

ACRE supported datasets at NCAR

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National Center for Atmospheric Research
Computational & Information Systems Laboratory
Boulder, CO

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University of Maynooth, Ireland
21 June 2016

[illegible]NCAR
UCAR

weather • data • *climate* 2

About the RDA



- <http://rda.ucar.edu>
- **Purposes**
 - Support climate & weather research at NCAR and UCAR universities with reference datasets
- **Established in 1960s**
- **Collections**
 - Ocean & atmospheric observations, analyses, reanalyses, operational NWP products
 - 700+ datasets, 8M files, 1.8 PB
 - 70+ datasets updated daily/monthly
- **Free and open access**
- **Worldwide usage**
 - Broad user community
- **Science-educated staff**



RDA home page: rda.ucar.edu

[UCAR](#) [NCAR](#)

Hello [tcrum@ucar.edu](#) [dashboard](#) [sign out](#)

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 **Research Data Archive**
Computational & Information Systems Lab

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First-time visitor to our site?
Please take a [video tour](#) of our home page

Dataset Search:
 [Search](#) [Advanced Options](#)

Look For Data:

All Datasets	Variable/Parameter	Type of Data
Time Resolution	Platform	Spatial Resolution
Topic/Subtopic	Project/Experiment	Supports Project
Data Format	Location	Recently Added/Updated

Recently Added Datasets: (within the last 6 months)

- International Comprehensive Ocean-Atmosphere Data Set (ICOADS) Release 3, Individual Observations
- International Comprehensive Ocean-Atmosphere Data Set (ICOADS) Release 3, Monthly Summaries
- EarthScope USArray Transportable Array (TA) Surface Pressure Observations Sampled at 1 Hz Frequency
- Coordinated Ocean-ice Reference Experiments - Phase II
- Streamflow drought indicators across conterminous United States
- GPCC Full Data Daily Version 1.0: Daily Land-Surface Precipitation from Rain Gauges built on GTS based and Historic Data
- GPCC Full Data Reanalysis Version 7.0: Monthly Land-Surface Precipitation from Rain Gauges built on GTS based and Historic Data
- GPCP Version 1.2 One-Degree Daily Precipitation Data Set

Other Ways to Explore:

• GCMD Topic:

[Agriculture](#) • [Atmosphere](#) • [Biosphere](#) • [Climate Indicators](#) • [Cryosphere](#) • [Hydrosphere](#) • [Land Surface](#) • [Oceans](#) • [Paleoclimate](#) • [Solid Earth](#) • [Spectral/Engineering](#) • [Sun-earth Interactions](#)

Get Help:

- [Frequently Asked Questions](#)
- [Reset your password](#)
- [A-Z Site Index](#)
- [RDA Users Email List](#)
- [RDA Blog](#)
- [RDA video tutorials](#)
- [Email Us](#)

