

NITARP: the NASA IPAC Teacher Archive Research Program (Overview)

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What is NITARP?

- NITARP is the (relatively) new incarnation of something that used to be called the Spitzer Research Program for Teachers and Students.
- Goal is (and was) to *give educators an authentic research experience* using real astronomical data and tools. Educators then turn around and carry this experience into the classroom and beyond.

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Brief (Funding) History

- The Spitzer program was funded out of the Spitzer EPO budget, which basically evaporated with Spitzer's cryogen.
- The NITARP program was rescued from the ashes and is now funded by the ADP program and the archives at IPAC (Spitzer, NED, NStED, IRSA, etc.).
- Most of the money goes to teacher travel.

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Educator Pools

- Previously, educators selected out of the NOAO RBSE program:
 - RBSE = Research-Based Science Education.
 - Teachers selected from national application process.
 - They attend summer program at NOAO to learn astronomy, observing, research, *and how to integrate this into the classroom.*
 - They have access to (some) KPNO telescopes after they finish the basic training, and they have their own student research journal.
 - (RBSE program on hiatus now.)

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Educator Pools (2)

- With transition to NITARP, widened to include
 - RBSE
 - HOU (Hands-On Universe)
 - “Greater SOFIA” (many smaller programs)
 - “Or other similar experiences”
- Had been just high school, with a few 8th grade teachers; tried community college; now non-traditional educators explicitly included.
- Applications due September.
- Also trying to make a larger community among the alumni of this program. (More on this later.) 5

Main program components (1)

- *Group of educators teamed with a scientist mentor; work to develop a science research program, do it, write it up.*
- Educators (& scientist mentors) attend a start-up workshop at a winter AAS (Jan 2011).
 - Workshop includes intro to infrared, tools, etc.
 - Learn about how AAS meetings work.
 - Start to define project, exchange contact information.
 - (We pay for teacher travel.)
- Work long-distance with the team to write a proposal. (due 21 March 2011 ??)
 - Must use data from Spitzer, IRSA, NED, and/or NStED.
 - Use telecons, internet-based resources such as our wiki, etc.
 - Proposal will be reviewed! (More on this later.) 6

Main program components (2)

- Meet for 3 days at IPAC to work on the data and understand how science works (Summer 2011).
 - Each team decides on a mutually acceptable date.
 - Each educator may be able to bring up to 2 students to this visit; students must be heavily involved in the project. [* what if no students?]
 - (We pay for educator/student travel.)
 - (Work remotely before and afterwards, using online resources.)
- Present results of the project in AAS posters (Jan 2011).
 - At least 2 posters: Science and Education.
 - Again, each educator may be able to bring up to 2 students; students must be heavily involved.
 - (We pay for educator/student travel.)

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Aside: What if no students?

- This program is for **your enrichment first**, because of your leveraging potential.
- If you are a classroom educator:
 - You do not **HAVE** to bring students. If no one 'steps up', or you run into bureaucratic snags, or you would be more comfortable learning yourself first, or you feel your own learning would be enhanced if you were alone, **THIS IS FINE**.
- If you are **not** a classroom educator:
 - We're still figuring this out too. The last two non-classroom educators recruited students from other sources (Hoette, Meredith). Once you get into this, think about how you can best leverage your participation, given your resources. Talk with your mentor teacher and scientist to figure out what to do.

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Main program components (3)

- Educators serve as NASA/NITARP ambassadors.
 - 12 hours' worth of professional development workshops, talks, etc. over 2 years.
 - We help provide some of the tools to use.
- Educators report back to us all the cool stuff accomplished in connection with this.
- Educators serve as mentor teachers to the rest of the NITARP community of educators and students.

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Mentor Teacher concept

- Now have ~30 (+10) educators who have been through the program, and almost uniformly they want to do more; they don't want to stop after just 1.5-2 years!
- "First year" educators are the brand new ones (first AAS, first IPAC visit, learning the ropes).
- "Second year" educators start with their second AAS, (conduct workshops, work with students, etc.).
- "Third year" and later educators = alumni. Some join new teams as deputies. Some will be involved in follow-up research of their original project using other telescopes. Some will be involved in a "proposal review." Some will be asked to lead community-building or assessment activities.

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What we expect educators to know

- How to work your computers. How to install software on your laptops.
- The basics of modern astronomy (what is a magnitude, what is a color-magnitude diagram, what is a FITS file).
- How to turn around and use research experiences in the classroom.
- (If you feel you are weak on any of these, talk to your team for help -- someone on that team knows!)

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What we will help educators learn

- Basics of infrared astronomy.
- Basics of Spitzer or Kepler (operations, data) and the other archives as needed (contents, usage).
- Basics of our software usage (e.g., ds9, etc.).
- “How the sausage is made” -- what takes time, what goes fast. (and some surprisingly obvious things...)
 - “Astronomers are normal people.”
 - “There is more programming involved than I realized.”

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You are here!

