

FY 2011 Guidelines for Strategic University Research Partnership Proposals

The deadline for proposal submission is Friday, October 1, 2010, by 4 PM PDT.

The **2011 SURP Proposal Guidelines** and **Proposal Templates** are also available online at the **SURP website** (URL <http://surp.jpl.nasa.gov/collaborations/2011surpcallguidelines>).

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Introduction

The JPL Strategic University Research Partnership (SURP) Program provides resources to initiate and cultivate collaborative efforts of mutual strategic value for NASA research and missions between JPL and our strategic university partners listed below. Proposed activities can be either **research initiatives** for collaborative basic and applied research or **educational initiatives** to support classroom activities and career path development for students. The total available funding for SURP is typically \$1.5M to \$2.5M per year. We anticipate that this will support up to 15–20 research initiatives funded up to a cap of \$100,000 each and 10–15 educational initiatives funded up to a cap of \$25,000 each. We anticipate funding 1–2 Research Initiatives and 1–2 Educational Initiatives with each partner university.

To strengthen the relationships between JPL and our strategic university partners, we encourage proposals describing research or educational efforts that include activities to be performed jointly at JPL or at the partnering university via the exchange of personnel. Possible exchanges include students working at JPL under the co-supervision of the JPL Principal Investigator and university faculty, JPL investigators working at the strategic partner university, and faculty working at JPL. We also invite proposals in this category that describe research performed jointly by a JPL team and by the academic faculty investigator while on sabbatical leave at JPL.

Strategic University Research Partners

JPL has established strategic university partnerships with the following academic institutions through joint memoranda of understanding:

Arizona State University	Stanford University
Carnegie Mellon University	University of Arizona
Dartmouth College	University of California, Los Angeles
Massachusetts Institute of Technology	University of Michigan
Princeton University	University of Southern California

Topical Areas

JPL has identified the science and technology areas that are essential for JPL’s continuing contribution to NASA’s future success and for which JPL’s leadership is key. Additional narrative for each of the 10 strategic technology directions may be found by downloading “[JPL Strategic Technology Directions 2009](#)”. Additional information on the four key science areas below may be found at the website for the JPL [Science Division](#).

JPL Strategic Technology Directions 2009 URL:

<http://scienceandtechnology.jpl.nasa.gov/research/StTechDir/>

JPL Science Division URL:

<http://science.jpl.nasa.gov/>

The SURP Program encourages proposals that address the strategic topical areas identified below. Preference will be given to proposals that are aligned with these topical areas, but selection of an exceptional proposal outside these areas is not precluded.

Strategic Science and Technology Topical Areas

<p>Next Generation Leaders and Innovators</p> <ul style="list-style-type: none"> • Education and training • Student career path development
<p>Solar System Science</p> <ul style="list-style-type: none"> • Planetary Atmospheres and Geology • Solar System characteristics and origin of life • Small solar system bodies • Lunar science
<p>Earth Science</p> <ul style="list-style-type: none"> • Atmospheric composition and dynamics • Land and solid earth processes, water and carbon cycles • Ocean and ice • Earth analogs to planets
<p>Global Change and Energy</p> <ul style="list-style-type: none"> • Climate science • Energy production, storage, and integration

Astronomy and Fundamental Physics <ul style="list-style-type: none">• Origin, evolution, and structure of the universe• Gravitational astrophysics and fundamental physics• Extra-solar planets and star and planetary formation• Solar and space physics
Large Aperture Systems <ul style="list-style-type: none">• Lightweight apertures• Lightweight precision controlled structures• Integrated low-temperature thermal control• Advanced metrology• Wavefront sensing and control• Precision pointing
Detector and Instrument Systems <ul style="list-style-type: none">• Detector and focal plane systems• Active remote sensing• Passive remote sensing• In-situ Sensing• Active cooling systems for detectors and instruments
Advanced Propulsion and Power <ul style="list-style-type: none">• Advanced electric propulsion technologies• Advanced chemical propulsion technologies• Precision micro/nano propulsion• Power sources for deep space missions• Energy sources for deep space missions
In Situ Planetary Exploration Systems <ul style="list-style-type: none">• Entry, descent and landing• Mobility• Sample acquisition and handling• Autonomous orbiting sample retrieval and capture• Planetary protection
Survivable Systems for Extreme Environments <ul style="list-style-type: none">• Survival in high-radiation environments• Survival in particulate and hypervelocity impact environments• Electronics and mechanical systems for extreme temperatures, pressures over wide temperature ranges• Reliability of systems for extended lifetimes• Space radiation modeling
Deep Space Navigation <ul style="list-style-type: none">• Mission design and navigation methods• Precision tracking and guidance• On-Board autonomous navigation
Precision Formation Flying <ul style="list-style-type: none">• Distributed spacecraft architectures• Wireless data transfer• Formation sensing and control
Deep Space Communications <ul style="list-style-type: none">• High-rate communication techniques

