

Fair Use of NOAA's CDR Data Sets, Algorithms and Documentation:

The development of a Climate Data Record (CDR) - including computer algorithms, data sets and documentation - is typically a painstaking process involving multiple scientists working over many years. These scientists rely on the fair use and proper acknowledgment of the CDR to sustain their professional reputations and careers.

The National Academy of Sciences has issued guidance for credit allocation in scientific work [1]. The CDR Program urges anyone using a NOAA CDR to honor this guidance by properly recognizing the CDR scientist and CDR Program following the acknowledgement and citation examples below. In cases where a NOAA CDR becomes a fundamental part of a study, publication, presentation or proposal, the CDR Program encourages users to offer co-authorship status to the original CDR developers. If the data are used we encourage the use of the data citation to ensure data provenance and attribution [2].

Acknowledgement Example: The Mean Layer Temperature - NOAA CDR used in this study was acquired from NOAA's National Centers for Environmental Information (<http://www.ncei.noaa.gov>). This CDR was originally developed by Cheng-Zhi Zou and colleagues at NOAA through support from NOAA's CDR Program.

Literature Citation Examples: Zou, C.-Z., Xu, H., Hao, X., & Liu, Q. (2023). Mid-tropospheric layer temperature record derived from satellite microwave sounder observations with backward merging approach. *Journal of Geophysical Research: Atmospheres*, 128, e2022JD037472. <https://doi.org/10.1029/2022JD037472>

Zou, C.-Z., Xu, H., Hao, X., & Fu, Q. (2021). Post-millennium atmospheric temperature trends observed from satellites in stable orbits. *Geophysical Research Letters*, 48, e2021GL093291. <https://doi.org/10.1029/2021GL093291>

Zou, C.-Z., M. Goldberg, and X. Hao (2018), New generation of U.S. satellite microwave sounder achieves high radiometric stability performance for reliable climate change detection, *Science Advances*, 4(10), eaau0049, DOI:10.1126/sciadv.aau0049

Zou, C.-Z., and W. Wang (2011), Intersatellite calibration of AMSU-A observations for weather and climate applications, *J. Geophys. Res.*, 116, D23113, <https://doi.org/10.1029/2011JD016205>

Zou, C.-Z., M. Gao, M. Goldberg, 2009, Error structure and atmospheric temperature trends in observations from the Microwave Sounding Unit, *J. Climate*, 22, 1661-1681, <https://doi.org/10.1175/2008JCLI2233.1>

Zou, C.-Z., M. D. Goldberg, Z. Cheng, N. C. Grody, J. T. Sullivan, C. Cao, and D. Tarpley (2006), Recalibration of microwave sounding unit for climate studies using simultaneous nadir overpasses, *J. Geophys. Res.*, 111, D19114, <https://doi.org/10.1029/2005JD006798>

- **Data Citation Example:** Cheng-Zhi Zou, Xianjun Hao (2023). NOAA Climate Data Record of Mean Layer Temperatures - NOAA, Version 5.0. [indicate subset used]. NOAA National Centers for Environmental Information. [doi:10.25921/tn91-wv50](https://doi.org/10.25921/tn91-wv50) [access date]

CDR Program Open Data Policy:

The NOAA CDR Program's official distribution point for CDRs is NOAA's National Centers for Environmental Information which provides sustained, open access and active data management of the CDR packages and related information in keeping with the United States' open data policies and practices as described in the President's Memorandum on "Open Data Policy" [3] and pursuant to the Executive Order of May 9, 2013, "Making Open and Machine Readable the New Default for Government Information" [4]. In line with these policies, the CDR data sets are non-proprietary, publicly available, and no restrictions are placed upon their use.

The software used to produce the CDRs may or may not be Government owned, and is outside of the scope of the Open Data policies, so permissions to re-use or modify the CDR production software should be sought from the software's copyright owner identified within its source code.

Users of CDR data, products, and related information received from any source are encouraged to engage with the CDR Program to establish the authenticity of the data, algorithms, and information and to ensure they are using the most recent version of the CDRs. Users may "Register" for any product of interest on the CDR website [5]; registration enables the CDR Program to provide announcements of product status, changes and updates, and provides a pathway for optional user feedback on product quality, existing applications and emerging uses of the data.

[1] On Being a Scientist: A Guide to Responsible Conduct in Research: 3rd Edition (2009), Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, 82 pages, ISBN-10: 0-309-11970-7. Available for download at: http://www.nap.edu/catalog.php?record_id=12192.

[2] Ruth E. Duerr, Robert R. Downs, Curt Tilmes, Bruce Barkstrom, W. Christopher Lenhardt, Joseph Glassy, Luis E. Bermudez and Peter Slaughter. On the utility of identification schemes for digital earth science data: an assessment and recommendations, Earth Science Informatics, Vol. 4, Num. 3, 139-160, 2011, doi:10.1007/s12145-011-0083-6.

[3] <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>

[4] <http://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government>

[5] <http://www.ncdc.noaa.gov/cdr/operationalcdrs.html>

