



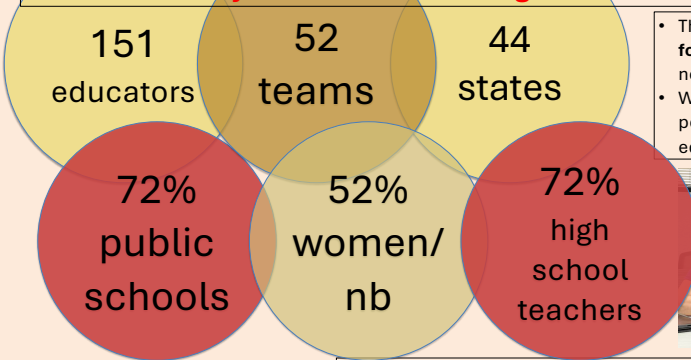
# NITARP, the NASA/IPAC Teacher Archive Research Program

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<http://nitarp.ipac.caltech.edu/>

**What is NITARP?** NITARP, the NASA/IPAC Teacher Archive Research Program, has been running (in one form or another) since 2005. NITARP partners small groups of largely high school educators with a research astronomer for a year-long authentic research project. NITARP projects use data and tools from IRSA, the same data and tools used by professional astronomers. The teams experience the entire research process, from writing a proposal, to doing the research, to presenting the results at an American Astronomical Society (AAS) meeting. The program runs from January through January. Applications are available annually in May and are due in September. The educators' experiences color their teaching for years to come, influencing thousands of students per teacher.

**2025 is the 20<sup>th</sup> year of teachers doing authentic astronomy research with IPAC!**



- There have been a **total of ~700 NITARP-affiliated folks at any AAS 2005-2025** (including all NITARPs, not just the ones we pay for\*)!
- We have had ~80 science posters, ~90 education posters, 9 astronomy refereed journal articles, & 9 education refereed journal articles.



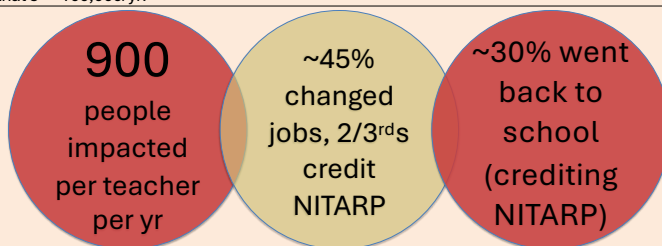
\*NITARP-affiliated people at any winter AAS include educators on teams starting, educators & students on teams finishing, and alumni educators/students coming back for more. We pay for educators on teams starting/finishing, and up to 2 students per educator on teams finishing.

We have only two new teams per year, and only a total of 6 new teachers per year. But, we work with them for 13 months – research says you need an extended interaction time to effect lasting change, and we see that in what the teachers tell us happens as a result of NITARP.

**We work with teachers because of the leverage they bring: change the way a teacher thinks, and you impact all the students they teach for the rest of their career.**



We conducted a “flash survey” of the NITARP community in Nov/Dec 2024 and got 63 responses, a ~40% response rate, from the alumni. These 63 NITARP educators reach a total of ~55,000 people per year – students in class, students in clubs, adults in classes or clubs, informal ed (e.g., museums or planetaria). **That is an average of ~900 people impacted per NITARP educator per year.** Scaling to the full ~150 alums, that's >~100,000/yr!



## NITARP changes how teachers teach!

- “My experience in NITARP has **fundamentally changed the way I teach every course.**”
- “[This program] **100% changed my view about science and the scientific method.** This changed my approach when teaching, and what I communicated to teachers when doing professional development.”
- “The NITARP program helped me **develop my classroom into more of a class to learn how to research and present their data** instead of a passive learning environment. [...] the concepts of this program would **help any teacher increase the success and productivity of their classroom.**”
- “As a result of NITARP, I **immediately started a scientific research before and after school program.** [...] I am the **only teacher** that has a scientific research course in northeastern Tennessee.”
- “NITARP has **vastly changed my perspective in science**, how science is done, teaching science, and what to emphasize when teaching science.”
- “I have brought **vastly improved context to all my classroom teaching**; I have incorporated data processing [...] in all my math and engineering classes. (This alone has made a huge difference in my students' skillset and engagement.)”

