PROJECT REPORT ON "COLLABORATIVE RESEARCH: SI2-SSE: COMPONENT-BASED SOFTWARE ARCHITECTURE FOR COMPUTATIONAL LANDSCAPE MODELING"

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INGREDIENTS OF AN NSF PROJECT REPORT

This section is just to remind us what we need to include in a project report submitted on Research.gov. The text is taken directly from the Research.gov pages.

Accomplishments. For NSF purposes, the PI should provide accomplishments in the context of the NSF merit review criteria of intellectual merit and broader impacts, and program specific review criteria specified in the solicitation. Please include any transformative outcomes or unanticipated discoveries as part of the Accomplishment section.

The PI is reminded that the grantee is required to obtain prior written approval from the awarding agency grants official whenever there are significant changes in the project or its direction. See agency specific instructions for submission of these requests.

For purposes of NSF, please see Exhibit II-1 of the Award & Administration Guide for a complete listing of Grantee Notifications To and Requests For Approval From the National Science Foundation.

Please make sure to read all instructions including NSF specific instructions, which can be found in the following link (contents of link below): (nothing happens when I click the link).

If there is nothing significant to report during this reporting period, please check "Nothing to Report" if applicable.

What are the major goals of the project? Generally, the goals will not change from one reporting period to the next. However, if the awarding agency approved changes to the goals during the reporting period, list the revised goals and objectives. Also explain any significant changes in approach or methods from the agency approved application or plan.

List the major goals of the project as stated in the approved application or as approved by the agency. If the application lists milestones/target dates for important

activities or phases of the project, identify these dates and show actual completion dates or the percentage of completion.

What was accomplished under these goals (you must provide information for at least one of the 4 categories below)? As the project progresses, the emphasis in reporting in this section should shift from reporting activities to reporting accomplishments.

For this reporting period describe: 1) major activities; 2) specific objectives; 3) significant results, including major findings, developments, or conclusions (both positive and negative); and 4) key outcomes or other achievements. Include a discussion of stated goals not met.

What opportunities for training and professional development has the project provided? Training activities may include, for example, courses or one-on-one work with a mentor. "Professional development" activities result in increased knowledge or skill in one's area of expertise and may include workshops, conferences, seminars, study groups, and individual study. Include participation in conferences, workshops, and seminars not listed under major activities.

For NSF purposes, please summarize the contributions to the research and teaching skills and experience of those who have worked on the project, including undergraduate students, graduate students, post-docs, college faculty, and K-12 teachers. If your project supported postdoctoral researchers, then you must include a summary of the mentoring activities conducted.

Describe opportunities for training and professional development provided to anyone who worked on the project or anyone who was involved in the activities supported by the project. "Training" activities are those in which individuals with advanced professional skills and experience assist others in attaining greater proficiency.

If the research is not intended to provide training and professional development opportunities or there is nothing significant to report during this reporting period, please check "Nothing to Report" if applicable.

How have the results been disseminated to communities of interest? Describe how the results have been disseminated to communities of interest. Include any outreach activities that have been undertaken to reach members of communities who are not usually aware of these research activities, for the purpose of enhancing public understanding and increasing interest in learning and careers in science, technology, and the humanities.

What do you plan to do during the next reporting period to accomplish the goals? Describe briefly what you plan to do during the next reporting period to accomplish the goals and objectives.

Supporting files. You may upload pdf files with images, tables, charts, or other graphics in support of this section. You may upload up to 4 pdf files with a maximum file size of 5 MB each.

Products. For NSF purposes, the PI should include and discuss in the Product section the goals associated with data management and access and note any significant changes in them, as well as specific plans for dissemination of data, software and other digital research products. When you report any of these items, please include any available identifiers and whether and how these products can be accessed or shared.

INSTRUCTIONS - List any products resulting from the project during the reporting period.

If there is nothing to report under a particular item, please check, "Nothing to Report" if applicable.

Participants.

Impact. What is the impact on the development of the principal discipline(s) of the project?

INSTRUCTIONS - This component will be used to describe ways in which the work, findings, and specific products of the project have had an impact during this reporting period.

