A Big Earth Data Platform for Three Poles

**WATER: Dataset of airborne microwave radiometers (K&Ka bands) mission in the Binggou watershed flight zone on Mar. 29, 2008**

1、Description

This data set was acquired by K & Ka band airborne microwave radiometer on March 29, 2008, in the Binggou watershed flight zone.
Among them, K-band frequency is 18.7ghz, zenith angle observation, no polarization information; Ka band frequency is 36.0ghz, scanning imaging, scanning range ± 12 °, vertical polarization observation. The plane took off from Zhangye airport at 8:49 (Beijing time, the same below) and landed at 12:54. 9: At 25-12:08, 18 routes were flown according to the scheduled design, with a flight altitude of about 5000m and a flight speed of about 220-250km / hr.
The original data is divided into two parts: microwave radiometer data and GPS data. The K-band of microwave radiometer belongs to non imaging observation, and the digital value obtained from instantaneous observation is recorded in the text file. Ka band belongs to imaging observation, which is different from L band and K band data. The original record of Ka band is hexadecimal text file. In data processing, the hexadecimal file needs to be converted to decimal system first, and then 112 data (the angle difference of each two data points is 24 / 112 = 0.214 degrees) are collected uniformly within the scanning range of 24 degrees. GPS data record the latitude and longitude of the flight and the aircraft attitude parameters. When using microwave radiometer to observe data, it is necessary to convert the digital value recorded into the bright temperature value according to the calibration coefficient (the calibration coefficient file is filed with the original observation data). At the same time, through the clock records of microwave radiometer and GPS, microwave observation and GPS record can be linked to match the geographical coordinate information for microwave observation. When processing Ka band data, the angle scanning effect should also be considered, and 112 data in the scanning period should be given geographical coordinate information respectively. Due to the coarse observation resolution of microwave radiometer, the effects of aircraft yaw, roll and pitch are generally ignored in data processing. According to the target and flight relative altitude (H), after calibration and coordinate matching, the observation information can also be gridded. The resolution (x) of K-band is consistent with that of observation footprint. The reference resolution is: x = 0.24h; the resolution of Ka band is 39m. After the above steps, we can get the products that users can use directly.

2、Keywords

Theme：Remote Sensing Technology,Microwave radiometer
Discipline：Remote Sensing Technology
Places：Heihe River Basin, the cold region hydrology experimental area in the upper reaches, ice-channel watershed encryption observation area
Time：2008-03-29

3、Data details

1.Scale：None

2.Projection：4326

3.Filesize：13.0MB

4.Data format：

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：38.15 | - |
| west：100.15 | - | east：100.3 |
| - | south：38.0 | - |

5、Time frame:2008-04-06 00:49:00+00:00--2008-04-06 05:00:00+00:00

6、Reference method

References to data:

CHE Tao. WATER: Dataset of airborne microwave radiometers (K&Ka bands) mission in the Binggou watershed flight zone on Mar. 29, 2008. A Big Earth Data Platform for Three Poles, doi:10.3972/water973.0237.db2010

References to articles:

7、Supporting project information

The CAS (Chinese Academy of Sciences) Action Plan for West Development Project
National Program on Key Basic Research Project (973 Program

8、Data resource provider

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