

Polarimeter to UNify the Corona and Heliosphere (PUNCH)



PUNCH Outreach Update

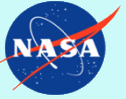
PUNCH 7

Southwest Research Institute

Boulder, CO

12 May 2026

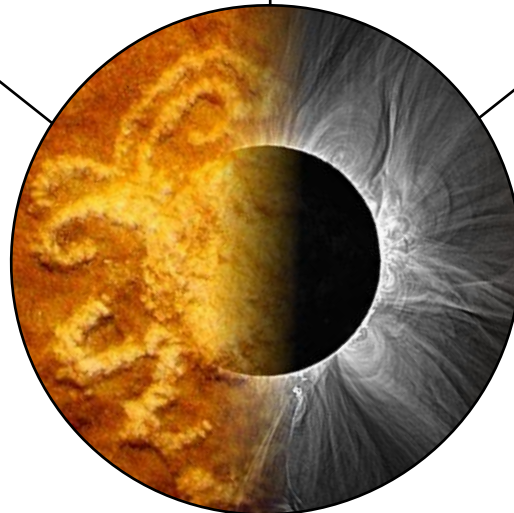
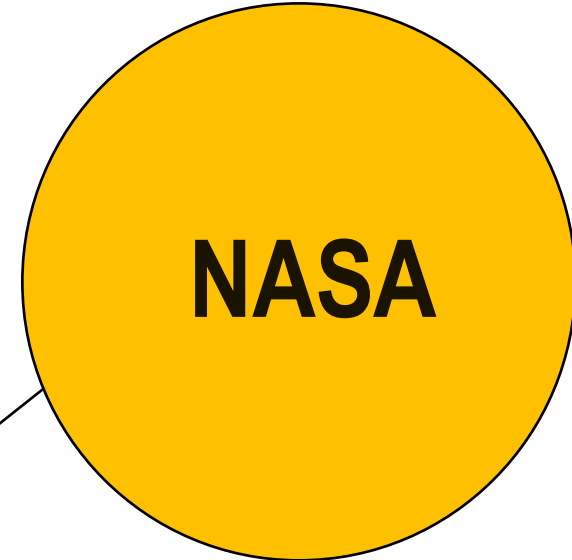
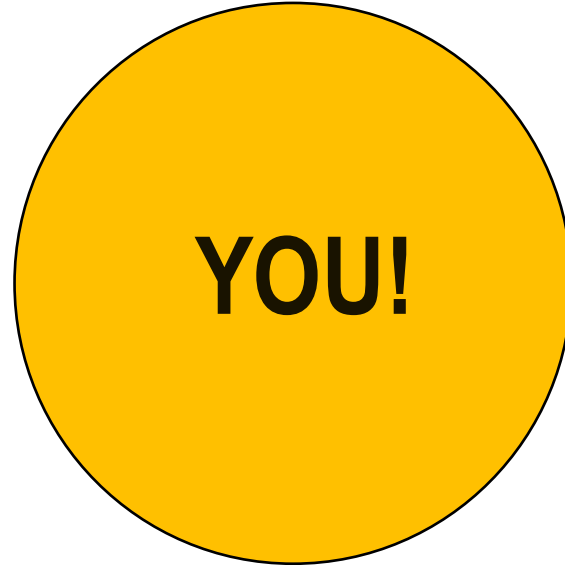
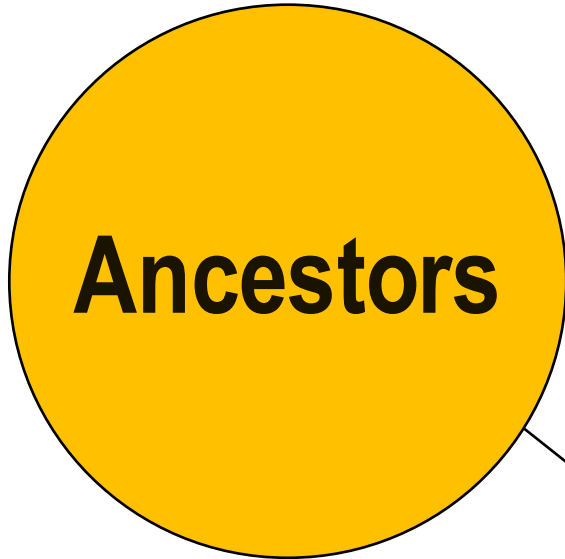




Why does PUNCH have an embedded outreach program? What is your Outreach Team good for?



