National Center for
Earth and Space Science Education

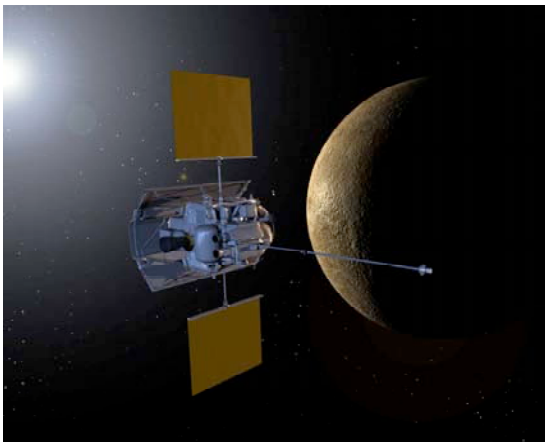
ANNOUNCEMENT OF OPPORTUNITY

Bring the Solar System to *Your* Community — Become a MESSENGER Fellow

Take part in the current golden era of Solar System exploration by becoming a MESSENGER Educator Fellow! As an integral part of NASA's MESSENGER mission to Mercury, the Fellows will help bring the excitement of this daring mission to classrooms across the nation.

What is MESSENGER?

Humankind is sending a spacecraft back to Mercury! NASA's MESSENGER (MErcury Surface, Space ENvironment, GEochemistry, and Ranging) is only the second spacecraft ever to visit, and will be the first to orbit, this enigmatic planet. Launched in 2004, the robotic spacecraft flew by Mercury three times in 2008 and 2009, sending back the first pictures of the previously unseen side of the planet. In March 2011 MESSENGER will go into orbit around Mercury and begin a year-long, comprehensive study of the planet. The mission will not only dramatically increase our understanding of Mercury, but also help reveal the story of the Solar System's formation. ***How would you like to help take the nation along for this thrilling ride as a MESSENGER Educator Fellow?*** Visit http://MESSENGER.jhuapl.edu for more information on the mission, and http://messenger-education.org for more information on the education and public outreach efforts of the mission.



An artist's conception of the MESSENGER spacecraft in orbit around Mercury.

What is a MESSENGER Educator Fellow?

An essential part of the MESSENGER education and public outreach program is a nationwide teacher training initiative whereby a cadre of thirty Fellows—master science educators—conduct teacher training workshops nationally, training up to 27,000 grades preK-12 educators over the mission lifetime. Fellows train educators on education materials (termed MESSENGER Education Modules) developed by the MESSENGER education and public outreach team. To date, over 14,000 educators across the nation have been trained by the MESSENGER Educator Fellows. Taking part in the MESSENGER Educator Fellowship Program is a great opportunity for educators to make a broad, yet profound impact in science education in the preK-12 community.

MESSENGER Educator Fellows at the Johns Hopkins University Applied Physics Laboratory during the spacecraft's third flyby of Mercury in September 2009.

What are MESSENGER Education Modules?

MESSENGER Education Modules include inquiry-based, hands-on lessons for grades preK-12 that are aligned to the National Science Education Standards and Benchmarks for Science Literacy. The Modules focus on Solar System science, Solar System exploration through history, and the process of designing, constructing, and sending a spacecraft to another planet. Each Module contains one or more education units addressing these central themes.

The *Staying Cool* education unit explores the basic concepts of light, heat, and energy to investigate how spacecraft such as MESSENGER can study planets using light and radiation without being damaged by the harsh high-temperature, high-radiation environment in which they have to operate. *Staying Cool* received outstanding grades for both scientific content and pedagogy from the NASA Office of Space Science's Education Product Review.

The *Voyage: A Journey Through the Solar System* education unit investigates Earth's place in the Solar System using models as powerful tools of exploration. The *Voyage* education materials are designed to help teachers nationwide bring into the classroom the excitement of the *Voyage* one to 10-billion scale models of the Solar System located on the National Mall in Washington, DC, and in three other communities around the U.S. (see http://www.voyagesolarsystem.org/ for more details).

