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NCEP-DOE Reanalysis 2: Gaussian Grid

Other Grid Types: [NCEP Reanalysis2 Main Page](#) | [Pressure Level Data](#) | [Surface Data](#) | [Gaussian Grid Data](#) | [Spectral Coefficients Data](#)

Brief Description:

- NCEP-DOE Reanalysis 2 is an improved version of the NCEP Reanalysis I model that fixed errors and updated parameterizations of physical processes

Temporal Coverage:

- 4-times and monthly values for 1979/01/01 to 2012/06/30 .

Spatial Coverage:

- Global T62 Gaussian grid (192x94).
- 88.542N-88.542S, 0E-358.125E

Levels:

- Surface or near the surface, nominal top of atmosphere(NTAT), entire atmosphere as a column, cloud pressure levels

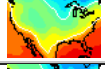
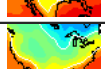
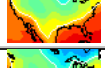
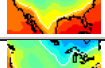

Update Schedule:

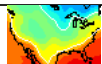
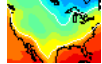
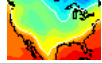
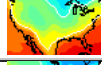
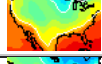

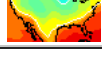
- Updated adding the previous year's data occur during the first quarter of the next.

Download/Plot Data:

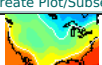
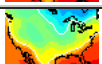
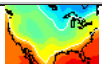
These variables are forecasts valid 6 hours after the reference time.

Variable	Statistic	Level	Download File	Create Plot/Subset
Air Temperature	4-times Daily Values	2m	See list	
Air Temperature	Daily Mean	2m	See list	
Air Temperature	Monthly Mean	2m	air.2m.mon.mean.nc	
Ice concentration	4-times Daily Values	Surface	See list	
Ice concentration	Daily Mean	Surface	See list	
Ice concentration	Monthly Mean	Surface	icec.sfc.mon.mean.nc	
Pressure	4-times Daily Values	Surface	See list	
Pressure	Daily Mean	Surface	See list	
Pressure	Monthly Mean	Surface	pres.sfc.mon.mean.nc	

Specific humidity	4-times Daily Values	2m	See list	
Specific humidity	Daily Mean	2m	See list	
Specific humidity	Monthly Mean	2m	shum.2m.mon.mean.nc	
Maximum temperature	4-times Daily Values	2m	See list	
Maximum temperature	Daily Maximum	2m	See list	
Maximum temperature	Monthly Mean of Daily Maxima	2m	tmax.2m.mon.mean.nc	
Minimum temperature	4-times Daily Values	2m	See list	
Minimum temperature	Daily Minimum	2m	See list	
Minimum temperature	Monthly Mean of Daily Minima	2m	tmin.2m.mon.mean.nc	
Skin Temperature	4-times Daily Values	Surface	See list	
Skin Temperature	Daily Mean	Surface	See list	
Skin Temperature	Monthly Mean	Surface	skt.sfc.mon.mean.nc	
Soil moisture (0-10cm)	Daily Mean	0-10cm	See list	
Soil moisture (0-10cm)	Daily Mean	0-10cm	See list	
Soil moisture (0-10cm)	Monthly Mean	0-10cm	soilw.0-10cm.mon.mean.nc	
Soil moisture (10-200cm)	4-times Daily Values	10-200cm	See list	
Soil moisture (10-200cm)	Daily Mean	10-200cm	See list	
Soil moisture (10-200cm)	Monthly Mean	10-200cm	soilw.10-200cm	
Temperature of 0-10cm layer	4-times Daily Values	0-10cm	See list	
Temperature of 0-10cm layer	Daily Mean	0-10cm	See list	
Temperature of 0-10cm layer	Monthly Mean	0-10cm	tmp.0-10cm.mon.mean.nc	
Temperature of 10-200cm layer	4-times Daily Values	10-200cm	See list	
Temperature of 10-200cm layer	Daily Mean	10-200cm	See list	
Temperature of 10-200cm layer	Monthly Mean	10-200cm	tmp.10-200cm.mon.mean.nc	
U-wind	4-times Daily Values	10m	See list	
U-wind	Daily Mean	10m	See list	

