

# EDUCATIONAL OUTREACH

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## Atlanta AAS Meeting Bears Fruit for NOAO and Gemini News

Douglas Isbell

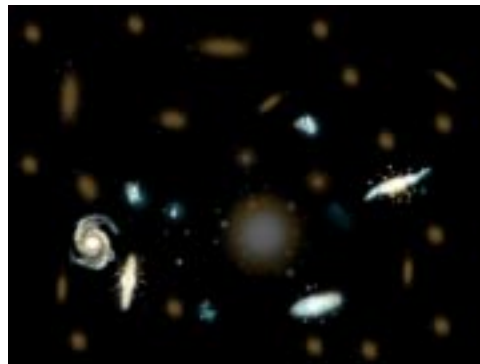
Each of the first three days of the American Astronomical Society (AAS) meeting in Atlanta from 5-7 January 2004 featured at least one press briefing with major connections to NOAO. These briefings produced strong print media and Web coverage, despite stiff competition from simultaneous robotic Mars landings and comet flybys.

The opening Monday press conference of the meeting marked the first AAS press event completely focused on a result from the Gemini Observatory. Canadian and US coprincipal investigators from the Gemini Deep-Deep Survey presented a series of initial findings on galaxy formation in the early universe in the so-called "Redshift Desert" ( $1 < z < 2$ ), enabled by the capabilities of the GMOS instrument and the first large-scale application of the nod-and-shuffle observing technique. Nod-and-shuffle significantly reduces interference from the background natural sky-glow, which allowed very deep spectra of this window in the early universe to be obtained for the first time.

Galaxies in this "region of maximum ignorance," as it was termed by Roberto Abraham (University of Toronto), appear to be much more mature and massive than general cosmological theory suggests. "Galaxies are already old and well-formed" by this era, having reached an age of 2.5-3.5 billion years by the time the Universe itself was just 4 billion years old, explained Pat McCarthy (Carnegie Institution). This is a "significant problem" for current mainstream models of galaxy evolution, McCarthy added, which implies that gradual, hierarchical accumulation does not work for a large fraction of massive galaxies. Panel members predicted that the Spitzer Space Telescope will find large numbers of galaxies at  $z=2-4$ , and that Spitzer and the James Webb Space Telescope will see massive starburst galaxies at very early times ( $z=4-10$ ).

The Gemini Deep-Deep Survey news was reported the next day on page A9 of *USA TODAY*, and in a January 8 story on page A19 of the *New York Times*, as well as in a widely used wire story by the Associated Press, and other stories in the *Australian* newspaper, *Space.com*, the January 23 issue of *SCIENCE*, and the front page of every major Hawaiian newspaper.

The Tuesday morning press conference (dubbed "Where did all the Spiral Galaxies go?") featured a cohesive story about the first clear evidence for a spiral galaxy being stripped bare of its gas by ram pressure from a violent collision with the ambient



Credit Gemini Observatory and Jon Lomberg

gas in a galaxy cluster. William Keel (University of Alabama) presented Mosaic imaging data from the Mayall telescope showing an extended oxygen-rich tail of gas dragged outward from the infalling galaxy that stretches for more than 200,000 light-years. Keel then discussed Gemini North spectroscopic data that pins down recent star birth at the leading edge of galaxy, where the constituent gas and dust builds up densely from this "perfect storm." Daniel Wang (University of Massachusetts) completed the multiwavelength tale of "tragedy on a galactic scale" with observations from the Chandra X-ray Observatory. (For more details, see the Science Highlight section and the cover art of this *Newsletter*.)

This story was reported by Reuters and Associated Press wire services in stories that ran across the United States, from the *San Francisco Chronicle* to the *Cleveland Plain-Dealer*, and on numerous Web sites including *Space.com*, *Astronomy.com* and *SkyandTelescope.com*.

The Wednesday morning AAS briefing was based on observations at the Cerro Tololo Blanco 4-meter telescope and the Anglo-Australian Telescope that revealed the outline of an enormous string of galaxies 300 million light-years long at a redshift of  $z=2.38$ , only 2.8 billion years after the Big Bang. "The Universe is growing up faster than we thought," said lead panel presenter Povilas Palunas (University of Texas), summarizing one of the obvious themes of media activity at the meeting.

Given that this massive unnamed string of 37 galaxies and a quasar is located in the southern constellation Grus (the Crane), wags in the press briefing audience suggested the name "the Crane's Neck" for the structure, which was blessed with good humor by the panel. This science result was cited in the January 8 *New York Times* story on the meeting, and several space news Web sites.

Meanwhile, the NOAO exhibit booth at the Atlanta AAS meeting received the prime location of the entire exhibitor area. It drew steady attention with new display posters on the formal debut of the NOAO Spanish Language Astronomy Materials Education Center on the Web (see [www.astronomyinspanish.org](http://www.astronomyinspanish.org)), and a striking new pink-purple-blue color image of the Veil Nebula by Travis Rector (University of Alaska Anchorage) that will soon become a poster for sale at the Kitt Peak Visitor Center (see [www.noao.edu/image\\_gallery/html/im0852.html](http://www.noao.edu/image_gallery/html/im0852.html)).