Global Change Research Data Publishing & Sharing Rankings

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Global Change Research Data Publishing & Repository (GCdataPR)[1] was jointly launched by the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences (IGSNRR/CAS) and Geographical Society of China (GSC) in June 2014. One of the main characteristics of GCdataPR is to publish metadata, datasets, and data papers coordinately for supporting the global change research. The website of the services is at: http://www.geodoi.ac.cn. The first issue of data papers was published in the supplement of *Acta Geographica Sinica* in 2014, and the *Journal of Global Change Data & Discovery* (both in Chinese and English) was officially launched in March 2017. By end of May 2018, the GCdataPR has published 20 issues, including 411 datasets and 134 articles (90 data papers, 20 data encyclopedia, 9 policy-theory-technology-method papers, and 15 academic activities and dissemination reports).

In order to credit the data authors' contributions, the GSC released the "Global Change Research Data Publishing & Sharing Rankings" on August 28 in the 2018 China Conference on Geography in Xi'an city. The following rankings were released, including the datasets authors' affiliates ranking, founding agencies ranking for supporting datasets publishing, journals ranking for articles published linking to the datasets, hot datasets browsed and downloaded ranking, and datasets and authors' impact rankings.

I. Best Institution Ranking (Top 10)

Since the GCdataPR was launched in June 2014, 411 datasets (20 issues) were published by 656 authors (co-authors) from 169 institutions (universities, research institutions) of 12 countries or international organizations (America, Japan, Pakistan, Chile, Madagascar, Kenya, United Nations, East Africa office, Russia, Netherland, Czech, Thailand, and China). Among them, 149 institutions were from China, accounting for 88.17% of the total institutions. The Top 10 Institution Ranking is listed in Table 1.

As shown in Table 1, the Top 1 of the ranking was the IGSNRR/CAS, who published 238 datasets, accounting for 57.91% of the total datasets published. The Top 2 of the ranking was

the Institute of Remote Sensing and Digital Earth, CAS, who published 83 datasets, accounting for 20.44% of the total datasets published. Half of the top 10 affiliates of the ranking were located in Beijing. It is worth noting that Keio University of Japan published 12 datasets in GCdataPR, ranking the Top 5.

Table 1   Best Institution Ranking (Top 10)

Institution	Location	Number of dataset published	Ranking
Institute of Geographic Sciences and Natural Resources Research, CAS[2]	Beijing	238	1
Institute of Remote Sensing and Digital Earth, CAS[3]	Beijing	84	2
University of Chinese Academy of Sciences[4]	Beijing	32	3
Beijing Normal University[5]	Beijing	23	4
Keio University[6]	Japan	12	5
Henan University[7]	Henan	10	6
National Geomatics Center of China[8]	Beijing	9	7
Jilin University[9]	Jilin	6	8
Polar Research Institute of China[10]	Shanghai	6	8
Xinjiang Institute of Ecology and Geography, CAS[11]	Xinjiang	6	8

II. Founding Agencies Ranking for Supporting Datasets Published (Top 10)

There were 672 foundation items (including 8 projects outside of China) which sponsored the 411 datasets published in GCdataPR. Among them, 173 foundation items were from Ministry of Science and Technology of P. R. China, accounting for 25.74% of the total foundation items. 151 foundation items were from National Natural Science Foundation of China, which ranked Top 2 who sponsored 151 datasets and accounted for 22.47% of the total foundation items. A total of 134 projects (sub-projects) from Chinese Academy of Sciences funded the datasets, accounting for 19.94% of the total foundation items. The Datasets Founding Agencies Ranking (Top 10) is listed in Table 2.

III. Journals Ranking for Articles Published Linking to the Datasets (Top 10)

Since 2016, 36 academic journals related to the global change studies (including geography, resources, environment, ecology, remote sensing, etc.), such as *Acta Geographica Sinica*, *Acta Meteorologica Sinica*, and *Chinese Journal of Geophysics*, have reached an agreement to encourage their authors to publish their original research data in the meantime of or after the publication of academic finding papers. As a positive response, authors from 27 journals have published 125 datasets in the past two years. Journals ranking for articles published linking to the datasets (Top 10) are listed in Table 3. The top three journals were *Journal of Natural Resources* (13 datasets), *Progress in Geography* (11 datasets), and *Geographical Research* (11 datasets). The data in Table 3 indicate that most original scientific data related to academic finding papers in the global change studies in China have not been published yet, which will be a big problem for promoting the quality and scientific impact of Chinese journals. Therefore, more attention should be paid to this issue in the future.

