

**Request for Proposals**  
**Federal Government and International Members of the Landsat Science Team**  
**March 16, 2012**

**Summary**

The U.S. Geological Survey (USGS), with NASA, is requesting non-monetary proposals from qualified Federal government and international scientists and engineers interested in serving as members of the Landsat Science Team. Up to eight U.S. Federal and international scientists will be selected through a competitive process to serve on the Landsat Science Team and contribute advice based on pertinent research and experience. Those selected must demonstrate financial support from their home agency or organization since USGS contracting policies preclude funding salaries for Federal government and international experts. Those selected will join approximately eight additional scientists and engineers from academia, non-governmental organizations, and industry that are being selected through a separate solicitation. The Landsat Science Team appointments are expected to be five years in duration. This will ensure science team continuity from the launch of the Landsat Data Continuity Mission (LDCM), which is planned for January 2013, and into its mature, operational phase.

**Background**

Since 1972, through a series of six Landsat earth-observing satellite missions funded under NASA research programs, the United States has acquired and maintained a unique and continuous record of global land-surface features that has become indispensable for detecting and monitoring natural and human-induced changes to the Earth's landscape. The Landsat Data Continuity Mission (LDCM), which will become Landsat 8 following launch in January 2013, will extend the global record further into the 21st century. The uniqueness and value of this record for applications ranging from resource management to national security places considerable emphasis on ensuring the successful integration of LDCM observations into the overall Landsat record. *The ultimate measure of success of the LDCM mission is the complete integration of LDCM data with past, present, and future remotely sensed data for the purpose of observing and monitoring national and global environmental systems.*

In order to ensure data continuity beyond LDCM, planning is underway for the Department of the Interior (DOI) and the USGS to continue Landsat missions beyond LDCM. This program must provide moderate resolution Earth observation data that meets the needs of Federal, State, local, and tribal governments, academia, and the general public and to support U.S. and international global change research. This requires the definition, development, and launch of the next satellite, Landsat 9, approximately 5 years following the launch of LDCM.

With an archive that includes more than 3 million Landsat scenes, the USGS recognizes

the need to provide systematic, science-quality, application-ready datasets representing land and water characteristics that are consistent over the full 40 year record and suited to detecting and monitoring changes in land surface conditions and to supporting analysis and modeling of climate and other related earth system processes. Landsat-based terrestrial variables are planned and will be based on the Global Climate Observing System (GCOS) definitions for Climate Data Records and Essential Climate Variables.

The Landsat Science team is being convened for the purpose of conducting scientific research on technical issues critical to the success of LDCM, including topics related to data acquisition, product access and formats, new science datasets, practical data applications to be derived from an operational system, and other science opportunities for new- and past-generation Landsat data. Recognizing the operational value and nature of Landsat, the USGS, with NASA endorsement, is assuming the responsibility for supporting the Landsat Science Team. To meet their responsibilities, the Landsat Science Team members must be knowledgeable on topics dealing with terrestrial monitoring, the applications of historical and contemporary Landsat data, issues related to effective use of archived data from Landsat sensors, and on the requirements for future sensors required to address the needs of Landsat-type data users involved in both practical applications and scientific research.

Because the capital investment in the Landsat program is so large, and because the scope of the Landsat program is so complex, the independent expertise of the Landsat Science Team plays a critical role in reducing mission risks and ensuring that critical design and functionality issues are addressed. The Landsat Science Team members must bring experience and fresh perspectives on mission design and mission operations concepts to shape the future of land observations from space.

### **Required Expertise**

Qualified U.S. Federal and international scientists and engineers are eligible to serve on the Landsat Science Team, which must be representative of the diverse Landsat data user community. As representatives of the science and applications community, the Landsat Science Team is expected to provide perspectives on topics that are important within the user community. Topical versatility is important, and team members with wide ranges of experience are invaluable. The Landsat Science Team perspectives, expertise, and research should span the topical areas of data characterization, science data products, and data applications. The Landsat Science Team will conduct scientific and applications research and share the results of their investigations in these areas with the USGS, NASA, and other partners. Examples of scientific research that are relevant to Landsat include the following topics:

Data Characterization

- Assessment of radiometric and geometric characteristics and performance of the LDCM Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) instruments
- Cross-comparisons of OLI and TIRS measurements with past Landsat instruments
- Methods and techniques for the merging and integration of Landsat data with measurements collected by other land imaging satellite instruments

#### Landsat Science Data Products

- Algorithms and approaches for developing Landsat Climate Data Records
- Requirements, strategies, and algorithms for developing Climate Data Records and Essential Climate Variables (e.g., land cover change)
- Defining new innovative Landsat standard and derived products

#### Data Applications

- Advanced methods or strategies for multi-decadal and large-area land change assessments
- New applications of LDCM data sets
- New applications and research capabilities resulting from the Landsat free data policy
- Value of Landsat for addressing societal issues

This is not an exhaustive list and other topics relevant to Landsat will be considered.

