GLAST E/PO Program Status

Science Working Group Meeting 10/1/04

Lynn Cominsky
Sonoma State University
E/PO Work Breakdown Structure

1) Management
2) Assessment and Evaluation (WestEd)
3) Web based Materials
   - Web Site – Newly revised
4) Educator Training
   - Educator Ambassadors Program
   - Conference participation
5) Printed materials
   - TOPS Lesson Modules
   - Posters and Activities
6) SLAC Virtual Visitor Center (2004-5)
8) GLAST Telescope Network
Evaluated by WestEd in 2003

Revised entirely following review

New sections for Educators, Scientists and the Public
Space Mysteries

- http://mystery.sonoma.edu
  - Originally funded by NASA’s LEARNERS program
  - 3 interactive web-based games that teach physical science and mathematics
  - First GLAST-funded SM now in design process

Image from New Space Mystery Flash animation of sky seen in different regions of the Electromagnetic Spectrum
California Science Teacher’s Association

– Combined Swift and GLAST booth (10/03, 10/04)
– AGN workshop by Plait & Silva (10/03), Cominsky & Silva (10/04)

National Science Teacher’s Association

– AGN workshop by Silva & EA Ford, Modeling the Universe (4/04)
– AGN workshop by Silva at NSTA-Regional (12/03)

American Association of Physics Teachers

• AGN and TOPS workshop (4/03)
• AGN and booth in (8/04)

Modeling the Universe workshop at HEAD (9/04)

California Science Teachers Association (10/03)

– “Things My Mother Never Told Me About the Universe” - Cominsky
– “Seven Ways a Black Hole Can Kill You” - Plait
GLAST Ambassadors Program

- 10 GLAST Ambassadors now funded, trained at SSU in 7/04 with 14 others funded from different programs.

- “The 7-day training was a superior professional development event that strongly met its goals..” Wested evaluation report

EA Della investigates spacetime

EA Garrett builds tasty AG model
Meet the award-winning GLAST Ambassadors:

- Jeff Adkins, Deer Valley High School, Antioch, California
- Teena Della, Terry Fox Secondary School, Coquitlam, British Columbia (Canada)
- Sharla Dowding, Newcastle High School, Newcastle, Wyoming
- Deanna Duncan, School for Environmental Studies, Cabarrus, North Carolina
- Michiel Ford, Holton High School, Holton, Kansas
- Mary Garrett, Instructional Designer, Michigan
- Walter Glogowski, Ridgewood High School, Norridge, Illinois
- Ellen Holmes, Bangor Public Schools, Bangor, Maine
- Daryl Taylor, Williamstown High School, New Jersey
- Pamela Whiffen, Palo Verde Middle School, Phoenix, Arizona

http://glast.sonoma.edu/ambassadors
EA Workshops since SWG in 9/03

- **8/26/03** – EA Jason Smith talked about the GLAST mission at the Challenger Center in Alexandria, Virginia.
- **10/17/03** – EA Mary Garrett presented “Out of this World Mathematics” to the Michigan Council of Teachers of Mathematics.
- **10/18/03** – EA Mike Ford presented “Seeing the Invisible Universe” to teachers in Holton, Kansas.
- **10/24/03** – EA Teena Della discussed GLAST with the BC Association of Physics Teachers.
- **11/13/03** – EA Jeff Adkins discussed GLAST at the NCN-AAPT.
- **11/14/03** – EA Mike Ford presented “Astronomy with the GLAST Telescope Network (GTN)” and “Invisible Universe” at NSTA Mid-west Regional in Kansas City.
- **11/19/03** – EA Jeff Adkins discussed GLAST with the teachers of the Antioch School District, California.
EA Workshops since SWG in 9/03

- 11/14/03 EA Jason Smith presented “The Gamma-ray Universe” at the NSTA regional meeting in Louisville, KY
- 12/04/03 – EA Tim Brennan presented “NASA’s GLAST Program and the Future of Gamma-Ray Astronomy” to the Vermont Science Teacher Association
- 12/2/03 EA Daryl Taylor “Bringing NASA into the classroom” to teachers at Rutgers University
- 1/24/04 – EA Mike Ford “Exploring the Invisible Universe with your Students” to teachers in Holton, Kansas
- 2/13/04 – EA Mike Ford “Mission of GLAST and the GTN” to Lawrence Astronomy Associates, at Lawrence University, Kansas
- 2/20/04 - EA Teena Della “Magic in the Classroom” at the CTA Professional Development Day
- 2/28/04 - EA Teena Della “NASA’s GLAST mission” at the BC Association of Physics Teachers
- 3/12/04 – EA Mary Garrett “Active Galaxies and Mathematical Models” at the MACUL conference in Michigan
EA Workshops since SWG in 9/03