Table 2 Best founding agencies ranking (Top 10)

Founding agency	Number of dataset sponsor	Ranking
Ministry of Science and Technology of P. R. China[12]	173	1
National Natural Science Foundation of China[13]	151	2
Local, companies, etc.	147	3
Chinese Academy of Sciences[14]	134	4
Ministry of Education of P. R. China[15]	23	5
State Oceanic Administration[16]	10	6
Outside of China	8	7
National Social Science Foundation of China[17]	6	8
Ministry of Environmental Protection of P. R. China[18]	4	9
Ministry of Land and Resources of P. R. China[19]	3	10

Note: the number of founding projects was calculated based on the foundation items in the published datasets.

Table 3 Journal ranking for articles published linking to the datasets (Top 10)

Journal	Number of articles published linking to the datasets	Ranking
Journal of Natural Resources[20]	13	1
Progress in Geography[21]	11	2
Geographical Research[22]	11	2
Acta Geographica Sinica[23]	9	4
Resources Science[24]	9	4
Geo-Information Science[25]	7	6
Scientia Geographica Sinica[26]	6	7
Acta Ecological Sinica[27]	6	7
Chinese Journal of Plant Ecology[28]	5	9
Chinese Journal of Geophysics[29]	5	9

IV. Hot Datasets Browsed Ranking (Top 10)

There are 37,859 IP users from 76 countries visited the GCdataPR.

The home page of GCdataPR was browsed more than 930,000 times. The hot datasets browsed ranking (Top 10) is listed in Table 4. Among them, the dataset "1 km grid population dataset of China" (First author: Fu, J. Y.), ranked the Top 1, has been browsed 20,541 times.

V.   Hot Datasets Downloaded Ranking (Top 10)

The dataset in GCdataPR was downloaded more than 140,000 times accumulatively. The hot datasets downloaded ranking (Top 10) is listed in Table 5.

The Top 1 of the ranking is the dataset titled as "Time series of land ecosystem classification dataset of China in five-year increments" (First author: Xu, X. L.), which was downloaded 9,687 times. The top 10 datasets of the ranking were all downloaded more than 3,000 times.

Table 4 Hot dataset browsed ranking (Top 10)

Title of the dataset	First author	Visitors	Ranking
1 km grid population dataset of China[30]	Fu, J. Y.	20,541	1
1 km grid GDP data of China (2005, 2010)[31]	Huang, Y. H.	13,071	2
Datasets of the boundary and area of the Tibetan Plateau[32]	Zhang, Y. L.	11,410	3
Global artificial land surface dataset at 30 m resolution (2010)[33]	Chen, J.	11,112	4
Time series of land ecosystem classification dataset of China in five-year increments[34]	Xu, X. L.	10,152	5
Global land surface water dataset at 30 m resolution (2010)[35]	Chen, J.	10,086	6
Historical monthly temperature data of China at 1 km resolution[36]	Jing, W. L.	9,609	7
Eco-regional boundary data of the roof of the world[37]	Liu, C.	8,657	8
Cropping rotation system data of China[38]	Xu, X. L.	6,942	9
Remote sensing based forest phenology data of Northeast of China[39]	Yu, X. F.	6,931	10

Table 5 Hot datasets downloaded ranking (Top 10)

Title of the dataset	First author	Times downloaded	Ranking
Time series of land ecosystem classification dataset of China in five-year increments[34]	Xu, X. L.	9,687	1
Historical monthly temperature data of China at 1 km resolution[36]	Jing, W. L.	9,071	2
1 km/5 day surface reflectance product over China and the association of Southeast Asian nations for 2013[40]	Zhong, B.	6,457	3
1 km/5-day NDVI product over China and the association of Southeast Asian nations for 2013[41]	Li, J.	5,589	4
1 km/daily evapotranspiration product over China and the association of Southeast Asian nations for 2013[42]	Jia, L.	5,499	5
Global land surface water dataset at 30 m resolution (2010)[35]	Chen, J.	5,266	6
1 km grid GDP data of China (2005, 2010)[31]	Huang, Y. H.	4,809	7
1 km grid population dataset of China[30]	Fu, J. Y.	4,170	8
Global artificial land surface dataset at 30 m resolution (2010)[33]	Chen, J.	3,816	9
Reanalysis dataset of MODIS-NDVI in Southeast Asia, 2010[43]	Wang, Z. X.	3,313	10

VI. Datasets Impact Ranking (Top 8)

Data Impact Score (DIS)[44] is a quantitative method to evaluate the impact of data on scientific discovery or data used and re-used performance. It is based on a data citation paper published in a journal and the respective journal's impact factor (IF). 2018 China Conference on Geography initially calculated the DIS of the datasets and released dataset impact ranking based on DIS (Table 6).

