Instructions for Disseminating JPL-Developed Software as OpenSource
Version 4.0

Last Update: 8-14-2014

Revised by Brian Morrison

Overview Per provisions in the NASA JPL prime contract (NNN12AA01C), the California Institute of Technology ("Caltech") reserves copyrights to all software developed at JPL. JPL and Caltech recognize that in certain situations, wide dissemination of software and source code with limited restrictions on use could be a benefit to the scientific and technical goals of the Laboratory, and therefore support the release of such code under an Open Source Initiative (OSI) approved "Open Source License".

This open source request is intended for software that is distributed though an approved forge or code repository such as SourceForge (sourceforge.net) and its distribution will use the following process:

1. The JPL Software Release Authority (SRA) (Brian.Morrison@jpl.nasa.gov) is the ONLY one who is authorized to approve uploads of software to an open source website.
2. Upon final sign-off of this form by the SRA, the PI (or custodian) of software will upload source code to the approved open source forge. The contents of this file cannot be password protected and must be the EXACT material that was approved by all signatories on this list.
3. It is the responsibility of the PI that the delivered material to the forge meets all rules and regulations imposed by the forge and it's associated license terms.
4. All subsequent updates to this software must be submitted to the RATS tool located at: https://shadow.jpl.nasa.gov/rats/. The RATSweb online code scanning utility leverages the capability of the Rough Auditing Tool for Security (RATS) code scanner with the convenience of the web browser interface. With this online tool, developers will scan PERL, PHP, Python and C source code for common security flaws.

In order to alleviate certain programmatic and legal concerns, we ask that the parties listed below formally approve each such release.

Instructions To allow release of source code for any JPL software application:

1. The requestor must first make sure that an NTR has been filed.
2. Next, you should contact the SRA to initiate the process to release as Open Source.
3. The request will then be routed (using electronic signature) to the individuals listed below and get their formal concurrence for release of the software.
4. Once ALL signatures have been received, the JPL SRA will send a final APPROVAL to the all parties on the open source release form indicating permission to upload the software to the source code forge.
5. The SRA will work directly with the PI as needed to post the software on the selected open source website.

Per the data provided by the NTR and the requestor, this request concerns releasing the software listed below, and requires concurrence from the following individuals:

Regards,

Brian Morrison
Software Release Authority
Office of Technology Transfer

Jet Propulsion Laboratory

4800 Oak Grove Drive
Brian Morrison, mailstop 321-178
Pasadena, CA 91109-8099
Phone: (818) 354-2458

Part 1: Software Description

NTR #(s):	49327
Title(s):	Web-Service Oriented Climate Model Diagnostic Analyzer - CMAC
Project:	CMAC
Lead Developer:	Lei Pan
Project Manager (Mgr II or above):	Seungwon Lee
Line Manager (Mgr II or above):	Andrew Bingham
Office of Export Compliance:	Govind Deshpande
Office of the Chief Technologist:	Jonas Zmuidzinas
Caltech Commercial Program Office:	Jennifer Shockro
Office of IT Security:	Mary Rivera
Office of IT Security:	Corbin Miller
JPL Office of Technology Transfer (SRA):	Brian Morrison

Part 2: Authorization to Release Software as Open Source

NTR #:   49327
Title: Web-Service Oriented Climate Model Diagnostic Analyzer - CMAC

Lead Developer or Software PI Concurrence

I certify that this source code is of sufficient value, quality and maturity to be publicly released as Open Source, and that it is free of malicious content and/or data. I also understand the SRA will be the only one who will distribute the software (or its updates) to SourceForge.

Print Name: **Lei Pan**
Signature and Date:

Program Manager Concurrence

I concur that publicly releasing this software would be a benefit to JPL's business and/or enhance its position as a leader in space science and technology development.

Print Name: **Seungwon Lee**
Signature and Date:

Line Manager Concurrence

I concur that publicly releasing this software and source code will not damage JPL's business or compromise any key JPL Intellectual Property or technology assets.

Print Name: **Andrew Bingham**
Signature and Date:

JPL Office of Export Compliance Concurrence

I certify that publicly releasing this software and source code does not violate any U.S. Export Compliance regulations.

ECCN before release:
Print Name: **Govind Deshpande**
Signature and Date:

JPL Office of the Chief Technologist

I concur with this request.

Print Name: **Jonas Zmuidzinas**
Signature and Date:

Caltech Office of Technology Transfer Concurrence

I concur that this software and source code has no significant commercial value that will be negated by a public release as Open Source.

Print Name: **Jennifer Shockro**
Signature and Date:

JPL Office of IT Security Concurrence

JPL IT Security has reviewed the source code for information that would pose a risk to JPL IT Security. No potential risks were identified and I concur with this release.

Print Name: **Mary Rivera**
Signature and Date:
Print Name: **Corbin Miller**
Signature and Date:

JPL Commercial Program Office Concurrence (SRA)

I concur with this request.

