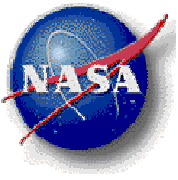


NCCS/SIVO Open House

14 February 2008



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

*Cluster Upgrade
Data Sharing Services*

*Dan Duffy
Harper Pryor*

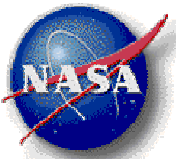
About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio
ESD Education & Public Outreach*

*Tom Clune
Horace Mitchell
David Herring*

*Questions / Comments
Tour of NCCS Facility*

*Phil Webster & Mike Seablom
NCCS Staff*



Software Integration and Visualization Office



SIVO-Who We Are

Advanced Software Technology Group

Tom Clune

- Develops & maintains application software
- Provides performance tuning of science codes
- Advocates professional software engineering practices
- Coordinates software integration efforts across Goddard and across NASA

Scientific Visualization Studio

Horace Mitchell

- Provides visualization services for a wide range of Earth and Space science customers
- Provides scientific visualizations targeted at NASA managers, policy makers, and the general public
- Develops visualization applications for use as analysis tools by scientists

MAP Integration Group

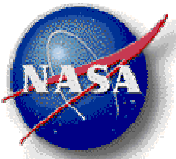
Gail McConaughy

- Serves the MAP program by selecting and implementing appropriate technologies that will benefit the development of Earth System models
- Develop software in support of Observing System Simulation Experiments (OSSEs)

Education & Public Outreach

David Herring

- Provides freely-available Earth Science visualizations through web-based publications
- Develops products for educators
- Coordinates Goddard Education & Public Outreach activities



NCCS & SIVO Partnership



NCCS

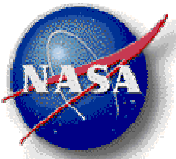
- High performance computing
- Data archival & stewardship
- Code development environments and modules support
- Scientific software code repository for SMD
- Data analysis environment and collaborative tools
- HEC networks
- Data sharing and publication
- User services



SIVO

- Application support and benchmarking
- Software design, development, and implementation
- Code porting and optimization/parallelization
- Visualization services
- Consulting & Training

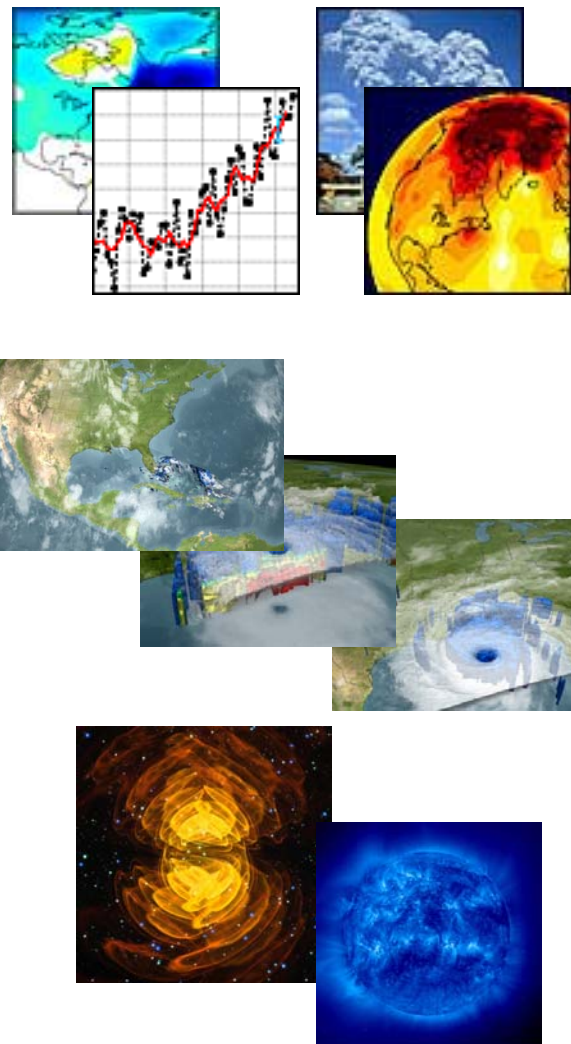
SIVO and the NCCS deliver a full range of HPC compute and data services to support the SMD science community.

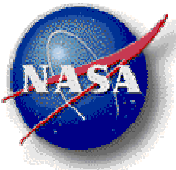


NCCS User Community



- Support SMD modeling and analysis activities in Earth, space, and solar research:
 - Atmospheric modeling
 - Ocean modeling
 - Land surface modeling
 - Space and solar modeling
 - Coupled models and systems of models
 - Observing systems studies
- Extend HPC support to other SED science and engineering activities

