

Spitzer Research Program for Teachers

Teacher-Student Research Program Using the Spitzer Space Telescope

– Doris Daou ⁽¹⁾, Stephen Pompea ⁽²⁾, & Michelle Thaller ⁽¹⁾



Summary

The Spitzer Science Center (SSC) and the National Optical Astronomy Observatory (NOAO) have designed a program for teacher and student research using observing time on the Spitzer Space Telescope. This program allows a group of 12 teachers and their students to team with Spitzer and NOAO scientists and utilize up to 3 hours of the director's discretionary observing time on the Spitzer Space Telescope for educational observations.

Spitzer Space Telescope:

A space-borne, cryogenically cooled infrared observatory capable of studying objects ranging from our Solar System to the distant reaches of the Universe.

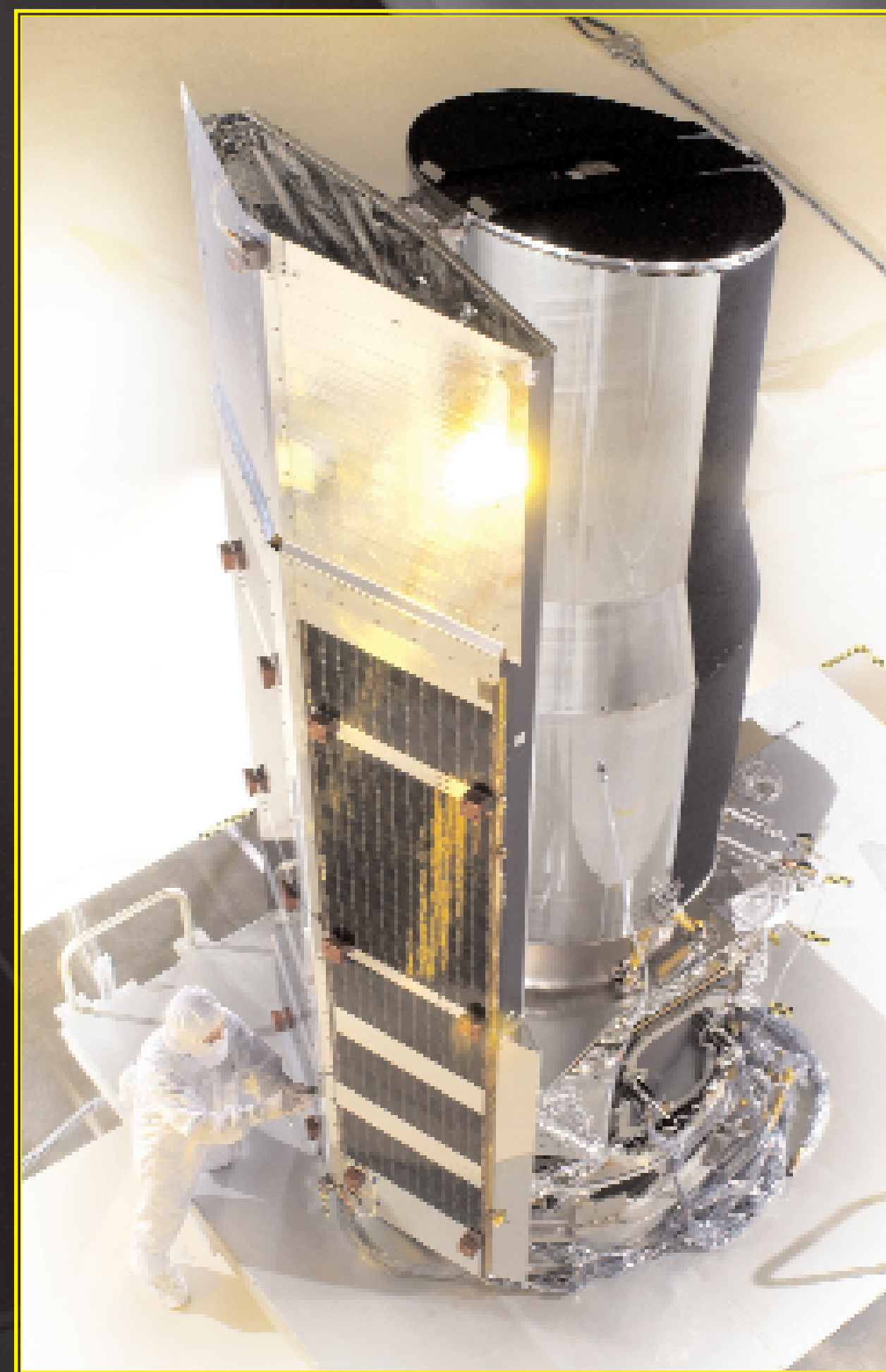
