



Overview of the Gemini science user experience

(as seen from a full partner)

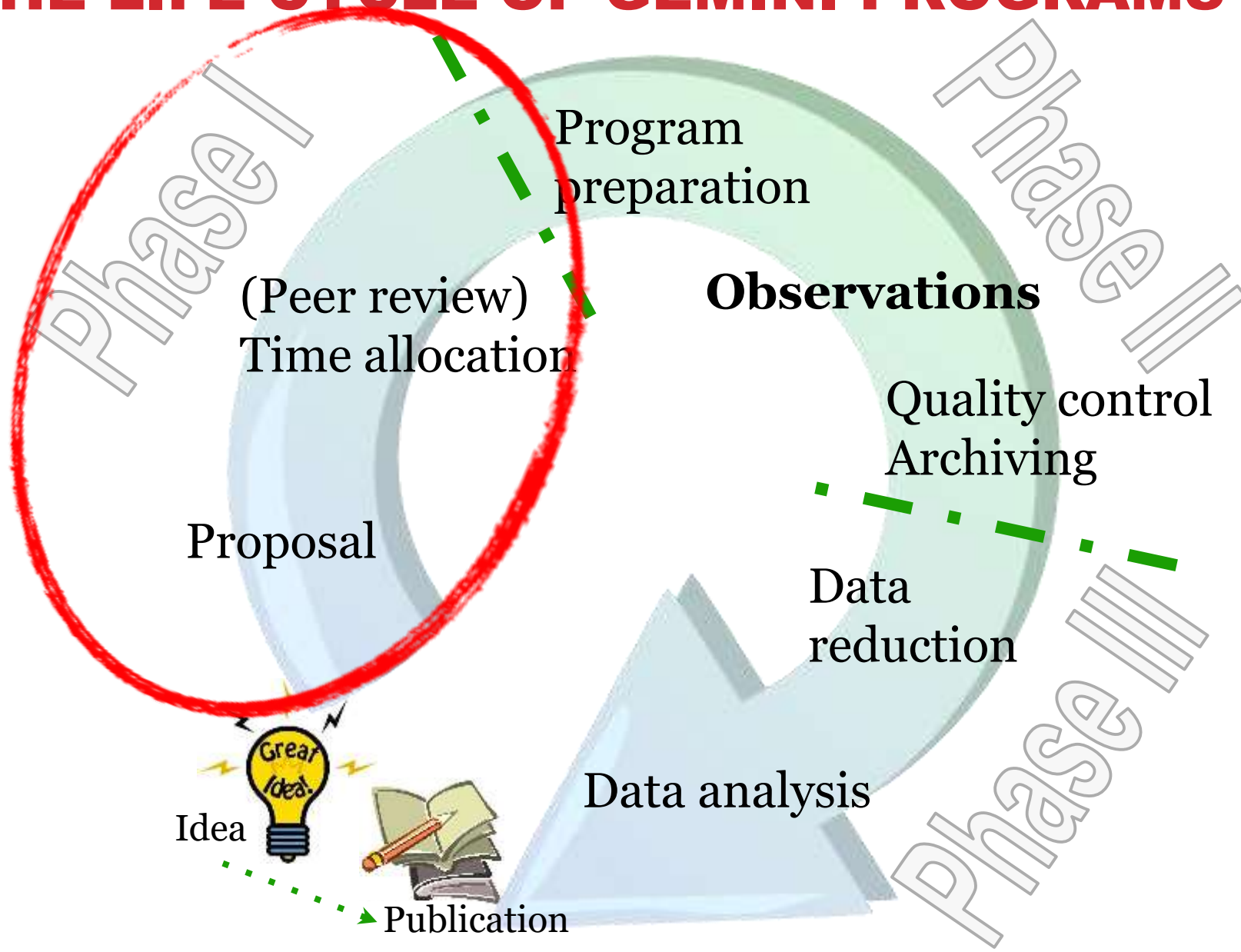


André-Nicolas Chené for the
Gemini Science User Support Department

The differences between limited and full partnership as seen by the user

- Queue and classical programs instead of mini-queues
- Full range of programs
- Different expectations
- Different timing and workflow

THE LIFE CYCLE OF GEMINI PROGRAMS



There are many ways to get time because there are many ways we do research!