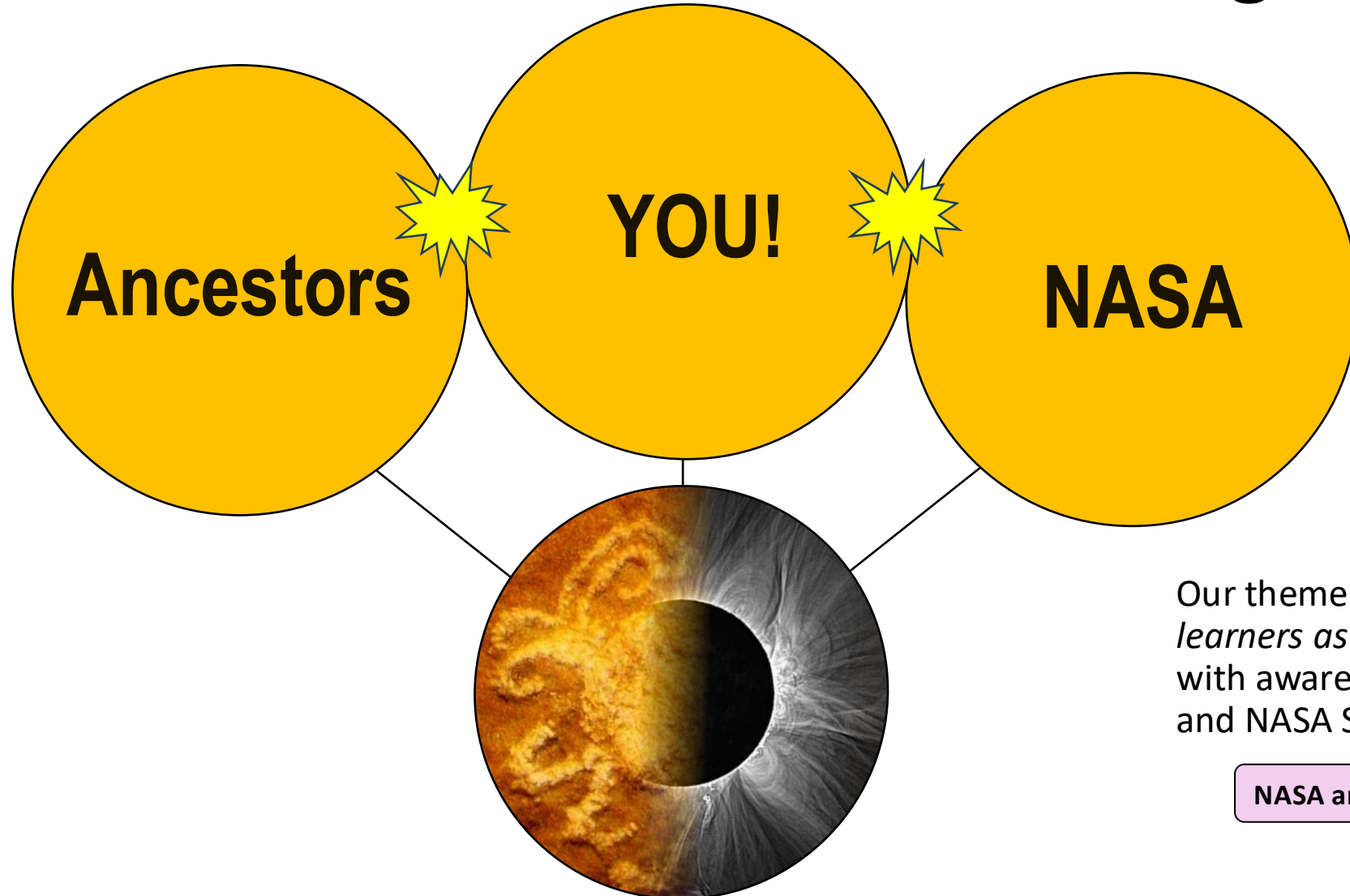
PUNCH Outreach Theme: Ancient and Modern Sun-Watching



NASA exploration of the Sun is a natural extension of humanity's age-old dedication to observing and learn to predict the rhythms and cycles of the Sun: for example, seasonal & 11-year sunspot cycles



PUNCH Outreach Theme: Ancient and Modern Sun-Watching



Our theme is centered on *learners as Sun-watchers* with awareness of ancestral and NASA Sun-watching.

NASA and Nature

Solar Corona & Heliosphere Observers UNITE!

across time, space, and culture

A Mission to
study how the
Sun Touches Us!



Petroglyph in Chaco Canyon, NM

May be humanity's first
impression of a solar
storm in the solar corona



IMAP



See Dr. Gilbert's Poster at this meeting!

