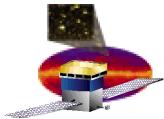

GLAST Education and Public Outreach (E/PO) Program

Gamma-ray Large Area Space Telescope



Lynn Cominsky
Sonoma State University
E/PO Sub-system Manager
lynnc@charmian.sonoma.edu
(707) 664-2655

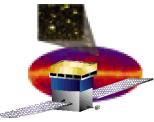
Phil Plait
Sonoma State University
E/PO Research Manager
phil@universe.sonoma.edu
(707) 664-2190



Overview of GLAST E/PO

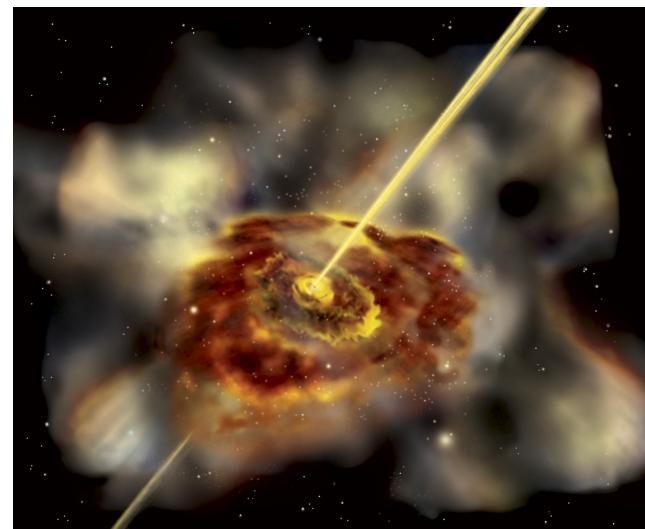
- **E/PO required to be budgeted at 1-2% of NASA cost (excluding launch) = \$3.4M for GLAST prelaunch & \$600k/yr postlaunch**
- **We are on schedule and within budget**
- **No new technical issues**
- **Our goal:**

“We will utilize the observations and scientific discoveries of the GLAST mission to improve the understanding and utilization of physical science and mathematics concepts for grades 9-12”



4.1.C E/PO Work Breakdown Structure

- 1) Management**
- 2) Assessment and Evaluation (WestEd)**
- 3) Web based Materials**
 - [Web Site](#)
 - [Space Mysteries \(2003-2005\)](#)
- 4) Educator Training**
 - [Educator Ambassadors](#)
 - [Conference participation](#)
- 5) Printed materials**
 - [TOPS Lesson Modules](#)
 - [Posters and Activities](#)
- 6) SLAC Virtual Visitor Center (2004)**
- 7) PBS documentary (Tom Lucas Productions)**
- 8) GLAST Telescope Network**



4.1.C.1: Management

- Professor Lynn Cominsky
 - GLAST E/PO Lead and Sub-system Manager
 - Oversight and daily coordination, SWG ex-officio
- Dr. Philip Plait
 - GLAST E/PO Research Manager
 - Development of curriculum content and teaching materials, management of Educator Ambassador program

Partners:

GSFC **TOPS Learning Systems**

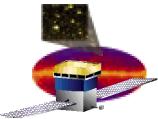
Francis Marion Univ.