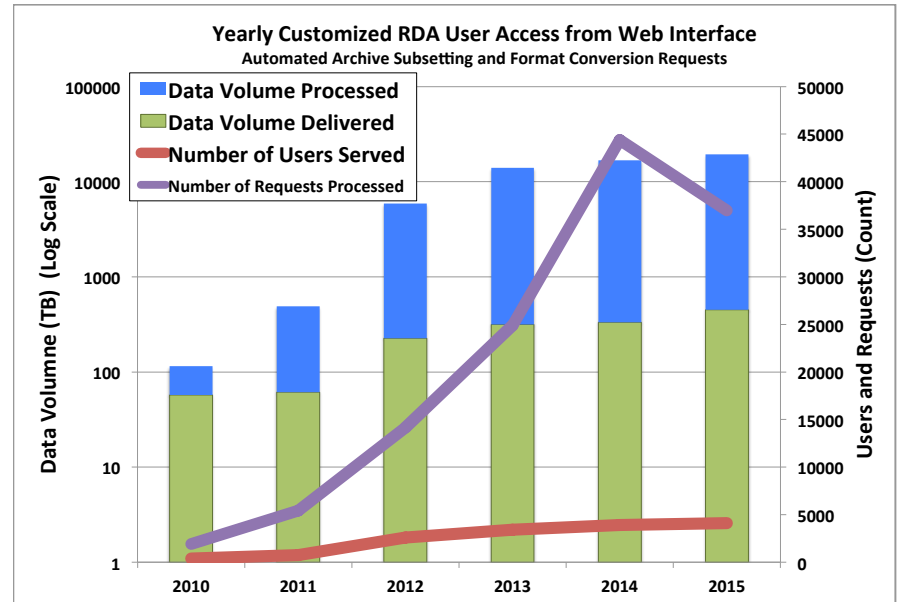
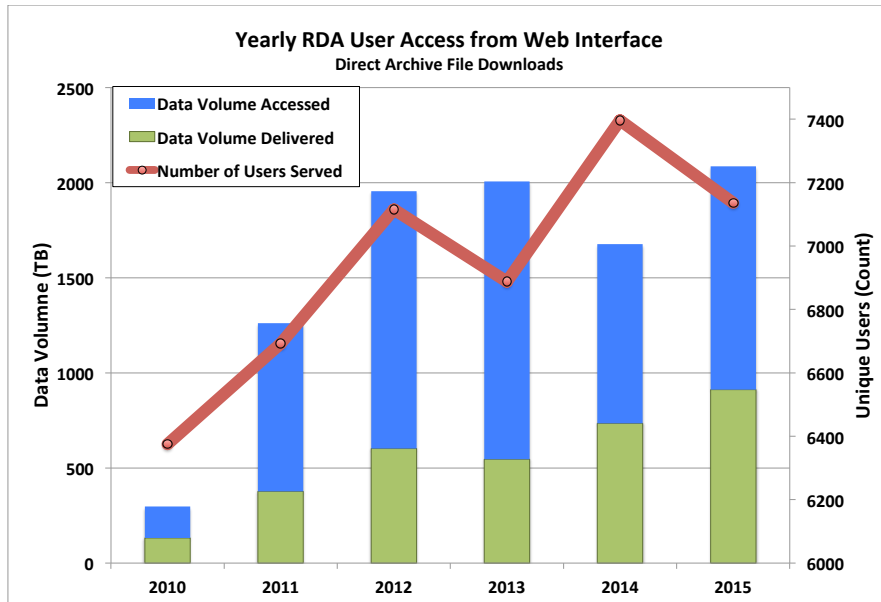
From Our Blog:

- [NCAR RDA System Outage June 7, 2016](#)
- [Open Access Data](#)
- [NCAR RDA System Outage April 27, 2016](#)
- [2016 UCAR Software Engineering Assembly Conference slides available online](#)
- [Accessing RDA data files from GLADE](#)

[More blog posts ...](#)

GLADE Users:
Much of the RDA is directly accessible from CISL's **GLobally Accessible Data Environment**. /glade files can be read directly in place from Yellowstone and Geyser/Caldera. You can find more information under the "Data Access" tab of individual datasets, including detailed lists of /glade files.

RDA Web Usage



FY 2015:

- 17+ PB virtual processing
- 11,000+ unique users
- 1.6 PB served

ACRE supported data collections

Title	RDA dataset ref.	Temporal Coverage
ICOADS Release 3.0 - Daily observations - Monthly summaries - NCEP Real-time (NRT)	ds548.0 (daily) ds548.1 (monthly)	1662–2014 2015–current (NRT)
ICOADS Release 2.5 - Daily observations - Monthly summaries	ds540.0 (daily) ds540.1 (monthly)	1662–2016
ISPD version 3.2.9	ds132.1	1755–2014
ISPD version 2	ds132.0	1768–2012
CHUAN version 1.7 - full, single-ascent data - QC'ed, non-biased corrected	ds352.0	1904–2007

RDA hosted reanalysis collections

Title (RDA dataset ref.)	Spatial domain	Temporal record
ECMWF 20 th Century (ERA-20C; ds626.0)	Global (T159, 91 levels)	1900 - 2010
NOAA/CIRES Twentieth Century Version 2c (ds131.2)	Global (T62, 28 levels)	1850 - 2014
NCEP/NCAR (NN		8-2003
NCEP Climate Fo		9 - present
NCEP North Ame		9 - present
NCAR Global Clin Hourly (CFDDA; c		5-2005
Arctic System (ASR; ds631.0)	Northern Hemisphere (30km, 71 levels)	2000 - 2012
Japanese 25 Year (JRA-25; ds625.0)	Global (T106, 40 levels)	1979 - 2004
Japanese 55 Year (JRA-55; ds628.0)	Global (T319, 60 levels)	1958 - 2013
ECWMF-40 (ERA-40)	Global (T159, 60 levels)	1957 - 2002
ECMWF-Interim (ERA-Interim; ds627.0, ds627.1, ds627.2)	Global (T255, 60 levels)	1979 - 2015