The "Datasets of the boundary and area of the Tibetan Plateau" (First author: Zhang, Y. L.) ranked the Top 1, with the DIS of 67.844,3. The DIS of this dataset is increasing continually since it was published in 2014 (June 2014−May 2018), with a total citation of 11 times (1 citation in 2014, 3 citations in 2015, 1 citation in 2016, 4 citations in 2017, and 2 citations in 2018). The journals that cited this dataset include *Cryosphere*, *Journal of Geographical Sciences*, *Nature*, *Atmospheric Chemistry and Physics*, *Environmental Earth Sciences*, *Journal of Glaciology*, *Ecosystem Services*, *Acta Geographica Sinica*, *Resources Science*, and *Geographical Research*. Among them, 6 journals have IF higher than 2.0, with the IF of 40.137 for *Nature* that year.

Table 6 Best datasets impact ranking (Top 8)

First author	Title of the dataset	Year published	DIS	Ranking
Zhang, Y. L.	Datasets of the boundary and area of the Tibetan Plateau[32]	2014	67.844,3	1
Fu, J. Y.	1 km grid population dataset of China[30]	2014	63.132,1	2
Huang, Y. H.	1 km grid GDP data of China (2005, 2010)[31]	2014	31.575,8	3
Zhong, B.	1 km/5 day surface reflectance product over China and the association of Southeast Asian nations for 2013[40]	2015	6.657,0	4
Xu, X. L.	Cropping rotation system data of China[38]	2014	6.514,5	5
Xu, X. L.	Time series of land ecosystem classification dataset of China in five-year increments[34]	2015	5.400,0	6
Chen, J.	Global artificial land surface dataset at 30 m resolution (2010)[33]	2014	3.122,0	7
Wang, J.	Remotely sensed dataset of grassland degradation on the Qinghai-Tibetan Plateau[44]	2014	2.822,4	8

VII. Datasets Authors' Impact Ranking (Top 10)

The DIS for individual authors (co-authors) can be calculated based on the DIS for a dataset or data product. Usually a data product may be produced by several authors (co-authors), with a certain rank for all authors. According to the scientific practice, authors ranking the first few places play more important roles in the completion of the data product. Therefore, these authors share the DIS of the data product when calculating the DIS of individual author(s). The share of DIS for individual authors will decrease by half according to their ranking order, with the last two co-authors having the same share. If the author has more than one data product, his/her scientific impact score will be the sum of DIS calculated from all data products. The Datasets Authors' Impact Ranking (Top 10) is listed in Table 7. Dr. Fu, J. Y. (IGSNRR/CAS) was the first author of the "1 km grid population dataset of China" and the third co-author of the "1 km grid GDP dataset of China". The DIS for Dr. Fu, J. Y. in 2018 was 39.460,1, ranking the Top 1.

Table 7 Best author scientific impact ranking (Top 10)

Author	DIS from ENG paper	DIS from CHN paper	DIS	Ranking
Fu, J. Y.	32.937,5	6.522,5	39.460,0	1
Zhang, Y. L.	30.120,0	3.802,2	33.922,2	2
Huang, Y. H.	26.410,8	5.160,2	31.570,9	3
Jiang, D.	19.782,8	3.894,2	23.677,0	4
Li, B. Y.	15.060,0	1.901,1	16.961,1	5
Zheng, D.	15.060,0	1.901,1	16.961,1	6
Xu, X. L.	0.405,0	7.407,9	7.812,9	7
Liu, C.	0.700,0	5.750,0	6.450,0	8
Shi, R. X.	0.250,0	4.025,0	4.275,0	9
Liu, L.	0.000,0	3.962,9	3.962,9	10

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[4]   University of Chinese Academy of Sciences [OL]. http://www.ucas.ac.cn/.
[5]   Beijing Normal University [OL]. https://www.bnu.edu.cn/.
[6]   Keio University [OL]. https://www.keio.ac.jp/zh/.
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[12]   Ministry of Science and Technology of P. R. China [OL]. http://www.most.gov.cn/.
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