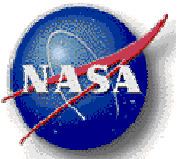




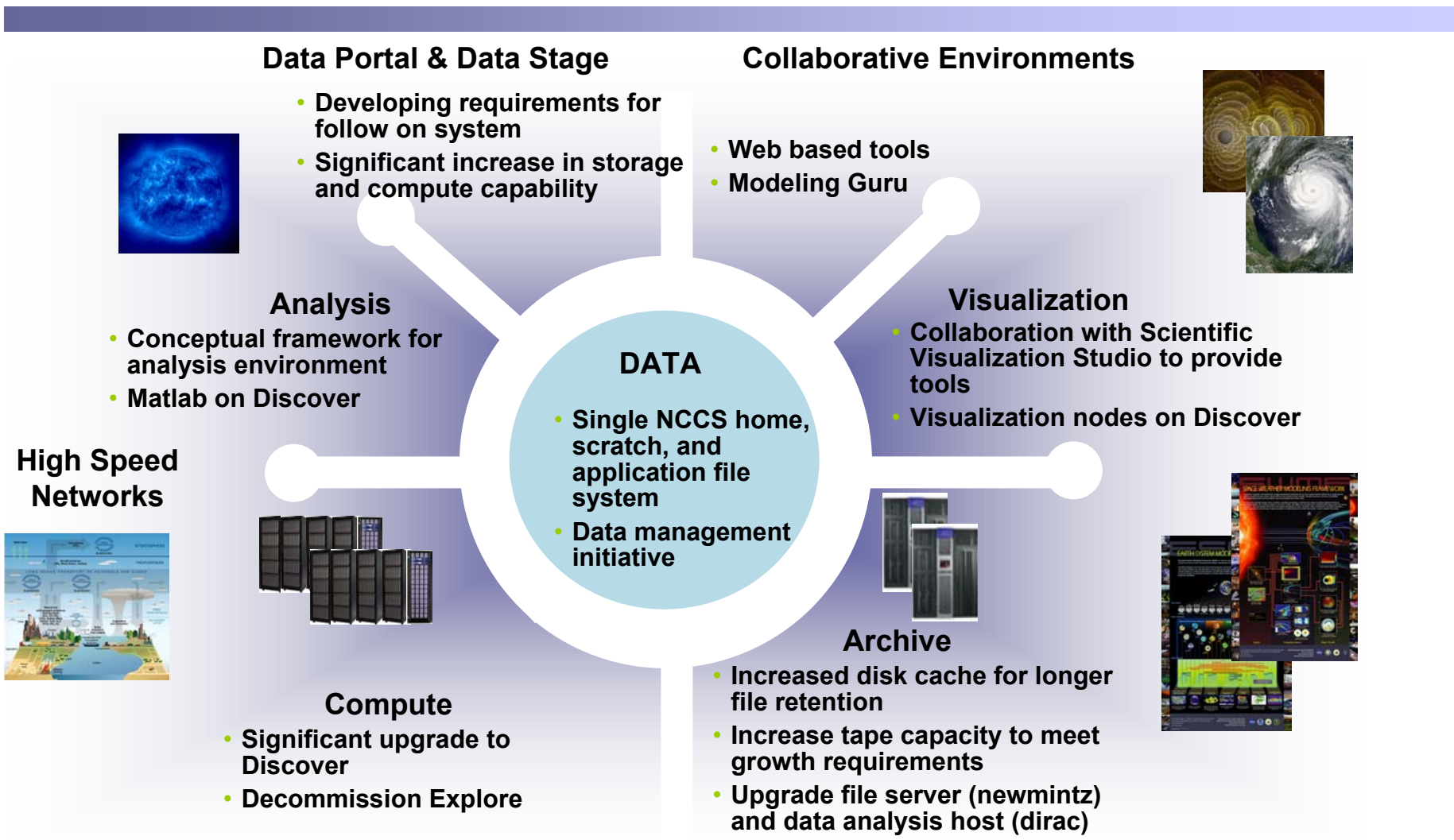
System Acquisition Philosophy

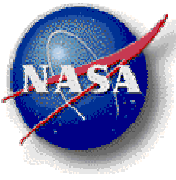


- Commodity-based approach to capacity computing:
 - Most flexible approach to support broad range of scientific & engineering applications
 - Builds a consistent HPC architecture
 - Reduces administrative cost and complexity
 - Architecture attends to data-centric needs of our users and applications
 - Supports flexible job execution opportunities – jobs not tied to specific resources
 - Ease of migration for users & Continuity of user experience
- Annual augmentation
 - Minimizes user impact while extended resources
 - Maintains balanced HPC environment
- ~3-year technology refresh
 - Provide sufficient opportunity to migrate users and applications to newer technologies
- Acquisition strategy based on:
 - Performance successes realized in Discover environment
 - Other lessons-learned
 - Characterized by standard HPC benchmarks
 - Maximize additional capacity with available funds
 - Competitive acquisition strategies to provide the best price performance



Data-Centric Conceptual Architecture





Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

Cluster Upgrade

Data Sharing Services

Dan Duffy

Harper Pryor

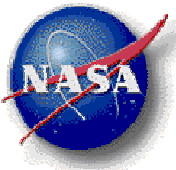
About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio
ESD Education & Public Outreach*

*Tom Clune
Horace Mitchell
David Herring*

*Questions / Comments
Tour of NCCS Facility*

*Phil Webster & Mike Seablom
NCCS Staff*



What are we going to do with Explore? Explore System Decommission



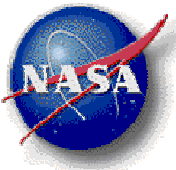
- Lease is due to expire at the end of September
- NCCS will not renew this lease
 - More cost effective to upgrade than it is to purchase the residual value and maintenance
- No significant changes to Explore are planned
 - Maintain the O/S with security patches and bug fixes as needed



Minimize User Disruption



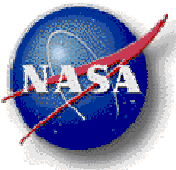
- The primary goal in planning the cluster upgrade is to minimize the impact on the user community
- How will we do that?
 - Support in migrating applications and data from Explore to the Discover cluster
 - Consistent user environment
 - Consistent architecture
 - Scalable approach to both compute and storage needs; end result is a balanced system
 - Provide about a two month overlap between first stage of upgrade and decommission of Explore
 - First stage will be roughly twice the peak capacity of Explore



How are we going to provide a consistent architecture and user environment?



- Hardware
 - Intel Xeon processors
 - Binary compatible
 - Approximately the same speed (between 2.67 GHz and 3.0 GHz)
 - Quad-core rather than dual-core
 - Infiniband
 - 2 GB/core – which is an increase over existing environment
- Software
 - SLES
 - MPI
- User Environment
 - Modules
 - All the same modules will be available
 - PBS
 - Though you may need to make some changes to your scripts
 - Still exploring a more generic way to submit jobs so users do not have to specify or worry about landing on dual-core versus quad-core nodes

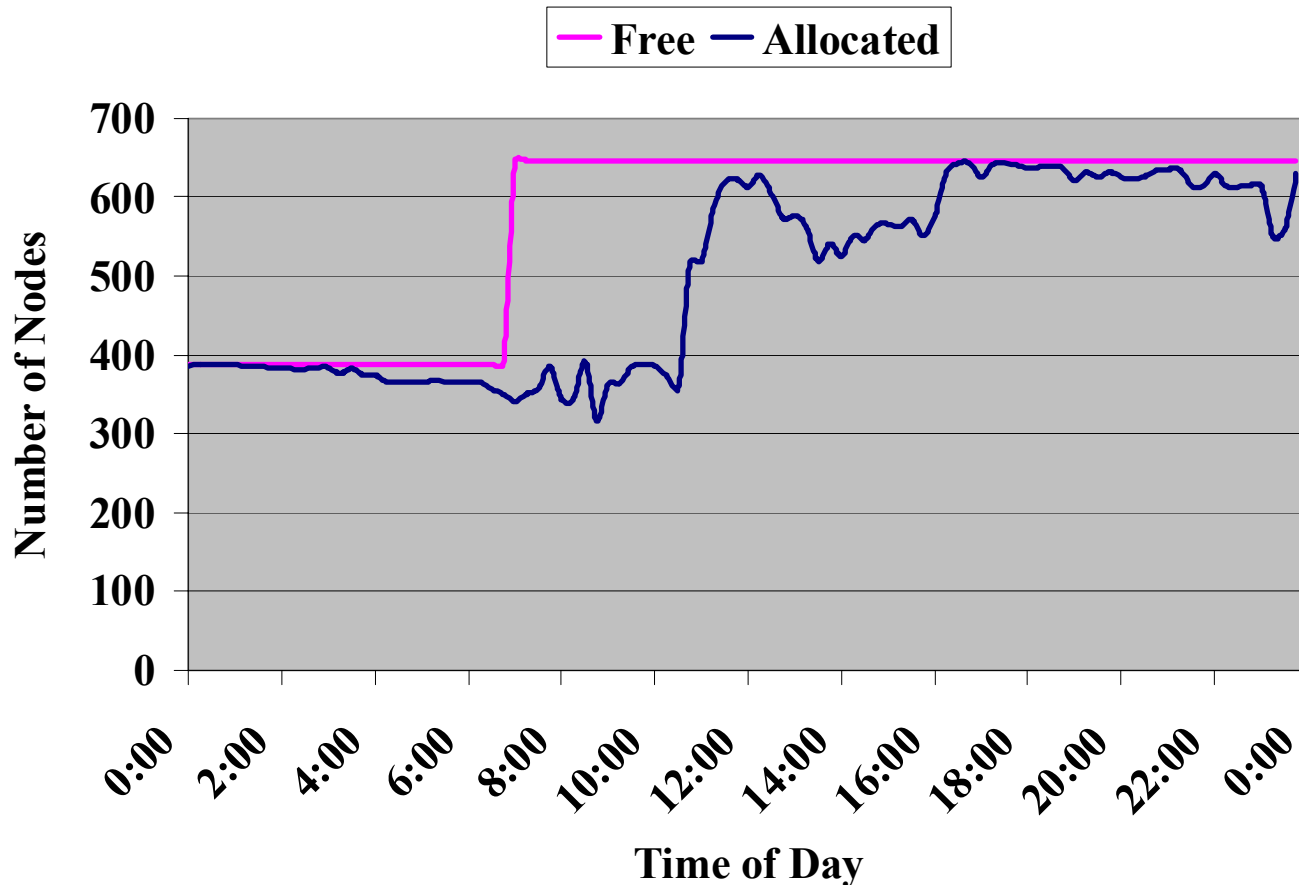


We have done this before



Addition of SCU2 11 September 2007

- Users went home on Monday night with only 388 nodes available for compute
- An additional 258 nodes were added to the PBS queues around 7:00 a.m. Tuesday morning
- By 11:00 a.m. Tuesday morning, the full 646 nodes were almost complete allocated



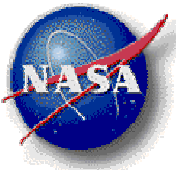
This is the kind of success we are targeting for the next upgrade!



