



# Inside Wallops

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## Global Garden Grows Greener

A NASA-Department of Energy jointly funded study concludes the Earth has been greening over the past 20 years. As climate changed, plants found it easier to grow.

The globally comprehensive, multi-discipline study appears in this week's Science magazine. The article states climate changes have provided extra doses of water, heat and sunlight in areas where one or more of those ingredients may have been lacking. Plants flourished in places where climatic conditions previously limited growth.

"Our study proposes climatic changes as the leading cause for the increases in plant growth over the last two decades, with lesser contribution from carbon dioxide fertilization and forest re-growth," said Ramakrishna Nemani, the study's lead author from the University of Montana, Missoula, Mont.

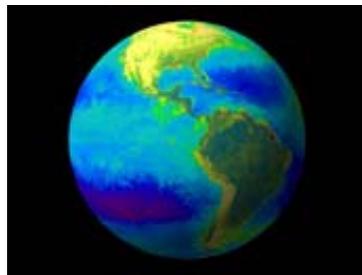
From 1980 to 2000, changes to the global environment have included two of the warmest decades in the instrumental record; three intense El Nino events in 1982-83, 1987-88 and 1997-98; changes in tropical cloudiness and monsoon dynamics; and a 9.3 percent increase in atmospheric carbon dioxide (CO<sub>2</sub>), which in turn affects man-made influences on climate. All these changes impact plant growth.

Earlier studies by Ranga Myneni, Boston University (BU), and Compton Tucker, NASA's Goddard Space Flight Center (GSFC), Greenbelt, also co-authors of the study, reported increased growing seasons and woody biomass in northern high-latitude forests.

Nemani and colleagues constructed a global map of the Net Primary Production (NPP) of plants from climate and satellite data of vegetation greenness and solar radiation absorption. NPP is the difference between the CO<sub>2</sub> absorbed by plants during photosynthesis, and CO<sub>2</sub> lost by plants during respiration.

NPP is the foundation for food, fiber and fuel derived from plants, without which life on Earth could not exist. Humans appropriate approximately 50 percent of global NPP.

NPP globally increased on average by six percent from 1982 to 1999. Ecosystems in tropical zones and in the high latitudes of the Northern Hemisphere accounted for 80 percent of the increase. NPP increased significantly over 25 percent of the global vegetated area, but decreased over seven percent of the area; illustrating how plants respond differently depending on regional climatic conditions.



**NASA's Sea-viewing Wide Field-of-view Sensor (SeaWiFS) aboard the OrbView-2 satellite has been collecting data on plant productivity and the carbon cycle since 1997.**

Climatic changes, over approximately the past 20 years, tended to be in the direction of easing climatic limits to plant growth. In general, in areas where temperatures restricted plant growth, it became warmer; where sunlight was needed, clouds dissipated; and where it was too dry, it rained more. In the Amazon, plant growth was limited by sun blocking cloud cover, but the skies have become less cloudy. In India, where a billion people depend on rain, the monsoon was more dependable in the 1990s than in the 1980s.

The climate data for NPP calculations came from the National Oceanic and Atmospheric Administration (NOAA) National Center for Environmental Prediction. Researchers used two independently derived 18-plus-year satellite datasets from the Advanced Very High Resolution Radiometers on NOAA satellite. The team processed and improved the data at GSFC and BU.

"Systematic observation of global vegetation is being continued by NASA's Earth observing satellites. Earth observing satellites are paving the way to find out if these biospheric responses are going to hold for the future," adds Steve Running, another co-author from the University of Montana.

## Wallops Shorts..... Launch

A NASA Orion sounding rocket was successfully launched from Wallops Island on June 6. The educational outreach Suborbital Space Experiment Module (Sub-SEM) was to obtain data for high school students from New York, Georgia, Illinois and Minnesota. Ed Parrott, NASA Teacher-On-Loan, was the principal investigator. Mission manager was Gordon Marsh, NSROC, and Project Manager was Dave Moltedo, NASA Range and Mission Management Office.



Photo by Keith Koehler.

The Sub-SEM payload was recovered and transported back to Wallops where the experiments were returned to the students.

## On the Road

Joe Mitchell, NASA Environmental Office, participated in a Career Day event at the Showell Elementary School on June 4.

## Time's Running Out

On Monday, June 23, 2003, IFMP Core Financial will go live at NASA Goddard Space Flight Center. To access this system and perform your Core Financial roles, you will need a User ID and Password for each of the following applications: SAP R/3, Business Warehouse and Bankcard.

To receive your User Ids and Passwords, you must complete NASA Form 1700, "IFMP System Access Request". A printed copy of this form, pre-populated with most of the required information, was sent to all users by GSFC internal mail on May 22.

Only users who have completed ALL required training will be given a SAP ID and password. To check the status of your training, visit <http://corefinancial.gsfc.nasa.gov/training/index.cfm>.

If you have any questions or require assistance in completing Form 1700, call the GSFC IFMP Help Desk on x66-4100.

## Bring On The Sun!

by Ted Wilz  
Senior Meteorologist

May proved to be cloudy and damp along the Eastern Shore. Clouds were abundant most of the month, resulting in an average temperature of 59.5 degrees, which is three degrees below normal.

We had measurable rainfall on 20 days during May, well above the monthly average of nine days. Almost four inches of rainfall was recorded, well above the normal 3.18 inch monthly total for May.



