BERKELEY LAB Lawrence Berkeley National Laboratory	**Lawrence Berkeley National Laboratory**	LBNL File No. Date Received

Software Disclosure And Abstract

This software was developed in the course of or under prime contract No. DE-AC02-05CH11231 between the U.S. Department of Energy and the University of California. This Disclosure is prepared for the Office of the Assistant General Counsel for Patents, U.S. Department of Energy.

Email completed form to ROI@lbl.gov

Telephone (510) 486-7058 if you have questions regarding this form.

Title of Software Program: TECA

Important- Check the box below & provide the requested information for the funding source for this software:

LBNL Account No.: 102650	LBNL Principal Investigator: Bill Collins

☒ DOE

    ☐ OASCR   ☐ ASCI   ☐ JBEI

B & R Code (See Division office for appropriate B & R code):102650
DOE Program Mgr. Name: Dr. Renu Joseph
Address: U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874
Telephone: (301) 903-9237
Email: Renu.Joseph@science.doe.gov

☐ Non DOE (including WFO)   Grant or Agreement Number:
Sponsor Name:
Address:
Telephone:
Email:

☐ CRADA: Private Sector Participant:
☐ Subcontractor No.:   Contractor:
☐ Other:
    Describe

Do you reasonably expect future or continuing funding?

☒ Yes   Source:SC/BER, Regional and Global Climate Modeling Program

☐ No future funding is currently expected.

This is ☒ continuing funding or ☐ future funding

Developer(s):

Full Name	Title/Position	Employer	Division	Telephone	Email
Burlen Loring	CSE	LBNL	CRD	510-486-7238	BLoring@lbl.gov
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Oliver Ruebel	Research Scientist	LBNL	CRD	510-486-4064	ORuebel@lbl.gov

Do you intend to distribute this code outside of LBNL or UC?

☒ Yes ☐ No

If yes, when and how do you intend to distribute? As open source software available through Berkeley Lab's Bitbucket service

A Tech Transfer licensing associate will contact you regarding any planned distribution.

Does the software contain freeware, shareware, commercial software or third party code?

☐ Yes ☒ No

If yes, when and how do you intend to distribute?

Name of software	Name of developer	Type of license	Link to license

Was any portion of the software written by a subcontractor or non-LBNL employee (including developers listed above who were no employed at LBNL at the time the code was written)?

☐ Yes ☒ No

If "yes", please supply the names, contact information, and whether you know if such third party has executed an LBNL grant-back letter.

Are you aware of any companies that are or would be interested in the software?

☐ Yes ☒ No

If "yes", please list:

UNITED STATES DEPARTMENT OF ENERGY
ANNOUNCEMENT OF COMPUTER SOFTWARE

Record Status (Select one):

☒ NEW PACKAGE   ☐ SOFTWARE REVISION

PART I: STI SOFTWARE DESCRIPTION

A. Software Title
TECA

SHORT NAME OR ACRONYM: TECA

KEYWORDS IN CONTEXT: Climate Simulation, Climate Modeling, Calibrated and Systematic Characterization, Attribution and Detection of Extremes, Atmospheric River, Tropical Cylcone, Extra-Tropical Cyclone

B. Developer (s)

Burlen Loring, Prabhat, Surendra Byna, Junmin Gu, Harinarayan Krishnan, Oliver Ruebel

E-MAIL ADDRESS(ES):

BLoring@lbl.gov, Prabhat@lbl.gov, SByna@lbl.gov, JGu@lbl.gov, HKrishnan@lbl.gov, ORuebel@lbl.gov

C. Site Product Number
1. DOE CONTRACT/GRANT NUMBER(S)

ESD13052

2. R&D PROJECT ID(S)

3. SOFTWARE OR OTHER IDENTIFYING NUMBER(S)

D. Originating Research Organization
LBNL

E. Release Date/Date of Issuance
5/29/2015

F. Sponsoring Organization
LBNL

G. Other (information useful to include in published announcement record, which is not suited for any other field on this form)

H. Description/Abstract

TECA is an extreme event detection and climate analysis package written in C++ capable of processing massive climate data archives on modern supercomputing hardware. TECA is comprised of a set of applications built on the TECA framework and a set of core algorithms enabling climate scientists to harness the power of supercomputing in their research. The TECA framework supports a range of scalable parallel design patterns such as map reduce, and is capable of task based and distributed data parallelism . The framework library includes a core set of climate analysis algorithms including atmospheric river detection, tropical and extra-tropical cyclone detection, CF I/O, and many data manipulation algorithms. TECA is easily extensible, due to it's modular design, and scripting capability.

UNITED STATES DEPARTMENT OF ENERGY
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PART II: STI PRODUCT MEDIA/FORMAT and LOCATION/TRANSMISSION	H. References

PART II: STI PRODUCT MEDIA/FORMAT and LOCATION/TRANSMISSION

A. Hardware Requirements

☒ PC   ☒ Supercomputer   ☐ Mainframe

☒ MAC   ☒ Multi-platform   ☒ Workstation

☐ Other Requirements

B. Software Requirements

1. OPERATING SYSTEM/VERSION: Any

2. COMPILER/VERSION: Requires a C++11 compiler

3. LIMITATIONS/RESTRICTIONS/TIMING REQUIRMENT ESTIMATE:
    None

4. OTHER SPECIAL REQUIREMENTS: None

5. RELATED/AUXILIARY SOFTWARE: None

6. TYPE(S) OF FILES:

☒ Source Code   ☐ Text Library
☒ Object Library   ☒ User Guide
☒ Executable Module(s)   ☒ Auxiliary Materials
☒ Compilation Instructions   ☒ Linking Instructions
☒ Sample Problem Input Data   ☒ Sample Problem Output Data
☐ Control Information   ☐ Program Flow Diagram
☐ Program Flow Data   ☒ Programmer Documentation
☒ Installation Instructions   ☐ Other