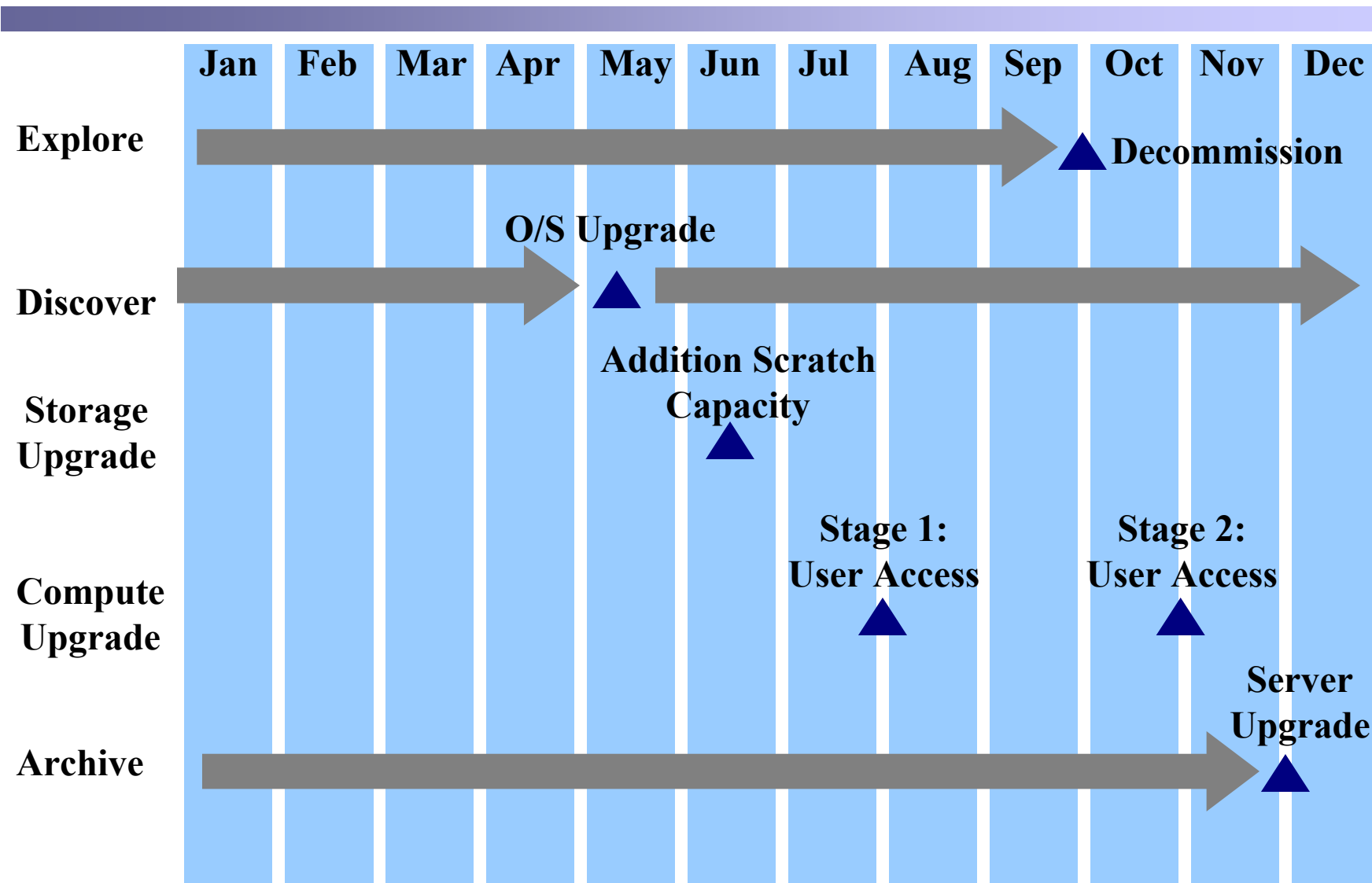
There will need to be some changes

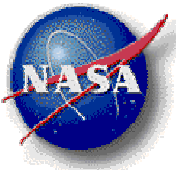


- Discover will need to be upgraded
 - Maintain compatibility with vendor supported software matrix
 - Provide compatibility with cluster upgrade
- Software Upgrade (2Q08)
 - O/S upgrade to SLES 10 SP1
 - Infiniband OFED 1.2
 - MPI Scali 5.6
 - Addition of Intel MPI
 - PBS 9.0
- Changes will be made on the test and development system and representative applications will be verified



Target Timeline & Milestones





What do you need to do to prepare?



- Support is immediately available to start
 - Getting an account on Discover
 - Porting your applications and scripts to Discover
 - Staging your data from Explore to the appropriate resource
- What about my data on Explore?
 - It is not going anywhere.
 - As always, you should save all critical files into the archive as soon as possible.
 - We will want to eventually clean off all the disks to reuse those disks elsewhere in the NCCS.
 - We will be asking you to stage your data from Explore into the archive or Discover as needed. The NCCS can help with this!
- How will we track this?
 - User services will track the migration of all groups from Explore to the new system.
 - As always, users can request support or ask general questions to support@nccs.nsa.gov



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

Cluster Upgrade

Dan Duffy

Data Sharing Services

Harper Pryor

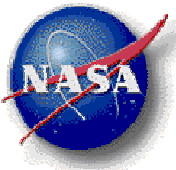
About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio
ESD Education & Public Outreach*