Print Name: **Brian Morrison**
Signature and Date:

License Terms

The following is a new software application:	**NTR Number: 49327**
Title: Web-Service Oriented Climate Model Diagnostic Analyzer	**Docket Date: 15-JAN-14**

Funding Disclosure

Funding Source: NASA

  Other-Specify: Contact:

Funding Project:*   105171   CMAC   Task: 929099.03.03.01.10

*Project/Task used for tracking purposes only, the number will be checked against existing and past account codes within the NBS financial system

Task Order: NNN13D968T

Development Costs:450
(Please estimate
within 50K)

Additional Development
Dollars Anticipated: 300

Software Description

This software accomplishes the following:

This software enables multi-aspect physics-based climate model performance evaluation and diagnosis through the comprehensive and synergistic use of multiple observational data, reanalysis data, and model outputs.

What are the unique features of the software:

This software uses web-service technologies to deploy existing scientific applications to a wide community and make the applications easy to use.

What improvements have been made over existing similar software application:

Existing similar software applications are home-grown scientific code that are used by just one user/developer/scientist. The existing applications are very user specific and not easy to share with collaborators. This software does not require any local installation of the tool. The only requirement for using this software is a web browser and internet connection. Users can simply connect to our web service and start using scientific applications through our web services.

Software Release Version: 1.0

What problems are you trying to solve in the software:

Comprehensive and innovative evaluations of climate models with newly available global observations are critically needed to diagnose model biases and improve model fidelity. The model diagnosis process requires physics-based multi-variable comparisons, which typically involve large-volume and heterogeneous datasets, and computationally demanding and data-intensive operations. We develop a computation and data efficient information system to enable the model diagnosis process.

Please cut and paste the abstract describing the program (this abstract should focus on the programmatic and/or utilization aspects of the software):

Satellite observations have been widely used in model-data intercomparisons and model evaluation studies. These studies normally involve the comparison of a single parameter at a time using a time and space average. Such studies can identify symptomatic model biases and errors but cannot diagnose the biases and errors. In order to understand the cause of the biases and errors, one has to simultaneously investigate several parameters that are integrated in the cloud parameterization. Such studies, aimed at a multi-parameter model diagnosis, require locating, understanding, and manipulating multi-source observation datasets, model outputs, and (re)analysis outputs that are physically distributed, massive in volume,

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heterogeneous in format, and provide little information on data quality and production legacy. Additionally, these studies involve various data preparation and processing steps that can easily become computationally very demanding since many datasets have to be combined and processed simultaneously. It is notorious that scientists spend more than 60% of their research time on just preparing the dataset before it can be analyzed for their research. To address these challenges, we build Web-Service Oriented Climate Model Diagnostic Analyzer (WS-CMDA) that enables a streamlined and structured preparation of multiple large-volume and heterogeneous datasets, and provide a computationally efficient approach to processing the datasets for model diagnosis.

Does your work relate to current or future NASA (include reimbursable) work that has value to the conduct of aeronautical and space activities? If so, please explain:

This work is funded by the NASA Science Mission Directorate's Research and Analysis Program called ROSES CMAC. The goal of the ROSES CMAC program is to invest in technology developments to reduce the risk and cost of evolving NASA information systems to support future Earth modeling efforts. This work supports the goal by developing new information technologies to facilitate the integration of observational data into the model development, operations, and validation.

JPL Contributors

Who should be included as contributors on the New Technology Report? Those who have made a direct, unique, and significant contribution to the conception and/or implementation of the innovation.

Badge #	Name	Lab Ext	Section Number	Main Contact	Specific Inventive Contribution
118397	LEE, DR. SEUNGWON	None-	398K	Y	She managed the project, defined the scope of scientific applications, designed web interfaces of the software, and tested the software.
119451	PAN, DR. LEI	None-	398K	N	He designed the architecture of the software and applied web service technologies to this software.
120153	ZHAI, DR. CHENGXING	None-	398K	N	He developed scientific algorithms and applications for this software.
111900	TANG, DR. BENYANG	None-	398J	N	He developed scientific algorithms and applications for this software.

Non-JPL Contributors

A badge number is not required for Non-JPL contributors. If the contributor has a JPL badge number, please enter it; otherwise, fill in all information as appropriate.

Badge #	Name	Phone	Email	US Citizen/ Perm. Res.	Company	Contract #

Name	Contribution

Outside Interest

What advantages does this software have over existing software?

The main advantage of this software over other similar scientific applications is that this software does not require any local installation on a user side and have a very low learning/adoption barrier because a user interacts with this software through a web browser with web page interface for inputs to web services for scientific applications in our web server. The web-browser interface enables instantaneous use without the hassle of local installation and compatibility issues.

Are there any known commercial applications? What are they? What else is currently on the market that is similar?

None

Is anyone interested in the software? Who? Please list organization names and contact information.

Tsengdar Lee (NASA Headquarter)

Joao Teixeira (328)

Graeme Stephen (320)

Amber Jenkins (183)

What are the current hardware and operating system requirements to run the software? (Platform, RAM requirement, special equipment, etc.)

