

Datasets and Services available from the Research Data Archive (RDA) at NCAR

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<https://rda.ucar.edu>

WRFDA Tutorial

July 26, 2017

Road Map

- Overview of the RDA
- DA-related datasets overview
- Dataset access options
- Datasets in more detail
- RDA user support

Highlights

- Overview of the RDA
- DA-related datasets overview
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- RDA user support

Overview of the RDA



- **NCAR's Research Data Archive**
 - Established in the 1960s
- **Purpose**
 - Support climate & weather research at NCAR and UCAR universities with reference datasets
- **Collections**
 - Ocean & atmospheric observations, analyses, reanalyses, operational NWP products
 - 600+ datasets, 8M files, 1.5 PB
 - 70+ datasets growing daily-monthly
- **Free and open access**
- **Worldwide usage**
- **Science educated staff**
- **One of many data assets at NCAR**



Highlights

- Overview of the RDA
- **DA-related datasets overview**
- Dataset access options
- Datasets in more detail
- RDA user support

DA Related Datasets at rda.ucar.edu

- NCEP Climate Forecast System, Full Ingest Data 1978-2014 (ds099.0)
- NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 – Continuing (ds337.0)
- NCEP ADP Global Upper Air Observational Weather Data, October 1999 – continuing (ds351.0)
- NCEP ADP Global Surface Observational Weather Data, October 1999 – continuing (ds461.0)
- NCEP GDAS Satellite Data April 2004 – continuing (ds735.0)

DA Related Datasets

- **Obs data that can be used for verification**
 - NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 – Continuing (ds337.0)
 - Data can be converted to DTC Model Evaluation Tool (MET) compliant NetCDF format through the “Get a Subset” web interface

DA Related Datasets

- Reanalysis data produced by data assimilation

Title	Spatial Coverage	Temporal Coverage
NCEP/NCAR (NNR)	Global (T62, 28 levels)	1948-2003
NCEP Climate Forecast System (CFSR)	Global (T382, 64 levels)	1979 - present
NCEP North American Regional Reanalysis (NARR)	North American (32km, 45 levels)	1979 - present
NCAR Global Assimilation	<ul style="list-style-type: none">• 24 Reanalysis dataset collections• 400 TB of disk accessible data	
Arctic System		
NOAA/CIRES Twentieth Century Version 2c	Global (T62, 28 levels)	1850 - 2011
Japanese 25 Year (JRA-25)	Global (T106, 40 levels)	1979 - 2004
Japanese 55 Year (JRA-55)	Global (T319, 60 levels)	1958 - 2013
ECWMF-40 (ERA-40)	Global (T159, 60 levels)	1957 - 2002
ECMWF-Interim (ERA-Interim)	Global (T255, 60 levels)	1979 - 2015
ECMWF 20 th Century (ERA-20C)	Global (T159, 91 levels)	1900 - 2010

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Data Access Options



NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 - Continuing

ds337.0 ☆

For assistance, contact [Thomas Cram](#) (303-497-1217).

Description

Data Access

Documentation

Software

Help with this page: [RDA dataset description page video tour](#)

Abstract:

NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format) are composed of a global set of surface and upper air reports operationally collected by the National Centers for Environmental Prediction (NCEP). These include land surface, marine surface, radiosonde, pibal and aircraft reports from the Global Telecommunications System (GTS), profiler and US radar derived winds, SSM/I oceanic winds and TCW retrievals, and satellite wind data from the National Environmental Satellite Data and Information Service (NESDIS). The reports can include pressure, geopotential height, temperature, dew point temperature, wind direction and speed. Report time intervals range from hourly to 12 hourly.

These data are the output from the PREPBUFR processing performed at NCEP, which is the final step in preparing the majority of conventional observational data for assimilation into the various NCEP analyses including the North American Model (NAM) and NAM Data Assimilation System (NDAS) unified grid-point statistical interpolation (GSI) analysis (the "NAM" and "NDAS" networks), the Global Forecast System (GFS) and Global Data Assimilation System (GDAS) unified grid-point statistical interpolation (GSI) analysis (the "GFS" and "GDAS" networks), the Rapid Refresh (RAP) unified grid-point statistical interpolation (GSI) analysis (the "RAP" network), the Real Time Mesoscale Analysis (RTMA) unified grid-point statistical interpolation (GSI) analysis (the "RTMA" network), and the Climate Data Assimilation System (CDAS) spectral statistical interpolation (SSI) analysis (the "CDAS" network).

