NCCS System Environment

COMPUTE

"Discover" Cluster

156 TF Peak, 14,848 cores, 34.8 TB main memory, InfiniBand interconnect

Base Unit:
- 128 nodes 3.2 GHz Xeon Dempsey (Dual Core)

SCU1 and SCU2:
- 512 nodes 2.6 GHz Xeon Woodcrest (Dual Core)

SCU3 and SCU4:
- 512 nodes 2.5 GHz Xeon Harpertown (Quad Core)

SCU5 and SCU6:
- 512 nodes 2.8 GHz Xeon Nehalem (Quad Core)

STORAGE

Mass Storage Archive

SGI Front-End
- DMF managed
- SGI Altix BX2
- 64 CPUs
- 128 GB main memory

StorageTek
- 16.5 PB capacity
- T10K, 9940 tape drives
- 9310, SL8500 tape libraries

Shared Storage

- 3.1 PB
- GPFS managed
- nobackup/scratch filesystems

USER INTERFACE

Analysis & Visualization

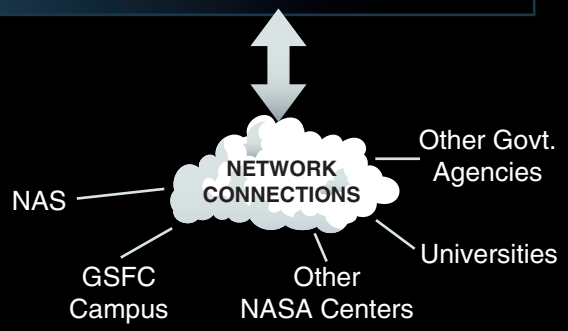
Dali: 128 cores, 2 TB RAM
Visor: 16 nodes, NVIDIA GPUs

Software Tools
- ESG/CDAT, IDL, ParaView
- Matlab, GrADS, ferret

Data Portal

HP Blade Server
- 128 CPUs
- 128 GB main memory
- 100 TB network storage (GPFS)
- NFS served to compute hosts

Software Tools
- IDL, Matlab, GrADS
- ESG Data Node
- Web services
- scp, ftp, bbftp





For More Information:

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Computational and Information Sciences and Technology Office
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National Aeronautics and Space Administration

High Performance Computing at Goddard Space Flight Center



NASA Center for Computational Sciences

www.nasa.gov

NCCS

Who We Are

The NASA Center for Computational Sciences (NCCS), located at NASA Goddard Space Flight Center, is a High End Computing (HEC) facility that provides a range of supercomputing and data services to scientists throughout NASA's Science Mission Directorate (SMD). The NCCS is part of the NASA HEC Program, together with its sister facility, the NASA Advanced Supercomputing (NAS) facility located at NASA Ames Research Center.

NCCS is funded by the SMD. Scientists request supercomputing resources from NASA HQ as part of the scientific proposal process via programs such as ROSES, MAP, NEWS, AURA, etc. Based on the specific needs of each science project, SMD allocates NCCS and/or NAS hours depending on the types of computing services required.

Our User Community

NCCS supports modeling and analysis activities for SMD users in Earth, space, and solar research including:

- ***Atmospheric modeling*** for climate and weather research
- ***Ocean modeling*** for climate, chemistry, and biology
- ***Land surface modeling*** for agriculture, land use, and water resource management
- ***Space and solar modeling*** for fundamental physics and astronomy, space weather, and gravitational wave studies
- ***Coupled models*** and ***systems of models*** in support of collaborative science efforts
- ***Observing system studies*** to enhance the use and design of space instruments

NCCS Support Services

Computing

- Multiple large-scale high performance clusters
- Tools for job scheduling & monitoring
- Portal to National Leadership Class System at NASA/ARC

Data Archival & Stewardship

- Large-capacity storage
- Tools to manage and protect data
- Data migration support

Code Development

- Environment for code development & test
- Code repository for collaboration
- Code porting & optimization support
- Earth System Modeling Framework (ESMF) assistance

Networks

- Internal NCCS high-speed interconnects for HEC components
- Center high-bandwidth access to NCCS for GSFC-based users
- Multi-gigabit network supports on-demand data transfers between NCCS and NAS

Analysis & Visualization

- Interactive analysis environment
- Software tools for image display
- Easy access to data archive
- Specialized data visualization support

Data Sharing

- Capability to share data & results
- Supports community based development
- Facilitates data distribution and publishing

User Services

- Help Desk
- Account support
- User teleconferences
- Training & tutorials