U-wind	Monthly Mean	10m	uwnd.10m.mon.mean.nc	
V-wind	4-times Daily Values	10m	See list	
V-wind	Daily Mean	10m	See list	
V-wind	Monthly Mean	10m	vwnd.10m.mon.mean.nc	
Water equiv. of snow depth	4-times Daily Values	Surface	See list	
Water equiv. of snow depth	Daily Mean	Surface	See list	
Water equiv. of snow depth	Monthly Mean	Surface	weasd.sfc.mon.mean.nc	

These variables are accumulations, but the monthly mean averages dailies.

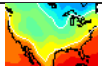
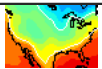
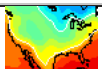
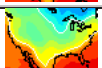
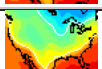
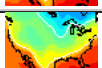
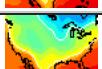


Variable	Statistic	Level	Download File	Create Plot/Subset
Water Runoff	6-hour Accumulation	Surface	See list	
Water Runoff	Daily Accumulation	Surface	See list	
Water Runoff	Monthly Mean	Surface	runof.sfc.mon.mean.nc	

These variables are 6 hour averages starting at the reference time.

Variable	Statistic	Level	Download File	Create Plot/Subset
Convective precipitation rate	4-times Daily Values	Surface	See list	
Convective precipitation rate	Daily Mean	Surface	See list	
Convective precipitation rate	Monthly Mean	Surface	cprat.sfc.mon.mean.nc	
Downward longwave radiation flux	4-times Daily Values	Surface	See list	
Downward longwave radiation flux	Daily Mean	Surface	See list	
Downward longwave radiation flux	Monthly Mean	Surface	dlwrf.sfc.mon.mean.nc	
Downward solar radiation flux	4-times Daily Values	Surface	See list	
Downward solar radiation flux	Daily Mean	Surface	See list	
Downward solar radiation flux	Monthly Mean	Surface	dswrf.sfc.mon.mean.nc	
Downward solar radiation flux	4-times Daily Values	NTAT	See list	
Downward solar radiation flux	Daily Mean	NTAT	See list	
Downward solar radiation flux	Monthly Mean	NTAT	dswrf.ntat.mon.mean.nc	

Ground heat flux	4-times Daily Values	Surface	See list	
Ground heat flux	Daily Mean	Surface	See list	
Ground heat flux	Monthly Mean	Surface	gflux.sfc.mon.mean.nc	
Latent heat net flux	4-times Daily Values	Surface	See list	
Latent heat net flux	Daily Mean	Surface	See list	
Latent heat net flux	Monthly Mean	Surface	lhtfl.sfc.mon.mean.nc	
Potential evaporation rate	4-times Daily Values	Surface	See list	
Potential evaporation rate	Daily Mean	Surface	See list	
Potential evaporation rate	Monthly Mean	Surface	pevpr.sfc.mon.mean.nc	
Precipitation rate	4-times Daily Values	Surface	See list	
Precipitation rate	Daily Mean	Surface	See list	
Precipitation rate	Monthly Mean	Surface	prate.sfc.mon.mean.nc	
Pressure at high cloud bottom	4-times Daily Values	High Cloud Bottom	See list	
Pressure at high cloud bottom	Daily Mean	High Cloud Bottom	See list	
Pressure at high cloud bottom	Monthly Mean	High Cloud Bottom	pres.hcb.mon.mean.nc	
Pressure at high cloud top	4-times Daily Values	High Cloud Top	See list	
Pressure at high cloud top	Daily Mean	High Cloud Top	See list	
Pressure at high cloud top	Monthly Mean	High Cloud Top	pres.hct.mon.mean.nc	
Pressure at low cloud bottom	4-times Daily Values	Low Cloud Bottom	See list	
Pressure at low cloud bottom	Daily Mean	Low Cloud Bottom	See list	
Pressure at low cloud bottom	Monthly Mean	Low Cloud Bottom	pres.lcb.mon.mean.nc	
Pressure at low cloud top	4-times Daily Values	low cloud top	See list	
Pressure at low cloud top	Daily Mean	low cloud top	See list	
Pressure at low cloud top	Monthly Mean	low cloud top	pres.lct.mon.mean.nc	
Pressure at middle cloud bottom	4-times Daily Values	middle cloud bottom	See list	
Pressure at middle cloud bottom	Daily Mean	middle cloud bottom	See list	

