A Big Earth Data Platform for Three Poles

**HiWATER: Dataset of measurements on channel flow in the midstream of the Heihe River Basin**

1、Description

The dataset includes channel flow measured at the second irrigation stage in spring (22 May, 2012), the third irrigation stage in spring (18 June, 2012) and the first irrigation stage in autumn (16 July, 2012). The time used in this dataset is in UTC+8 Time.

1.1 Objective of measurement

Objective of measuring channel flow are to provide the conference data for irrigation water optimal allocation model according to obtain reality water volume measured at Dou channel and Mao channel. Data set also is used to reference data for other observations such as eddy, biophysical parameters.

1.2 Observation measures and principle

Measures: flow meter named Flowatch, which is made in Switzerland, observation precision: 0.1m/s; and rule, observation of which is 1cm.
Principle: Flowatch, which is mechanical-based, is used to compute the velocity of the fluid according to vanes speed. The flow of channels is computed by using observed flow velocity and channel sectional area calculated on the basis of channel engineer sectional parameters and water level.

1.3 Observation location and items

Observation spots include Yingyi branch San dou (Liu She, Shang’er She, and Xia’er She of Shiqiao village), Si Dou (Qi She, Ba She, and Jiu She of Shiqiao village), and Wu Dou (Yi She of Shiqiao village) at Yingke irrigation district, and seven Mao channels branched from five star branch channel Si Dou San Nong. Observation time is described as followed:

Second stage irrigation in summer:

2012-5-22: Si Dou, Yingyi branch channel: Jiu She (Shiqiao village)
2012-5-23: Si Dou, Yingyi branch channel: Ba She (Shiqiao village)
2012-5-24 to 2012-5-25: Si Dou, Yingyi branch channel: Qi She (Shiqiao village)
2012-5-26 to 2012-5-28: Wu Dou, Yingyi branch channel: Yi She (Shiqiao village)
2012-5-28 to 2012-5-29: San Dou, Yingyi branch channel: Xia’er She (Shiqiao village)
2012-5-29 to 2012-5-30: San Dou, Yingyi branch channel: Shang’er She (Shiqiao village)
2012-5-30 to 2012-6-2: San Dou, Yingyi branch channel: Liu She (Shiqiao village)
2012-6-6: Yi Mao, Er Mao, San Mao, Si Mao, and Wu Mao branched from Five star branch channel Si Dou San Nong: Five star village
2012-6-7: Liu Mao, and Qi Mao branched from Five star branch channel Si Dou San Nong: Five stars village

Third stage irrigation in summer:

2012-6-18 to 2012-6-19: Si Dou, Yingyi branch channel: Jiu She (Shiqiao village)
2012-6-19 to 2012-6-20: Si Dou, Yingyi branch channel: Ba She (Shiqiao village)
2012-6-20 to 2012-6-21: Si Dou, Yingyi branch channel: Qi She (Shiqiao village)
2012-6-22 to 2012-6-24: Wu Dou, Yingyi branch channel: Yi She (Shiqiao village)
2012-6-24 to 2012-6-26: San Dou, Yingyi branch channel: Xia’er She (Shiqiao village)
2012-6-26 to 2012-6-27: San Dou, Yingyi branch channel: Shang’er She (Shiqiao village)
2012-6-27 to 2012-6-30: San Dou, Yingyi branch channel: Liu She (Shiqiao village)
2012-7-1 to 2012-7-2: Yi Mao, Er Mao, San Mao, Si Mao, Wu Mao, Liu Mao, and Qi Mao branched from Five star branch channel Si Dou San Nong: Five stars village

First stage irrigation in Autumn:

2012-7-16 to 2012-7-18: Si Dou, Yingyi branch channel: Jiu She (Shiqiao village)
2012-7-18 to 2012-7-19: Si Dou, Yingyi branch channel: Ba She (Shiqiao village)
2012-7-19 to 2012-7-21: Si Dou, Yingyi branch channel: Qi She (Shiqiao village)
2012-7-21 to 2012-7-24: Wu Dou, Yingyi branch channel: Yi She (Shiqiao village)
2012-7-24 to 2012-7-25: San Dou, Yingyi branch channel: Xia’er She (Shiqiao village)
2012-7-25 to 2012-7-27: San Dou, Yingyi branch channel: Shang’er She (Shiqiao village)
2012-7-27 to 2012-7-31: San Dou, Yingyi branch channel: Liu She (Shiqiao village)
2012-7-27 to 2012-7-28: Yi Mao, Er Mao, San Mao, Si Mao, Wu Mao, Liu Mao, and Qi Mao branched from Five star branch channel Si Dou San Nong: Five stars village

Second stage irrigation in Autumn:

2012-8-8 to 2012-8-9: Si Dou, Yingyi branch channel: Jiu She (Shiqiao village)
2012-8-9 to 2012-8-10: Si Dou, Yingyi branch channel: Ba She (Shiqiao village)
2012-8-10 to 2012-8-12: Si Dou, Yingyi branch channel: Qi She (Shiqiao village)
2012-8-13 to 2012-8-15: Wu Dou, Yingyi branch channel: Yi She (Shiqiao village)
2012-8-15 to 2012-8-17: San Dou, Yingyi branch channel: Xia’er She (Shiqiao village)
2012-8-17 to 2012-8-19: San Dou, Yingyi branch channel: Shang’er She (Shiqiao village)
2012-8-19 to 2012-8-22: San Dou, Yingyi branch channel: Liu She (Shiqiao village)
2012-8-24 to 2012-8-25: Yi Mao, Er Mao, San Mao, Si Mao, Wu Mao, Liu Mao, and Qi Mao branched from Five star branch channel Si Dou San Nong: Five stars village

Observed items: average flow velocity of channel (m/s), water level of channel (m), water temperature (℃), engineer sectional parameters of channel (investigation). Average flow velocity and water level of channel are measured one time per hour when channel flow is stable. However, the two items are measured two times or more times when channel flow is unstable.

1.4 Data process
Observed data is saved in excel sheet, types of which include channel flow velocity, channel sectional area, water level, and water temperature. Channel flow and irrigation water volume are calculated by using observed data according to data per-process approach.

2、Keywords

Theme：Surface Water,Water flow rate,Discharge/Flow,Irrigation
Discipline：Terrestrial Surface
Places：Heihe River Basin, the artificial oasis experimental area in the middle reaches
Time：2012-06-18, 2012-07-16, 2012, 2012-05-22

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：34.6MB

4.Data format：文本

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.89026 | - |
| west：100.335437 | - | east：100.39606 |
| - | south：38.84863 | - |

5、Time frame:2012-06-06 09:58:00+00:00--2012-07-31 09:58:00+00:00

6、Reference method

References to data:

LI Xin. HiWATER: Dataset of measurements on channel flow in the midstream of the Heihe River Basin. A Big Earth Data Platform for Three Poles, doi:10.3972/hiwater.123.2013.db2017

References to articles:

Li, X., Liu, S.M., Xiao, Q., Ma, M.G., Jin, R., Che, T., Wang, W.Z., Hu, X.L., Xu, Z.W., Wen, J.G., Wang, L.X. (2017). A multiscale dataset for understanding complex eco-hydrological processes in a heterogeneous oasis system. Scientific Data, 4, 170083. doi:10.1038/sdata.2017.83.

7、Supporting project information

The CAS (Chinese Academy of Sciences) Action Plan for West Development Project

8、Data resource provider

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