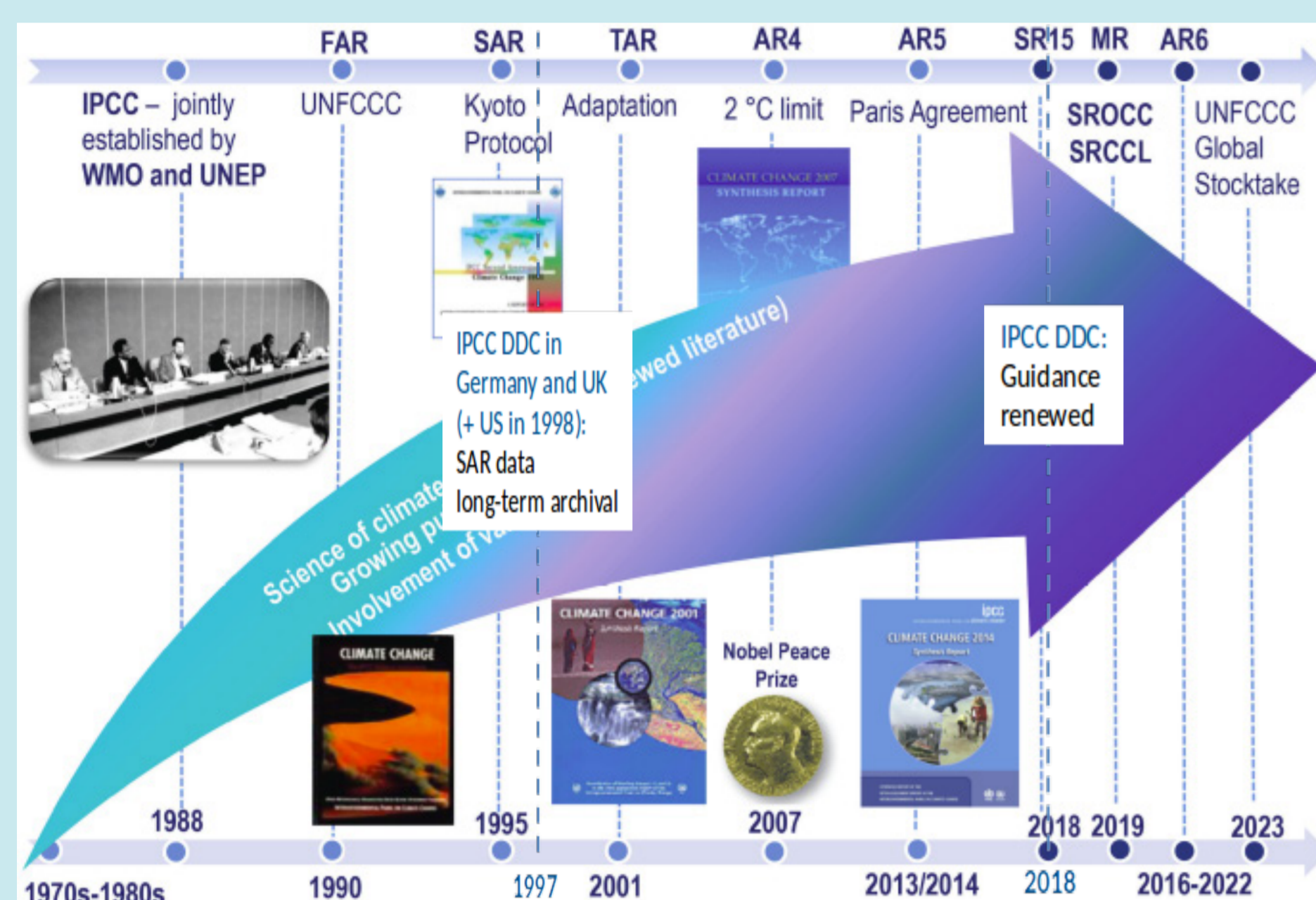
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1: ABSTRACT

The Data Distribution Centre (DDC) of the Intergovernmental Panel on Climate Change (IPCC) was established in 1997 to facilitate the timely distribution of a consistent set of up-to-date scenarios of changes in climate and related environmental and socio-economic factors for use in climate impacts assessments, particularly to support the periodic IPCC Assessment Reports. This work could be seen as helping to bridge the gap between intercomparison of models which is conducted within CMIP (Coupled Model Intercomparison Project) and the broader problem of assessing climate change.