C. Media Type Information

1. ☐ 3.5" DISKETTE   ☐ ZIP DISK   ☐ CD-ROM

   QUANTITY: CAPACITY:

2. FORMAT: ☒ PC   ☒ MAC   ☒ UNIX (Tar Format)

3. LOCATION/TRANSMISSION:

☒ URL: https://bitbucket.org/lbl-cascade/teca   ☐ FTP FILENAME:

D. Documentation Type Information

1. TYPE:

☒ USER MANUAL   ☒ READ ME FILE   ☐ OTHER

2. FORMAT

☒ ELECTRONIC   ☐ PAPER   ☐ OTHER

3. LOCATION/TRANSMISSION:

☒ URL: https://bitbucket.org/lbl-cascade/teca   ☐ FTP
FILENAME:

UNITED STATES DEPARTMENT OF ENERGY
ANNOUNCEMENT OF COMPUTER SOFTWARE

PART III: ACCESS LIMITATIONS/ STI PRODUCT REVIEW/RELEASE INFORMATION

A. Intellectual Property/Distribution Limitations

☒ 1. UNLIMITED ANNOUNCEMENT
(available to US. And non-U.S. public)

☐ 2. OPENNET *(use OpenNet guidance for below)*
   a. Field Office Acronym
   b. Declassification date *(mm/dd/yyyy)*
   c. Declassification Status
   ☐ Declassified ☐ Sanitized ☐ Never Classified

☒ 3. COPYRIGHTED MATERIAL:
   ☒ UNLIMITED DISTRIBUTION
   ☐ LIMITED DISTRIBUTION *(please specify source of availability)*

☐ 4. SMALL BUSINESS INNOVATION RESEARCH (SBIR)
   Release date:

☐ 5. PROPRIETARY/TRADE SECRET

☐ 6. PATENT HOLD

☐ 7. PROTECTED DATA
   ☐ CRADA
   ☐ OTHER (please specify)

☐ 8. EXPORT CONTROLLED INFORMATION (ECI)
   (please specify appropriate audience)

☐ 9. UNCLASSIFIED CONTROLLED NUCLEAR INFORMATION (UCNI)
   (please specify appropriate audience)

☐ 10. PROGRAM-DIRECTED SPECIAL HANDLING
   (e.g., Office of Nuclear Energy Applied Technology, etc.)
   (please specify appropriate audience)

☐ 11. CLASSIFIED: CLASSIFICATION LEVEL/CATEGORY OF THIS FORM
   (see form instruction regarding classified STI software products)

B. Contact and Approving Official

☒ 1. CONTACT (Site contact that will receive any external questions about the software package

NAME AND/OR POSITION:

Burlen Loring

EMAIL:

BLoring@lbl.gov

PHONE:

510-486-7238

ORGANIZATION:

LBNL

☒ 2. RELEASING OFFICIAL

I VERIFY THAT ALL NECESSARY REVIEWS HAVE BEEN COMPLETED (e.g. Patent, Copyright, ECI, UCNI, etc.). FOR ITEMS MARKED EXPORT CONTROLLED INFORMATION (ECI) (Pt. III, A8), WAS A REVIEW BY THE NUCLEAR TRANSFER AND SUPPLIER POLICY DIVISION (NN-43) REQUIRED?

☒ YES ☐ NO

IF YES, INDICATE DATE COMPLETED

5/29/2015

RELEASED BY (Name) Burlen Loring

DATE 5/29/2015

EMAIL bloring@lbl.gov

PHONE 510-486-7238

BUSINESS REVIEW AND COPYRIGHT REGISTRATION INFORMATION

In addition to Form DOE F 241.4 which is incorporated into this form, please fill out the following

LBNL Contact Information

Please fill in the contact information for how an external user would receive information about this software. For example, this might be the primary author's contact information (e.g., Jbrown@lbl.gov) or a generic contact (e.g., XYZCode@lbl.gov)

Name: Burlen Loring	Email: bloring@lbl.gov
Phone: 510-486-7238	Organization: LBNL

Related and/or Auxiliary Software

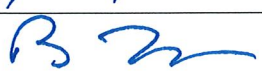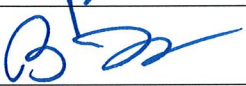- If the software requires the use of third party software, or if the code supersedes or is an extension of earlier software, please identify such software here:

- Also, identify any programs not considered an integral part of this software but used in conjunction with it (e.g., for preparing input data, plotting results, or coupled through use of external data files.) Note similar library software, when known:

- Where your software incorporates or is a derivative work of some other software, it is important that you (i) identify the original software, (ii) from where you obtained it, and (iii) any applicable copyright notices and licenses accompanying such software (attach copies of any licenses or other copyright notices as separate pages as necessary).

Developer Signature(s)

I believe myself to be a developer (i.e. author and/or inventor) of the above-described software program.
(Each contributor must sign)

Developer: *Oliver Rübel*	Date: 06/11/15
Witness: *B Bremer*	Date: 6/11/15

Developer: *B Bremer*	Date: 6/11/15
Witness: *Oliver Rübel*	Date: 06/11/15

Developer: *Gunther*	Date: 6/12/2015
Witness: *B Bremer*	Date: 6/12/2015

Developer:	Date: 6/21/2015

Witness:	Date: 6/21/2015

Developer:	Date: 6/23/2015
Witness:	Date: 6/23/2015

Developer:	Date: 6/25/2015
Witness:	Date: 6/25/2015

Developer:	Date:
Witness:	Date:

Developer:	Date:
Witness:	Date:

Read and Understood by:

_____   Date: _____

LBNL Patent Group Reviewer