MSFC **Videodiscovery, Inc.**

AAVSO

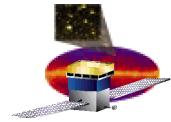
SLAC **Thomas Lucas Prod.**

Texas A&M Univ., Kingsville



4.1.C.2 Assessment

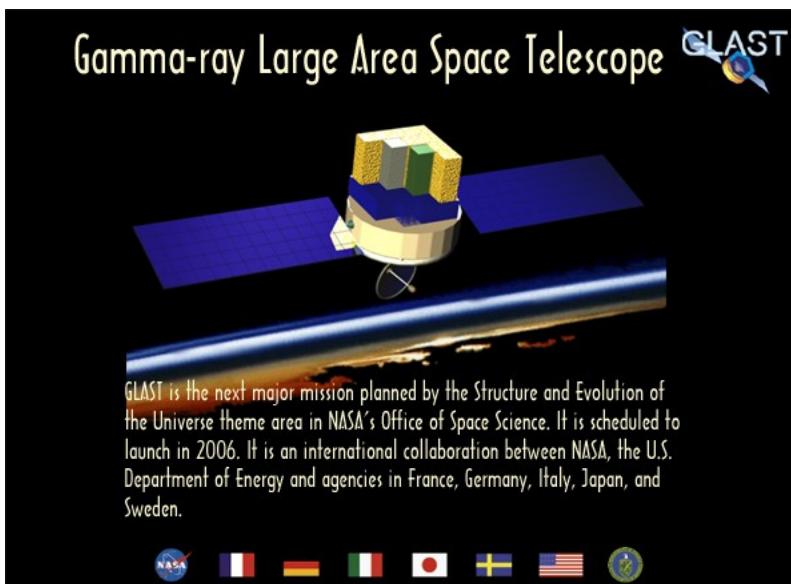
- **Evaluation & Dissemination plans also required by NASA**
- **Program assessment provided by WestEd: Ted Britton is Lead Evaluator**
- **Under contract since June, 2002**
- **Educator Ambassador workshop assessment in progress**
- **Formative and summative evaluation**
 - **Pre- and post-tests for workshops**
 - **Web-tracking and surveys**
 - **Use of workshop materials in classroom**
- **WestEd also measures dissemination**
 - **NASA distribution channels**
 - **EPO site usage**
 - **Marketing by Videodiscovery, TOPS, PBS, etc.**
 - **Educator conferences**



4.1.C.3: Web Materials



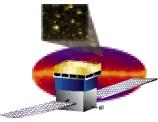
<http://glast.sonoma.edu>



GLAST slides for SEU museum exhibit

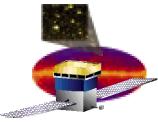


Play the first two mysteries at:
<http://mystery.sonoma.edu>



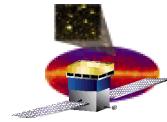
4.1.C.4: Educator Training

- **Meetings supported in 2002:**
 - National Science Teachers Association National and 2 Regionals
 - National Council for Teachers of Mathematics
 - California Science Teachers Association
 - American Astronomical Society
 - AAS High Energy Astrophysics Division Meeting
 - Expanding Your Horizons (8th grade girls)
 - American Association of Variable Star Observers
 - CSU-NASA Collaboration Planning
- **Near-Future meetings:**
 - National Science Teachers Association (TOPS workshop in FY03)
 - National Council for Teachers of Mathematics (TOPS workshop in FY03)
 - California Science Teachers Association (booth)
 - American Association of Physics Teachers (workshop in FY03)



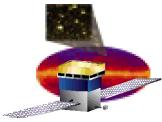
4.1.C.4.5 GLAST Educator Ambassadors Program

- **5 highly skilled educators from across the country (and Canada) chosen in national competition**
- **Awards include Presidential Award for Excellence in Math and Science Teaching, Millikan Fellowship, Christa McAuliffe Fellowship, and many state and local Teacher of the Year honors**
- **Develop, assess and disseminate GLAST-related curriculum and activities designed to meet national science, math and technology education standards**
- **Five more will be chosen in 2003 to begin work in 2004**
- **Week-long workshop at SSU held during July 15-19 was an extraordinary success**



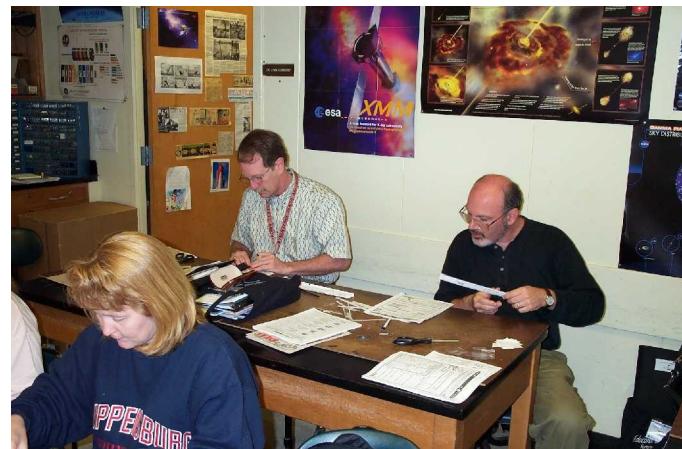
4.1.C.4.5 Educator Ambassadors (cont'd)

