

# Working with the new CEDAR Madrigal Archive Database

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# Key points of talk

- The new CEDAR archival database is a Madrigal node
- [cedar.openmadrigal.org](http://cedar.openmadrigal.org)
- Old CEDAR database already imported
- Madrigal is open source - developed by the community with Millstone support
- Users wanting to put data into Madrigal archive:
  - *Work with Millstone to fully automate loading directly to archive*
  - *Set up your own Madrigal node - automated import*

# The new CEDAR archival database is a Madrigal node

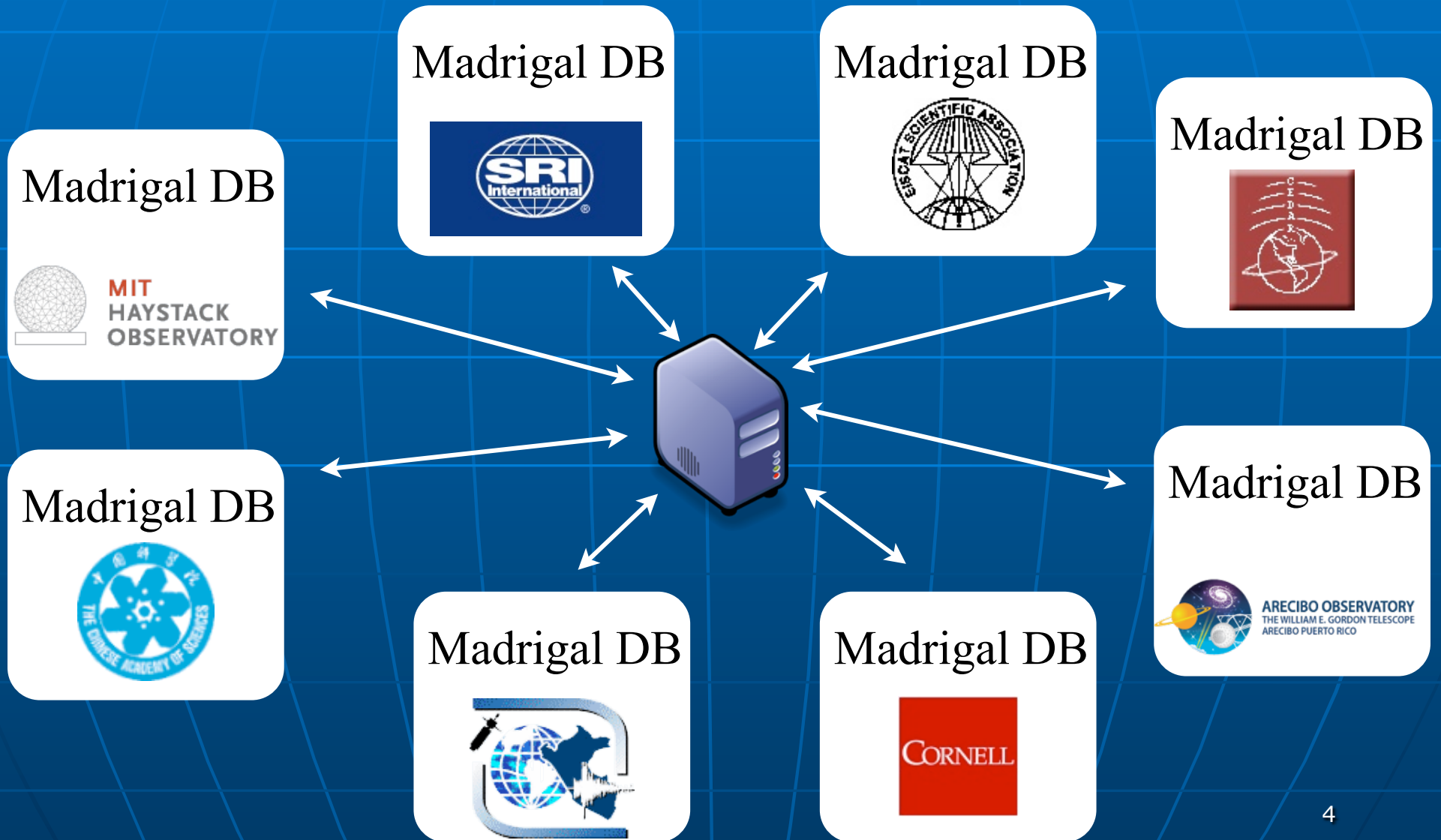
Simple web UI  
(Jicamarca)