PUNCH 7 SCIENCE MEETING · SwRI BOULDER · MAY 12-14, 2026

PUNCH PULSE

A Citizen-Science Pipeline for Heliospheric Imagery

Chris "Gilly" Gilbert (PI, NWRA) · Cherilynn Morrow (Outreach Co-I, SwRI)
Sarah Kovac (Co-I / PM, UCAR/HAO) · Sanlyn Buxner (Ext. Evaluator, PSI) · Jimmy Negus (Education Consultant, CSU)

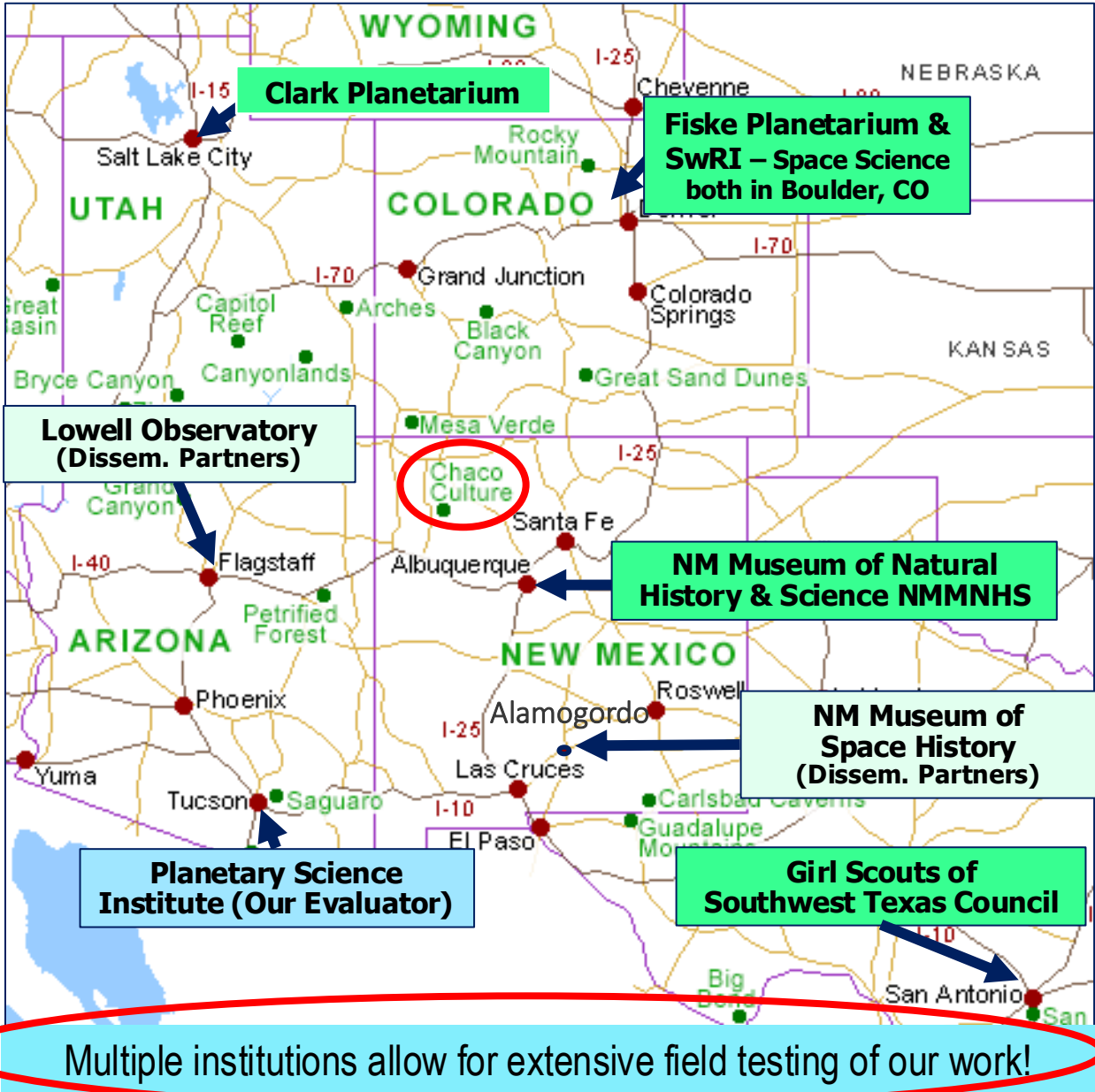
Training the Next Generation of Citizen Sun-watchers Returning Ancient Practices to the Public

OVERLAPS — WHERE PULSE LIVES

- 1 Collaboration on authentic data analysis
- 2 Support for educator training and data access
- 3 Leading participatory inquiry; recruiting citizen scientists

★ *PULSE — Public Understanding through Live Science Exploration*

PUNCH Outreach is enacting a “Stone Soup” model of collaboration.