This presentation will explore two key aspects of this work: firstly, supporting the exchange of data between the physical climate, climate impacts and socio-economic science domains and, secondly, ensuring that data used in assessments, which may be from dynamic research projects, is reliably curated to ensure long term access and proper tracking of data usage. These activities play a critical role in enabling robust assessments by an extended community effort while maintaining transparent data provenance. Our work is underpinned by engagement with the World Data System.

2: HISTORY, PARTNERS AND OBJECTIVES



The DDC was established in 1997. The current partners are:

- Centre for Environmental Data Analysis (CEDA): Climatologies;
- World Data Center Climate (WDCC) at DKRZ: Reference Data Archive for climate model output;
- Center for International Earth Science Information Network (CIESIN) at Columbia University, NASA Socioeconomic Data and Applications Center (SEDAC): Socioeconomic data, scenarios, and observed impacts.

From IPCC 2016, key DDC dates added.

DDC objectives:

- | | |
|-------------------------|--|
| Current Objectives | 1. Long-term data archival of data underlying the reports, incl. data for key figures and tables |
| (Partly) New Objectives | 2. Data curation and supporting materials for data usage |
| | 3. Collaboration with other data centers as IPCC DDC in a transparent manner |
| | 4. Contribute to a sustainable (infra-)structure for data on regional to local scales |

3: SUPPORTING DATA EXCHANGE

In the early days of the DDC it was conceived as a hub of data exchange: key datasets contributing to the WG1 assessment would be lodged there in order to make them readily available to WG2 and WG3 scientists.

As the IPCC has grown and evolved the role of the DDC has also changed, and it has gained importance as a facilitator of data exchange. The DDC partners contribute to the information strategy of the Coupled Model Intercomparison Project Phase 6 (CMIP6) to ensure that data will be documented, easily used, and designed to facilitate citation.

For CMIP6, data exchange is being supported further by giving IPCC authors interactive server access to large data archives maintained at the Centre for Environmental Data Analysis (CEDA) and the German Climate Computing Centre (DKRZ).

The authors using this service would be able to access all the data held at these institutions, subject to the usual access procedures, which is a far greater volume than the DDC data collections. Common tool packages are available in these virtual workspaces, including the ESMValTool-AR6 at DKRZ. More information is given in Section 6 (far right).

REFERENCES

IPCC 2016: The IPCC and the 6th Assessment cycle: https://www.ipcc.ch/site/assets/uploads/2018/09/AC6_brochure_en-1.pdf
 CEDA Interactive Server - User Guide (v1.1, Dec 2018): https://cedadev.github.io/ipcc_ddc/Documents/IPCC_DDC_CEDA_InteractiveServer_UserGuide_v1-1.pdf
 The DKRZ CMIP data pool (DKRZ CDP): https://redmine.dkrz.de/projects/dkrz_cdp/wiki

4: PRESERVING VALUABLE DATA

DDC staff at CIESIN worked with IPCC author's to preserve a key dataset on observed climate impacts which featured in the 5th IPCC Assessment Report (AR5). The relevant data tables have been extracted from the report and made available as an Excel database.

Similar preservation work has been done to make preserve and improve the accessibility of regional data which was presented in printed tables in AR5.