## NITARP helps teachers bring data to classes!

- “As a result of this program, I am **really dedicated to bringing authentic data** into middle school classes.”
- “I think taking and **using real data** and exposing students to **real research** is a **baseline of 21st century science education**, especially for students who are college-bound.”
- “NITARP **challenged me to go beyond what I thought my students could do** and challenge them in turn. Several of my **colleagues were inspired** to do other research programs in their disciplines (life sciences and earth science) which in turn inspired more students.”
- “My entire science department benefited from my NITARP experience since I was Department Chair at the time and was able to focus our meeting times on ways to **incorporate real world data into our curriculum.**”
- “We need programs like this to **teach teachers how to be scientists.** When you improve teachers, you improve learning.”

## NITARP's influence grows!

- “The experience amplifies the teachers' STEM heart and **thus touches the life of every student in the teacher's caseload.**”
- “NITARP impacts many teachers and, therefore students, in a way that is **unparalleled in science education.** These impacts go beyond increasing teacher and student science self-efficacy and **changing attitudes about science as a way of thinking.**”
- “The NITARP program is by far the **most impactful program** I have been part of in my 25 yr career. Its **impact extends far beyond the subject matter** to influence both teachers and students [...] **The participants are forever changed for the better** regardless of the future career path they choose and the information they share about what they have learned touches everyone around them.”
- “I still think NITARP is the **best teacher/student experience** I've had.”
- “Everything about the NITARP program promotes **diversity and accessibility.**”

**Many of our alumni leave the classroom and move into positions where they can have a greater influence on education and educators.** This is just one reason why it's important to continue to maintain our vibrant community of alumni! Our latest example: “[I left the classroom and became] the director of STEM education at an innovation center [...] and developed a program which impacted 4 school systems. Before I left [...], we had trained every teacher in grades k-5 in a baseline inquiry system that effectively integrated science inquiry into English and Math curriculums in **3 of the school districts.** This included 14 elementary schools and thousands of students. The NITARP program's inquiry approach and focus on communication and authentic, effective analysis parallels good science process that engages students and was influential in the development of the Baseline Inquiry program. When I left, the program had begun training in two additional districts, bringing the **total impact to 6 districts**, and expanded staff. **Programs like NITARP are essential to developing professionals who can provide the right direction and training for our teachers from within the teaching community.** During interviews, it was obvious [that it is a huge challenge] to find individuals who had [both] experienced the classroom, and understood the inter-curricular connection of science to other subjects -- what inquiry really is, especially when applied to real investigations. **Every district's children deserve a teacher trainer with a NITARP-caliber teacher.**”

| Since participating in NITARP, have you...                                      | Number    | Fraction   |
|---|-----------|------------|
| Used NASA education resources and/or lessons                                    | 61        | 97%        |
| Used NASA databases   | 53        | 84%        |
| Used NASA data in classrooms in any form  | 57        | 90%        |
| Presented at conferences around NITARP-related work                             | 39        | 62%        |
| Run professional development for other educators using NITARP-related resources | 24        | 38%        |
| <b>Felt more confident exploring new things for use in the classroom</b>        | <b>61</b> | <b>97%</b> |
| (Nope, not really anything new because of NITARP)                               | 0         | 0          |

## NITARP is valued!

- “Far and away the **best Professional Development I've even seen.** And perhaps the **only real, legit, functioning teacher-scientist partnership available.**”
- “NITARP is one of the **best professional development for classroom teachers.** [...] It is a **unique experience and better than any PD classrooms offered.** I continue to do research today and involve students in research because of this experience.”
- “NITARP was **by far the best professional development opportunity** I participated in during my 37 year teaching career.”
- “The NITARP experience is the **best PD that a teacher could ever have...** it is an authentic research experience and changes the person involved and their teaching. As such, the echoes of the **experience ripple out into the world year after year** as a result of everything that these amazing teachers did during their year with the NITARP program.”

## NITARP changes teachers' lives!

- “NITARP is more than just professional development: it's a community, it's the **opening of a door**, and it's a lifestyle!”
- “This program has been **life-changing.**”
- “Participating in NITARP was a **life-changing event for me**, setting me down a path that I would have been unlikely to have found without it.”
- “As a result of NITARP my **career was skyrocketed** into a new trajectory.”