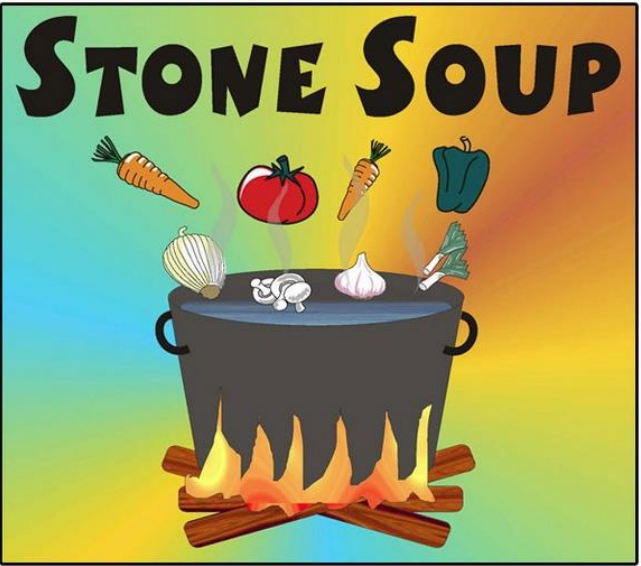


Multiple institutions allow for extensive field testing of our work!

“Stone Soup” Collaborative



We pool and leverage our strengths and resources to produce a **wider spectrum of outreach products and events** ... far beyond what a single institution could do for the same time and money.





PUNCH OUTREACH: STONE SOUP COLLABORATIVE



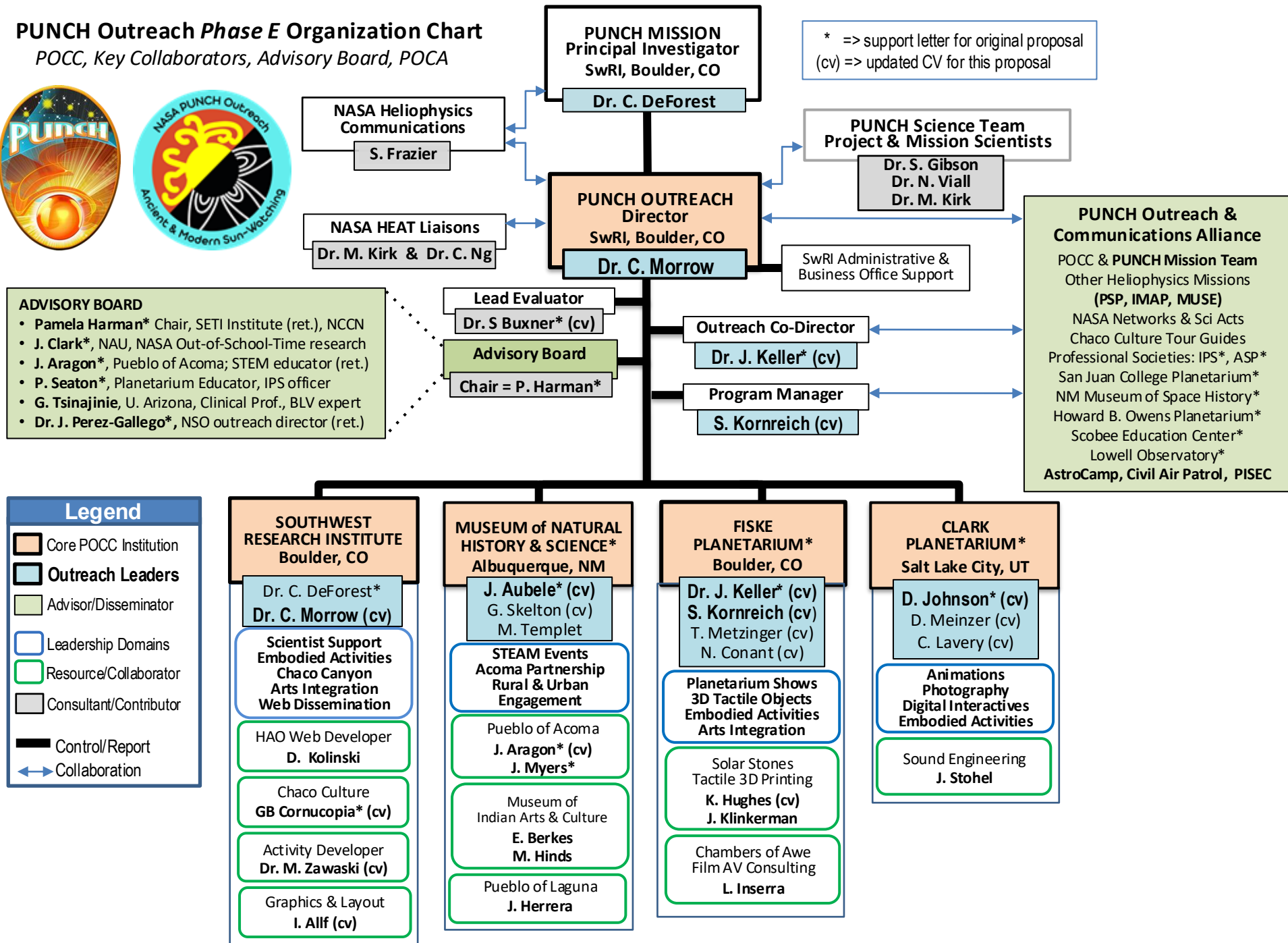
Figure 7: PUNCH Outreach is enacting a **Stone Soup** model of collaboration in the US Southwest that “feeds” all participating partners with products derived from the strengths of each partner. The “abundant soup” is “ladled out” to the Nation via our **Mission Team Members** and our **Allied Dissemination Partners**



Allied Dissemination Partners reflect the interest and support we receive in the broader outreach community. Regional organizations like the Lowell Observatory and national networks like NASA HEAT, the Astronomical Society of the Pacific, and the International Planetarium Society (IPS) are among those who have agreed to distribute our outreach products.

