

DDC Report 2014 of WDCC

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Author team:	M. Stockhause, M. Lautenschlager, F. Toussaint	
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1. Summary

In 2014 IPCC DDC users downloaded ca. 100 TBytes of data in ca. 180 000 individual downloads. 225 WDCC users plus an unknown number of ESGF users¹ accessed IPCC DDC data. The average number of downloads for an individual IPCC DCC user was ca. 450.

Data downloads and user requests for 2014 are dominated by AR5. The importance of AR4 was low at the beginning of the year and decreased further over the year. The total DDC download rates increased, significantly, in 2014 (27 times of 2013 download volume), especially in the second half of the year, due to AR5 data downloads.

The total AR5 data volume provided by IPCC DDC is 1.7 PBytes, 1.6 PBytes in the DDC Reference Archive and 100 TBytes in the IPCC WG1 Archive, compared to about 1 TBytes for AR4, and less than 10 GBytes each for the preceding ARs: FAR, SAR, and TAR.

Geographically, at least 43 % of the downloads were performed by Asian, 10 % by European and 4 % by North American users, minor download numbers by users from other continents with a

¹ Data downloads from ESGF users are executed under a single WDCC user account.

lower bandwidth. The average number of downloads for an individual Asian user was also the highest, about double of the average for an IPCC DDC user. The offer to send data for selected areas on storage media was requested by 14 users, the majority from Asia (>50 %), some from Africa and South America.

2. Evolution of data access

In the user downloads from the DDC reference archives a significant increase is observed for 2014 (**Figure 1**). The number of downloads in 2014 was ca. 180 000, more than 4.5 times of that in 2013. The download volume was with ca. 100 TBytes 27 times of that in 2013. The highest monthly data download in 2014 was registered in September with 27 TBytes in 28 000 individual downloads. The average monthly download volume in 2014 was ca. 8 TByte, which increased from 2 TBytes for the first half to 14.5 TBytes for the second half of 2014.

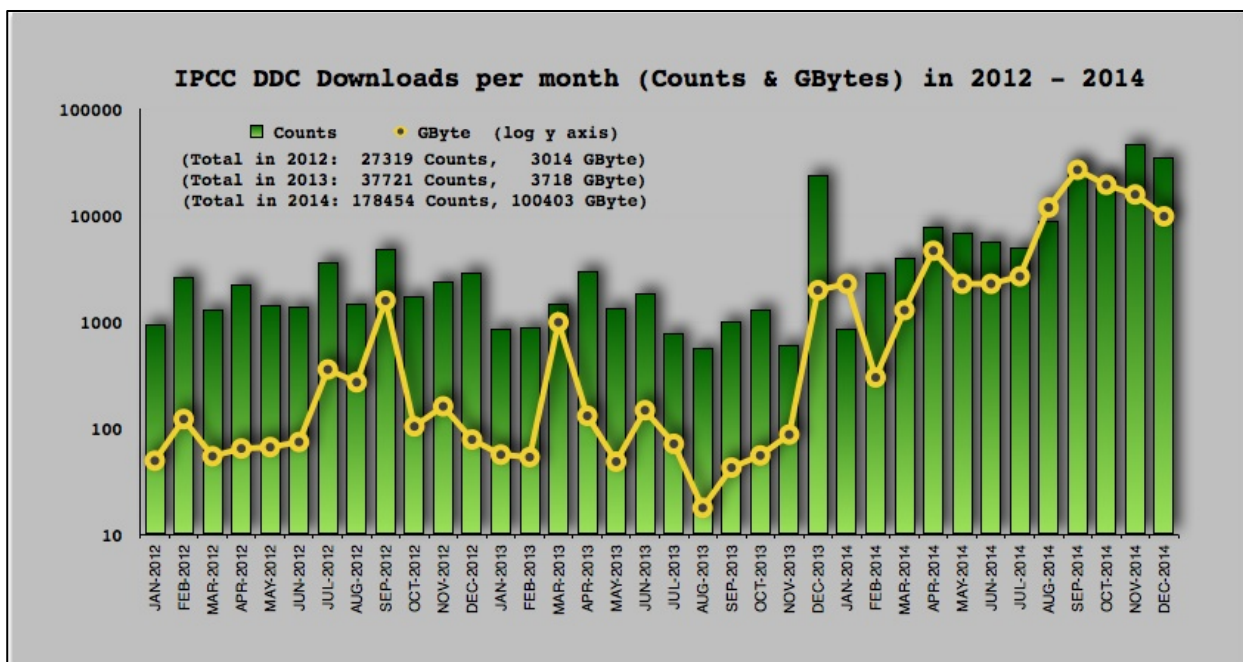


Figure 1: Total data download counts and volumes per months over the last three years in GBytes from the IPCC DDC reference archive.