Data Access Options



NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 - Continuing
ds337.0 ☆

For assistance, contact [Thomas Cram](#) (303-497-1217).

Description	Data Access	Documentation	Software
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Mouse over the table headings for detailed descriptions

Data Description		Data File Downloads		Customizable Data Requests	NCAR-Only Access	
		Web Server Holdings	Globus Transfer Service (GridFTP)	Subsetting	Central File System (GLADE) Holdings	Tape Archive (HPSS) Holdings
Union of Available Products		Web File Listing	Request Globus Transfer		GLADE File Listing	HPSS File Listing
PRODUCTS	Unrestricted GDAS PREPBUFR data (daily tar files)	Web File Listing		Get a Subset	GLADE File Listing	HPSS File Listing
	Unrestricted GDAS PREPBUFR data, including ACARS/AMDAR data	Web File Listing		Get a Subset	GLADE File Listing	HPSS File Listing
	Unrestricted GDAS PREPBUFR Data (synoptic PREPBUFR files)				GLADE File Listing	

Data Access Options

- Direct File Transfer
 - HTTP
 - GridFTP (Globus Online)
- Subset/Format conversion requests (select datasets)
 - Web interface
 - Download via Globus or scripts
- CISL HPC account –Direct file access from disk
 - U.S. University users
 - <https://www2.cisl.ucar.edu/docs/accounts>

RDA User Services Data Transfer Options Globus Advantages



- **Reliable, Secure, High-performance** file transfer
- “Fire and Forget”
- Automatic fault recovery
- Powerful GUI, APIs and CLI
- Integrated with RDA file lists
- Authenticate with RDA identity
- Globus.org



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NCEP Climate Forecast System (CFS), Full Ingest Data (ds099.0) 1978-2014

- <https://rda.ucar.edu/datasets/ds099.0>
- Gridded analyses: T, Precip Rate, Snow (Cover, Depth), Ice Concentration, Land Cover
- Obs data ingested into CFS: satellite, surface, upper air
- Entire or subset BUFR files
 - All times
 - Organized in 6-hourly files by type

NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 – Continuing (ds337.0)

- <https://rda.ucar.edu/datasets/ds337.0>
- Can be used for DA and verification
- T, TD, P, GeoZ, winds
- Surface data: land, marine
- Upper air: radiosonde, pibal, aircraft
- Translation into NetCDF for use in Model Evaluation Tool (MET) or ASCII
- Entire files or subset

NCEP ADP Global Upper Air Observational Weather Data, October 1999 – continuing (ds351.0)

- <https://rda.ucar.edu/datasets/ds351.0>
- T, TD, P, GeoZ, Winds
- Upper Air: raob, pibal, dropsonde, aircraft, satellite cloud-motion winds
- Entire files or subset in BUFR or ASCII
 - All times, variable frequency
 - Daily or sonde-only data files
- Entire global daily LITTLE_R translations

NCEP ADP Global Surface Observational Weather Data, October 1999 – continuing (ds461.0)

- <https://rda.ucar.edu/datasets/ds461.0>
- T, TD, P, GeoZ, Winds, Precip, Visibility, Cloud & Wave Info
- Surface: fixed & mobile land and buoys, ships
- Entire files or subset in BUFR or ASCII
 - All times, variable frequency
 - Daily data files
- Entire global daily LITTLE_R translations

NCEP GDAS Satellite Data April 2004 – continuing (ds735.0)

- <https://rda.ucar.edu/datasets/ds735.0>
- Satellite-related data ingested into GDAS
- Radiances, Tb, Refractivity (GPSRO & GPSIPW), Surface Winds, WV, TPW, P, GeoZ, O3, Imagery, Cloud Frequency
- Entire BUFR files for each type
 - Organized in 6-hourly files
 - Files may contain data from multiple satellites
- Text files
 - TCVITALS, ABIAS, ABIAS_PC