*Tom Clune
Horace Mitchell
David Herring*

*Questions / Comments
Tour of NCCS Facility*

*Phil Webster & Mike Seablom
NCCS Staff*

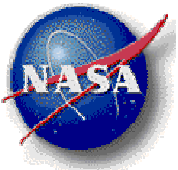


Data Sharing Services

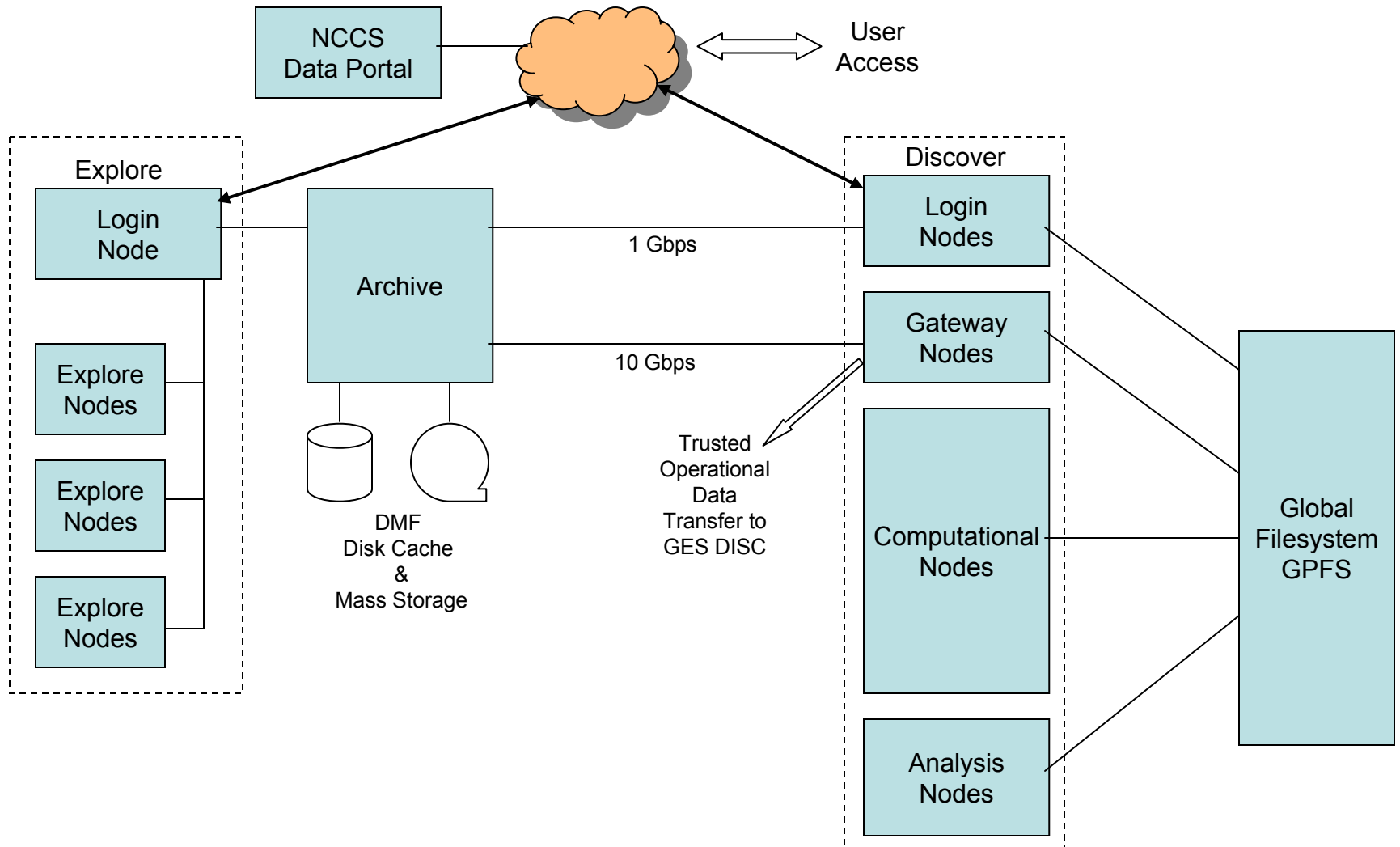


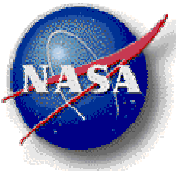
NCCS supports a collection of service capabilities to better support scientific code development, job execution, data analysis, and collaboration with the scientific community.

- Shared on-line data repositories within the NCCS HPC environment for development team use
- Large, temporary input data holding areas to expedite production
- Access to production data output from the HPC analysis environment to support monitoring and assessment
- Data portal for sharing results with collaborators without requiring NCCS users accounts



NCCS Conceptual Environment





NCCS File System Attributes



- Shared on-line data repositories within the NCCS HPC environment for development team use
 - /nobackup areas established for finite timeframes to support group use
 - Examples: group access to shared codes, input or simulated data sets, etc.
 - Simply ask for assistance via support@nccs.nasa.gov
- Large, temporary input data holding areas to expedite production
 - /nobackup areas established for finite timeframes to support production use
 - Supports large input data sets to lesson mass storage impact on production
 - Simply ask for assistance via support@nccs.nasa.gov
- Access to production data output from the HPC analysis environment to support monitoring and assessment
 - /nobackup areas established for finite timeframes to support multiple access needs to large output data sets
 - GPFS file system is accessible from computation & analytic nodes
 - Simply ask for assistance via support@nccs.nasa.gov



NCCS Data Portal



- Sharing information and preliminary results with scientific collaborators without requiring NCCS user accounts
 - Approach:
 - Develop capabilities for specific projects and generalize for public use
 - Resources managed by the NCCS
 - Software development by SIVO and SMD users
 - Capabilities:
 - Web/Portal registration
 - Usage monitoring & reporting
 - Directory listings
 - Data download
 - Limited data viewing/display (GrADS, IDL, OpenDAP)



NCCS Portal Support



NCCS maintains Data Portal environment with:

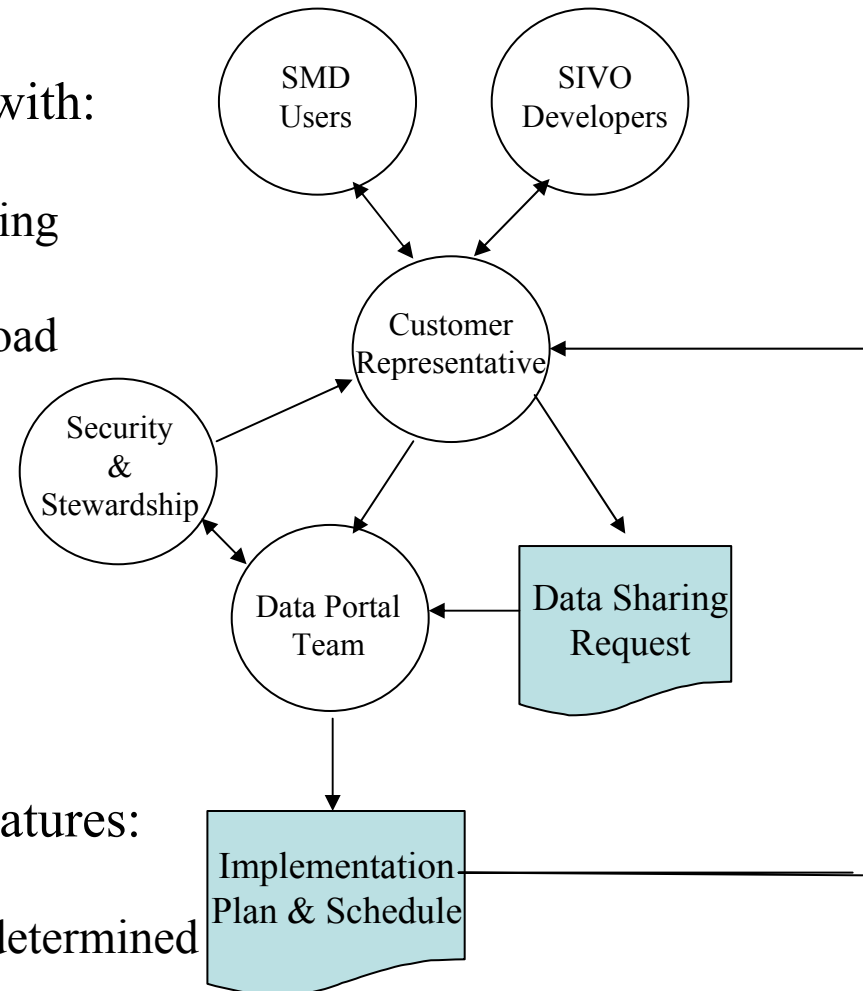
- Systems administration support
- System security administration & monitoring
- Agency required data sharing paperwork
- Development tools – web, display, download

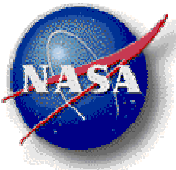
NCCS will manage user requirements to completion:

- Coordinate internal development
- Establish user development area
- Support your customer needs

NCCS will assist in establishing standard features:

- Support assessment
- Promote features to standard services, as determined
- Maintain underlying services

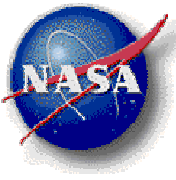




NCCS Data Portal Features



- Architecture
 - Selective portal disks mounted to NCCS archive to facilitate data movement from mass storage
 - GPFS based to serve data for multiple sharing services
 - Data files can be used by Web Mapping Services (WMS),
 - OpenDAP/GrADS Data Server
 - Anonymous ftp
- Disk Upgrade, February 2008
 - 120 TB (4X previous capacity) to host more data
 - Improved disk technology for more reliable storage
 - Additional data paths between the portal CPUs and the storage array for improved I/O performance



Discussion



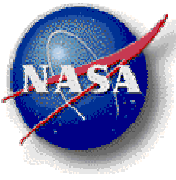
- Let us know if you have a project that could benefit from data sharing services – so we can plan for it.
- Contact us if you want to explore opportunities.
- Your Points of Contact are:

Harper.Pryor@nasa.gov

301-286-9297

And

User Services: support@nccs.nasa.gov



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

*Cluster Upgrade
Data Sharing Services*

*Dan Duffy
Harper Pryor*

About SIVO

Advanced Software Technology Group

Scientific Visualization Studio

ESD Education & Public Outreach

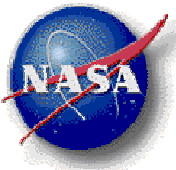
Tom Clune

Horace Mitchell

David Herring

*Questions / Comments
Tour of NCCS Facility*

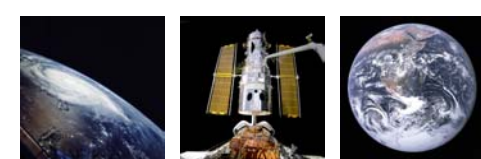
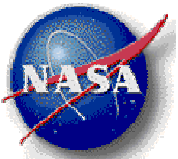
*Phil Webster & Mike Seablom
NCCS Staff*



The Modeling Guru



- New “knowledge base” to support scientific modeling within NASA
 - Commercial package, customized by ASTG, hosted by NCCS
 - Moderated discussions/forums
 - Document repository
 - Questions and support
- Goal is to leverage and share community expertise
 - New paradigm for level 2 support provided by SIVO to the NCCS
 - Topics/Communities include
 - HPC systems
 - Programming languages (e.g. SIVO F2003 Series)
 - Models: GEOS-5, GMI, modelE, etc
- Access: <https://modelingguru.nasa.gov>
 - Most categories publicly visible
 - Posting requires login
 - All NCCS users have login by default
 - Anyone with relevant interest can request an ID



NASA Modeling Guru: Clearspace: NASA Modeling Guru

https://modelingguru.nasa.gov/clearspace/index.jspa

Published Articles RSS Feeds SAX Guru ASL Browser DOUG development pages Exchange National We...e - Oakland Web Paint-by-Number CAF GSFC Exchange Id hint Bibl... >>

NASA Modeling Guru: Cl... Web Paint-by-Number AND SPACE ADMINISTRATION + Modeling Guru Home

Modeling Guru BETA

Welcome, clune (Log out) New Your Stuff History Browse Enter Search Term

NASA Modeling Guru

Modeling Guru is a research and collaboration resource for all those concerned with NASA scientific models or NASA's HPC systems.

Communities

- Space Science Models**
 - DYNAMO
- Atmospheric Dynamic Models**
 - GEOS-DAS
 - GEOS
 - MERRA
 - GCE
 - GISS ModelE
 - Climat@Home
 - fuCore
- Atmospheric Chemistry Models**
 - GEOS-CHEM
 - GMI
- Ocean Models**
 - Poseidon
 - MOM4
 - MIT OCCM
- Solid Earth Models**
- MAP Modeling Environment Workflow Tool**
- Languages, Libraries & Tools**
- Software Development**
- Computing Systems & Technologies**
- Modeling Guru FAQs, Feedback & General Questions**
- SIVO Internal**

Welcome NASA Modelers



Modeling Guru's combined forums and knowledge base is becoming a repository for the accumulated expertise of NASA's scientific modeling community. All NASA modelers and associates are encouraged to participate and help us fill the "holes" in our modeling knowledge.

Disclaimer: While this is a government resource, it is not totally screened for content. By accessing this site, you agree to use it at your own risk.

Become a Registered Member Today!

Registration offers you a number of benefits, including being able to view restricted material, ask questions, contribute your expertise and more. View registration instructions in the [Modeling Guru Registration FAQ](#).

New to Modeling Guru?

This site offers a number of powerful features, including "wiki" documents, RSS feeds, search tools, and more. For a brief intro, see [Modeling Guru Basics](#) or take the more-detailed [Quick Tour](#).

Important Links

- [How To Register](#)
- [Frequently Asked Questions](#)
- [Posting Policy](#)

What's New

All Content Your View Go to: Discussions Documents Blog Posts

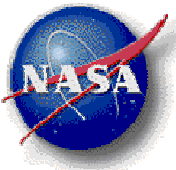
ANNOUNCEMENT:

SIVO Seminar Series on Fortran 2003 by clune at Jan 29, 2008 9:02 AM

SIVO is hosting a biweekly series on the Fortran 2003 standard. The next session on "Interoperability with C" will be on Tuesday February 12th. Materials for the seminars will be available [here in Modeling Guru](#). Participants are also encouraged to use Guru's [Languages, Libraries & Tools](#) community for further discussions on the standard.

Modeling Guru text editor issue

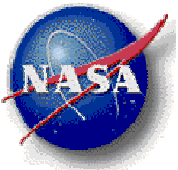
39 minutes ago in [Modeling Guru FAQs, Feedback & General Questions](#) by rsved



GUI-Based Workflow Tool



- Streamlines process of building and running complex models such as GEOS-5 and GMI
 - Provides different views to different categories of users
 - Narrow set of options for external users
 - Wide set of options for developers and internal users
 - Enables SIVO and NCCS to propagate patches to entire community quickly and efficiently
 - Streamlines management of input and output data sets
 - Manages batch jobs and provides visual feedback about execution progress
 - Enables sharing/comparing of experiments with other users
- Built on top of tools from ECMWF



Monitoring progress of experiment

2008-02-13 19:47

```

localhost | GEOSgcm_GEOSGCM_srki_2008_1_4_4_37_0_813 | ...
           | GEOSgcm_GEOSGCM_srki_2008_1_4_4_50_52_691 | ...
           | GEOSgcm_GEOSGCM_ccruz_2008_1_4_5_11_11_6 | ...
           | sensorWeb_rburns_2008_1_7_4_35_31_423 | ...
           | GEOSgcm_GEOSGCS_rburns_2008_1_13_2_46_52_925 | ...
           | prepare_env | setup_wf_env | Info: Setup workflow environment
           |           | setup_model_env | Info: Setup model environment
           | main | prepare_env == complete
           |       | load_batch_parms | load_batch_parms == complete
           |       | create_exp_dirs | create_exp_dirs == complete
           |       | create_rc_templates | create_rc_templates == complete
           |       | create_live_rcs | create_live_rcs == complete
           |       | linkbcs | linkbcs == complete
           |       | getgcm_rst_exe | Info: Get executable and restarts
           |       | regress_test | getgcm_rst_exe == complete
           |       | runloop | getgcm_rst_exe == complete
           |                   | RUNSEG=1
           |                   | run_model | Running:
           |                   | rename_chk_to_rst | run_model == complete
           |                   | archive_restarts | rename_chk_to_rst == complete
           |                   | rename_rst_for_ana | archive_restarts == complete
           |                   | move_history | rename_rst_for_ana == complete
           |                   | post_processing | rename_chk_to_rst == complete
           |                   | gsl_analysis | Info:
           |                   |                   | rename_rst_for_ana == complete
           |                   | resubmit | Info:
           |                   |                   | move_history == complete
           |                   |                   | Info:
           | post_process | main == complete
           |               | pull_back_data | Info:
           |               | view_data | pull_back_data == complete
           | clean_env | post_process == complete
           |               | remove_wf_env | Info:
  
```

Configuring experiment

File Search Tools Database Submission Help

GEOSGCS

- Basic settings
 - SITE
 - MACH
 - EXP_ID
 - BEG_DATE
 - END_DATE
 - JOB_SGMT
 - DT
 - MODEL_RES
 - LM
 - NX
 - NY
 - tot_run_segs
 - group_list
 - CLEAN_WF
- GCS Components
 - Ocean
 - OCEAN_MODEL
 - OCEAN_RAD
 - BIO_CHEM
 - SEA_ICE
 - Atmosphere
 - AGCM_MODEL
 - FVcore
 - Workflow setup
 - TMP_DIR
 - WF_DIR
 - MASTOR
 - VIS_DIR
 - Installation settings
 - LOCAL_INSTALL_DIR
 - INSTALL_DIR
 - TAG
 - OPT_CVS

Name	Description	Data Type	Values
SITE	Platform site	STRING	NCCS
MACH	Remote machine (default discover)	STRING	discover
EXP_ID	GEOS5 Experiment ID (automatic generation)	STRING	coupled3
BEG_DATE	Model start date	STRING	'20030714 223000'
END_DATE	Model end date	STRING	'20030716 223000'
JOB_SGMT	Length of the GEOS5 integration segment	STRING	'0000001 000000'
DT	Model time step	INTEGER	1800
MODEL_RES	Model resolution	STRING	2x2.5
LM	Number of vertical levels	INTEGER	72
NX	CPU decomposition in x-direction	INTEGER	8
NY	CPU decomposition in y-direction	INTEGER	8
tot_run_segs	Number of times to submit the run script	INTEGER	1

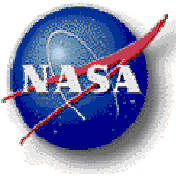
Status	Affects	Description
Success	GEOSGCS	The workflow was validated successfully.