3. Geographical distribution of data access

For the IPCC DDC AR5 data, direct data access at the WDCC and data access via ESGF (Earth System Grid Federation) is supported. For the ESGF data access share, no information about user locations is available. More than 1/3 of the registered users are located in Asia and about another 1/3 in Europe. North American users contribute with about 17 % to the total number of users and the other continents, South America, Africa and Australia are of minor importance (between 1 and 6 %).

As 43 % of the data downloads were accessed via ESGF, a statement about the continental distribution of user downloads is difficult (**Figure 2**). E.g. 43 % of downloads were from registered Asian WDCC users, whereas this number increases to 75 %, assuming that the continental distribution of the ESGF users is equal to those of the WDCC users. Thus at least

43 % of the data was downloaded to Asia, at least 10 % within Europe, at least 4 % to North America and less than 1 % each to Australia, Africa and South America. Compared to the number of registered users, the average download per Asian user is with 880 downloads much higher than for European (224), North American (182) or African (81) users.

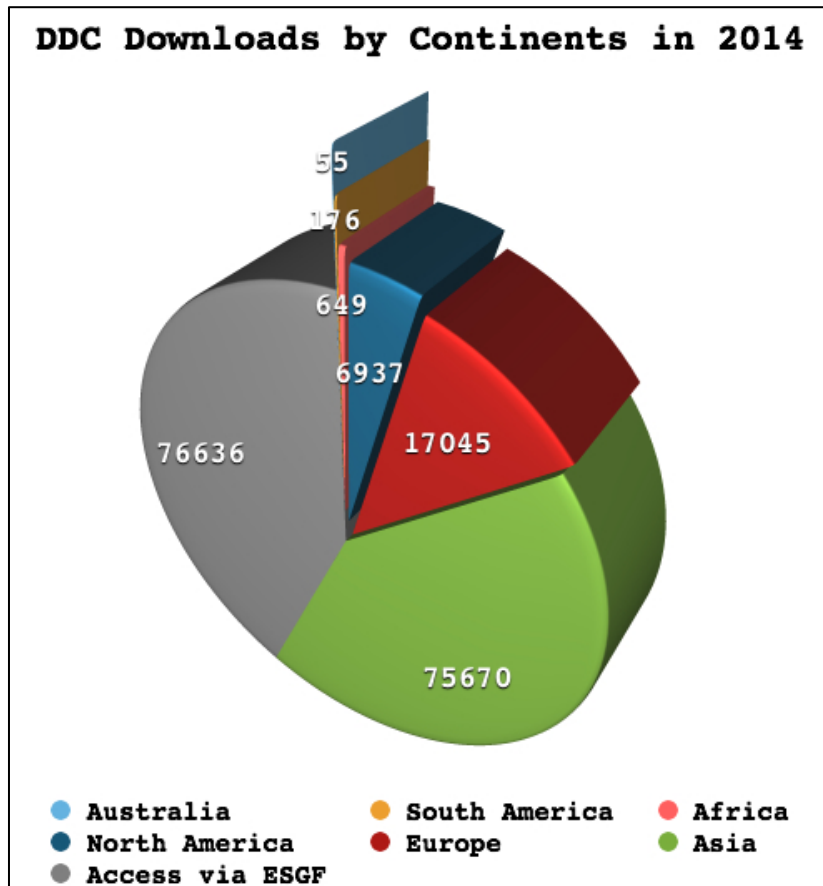


Figure 2: Number of downloads per continent and by ESGF users.

3.1 Data on storage media

Most of the users of storage media requested data for their own continent. About half of the users asked for AR4 and AR5 data. All users are located in continents with low internet bandwidths to Europe: Asia, Africa and South America (see Table 1 and Table 2).

Table 1: Number of storage media requests per data area for AR4 and AR5 in 2014.

Area of Data	No of storage media	Africa	Asia	Australia / Central Pacific	Europe	North America	South America	North Pole	South Pole
AR4	6	3	3	-	-	-	-	-	-
AR5	18	5	5	1	1	1	2	1	2
DDC total	24	8	8	1	1	1	2	1	2

Table 2: Number of user requests for AR4/AR5 data on storage media per user origin (continent) in 2014 (*: Some users requested data for multiple areas or AR4 and AR5 data).

