



# UA News

## UA Astronomer Earns National Education Honors

By Jeff Harrison, University Communications, February 1, 2012

### **Steward Observatory's Don McCarthy has introduced scores of students and others to science through the UA's Astronomy Camp.**

The American Astronomical Society, or [AAS](#), has awarded its annual Education Prize for 2012 to Don McCarthy, an astronomer at the University of Arizona's [Steward Observatory](#).

In making the award, AAS cited [McCarthy](#) "for his tireless efforts over the past three decades to educate and involve more than 1,500 students, teachers, and adults in astronomy and the scientific method using authentic inquiry."

AAS will make the presentation, which comes with a \$1,500 stipend, at its next annual meeting in Long Beach, Calif., in 2013.

McCarthy is best known as the director of the UA's [Astronomy Camp](#), which is marking its 25th anniversary this year. He also has run dozens of other outreach activities to a variety of organizations, most notably the Girl Scouts of America. As a teacher, he's been a finalist for the Five Star Teaching Award given by the UA Honors College.

Over the last quarter century, Astronomy Camp has left its imprint on the UA and the nation in some surprising ways, demonstrating both the short- and the long-term value of engaging the public in authentic science. It is Arizona's longest running science camp, and it also has pioneered a unique research-based approach to STEM (science, technology, engineering and math) education.

Using the Sky Island environments and observatories in the Santa Catalina mountains and at Kitt Peak National Observatory southwest of Tucson, Astronomy Camp provides what McCarthy calls "immersion experiences."

"Since 1988, Astronomy Camp has drawn thousands of campers from 48 states and 20 foreign countries to learn to become scientists. They range from teenagers and adults to school groups like private and public middle schools and community colleges to the UA Honors College and Flinn Scholars, as well as educators," McCarthy said.

Campers reside at the mountaintop observatories, operate research-class telescopes and related technology, deal with nighttime hours, interact with leading scientists, interpret their own observations and investigate their own questions and curiosities. And they are exposed to a large variety of experiences – such as eTextiles, music, space art and natural phenomena – as a way to encourage basic science and quantitative literacy.

One goal of Astronomy Camp has been to encourage students to continue their education in the STEM subjects. An eight-day Advanced Teenage Camp, for example, attracts some of the nation's best students, in part, because they can experience and get their hands on major astronomical facilities in southwest Arizona. Those include the [Arizona Radio Observatory](#), the [Large Binocular Telescope](#), the [Steward Observatory Mirror Lab](#), the McMath-Pierce Solar Telescope and the WIYN and RCT telescopes on Kitt Peak.

Students frequently continue their research projects after camp has ended and place highly in local, regional and national science fairs. Many of them eventually apply to the UA for admission as undergraduate and graduate students.

McCarthy said more than 60 campers have enrolled at the UA as undergraduates, majoring in subjects both technical and nontechnical. Several are or were [Galileo Circle Scholars](#) in the [College of Science](#). About 15 of them have since earned master's and doctoral degrees in astronomy. Others have gone on to various positions at Steward Observatory or have become leaders at a variety of programs on campus and in their career fields.

Some, McCarthy said, have even found their life partners there.

Cynthia Carr enrolled at the UA after attending Astronomy Camp, was named Most Outstanding Senior in the molecular and cellular biology department and eventually earned a doctoral degree.

"After Camp, we mentored Cyndi in her astronomy project that won the southern Arizona Youth Energy Science fair," McCarthy said. "At the UA she was one of the first student leaders in the Science Connections outreach program with UA Vice Provost Gail Burd."

"Cyndi also won the Miss Tucson Valley scholarship pageant in 1997 with a community service platform about the importance of science education," he said.

Carr currently works as senior medical writer at Ventana Medical Systems in Tucson on the early diagnosis of cancer. Former campers return each year to serve as camp counselors, giving of themselves to motivate other generations. Alumni also contribute funds for scholarships and general operation.

McCarthy credits a couple of features for the success of Astronomy Camp.

"One is a youth-centered, personal approach by the entire Astronomy Camp staff that treats young people as colleagues rather than children. There is authentic scientific inquiry with realistic projects using modern research telescopes, technology and equipment, and with real scientists as mentors."

"Another is that the students are peers with a common interest in science and engineering. There is a fun attitude toward learning, exploring ideas and searching for answers."

In 2002, Astronomy Camp proposed an educational partnership with the Girl Scouts of the USA as part of a NASA proposal to build the Near-Infrared Camera for the future James Webb Space Telescope. This proposal helped secure more than \$200 million to build NIRCam, some \$1 million of which is used to host biannual "Train the Trainers" workshops with Girl Scout leaders.

These workshops not only involve astronomical topics but focus primarily on encouraging students in the basic fields of science, technology and numerical literacy. To date, more than 200 GSUSA leaders have attended these workshops, impacting the lives of thousands of girls.

NIRCam is scheduled for launch in 2018 with an expected lifetime of 10 years.



Astronomy camper Cynthia Carr's reflection is captured in the mirrors in the Smithsonian's Whipple Observatory telescope, located near Amado, Ariz. Carr enrolled as an undergraduate and went on to earn a doctoral degree in neurosciences at the UA. (Photos courtesy of Don McCarthy)



UA astronomer Don McCarthy

Astronomy Camps also has benefitted UA classrooms. McCarthy said he has "accumulated a wide range of activities, demonstrations, research tools, etc. that are used routinely in my Tier I (ASTR 170B1) and Tier II (ASTR 201) classes, our NIRCam workshops with Girl Scout leaders, local schools and also in classes taught by other faculty members and students. "In one activity, for example, we 'electrocute' a pickle by connecting it to a standard wall outlet and use an electronic spectrometer and camera to record the specific colors emitted by energized sodium and potassium atoms in the visible and infrared spectrum. It demonstrates the interplay between atoms, light, energy and sound. We also use our infrared camera and liquid nitrogen in classroom experiments to demonstrate the spectrum of light and help people to relate to our infrared research at Steward Observatory with the James Webb Space Telescope."

Astronomy Camp was conceived by the late UA astronomer and University Distinguished Professor Ray White, and Joan Morrill, formerly of the UA [Alumni Association](#), as an outreach program for children of UA alumni.

While Astronomy Camp receives no University funding, it has contributed significantly to the University's mission in both education and research. A number of camp participants and their families have contributed approximately \$1 million to fund major projects such as the SkyCenter on Mt. Lemmon and the expansion of the Catalina Sky Survey research into the discovery and characterization of near-Earth objects.

It remains sponsored by the UA Alumni Association and is essentially a volunteer effort of dedicated faculty members, staff and students from around the country who devote their time on weekends, holidays and summers in the service of public education. Scholarships for teenage students are funded by camp alumni and families, adult donors and the Dudley Observatory in New York.



Three young Astronomy Camp students watch a solar eclipse from the 9,157-foot summit of Mt. Lemmon near Tucson.



Two students at Astronomy Camp measure the sun's energy output using a wax cube and a light bulb.

#### Et Cetera

##### **Extra Info**

[Astronomy Camp website](#)

##### **Contact Info**

Don McCarthy  
Steward Observatory  
520-621-4079

[dmccarthy@as.arizona.edu](mailto:dmccarthy@as.arizona.edu)

The University of Arizona Office of University Communications  
888 N. Euclid Ave. Room 413, Tucson, Arizona 85721 :: [Contact](#)  
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