- 24 reanalysis collections
- 370 TB accessible from disk

Data access pathways

- **Direct file transfer**
 - HTTP
 - GridFTP (Globus)
- **Subset/Data format conversion requests**
 - Web interface
 - REST API (supports batch requests)
- **Remote file access**
 - OPeNDAP (files or dataset aggregations)
- **Direct file access from disk**
 - NCAR CISL HPC accounts
 - U.S. University users

Data access: Globus (GridFTP)



- www.globus.org
- Developed and maintained by Univ. of Chicago & Argonne Nat'l Laboratory
- RDA supported capabilities
 - Dataset archive file transfers
 - Custom data products (e.g. subset data requests)
- Advantages
 - “Fire and forget”
 - **Automatic fault recovery**
 - Up to 10x faster than traditional download methods
 - Transfer directly to laptop or institution supported HPC
 - Ideal for large data volumes

Data access: Globus example

The screenshot shows the NCAR Research Data Archive website. The header includes the NCAR logo and the text "Research Data Archive Computational & Information Systems Lab". A navigation bar contains links: Home, Find Data, Ancillary Services, About/Contact, Data Citation, Web Services, and For Staff. The main content area is titled "International Comprehensive Ocean-Atmosphere Data Set (ICOADS) Release 2.5, Individual Observations". Below this title is a tabbed interface with four tabs: Description, Data Access, Documentation, and Software. The "Data Access" tab is highlighted with a red box, and a red arrow points from it to a separate red box containing the text "Data access". The "Description" tab content is visible, including an abstract, a list of partners (NOAA/ESRL, NOAA/NCDC, NCAR), and a list of important notes about the dataset's temporal range and updates.

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Go to Dataset: nnn.n

Home Find Data Ancillary Services About/Contact Data Citation Web Services For Staff

International Comprehensive Ocean-Atmosphere Data Set (ICOADS) Release 2.5, Individual Observations
ds540.0

For assistance, contact Zaihua Ji (303-497-1819).

Description Data Access Documentation Software

Help with this page: RDA dataset description page v1.0

Abstract: The International Comprehensive Ocean-Atmosphere Data Set (ICOADS) is a global ocean dataset. It is formed by merging many national ocean datasets. Each report contains individual observations of meteorological and oceanographic parameters. Each report contains individual observations of meteorological parameters: temperature, wind, pressure, humidity, and cloud cover. Each report contains individual observations of oceanographic parameters: sea surface temperature, sea surface salinity, and sea surface height. Each report contains individual observations of meteorological parameters: temperature, wind, pressure, humidity, and cloud cover. Each report contains individual observations of oceanographic parameters: sea surface temperature, sea surface salinity, and sea surface height.

All three U.S. ICOADS partners (NOAA/ESRL, NOAA/NCDC, NCAR) offer various data access and format options. To review all available options see the [ICOADS website](#).

IMPORTANT: The time period of data available is defined in two segments.

- ICOADS Release 2.5 covers 1662 through 2007
- All data following the Release 2.5 end date is based exclusively on real-time GTS data with minimal quality control. These data should be considered preliminary and will be subject to change in new Releases of ICOADS

Temporal Range: 1662-10-15 to 2016-02-29 (Entire dataset)
[Period details by dataset product](#)

Updates: Monthly

Data access: Globus example

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International Comprehensive Ocean-Atmosphere Data Set (ICOADS) Release 2.5, Individual Observations
ds540.0

For assistance, contact Zaihua Ji (303-497-1819).

Description Data Access Documentation Software

Mouse over the table headings for detailed descriptions

Globus transfer

	Web Holdings	Data File Downloads		Customizable Data Requests	NCAR-Only Access	
		Globus Transfer Service (GridFTP)	Staged Access from Tape Archive	Subsetting	Central File System (GLADE) Holdings	Tape Archive (HPSS) Holdings
Union of Available Products	Web File Listing	Request Globus Transfer	Request Access		GLADE File Listing	HPSS File Listing
IMMA format data for ICOADS Release 2.5	Web File Listing			Get a Subset	GLADE File Listing	HPSS File Listing
IMMA format data for ICOADS Release 2.5 Intermediate			Request Access			HPSS File Listing
ICOADS Release 2.5.1 in experimental-2 IMMA1 format	Web File Listing				GLADE File Listing	HPSS File Listing
ICOADS Release 2.5.1 Intermediate in experimental-2 IMMA1 format			Request Access			HPSS File Listing
ICOADS Release 2.5.2 for 2008-2014/8 in experimental IMMA1 format	Web File Listing				GLADE File Listing	HPSS File Listing
ICOADS Release 2.5.2 for 2008-2014/8 Intermediate in experimental IMMA1 format			Request Access			HPSS File Listing
ICOADS Release 3.0 Preliminary Beta-3 Release	Web File Listing				GLADE File Listing	HPSS File Listing
ICOADS Beta Release 3.0 Clean Version in IMMA1 format	Web File Listing				GLADE File Listing	HPSS File Listing