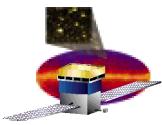




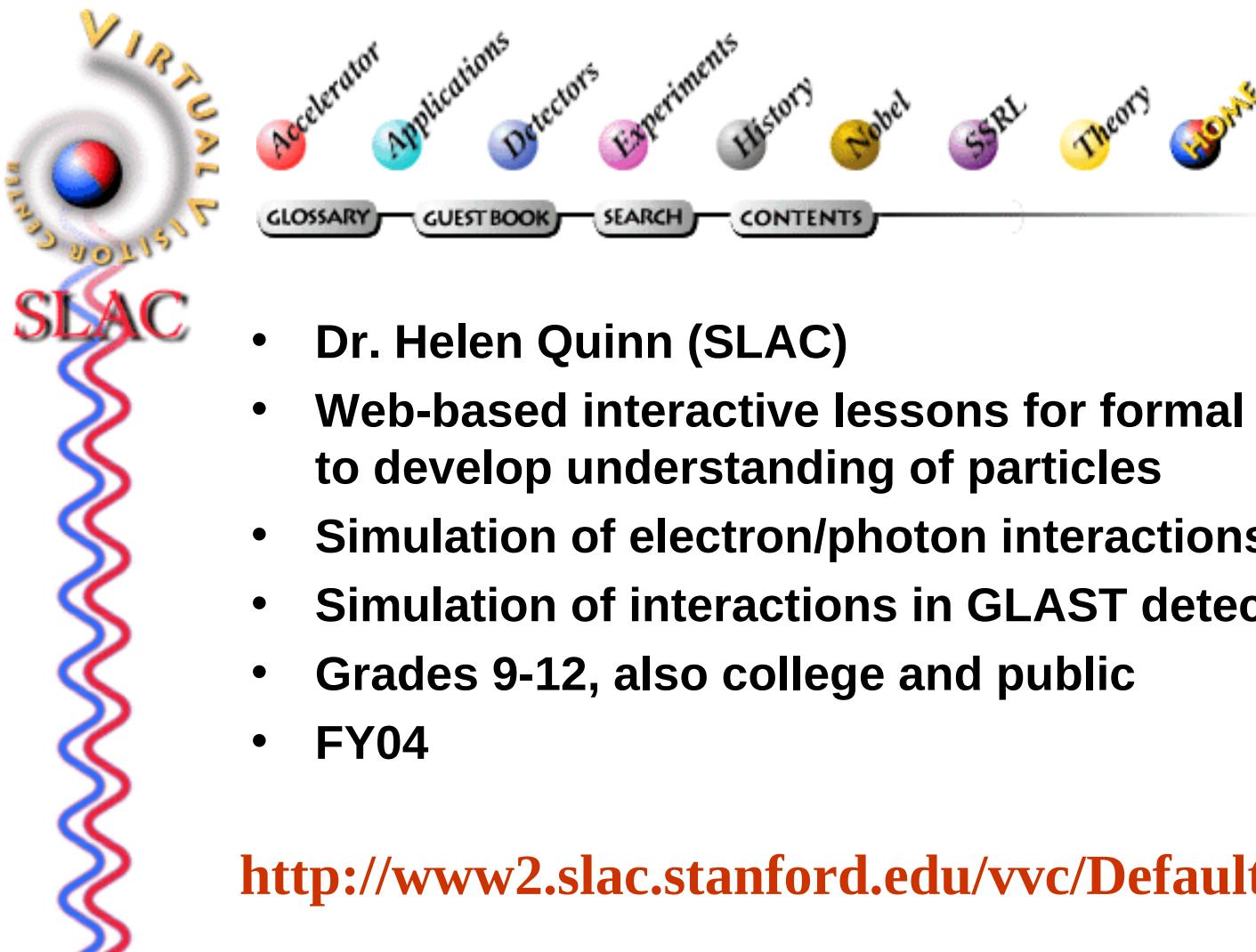
4.1.C.5 Printed Material and Curriculum Development

