A Big Earth Data Platform for Three Poles

**Long-term C- and L-band SAR backscatter data for monitoring post-fire vegetation recovery in the tundra environment of the Anaktuvuk River, Alaska (Version 1.0) (2002-2017)**

1、Description

Wildfires can strongly affect the frozen soil environment by burning surface vegetation and soil organic matter. Vegetation affected by fire can take many years to return to mature pre-fire levels. In this data set, the effects of fires on vegetation regrowth in a frozen-ground tundra environment in the Anaktuvuk River Basin on the North Slope of Alaska were studied by quantifying changes in C-band and L-band SAR backscatter data over 15 years (2002-2017). After the fire, the C- and L-band backscattering coefficients increased by 5.5 and 4.4 dB, respectively, in the severe fire area compared to the unburned area. Five years after the fire, the difference in C-band backscattering between the fire zone and the unburned zone decreased, indicating that the post-fire vegetation level had recovered to the level of the unburned zone. This long recovery time is longer than the 3-year recovery estimated from visible wavelength-based NDVI observations. In addition, after 10 years of vegetation recovery, the backscattering of the L-band in the severe fire zone remains approximately 2 dB higher than that of the unburned zone. This continued difference may be caused by an increase in surface roughness. Our analysis shows that long-term SAR backscattering data sets can quantify vegetation recovery after fire in an Arctic tundra environment and can also be used to supplement visible-wavelength observations.
The temporal coverage of the backscattering data is from 2002 to 2017, with a time resolution of one month, and the data cover the Anaktuvuk River area on the North Slope of Alaska. The spatial resolution is 30~100 m, the C- and L-band data are separated, and a GeoTIFF file is stored every month.
For details on the data, see SAR Backscattering Data of the Anaktuvuk River Basin on the North Slope of Alaska - Data Description.

2、Keywords

Theme：Vegetation,Radar remote sensing,Aerosol,Ecological remote sensing products,Aerosol backscatter,Vegetation cover,Terrestrial Surface Remote Sensing
Discipline：Atmosphere,Terrestrial Surface
Places：Alaska
Time：2002-2017

3、Data details

1.Scale：250000

2.Projection：

3.Filesize：62000.0MB

4.Data format：Geotiff

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：69.7 | - |
| west：-150.8 | - | east：-150.2 |
| - | south：68.8 | - |

5、Time frame:2002-01-11 08:00:00+00:00--2018-01-10 08:00:00+00:00

6、Reference method

References to data:

JIANG Liming. Long-term C- and L-band SAR backscatter data for monitoring post-fire vegetation recovery in the tundra environment of the Anaktuvuk River, Alaska (Version 1.0) (2002-2017). A Big Earth Data Platform for Three Poles, doi:10.11888/Ecolo.tpdc.2709802018

References to articles:

7、Supporting project information

CASEarth:Big Earth Data for Three Poles（grant No. XDA19070000）

8、Data resource provider

name: JIANG Liming
unit: Institute of Geodesy and Geophysics, Chinese Academy of Sciences
email: jlm@whigg.ac.cn