

Latest from ESA/Hubble outreach and education

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Abstract

Over the past few years the European Hubble office in Munich, Germany, has produced a massive amount of astronomical material suitable both for educational purposes and wider public consumption. Recently some powerful web tools have been developed to allow anyone to search the treasure trove of Hubble images and animations and create their own visual material.

Introduction

A science communication office, called the Hubble European Space Agency Information Centre (HEIC), was established at the Space Telescope-European Coordinating Facility (ST-ECF) in Munich late in 1999. This initiative was taken so as to fulfil the Hubble Space Telescope outreach and education tasks for the European Space Agency, ESA, as outlined in the agreement between NASA and ESA (the so-called Memorandum of Understanding). Hubble's prominent advantages for public outreach and education are described in Christensen (2002).

In 2002 these efforts were officially expanded to include the NGST (now JWST) mission. Within four years of starting the group, running on a modest budget and consisting of only two staff members, became one of the most productive and innovative outreach and education groups worldwide. HEIC delivers one of the loudest "Bang for the Bucks" of any such group in the world, as the operations are kept small, focused, technically autonomous and well-supported in terms of infrastructure.

Characterised by a unique line in informative visual and graphic artistry and an exemplary consistency in quality and distribution, the group has received international recognition for their achievements. HEIC receives more than 1000 requests from press, public, educators, scientists and others for printed products, information, electronic products etc. on a yearly basis and these are usually dealt within the same day. The work is centred on the production of news and photo releases that highlight interesting Hubble science results and images. These are often European in origin, and so not only increase the awareness of ESA's Hubble share (15%), but the contribution of European scientists to the observatory. Furthermore the group produces innovative educational material, CD-ROMs, brochures, posters, as well as DVDs and museum information kiosks, to mention two on-going projects.

The results of the group often break new ground for ESA. Some of what I consider to be the 'principal achievements' of HEIC are described below. More information can be found at: http://www.spacetelescope.org/about_us and <http://www.spacetelescope.org/projects> .



The front page of www.spacetelescope.org.

The web site <http://www.spacetelescope.org>

The Spacetelescope.org web site itself is one of the achievements I would like to mention. The success of the site is clearly seen in the monthly statistics. With a monthly rate of up to 16 million hits, more than 125,000 individual visitors and up to 2 Terabytes of data delivered, the web site belongs in the absolute elite of astronomical outreach web sites and can be compared with the web sites of larger groups such as ESO and OPO/STScI. The web site is easy to use for visitors at all levels, with a carefully structured content that is readily updated, keeping the maintenance work for the web master to a minimum. The site was carefully crafted with a deep insight into all the many issues of graphics, communication and technology, and the system behind the web site (called Simplicity, see Christensen 2004a, b and c) gives an instantaneous response to search queries and much more.

Production of visuals



Some examples of visuals produced by HEIC. To the left the star-forming region N11B in the Large Magellanic Cloud constructed with the FITS Liberator from just two exposures with Hubble. To the right an artist's impression of a dust-obscured black hole.

There is no doubt that the importance of good visuals in astronomy communication has continued to increase. It is true that all good science communication is based on good science, but without good visuals the probability of 'selling the product' is small. For Hubble, already a state of the art 'photographic machine', the emphasis on visuals is even more pronounced.

HEIC is leading the way in Europe not only in the production of 'pretty pictures' from raw data but in the production of high quality artist's impressions in 2D and 3D. This

work has mainly been carried out using Hubble data, but images for the ESA missions ISO, XMM-Newton, Integral and Eddington, as well as for the ESO VLT, 2.2-metre and others have also been produced. The illustrations are made with some of the most sophisticated and optimized software and hardware techniques available, including a 'Hollywood-style' render farm and world-class 3D models.

Video News Releases



Clip from a 3D fly-through of the Eagle Nebula.

Television is one of the most powerful news media around, and its importance is increasing. Some of the main reasons for its success as a news medium are:

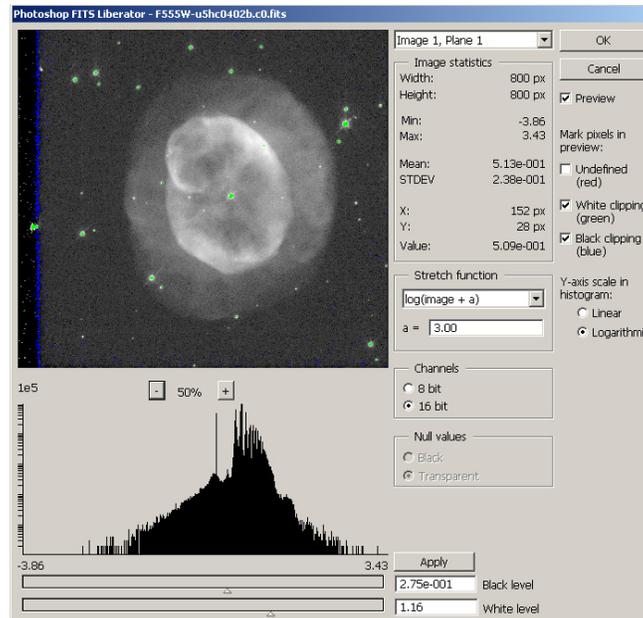
- the public's desire for quick access to news about the events of the world.
- the ability to describe a given news topic very quickly on screen by means of animations, illustrative footage, sound bytes from experts etc.
- its accessibility. The media works almost exclusively by pushing information towards the user. The user only has to turn on the television set, sit back, and relax.

For these reasons television is one of the most attractive media to use for distributing news oriented products. Television is also one of the great challenges. Taylor (2003) writes: *"Television is a medium of great power and vast limitations"*. The medium is very simplistic and there is a great economic pressure to make science programmes less 'in-depth' and more 'edutaining'. But as Taylor continues: *"On the positive side, if you use television's visual power effectively you can create images that stay on in the mind"*.

The usual way to distribute video material related to a press release is by issuing Video News Releases (VNRs). The medium is 'expensive' in more than one way. VNRs are, due to the nature of the medium, relatively costly to produce (both for technical and manpower reasons). The entire broadcasting system is expensive, meaning that competition for airtime is fierce. Therefore, a communication office

should only use this medium for the very best news stories and take great pride in producing the best possible VNRs.

In Europe the production of high quality video material for news releases is not common. HEIC made an early strategic decision to support TV broadcasters in the best way possible. This investment in manpower and equipment has more than paid off. Since the beginning of 2004 HEIC's automated web-distribution of full broadcast quality video material has enabled broadcasters to use its material in evening news broadcasts countless times. This approach may be the only one of its kind in Europe, and perhaps in the whole world.



The ESA/ESO/NASA Photoshop FITS Liberator in use.

The ESA/ESO/NASA Photoshop FITS Liberator

The ESA/ESO/NASA Photoshop FITS Liberator was released in July 2004. This software gives anyone – for the first time in history – access to astronomical images in data archives around the world. The software is a simple, yet powerful plug-in for Photoshop CS, 7.0 and Elements (a 'light' version of Photoshop).

The development of Liberator itself will continue and extend gradually to support more virtual observatory and repository type options (see also Christensen, 2004c).

On the FITS Liberator homepage,

http://www.spacetelescope.org/projects/fits_liberator/index.html, the User's Gallery illustrates many different uses for the FITS files once they have been 'Liberated' with the Photoshop plug-in. The software was downloaded by more than 20,000 people in the first two weeks and 500 people signed up for an e-mail newsletter.

A separate section on the web site called "Fits for education" features educational material, a teacher's guide, example FITS files, step-by-step guides and more.

Literature

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