- **TOPS (Ron Marson)**
“Far Out Math!”: using slide rules to understand powers and logarithms
- **GLAST AGN Poster**
Poster describes unified model of AGN
Activities and teacher’s guide – **COMING SOON!**
- **CD containing GLAST promotional movie**
- **Cosmic Journeys card game and GLAST trading cards**



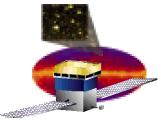


4.1.C.6 SLAC Virtual Visitor Center



- Dr. Helen Quinn (SLAC)
- Web-based interactive lessons for formal setting to develop understanding of particles
- Simulation of electron/photon interactions
- Simulation of interactions in GLAST detectors
- Grades 9-12, also college and public
- FY04

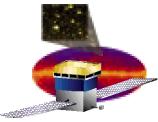
<http://www2.slac.stanford.edu/vvc/Default.htm>



4.1.C.7 PBS Special

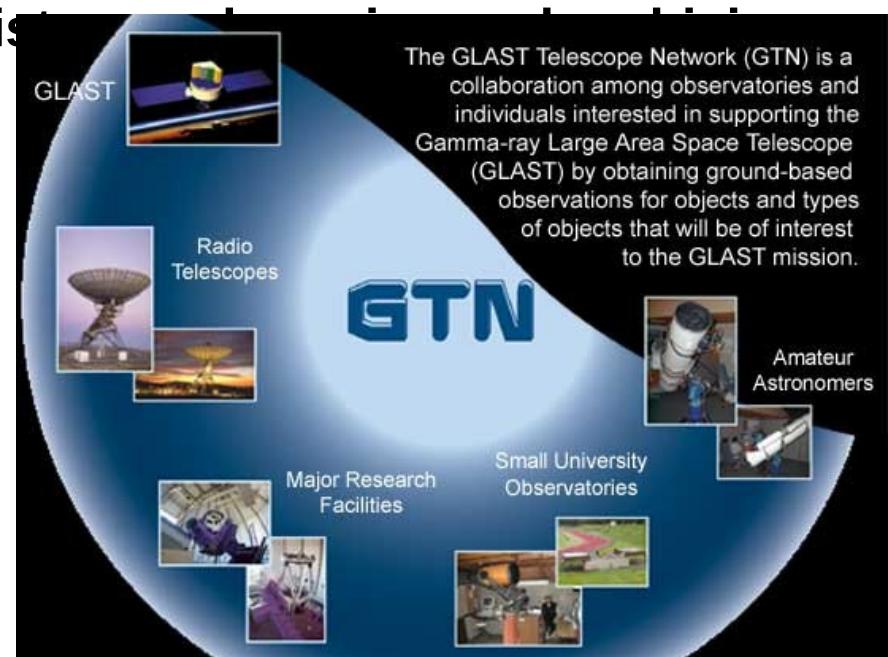
- **Thomas Lucas Productions**
- **“Mysteries of Deep Space”, “Runaway Universe”**
- **1 or 2 hour documentary special, cost-share with Nova, PBS**
- **Possible topics: GRBs leading to the birth of black holes; seeming ubiquity of black holes**
- **Cominsky and Plait will provide scientific oversight**
- **Cominsky has met with TLP to discuss script outline**
- **Detailed R&D in FY 03, production in 04, 05**





4.1.C.8 GLAST Telescope Network

- Provide multiwavelength monitoring of GLAST active galaxy targets and gamma-ray bursts
- Professor Gordon Spear attended AAVSO meeting
- Tim Graves developing prototype Java-based archiving system
- Educator Ambassador Michiel Ford (Holton, KS) will participate to help develop distributed education program
- Dr. John Mattox (Francis Marion University), member of the Robotically Controlled Telescope consortium



Issues and Concerns

- **Though lauded by EAs for content and activities, SSU team lacks expertise in instructional design**
- **We are investigating ways of improving design, including implementing design template from Challenger Center, and/or hiring instructional design consultant**
- **GLAST AGN activities need scientific review**
- **Science team members must become more involved with E/PO (especially now that NASA Quest webchats have been discontinued due to lack of leverage)**

Summary

- E/PO program is going **very well**
- Over 15,000 teachers have received **GLAST E/PO materials at educator conferences**
- Educator Ambassadors program off to a good start
- Activity development will be improved using better instructional design
- GTN ramping up
- On schedule and within budget