Data access: Globus example

You may now transfer your data using Globus at the URL

https://www.globus.org/app/transfer?origin_id=db57de42-6d04-11e5-ba46-22000b92c6ec&origin_path=%2Fds540.0%2F&add_identity=91dc4454-d2bc-11e5-a34a-a3f71caddfd7.

From the Globus website, please select 'NCAR RDA' from the list of organizational logins and then enter your RDA e-mail address (**tcram@ucar.edu**) and password to log in.

Close This Window

Data access: Globus example

The screenshot shows the Globus web interface. At the top, there's a navigation bar with 'Publish', 'Groups', 'Support', and 'Account'. Below this, there's a 'Transfer Files' section. Two endpoints are highlighted with red boxes and callouts:

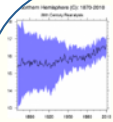
- Endpoint 1:** 'NCAR RDA dataset archive'. The path is '/ds540.0/imma_r2.5/'. A callout points to this endpoint with the text: "NCAR/RDA host endpoint. Data originates here."
- Endpoint 2:** 'cisl-toulon'. The path is '/~/datasets/ds540.0/'. A callout points to this endpoint with the text: "User's endpoint. Data is transferred here."

Both endpoints show a list of files. The first endpoint shows a list of files with sizes ranging from 1.40 GB to 1.42 GB. The second endpoint shows a list of files with sizes ranging from 7.60 MB to 6.81 MB.

Data access: Custom subset requests

- Web interface
- RDA apps API
 - Submit subset/format conversion requests
 - Check processing status
 - Download output files
 - rdams-client
 - <http://rda.ucar.edu/app-clients/py/rdams-client.py>
 - API documentation
 - http://rda.ucar.edu/#!apps_api_desc

Data access: Subset request example

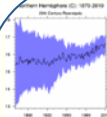


NOAA/CIRES Twentieth Century Global Reanalysis Version 2c
ds131.2

For assistance, contact [Doug Schuster](#) (303-497-1216).

Description										Data Access										Documentation										Software																			
Mouse over the table headings for detailed descriptions																																																	
Data Description										Data File Downloads										Customizable Data Requests					Other Access Methods					NCAR-Only Access																			
																				Subsetting					THREDDS Data Server																								
Union of Available Data										Web Server Holdings					Globus Transfer Service (GridFTP)					Data Format Conversion					Staged Access from Tape Archive					Request Access					TDS Access					GLADE File Listing					HPSS File Listing				
										PRODUCTS										Listing					Files					Get a Subset					TDS Access					GLADE File Listing					HPSS File Listing				
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Data access: Subset request example



NOAA/CIRES Twentieth Century Global Reanalysis Version 2c ds131.2

For assistance, contact [Doug Schuster](#) (303-497-1216).

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

Get a Subset

A subset is a partial selection of the records from each data file. Make selections from the following options to request a subset of data that matches your selections (you will then have further opportunity to refine your subset), and then click the "Continue" button below.

[Can I submit requests without going through this interface?](#)

Dataset Product: Yearly Time Series Analysis Fields (2x2 degree Lat/Lon)

Temporal (Valid Time) Selection: 1851-01-01 00:00 to 2014-12-31 18:00

Parameter Selection: (selecting no parameters has the same effect as selecting all parameters)

☐ Cloud water	☐ Relative humidity
☐ Convective available potential energy	☒ Specific humidity
☐ Convective inhibition	☒ Temperature
☒ Geopotential height	☐ Total ozone
☐ Potential temperature	☐ u-component of wind
☒ Precipitable water	☐ v-component of wind
☒ Pressure	☐ Vertical velocity (pressure)
☐ Pressure reduced to MSL	

[Continue](#)[Reset](#)

Data access: Subset request example

Get a Subset

Refine Your Selections:

- **Dataset Product:** Yearly Time Series Analysis Fields (2x2 degree Lat/Lon)
- **Input Data Format:** WMO GRIB1
- **Output Format:** ☒ Same as input ☐ Converted to netCDF
- **Valid Date Range:** 1920-01-01 00:00  to 1930-12-31 18:00 
- **Parameter(s):**

All available

Geopotential height

Precipitable water

Pressure
- **Vertical Level(s):**

All available

Entire atmosphere (considered as a single layer)

Ground or water surface

Isobaric surface: 1000 mbar

Isobaric surface: 950 mbar

Isobaric surface: 900 mbar

Isobaric surface: 850 mbar
- **Gridded Product:** Analysis
- **Grid:** 2° x 2° from 0E to 358E and 90N to 90S (180 x 91 Longitude/Latitude)
- **Ensemble:**

All available 

Data access: Subset request example

Get a Subset

Refine Your Selections:

- **Dataset Product:** Yearly Time Series Analysis Fields (2x2 degree Lat/Lon)
- **Input Data Format:** WMO GRIB1
- **Output Format:** ☒ Same as input ☐ Converted to netCDF
- **Valid Date Range:** 1999-01-01 to 2020-12-31
- **Spatial Selection:**

Parameter(s)

Vertical Level

- **Gridded Product**
- **Grid:** 2° x 2°
- **Ensemble:** A



Interactive Map Instructions:

- Use the 'Pan Map' option to drag and center the map on your area of interest
- Use the 'Draw Box' option to drag a box around your area of interest. You can also manually enter bounding latitudes and longitudes in the text boxes.

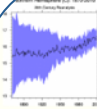
North*: 56
West*: -13 Reset East*: -4
South*: 51

*Latitudes and longitudes must be specified in whole degrees

Data access: Remote file access

- Protocols/Applications supported by Unidata THREDDS Data Server
 - OPeNDAP
 - OGC
 - NetcdfSubset
- Access type
 - Individual files
 - Virtual data aggregation
- Gridded products only (reanalyses)

Data access: OPeNDAP example



NOAA/CIRES Twentieth Century Global Reanalysis Version 2c
ds131.2

For assistance, contact [Doug Schuster](#) (303-497-1216).

