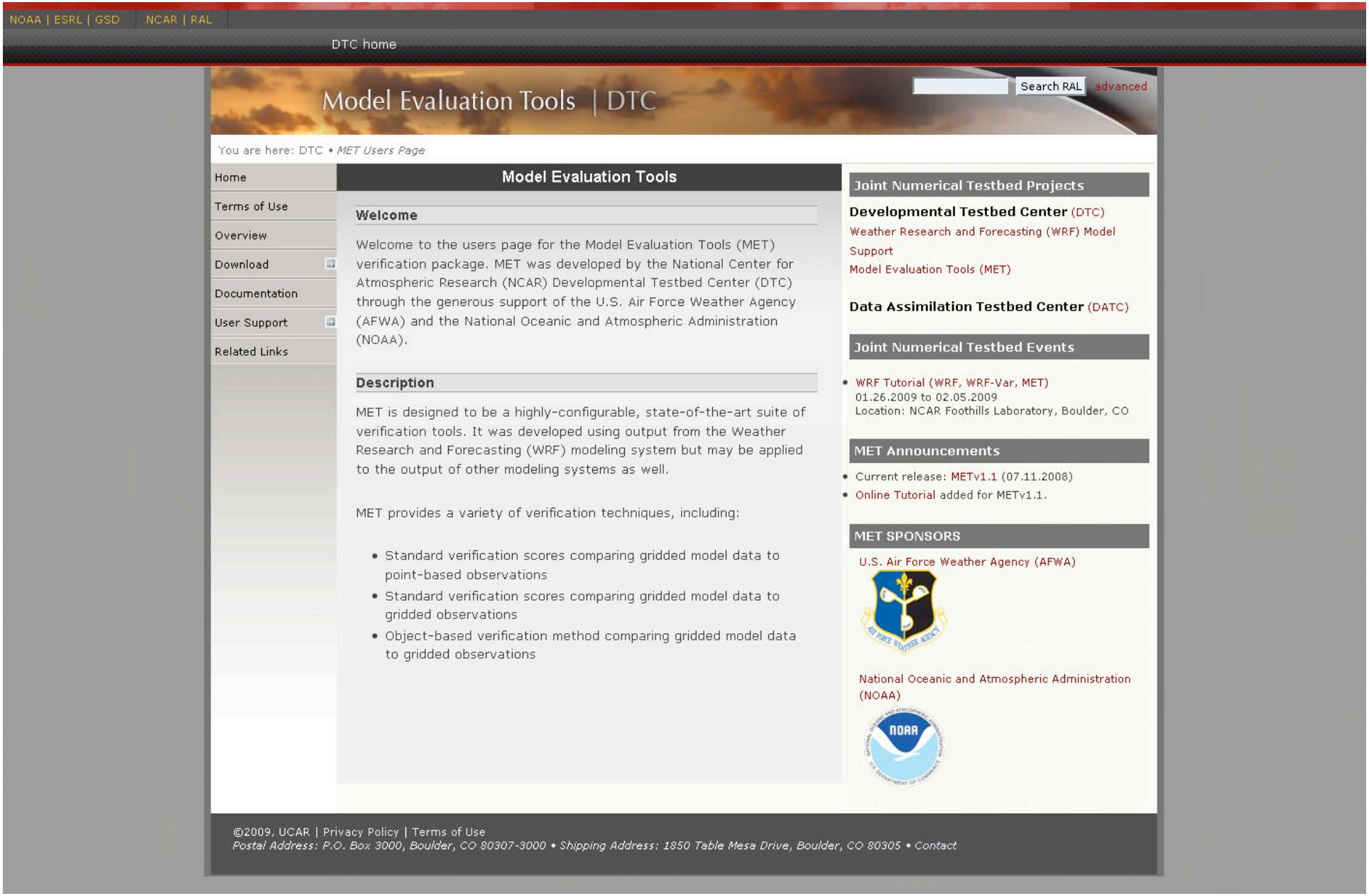
Technical Details

John Halley Gotway

Downloading MET

- MET distributed as a tarball to be downloaded and compiled locally.
  - METv1.1 released on July 11, 2008.
  - METv2.0 scheduled for February 2009.
  - METv2.0 BETA pre-installed on tutorial machines.
  - Register and download: **www.dtcenter.org/met/users**
- Language:
  - Written primarily in C++ with calls to a Fortran library
- Supported Platforms and Compilers:
  - Linux with GNU compilers
  - Linux with Portland Group (PGI) compilers
  - Linux with Intel compilers
  - IBM machines with IBM compilers

www.dtcenter.org/met/users



Dependencies

- REQUIRED:
  - GNU Make Utility
  - C++ and Fortran compilers (GNU, PGI, Intel, or IBM)
  - NetCDF version 3 Library
  - BUFRLIB Library
  - GNU Scientific Library (GSL)
  - F2C Library (f2c or g2c, for some compilers)
- RECOMMENDED:
  - WRF Post-Processor
  - COPYGB (included with WRF-Post)
  - R statistics and graphics package
  - *CWORDSH (not needed for v2.0)*