First AAS meeting

- Day-long workshop to learn the basics, meet your team.
- Learn about your science topic, start on your proposal.
- Block off some dates for a summer meeting.
- An alumnus (“mentor teacher”) is the scientist’s deputy for the team.
 - They will help a LOT because they’ve done this before.
- AAS meetings can be overwhelmingly busy!
 - We have a worksheet/treasure hunt (more later).

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After the first AAS

- Over telecons and e-mail, write proposal, learn the basics of the science and tools you will use.
 - Proposals due mid-March?
- Keep working through the Spring in preparation for the Summer.
- A LOT of material already on how to do work with Spitzer+2MASS data is on our wiki, and some on Kepler too. (Scientists/mentor teachers probably will want to develop more.)
- We welcome any more material that you develop that you would like to share.

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Visiting IPAC

- 3-day IPAC visit (Pasadena, CA).
- Will meet more people from IPAC (including non-astronomer staff!)
- Very very busy 3 days!
 - 0.5-1 day usually is a JPL tour.

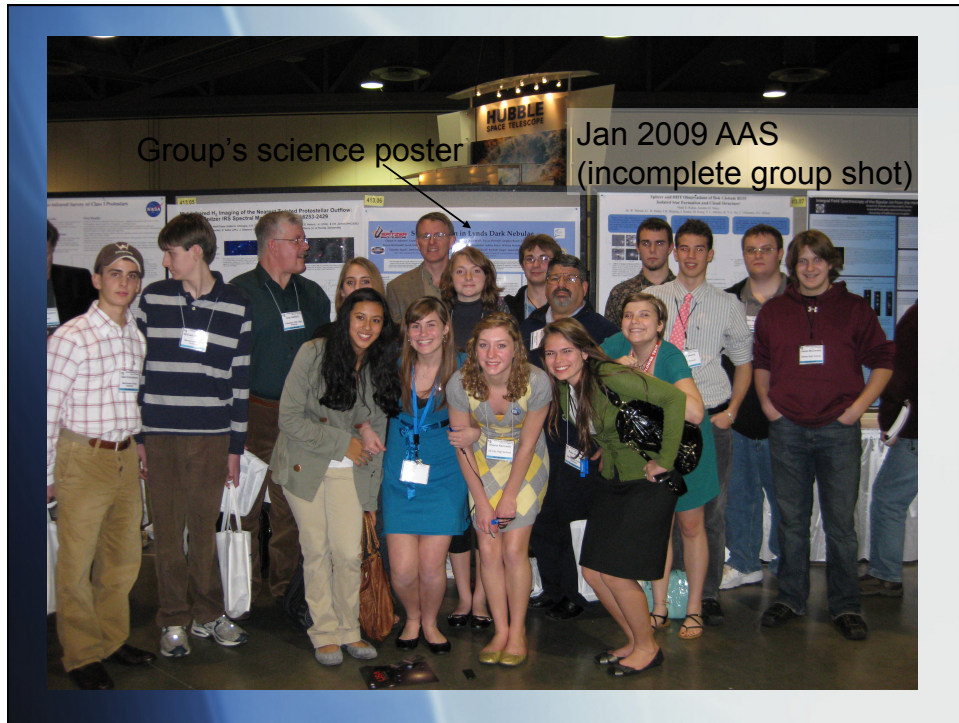
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After the visit

- Work on the data while you visit and more after you go home.
- You then write up your results for the AAS.
 - Your scientist may be the lead author or one of you may be the lead author.
 - You may also wish to submit it to the RBSE journal.
 - Your scientist will lead a paper for a refereed astronomy journal.

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Next steps

- Are there follow-up observations that would help? Some KPNO time may be available, or we can approach other observatories. Talk to your team!
- Can you do a similar analysis on your own of a different object?
- Mentoring the new folks...

Websites

- http://coolcosmos.ipac.caltech.edu/cosmic_classroom/teacher_research/
- <http://coolwiki.ipac.caltech.edu/>
- (long, first one linked from second one.)
- First one is “public face” and will have a profile for each of you soon. Second is working area.
- We will post talks from today on the wiki when we get a chance (also “soon”).

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Travel Anxieties

- Much of your participation in this is travel.
- I think this is cool!
- But this seems to cause the most angst, phone calls, money stress, etc.
- Faster you turn in receipts, faster you get your money back.
- I consolidated EVERYTHING, all the most frequently asked questions, helpful advice, etc. into a multi-page travel advice document. (You got a version customized to you at the beginning of this process, and will get another one customized to each of your next trips.)
- **PLEASE PLEASE PLEASE read and follow those instructions!**

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Returning to the present...

- We found, from past years, that the one thing that educators wanted us to do was help them get good press (literal and virtual) at home.
- Towards that end, we collected media and administrative contacts from you.
- We will put out a press release TOMORROW with a few words advertising this class and the prior class's results.
- **If you gave us no contacts (or contacts without email or a regular address), we will depend on you to relay the release.**
- We NEED to get a picture! (How about now?)

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