For NSF purposes, include, where appropriate, discussion of data resources and the acquisition of data skills. Include the emergence of new career paths, such as data scientists, or new disciplines.

If there is nothing significant to report during this reporting period, please check "Nothing to Report" if applicable.

What is the impact on the development of the principal discipline(s) of the project? Summarize using language that an intelligent lay audience can understand (Scientific American style).

How the field or discipline is defined is not as important as covering the impact the work has had on knowledge and technique. Make the best distinction possible, for example, by using a "field" or "discipline", if appropriate, that corresponds with a single academic department (i.e., physics rather than nuclear physics).

For NSF purposes, the paragraph should read, How the fields or disciplines are defined is not as important as covering the impact the work has had on knowledge and technique.

Changes/Problems.

Special Requirements.

Accomplishments

Goals. 1. To create and enhance a set of prototype components by modifying existing modules in the Channel-Hillslope Integrated Landscape Development (CHILD) model.

2. Design an interface for communication with and between these components.

3. Disseminate the software through the CSDMS web site, and provide training through seminars at annual meetings of the CSDMS TerrestrialWorking Group.

(Note: the original proposal listed a third goal that involved a proof-of-concept application to post-wildfire erosion. This goal was removed due to a budget reduction at the time of the award.)

Components to be created and linked:

1. A gridding engine.
2. A stochastic rainfall generation component.
3. A simple surface hydrology component.
4. An erosion and sedimentation component.
5. A vegetation ecology component.
6. A simulation driver.

Annual milestones:

Year 1: Finalize the Gridding engine and Simulation driver (CU, TU); Focused development of the soil moisture models (UW), spatial models of stochastic weather forcing (CU, TU, UW), and flow routing components (CU, TU); Testing of component integration (CU, TU, UW); Participate in CSDMS workshop and project meeting in New Orleans (CU, TU, UW, UNM).

Year 2: Focused development of the fluvial erosion and sediment transport components (TU), vegetation models (UW) and WRF integration as a component for input to models (UNM); Testing of component integration (CU, TU, UW); Begin designing proof-of-concept studies (CU, TU, UW); Write manuscripts on the physical components and the modeling framework (CU, TU, UW); Participate in CSDMS workshop and project meeting in Seattle (CU, TU, UW, UNM).

Year 3: Focus on proof-of-concept model runs and writing manuscripts (CU, TU, UW). Participate in CSDMS meeting and project meeting in Boulder (CU, TU, UW, UNM).

Major Activities. * Turned CHILD's grid module into a component-style gridding engine. Wrote and tested 3 proof of concept applications using this gridding engine.

* Re-evaluated language issue, and decided to switch to python.
* Created basic infrastructure: svn repository, trac page, documentation generator.
* Crater component.
* Initial design sketches and trials.
* Radiation component.

* Stochastic storm generation?
* Flow routing?

Specific Objectives. (N/A)

Significant Results. none to report yet

Key Outcomes or Other Achievements. none to report yet

What opportunities for training and professional development has the project provided? * Dan, Sai, Jordan, Mariela
  * all of us learn python ...

How have the results been disseminated to communities of interest? * CSDMS presentations (honorable mention!)
  * SI2 poster, EarthCube poster

What do you plan to do during the next reporting period to accomplish the goals? * continued design, testing, and refinement of component integration
  * voronoi/delaunay capability in gridding engine
  * flow routing and accumulation component
  * soil moisture component (building from radiation)
  * project meeting
  * csdms meeting
  * agu session?
  * Focused development of the fluvial erosion and sediment transport components (TU),
  * vegetation models (UW)
  * WRF integration as a component for input to models (UNM);
  * Write manuscripts on the physical components and the modeling framework (CU, TU, UW);

PRODUCTS

(none yet)

PARTICIPANTS

JA, NMG, DEH, EH, EI, SN, MP, GT

IMPACT

What is the impact on the development of the principal discipline(s) of the project? (none yet)

0.1. What is the impact on other disciplines? (none yet)

What is the impact on the development of human resources? postdoc and grad students

Changes/Problems. switch to python

Special Requirements.