A Big Earth Data Platform for Three Poles

**Merged 3-Dimentional gridded temperature dataset among Indian Ocean (2005-2019)**

1、Description

Estimate of the thermal state of the ocean is of vital importance to understand the process of air-sea interaction and footprint of climate change in the Indian Ocean. However, the insufficiency and poor coverage of subsurface observation brings quite a large challenge to estimate the subsurface temperature changes accurately. Moreover, surface observation from satellite contains well sample and could also reflect the subsurface information partly. We derived the ‘synthetic profiles’ based on the ‘surface-subsurface regression’ method in order to enrich the subsurface profiles. Then the 3-dimentional gridded temperature dataset are established by combining both the in-situ and synthetic profiles through objective analysis technique. Inter-comparison between the previous released datasets, such as IAP, EN4 and Ishii, this dataset could capture main thermal signal among the Indian Ocean and shows more mesoscale signal because of its higher resolution.  
This dataset provides monthly mean gridded subsurface temperature estimate among 30E-105E, 45S-30N, ranging from 2005 to 2018. We provide with dataset which has horizontal resolution in quarter degree and 42 vertical levels from surface to 2000-m depth in netCDF format.

2、Keywords

Theme：Temperature,Surface Water,Water temperature,Sea temperature,Hydrology  
Discipline：Terrestrial Surface  
Places：Indian Ocean  
Time：month

3、Data details

1.Scale：None

2.Projection：

3.Filesize：2800.0MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：29.875 | - |
| west：29.875 | - | east：104.875 |
| - | south：-45.125 | - |

5、Time frame:2004-12-31 16:00:00+00:00--2019-09-30 03:59:59+00:00

6、Reference method

References to data:

ZHAO Liang, WANG Gongjie. Merged 3-Dimentional gridded temperature dataset among Indian Ocean (2005-2019). A Big Earth Data Platform for Three Poles, doi:10.11888/Hydro.tpdc.2710292020

References to articles:

Wang, G.J., Cheng, L.J., John, A., and Li, C.Y. (2018). Consensuses and Discrepancies of Basin-Scale Ocean Heat Content Changes in Different Ocean Analyses. Climate Dynamics 50, no. 7, 2471–87. https://doi.org/10.1007/s00382-017-3751-5.  
  
Cheng, L.J., and Zhu, J. (2016). Benefits of CMIP5 Multimodel Ensemble in Reconstructing Historical Ocean Subsurface Temperature Variations. Journal of Climate 29, no. 15, 5393–5416. https://doi.org/10.1175/JCLI-D-15-0730.1.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

name: ZHAO Liang  
unit: Institute of Atmospheric Physics, Chinese Academy of Sciences  
email: zhaol@lasg.iap.ac.cn  
  
name: WANG Gongjie  
unit: China Meteorological Administration, National Climate Center  
email: wanggj\_9015@sina.com