Data set highlights


	CFS Analyses & Ingested Obs	ADP UA/ Surface PREPBUFR	ADP Upper Air	ADP Surface	GDAS Ingested Satellite
Dataset ID #	ds099.0	ds337.0	ds351.0	ds461.0	ds735.0
Date Range	1978-2014	1997 – con’t	1999 – con’t	1999 – con’t	2004 – con’t
Native Format	BUFR	PREPBUFR	BUFR	BUFR	BUFR
LITTLE_R translation	N/A	N/A	Daily Global File	Daily Global File	N/A
‘Get a Subset’ output options	N/A	ASCII NetCDF*	ASCII	ASCII	N/A
‘Faceted Browse’ subset	Yes** BUFR	Yes PREPBUFR	Yes BUFR	Yes BUFR	Entire File BUFR

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RDA user support: Advise user of best data set collection for research purpose

[Home](#) [Find Data](#) [Ancillary Services](#) [About/Contact](#) [Data Citation](#) [Web Services](#) [For Staff](#)

 **NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 - Continuing**
ds337.0 ☆

For assistance, contact [Thomas Cram](#) (303-497-1217).

[Description](#) [Data Access](#) [Documentation](#) [Software](#)

Help with this page: [RDA dataset description page video tour](#)

Abstract: NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format) are composed of a global set of surface and upper air reports operationally collected by the National Centers for Environmental Prediction (NCEP). These include land surface, marine surface, radiosonde, pibal and aircraft reports from the Global Telecommunications System (GTS), profiler and US radar derived winds, SSM/I oceanic winds and TCW retrievals, and satellite wind data from the National Environmental Satellite Data and Information Service (NESDIS). The reports can include pressure, geopotential height, temperature, dew point temperature, wind direction and speed. Report time intervals range from hourly to 12 hourly.

These data are the output from the PREPBUFR processing performed at NCEP, which is the final step in preparing the majority of conventional observational data for assimilation into the various NCEP analyses including the North American Model (NAM) and NAM Data Assimilation System (NDAS) unified grid-point statistical interpolation (GSI) analysis (the "NAM" and "NDAS" networks), the Global Forecast System (GFS) and Global Data Assimilation System (GDAS) unified grid-point statistical interpolation (GSI) analysis (the "GFS" and "GDAS" networks), the Rapid Refresh (RAP) unified grid-point statistical interpolation (GSI) analysis (the "RAP" network), the Real Time Mesoscale Analysis (RTMA) unified grid-point statistical interpolation (GSI) analysis (the "RTMA" network), and the Climate Data Assimilation System (CDAS) spectral statistical interpolation (SSI) analysis (the "CDAS" network).

This step involves the execution of series of programs designed to assemble observations dumped from a number of on-line decoder databases, encode information about the observational error for each data type as well the background (first guess) interpolated to each data location, perform both rudimentary multi-platform quality control and more complex platform-specific quality control, and store the output in a monolithic BUFR file, known as PREPBUFR. The background guess information is used by certain quality control programs while the observation error is used by the analysis to weigh the observations. The structure of the BUFR file is such that each PREPBUFR processing step which changes a datum (either the observation itself, or its quality marker) records the change as an "event" with a program code and a reason code. Each time an event is stored, the previous events for the datum are "pushed down" in the stack. In this way, the PREPBUFR file contains a complete history of changes to the data throughout all of the PREPBUFR processing. The most recent changes are always at the top of the stack and are thus read first by any subsequent data decoder routine. It is expected that the data at the top of the stack are of the highest quality.