ASTG Services - Software



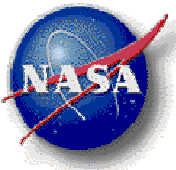
- ASTG help scientists to extend modeling capabilities
 - Cubed-sphere finite-volume dynamical core
 - ESMF/MAPL support
 - Coupling modelE - FV dynamical core
 - Componentization of biogeochemistry model
 - Componentization of GMI model
 - Coupling of LIS with NOAA forecasting system
 - Optimization
 - Parallelization of GISS modelE via MPI
 - Tuning GMAO next generation 4Dvar assimilation
 - MPI implementation of Gigaparticles
 - Stewardship for GMI model
- ASTG develops tools to improve developer productivity
 - pFUnit: Fortran framework for Test Driven Design
 - FFTT: Fast Fortran Transformation Toolkit for refactoring legacy Fortran code



Training



- ASTG provides training on a variety of topics
 - Programming languages
 - Software best practices
 - Tools
 - Parallelization: MPI, OpenMP, hybrid
 - Optimization
- Training formats include
 - Tutorials, including hands-on workshops
 - Consulting
 - Seminars
 - Written materials
 - Possible summer school this year: “Boot Camp for Modelers”



Level 2 Ticket Support



- ASTG provides Level 2 Ticket Support
 - Application level questions, problems, and requests
 - Support NASA centralized computing resources both at NCCS and NAS
 - Porting between platforms
 - Installing 3rd party software libraries
 - Optimization/parallelization
 - Training
- Develop and maintain benchmark suite to assess computing platforms



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

*Cluster Upgrade
Data Sharing Services*

*Dan Duffy
Harper Pryor*

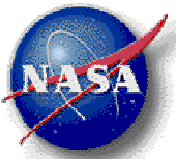
About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio
ESD Education & Public Outreach*

*Tom Clune
Horace Mitchell
David Herring*

*Questions / Comments
Tour of NCCS Facility*

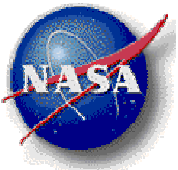
*Phil Webster & Mike Seablom
NCCS Staff*



NASA's Scientific Visualization Studio



- *Lots of help from Tom Bridgman , Randy Jones, Alex Kekesi , Kevin Mahoney, Marte Newcombe, Lori Perkins, Greg Shirah, Stuart Snodgrass , Eric Sokolowsky, Cindy Starr, Joycelyn Thomson, Jim Williams*
- *Most of the visuals in this talk are available at svs.gsfc.nasa.gov*



There are 3 Basic Types of Visualization



- Visualization as a communication tool:

The public face of NASA science relies on these visuals.

SVS - About 60%-70% of SVS projects are communication-related, with a growing emphasis on specialized products: show booth visuals, museum exhibits, dome shows, Science on a Sphere, etc.

- Visualization as a research & analysis tool:

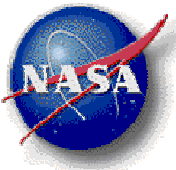
Tools are decided upon based on cost and local utility, not future requirements - very little visualization R&D.

SVS - Tiled Hyperwall displays for analyzing complex simulation models

- Visualization as an operational tool:

Operational projects deliver data, browse images, satellite status displays.

SVS - Web-based delivery to visualizations through GIS systems and geobrowsers: Google Earth, WorldWind, etc.

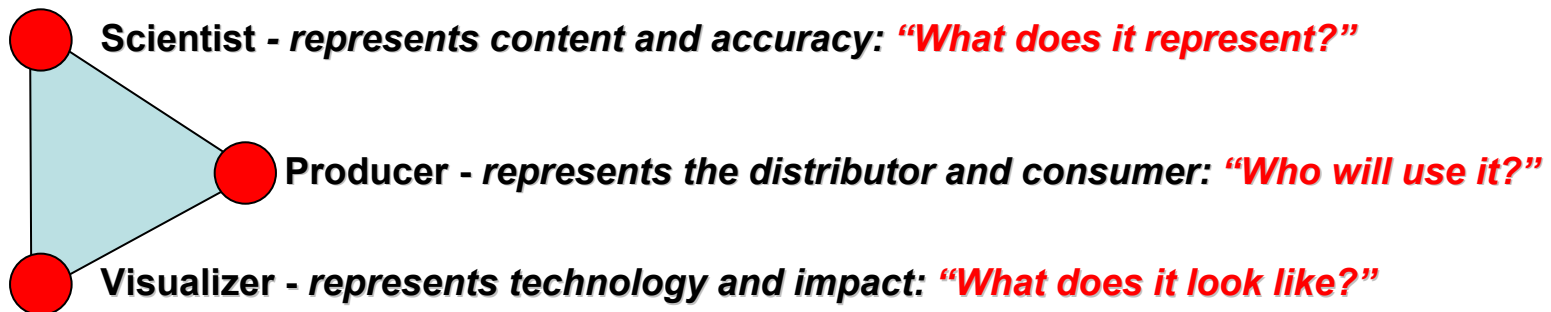


It Takes Three Legs to Make a Tripod Stable



Goal: *To weave NASA Science images into the everyday fabric of American life*

Our unique approach was to use a tripod of individuals for each project, each of whom could represent an important aspect of the outreach process.





Practice Makes Perfect



Example: In 1997, *NASA* was about to launch a satellite (*TRMM*) that would take 3D rainfall measurements.

Question: *What would excite the public?*

Answer: *3D Hurricanes, of course*

1997 - Preliminary Design
Test Data (weeks)

1998 - Hand Design
Hurricane Bonnie (days)

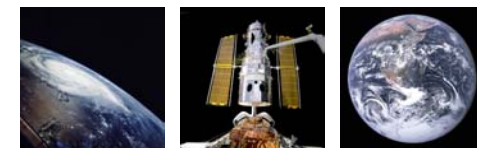
2003 - Automatic Design
Hurricane Isabel (hours)

We often work towards well-planned products that can be produced automatically (pipelines) and delivered to the media.