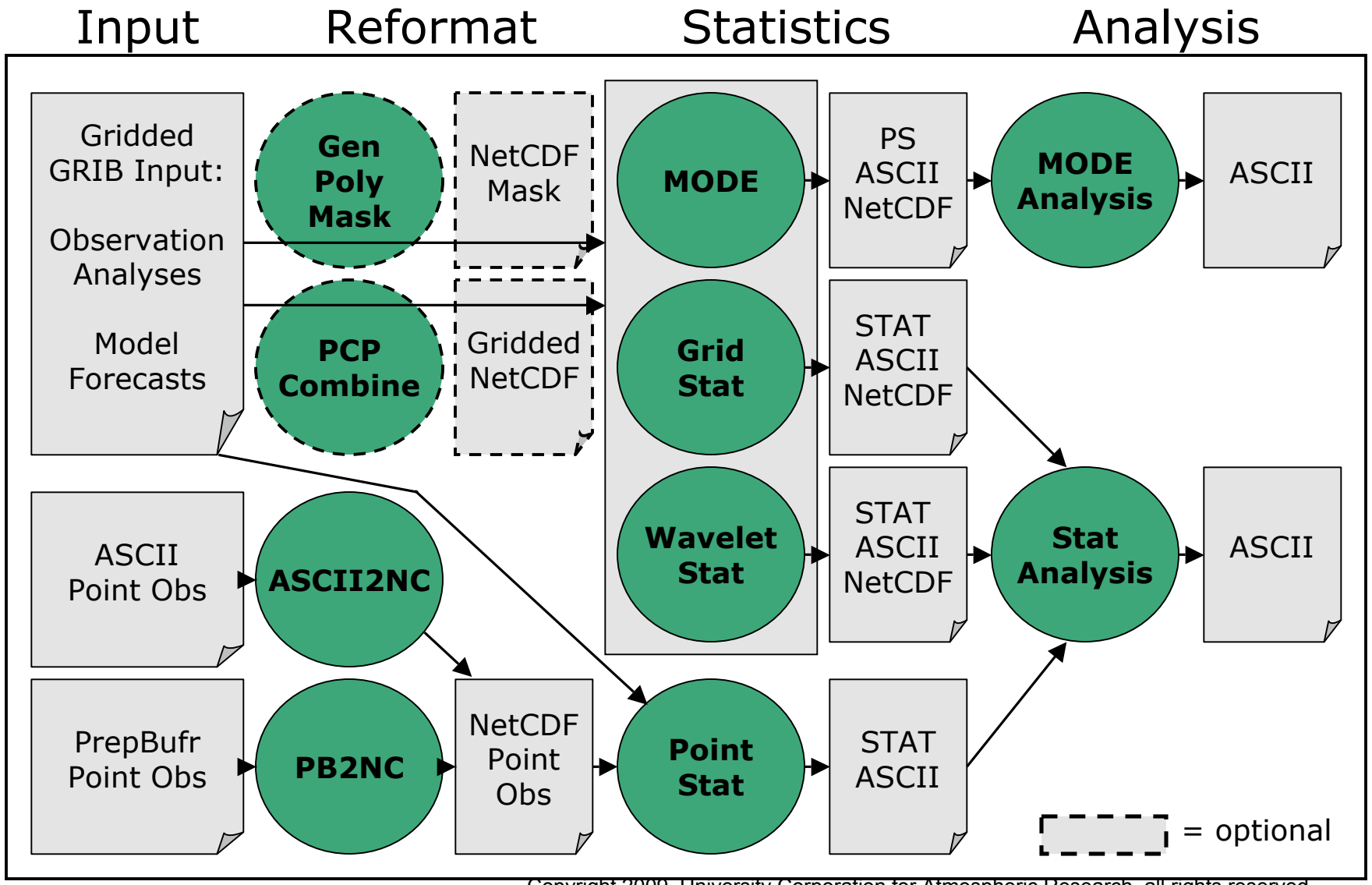
Directory Structure

File or Directory	Contents
README	Installation instructions and release notes.
Makefile_gnu (pgi, intel, ibm)	Top-level Makefile to be configured prior to building MET.
lib/	Source code for internal MET libraries.
src/	Source code for the MET applications.
doc/	MET User's Guide.
bin/	Built MET executables.
scripts/	Test scripts to be run after building MET.
data/	Sample data used by the test scripts.
out/	Output generated by the test scripts.

Building MET

- Steps for building MET:
  - Build the required libraries with the same family of compilers to be used with MET.
  - Select the appropriate Makefile.
    - GNU, PGI, or IBM
  - Configure the Makefile.
    - C++ and Fortran compilers
    - Paths for NetCDF, BUFRLIB, GSL, and F2C libraries
  - Execute the GNU Make utility to build all of the MET utilities.
  - Run the test script and check for runtime errors.
    - Runs each of the MET tools at least once.
    - Uses sample data distributed with the tarball.

MET v2.0 Flowchart



Graphics

- Limited graphics incorporated into MET.
  - Generated using internal PostScript library.
- Several options for plotting MET statistical output - including R, NCL, IDL, GNUPlot, and many others.
- Users are encouraged to submit their own plotting and/or analysis scripts using any tool for posting to the MET website.

R Statistics and Graphics

- The R Project for Statistical Computing (www.r-project.org)
  - Powerful statistical analysis and plotting tools.
  - Freely available and well supported for Linux/Windows/Mac.
- Sample R plotting and analysis scripts posted on the MET website.
- Recent praise for R in the technology section of the NY Times:
  - **Data Analysts Captivated by R's Power**

Configuration Files

- Set of command line tools controlled using command line options and ASCII configuration files.
  - Well commented and documented in MET User's Guide.
  - Easy to modify.
  - Distributed with the tarball.
- Configuration files control things such as:
  - Fields/levels to be verified.
  - Thresholds to be applied.
  - Interpolation methods to be used.
  - Verification methods to be applied.
  - Regions over which to accumulate statistics.