

The Gemini Science Archive

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Introduction

Hosted by CADC in
 Victoria, Canada.
 Released September 2004
 Gemini North data from
 May 2000
 Gemini South data from
 October 2001
 E-transfer started
 October 2005 - automatic
 transfer from sites to
 CADC.
 Active transfer from sites

to archive as observation progresses.



Data and Content

FITS Science	473973
Calibrations, other	682160
Logs	21787
Science Programmes	3022

Instrument	Files	Pointings (0.1 deg.)	Ratio
BHROS	401	56	8:1
FLAMINGOS	7,680	69	112:1
GMOS-N	32,493	2,670	13:1
GMOS-S	32,551	2,431	14:1
GNIRS	18,220	597	31:1
HOKUPAA+QUIRC	33,582	750	45:1
HRWFS	70,788	35	2023:1
MICHELLE	3,026	518	6:1
NICI	11,510	150	77:1
NIFS	8,779	284	31:1
NIRI	187,972	2,580	73:1
PHOENIX	53,828	1,688	32:1
TEXES	3,173	97	33:1
TRECS	9,970	732	14:1
Total	473,973	12,657	38:1

GMOS N/S, NIRI and Phoenix observations dominate the collection in terms of individual pointings

38:1 emini Data workshop – Tucson, 2010–07–20



Data and Content

Distinct (0.1 degrees) GSA Pointings



Data Ingestion



As of Dec 09: ~7Tb of data
~7Gb transferred
per night per site
>1.27M FITS files
>Ratio of Public to
proprietary science
files is now 1.3

Gigabytes	2003	2004	2005	2006	2007	2008	2009*
Public	2	22	122	132	575	1,198	950
Proprietary	0	1	181	617	1,042	1,345	788
Total	2	23	303	749	1,617	2,544	1,739

* As of Dec09

Data Distribution

During 2009

451 distinct users
920 registered
users from 31
countries
Average delivery
9Gb/day





Data Distribution

 "Raw" (not QA-ed) data are transferred to the Archive in real-time (as observation progresses).
 Transfer time varies between 2-10min (dependent on transfer speed between sites and CADC in Canada)
 Once data checked and properly flagged as PASS (charged) or USABLE (not charged), are re-transferred to the Archive with updated headers.

> Pre-imaging also distributed from the Archive, and users notified by e-mail.

> Once a week, new data are "packaged" and a notification sent to the Principal Contact.



Quality Assesment

By the observer during the night: inspection of calibrations (saturation/faint arcs and flats), check of data integrity, monitoring of weather conditions (seeing, cloud cover, sky background, water vapour).
 By the Data Analyst Specialist the next day: check instrument configuration, check IQ from the data when possible, check flux level when possible (CC). Check calibrations and request repeat of any that may be missing.

Processing of GMOS pre-imaging - distributed to users for mask design.

> No general processing to check for achieved S/N.



Populating the database

Database is populated with content of header keywords
 Header content is enforced from the time of ingestion – if a mandatory keyword is absent, the dataset is rejected until fixed
 Metadata related to individual observations is obtained from the Observing Tool – very little information is required to be added by the observer (environmental information in terms of realized percentiles, name of observer/SSA).

Instrument/telescope related information is passed directly from subsystems to Data Handling System

- > Result in complete, stable header content.
- Filename format is fixed and unique (S20100310S0001.fits)
- > Each dataset is uniquely identified by a datalabel, containing the name of the programme (GN-2010A-Q-1-1-0001)
- > Obslogs are automatically generated as observation progresses, and the observer can add comments, but not change content.

Proprietary Data

Proprietary period
 18 months from date
 of observation
 CADC registration
 required
 Access through
 Phase II passkey
 Authorize other
 users without
 releasing Phase II key
 Download datasets
 any time or
 "packages" when
 available



Proprietary data search

> Authorize use ➤Use proprietar searches to ena ➤Science Catalc only science datcalibrations Re ≻Use General C search for calibise >Obslogs are p until first datase ~ ~ public ~ Search ≻Select

≻And download!



JEMINI DBSERVATORY

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General Searches

Mark	<u>Bibcode</u>	<u>Title</u>	Citations	Impact	Program ID	Telescope	Instruments	Affiliate
~	2007ApJ670959S	Nuclear Spirals as Feeding Channels to the Supermassive Black Hole: The Case of the Galaxy NGC 6951	10	0.50	<u>GN-2006B-Q-23</u>	Gemini North	GMOS-N	Brazil
>	2008A&A48259D	Ages and metallicities of circumnuclear star formation regions from Gemini IFU observations	3	0.25	<u>GN-2006B-Q-23</u>	Gemini North	GMOS-N	Brazil
~	2009AJ138502M	An Optical and X-Ray Study of the Fossil Group RX J1340.6+4018	1	0.00	<u>GN-2006B-Q-38</u>	Gemini North	GMOS-N	Brazil
>	2009ApJS185186W	The Gemini Spectral Library of Near-IR Late-Type Stellar Templates and Its Application for Velocity Dispersion Measurements	0	0.00	<u>GN-2006A-SV-123,</u> <u>GN-2006B-Q-107,</u> <u>GS-2006B-DD-3,</u> <u>GN-2007A-Q-25</u>	Gemini South, Gemini North	NIFS, GNIRS	Gemini Staff, Brazil, Demo Science ol SV
•	2009A&A503399U	Cluster and cluster galaxy evolution history from IR to X-ray observations of the young cluster RX J1257.2+4738 at z = 0.866	0	0.00	<u>GN-2005A-Q-9,</u> <u>GN-2006B-Q-38,</u> <u>GN-2006A-Q-4</u>	Gemini North	GMOS-N	Brazil
~	2009ApJ698451G	Measurements of the Isotopic Ratio 6Li/7Li in Stars with Planets	0	0.00	<u>GS-2006A-C-5,</u> <u>GS-2006B-Q-47</u>	Gemini South	GMOS-S	United States, Brazil

Observation Type...: Any



Gemini Publications

➤Calibrations association needs to be improved. Mostly contained within the programme, but not easy to find when searching public data. See Gemini page, linked from GSA Help menu.