DescriptionData AccessDocumentationSoftware

Mouse over the table headings for detailed descriptions

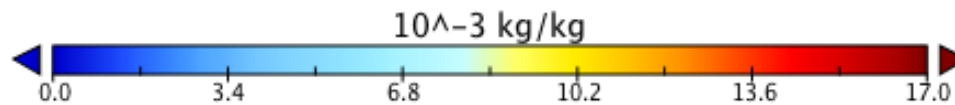
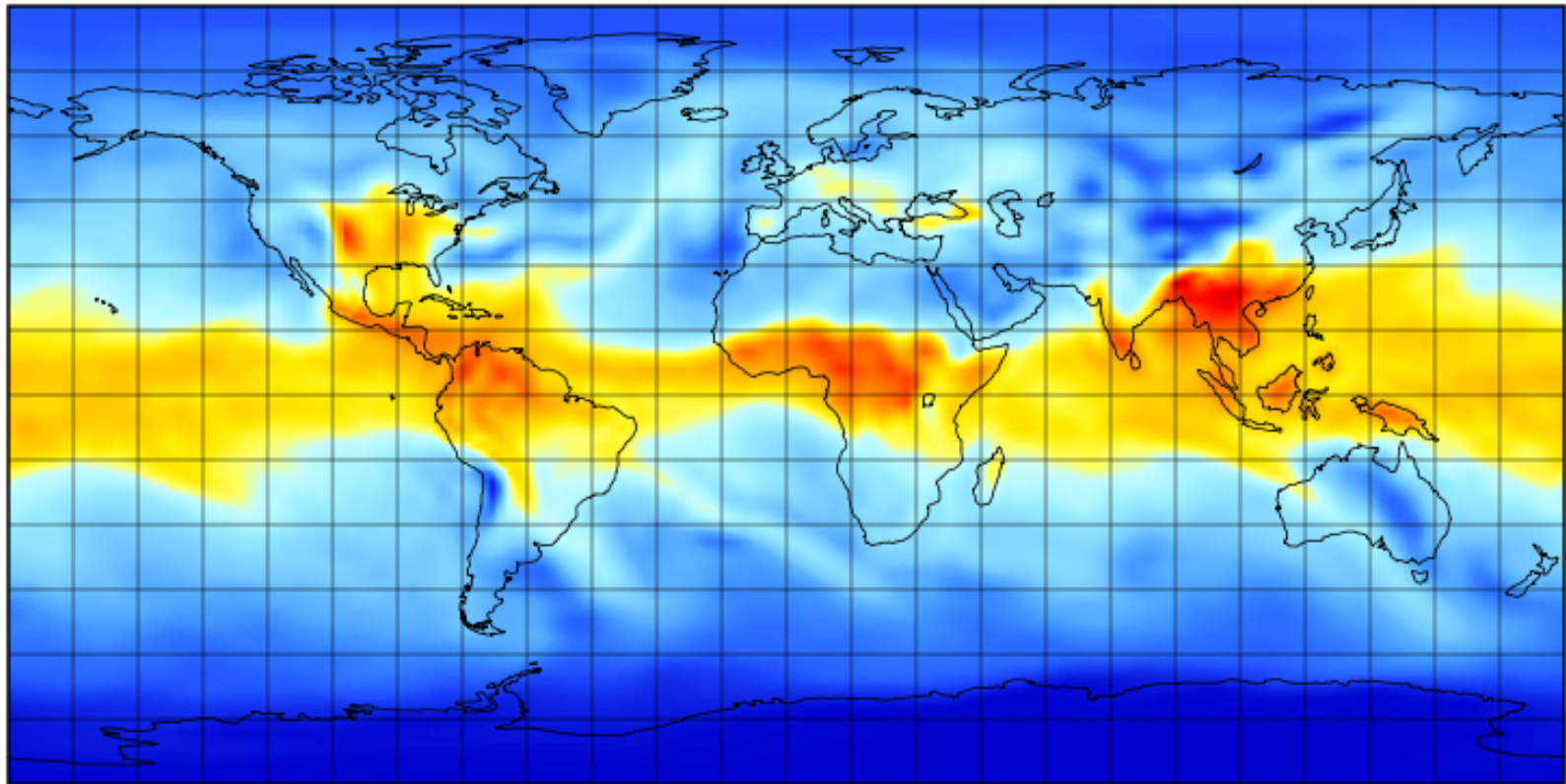
Data Description		Data File Downloads				Customizable Data Requests	Other Access Methods	NCAR-Only Access	
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Union of Available Products							TDS Access	GLADE File Listing	HPSS File Listing
PRODUCTS	Yearly Time Series Analysis Fields (2x2 degree Lat/Lon)	Web File Listing		Converted Files		Get a Subset	TDS Access	GLADE File Listing	HPSS File Listing
	Yearly Time Series First Guess Forecast Fields (Gaussian T-62)	Web File Listing				Get a Subset	TDS Access	GLADE File Listing	HPSS File Listing
	Hxens files				Request Access				HPSS File Listing
	Prepbufrobs_assim files				Request Access				HPSS File Listing
	High priority data tarfiles				Request Access				HPSS File Listing

Remote file access

Data access: OPeNDAP example

20CR v2c Specific humidity @ 850 hPa

GRIB reference time: 1900-06-01 12:00:00 +0000



Data Min = 0.0, Max = 15.5, Mean = 6.2



20CR v2c: Jun-Sep 1900 Specific humidity @ 850 hPa

User support: User dashboard

Hello tcram@ucar.edu [dashboard](#) [sign out](#)

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User dashboard

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- [Accessing RDA data files from GLADE](#)

User support: Data citation

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Dashboard

User Profile

Thomas Cram
National Center for Atmospheric Research

[Edit/Change Profile](#)

Customized Data Requests

You have 1 customized data requests.

Custom data requests

[Show Requests](#)

Globus Endpoints Shared With You

8 RDA data paths have been shared with you.

Globus endpoints

[Manage Shares](#)

Customized OPeNDAP Aggregations

You have not defined any aggregations.

Data citation tool

[Show Citation Tool](#)

Data Citation

This interface will allow you to view your data download history from the RDA and generate an appropriate data citation for specific data that you have downloaded and wish to cite.

User support: Automatically generated data citations

Dataset:

NOAA CIRES Twentieth Century Global Reanalysis Version 2¹² (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	<u>3</u>	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			

- Full history of data usage
- Data citations on demand

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

Contact us



web: [*rda.ucar.edu*](http://rda.ucar.edu)



@NCAR_RDA



NCAR CISL Research Data Archive



[*ncarrda.blogspot.com*](http://ncarrda.blogspot.com)