– *40 Hurricane, cyclones, and storms produced in 5 years*



Scientific Visualization Studio



Go Time (UT) and Forecast Selection

Date: 2007 -05 -28 Time: 12 Forecast: 0.5

NOTE: Actual time of each image is shown beside legend

Go Map Size

Magnify: 100%

Top: 90

Width: 720

Left: -180

Right: 180

Height: 360

Bottom: -90

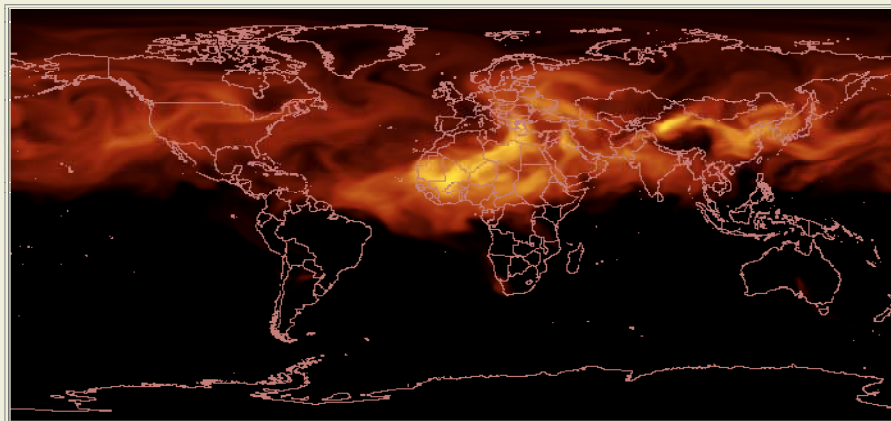
Go Map Layers

- National Boundaries
- Dust Aerosol Optical Thickness
- USA State Boundaries 1:20M scale
- Lat/Lon Grid
- Sea Salt Aerosol Optical Thickness
- Sulfate Aerosol Optical Thickness
- Black Carbon Aerosol Optical Thickness
- Organic Carbon Aerosol Optical Thickness
- Organic+Black Carbon Aerosol Optical Thickness
- Total Aerosol Optical Thickness
- Sea-Level Pressure
- Ozone Total Column
- Carbon Monoxide - Global
- Carbon Monoxide - North America Anthropogenic
- Carbon Monoxide - Central America Anthropogenic
- Carbon Monoxide - Western Hemisphere Biomass
- Carbon Monoxide - Asian Anthropogenic
- Carbon Monoxide - Northern Asia Biomass
- Carbon Monoxide - Southern Asia Biomass
- Carbon Monoxide - Mexico City Anthropogenic
- Aqua MODIS 1km true-color imagery
- Terra MODIS 1km true-color imagery
- GOES-12 full-disk long-wave infrared imagery
- CPC global infrared composite
- Blue Marble 2002 - MODIS composite land image

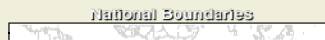
Select Project Aerosol Forecasting

Aerosol WMS Viewer
WMS Viewer / NASA / GSFC / GMAO / ACDB /

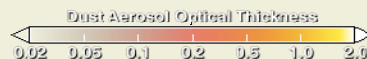
Viewer development courtesy of NASA GSFC Software Integration and Visualization Office and Scientific Visualization Studio
WMS Server development courtesy of NASA Geoscientific Interoperability Office
Software Developer: Jeff de la Beaujardine, GSFC 610.3.301.286.1560.
Responsible NASA Official: Michael Sablom, GSFC 610.3.301.286.8580.
Privacy Policy and Security Notice / Software Version: 2007-05-04 13:57:33Z



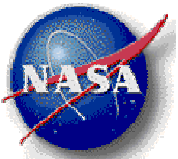
Click on map to: Zoom In Out by 2, or Recenter Google Earth KML file [?]



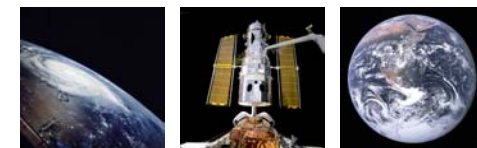
National Boundaries. Metadata.



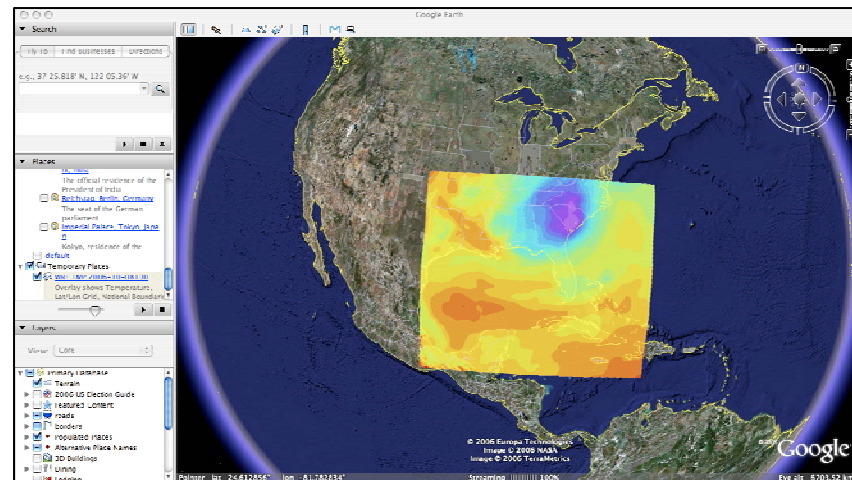
Dust Aerosol Optical Thickness. Time: 2007-05-28T12:30 UT. (run 2007-05-28T12 UT at 0.5hr.)
Metadata. GeoTIFF. NetCDF. MPEG animation (5.8 MB). Credit: Courtesy of NASA GSFC Global Modeling and Assimilation Office and Atmospheric Chemistry and Dynamics Branch.



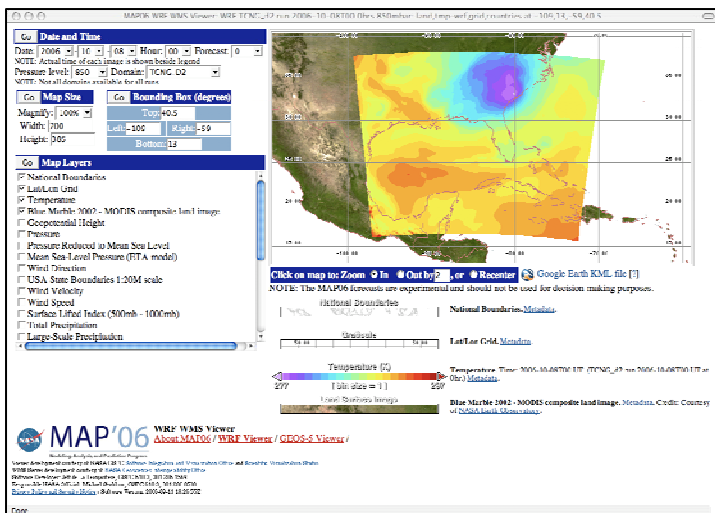
Scientific Visualization Studio



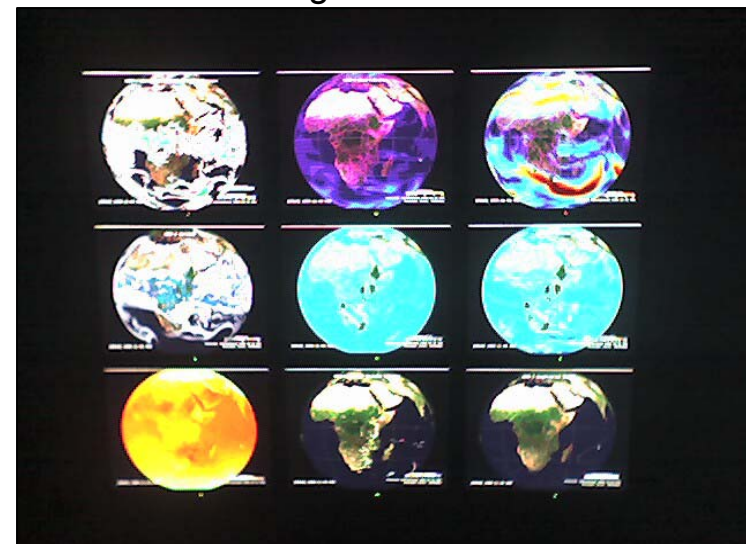
**Modular system design
allows Visualization as a
Web Service across many
different
Geo-browsers**



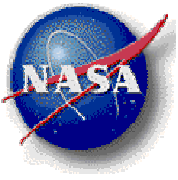
Google Earth



NASA WMS Viewer



Hyperwall



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

*Cluster Upgrade
Data Sharing Services*

*Dan Duffy
Harper Pryor*

About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio*

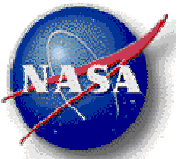
*Tom Clune
Horace Mitchell*

ESD Education & Public Outreach

David Herring

*Questions / Comments
Tour of NCCS Facility*

*Phil Webster & Mike Seablom
NCCS Staff*



NASA Earth Observations (NEO)



