

## NOAA Operational Model Archive and Distribution System NOMADS

### Overview

To address a growing need for remote access to high volume numerical weather prediction and global climate models and data, the National Climatic Data Center (NCDC), along with the National Centers for Environmental Prediction (NCEP) and the Geophysical Fluid Dynamics Laboratory (GFDL), initiated the NOAA Operational Model Archive and Distribution System (NOMADS) project. NOMADS addresses model data access needs as outlined in the U.S. Weather Research Program (USWRP) [Implementation Plan for Research in Quantitative Precipitation Forecasting and Data Assimilation](#) to "redeem practical value of research findings and facilitate their transfer into operations." The NOMADS framework was also developed to facilitate climate model and observational data inter-comparison issues as discussed in documents such as the Intergovernmental Panel on Climate Change (IPCC 1990, 1995, 2001) and the U.S. National Assessment (2000). NOMADS is being developed as "A *Unified Climate and Weather Archive*" so that users can make decisions about their specific needs on time scales from days (weather), to months (El Nino), to decades (global warming).

### The Project

NOMADS is a network of data servers using established and emerging technologies, the format neutral data transport protocol called OPeNDAP to access and integrate model and other data stored in geographically distributed repositories in heterogeneous formats. NOMADS enables the sharing and inter-comparing of model results and is a major collaborative effort, spanning multiple Government agencies and academic institutions. The data available under the NOMADS framework include model input and Numerical Weather Prediction (NWP) gridded output from NCEP, and Global Climate Models (GCM) and simulations from GFDL and other leading institutions from around the world. The goals of NOMADS are to:

- provide access to NWP and GCM's model output and provide the observational and model data assimilation products for Regional model initialization and forecast verification,
- promote improvements to operational weather forecasts by allowing more users to interact with model data,
- develop linkages between the research and operational modeling communities and fosters collaborations between the climate and weather modeling communities,
- promote product development and collaborations within the geo-science communities (ocean, weather, and climate) and foster inter-disciplinary research to study multiple earth systems using collections of distributed data under a sustainable system architecture.

### The Users

Today NOMADS servers at NCEP and NCDC provide roughly 1 million individual downloads per month serving over 5TB of model data. All sectors of the community are using NOMADS including foreign governments that use NOMADS services for their operational forecasting capabilities. Further, NOMADS is the primary NOAA distribution point for the new NCEP North American Regional Reanalysis (NARR) and soon the Coupled Climate Model from NCEP. Observational data is also available under the NOMADS construct providing format neutral access and inter-operability across these data types.

### The Future

Both researchers and policy-makers alike now expect NOAA's national data assets to be easily accessible and interoperable with each other, regardless of their physical location. Under NOMADS and its collaborators, NOMADS has already extended its capabilities into a pilot Radar and Satellite NOMADS server. For more information see the NCDC NOMADS server at: <http://nomads.ncdc.noaa.gov/data-access.html>. Glenn K. Rutledge, NOMADS PI ([Glenn.Rutledge@noaa.gov](mailto:Glenn.Rutledge@noaa.gov))

A graphic follows fyi.



**NOMADS**  
The NOAA Operational Model  
Archive and Distribution System

# The NOMADS Philosophy

## Multiple paths to format independent data access:

