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Donelson, students to conduct research with NASA scientist



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By MARLA K. KUHLMAN ThisWeek Community News Wednesday October 24, 2012 9:59 AM

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Gahanna Lincoln High School science academy coordinator Fred Donelson will boldly go where few teachers have gone before, thanks to being chosen for the NASA/IPAC Teacher Archive Research Program this coming year.

Donelson and some of his students will be mentored by astronomers to use true NASA-archived data to perform original astronomical research they will present at a national

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American Astronomical Society meeting in January 2014.

"It's an unbelievable opportunity for the kids and for me," Donelson told *ThisWeek*. "I'm still pinching myself."

He said students would have access to data and analysis instruments that usually are reserved for top astronomers, and they will be trained by astronomer mentors on how to use them.

"They will work with teams from around the country, so they will have to communicate via the (Internet) and videoconferencing, just like real scientists," Donelson said. "They will be working with real science data on current science problems. They will have to brainstorm and discuss concepts and theories with other students and teachers who are thousands of miles apart. Plus they get to present their findings to real astronomers, who will be treating them like peers, rather than high school students. Very few programs offer this type of experience for kids, and I am absolutely thrilled to be a part of it."

Each year, the NASA Infrared Processing and Analysis
Center and the Spitzer Science Center take applications from
educators across the country with experience in astronomy
for the purpose of bringing scientific research into the
classroom by conducting research with an educator team
and a mentor scientist.

As one of only about 20 educators chosen nationwide, Donelson and several of his students will work with other educators and students to do original astronomical research in the coming year.

Donelson and his team will be mentored by scientists whose main research involves data gathered from extra-solar planets -- those discovered around stars outside the solar system.

"The study of exoplanets has really increased the past few years," he said. "When I first started teaching our space technology class, there were only a few known exoplanets. Now we have discovered over 800 extra-solar worlds, and as our sensing technology gets better, I expect that number to grow even more rapidly.

"We are now even able to discern some of the gases in their atmospheres," he said. "The fact that present students from Gahanna Lincoln can actually be a part of this pioneering science is a tribute to the hard work and efforts of past Science Academy students."

Donelson and his students will work with Dr. Steve Howell, project scientist for the Keppler Mission at the NASA Ames Research Center, and Dr. David Ciardi, a research astronomer at the NASA Exoplanet Science Institute at the California Institute of Technology. They also will team up with teachers and students from San Mateo, Calif.; Medford, Ore.; and Orlando, Fla., to actually do the research.

Donelson and the other teachers will attend a training session at the AAS meeting in January and then return to teach their students what they have learned.

Data will be mined from recent space telescope archives, such as the Spitzer Telescope, during the spring.

Two students will accompany Donelson to the California

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Institute of Technology for about a week next summer to team up with the other teacher/student groups and share findings and make initial conclusions.

During the fall, students will statistically analyze results and develop poster presentations of conclusions and lessons learned. Those posters will be presented by the students and Donelson during the 2014 winter meeting of the AAS to astronomers from all around the country.

Donelson said he appreciates the support of the community and district administrators.

"Gahanna has great, hard-working kids," he said. "I just try to help them identify current areas of scientific need, try to point them in the right direction and get out of their way."

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