PUNCH Outreach Phase E Organization Chart

POCC, Key Collaborators, Advisory Board, POCA



* => support letter for original proposal
(cv) => updated CV for this proposal

- ADVISORY BOARD**
- Pamela Harman* Chair, SETI Institute (ret.), NCCN
 - J. Clark*, NAU, NASA Out-of-School-Time research
 - J. Aragon*, Pueblo of Acoma; STEM educator (ret.)
 - P. Seaton*, Planetarium Educator, IPS officer
 - G. Tsinajinie, U. Arizona, Clinical Prof., BLV expert
 - Dr. J. Perez-Gallego*, NSO outreach director (ret.)

Legend

- Core POCC Institution
- Outreach Leaders
- Advisor/Disseminator
- Leadership Domains
- Resource/Collaborator
- Consultant/Contributor
- Control/Report
- Collaboration

SOUTHWEST RESEARCH INSTITUTE
Boulder, CO

Dr. C. DeForest*
Dr. C. Morrow (cv)

Scientist Support
Embodied Activities
Chaco Canyon
Arts Integration
Web Dissemination

HAO Web Developer
D. Kolinski

Chaco Culture
GB Cornucopia* (cv)

Activity Developer
Dr. M. Zawaski (cv)

Graphics & Layout
I. Alf (cv)

MUSEUM of NATURAL HISTORY & SCIENCE*
Albuquerque, NM

J. Aubele* (cv)
G. Skelton (cv)
M. Templet

STEAM Events
Acoma Partnership
Rural & Urban
Engagement

Pueblo of Acoma
J. Aragon* (cv)
J. Myers*

Museum of Indian Arts & Culture
E. Berkes
M. Hinds

Pueblo of Laguna
J. Herrera

FISKE PLANETARIUM*
Boulder, CO

Dr. J. Keller* (cv)
S. Kornreich (cv)
T. Metzinger (cv)
N. Conant (cv)

Planetarium Shows
3D Tactile Objects
Embodied Activities
Arts Integration

Solar Stones
Tactile 3D Printing
K. Hughes (cv)
J. Klinkerman

Chambers of Awe
Film AV Consulting
L. Inserra

CLARK PLANETARIUM*
Salt Lake City, UT

D. Johnson* (cv)
D. Meinzer (cv)
C. Lavery (cv)

Animations
Photography
Digital Interactives
Embodied Activities

Sound Engineering
J. Stohel



Support for Scientists in Outreach

The screenshot shows the NASA PUNCH Outreach website. At the top, there is a navigation bar with links for Home, About, Science, Media, and Outreach. The Outreach dropdown menu is open, showing options: Outreach Overview, Outreach News, What is Heliophysics?, Outreach Team, Support for Scientists (highlighted), Outreach Products, Newsletters, and Publications / Presentations.

OUTREACH PRODUCTS

The well vetted educational products and activities linked below are aligned with the Outreach theme of Ancient & Modern Sun-watching described on our [Outreach Overview](#). May these enduring activities enhance you and your learners' Sun-watching experience and awareness of our common Sun-watching heritage and the natural extension of that heritage into space with NASA Sun-watching [missions like PUNCH](#).

FUN ACTIVITIES to inspire curiosity, wonder, and learning about the Sun

- 3-Hole-PUNCH Pinhole Projector (oval-shaped card 6 inches tall)**
This projector allows safe, indirect viewing of the Sun and is a wonderful tool for the study of image formation. The Projector brought joy and delight to hundreds of thousands of people observing from every state of our country during the 2023 and 2024 eclipses. Yet its 3-hole design makes it timelessly relevant to science education both outdoors in the Sun or indoors with a desk lamp. (Spanish version and a 6-min How-to video available)
- PUNCH Team Cards (digital interactives + printable downloads)**
Experience the beautiful 3-D interactive formatting of our online cards as you meet members of the NASA PUNCH Team. (Physical cards are also available as printable PDF downloads).
- Sun Fun Fill-in-the-Blanks (drag & drop interactive)**
Play an online "drag & drop" word game to learn about the Sun and its effects on Earth.
- Dancing Up A Solar Storm (15-min video-guided activity)**
Deepen your appreciation for the beauty and nature of the Sun and solar storms. This video-guided kinesthetic learning activity for all ages interweaves the art of dance, exciting science, and embodied science education.