Pressure at middle cloud bottom	Monthly Mean	middle cloud bottom	pres.mcb.mon.mean.nc	
Pressure at middle cloud top	4-times Daily Values	middle cloud top	See list	
Pressure at middle cloud top	Daily Mean	middle cloud top	See list	
Pressure at middle cloud top	Monthly Mean	middle cloud top	pres.mct.mon.mean.nc	
Sensible heat net flux	4-times Daily Values	Surface	See list	
Sensible heat net flux	Daily Mean	Surface	See list	
Sensible heat net flux	Monthly Mean	Surface	shtfl.sfc.mon.mean.nc	
Total cloud cover	4-times Daily Values	Surface	See list	
Total cloud cove	Daily Mean	Surface	See list	
Total cloud cove	Monthly Mean	Surface	tcdc.eatm.mon.mean.nc	
Momentum flux (zonal)	4-times Daily Values	Surface	See list	
Momentum flux (zonal)	Daily Mean	Surface	See list	
Momentum flux (zonal)	Monthly Mean	Surface	ufix.sfc.mon.mean.nc	
Zonal gravity wave stress	4-times Daily Values	Surface	See list	
Zonal gravity wave stress	Daily Mean	Surface	See list	
Zonal gravity wave stress	Monthly Mean	Surface	ugwd.sfc.mon.mean.nc	
Upward longwave radiation flux	4-times Daily Values	Surface	See list	
Upward longwave radiation flux	Daily Mean	Surface	See list	
Upward longwave radiation flux	Monthly Mean	Surface	ulwrf.sfc.mon.mean.nc	
Upward longwave radiation flux	4-times Daily Values	NTAT	See list	
Upward longwave radiation flux	Daily Mean	NTAT	See list	
Upward longwave radiation flux	Monthly Mean	NTAT	ulwrf.ntat.mon.mean.nc	
Upward solar radiation flux	4-times Daily Values	Surface	See list	
Upward solar radiation flux	Daily Mean	Surface	See list	
Upward solar radiation flux	Monthly Mean	Surface	uswrf.sfc.mon.mean.nc	
Upward solar radiation flux	4-times Daily Values	NTAT	See list	

Upward solar radiation flux	Daily Mean	NTAT	See list	
Upward solar radiation flux	Monthly Mean	NTAT	uswrf.ntat.mon.mean.nc	
Momentum flux (meridional)	4-times Daily Values	Surface	See list	
Momentum flux (meridional)	Daily Mean	Surface	See list	
Momentum flux (meridional)	Monthly Mean	Surface	vflx.sfc.mon.mean.nc	
Meridional gravity wave stress	4-times Daily Values	Surface	See list	
Meridional gravity wave stress	Daily Mean	Surface	See list	
Meridional gravity wave stress	Monthly Mean	Surface	vgwd.sfc.mon.mean.nc	
Land-sea mask	time invariant	Surface	See list	

Usage Restrictions:

- None

Detailed Description:

- The NCEP-DOE Reanalysis 2 project is using a state-of-the-art analysis/forecast system to perform data assimilation using past data from 1979 through the previous year. A large subset of this data is available from PSD in its original 4 times daily format and as daily averages.

Caveats:

- **Bad MSLP data in 2004 NetCDF files:** The MSLP data in the NetCDF files representing 2004 values that were added to our archives in early April, 2004, were done incorrectly. The source data from NCEP were fine; it was a processing error here. This was corrected late on 2005/06/23. If you have downloaded 2004 MSLP data from us at any of the three temporal frequencies, you are strongly urged to reacquire the data.