User origin	No of users	African users	Asian users	South American users
AR4	6	3	3	-
AR5	12	4	6	2
DDC total*	14	4	8	2

4. Data access by category AR

For the downloads per IPCC DDC reference archive the monthly download rates for AR5 reached 1 TByte/month in December 2013 and exceeded the AR4 download rates for the first time. During 2014 these trends of an increased download rate of AR5 data and a decreased download rate for AR4 data continued. By end of 2014 the download rates were dominated by AR5 downloads, which reached ca. 1 000 times those of AR4 in volume and ca. 100 times those of AR4 in number (**Figure 3**; online monthly download statistics²).

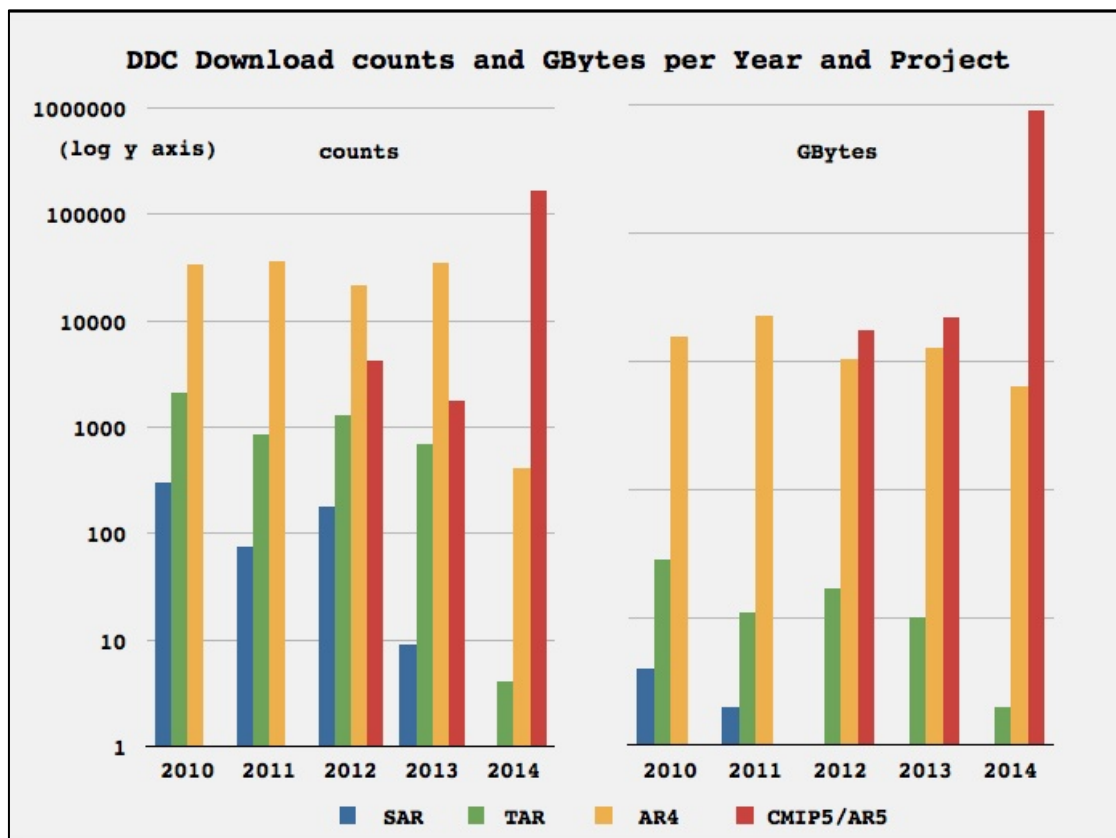


Figure 3: Total yearly data downloads counts (left) and volumes in GBytes (right) over the last five years for the different DDC reference archives (without FAR).

² Online monthly download statistics are available at:
<http://cera-www.dkrz.de/WDCC/ui/Statistics.jsp?domain=IPCC-DDC>
http://cera-www.dkrz.de/WDCC/ui/Statistics.jsp?domain=IPCC-DDC_AR5
http://cera-www.dkrz.de/WDCC/ui/Statistics.jsp?domain=IPCC-DDC_AR4

5. Review of user queries

The WDCC/DKRZ user support handled ca. 750 user requests in 2014. A separation of user requests on IPCC DDC issues is not possible.

Additionally, in ESGF user support 80 to 90 requests on 'Data', 'Scientific questions' and 'Search' were registered. As part of the IS-ENES support activity, DKRZ provides first level user support for ESGF. ESGF user requests include requests related to DDC AR5. Currently, a separation of CMIP5/DDC AR5 requests is not possible.

In parallel to the regular user support channels, additional requests were directed to individuals at the modelling centres or at the data centres (within ESGF or to WDCC/DKRZ).