3-Hole-PUNCH Pinhole Projector

(adapted by SHIELD & MUSE. Connections to PUNCH cameras, eyeballs, and the Natural World)

Joy and Delight for all Ages. Indoors and Outdoors

No eclipse necessary
ANY day the Sun shines...





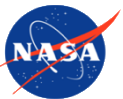
PUNCH OUTREACH TEAM MEMBERS

NAME	AFFILIATION	PUNCH OUTREACH ROLE
Dr. Cherilynn Morrow	SwRI Consultant, Boulder, CO	Outreach Director
Dr. John Keller	Fiske Planetarium (director), Boulder, CO	Outreach Co-Director
Dr. Mike Zawaski	Fort Lewis College, Durango, CO	Senior Activity Developer
Duke Johnson	Clark Planetarium (director), Salt Lake City, UT	Outreach Co-Director Photography & Animation
Samantha Kornreich	Fiske Planetarium, Boulder, CO	Program Manager
Geoff Skelton	NM Museum of Natural History & Science, ABQ	Co-Director of What's Needed
Jayne Aubele	NM Museum of Natural History & Science, ABQ	Outreach Co-Director Community Engagement
Joe Aragon	Pueblo of Acoma, NM	Senior Education Consultant
David Cornucopia	Chaco Culture NHP (retired), Albuquerque	Consultant
Dr. Sanlyn Buxner	Planetary Science Institute, Tucson, AZ	Evaluator
Don Kolinski	High Altitude Observatory, Boulder, CO	Web & Graphics Developer
Others	Mission team member institutions	Many valuable roles



PUNCH OUTREACH TEAM MEMBERS





SUNRISE HORIZON CALENDAR

from a Great Kiva in Chaco Canyon, NM

Birthday Sunrises on the Horizon

Great Kiva, Chaco Canyon, NM

Summer Solstice ~June 21

Spring Equinox ~March 21
Fall Equinox ~September 21

Winter Solstice ~December 21

Northeast

Start of Sun's path across the sky

East

Southeast

S U N W A T C H E R

Where on the horizon does the Sun rise on your birthday?

Use the letters of 'SUNWATCHER' to refer to horizon positions



Imagine standing at the STAR looking eastward across the round kiva. The larger photo shows the horizon you see.

★ Position of sunrise on the PUNCH mission's launch day (11 March 2025)
★ Position of sunrise on the day of PUNCH "first light" (3 June 2025)



http://www.nasa.gov/punch/outreach/birthday_sunrises



SUNSET HORIZON CALENDAR

Ft Lewis College, Durango, CO

Fort Lewis College

Winter Solstice ~21 December

Spring Equinox ~21 March
Fall Equinox ~21 September

Summer Solstice ~21 June

R E H C T A W N U S

Southwest Northwest

Where on the horizon does the Sun set on your birthday?

Sunset Bench

NEVER stare at the Sun. The best time to view a sunset is the moment right before or after the Sun completely disappears.

Use the letters of 'SUNWATCHER' (spelled backwards) to refer to horizon positions.

Birthday Sunsets on the Sky Steps Horizon

Fort Lewis College, Durango, Colorado (Latitude: ~37° N)