Full web UI

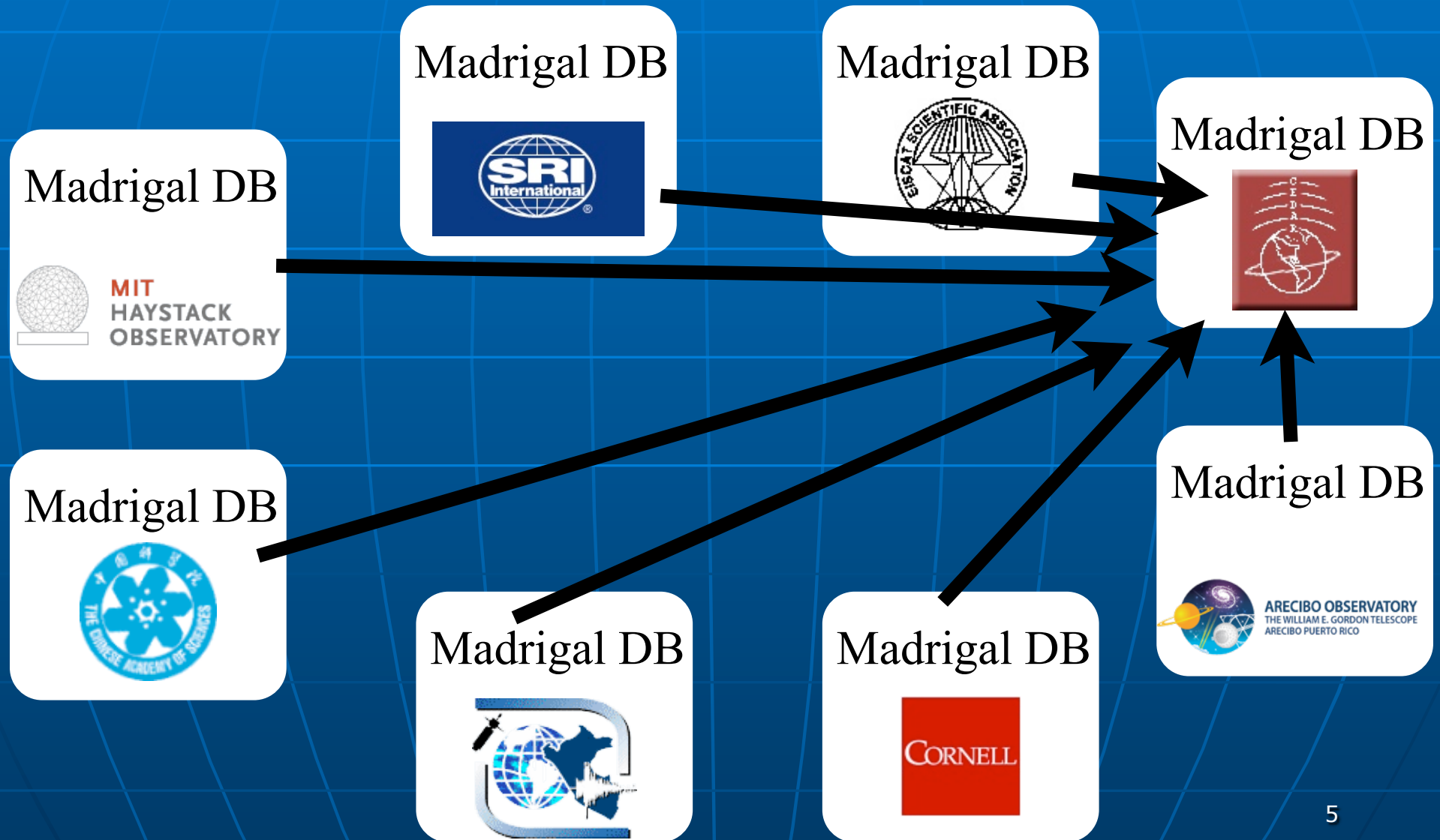
Documentation of  
script access

The screenshot shows a web browser window titled "Madrigal Database" with the URL "http://cedar.openmadrigal.org/". The page content includes a navigation menu on the left with links for Tutorial, Simple Local Data Access, Full Data Access, Run Models, Documentation (with sub-links for Web access and Script access), and Open Madrigal. The main content area features a "Welcome to the CEDAR Archival Madrigal Database" heading, followed by introductory text about the archival site and its data sources. At the bottom, there is a grid of logos for various Madrigal sites, including MIT, SRI International, Cornell, and others.