- **3/12/04** – EA Daryl Taylor “What NASA Can Do for You” at the Black Horse Pike Public Schools Inservice Training Day
- **4/3/04** – EA Jeff Adkins discussed GLAST during a “A Project-based Space Academy at Deer Valley High School” at NSTA-regional
- **5/7/04** - EA Teena Della “NASA: Magic in the Classroom” at the BC Science Teachers Association
- **6/21/04** - EA Mary Garrett presented “Active Galaxies: Activities in Science and Mathematics from NASA” at ISTE, in New Orleans
- **6/28/04** – EA Ellen Holmes presented “Exploring the Invisible Universe” at the Challenger Center in Maine
- **7/9/04** – EA Teena Della presented “What’s New with NASA?” at Simon Fraser University
- **7/13/04** – EA Walter Glowgowski presented “Things that Go Bang in the Sky: AGN and NASA’s GLAST telescope” at the Illinois STA
- **7/12/04** – EA Ellen Holmes presented “Exploring the Invisible Universe” at the NASA Joint Propulsion Conference in Florida
EA Workshops since SWG in 9/03

8/2/04 – EA Jeff Adkins presented “Using Digital Image Analysis to teach parallax” at the AAPT national meeting in Sacramento, CA

8/9-12/04 – EA Teena Della presented “Space Mysteries” at the Canadian Space Agency Educator Conference

Workshops and Meetings in 2004 (submitted)

10/04 – EA Ellen Holmes will present “Active Galaxies” at Southworth Planetarium in Bangor, Maine

10/04 – EA Sharla Dowding will present “Huge Black Holes: Measuring the Monster in the Middle” at the Montana Educator’s Conference

11/04 – EA Jeff Adkins will present “Activities from NASA’s GLAST mission” at the NSTA-regional in Portland, Oregon

2/05 - EA Ellen Holmes will present “Size Matters: Using GLAST to explore the very small and very large matters in our Universe”, at SEEC in Newbern, Maine
• 46 Teacher workshops
  – 3523 direct teachers trained
  – 21,170 indirect teachers through exhibit booth

• 19 Public events
  – 346 direct participants
  – 14,530 indirect participants through exhibit booth

• 16 Student presentations
  – 2065 direct students in attendance
  – 2350 indirect students through exhibit booth
GLAST Exhibit Booth since 9/03

- HEAD 9/04 (with Swift)
- AAS 1/04, 6/04 (with Swift)
- Santa Fe GRB 9/03 (with Swift)
- CSTA 10/3, 10/4 (with Swift)
- AAPT 8/04 (with Swift)
- AAPT-NCN 4/03 (with Swift)
- Expanding Your Horizons 5/04 (with Swift)
TOPS Learning Systems

• Next module: SCALE THE UNIVERSE
  — Reviewed extensively by WestEd and SSU
  — Significantly revised, almost in print
  — TOPS workshop given during SEU Training during 7/04
  — Included preview of third module

http://www.topscience.org/
Other printed materials

• GLAST stickers

• New materials in development
  – GLAST Race Card Game
  – AGN Pop-up Book - Activities, a story and more!
  – Supernova Educator’s Guide (Joint with XMM-Newton)
SLAC Virtual Visitor’s Center

Interactive Gamma-ray exhibit will be added to
http://www2.slac.stanford.edu/vvc/
in 2004 – in progress
PLAST

Program script now in development

- Focus on GRBs and Black Holes
- 1 hour program on PBS NOVA
- $1M NSF grant received for TV and Large format full digital dome show with the Denver Museum of Nature and Science
- Will include Swift launch
- Should air by the end of 2005 or early in 2006

Voyage to the Milky Way
Global Telescope Network

- Program objects are AGN and GRBs
- GTN website: http://glast.sonoma.edu/gtn
  - Has finding charts for each target object
  - Background information about robotic telescopes and active galaxies
- SSU has designed archive for images
- AAVSO will archive magnitudes from CCD observations
- Other notable partners
  - Holton, KS Elk Creek Observatory
  - WIRO, Wyoming
  - Hands On Universe Project

GLAST Optical Robotic Telescope at the California Academy of Science’s Pepperwood Natural Preserve
GLAST Public Relations - Update

- “Giveaways” at science meetings
  - Out of AGN flashlights
  - A few more Magic cubes
- GLAST public brochure –
  - New brochure at GPO
- Press coverage of GTN opening
E/PO Summary

- GLAST E/PO is exciting the public and students of all ages
- We meet all requirements for NASA E/PO
- We are on budget and moving ahead on all scheduled items
- Over 3500 teachers have been trained in 2004
- GLAST E/PO materials are in the hands of over 15,000 teachers nationwide