tinyurl.com/PUNCHOutreach

Activity 2.2: Sun Connections: A Multi-sensory Matching Game

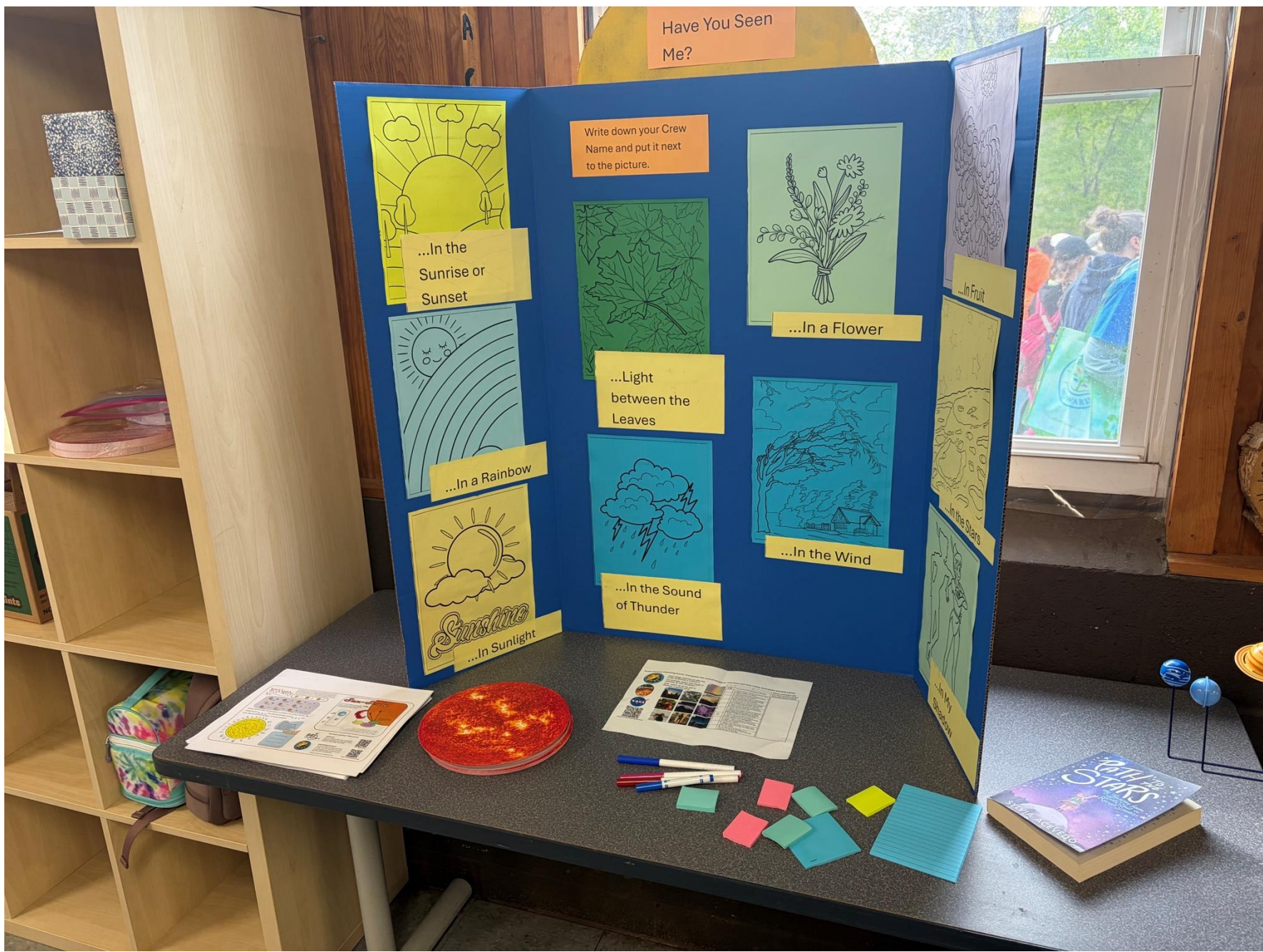
Each image matches up with one of the sentences in Column 2.

For example, notice how Image C matches up with Sentence 7.

Now, match up all the rest to discover a special word!



1	2
Image Letter	Connecting My Senses to the Sun
	1. When I taste a fruit I remember that sunlight helped it to grow.
	2. I feel warmth when sunlight shines on the palms of my hands.
	3. When I smell a flower I remember that sunlight helps the plants create oxygen for the air we breathe.
	4. When I hear or feel the wind blow, I know sunlight has warmed the Earth more in some places than others.
	5. When I hear thunder I remember that the Sun's energy heats the Earth to make clouds and rain.
	6. When I see round circles of light on a sidewalk beneath trees, I know the gaps between the leaves are making "pinhole" images of the round Sun.
C	7. When I see a pretty sunrise or sunset I know Earth is turning to make the Sun appear and disappear.
	8. When I see a rainbow I know that sunlight is shining through raindrops to make the colors.
	9. When I see the stars at night, I am reminded that each star is a sun that is far, far away.
	10. If I see my full shadow on a vertical surface, then I know the Sun must be low in the sky.





THE VALUE of OUTREACH KITS



Hi Cherilynn and Nicki,

Thought you would enjoy seeing how heliophysicists used PUNCH outreach materials to interact with children and adults at the **Goddard Visitor Center** last Saturday.

Kids were patiently waiting for their turn to stick their hands in the mystery box. At one point, more than 15 children and adults were listening to a scientist around that table.

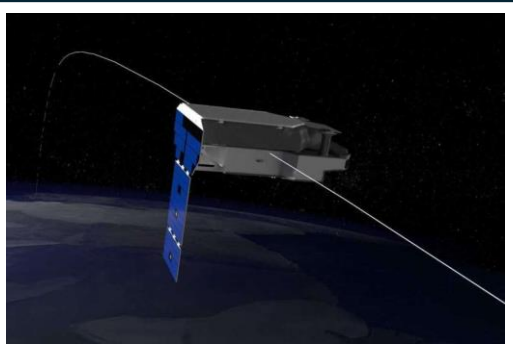
Thanks for sharing the PUNCH outreach materials!