Calibration data

Calibration Data Retrieval

Home » Sciops » Data and Results

The raw frames for calibrations that are shared among programs are not included with the PI package, although some of the relevant processed calibrations are. All of those, as well as the calibrations directly associated with a science program can be found and retrieved using the "Search Complete Catalog" and "Search for Processed Calibrations" query pages. In case the desired calibration observation is not immediately found, PIs are requested to follow the instructions below.

Default 🗣

GMOS-N and GMOS-S MOS Mask Definition Files:

For MOS programs only, if the MDF (Mask Definition File) is not included in the PI package, please follow these instructions to locate and retrieve the MDF from the GSA. If you still cannot locate the required file, please use the HelpDesk to contact Gemini. MDF files are small and can be send by e-mail.

Raw Calibration Data:

The table lists the instrument modes and corresponding associated calibrations that fall under the **shared calibration** category. If your program/observation belongs to any of them, please follow the links for detailed instructions.

Instrument	Observing Mode	Calibrations
	Imaging	Flats, Photometric Standards
GMOS-N	Imaging and Spectroscopy	Bias (all modes)
GMOS-S Nod and Shuffle Longslit/MOS/IFU spectroscopy		Darks (previous to 2006A) Biases (all modes)
NIRI	Imaging	Photometric standards, flats, darks in addition to those taken from the science program
GNIRS	XD 32I/mm (R=1700) Spectroscopy	Flats, Pinhole (previous to 2006A)
Michelle	Imaging	Photometric standards, flats in addition to those taken from the science program
T-ReCS	Imaging	Photometric Standards

Processed Calibration Data

Processed calibration frames for some instrument modes can be retrieved from the archive. The GMOS calibrations are mostly reduced once per moon-phase, around full moon. The reductions include all calibrations taken in the previous moon period. Please check the observing logs to identify the appropriate date and configuration.

Instrument	Observing Mode	serving Mode Calibration Frames available	
CMOS	Imaging	Combined flats (North/South) Processed standards (South)	GSA GSA
GIVIOS	Imaging and Spectroscopy (all modes)	Combined bias (North/South)	GSA
T-ReCS	Imaging	Standard stars	GSA

 Shared calibrations not included within the PI package.
 Guidelines on Gemini web page :http://www.gemini.edu/ sciops/data-and-results/ science-archive/calibrationdata-retrieval
 Some of the processed Calibration data included with the PI package and can be found using the "Search for Processed calibrations" query pages.

Gemini and CADC

	MGEMINI OBSERVATORY					
Science	e Public/Images About Careers Contact Search					
PIO	Change page style:					
Sciops	Calibration Data Retrieval - GSA queries					
	Home » Sciops » Data and Results					
Gemini Home	- GMQS-N/GMQS-S MQS Mask Definition Files (MDF):					
Telescopes and Sites						
Instruments	- Go to the GSA "Search Complete Catalog" page					
Future Instrumentation	- Select "GMOS-N" or "GMOS-S" from the "User Defined Query" menu on the left.					
Observing With Gemini	- In the field "Program ID", enter the programe identification (e.g. GS-2005B-Q-4)					
Science Visitors at Gemini	- In the field "obstype", enter MASK					
Queue and Schedules	- Apply the search, select the appropriate mask definition file and follow the instructions for retrieval.					
Data and Results	- GMOS-N/GMOS-S Imaging calibrations (flats, photometric standards):					
Data Formats						
Data Characteristics	- Go to the GSA "Search Complete Catalog" page					
Processing Software	- Select a GMOS-N and/or GMOS-S Standard query from the menu on the right					
Automated Pipeline	- To restrict the search , try constraining the CAL observations to be those of the same month your data was taken (eg, if					
Quality Assessment	the science data was taken 2005 Jul 05, use "Data Label" Contains CAL200507) or restricting the release date to +/- one					
Science Archive	month of the observation date (for the same 2005 Jul 05 observation, use "Release Date" 1 Jun 2005 30 Jul 2005)					
Data distribution	as "Object".					
Calibration Data	- Restrict the search by the filter if desired (a tip on wildcards: ~g_G will select only the data taken with the g' filter, while g					
Retrieval	or g^* will return nothing and ~g will return all filters!)					
Instructions	- Restrict the instrument (GMOS-N or GMOS-S)					
Doct / Future	- Apply the search, select the appropriate calibration frames and follow the instructions for retrieval.					
Development	- The search will return both raw and processed imaging flats. The processed frames can be identified by a datalabel					
DI /Observer Feedback	ending in _f for GMOS-N and ending in _g for GMOS-S					
Comini Publications	- To search only for the processed flats, use "Data Label" Contains flat					
Acknowledging Comini	- Processed lifes for the GMOS-S imaging standards are also available, and can be selected by searching with "Data Label" Contains rg					
Acknowledging Gemini	Labor Containerg					



Use during Phase I

Check for similar data in the Gemini
Science
Archive
Use the
"Query GSA"
button.





Future plans?

- Pending contract/budget/resources:
 - > Backwards compatibility work.
 - > PI packaging replacement:
 - >Automatic association of calibration with science files;
 - >User configurable notification;
 - ➢File status: Downloaded, Never downloaded, Modified since last download.
 - > CAOM, products and VO publication:
- End-to-end experiment with GMOS imaging.
 Long range plan: input needed from user community take your requests to the Gemini Science Committee!



Questions?