RDA user support: Advise user of best data set collection for research purpose

NCAR UCAR | **ClimateDataGuide** *inform • compare • discover*

CLIMATE DATA | ANALYSIS TOOLS | MODEL EVALUATION | EXPERT CONTRIBUTORS | ABOUT | Site-wide Search >>

Data Discovery Guided by Experts >>

Search and access 174 data sets covering the Atmosphere, Ocean, Land and more. Explore climate indices, reanalyses and satellite data and understand their application to climate model metrics. This is the only data portal that combines data discovery, metadata, figures and world-class expertise on the strengths, limitations and applications of climate data. [Discover it now.](#)

See data pages with guidance from these experts:

 Ricciardulli, Lucrezia	 Malyappan, Prasanth	 Vicente-Serrano, Sergio M.	 Huang, Boyin	 Kay, Jennifer	 von Schuckmann, Karina
 Dai, Aiguo	 Keyantash, John	 Meier, Walter	 Kent, Elizabeth	 Hassler, Birgit	 Tian, Baijun

Data Set Overviews >>

Compare the attributes, strengths and limitations of multiple data sets.



Atmospheric Reanalysis: Overview & Comparison Tables



Global Temperature Reanalysis: Overview & Comparison Table



Precipitation Data Sets: Overview & Comparison table



Sea Ice Concentration data: Overview, Comparison table and graphs

Advancing Reanalysis

ABOUT | ATMOSPHERE | OCEAN | OBSERVATIONS | ACTIVITIES

Reanalyses.org Home Page

Welcome to the Reanalyses.org site.

Recently, you may have heard about a new internet security weakness, known as Heartbleed, which is impacting some websites. There is no indication that Heartbleed has been used against reanalyses.org or that any personal information has ever been at risk. However, we are asking users to change their current password out of an abundance of caution to ensure the protection of your information.

Members will need to login to the site to see more information.

Recent Updates

- Overview of current atmospheric reanalyses - 02/06/2015
- International Surface Pressure Database - Contributing Organizations - 01/27/2015
- Web-based Reanalysis Intercomparison Tools (WRIT) - 01/15/2015

Using a collaborative Wiki framework, the goal of reanalyses.org is to facilitate comparison between reanalysis and observational datasets. Evaluative content provided by reanalysis developers, observationalists, and users, and links to detailed data descriptions, data access methods, analysis and plotting tools, and dataset references are available. Discussions of the recovery of observations to improve reanalyses is also a focus. The wiki framework encourages scientific discussion between members of reanalyses.org and other reanalysis users.

Highlights

Differences between GCM, Reanalysis and Observational multidecadal variability [Discussion Page](#)

Reanalyses Intercomparison Tool (WRIT) BAMS article: <http://journals.ametsoc.org/abstract/10.1175/BAMS-D-13-00192.1>
[Link to WRIT tools](#)

- Reanalyses.org

RDA user support

NCAR Research Data Archive Blog

News and tutorials from the National Center for Atmospheric Research's Research Data Archive.

Blog Archive

▼ 2015 (25)

▼ August (6)

Interoperable Access to NCAR Research Data Archive...

Accessing RDA collections from Yellowstone

Cite your data

New Terms and Conditions of Use

2015-08-18

Interoperable Access to NCAR Research Data Archive Collections

To enhance user experience and utility, the RDA now offers THREDDS Data Server (TDS) access for many highly valued gridded dataset collections (<http://rda.ucar.edu/thredds/>). TDS offered datasets with native formats in GRIB1 and GRIB2 are presented as aggregations, enabling users to access an entire dataset collection that can be comprised of 1000's of files, through a single virtual file.

Search This Blog

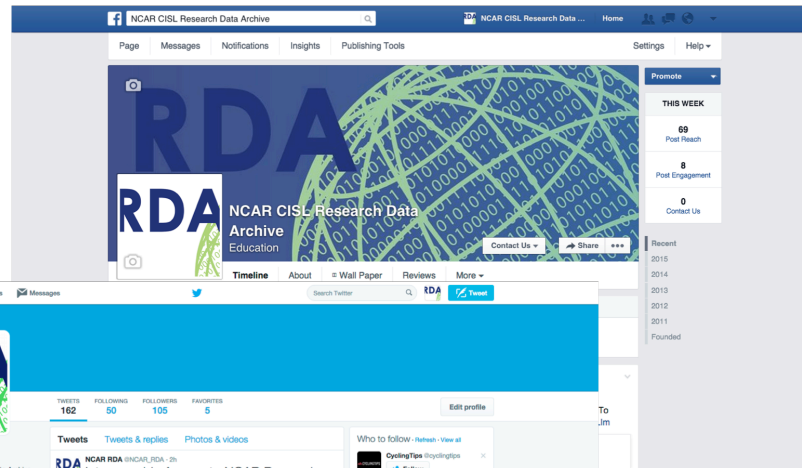
Search

Links

- Home
- NCAR RDA Portal
- About the RDA
- NCAR

Translate

<http://ncarrda.blogspot.com/>
[@ncar_rda](#)