“Regular” programs

Large and Long programs

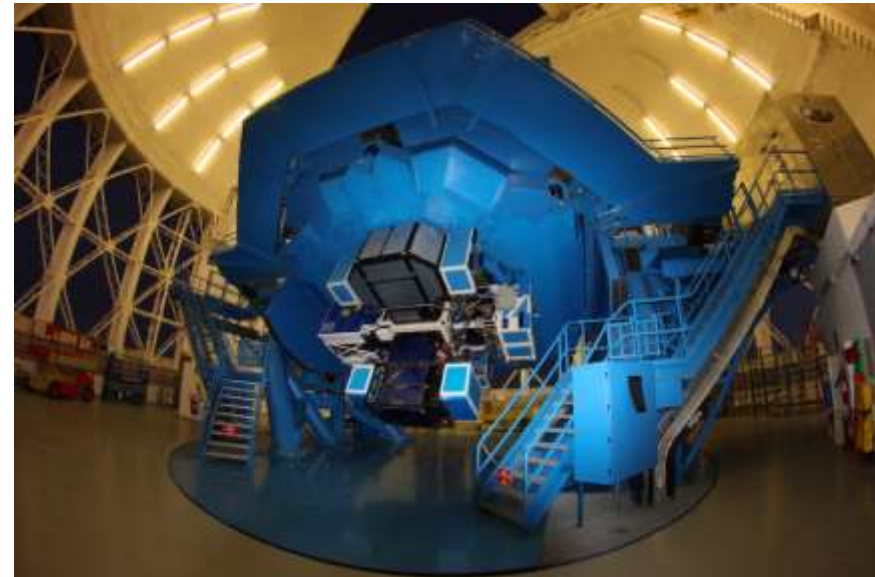
Fast Turnaround programs

Discretionary Director’s Time programs

Poor Weather programs

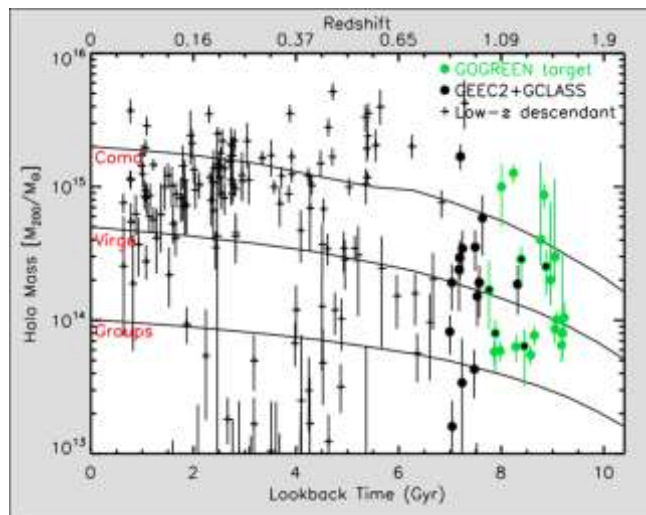
For “regular” projects

- Submitted during the **Calls for Proposals** (CfP):
in *October* (A semester) and *March* (B semester)
- Programs lifetime is **6 months**:
Feb-Jul for A semester and Aug-Jan for B semester
- Full access to all capabilities
- Classical or Queue



For projects that require 100s of hours and/or several semesters

- For participating partners (have to reserve 20% of their time)
- Letter of intent required in **February**, and proposal submitted with the **B semester CfP**
- Can stay active for up to **3 years!**



24 publications so far since 2015 on:

Exoplanets

Lensed galaxies

Asteroids

Low-mass galaxy evolution

Kuiper Belt objects

Faint Halo objects

Supernovae

Quasars

For rapid response

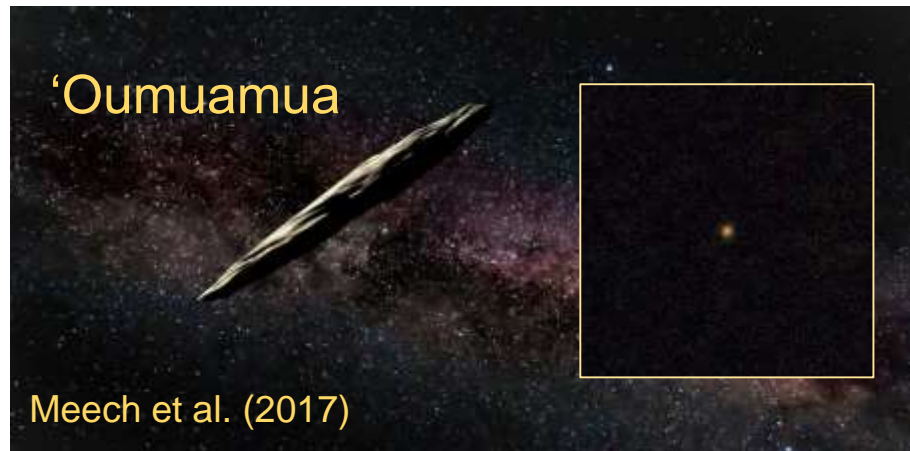
- Submitted **every month** (e.g., 26 Feb)
 - Evaluation starts the first of the following month (e.g., 1 Mar)
 - Answer sent the 3rd week (e.g., 15 Mar)
 - Program starts the next month (e.g., 1 Apr)
 - Program ends after 3 month (e.g., 30 Jun)
- All proposers serve as referee
- Limited access to Visiting Instruments

24 publications so far since 2015 on various topics!



