



## The Best Tie Award Goes To...

Yet Another ADASS Recap

Heather Kelly

Fermi Offline Software



**Boston World Trade Center**



**Attendees really do come from all over the world**



## **Key Topic: Visualization and Outreach**

Kimberly Arcand from Smithsonian Astrophysical Observatory

Discussed findings of study concerning how visual presentation of images affect comprehension for both non-experts and experts.

# 2008 Study

- Key Findings
  - Images with text were viewed as more attractive
  - Captions are critical to providing understanding
    - Experts prefer short and sweet
    - Non-experts prefer narrative style
  - Experts and Non-experts “see” images differently
    - Non-experts start with awe and focus on aesthetic qualities
    - Experts wonder how image was generated and what is being conveyed
  - Non-experts more likely (80%) to see red as “hot” compared to 60% of experts

# Aesthetics & Astronomy

## Applying the results in EPO products:

### CHANDRA X-RAY OBSERVATORY

ABOUT CHANDRA EDUCATION FIELD GUIDE PHOTO ALBUM PRESS ROOM RESOURCES MULTIMEDIA PODCASTS

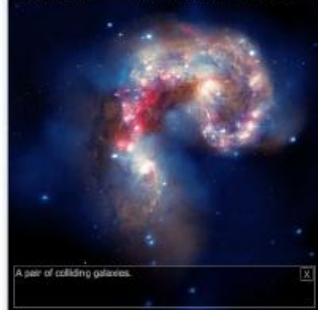
15610 ANTENNAE GALACTIC SPECTACLE

IMAGES BY DATE: 2010 2009 2008 2007 2006 2005 2004 2003 2002 2001 2000 1999

BY CATEGORY: SOLAR SYSTEM STARS WHITE DWARFS SUPERNOVA NEUTRON STARS BLACK HOLES MILKY WAY GALAXY NORMAL GALAXIES QUASARS GROUPS OF GALAXIES COSMOS/DEEP FIELD MISCELLANEOUS

MULTIWAVELENGTH SKY MAP CONSTELLATIONS 3D WALL SPECIAL FEATURES CHANDRA ZOOMS IMAGE HANDOUTS DESKTOPS HIGH RES PRINTS SCALE BAR IMAGES OPENFITS TUTORIALS PHOTO ALBUM TUTORIAL FALSE COLOR COSMO DISTANCES LOOK-BACK TIME SCALE & DISTANCE ANG. MEASUREMENT IMAGES & PROCESSING FITS FILES ANNOUNCEMENTS IMAGE USE POLICY WEB SHORTCUTS

WAVELENGTHS: COMPOSITE X-RAY INFRARED OPTICAL



A pair of colliding galaxies.

WHAT IS IT? HOW FAR AWAY IS IT? HOW IS IT MADE? HOW BIG IS IT? WHAT DO THE COLORS MEAN? WHERE IS IT LOCATED? CLOSE THE BASICS

- A new composite image from NASA's Great Observatories presents a stunning display of the Antennae galaxies.
- X-ray data from Chandra (blue), optical data from Hubble (red and brown), and infrared data from Spitzer (red) are featured.
- Supernova explosions are enriching the intergalactic gas with elements like oxygen, iron, and silicon that will be incorporated into new generations of stars and planets.

A beautiful new image of two colliding galaxies has been released by NASA's Great Observatories. The Antennae galaxies, located about 60 million light years from Earth, are shown in this composite image from the Chandra X-ray Observatory (blue), the Hubble Space Telescope (red and brown), and the Spitzer Space Telescope (red). The Antennae galaxies take their name from the long antenna-like "arms" seen in this [video](#) of the system. These features are produced by the collision and the subsequent star formation.

RATE THIS IMAGE: Rating: 3.6/5 (279 votes cast)

DOWNLOAD IMAGE: JPG (496 kb) GIF (16.5 MB) PS (14.4 MB)

Download Desktop High-Quality Prints Download and PDF Image Feed

MORE INFORMATION: Blog: Galactic Spectacle Handout: HTML PDF Zoom In (Flash)


MORE IMAGES: 3-ray image of Antennae

See: Top 25 NASA/CXC/SAO Surveys

More Images

ANIMATION & VIDEO: Tower of Antennae (video: 28:17) More Animations

### BULLET CLUSTER



With the "Bullet Cluster" named for its two "bullet" galaxy clusters (collected in 1993 and 1994) and in the field of the collision of two individual clusters of galaxies.


NEWS: The collision had caused the Bullet Cluster to appear as if two separate events were the Big Bang.

NEWS: An estimate of about 10 billion light years from Earth, the Bullet Cluster is located in the constellation Corona, or the "crown" between a ship.

