

Software Citation Guidance for Geoscience Communities

Keith Maull & Matt Mayernik
NCAR Library

National Center for
Atmospheric Research (NCAR)

10/13/2021

Topics

- Background and purpose
- Software citation core guidance
- Github-specific guidance
- Software citation metrics



Background and purpose

- Explore resource for tips, best practices and guidance for data citation
- Suggest relevant and applicable Geoscience community guidance for citation
- Recommendations and guidance for Github-hosted software
- Explain program and project benefits of software citation

Community Resources

- FORCE11 Software Citation Principles (2016)
- ESIP Software Citation Recommendations (2019)
- AGU guidance on “Data and Software for Authors” (2021)
- AMS statement on “Software Preservation, Stewardship, and Reuse” (2021)



Software Citation - End User Guidance

Software User Recommendations

- **Always cite the software you use in all contexts**, whether created by you or somebody else (e.g. publications, dataset documentation, etc.)
- **Use the DOI and complete citation** with all software citations
 - Ex. from ESIP Software citation guidelines:
 - Author. (Publication Year). Title. Version No. Publisher. DOI URL. Access Date.

Software Citation - Creator Guidance

Software Creators Recommendations

repository developers create a persistent web identifier (e.g. Digital Object Identifier (DOI)) for your software repository and provide appropriately placed, prominent and clear acknowledgement instructions

Potential ways to get a persistent identifier are:

- Github-to-Zenodo export
- Figshare
- Software Heritage
- University library

Minimum Github-specific Guidance

Minimally advocate for:

1. encouraging clear citation language within Github README so users know citation is important;
2. including a DOI shield within README for to prominent display;
3. using the software DOI within all publications, data and related software so benefits of linking and metrics can be realized;
4. minting a Zenodo DOI.
 - <https://guides.github.com/activities/citable-code/>



Citing NCL

Cite NCL using the following text:

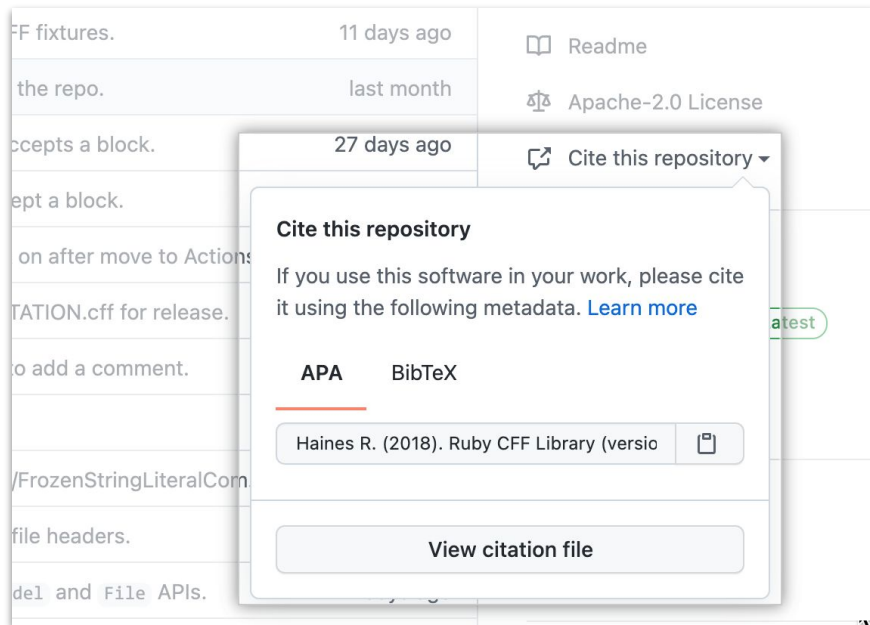
<> The NCAR Command Language (Version 6.6.2) [Software].
(2019). Boulder, Colorado: UCAR/NCAR/CISL/TDD.
<http://dx.doi.org/10.5065/D6WD3XH5>

Update the NCL version and year as appropriate.

Ideal Github-specific Guidance

Encourage repository owners to:

- include CITATION File Format (CFF) file in the root of their repo.
 - [Github Guide for CITATION Files](#)
 - [More about Citation File Format \(CFF\)](#)
- this is a new (and welcome) addition to Github



Software Citation: What's in it for you?

Funded Program Benefits

- understanding the broader impact of the program software
- consistency of software project structure
- understanding the relationships between other tracked program outputs (papers, datasets, instruments, etc.)

Research Project Benefits

- software, data and other inputs and outputs of the scientific process need to be first class artifacts just like papers
- getting credit for the software work you do is not an exception, it is the rule
- a software citation provides the necessary tool for linking highly cited papers and datasets to the (your) software involved

Software Citation Metrics

- some tools are now tracking software citations that have DOIs:
 - Dimensions
 - Clarivate
 - coverage is not complete or comprehensive, but things are expanding rapidly
 - in-house analyses can also be done using software DOIs and DataCite metadata
 - a software citation links papers and datasets, and their corresponding citations and metadata, to the software involved
- Dimensions.ai
fulltext search of
NCL DOI:
10.5065/D6WD
3XH5
 - search results
suggest DOI is
being widely
used (proper
citation requires
further analysis)



Dimensions	
FILTERS	FAVORITES
▼ PUBLICATION YEAR	
<input type="radio"/> 2021	48
<input type="radio"/> 2020	79
<input type="radio"/> 2019	78
<input type="radio"/> 2018	76
<input type="radio"/> 2017	98
<input type="radio"/> 2016	78
<input type="radio"/> 2015	51
<input type="radio"/> 2014	45
<input type="radio"/> 2013	20
<input type="radio"/> 2012	9

Thank You!

Further Questions

1. What recommendations have you found are most useful for your projects?
2. Beyond Github, are there other software hosting platforms (Gitlab? Bitbucket?) that have special capabilities or require specific guidelines?

