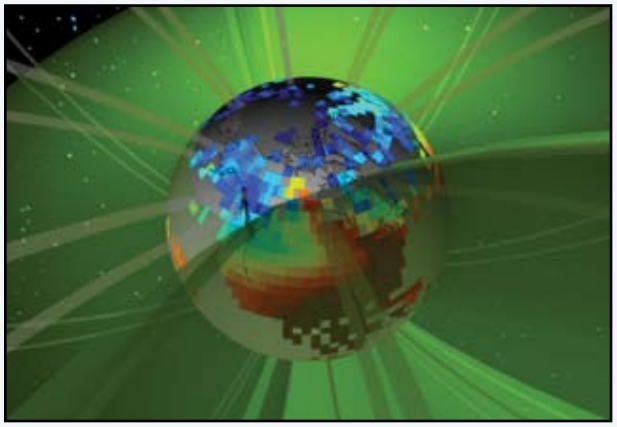
Scientifc Visualization Studio

The Scientific Visualization Studio (SVS) facilitates scientific inquiry and outreach within NASA programs through visualization. The SVS collaborates with scientists to create visualization products, systems, and processes to promote a greater understanding of Earth and Space Science research activities at Goddard Space Flight Center and within the NASA research community. All SVS visualizations (currently totalling over 2,700) are available through the internet (http://svs.gsfc.nasa.gov).



Space weather events which disturb the plasmapause (shown in green) can propagate down the Earth's magnetic field lines (in gray) to the Earth's ionosphere. The result can be enhanced electron content (shown in red and yellow) which may disrupt satellite radio signals. This ionospheric electron enhancement over North America was measured by ground-based sensors.



Hurricane Rita clouds and sea surface temperatures (SSTs) on September 23, 2005 at 13:45 GMT. The colors on the ocean represent the SSTs, and satellite images of the hurricane clouds are laid over the SSTs to clearly show the hurricane positions. Orange and red depict regions 28° C and higher, where the ocean is warm enough for hurricanes to form.

For more information, contact:

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Code 610.3
Greenbelt, MD 20771

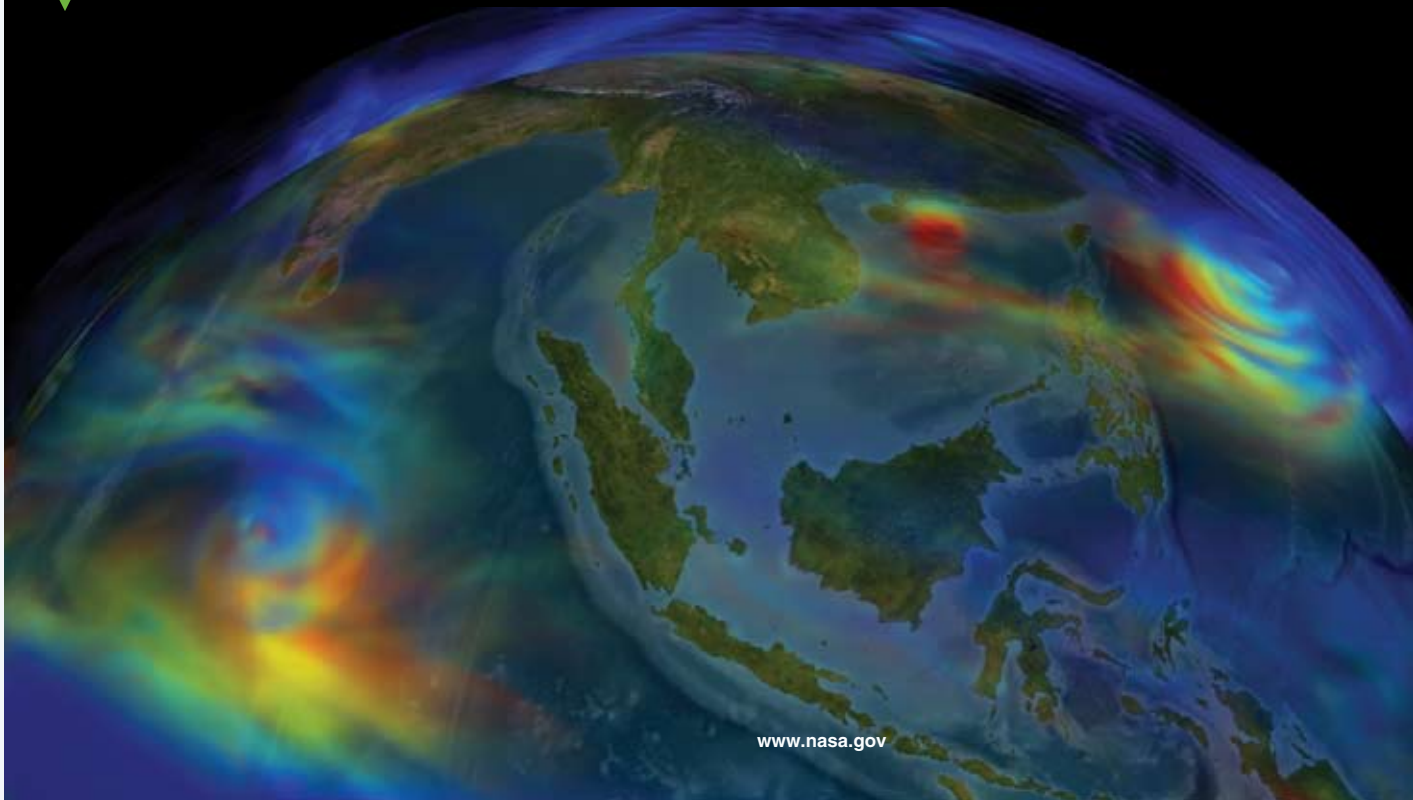
(301) 286-9804

http://sivo.gsfc.nasa.gov

National Aeronautics and
Space Administration

Software Integration and Visualization Office (SIVO)