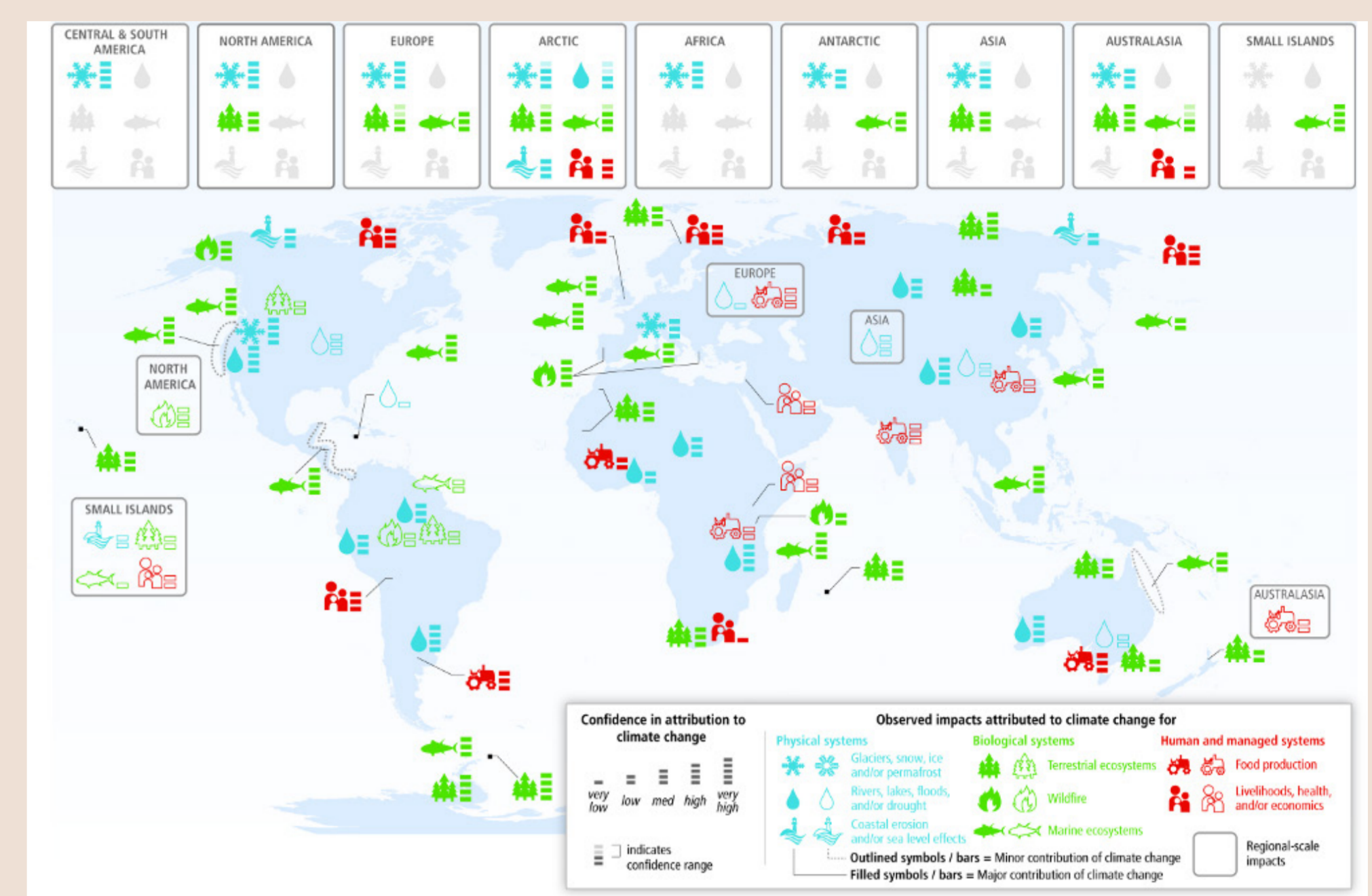


Figure 18-3. Global patterns of observed climate change impacts reported since AR4. Each filled symbol in the top panels indicates a class of systems for which climate change has played a major role in observed changes in at least one system within that class across the respective region, with the range of confidence in attribution for those region-wide impacts indicated by the bars. Regional-scale impacts where climate change has played a minor role are shown by outlined symbols in a box in the respective region. Sub-regional impacts are indicated with symbols on the map, placed in the approximate area of their occurrence. The impacted area can vary from specific locations to broad areas such as a major river basin. Impacts on physical (blue), biological (green), and human (red) systems are differentiated by colour. This map represents a graphical synthesis of Tables 18-5, 18-6, 18-7, 18-8, and 18-9. Absence of climate change impacts from this figure does not imply that such impacts have not occurred. It means, instead, that it has not yet been (or perhaps never will be) detected and/or attributed.

5: RELIABLE DATA CURATION

IPCC reports are produced under great pressure, with scientists working to tight deadlines. This can lead to the neglect of data curation principles and loss of important contextual information when science teams are disbanded immediately after the publication of the reports. The two columns of figures at the right are the first 11 rows of a text file which is the reference copy of a global mean temperature dataset which played a central role in the 4th IPCC Assessment Report (AR4). The file contains no information other than the two columns of numbers.

As the IPCC has grown and evolved the role of the DDC has also changed, and it has gained importance in other roles:

- promoting good use and management of data;
- promoting long-term curation of data;
- promoting sustainability of repositories in different areas (organizational, technical, financial, legal, etc.)

1880	-0.1591
1881	-0.0789
1882	-0.1313
1883	-0.1675
1884	-0.2485
1885	-0.2042
1886	-0.1695
1887	-0.2505
1888	-0.1605
1889	-0.1103
1890	-0.3014

6: CLOUD SERVICES FOR AUTHORS

Access to services funded through the DDC is open to IPCC Authors. More details are available in the following documents:

- CEDA Interactive Server – User Guide (v1.1, Dec 2018)
- The DKRZ CMIP data pool (DKRZ CDP)

Users will be able to execute their own software on the servers, or exploit the wide range of pre-installed tools.