No record high temperatures were set during May. The warmest day of the month was May 11 with a reading of 80 degrees. The coolest day of the month occurred on May 5, when the temperature dropped to 37 degrees, which tied the record low for that date.

What does July have in store for us, other than the inevitable increase in mosquitoes that all the rain in May is sure to bring? Hopefully, we'll see much more sunshine. July brings average high temperatures in the low to mid 80s throughout the month, with inland locations often pushing into the 90s.

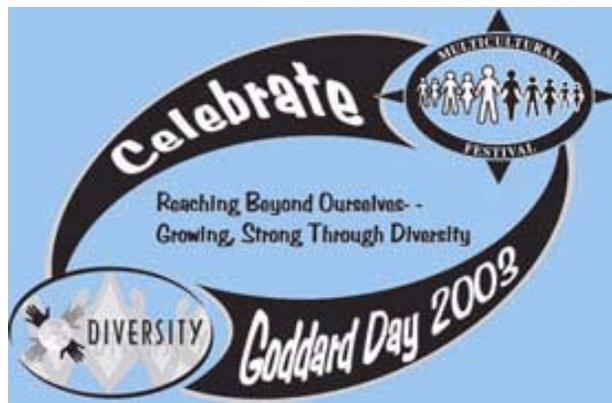
Along the coast there usually is an afternoon sea breeze to moderate temperatures, keeping us six to 10 degrees cooler than our inland neighbors. On occasion, the coast will get an offshore breeze, pushing temperatures into the 90s. The mercury has reached a sweltering 100 degrees on four occasions in July, most recently in 1993.

July and August provide the hottest weather on Delmarva. Air conditioning systems get only a slight break when overnight lows usually dip briefly into the upper 60s. The all-time low for July occurred on July 2, 1965, when the early morning low reached 51 degrees!



July also is one of our wettest months with summer heat often translating to afternoon and evening showers and thunderstorms that can drop abundant rainfall in a very short period of time.

Rainfall averages 3.54 inches in July. There are usually 10 days with measurable rainfall during the month. This amount can vary widely and is sometimes affected by the presence of a tropical storm or hurricane.



Wallops  
Employees are  
Invited to join the  
Celebrate  
Goddard Day  
2003

### June 24 - Movie Day

"Antwone Fisher" Bldg. 3 -- Goett Auditorium -- 10 a.m.  
"A Beautiful Mind" Bldg. 8 -- Auditorium -- 1 p.m.

### June 25 - Drama Day

A live performance entitled, "Invisible Diversity Conflicts: "The Role of Emotional Intelligence" presented by Orlando-Ward & Associates, Inc. of San Diego, CA. Bldg. 3 -- Goett Auditorium -- 12:30 p.m.

### June 26 - "Celebrate Goddard" Day

9 a.m. - 2:30 p.m. on the Mall (Grassy area between Bldg. 8 and Bldg. 3)

#### -- Live Entertainment:

- Goddard's Child Development Center (children songs)
- Mark Hubbard (Rock & Roll, Top 40)
- **Voices of Wallops (A Medley of National Songs)**
- The Tropical Ensemble (Caribbean/Steel Drums)

#### -- Arts & Crafts - Representing the following ethnic groups:

Indonesian	Nicaraguan
African American	Haitian
Native American	Asian American

#### -- A Variety of Food:

German, Barbecue, Greek, Caribbean, Cuban/Puertorican, Crab Cakes & Ribs, Jamaican, West African, Sno balls, Korean, Funnel Cakes

## Workshops for Travel Preparers and Resource Analysts

In preparation for implementing travel manager with the Core Financial software, travel manager preparers and resource analysts are asked to attend one of the training sessions at the Greenbelt facility listed below.

### June 10

9 - 10 a.m. Travel Preparers  
10:15 - 11:15 a.m. Travel Preparers

### June 16

9 - 10 a.m. Travel Preparers  
10:15 - 11:15 a.m. Resource Analysts

### June 19

1 - 2:15 p.m. Resource Analysts

A VITs will be held for travel preparers and resource analysts at Wallops and IV&V on June 18, 10 - 11:30 a.m. in Building F-6, Room 213.

Call the help desk x66-4100 if you have any questions.

## Centennial of Flight Milestone

75 years ago on June 17, Amelia Earhardt became the first woman to fly across the Atlantic.

## June Events at the NASA Visitor Center

### Saturday June 14: "Water and Our World" Children's Program

Come and find out how old our water is and why it is so important to keep our water clean. Following the presentation children will make water bugs and learn how to make them glide across water. The program begins at 1 p.m. and will last 45 minutes.

### Saturday, June 21: "Bottle Rockets" Children's Program

Children of all ages can learn about rocketry and how to make and fly a bottle rocket. Please bring a 2-liter plastic soda bottle, all other materials are provided by the Visitor Center. The 1-hour program begins at 1 pm.

The Visitor Center is open Thursday through Monday from 10 a.m. to 4 p.m. Admission to Visitor Center programs is free. For further information, call Gail Troutman on x-2298 or visit: <http://www.wff.nasa.gov/vc>

*Inside Wallops* is an official publication of Goddard Space Flight Center and is published by the Wallops Office of Public Affairs, Extension 1584, in the interest of Wallops employees. Recent and past issues of *Inside Wallops* may be found on the NASA Wallops Flight Facility homepage: [www.wff.nasa.gov](http://www.wff.nasa.gov)

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