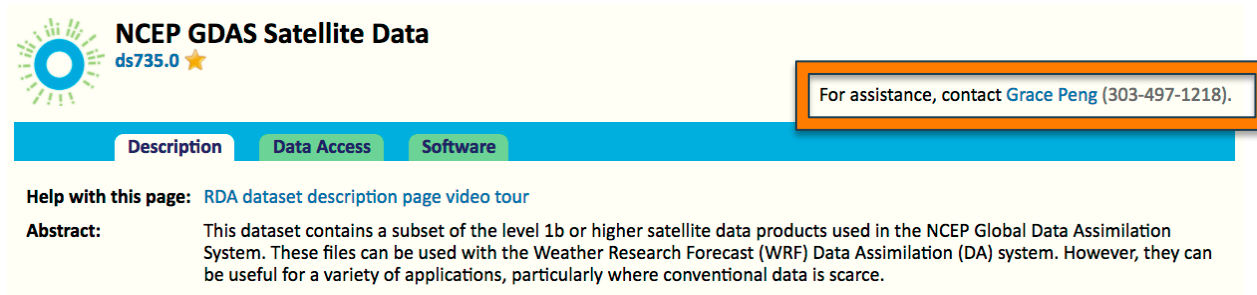


NCAR | RDA Datasets and Services that
UCAR | Support DA

air • planet • people

RDA user support

- Dataset Consultant listed on each dataset homepage



NCEP GDAS Satellite Data
ds735.0 ★

For assistance, contact [Grace Peng](#) (303-497-1218).

Description Data Access Software

Help with this page: [RDA dataset description page video tour](#)

Abstract: This dataset contains a subset of the level 1b or higher satellite data products used in the NCEP Global Data Assimilation System. These files can be used with the Weather Research Forecast (WRF) Data Assimilation (DA) system. However, they can be useful for a variety of applications, particularly where conventional data is scarce.

- General help email: rdahelp@ucar.edu
- Blog posts: ncarrda.blogspot.com
- User video tutorials

RDA user support: Server generated data citation

How to Cite This Dataset:

RIS

BibTeX

Compo, G. P., and Coauthors, 2009: NOAA CIRES Twentieth Century Global Reanalysis Version 2. Research Data Archive at the National Center for Atmospheric Research, Computational and Information Systems Laboratory, Boulder, CO. [Available online at <http://dx.doi.org/10.5065/D6QR4V37>.] Accessed† dd mmm yyyy.

†Please fill in the "Accessed" date with the day, month, and year (e.g. - 5 Aug 2011) you last accessed the data from the RDA.

Bibliographic citation shown in style

Get a customized data citation

Access from
user dashboard or
data set page

Dataset:

NOAA CIRES Twentieth Century Global Reanalysis Version 2^{ds} (ds131.1)

Your Access History for July 2013:

Choose a day to get a citation for this dataset. You will also see more details about your downloads on that day, which will help you verify that this is the citation you want.

July 2013						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Maintain user access history,
citation recall at any time

For Data Accessed on 2013-07-03:

Dataset Citation:

RIS

Compo, G. P., et al. 2009. *NOAA CIRES Twentieth Century Global Reanalysis Version 2*. Research Data Archive at the National Center for Atmospheric Research, Computational and Information Systems Laboratory. <http://dx.doi.org/10.5065/D6QR4V37>. Accessed 3 Jul 2013.