The *Exploring Ice in the Solar System* unit examines the importance of water in the form of ice. From hands-on experiences with ice, the unit moves on to investigating ice in everyday life, in polar regions on Earth, and throughout the Solar System. *Exploring Ice in the Solar System* received outstanding grades for both scientific content and pedagogy from the NASA Office of Space Science's Education Product Review; it is also one of the educational units featured during the International Polar Year 2007-2009.

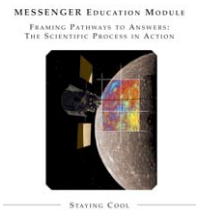
Mission Design is a new education module released in 2010. It examines in detail the process of planning a spacecraft mission to explore other worlds in the Solar System. The module also places space exploration in the greater context of the human history of exploration.

Future planned MESSENGER education modules include a look into the history of Solar System exploration (*Stories Across Cultures*), as well as an opportunity for students to use MESSENGER data in the classroom (*Using MESSENGER Data*).

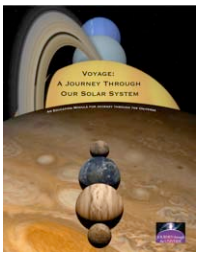
More information on the *Voyage* and *Staying Cool* Modules, including lesson layout, lesson descriptions, and downloadable lessons, can be found at the National Center's *Journey through the Universe* program web site: http://journeythroughtheuniverse.org/program_overview/po_co.html

What organizations are involved in the MESSENGER mission?

The MESSENGER mission is supported by the NASA Discovery Program under contract to the Carnegie Institution of Washington (CIW) and the Johns Hopkins University Applied Physics Laboratory (JHU/APL). The MESSENGER education and public outreach program team includes individuals from the following organizations: National Center for Earth and Space Science Education (NCESSE), Carnegie Institution of Washington Carnegie Academy for Science Education (CIW/CASE), Center for

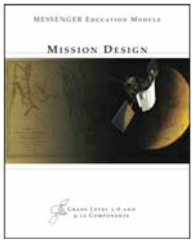


Staying Cool examines how spacecraft studying other planets can meet the mission goals in a harsh environment such as the high-radiation, high-temperature space near Mercury.



Voyage: A Journey Through Our Solar System investigates Earth's place in the Solar System using models as powerful tools of exploration.

Exploring Ice in the Solar System investigates the importance of water in the form of ice in the Solar System.



Mission Design examines the process of designing a spacecraft mission to explore other worlds in the Solar System.

Educational Resources at Montana State University–Bozeman (CERES/ MSU–Bozeman), American Association for the Advancement of Science (AAAS), Smithsonian Institution National Air and Space Museum (SI/NASM), and Science Systems and Applications, Inc. (SSAI). The MESSENGER Educator Fellowship Program is managed by NCESSE.

What is the commitment expected of a MESSENGER Educator Fellow?
This recruiting class of Fellows must commit to conducting MESSENGER educator-training workshops for a minimum of **100 teachers per year** for a total of two years, beginning in summer 2010, and sharing evaluation information from the workshops with NCESSE.

If selected as a MESSENGER Educator Fellow, what will you receive?
To help you become an effective MESSENGER Educator Fellow, and to help you reach the program goals, you will receive the following:

MESSENGER Educator Fellows performing an activity from the *Staying Cool* education unit.