# Madrigal is a distributed database



# Cedar Madrigal archive imports all data weekly





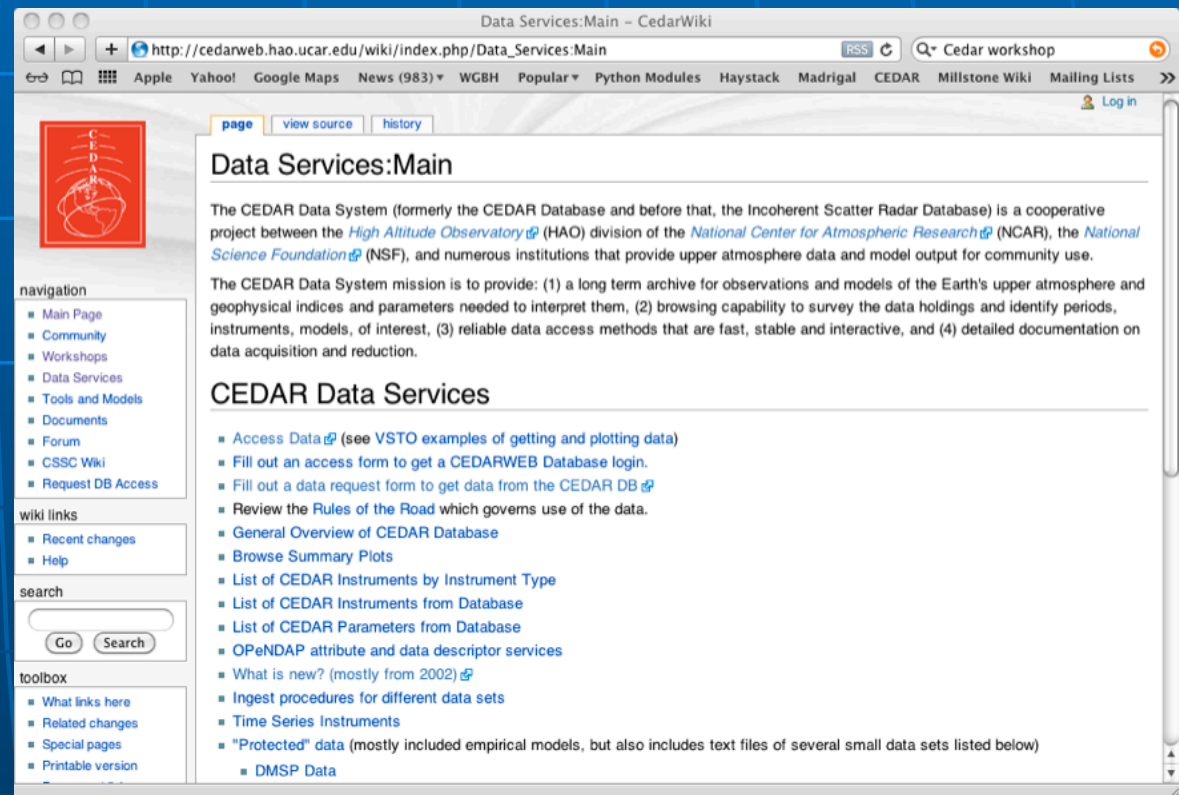
# Script access to Madrigal

- Scripts can be written in Matlab, python, IDL
- Every version comes with globalIsprint
  - Allows downloading any slice of the whole database with a single command
- Always requires name, email, affiliation
- Please avoid multiple threads

# cedar.openmadrival.org

- Go directly to cedar.openmadrival.org, or
- Go to any Madrigal site, use Full Data Access, or

- Link from CEDAR



The screenshot shows a web browser window displaying the CedarWiki website. The browser's address bar shows the URL [http://cedarweb.hao.ucar.edu/wiki/index.php/Data\\_Services:Main](http://cedarweb.hao.ucar.edu/wiki/index.php/Data_Services:Main). The page title is "Data Services:Main". The main content area contains the following text:

The CEDAR Data System (formerly the CEDAR Database and before that, the Incoherent Scatter Radar Database) is a cooperative project between the [High Altitude Observatory](#) (HAO) division of the [National Center for Atmospheric Research](#) (NCAR), the [National Science Foundation](#) (NSF), and numerous institutions that provide upper atmosphere data and model output for community use.