<ul style="list-style-type: none"> • Optical communications • Autonomous and cognitive radios • Flight transponder technology • Antenna arraying
<p>Mission System Software and Avionics</p> <ul style="list-style-type: none"> • Space-borne computing • Mission system software • Autonomous operations • Software reliability
<p>Lifecycle Integrated Modeling and Simulation</p> <ul style="list-style-type: none"> • Trade space exploration • Coupled and integrated physics-based modeling • High-fidelity model verification and validation • Model integration

Successor Proposals

SURP awards are for one-year duration. However, holders of existing SURP awards may submit a successor proposal for the continued pursuit of previously funded activities and are welcome, in particular, for the intent of providing continuity of graduate student research. Successor proposals must describe the relevant achievements made during the course of the predecessor award. Successor proposals are considered with neither advantage nor disadvantage along with new proposals.

Summer Internships

The SURP program will further support the career development of graduate students by offering a limited number of ten-week summer internships at JPL for students involved with the awarded work. The JPL principal investigator must state in their proposal their desire to host a student to perform collaborative research during the summer of the year in which the SURP task is active. If the proposal is selected for award, the award will be augmented with additional funds to support the student. The cost of the internship should not be included in the proposed budget and it will not count against the cap for the proposal.

Program Constraints

- Proposals must include participation by one or more of the strategic university research partners listed above.
- The Principal Investigator must be a JPL employee.
- SURP awards are for one-year duration. Although successor proposals may be submitted, all proposed activities must be complete within the 12-month period of performance.
- Funds cannot be sent to foreign nations.

There is no constraint on how the funds are split between JPL and the university partner.

Schedule

The following schedule of events is planned for the 2011 Call for Proposals:

- July 7, 2010 Call for Proposals released
- October 1, 2010 Proposals due
- November 24, 2010 Technical reviews completed
- December 14, 2010 Technical & programmatic rankings completed & merged
- January 2011 Awards announced

Proposal Submission Process Overview

1. The [2011 SURP Proposal Template](#) (it has changed) is available on the SURP website. Do not exceed 8 pages total for this submission, including the signature page, budget sheet, and figures, but excluding any additional budget backup or signatory detail that the university partner elects to include.

2011 SURP Proposal Template URLs:

Word Version - [http://surp.jpl.nasa.gov/files/surp/2011 SURP Proposal Template.doc](http://surp.jpl.nasa.gov/files/surp/2011_SURP_Proposal_Template.doc)

PDF Version - [http://surp.jpl.nasa.gov/files/surp/2011 SURP Proposal Template.pdf](http://surp.jpl.nasa.gov/files/surp/2011_SURP_Proposal_Template.pdf)

2. The completed proposal must be electronically submitted into [the SURP Proposal Submission site](#). At the end of the electronic submission process, you will receive an assigned proposal number. Please record this number on your original signed proposal. You will also be asked to suggest the names of at least 3 JPL colleagues who can provide an expert technical review of your proposal.

The SURP Proposal Submission website is only available through the internal JPL website and is scheduled to go live by September 17, 2010.

2011 SURP Proposal Submission URL: <http://surp.jpl.nasa.gov/collaborations/application/>

If you need any assistance with your electronic submission, please call Lori Williams (3-6392).

3. After electronically submitting your proposal, please deliver six (6) hard copies of your proposal to Alma Cardena, (office location 180-604, M/S 180-604, ext. 4-2328) by no later than 4 PM on October 1, 2010. Your hard copies must include the assigned proposal number and must include all required signatures (scanned or faxed signatures are acceptable).