### **Landsat Science Team Duties**

The primary responsibility of the Landsat Science Team is to conduct scientific and applications research and share the results of their research with the USGS and other partners on topics that will affect the overall success of the Landsat program. Science team members should be prepared to provide informed ideas based on their expertise. In this way, Landsat Science Team members will address issues associated with the Landsat archive, LDCM, and future Landsat missions. Specific Team objectives include:

- Represent the breadth of user perspectives and their requirements on product formats and product generation issues.
- Provide feedback on critical design issues, including functional performance specifications of the instruments and data systems that affect Landsat data users.
- Contribute to the specification and design of the data acquisition strategy and data access systems.
- Consider interoperability of Landsat with other systems currently in orbit or planned for launch.

- Conduct studies on science and applications elements of program; each Team member should be involved in Landsat research that advances the capabilities of the overall Landsat Program.
- Provide insights on long-term issues (e.g., future missions).
- Represent Landsat activities and plans in appropriate forums, including scientific meetings.

The Landsat Science Team will hold two meetings per year, or more frequently if issues arise that require direct dialog. During these meetings, Landsat Science Team members will present their research that is relevant to the meeting topics, and will be briefed by USGS and NASA staff on mission and program status. Landsat Science Team members should organize sessions at appropriate professional meetings so that they can share results of their LDCM research and facilitate technical exchange with the Landsat user community. The USGS will provide travel support for Federal and international scientists involved in Landsat Science Team activities.

### **Landsat Science Team Measures of Success**

The measure of success of the overall Landsat Program is the complete integration of LDCM data with past, present, and future remotely sensed data for the purpose of observing and monitoring global environmental systems. The more specific Landsat Science Team measures of success include:

- Clarity and innovativeness of scientific research conducted on topics relevant to the LDCM project
- Productivity and originality of the sponsored science as measured through publications, cited works, and new applications
- Enhanced science, applications, and engineering capabilities
- Community contributions to, and acceptance of, future Landsat mission plans
- Visibility brought to the Landsat Program in a wide range of science and applications forums

These measures will provide direct benefits to the DOI, USGS, and NASA as they implement the LDCM mission, continue to improve the relevance of all archived Landsat data, and plan for Landsat 9 and beyond.

### **Eligibility**

The Landsat Science Team is being formulated using a two-phase process. One phase involves selecting and funding up to eight science team members through a competitive process (see <https://www.fbo.gov/>). Because USGS contracting policies restrict payment of government and international salaries, a second and parallel non-monetary

competition is being used to add up to eight additional members of the Federal government and international community to the Landsat Science Team. Interested parties must demonstrate the support of their home agency or organization through a letter specifying a willingness to cover the cost associated with Landsat Science Team service.

## **Proposals**

Selection of the government and international scientists and engineers will be based on the merits of a brief five page proposal that outlines the topical focus and credentials of the proposed Landsat Science Team member. Because funding will not be provided (other than travel expenses), the proposal length is streamlined. The proposal length must not exceed five (5) pages, not including the title page. The proposal format requirements also include one-inch margins with 12-point font. The title page should include the project name, key personnel including addresses, and the name of the proposing government agency or international organization. Those sending in proposals are urged to review the Evaluation Factors listed later in this document. Technical proposals must address each of these factors since these are the standards against which proposals will be evaluated.

The five-page proposal must address the following topics:

Planned Contribution: This section addresses the LDCM and Landsat research interests of the proposal Principle Investigator and includes a summary of planned objectives that will support the overall Landsat Science Team effort.

Technical Approach: This section should provide a brief summary of the technical details and methods related to the planned technical contributions.

Relevancy: Explain the specific Landsat Program benefits associated with your contribution on the Landsat Science Team.

Qualifications: Summarize the role and appropriate credentials of the Principle Investigator and other team members. Include 2 page *curricula vitae* (note - *curricula vitae* do not count against the five page limit).

Letter of Support: A statement of support from an appropriate agency or organization official (e.g., center chief, program head, etc.) expressing a willingness to cover the cost of your participation on the Landsat Science Team (note - the letter of support does not count against the five page limit).

## Proposal Evaluation Factors

The selection of government and international proposals will be based on the following evaluation factors.

- The relevance of the proposed contribution of the goals of LDCM and the Landsat Program and to the overall balance of the Landsat Science Team.
- The creativity and feasibility of the overall research strategy for accomplishing the scientific and technical aspects of the research.
- The likelihood that Science Team participation will lead to new Landsat applications or new scientific capabilities and understanding.
- The credentials of the proposal team.
- Verification of agency or organizational support.

## Proposal Submission

Proposals are due by 5:00pm Central Daylight Time. An electronic copy of the proposal in either PDF or Word formats should be sent to:

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