On the user side, it only requires a web browser. On the server side where this software is running, it requires a Linux operating system, some open-source libraries such as Python, Flask, Gunicon.

Software Status

What is the status of the software?   MATURE

How has the software performed in tests? Describe further testing if planned.

The software has been tested thoroughly in the application level and in the web-interface level. In both levels, it successfully runs and generates correct outputs.

Awards

Do you want this information published in NASA Tech Brief magazine (www.nasatech.com)?   N

If you want the innovation to be considered for publication in Tech Briefs, you will need to provide a Technical Support Package (TSP). Your technology must specifically relate to NASA work that has value to the conduct of NASA aeronautical and space activities, then publication alone is still possible if you wish. If this is the case, please contact your evaluator.

Software Available for Public Release Award

This award is a cash award of $500 for programs with multiple contributors and $1000 for programs with a single contributor. The software does not have to be available to the general public. In order for your software to be eligible to receive this award, it must be of commercial quality i.e. fully documented either electronically or in hard copy format, have completed all alpha and beta testing, be nearly bug-free, perform the purpose for which it was intended on the intended platform(s) without harm to the host computer's operating system or data, and be distributed to customers and sponsors in the final commercial grade form. It must also be of mature status (see software status questions) and relate to current or future NASA (include reimbursable) work that has value to the conduct of aeronautical and space activities.

Do you believe your software is eligible?   Y

If so, please identify the customer(s) and sponsors(s) outside of your section that requested and are using your software.

Tsengdar Lee (NASA Headquarter)

Joao Teixeira (328)

Graeme Stephen (320)

Amber Jenkins (183)

Software Dissemination

Third Party Contributions

Was this software built upon previously existing code/software?   Y

If yes, then was the previously existing code/software developed at JPL and/or Campus?   Y

If the previously existing code was not developed at JPL or Campus, please answer the following:

   Name and description of the previously existing code/software:

Contact information for the code/software (web site, name/email, name/phone number):

Did you accept any license terms for the previously existing code/software? N

Website (URL) for license to previously existing code/software (if applicable):

Has the software been disclosed (e.g. presented as an enabling flowcharge) or distributed to others external to JPL or Campus? N

If so, please identify to whom the disclosure was made and provide date, place, and manner of distribution:

Do you need to disseminate your software? Y

SOFTWARE DISSEMINATION FORM - NTR number: 49327

Introduction

The guiding requirements and procedures for Software Dissemination can be found here:

New Technology, Laboratory Notebooks, ICB Awards, Software Dissemination and New Ventures, Rev. 1
http://rules/cgi/doc-gw.pl?DocID=56592

Disseminating JPL Developed Software
http://rules/cgi/doc-gw.pl?DocID=46512

This form enables the approval of the dissemination of JPL developed software outside of JPL. Please complete this form and the Intellectual Assets Office will contact you regarding the dissemination request.

Is there a mission or programmatic requirement to disseminate this software?
Y

Is there an oustanding request from a government agency or government subcontractor for this software?

Are you involved in a collaboration where you expect to disseminate this software to people outside of JPL?
N

If yes, is there a formal agreement between JPL and the outside collaborator(s)? Note: Formal agreements include task plans/orders, MOU's, TCA's, subcontracts and the like. Please identify the agreement by name, number, and date if possible:

Wide Dissemination of JPL Developed Software

Wide dissemination of JPL developed software will normally be done by Open Channel Software Foundation (www.openchannelsoftware.org). Open Channel and Caltech have an agreement to permit JPL developed software to be hosted at the Open Channel site. Your software will have its own web page at Open Channel. You will need to be involved in helping Open Channel to prepare the web site, along with sending them bug fixes and additional information about your software as the information becomes available. Anyone disseminating JPL developed software will need to follow the procedure at http://rules/cgi/doc-gw.pl?DocID=46512, Disseminating JPL Developed Software Procedure, Section 6, "Disseminate Software as a JPL Activity". If you acquired software from an open source, modified it, and then returned it then just follow that procedure, otherwise please complete this form.

Is there a Mission or Programmatic requirement to disseminate this software to outside JPL?
N

If so, describe the requirement:

How would you like Open Channel to disseminate this Software?

This software will be provided to Open Channel in what form?

Assuming that the software has a classification that will allow export, do you need Open Channel to export the software?

Are there non-JPL employee developers for this program? If so, please porvide all contact information for them, including a company name, JPL contract number if appropriate, and email/phone information. Note that permission needs to be obtained from non-JPL developers or their companies before approval can be given for Open Source or Open Channel software release. You will need to work with the Intellectual Property Office at x34612 to do this.

Open Channel will need to know the fields of use for the software. Please describe.

Do you have an existing web site that describes the software and/or the problem the software is solving? If so, please provide URL.

Do you have any publications on the software? If so, please provide references to the publication.

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Proprietary Information

Signature: *Lei Pan*
Lei Pan (Jan 8, 2015)

Email: lei.pan@jpl.nasa.gov

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