How to Complete the Proposal Template Sections

1. **Title:** Enter the full title of the proposal

2. **JPL Principal Investigator:** Enter the first and last name of the PI with JPL line organization number and email address. The PI must be a JPL employee and only one PI can be listed.
3. **Co-Investigator(s):** Enter the first and last name(s) of all external partner and JPL investigators with affiliation and email address.
4. **Total Budget Request for FY11:** Indicate whether the proposal is new or a successor proposal. Enter the total budget request from your budget sheet.
5. **Student Participants:** For Research Initiatives enter the student name(s), email addresses, and academic level (undergrad, grad) of students participating in this proposed effort. If names are not yet known, enter TBD and the planned academic levels for student participation. Names are not required for Educational Initiatives.
6. **Topical Areas:** Enter a "1" next to the primary topic area for the proposed work. If you wish to designate a secondary topic, place a "2" next to your secondary area.
7. **Objectives:** State clearly and concisely the goals and objectives of your proposal and your expected deliverables.
8. **Technical Approach:** Describe your plan to achieve your objectives. List specific tasks, responsibilities, and milestones.
9. **Successor Proposals only:** Describe the achievements of the predecessor award.
10. **Innovative Features:** What new ideas are being applied in this proposal? Innovation refers to any new evolutionary or revolutionary change in thinking, processes, products, and/or organization. Relate these innovative features to current approaches inside and outside of JPL.
11. **Team Strengths:** Describe the experience, skills and capabilities the team members bring to the proposed effort. List the specific responsibilities of each team member.
12. **Exchange of Personnel:** Describe any plans to have work done at JPL by university students or faculty or work to be done at the university by JPL employees. Please note that the expenses incurred for any exchange must be included in the budget request, with the possible exception of a student summer internship. Please indicate if a student summer internship will be requested if the proposal is awarded and how that internship will forward the proposed effort. You will be notified after award selections if we are able to provide additional funds for your summer student.

13. **Significance and Impact of Results:** Discuss the significance of this proposed effort and the impact this work may have on JPL missions and programs. How does the effort contribute to the primary and secondary strategic topic area? How does the effort help strengthen the relationship between JPL and the strategic university?
14. **Plans for Follow-on Funding:** Provide a realistic assessment of the potential for the task for follow-on funding and possible sources for such funding. Discuss how the proposal may enhance the probability of such funding.
15. **JPL Principal Investigator Signature:** The JPL PI must sign the proposal. A scanned or faxed signature is acceptable.
16. **JPL PI Division Manager Approval Signature:** The Division Manager or Manager III equivalent for Program Office submissions, or their designee, of the JPL Principal Investigator must sign and approve the proposal. A scanned or faxed signature is acceptable.
17. **External Co-Investigator Signature:** The primary university Co-I must sign the proposal. A scanned or faxed signature is acceptable.
18. **University representative with signature authority:** Most universities require the approval of university personnel with contractual or procurement authority or the appropriate Dean or Department Chair. It is also acceptable for the university to submit a signed letter stating willingness to participate in the proposed research in lieu of a signature in this box. A scanned or faxed signature is acceptable.
19. **Figures, Graphics, Tables:** All figures, graphics, and tables should be placed at the end of the proposal. Please do not use "text wrapping" when incorporating graphics at the end of the report. The PI is responsible for ensuring that figures, graphics, and tables are legible.
20. **Budget Sheet:** Complete the budget sheet as indicated by the form. The university budget request should be entered as Item #5 and sufficient budget backup detail from the university should be appended to the proposal. The university backup detail will not count against the 8-page limit and may be in the format of their choosing.
 - Period of performance: For budgeting purposes, assume tasks will begin on March 1, 2011, and end 12 months later on February 29, 2012.
 - JPL salaries: You should not list each person's salary within the budget. You should list the individual's name or job classification and the number of hours for each person, and then provide one total salary dollar figure. This protects salary confidentiality.

- JPL Category “A” Labor: List the individuals’ name or job classification and number of hours, and then provide one total salary dollar figure.
- JPL Procurements–PO: Equipment, Materials, and Supplies: Itemize all equipment, materials, and supplies needed for the proposed effort.
- JPL Procurements–RSA (or PS) for university subcontract: Itemize all the university subcontracts for this effort and indicate whether they are to be a RSA or PS type of subcontract. Use a Procurement–RSA subcontract to send funds to your university partner, except in the following circumstances. If your proposal involves hardware or software deliveries from your partner, or if government furnished property will be sent to the university, then a RSA-type of subcontract will not be allowed. Under these circumstances, use a Procurement-PS type of subcontract (also called a Cost Reimbursable with an Educational Institution (CREI) by some JPL offices). The allocated direct cost (overhead) rates are very different for these two types of subcontract (RSA subcontracts have lower ADC applied), so it is very important to make this distinction in your budget planning. If you have multiple university partners, it is possible to send different types of subcontracts to each as long as each activity meets with the constraints mentioned above. If you need additional assistance in distinguishing the type of subcontract you need, you may contact the SURP/DRDF Acquisitions Manager, Margaret “Peggy” Easter at x4-5354 (email: margaret.b.easter@jpl.nasa.gov).
- JPL Services: Itemize all in-house services needed for the proposed effort.
- JPL Travel: Domestic programmatic travel needed for research purposes is allowed. Domestic conference travel up to 5% of the total budget is also allowed. Itemize all travel with a brief explanation of why and when travel is required.
- JPL Other: Itemize any other costs. At JPL, this includes chargebacks for computers, phones, etc.
- JPL Allocated Direct Costs (ADC): ADC and labor fringe rates apply, however Multiple Project Support (MPS) does not. Please contact your Section Administrator or Business Administration Manager for appropriate FY rates and assistance in filling out the form. It is very important to correctly determine if your university subcontract can be issued as a RSA-type of subcontract or if it must be issued as a PS-type of subcontract (see above discussion on JPL Procurements–RSA (or PS) for university subcontracts) as the ADC rates applied are very different.
- Total budget request: Sum of total direct costs (Item #10) and allocated direct costs (item #11). The budget request must comprehensively include all costs for