Bad skin temperatures in 1982.

The skin temperature (variable name skt) for 1982 had bad data. These data were updated late on 2003/05/14 based on new GRIB file from NCEP. All three temporal frequencies were affected and thus updated.

- * = no year in file name

Note:

§ The skt.sfc files contain skin temperature as described in the March, 1996 BAMS article. As such, over land and sea ice, the temperature is a prognostic variable. Over open water, the skin temperature is fixed at its initial value; i.e., the Reynolds SST as seen by the model. The Reynolds' SST analyses were done weekly and the reconstructed SST done monthly. The analyses were linearly interpolated to daily values which were used for all four analyses.

The following variables are **six hour forecast** values valid six hours after the reference time: skt.sfc, air.2m, icec.sfc, pres.sfc, runof.sfc, shum.2m, tmax.2m, tmin.2m, tmp.300cm, uwnd.10m, vwnd.10m, weasd.sfc

The following variables are **six hour averages** for the period of the reference time plus six hours: cprat.sfc, dlwrf.sfc, dswrf.sfc, dswrf.ntat, gflux.sfc, lhtfl.sfc, pevpr.sfc, prate.sfc, pres.{hcb,hct,lcb,lct,mcb,mct}, shtfl.sfc, soilw.0-10cm, soilw.10-200cm, tcde.eatm, tmp.0-10cm, tmp.10-200cm, uflx.sfc, ugwd.sfc, ulwrf.sfc, ulwrf.ntat, uswrf.sfc, uswrf.ntat, vflx.sfc, vgwd.sfc

And, of course, land.sfc is time-invariant.

Related File Naming & Structure Information:

File Names:

- var.time.stat.nc (In directory: /Datasets/udel.airt.precip/)

Archive parameters: File names are composed of variable abbreviations, level, and year: (variable).(level).gauss.(year).nc

These variables (air.2m - weasd) are forecasts valid 6 hours after the reference time.

Dataset Format and Size:

- PSD standard NetCDF 311 Mbyte file for each monthly file (packed).
- PSD standard NetCDF 30 Mbyte file for each long term mean file (packed).
- **By anonymous FTP:**
 - 4x daily data are available from ftp.cdc.noaa.gov in /Datasets/ncep.reanalysis2/gaussian_grid/.
 - **The 4x data files are quite large, so you may only be able to download them if you have a fast network connection.**
 - Daily averages are available from ftp.cdc.noaa.gov in /Datasets/ncep.reanalysis2.dailyavgs/gaussian_grid/.
 - The data are divided by variable and year into separate files
 - There are 1,796files currently
 - Files are 5 to 52 Mbytes per variable per year
 - Current total of 45 Gbytes for 4xDaily and 11 Gbytes for daily averages

Missing Data:

- None.

Citation:

- **Please note:** If you acquire NCEP/DOE 2 Reanalysis data products from PSD, we ask that you acknowledge us in your use of the data. This may be done by including text such as *NCEP/DOE 2 Reanalysis data provided by the NOAA/OAR/ESRL PSD, Boulder, Colorado, USA, from their Web site at <http://www.esrl.noaa.gov/psd/>* in any documents or publications using these data. We would also appreciate receiving a copy of the relevant publications. This will help PSD to justify keeping the NCEP/DOE 2 Reanalysis data set freely available online in the future. Thank you!

References:

- <http://www.cpc.ncep.noaa.gov/products/wesley/reanalysis2/kana/reanl2-1.htm>
- NCEP-DEO AMIP-II Reanalysis (R-2): M. Kanamitsu, W. Ebisuzaki, J. Woollen, S-K Yang, J.J. Hnilo, M. Fiorino, and G. L. Potter. 1631-1643, Nov 2002, Bulletin of the American Meteorological Society.

Original Source:

- NOAA National Centers for Environmental Predictions

Contact:

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