Bibliographic citation shown in style

Data Access Detail:

1 subset request:

- 18 files, 3.44 MB

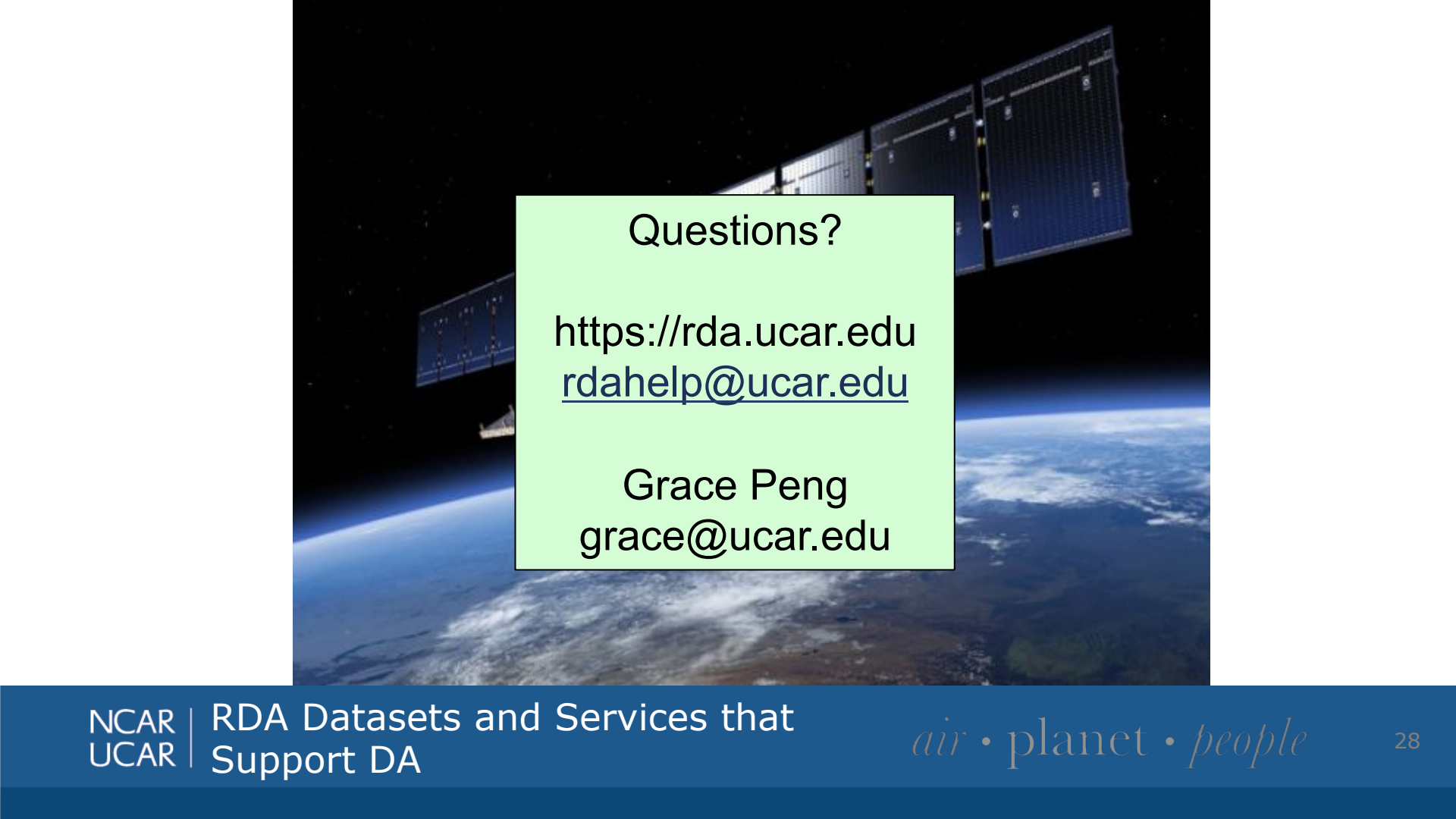
Date Limits : 1975-06-15 00:00 to 1975-06-30 12:00

Parameter : TMP

Level : 1000

Key Takeaways

- The RDA offers many data services to help you be more productive
- Information-rich home web page for each data set
 - Science-trained staff assigned to assist with each data set
- Our collection is always evolving
 - We are open to adding data or data services that have broad user bases
- Cite your data and where you got it

A satellite with large solar panels is shown in space, orbiting the Earth. The Earth's blue horizon and white clouds are visible below the satellite.

