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It Must Have Been Nightglow, the Balloon

A midnight balloon ride high above the farms and fields of the American West to view the gentle glow of the Earth at night may sound rather romantic. The ride from Palestine, Texas, July 6, however, was pure science, the first of a series of unmanned NASA scientific balloon flights that will measure the ultraviolet (UV) light illuminating the night sky and that may ultimately help solve the mystery of high-energy cosmic rays, which seem to travel through space further than physicists deem possible.



The balloon carried an experiment called NIGHTGLOW, a collaboration between NASA Goddard Space Flight Center and the University of Utah, Salt Lake City.

The Wallops Flight Facility manages the scientific balloon program for NASA.

NIGHTGLOW is designed to detect background radiation produced by a variety of sources, including moonlight and starlight, the interaction of oxygen and nitrogen molecules in the atmosphere, human-made lighting and even the bioluminescence of squid and other animals.

NIGHTGLOW flew for nearly 9 hours at a height of 100,000 feet (30,480 meters) beneath a 4 million cubic foot (113,000 cubic meter) scientific balloon. While this maiden flight for NIGHTGLOW collected a modest amount of data about the UV background, the goal was to test the mechanics of the instrumentation in preparation for a global, long-duration flight in February from Alice Springs in Australia.

“The flight went off without a hitch, and all the instruments tested out fine,” said Dr. Louis Barbier, the NIGHTGLOW principal investigator and an astrophysicist at Goddard. “We launched under a warm, cloudless sky heading into a waxing, crescent moon hanging in the western sky, a perfect night for observing the Earth’s UV glow. The payload flew west and landed among rattlesnakes near the small Texas town of Stiles.”

There have not been many measurements of the UV nightglow background, Barbier said. Most scientists have concentrated on measuring the dayglow instead.

Nightglow is less intense than dayglow, and sensitive instruments are needed to accurately measure it. Interestingly, understanding background radiation levels of lower-energy UV is a key component in finding the origin of the mysterious high-energy cosmic rays.

When these highest-energy cosmic rays strike the Earth’s atmosphere, they produce low-energy UV radiation in the NIGHTGLOW range.

A proposed NASA satellite mission called OWL (Orbiting Wide-angle Light-collectors) would detect this radiation from a low-earth orbit and help us understand their origins. The highest-energy cosmic rays are rare, and a device such as OWL is needed to search for them simultaneously over wide stretches of the atmosphere, as wide as 400,000 square miles.

NIGHTGLOW will lay the groundwork for OWL by precisely measuring the background UV radiation at nighttime. When an energetic cosmic ray strikes, OWL would be able to differentiate between the cosmic ray-induced UV radiation and ordinary background radiation.

NIGHTGLOW itself could not search for such rare cosmic rays because its field of view at any give time is less than a square mile.

The NIGHTGLOW instrument comprises three telescopes, each with a 14-inch (355 mm) diameter mirror and a 28-inch (711 mm) focal length instrument with two photomultiplier tubes (PMTs). A PMT is a very sensitive device for converting light into an electronic signal. One of the three telescopes looks down at all times while the other two rotate to view the UV glow at higher altitudes, above 55 miles (88.5 kilometers).

Aside from cosmic-ray work, NIGHTGLOW UV data is also valuable for meteorological studies about wind and lightning.

For images and more information about NIGHTGLOW, refer to <http://lhea-www.gsfc.nasa.gov/docs/gamcosray/hecr/NightGlow/ng.html>.

DynCorp ISO-9000 Certified

Gary Richardson, Division Manager for DynCorp at Wallops, recently received word that DynCorp has been recommended for ISO-9000 registration.

DynCorp provides the services for management, operations, logistics, maintenance, and configuration control of aircraft, engines, and aeronautical equipment. These services are provided to NASA Wallops Flight Facility’s Aircraft Office in the aircraft hanger and control tower.

“While the entire DynCorp team worked very hard to attain this Quality Standard,” said Robinson, “special recognition goes to Chris Piper, Director of Maintenance, and Frank McNally, Manager of Quality Assurance, for their individual efforts.”

The ISO 9000 standard is an internationally accepted set of topics comprising the basic items needed to define and implement a “Quality Management System” for an organization. An impartial auditor evaluates the effectiveness and completeness of the quality management system before recommending an organization.

In addition to the initial certification, DynCorp chose a continuous registration option to ensure that their quality system remains effective. Under this option, five surveillance audits will be conducted during the three-year period following registration. Each of the five will assess a minimum of 25% of their quality management system.

Benefits of this option are that the provisions of their certificate will not expire and re-registration audits will not be required. It will also provide more frequent interaction with the audit team to ensure that the system is working efficiently and that continuous improvement is realized.

Wallops Shorts.....

A NASA Terrier-Black Brant sounding rocket was successfully launched from White Sands Missile Range, N.M. on July 6. The payload was a microgravity research experiment for Dr. Gareth McKinley, Massachusetts Institute of Technology. The payload was recovered.