- A package of materials to establish your credentials as a representative of a NASA spacecraft mission, including:
  - Business cards which identify you as a MESSENGER Educator Fellow; the cards will bear logos from NASA, CIW, JHU/APL, and NCESSE.
  - A press release about your acceptance to the program; the press release can be issued to media outlets in your community.
  - A letter of introduction from the NCESSE Center Director to authorizing officials (e.g., superintendents and museum directors) at potential workshop venues; the letter establishes you as a MESSENGER Educator Fellow connected with a current NASA spacecraft mission.
  - Social networking tools and a personal Web environment to promote your workshops (currently being planned).
- An all-expense-paid, five-day training workshop in Washington, DC, in summer 2010; the workshop includes:
  - Information on the science and engineering behind the mission, including presentations by MESSENGER mission scientists and engineers.
  - Tours of the Smithsonian National Air and Space Museum and NASA Goddard Space Flight Center (subject to availability of these facilities).
  - Training on the MESSENGER Education Modules, including recipes for success in using the Modules in teacher training workshops in classrooms.
  - An overview of program logistics and reporting documents.
  - Best practices on planning and conducting effective teacher training workshops.
  - An introduction to the MESSENGER Educator Fellowship Program Web environment, including online reporting tools and personal Web spaces.
- A presenter's package for conducting MESSENGER workshops, including:
  - Copies of the grades preK-12 MESSENGER education units (which include the currently available *Staying Cool*, *Voyage: A Journey Through the Solar System Exploring Ice in the Solar System*, and *Mission Design*.)

MESSENGER Educator Fellows performing an activity from the *Voyage: A Journey Through the Solar System* education unit.

- A how-to manual on planning, advertising, conducting and assessing effective teacher training workshops, including sample workshop agendas, best practices on facilitating educator training workshops, and approaches to adapting MESSENGER education content for curricula concentrating on math, technology, reading, and writing.
- Multimedia resources, including posters and CD-ROMs.
- Educational supplies necessary to conduct workshops.

❖ An annual allowance of up to $300 to help cover the cost of conducting workshops.
❖ Ongoing logistical and informational support from NCESSE for all aspects of the MESSENGER Educator Fellowship Program.
❖ Ongoing detailed analysis of the assessments of your workshops based on the feedback provided by the workshops attendees.
❖ A MESSENGER Educator Fellowship Program Update Session to take place in spring/summer 2011 (details to be determined).

MESSENGER Educator Fellows performing an activity from the *Exploring Ice in the Solar System* education unit.

How will Fellows be selected?

This Announcement of Opportunity is intended to recruit a new cadre of thirty Educator Fellows capable of making a two-year commitment to the program, for the academic years 2010-2011 and 2011-2012. In order to maximize the reach of the program, Fellows are usually chosen to reflect a geographically and institutionally diverse mix of individuals from a variety of settings—science centers/museums, school districts, universities, educational organizations, etc. While a variety of factors will be used in the final selection, a MESSENGER Educator Fellowship candidate must be a legal U.S. resident actively teaching students or conducting teacher training in a formal (traditional classroom setting, school district) or informal (museum, science center, etc.) science education environment. Experience with teacher/adult training is not required but is strongly desirable.

The application submission requirements are:

❖ A completed application form.
❖ A current resume or curriculum vitae.
❖ A written letter of commitment from your host institution (current employer or sponsoring organization) to provide you release time to conduct MESSENGER educator training workshops, as necessary, and an expressed willingness to support you throughout the two-year Fellowship.
❖ Two letters of reference from individuals or institutions that are familiar with your teaching style and can speak to your success as a presenter.
❖ A two-page proposal outlining an implementation plan for the workshops you would conduct, including possible venues, audiences, and goals.
❖ A ten-minute video sample of yourself teaching/training an audience on an inquiry-based, hands-on lesson. The video sample should clearly demonstrate your abilities to facilitate inquiry-based learning. If you cannot submit a video sample, please submit a written explanation as to why you cannot. Please note, however, that applications with a video will be given higher consideration.

To download an application form, visit http://messenger-education.org/teachers/application.pdf. Applications must be received by NCESSE by April 10, 2010. Fellow selections will be announced by May 15, 2010. The training workshop is scheduled to take place July 6-10, 2010. For any questions about the Fellowship program or the application process, please contact the MESSENGER Educator Fellowship Program manager at HarriVanhala@ncesse.org.