The CEDAR Data System mission is to provide: (1) a long term archive for observations and models of the Earth's upper atmosphere and geophysical indices and parameters needed to interpret them, (2) browsing capability to survey the data holdings and identify periods, instruments, models, of interest, (3) reliable data access methods that are fast, stable and interactive, and (4) detailed documentation on data acquisition and reduction.

### CEDAR Data Services

- [Access Data](#) (see [VSTO examples of getting and plotting data](#))
- [Fill out an access form to get a CEDARWEB Database login.](#)
- [Fill out a data request form to get data from the CEDAR DB](#)
- [Review the Rules of the Road which governs use of the data.](#)
- [General Overview of CEDAR Database](#)
- [Browse Summary Plots](#)
- [List of CEDAR Instruments by Instrument Type](#)
- [List of CEDAR Instruments from Database](#)
- [List of CEDAR Parameters from Database](#)
- [OPeNDAP attribute and data descriptor services](#)
- [What is new? \(mostly from 2002\)](#)
- [Ingest procedures for different data sets](#)
- [Time Series Instruments](#)
- ["Protected" data \(mostly included empirical models, but also includes text files of several small data sets listed below\)](#)
  - [DMSP Data](#)

The left sidebar contains navigation links, wiki links, a search box, and a toolbox.

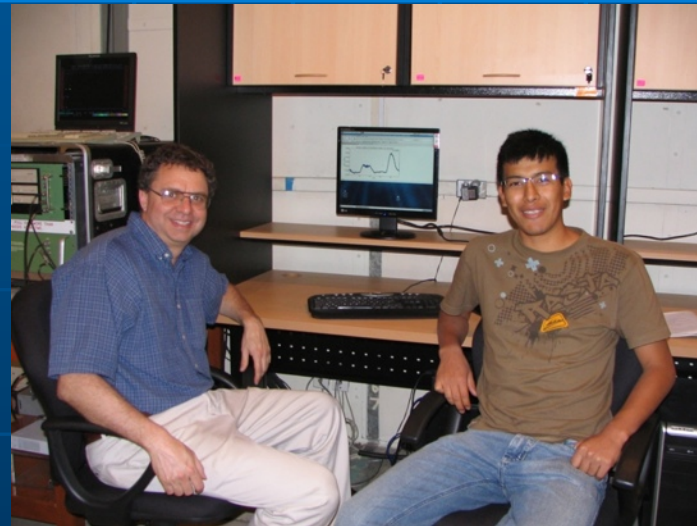
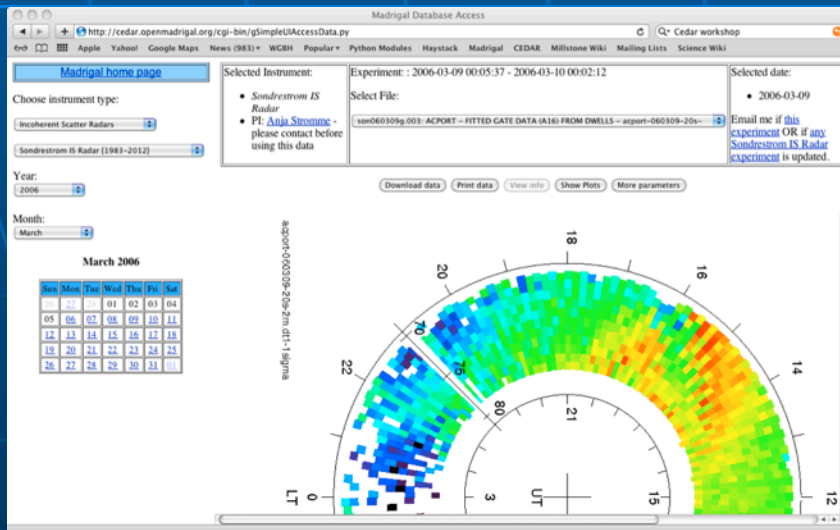
# Old CEDAR database already imported