Questions?

<https://rda.ucar.edu>
rdahelp@ucar.edu

Grace Peng
grace@ucar.edu

Backup Globus Options Slides

- Select and download entire files in background
 - Receive email when complete
- Make custom data request
 - When email arrives about job completion, select Globus
- Fire and forget
 - Or watch progress as files appear at your local endpoint

Data Access Options



NCEP ADP Global Upper Air and Surface Weather Observations (PREPBUFR format), May 1997 - Continuing

ds337.0 ☆

For assistance, contact [Thomas Cram](#) (303-497-1217).

Description

Data Access

Documentation

Software

Mouse over the table headings for detailed descriptions

Data Description		Data File Downloads		Customizable Data Requests
		Web Server Holdings	Globus Transfer Service (GridFTP)	Subsetting
Union of Available Products		Web File Listing	Request Globus Transfer	
PRODUCTS	Unrestricted GDAS PREPBUFR data (daily tar files)	Web File Listing		Get a Subset
	Unrestricted GDAS PREPBUFR data, including ACARS/AMDAR data	Web File Listing		Get a Subset
	Unrestricted GDAS PREPBUFR Data (synoptic PREPBUFR files)			

NCAR-Only Access	
Central File System (GLADE) Holdings	Tape Archive (HPSS) Holdings
GLADE File Listing	HPSS File Listing
GLADE File Listing	HPSS File Listing
GLADE File Listing	HPSS File Listing
GLADE File Listing	

Download options

[Home](#) [Find Data](#) [Ancillary Services](#) [About/Contact](#) [Data Citation](#) [Web Services](#) [For Staff](#)

Subset Data Requested From DS461.0

Go to [DS461.0 Home Page](#).

The Subset Data requested by Grace Peng (grace@ucar.edu) from RDA dataset ds461.0 - "NCEP ADP Global Surface Observational Weather Data, October 1999 - continuing" are listed below. The data files will remain available online for 5 days (until 2017-07-26 14:29:43). If you need additional time to complete the download, please notify [Grace Peng](#). After you have completed the download, you may delete the request from our web server by clicking the "Purge request" button.