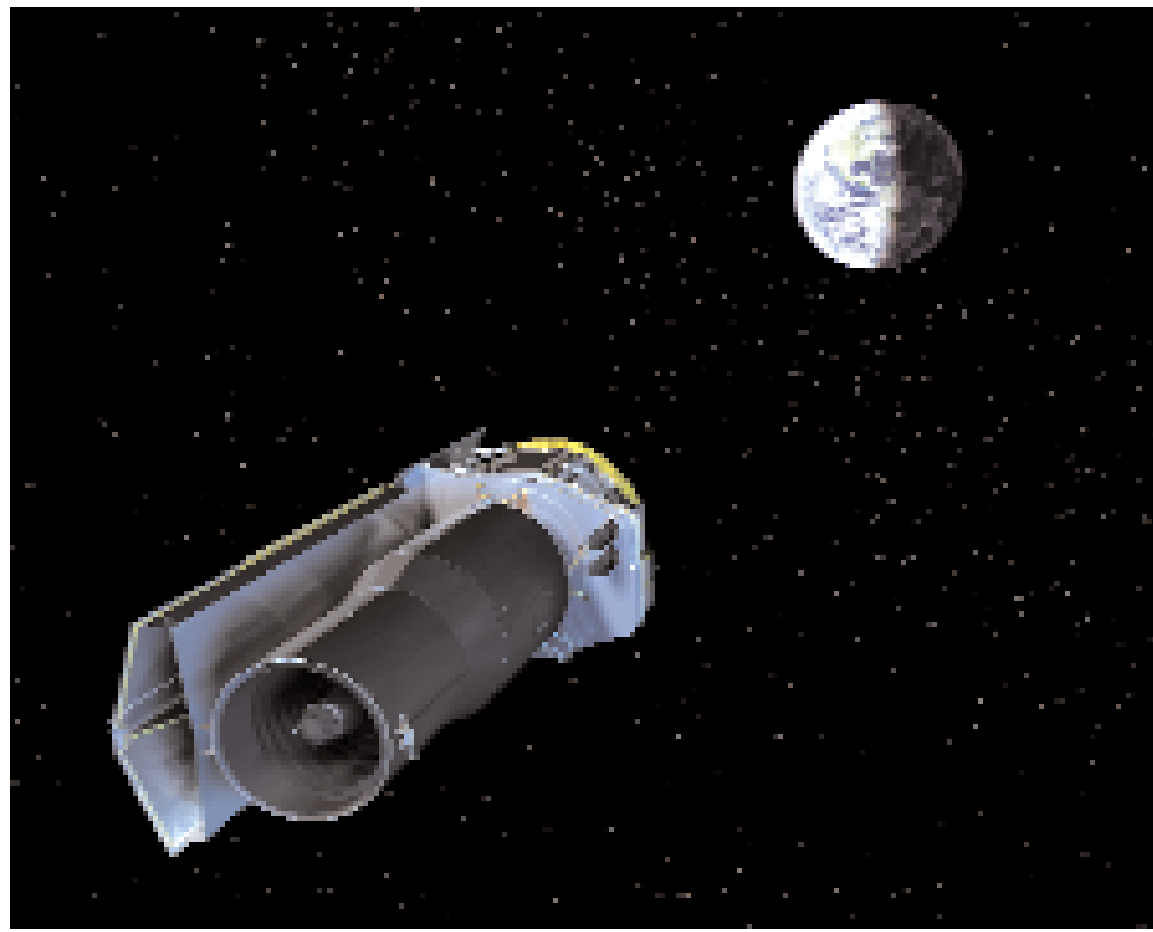
Launched 25 August, 2003.

Wavelength Coverage:

- 3 - 180 microns

Science Capabilities:

- Imaging / Photometry, 3-180 microns
- Spectroscopy, 5-40 microns
- Spectrophotometry, 50-100 microns



NASA Vision This program has as its goals the fundamental NASA goals of inspiring and motivating students to pursue careers in science, technology, engineering, and mathematics as well as to engage the public in shaping and sharing the experience of exploration and discovery. Our educational plan addresses the NASA objectives of improving student proficiency in science and improving science instruction by providing a unique opportunity to a group of teachers and students to observe with the Spitzer Space Telescope and work with the Spitzer archival data.