Jicamarca IS Radar: 1966-2012  
Jicamarca Bistatic Radar: 2004-2011  
Arecibo IS Radar - Linefeed: 1966-2010  
Arecibo IS Radar - Gregorian: 2001-2010  
Arecibo IS Radar - Velocity Vector: 1974-2006  
MU IS Radar: 1986-2003  
Millstone Hill IS Radar: 1961-2012  
Millstone Hill UHF Zenith Antenna: 1964-1974  
St. Santin IS Radar: 1973-1985  
St. Santin Nançay Receiver: 1966-1987  
Kharkov Ukraine IS Radar: 1996-2010  
Chatanika IS Radar: 1979-1979  
ISTP Irkutsk Radar: 1995-2002  
Poker Flat IS Radar: 2007-2012  
EISCAT combined IS Radars: 1986-2005  
EISCAT Kiruna UHF IS Receiver: 1984-2011  
EISCAT Tromso UHF IS radar: 1984-2012  
EISCAT Sodankyla UHF IS Receiver: 1984-2010  
EISCAT Tromso VHF IS radar: 1990-2012  
Sondrestrom IS Radar: 1983-2012  
Resolute Bay North IS Radar: 2009-2011  
EISCAT Svalbard IS Radar Longyearbyen: 1997-2011  
Interplanetary Mag Field and Solar Wind: 1963-2012  
Geophysical Indices: 1950-2012  
AE Index: 1978-1987  
DST Index: 1957-2008  
Arecibo MST Radar: 1989-1989  
Poker Flat MST Radar: 1979-1985  
SOUSY Svalbard MST Radar Longyearb: 2001-2001  
Scott Base MF Radar: 1988-1988  
Davis Antarctica MF radar: 2001-2004  
Mawson MF Radar: 1984-1990  
Rothera MF radar: 2002-2005  
Christchurch MF Radar: 1987-1987  
Adelaide MF Radar: 1987-2005  
Rarotonga MF radar: 2002-2004  
Tirunelveli MF radar: 2001-2002  
Kauai MF radar: 1990-2005  
Yamagawa MF radar: 1998-2004  
Platteville MF radar: 2002-2002  
Wakkanai MF radar: 1997-2005  
Collm LF Radar: 1987-2008  
Saskatoon MF Radar: 1987-2005  
The Poker Flat MF radar: 1998-2005  
Tromsø MF Radar: 1987-2005  
Ascension Island meteor radar: 2002-2003  
Atlanta meteor Radar: 1974-1987  
Durham meteor Radar: 1979-2002  
Obninsk meteor radar: 2002-2002  
Esrangle meteor radar: 2002-2005  
Christmas Island ST/MEDAC Radar: 1988-1992  
Platteville ST/MEDAC Radar: 1988-1988  
U Lowell Digisonde MLH Radar: 1976-2012  
Sondre Stromfjord Digisonde: 1993-1993  
Qaanaaq Digisonde ST/MEDAC Radars: 1989-1993  
POES Spacecraft Particle Flux: 1998-2006  
South Pole Fabry-Perot: 1989-1999  
Arrival Heights Fabry-Perot: 2002-2005  
Halley Fabry-Perot: 1988-1998  
Mount John Fabry-Perot: 1991-1996  
Arequipa Fabry-Perot: 1983-1999  
Arecibo Fabry-Perot: 1980-2009  
Kitt Peak H-alpha Fabry-Perot: 1997-2006  
Fritz Peak Fabry-Perot: 1973-1985  
Ann Arbor Fabry-Perot: 1986-1987  
Peach Mountain Fabry-Perot: 1993-1994  
Millstone Hill Fabry-Perot: 1989-2002  
Millstone Hill High-Res Fabry-Perot: 2009-2012  
Arecibo Imaging Doppler Fabry-Perot: 2012-2012  
Watson Lake Fabry-Perot: 1991-1992  
College Fabry-Perot: 1981-1983  
Poker Flat all-sky scanning Fabry-Perot: 2002-2002  
Fort Yukon Fabry-Perot: 2008-2008  
Poker Flat Fabry-Perot: 2010-2010  
Sondre Stromfjord Fabry-Perots: 1983-2004  
Inuvik NWT Fabry-Perot: 2000-2005  
Resolute Bay Fabry-Perot: 2003-2008  
Thule Fabry-Perot: 1987-1989  
Cariri Fabry-Perot: 2011-2011  
South Pole Michelson Interferometer: 1992-2003  
Daytona Beach Michelson Interferometer: 2001-2001  
Stockholm IR Michelson: 1993-1994  
Sondrestrom Michelson Interferometer: 1997-2002  
Resolute Bay Michelson Interferometer: 1996-2001  
Eureka Michelson Interferometer: 1994-1994  
Arecibo potassium [K] lidar: 2003-2010  
CEDAR lidar: 1989-1998  
Colorado State sodium lidar: 1990-2010  
Rayleigh lidar at the ALO - USU/CASS: 1998-1998  
Jicamarca Magnetometer: 1997-2012  
JULIA: 1996-2012  
World-wide GPS Receiver Network: 1998-2012  
Davis Czerny-Turner Scanning Spectrophotometer: 1990-2003  
Wuppertal (DE) Czerny-Turner OH Grating Spectrometer: 1980-  
Poker Flat 4 Channel Filter Photometer: 2001-2002  
Fort Yukon 4 Channel Filter Photometer: 2001-2002  
USU Mesospheric Temperature Mapper: 1997-2004



