A Big Earth Data Platform for Three Poles

**Monthly irrigation dataset (for both surface water and groundwater) with 30 sec spatial resolution over the Heihe River Basin (1981-2013)**

1、Description

Agricultural irrigation, which accounts for about 80% of human water consumption, is the most important part of human water resources management and closely related to human survival and development.Irrigation is also an important part of the water cycle. Large-scale irrigation can affect the water cycle and even the local climate by affecting evapotranspiration.Excessive diversion of irrigation water will lead to unsustainable utilization of water resources, and at the same time, will reduce river flow and aquifer water reserves, thus harming the ecological environment.  
Therefore, determining the spatial and temporal distribution and variation of irrigation is critical to studying past human water use, the impact of irrigation on ecological and hydrological processes, the environment and climate, and the development of future irrigation plans.  
By integrating the irrigation amount of channel diversion water and irrigation amount of groundwater intake from different data sources, and combining the evapotranspiration data of land surface model CLM4.5 simulation and remote sensing inversion, a set of spatio-temporal continuous surface water and groundwater irrigation amount data set with spatial resolution of 30 arcseconds (0.0083 degrees) on the scale of 1981-2013 in heihe river basin was made.  
It has been verified that this data set has a high reliability from 2000 to 2013, and a lower reliability from 1981 to 1999 than from 2000 to 2013 due to the absence of remote sensing data and the absence of soil utilization changes.  
The document is described as follows:  
Monthly surfacewater irrigation volume file name: monthly\_surfacewater\_irrigation gation\_1981-2013.nc  
Monthly groundwater\_irrigation gation\_1981-2013.nc  
The data is in netcdf format.There are three dimensions, which are month, lat, and lon.  
Where, month is a month, and the value is 0-395, representing each month from 1981 to 2013. Lat is grid latitude information, and lon is grid longitude information.

2、Keywords

Theme：Surface Water,Ground Water,Groundwater irrigation  
Discipline：Terrestrial Surface  
Places：Heihe River Basin  
Time：1981-2013

3、Data details

1.Scale：850000

2.Projection：4326

3.Filesize：1434.0MB

4.Data format：netcdf

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：43.0 | - |
| west：96.5 | - | east：102.5 |
| - | south：37.5 | - |

5、Time frame:1981-01-12 18:36:00+00:00--2014-01-11 18:36:00+00:00

6、Reference method

References to data:

XIE Zhenghui. Monthly irrigation dataset (for both surface water and groundwater) with 30 sec spatial resolution over the Heihe River Basin (1981-2013). A Big Earth Data Platform for Three Poles, doi:10.11888/Hydro.tpdc.2705732016

References to articles:

Yujin Zeng, Zhenghui Xie, Yan Yu, Shuang Liu, Linying Wang, Binghao Jia, Peihua Qin, Yaning Chen. Ecohydrological effects of stream–aquifer water interaction: a case study of the Heihe River basin, northwestern China, 2016. Hydrology and Earth System Sciences, 20, 2333-2352, doi:10.5194/hess-20-2333-2016.  
  
Zeng, Yujin, Xie, Zhenghui, Yu, Yan, Liu, Shuang, Wang, Linying, Zou, Jing, Qin, Peihua, Jia, Binghao. Effects of anthropogenic water regulation and groundwater lateral flow on land processes. Journal of Advances in Modeling Earth Systems, 2016, :n/a-n/a. doi:10.1002/2016MS000646

7、Supporting project information

8、Data resource provider

name: XIE Zhenghui  
unit: Institute of Atmospheric Physics,Chines Academy of Sciences  
email: zxie@lasg.iap.ac.cn