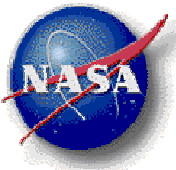
Kevin Ward • 503-977-2970
 David Herring • 301-614-6219

• kevin_ward@ssaihq.com
 • david.d.herring@nasa.gov

<http://neo.sci.gsfc.nasa.gov>

- Easy access to NASA remote sensing imagery
- Designed for educators, communicators, & citizen scientists
- Why visit NEO?
 - Obtain Earth images for articles, posters, kiosks, etc.
 - Access data & analytic tools for educational lessons
 - Export images to geobrowsers (e.g., GoogleEarth, WorldWind)
 - Export images for display in virtual globes (e.g., Magic Planet, Science on a Sphere)
 - Browse scenes and then order matching data

The screenshot displays the NEO website interface. At the top, there is the NASA logo and the text 'NATIONAL AERONAUTICS AND SPACE ADMINISTRATION'. To the right, the 'NEO' logo is followed by 'NASA Earth Observations'. Navigation links for 'Home', 'News', 'Help', and 'About NEO' are visible. A 'Welcome to NEO' section includes a tip about granule overlays. Below this is a world map with a search bar and a 'Search NEO' button. To the right of the map are 'Download Options' (Full, Color, JPEG) and a 'Get Image' button. Below the map are tabs for 'Ocean', 'Atmosphere', 'Energy', 'Land', and 'Life'. A search results section shows 'Blue Marble: Next Generation (Terra/MODIS)' data from December 1, 2004 00:00 to January 1, 2005 00:00. The results list various time intervals from March 1, 2004 to November 1, 2004. A 'Select' button is present at the bottom of the search results.




NASA's Visible Earth



- Digital image library of NASA Earth images, animations & data visualizations for public release
- More than 20,900 image records (~103,000 images) & growing!
- One of the 3 most-visited Web sites at GSFC
 - Serving ~35 Gb per day
 - 1.1 Terabytes last month
- Just rebuilt the entire system & database
 - XML database will allow scripted queries & content syndication
 - Simple forms will allow content authoring by colleagues from across the agency

<http://visibleearth.nasa.gov>




VISIBLE EARTH
A catalog of NASA images and animations of our home planet

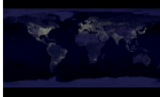
[SEARCH](#)

Home
Terms of Use
Frequently Asked Questions
Browse By:
Satellite
Sensor
Collections
Country
U.S. State
GCMD Topic


FAVORITES




The Blue Marble



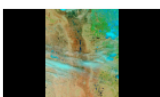
Earth's City Lights



Dust over Cape Verde Islands



Fires in Central Alaska

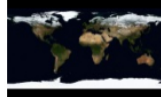


Floods along the Red River in ...

NEWEST



December, Blue Marble Next ...



November, Blue Marble Next ...



October, Blue Marble Next ...



September, Blue Marble Next ...



August, Blue Marble Next ...

BROWSE ARCHIVES

Satellites
Aqua · OrbView-2 · Terra · more...

Sensors
MODIS · SIR-C/X-SAR · SeaWiFS · more...

Collections
Astronaut Photography · Blue Marble, Next Generation · Earth Observatory Image of the Day · Earth Observatory: Natural Hazards · MODIS Land Group · MODIS Rapid Response · Planetary Photojournal

GEOGRAPHIC REGIONS

Countries
Canada · Russia · United States · more...

U.S. States
Alaska · California · Washington · more...

GCMD TOPICS

Agriculture
Agricultural Plant Science... · Forest Science · Soils · more...

Atmosphere
Aerosols · Air Quality · Atmospheric Phenomena · more...

Biosphere
Microbiota · Terrestrial Habitat · Vegetation · more...

Cryosphere
Sea Ice · Snow/Ice

Human Dimensions
Environmental Impacts · Infrastructure · Natural Hazards · more...

Hydrosphere
Snow/Ice · Surface Water · Water Quality · more...

Land Surface
Erosion/Sedimentation · Land Use/Land Cover · Topography · more...

Oceans
Coastal Processes · Ocean Circulation · Sea Ice · more...

Paleoclimate
Ice Core Records · Land Records · Ocean/Lake Records

Radiance Or Imagery
Infrared Wavelengths · Radar · Visible Wavelengths · more...


Solar Physics
Solar Activity · Solar Energetic Particles

Solid Earth
Seismology · Tectonics · Volcanoes · more...

Sun-earth Interactions
Ionosphere/Magnetosphere Particles · Solar Activity

7135 Records · 33889 Images · 205.5GB File Size

[NASA Privacy Statement, Disclaimer, and Accessibility Certification](#)
[Contact NASA](#)
[Contact Visible Earth](#)

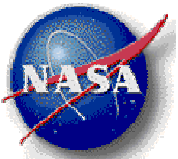


Webmaster: Dan Singhal
Project Manager: David Herring
NASA Official: Michael King
Last Updated: September 13 2005

2/14/2008

NCCS/SIVO Open House

41



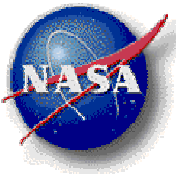
NASA's Earth Observatory



The screenshot shows the NASA Earth Observatory website interface. At the top, it says "earth observatory" with the NASA logo. Below are navigation tabs: DATA & IMAGES, FEATURES, NEWS, REFERENCE, MISSIONS, and EXPERIMENTS. The main content area includes "TODAY'S IMAGE" featuring Mount Etna, Sicily, with a "more images" link. "BREAKING NEWS" includes "Ancient Arctic Water Cycles Are Red Flags to Future Global Warming" and "Greenland's Ice Loss Accelerating Rapidly, Gravity-Measuring Satellites Reveal". "CURRENT STORIES" features "natural hazards", "Beating the Heat in the World's Big Cities", "DEFYING DRY", "Paleoclimatology: Explaining the Evidence", "EARTH'S BIG HEAT BUCKET", "FOREST on the THRESHOLD", and "Lake Victoria's Falling Waters". At the bottom, there is a "VISIBLE EARTH" section with a "BLUE MARBLE next generation" logo and icons for ATMOSPHERE, OCEANS, LAND, ENERGY, and LIFE. Navigation links include "SITE MAP", "GLOSSARY", "ASK A SCIENTIST", and "SEARCH". A "SUBSCRIBE TO THE EARTH OBSERVATORY" button is also present.

<http://earthobservatory.nasa.gov>

- Interactive Web-based magazine
 - First published April 29, 1999
- Recipient of numerous awards
 - Webby People's Voice Award ('06)
 - NASA Group Achievement Award ('05)
 - Webby Award in Education ('03)
 - Webby People's Voice Award ('03)
 - Webby People's Voice Award ('02)
 - Selected "50 Best of the Web" by *Scientific American* ('02)
 - NASA Group Achievement Award ('01)
 - GSFC Public Service Achievement Award ('01)
 - Selected "50 Best of the Web" by *Popular Science* ('00)



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

*Cluster Upgrade
Data Sharing Services*

*Dan Duffy
Harper Pryor*

About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio
ESD Education & Public Outreach*

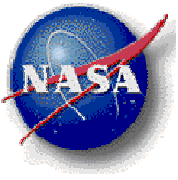
*Tom Clune
Horace Mitchell
David Herring*

*Questions / Comments
Tour of NCCS Facility*

*Phil Webster & Mike Seablom
NCCS Staff*



-
- Questions?
 - Comments?



Agenda



Welcome & Introduction

Phil Webster/NCCS, Mike Seablom/SIVO

About the NCCS

*Cluster Upgrade
Data Sharing Services*

*Dan Duffy
Harper Pryor*

About SIVO

*Advanced Software Technology Group
Scientific Visualization Studio
ESD Education & Public Outreach*

*Tom Clune
Horace Mitchell
David Herring*

Questions / Comments

Phil Webster & Mike Seablom

Tour of NCCS Facility

NCCS Staff



NCCS Facility



- Explore
- DICE
- Data Portal
- Discover
- Archive