Image: Three-dimensional volumetric representations of Tropical Cyclone Pheobe in the Indian Ocean and Super Typhoon Songda in the Pacific Ocean. The structures are defined by areas of high wind speeds. The colors represent total precipitable water (blue is low, red is high).



www.nasa.gov

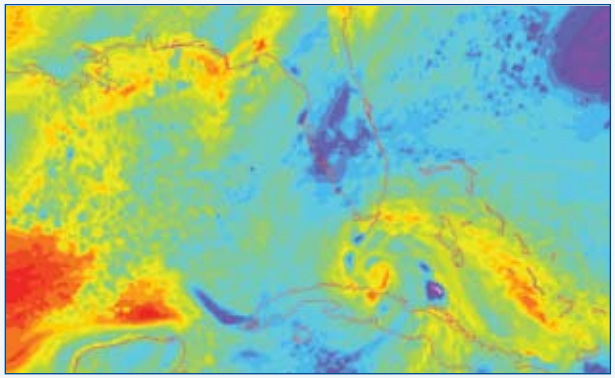
Software Integration and Visualization Office

The Software Integration and Visualization Office (SIVO) is located at the NASA Goddard Space Flight Center in Greenbelt, Maryland, and provides expertise in high-end computing and visualization technologies to the Sciences and Exploration Directorate and the NASA Center for Computational Sciences (NCCS).

SIVO has expertise in the following areas:

- Advanced scientific software, state-of-the-art tools, andproducts in support of Goddard research scientists
- Computational science, high-end computing, advanced Earth science modeling, and simulation
- Award-winning visualization techniques, modern software engineering, integration principles, and effective performance optimization

SIVO is comprised of four groups: the Advanced Software and Technology Group, the Scientific Visualization Studio, the Education and Public Outreach Group, and the Modeling, Analysis, and Prediction Integration Group.

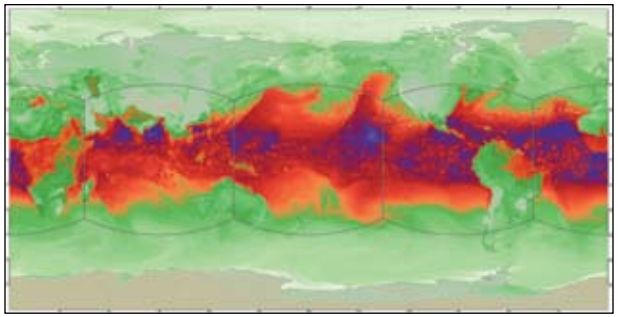


This is a visualization generated on-demand from the SIVO Weather Research and Forcasting (WRF) Model Web Map Service (WMS). The image shows energy stored in the wind motions of Hurricane Ernesto as it approaches Florida on August 29, 2006. The WMS is able to overlay multiple datasets together, combining NASA satellite observations and weather forecast data to create images showing exactly the data, time, and area of interest.

Advanced Software Technology Group

The Advanced Software Technology Group (ASTG) provides custom high-end computing support to NASA funded researchers. The ASTG team consists of experts from a variety of disciplines including meteorology, physics, mathematics and several areas of engineering. ASTG services include training, parallelization, algorithmic improvements, optimization, porting, and software design/implementation. ASTG clients include the Goddard Institute of Space Studies, the Global Modeling Initiative, and the Global Modeling and Assimilation Office.





ASTG project, Cubed-Sphere (fvcore): The current implementation of the finite-volume dynamical core (fvcore), a key component of global models at NASA, NOAA and NCAR, is limited in terms of scalability by the choice of computational grid (latitude-longitude based). To break through these scalability limitations the fvcore has been implemented on the quasi-uniform cubed-sphere grid with a 2-dimensional horizontal domain decomposition. Upper image: The cubed-sphere grid at c44 (~200-km) resolution. Lower image: A snapshot from a high-resolution (c720, 12-km) idealized moist baroclinic test with the cubed-sphere fvcore displaying low-level moisture.

Education and Public Outreach Group

The Education and Public Outreach (EPO) Group engages educators and the public in programs designed to improve their Earth science literacy, to raise their awareness and understanding of NASA's Earth science missions, and to freely share our data and information in ways that benefit society. To achieve these goals, the EPO Group builds and sustains partnerships with a diverse range of formal and informal educational institutions and develops and publishes a variety of print and on-line publications.



NASA's Earth Observatory (http://earthobservatory.gsfc.nasa.gov) is a Web-based magazine about NASA Earth science. Earth Observatory has received numerous awards, including one Webby and three People's Voice Awards.

Modeling, Analysis, and Prediction Integration Group

The Modeling, Analysis, and Prediction (MAP) Integration Goup provides guidance to the Earth Sciences Division and the MAP Program regarding technology trends that will benefit the development of end-to-end Earth System models. The MAP Group also provides line management for the Observing System Simulation Experiment (OSSE) software development group.