Carolyn

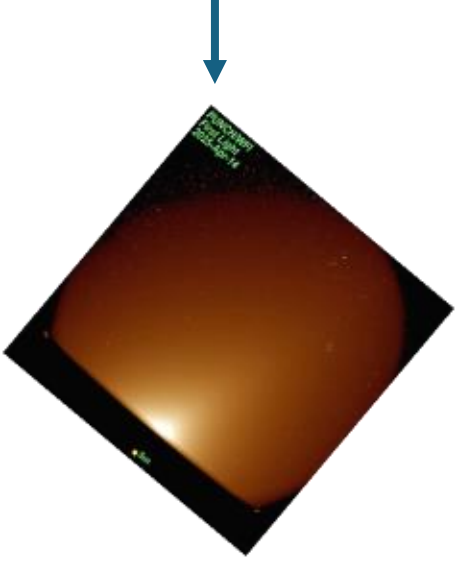




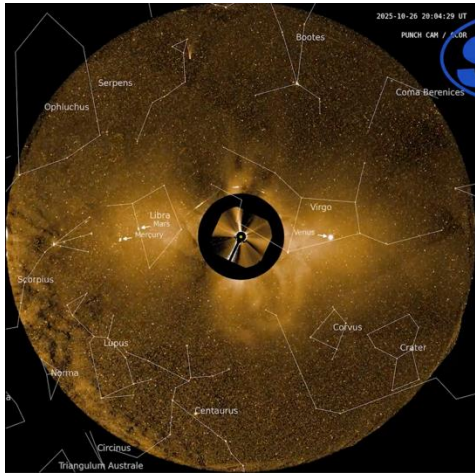
PUNCH DATA to PLANETARIUM DOMES



PUNCH Spacecraft
Single WFI Image
Inner Heliosphere



SOC Creates
PUNCH Mosaic
Images and Video



Fiske Planetarium
Customizes Video for
Dome Display and Free
Global Distribution

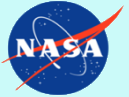




Our Feature-Length Planetarium Film

Ancient & Modern Sun –Watching

Created a prior short film specifically on PUNCH with StS on portable dome tonight!



Our feature-length film is composed of four “blocks” with six “threads” that interweave their content:

FOUR BLOCKS

BLOCK 1: The Sun’s Place in the Cosmos (inverse Contact + IMAP model of outer heliosphere)

BLOCK 2: Ancestral Sun-Watching from Chaco Canyon (new photography & photogrammetry)

BLOCK 3: NASA Sun & Solar Wind Watching from Space (Parker for *birth*, PUNCH data for *life adventures*)

BLOCK 4: Human-Sun Connections (Seeing the solar wind and experiencing the Sun’s energy from Earth)

[weaving prior content across time, space & culture]

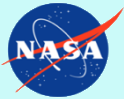
SIX THREADS

- The Sun & “Life Story” Solar Wind,
- Spirals & Cycles,
- Home & Human Belonging,
- The Fullness of Empty Space,
- Birth & Death, and
- Human-Sun Connections.





What is Your Outreach Team Good For?



- 1. SUPPORTING & MAGNIFYING the OUTREACH EFFORTS of our MISSION TEAM**
 - a. Providing **NOVEL, HIGH-QUALITY, WELL-VETTED OUTREACH PRODUCTS & ACTIVITIES**
 - b. Providing **OPPORTUNITIES TO LEARN HOW to USE or to SUPPORT THEIR USE by OTHERS**
 - c. Creating and/or Supporting **HIGHER-IMPACT OPPORTUNITIES for PUBLIC ENGAGEMENT**

- 2. AMPLIFYING DISSEMINATION & EFFECTIVE USE of PRODUCTS & PUNCH DATA**
 - a. Leveraging our **MISSION TEAM + PROFESSIONAL OUTREACH NETWORKS**
 - b. Providing **SELF-DIRECTED TRAINING MATERIALS for NEW USERS of our PRODUCTS**
 - c. Fostering & empowering **OTHER PROGRAMS to ADOPT or ADAPT our PRODUCTS**

- 3. RETURNING KNOWLEDGE to the SCIENCE & OUTREACH COMMUNITIES**
 - a. Evaluating the impact of **PUNCH Outreach on scientists, outreach partners & product users,**
 - b. Publishing the insights gained about our experience with **mission-embedded outreach.**





The Future of PUNCH Outreach

You are an essential part of the past, present, and future of the mission's Outreach efforts since the PUNCH Outreach team cannot remain funded for as long as the scientific quest will endure.

Thus, we are working to empower and equip YOUR outreach efforts (and those of fellow outreach professionals) for the longer run by:

- ☀️ developing outreach kits & sample public presentations for mission team members,
- ☀️ showing you how to fish for yourself in replenishing the expendables in the kits, and
- ☀️ encouraging & supporting your connection and collaboration with planetariums local to you.



Please take a few minutes to complete this form for us





PUNCH 7 OUTREACH SURVEY of MISSION TEAM



Thank you!
Please take a
few minutes to
complete this
brief form for us

<https://forms.gle/qraAhj54JAKz2gis9>