# Madrigal is open source

- Source at [www.openmadrgal.org](http://www.openmadrgal.org)
- Madrigal 2.6 features developed with Jicamarca:
  - New Simple Web UI
  - Download data as HDF5
- Madrigal 3.0 features - HDF5/netCDF4 format



# Putting data into Madrigal

- Option 1: Load directly into the CEDAR Madrigal Archive
  - Send Bill Rideout
    - Sample data in *your* format
    - Standard plots you create
    - Documentation on your instrument/analysis
  - Verify sample data loaded correctly
  - Upload new data and plots to sftp site
  - Get email when loaded (within 24 hours)
  - Download usage log

# Putting data into Madrigal

## Example: SSI Fabry Perot at Arecibo

The screenshot shows the Madrigal Database Access web interface. The browser address bar displays the URL: <http://cedar.openmadrigal.org/cgi-bin/gSimpleUIAccessData.py>. The search criteria are as follows:

- Selected Instrument:**
  - Arecibo Imaging Doppler Fabry-Perot
  - PI: [John Noto](#) - please contact before using this data
- Select Experiment:**
  - Arecibo Imaging FPI: 2012-05-30 23:26:24 - 2012-05-31 09:05:42
- Select File:**
  - aif120530g.001: FPI basic temperature and los wind data - Final
- Selected date:**
  - 2012-05-30

Additional options include: Download data, Print data, View info, Show Plots, and More parameters.

Navigation and selection options:

- Madrigal home page
- Choose instrument type: Fabry-Perots
- Arecibo Imaging Doppler Fabry- [2012-2012]
- Year: 2012
- Month: May

Calendar for May 2012:

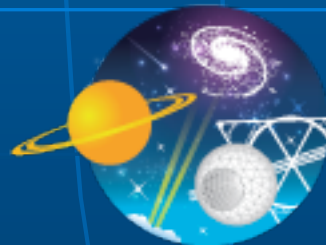
Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	<a href="#">29</a>	<a href="#">30</a>	<a href="#">31</a>	<a href="#">01</a>	<a href="#">02</a>

Available plot options:

- [Plot of Meridional and Zonal winds v. UT](#)
- [Plot of relative brightness v. UT](#)
- [Plot of line of sight winds v. UT](#)
- [Plot of relative background v. UT](#)
- [Instrument description](#)
- [Plot of wind gradient v. UT](#)
- [Description of parameters used](#)
- [Plot of temperature v. UT](#)
- [Description of data quality \(FPI DATAQUAL\) parameter](#)

# Putting data into Madrigal

- Set up your own Madrigal site
  - Automatically archived weekly



# Summary

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Workshop Thursday 4pm Zia:

*Making loading data and  
accessing data easy with  
Madrigal and the CEDAR  
Madrigal archive*