Purge request

Date Limits

: 2017-07-10 2017-07-15

Latitude Limits

: 31.0 N 43.0 N

Longitude Limits

: 112.0 W 93.0 W

Record Types

: ADPSFC SFCBHP

All Basic Parameters

: Y

Parameters

: PRES PMSL TMDB ALSE TMDP REHU WDIR WSPD TP03 TP24 HOVI

Compression

: gz

Download options

Show selected files/Download tar file

Perl download script

Ch download script

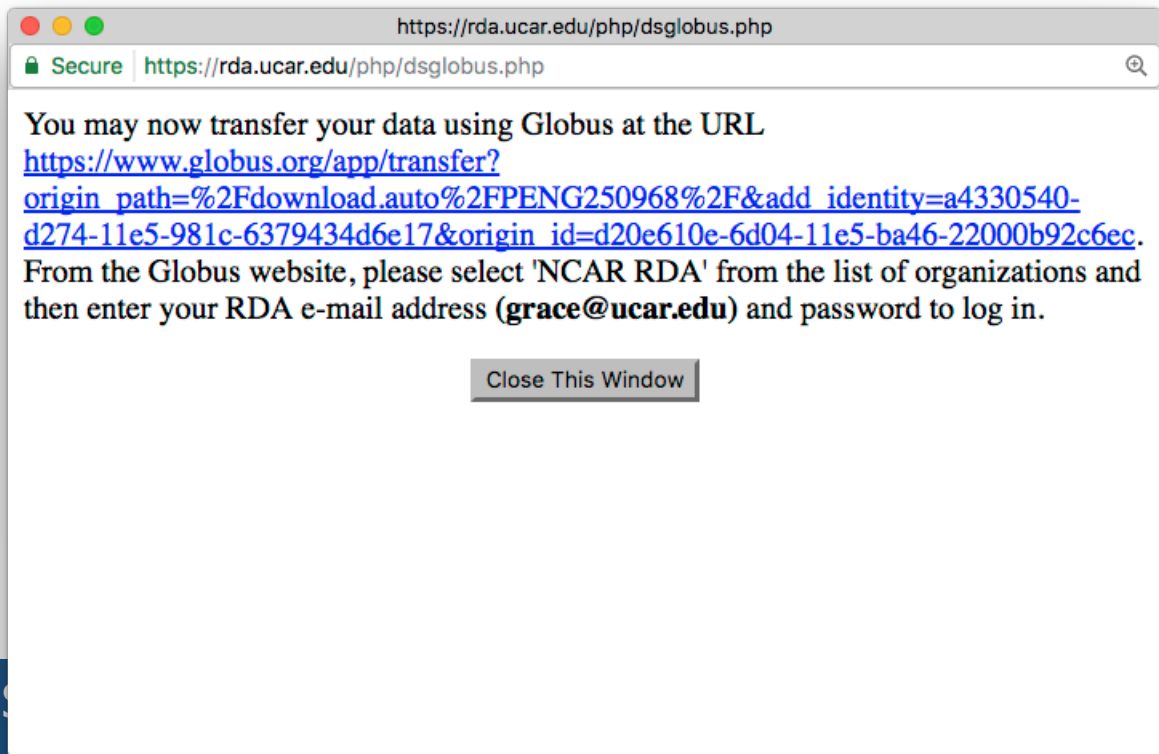
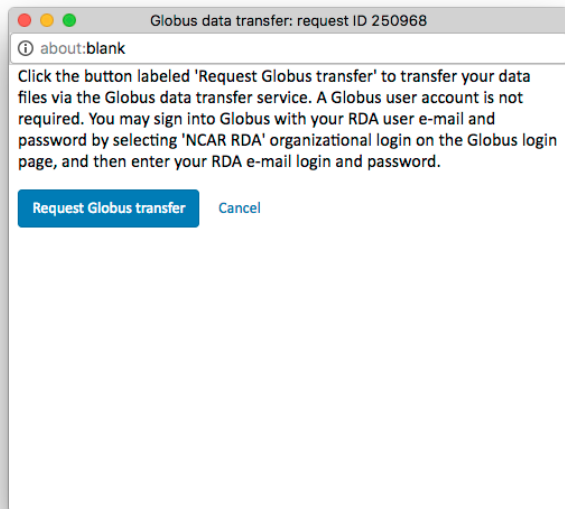
Globus download

What is Globus?

- A total of **22 Files (2.71M)** are listed below
- Click a file name to download a single file
- Select one or multiple files to get a download script
- Select multiple data files to download as a single tar file
- Currently **0 File** selected

Clear Selection

<input type="checkbox"/>	INDEX	File Name	Size	Type	Data Format	Archive Format	Date Online
<input type="checkbox"/>	1	GDAS.ADPSFC.2017071000.txt.gz	136.99K	Data	TEXT	GZ	07/21/2017
<input type="checkbox"/>	2	GDAS.ADPSFC.2017071100.txt.gz	132.15K	Data	TEXT	GZ	07/21/2017
<input type="checkbox"/>	3	GDAS.ADPSFC.2017071200.txt.gz	131.00K	Data	TEXT	GZ	07/21/2017
<input type="checkbox"/>	4	GDAS.ADPSFC.2017071300.txt.gz	133.40K	Data	TEXT	GZ	07/21/2017
<input type="checkbox"/>	5	GDAS.ADPSFC.2017071400.txt.gz	141.06K	Data	TEXT	GZ	07/21/2017



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Transfer Files

RECENT ACTIVITY 0 0 1

Endpoint ☆

Path

select all ↑ up one folder ↻ refresh list permissions ≡

PENG250968 Folder

Endpoint ☆

Path

select all ↑ up one folder ↻ refresh list share ≡

BUFR Folder

GIS Folder

GRIB Folder

HPSS Folder

NAM Folder

Other Folder

Vtables Folder

ds083.2 Folder

ds083.3 Folder

ds084.1 Folder