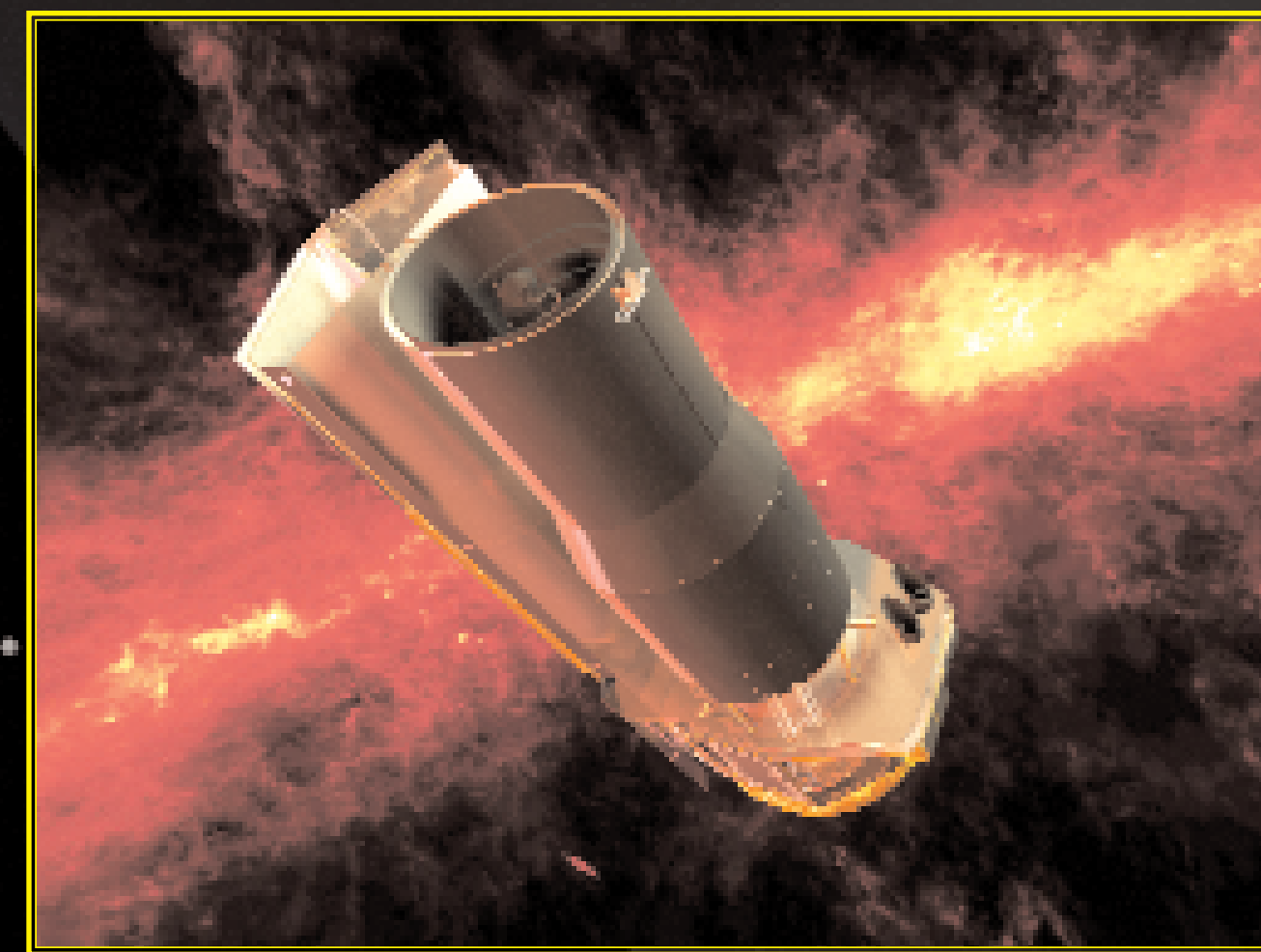
- Share the excitement of space science discoveries with the public
- Enhance the quality of Science, Technology, Engineering and Mathematics education, particularly at the pre-college level
- Help create our 21st century scientific and technical workforce



Teacher Leaders in Research Based Science Education (TLRRBSE)

Leveraging on a well-established teacher professional development program, the SSC is offering this program to teachers in the Teacher Leaders in Research Based Science Education (TLRRBSE), an ongoing program at the NOAO. This NSF-sponsored program touches the formal education community through a national audience of well-trained and supported middle and high school teachers.