Fire Department Responses

June 25 - July 5
Aircraft Stand-bys — 47
Fire Alarms — 5
Ambulance Calls — 1
Mutual Aid Assistance — 1

Warm Summer Showers

by Ted Wilz

June was a wonderful month for Delmarva farmers and gardeners with temperatures averaging 72.9 degrees, nearly 2 degrees above the monthly norm.



A new record high temperature was set on June 12 when we reached our monthly high of 92 degrees, surpassing the previous high of 91 degrees. No new record low temperatures were established.

June also was a very moist month. We had 4.14 inches of rainfall, which is over an inch above the monthly average of 3.11 inches. It was quite cloudy and rainy with 15 days of measurable rainfall, as opposed to the normal 8 days. There were 7 days with thunderstorms in the Wallops area that were responsible for depositing most of the rainfall.

So, what looms on the horizon for the weather during August at Wallops? For sure there will be more heat and humidity.

July and August is the hottest, muggiest period of the year along Delmarva. By the first of August, average high temperatures start in the mid-80's and are still in the low 80's as September approaches.

Low temperatures start out in the upper 60's, cooling to only the mid 60's by the end of the month. The warmest temperature recorded in August was 101 degrees on August 10, 1977. The record low was a chilly 47 degrees set on August 30, 1982.

August is usually our second wettest month of the year, second only to March with an average rainfall of 3.73 inches.

Mid to late August is typically when the Bermuda High begins to lose its grip on the region and tropical activity increases.



With the possibility of increased hurricane and tropical storm activity, it's easy to see why average precipitation amounts are greater for August than the earlier summer months.

Remember that the 2000 tropical season is projected to be slightly more active than normal. It's not too soon to make necessary preparations and inventory emergency supplies. Too late could happen too soon.

Upcoming Training

Machinery and Machine Guarding

August 1 - 3, 2000

Register now. If there are not enough employees registered for the course, it will be cancelled. Additional information and course registration form can be found at:

http://www.wff.nasa.gov/~code803/pdf/machine_guarding.pdf

Situational Awareness

Wallops Flight Facility

August 22-24, 2000

8 a.m. to 4 p.m.

This course is offered at no cost to NASA and Contractor employees. Employees need to fill out the course registration form that requires their supervisors signature. Registration is required by July 21, 2000. Additional information and course registration form can be found at:

http://www.wff.nasa.gov/~code803/pdf/situational_awareness.pdf

Taming the Weeds

Now's the time to keep your garden well weeded if you don't want a jungle on your hands by mid-summer. The following tips can help:

✓ Weeding is easiest immediately after a rain because the roots will come out of the soil easier.

✓ Avoid deep cultivating to control weeds. This can bring other seeds to the surface where they will germinate.

✓ Look for weeding tools that remove the greatest amount of a root system and the least amount of soil. Push-pull hoes (such as the swan neck hoe) cut off weeds with less effort than some traditional garden hoes. Most weeds will eventually die if you repeatedly cut them off as deep as possible.

✓ Mulch helps stop weed growth. Rocks and crushed marble are generally less favorable to weed growth than organic mulches and keep the soil drier but don't provide organic matter for the soil.

✓ Landscape fabric eliminates weed growth by providing a physical barrier against weeds and tree roots. Unlike plastic, landscape fabrics let air and water through, and don't adversely affect the health of plants. The fabric should be installed after planting so it can be carefully fitted around plants. Then cover the fabric with mulch.

A message for civil servants and contractors covered by the GSFC QMS:

The next periodic ISO audit by the DNV auditors will be scheduled for two days during the week of August 21, 2000, and will focus exclusively on Wallops. The following six-month audit, in February 2001, will focus on Greenbelt only. If you have questions or concerns about the upcoming audit, contact Regena Haugh, x1530 or by email: Regena.W.Haugh.1@gscf.nasa.gov.

Arnold Torres

Balancing Work and Family

Dr. Chris Garner, an EAP affiliate counselor will host the Employee Assistance Program's monthly discussion group on July 13 at 11:30 a.m. in Building F-160, Room C164.

The topic is "Balancing Work and Family".

Do you ever feel that balancing your obligations from work and home is like walking a tightrope? If so, you are not alone. All of us juggle responsibilities and set priorities for work and home. These choices are not always easy or clear-cut. Please join us to share and discuss successful strategies for finding this balance as well as learning what pitfalls to avoid.



The group format is informal. The EAP invites everyone to participate, either through the sharing of experiences or just through listening. Please call the EAP at 66-4600 to reserve a seat.

For Sale: Two bedroom, one bath trailer near Onley on 1/2 acre of land. Oil heat, new carpet, curtains, blinds and kitchen appliances included. \$25K. Call 757-789-3933 after 5:30 p.m.

House for Rent

101 Brentwood Cr., Pocomoke City, MD. 4 br, 2.5 bath, 2 car garage, no pets \$700/month. Call Ralph Welsh, (301) 464-9596

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