NEWS: The speed and shape of the bullet, and other observational data, provide strong evidence that the smaller cluster passed through the core of the larger one about 150 million years ago.

NEWS: While some have suggested optical images may show the Bullet Cluster as a great field of "bullet" stars in the form of hot gas (see in photo) from the dark matter field.

NEWS: The separation between the hot gas and the dark matter field system is about 100,000 light years from the core, which "the most nature of dark matter remains unknown, but it is thought to account for about 85% of the matter in the universe."



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# More Info

- More details from 2008 study available in Journal of Science Communication:  
<http://tiny.cc/t2mhx>
- Current Study concerns non-expert perception of astronomical images. If you'd like to take part in the study:  
<http://chandra.si.edu/mobile/aa.html>
- More Info:  
<http://astroart.cfa.harvard.edu/>

# COSPAR

## Capacity Building Programme

- Provides 2 week workshops in developing countries to promote use of space science data and tools.
- Recent workshop in Bangalore, India involved Fermi data and tools.
- Upcoming Brazil workshop is being arranged by participants from 2001 workshop.



# Outreach Links

- Volunteer Program using WWT as a teaching tool
  - <http://www.cfa.harvard.edu/WWTAmbassadors>
- Free Desktop Planetarium Software:
  - <http://www.shatters.net/celestia/>
- 3D+Time dataset viewer
  - <http://viridir.ncsa.illinois.edu/partiview/#uses>



**This coffee break was made possible by NetApp...**

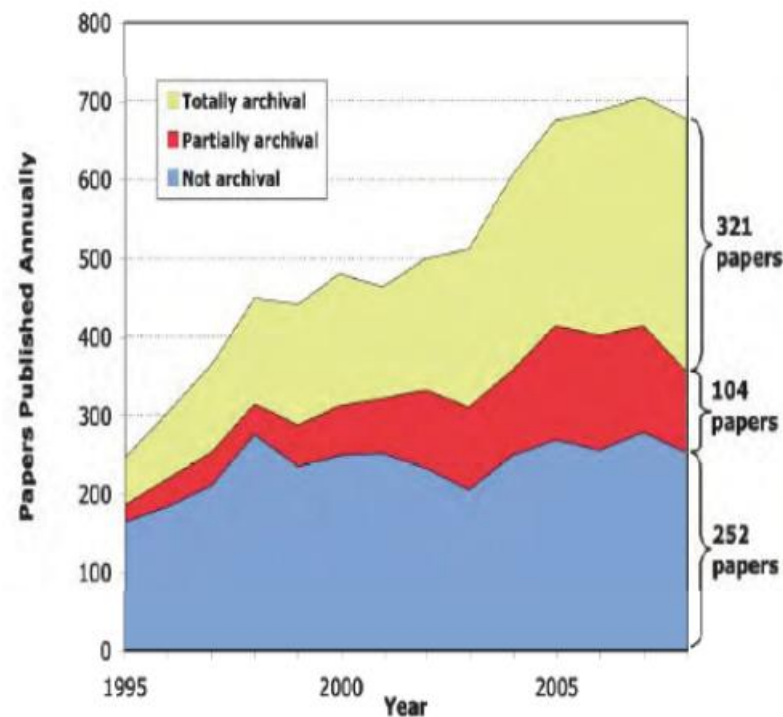
<http://www.netapp.com/us/>

# Rants

- FITs and what we can learn from Python
- What Observers Really Want
  - Objects Oriented Software & Multi-wavelength
  - Data is hard to find, using variety of non-compatible formats
    - Due to lack of forced collaboration
  - RTFM is not the solution
  - Suggestions
    - Overlay software that converts data into “standard” user-chosen format, as well as uniform commands to do standard tasks such as print, make light curve

## Archival Data Analysis is Rapidly Increasing in Importance

- Vast increase in archival research-based mostly on space based data (ground archives are poorly/not developed in the US)
- However to combine Chandra/Herschel/Spitzer data you need to become 'expert enough' in 3 data systems



# Future of ADASS Proceedings

- Discussion of moving toward e-proceedings
- Currently, hardbound books are produced
- Shipped to all participants
- Concerns
  - Book production is time consuming and expensive
  - Books arrive about a year after the actual conference!
- [http://adass2010.cfa.harvard.edu/ADASS2010/incl/presentations/O02\\_5.pdf](http://adass2010.cfa.harvard.edu/ADASS2010/incl/presentations/O02_5.pdf)

# Why Not E-Proceedings?

- Concerns about preservation
- Loss of prestige
- Some distaste using e-readers
- “It isn’t published if it isn’t on paper”
- The current publisher tossed in some bones
  - Promised faster turn-around and e-access
- Hope for “solution” to curation problem



**Despite the daytime weather,  
there were some spectacular sunsets.**