the proposed activity and not exceed the cap of \$100,000 for Research Initiatives and \$25,000 for Education Initiatives.

21. **Budget Details for University Partner(s):** Replace this page with your collaborator's budget detail. There is no page limit and the format may be of their choosing. The budget breakdown must be adequate for reviewers to understand labor, procurements, subcontracts, services, travel, and university overhead.

Proposal Evaluation Process

1. The technical and programmatic evaluation of all proposals will be carried out by a process organized by the SURP Program Office. The review criteria are as follows:
 - Innovation
 - Merit of the technical approach
 - Strength of the investigation team
 - Alignment with strategic topic areas
 - Impact on JPL capabilities for future missions and programs
 - Cost and schedule realism
 - Possibility of follow-on funding
2. Based on the outcome of the review process, the SURP program office will forward a recommended list of awards to the JPL Chief Scientist and Chief Technologist. The OCS/OCT will review the results of these discussions and make their final recommendations to the JPL Director. Proposals selected for award will receive an award letter via email.
3. Debriefing— the principle investigator will be given a written summary of the technical comments for their proposal. Programmatic and institutional reviews that may affect the proposal award decisions will not be made available.

SURP Program Obligations

By accepting an award, the proposer is also accepting the following terms and conditions:

- a. The JPL Principal Investigator is required to manage the task expenditures to ensure that they do not exceed the amount of the award. The award has a 12-month period of performance starting from the date the account is open.
- b. The JPL PI is required to initiate all the paperwork necessary to execute the subcontract for the external collaborator.

- c. If you are collaborating with foreign nationals who are not JPL employees (NASA funding cannot be sent to foreign countries) and you wish to have them visit the Laboratory, refer to the "Foreign National Access to JPL" policy statement identified in "JPL Rules!"
- d. Reporting annually on the status of the task by the JPL PI via an Interim or a Final report is required. Failure to submit a report could result in the Chief Scientist and Chief Technologist prohibiting you from being considered for any further funding opportunities, or may lead to closure of the task account. Additional information regarding the Annual Report will be sent at a later date.
- e. DRDF/SURP Poster Session: Submission of a poster at the annual DRDF/SURP Poster Conference (and attendance by the Principal Investigator or designee) is required. Additional information regarding the Poster Conference will be sent at a later date.
- f. The SURP program is derived from the Director's Research and Development Fund (DRDF) and the principle objective is to provide funding to promote innovative seed efforts in promising fields of science and technology for which conventional program resources are not available and to cultivate collaborative work with our strategic university partners. As such, every award that is made in the program is expected to contribute to the strategic needs of the Lab. It is anticipated that the researchers working on these tasks will publish the results of their work in refereed journals.
- g. Any external publication or presentation of work performed under SURP must have the following acknowledgement:

"This research was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration and funded through the Director's Research and Development Fund Program."

Links to Proposal Template, Guidelines and Submission Site

- **2011 SURP Proposal Template URLs:**
Word Version - http://surp.jpl.nasa.gov/files/surp/2011_SURP_Proposal_Template.doc
PDF Version - http://surp.jpl.nasa.gov/files/surp/2011_SURP_Proposal_Template.pdf
- **2011 SURP Proposal Guidelines URL:**
<http://surp.jpl.nasa.gov/collaborations/2011surpcallguidelines/>
- **2011 SURP Proposal Submission Site URL:**
<http://surp.jpl.nasa.gov/collaborations/application/>

Questions

Please contact Paula Grunthner for any questions relating to the SURP proposal call and process. You may reach her via email (Paula.J.Grunthner@jpl.nasa.gov) or via phone (818-354-0360 office, 818-687-9239 mobile).