The TLRRBSE Project is funded by the National Science Foundation under ESI 0101982, funded through the AURA/NSF Cooperative Agreement AST-9613615. NOAO is operated by the Association of Universities for Research in Astronomy (AURA), Inc. under cooperative agreement with the National Science Foundation.



The Spitzer Research Program Teachers

Jeff Adkins	Deer Valley High School Antioch, CA 94531 11th-12th Grade
Howard T. Chun	Cranston High School East Cranston, RI 02910 11th-12th Grade
Lauren K. Chapple	Traverse City East Junior High School Traverse City, MI 49684 8th Grade
Harlan V. Devore	Cape Fear High School Fayetteville, NC 28312 11th-12th Grade
Anthony R. Maranto	Phillips Exeter Academy Exeter, NH 03833 9th-12th Grade
Steve Rapp	Linwood Holton Governor's School Abingdon, VA 24210 10th-12th Grade
Theresa Roelofsen	Bassick High School Bridgeport, CT 06605 9th-12th Grade
Babs Sepulveda	Lincoln High School Stockton, CA 95207 9th-12th Grade
Linda Stefaniak	Allentown High School Allentown, NJ 08501 10th-12th Grade
Timothy S. Spuck	Oil City Area Sr. High School Oil City, PA 16301 10th-12th Grade
Beth Thomas	East Middle School Great Falls, MT 59405 7th Grade
Cynthia Weehler	Luther Burbank High School San Antonio, TX 78204 9th-12th Grade

The Program:

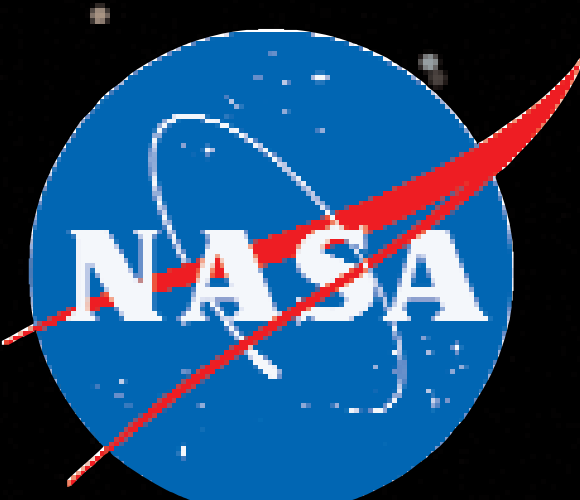
We have invited a group of teachers to experience an observing program with the Spitzer Space Telescope. The Spitzer Science Center Director has offered the Education and Public Outreach Office up to 3 hours of the director's discretionary time to be used for observing projects for teachers and their students. We have advertised this opportunity to teachers on a national level in September and at the end of October we selected the teachers for the program. Of the 37 applications received, we chose 12 teachers. The selection was made with special attention to the teacher's education background and experience. The participating teachers attended a fall 2004 workshop to become familiar with the Spitzer Space Telescope archives, and to receive training in infrared astronomy and observational techniques. The teachers will also attend a workshop offered by the SSC Observing Support Team to learn about the observation planning process, and telescope and instrument capabilities.

We will be dividing these teachers into subgroups to work on Spitzer observing projects. We will pair each teacher subgroup with scientists from the SSC/IPAC and the NOAO. The scientist will take on a role of the mentor and Primary Investigator (PI) for the individual subgroup and respective observing project. The granted observing time and targets are subject to approval by the Spitzer Science Center Director and must follow all the Spitzer Space Telescope observing rules and guidelines. All data taken during this program will be non-proprietary, and publicly available through the Spitzer Archive immediately after processing. The mentoring scientist and PI will provide advice on the scientific analysis and results of the program. The scientific PI will be the basic point-of-contact to answer their questions about instrument capabilities and performance, and the utility of their planned scientific observations (i.e., whether the measurements are possible, whether they have obtained already by other researchers, etc.) The mentoring scientist will also assist in the efforts to disseminate the scientific results (AAS and/or ApJ).

Spitzer Teachers as Ambassadors

As part of their "internship" in the Spitzer Research Program, the Spitzer teachers have obligations to provide:

- BEFORE the Observations**
- 3 workshops for teachers in district or neighboring schools districts
- AFTER the Observations**
- Presentation of results at national, regional and local teachers meetings
 - Astronomical results at American Astronomical Society



⁽¹⁾ Spitzer Science Center (SSC)
⁽²⁾ National Optical Astronomy Observatory (NOAO)