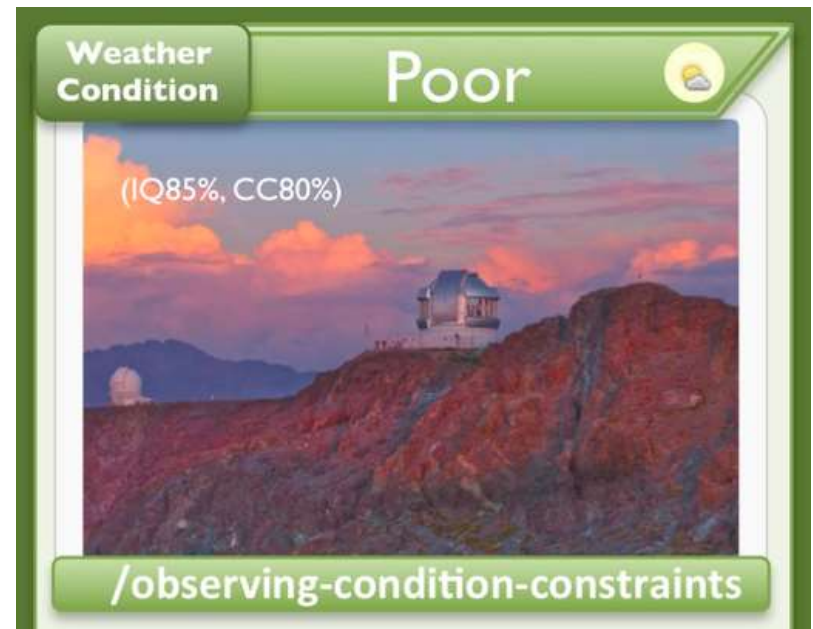
For extraordinary opportunities

- Submitted directly to the **Chief Scientist** (John Blakeslee)
- **High priority** programs
- Report on work progress 4 months after observations
- Oversubscription “auto-regulated”



For when we open on cloudy nights

- Submitted directly to the **Head of Science Operation**
- For **bright targets** (typical 2-4m telescope projects)
- For poor seeing (1") and/or thick clouds (extinc. $> 1\text{mag}$)
- Approved based on schedule
- Best effort basis



There are many ways to get time because there are many ways we do research!

	Regular proposal	Large & Long programs	Fast turnaround	Director Discretionary Time	Poor Weather
When	Once per semester	Once per year	Once per month	Anytime	Anytime
Refereeing	National Allocation Committees	LLP Program Time Allocation Committee	Peer reviewed! (No TAC)	Chief Scientist (John Blakeslee)	Head of Science Operation
What for?	"Business as usual"	Ambitious large or long projects	Immediate, short and/or follow-up	Special opportunities	Typically for 2-4 meter-class
Over-subscription	2	5	2	<2	N/A

65%

20%

10%

5%

weather loss

Phase I: Proposal → PIT

All the proposals are prepared the same way!

Untitled[*] - Gemini PIT 2013A 2.1.2 - TEST

File Edit View Catalog Help Debug

Overview

Title:

Abstract:

Title and abstract here

TAC Category: Select

Keywords: 0 Selected

Attachment: PDF attachment goes here.

Name	Institution	Phone	Email
Principal Investiga...			

Your team here

Overview | Time Requests | Scheduling | Submit | TAC

Observations

Group by: Conditions Resources Targets

Item	Time	Guiding	Vis	GSA
------	------	---------	-----	-----

Target list here

Sum observation times: 0.00 hr

| Lookup

Observations | Band 3 | Targets

Problems

Description	Section
<input type="checkbox"/> Please create observations with conditions, targets, and resources.	Observations
<input type="checkbox"/> Please provide a PDF attachment.	Overview
<input type="checkbox"/> Please provide a title.	Overview
<input type="checkbox"/> Please provide an abstract.	Overview
<input type="checkbox"/> Please provide full contact information for Principal Investigator.	Overview
<input type="checkbox"/> Please provide keywords.	Overview

Ready

Phase I: Proposal → PIT

Proposals must contain:

- Team members information (Name, email, phone)
- Title and Abstract
- Science Justification
- Experimental design
- Technical Justification
- Target list
- Instrument set-up
- Weather constraints
- Time requests
- Scheduling notes



www.gemini.edu/PIT-tutorial

Phase I: Proposal → ITC

Proposals must also contain a prediction of the Signal-to-Noise ratio

<https://www.gemini.edu/sciops/instruments/integration-time-calculators>

You “play” with:

- Brightness
- Spectral distribution
- Instrument set-up
- Weather constraints
- Exposure time
- Aperture (depends on mode)

Astronomical source definition

Spatial profile and brightness [\(help\)](#)
Choose one of point, extended or user-defined source profile and the brightness at any filter/wavelength

☒ **Point source** [\(help\)](#) with spatially integrated brightness: mag (e.g. 19.3 mag or 2e-17 W/m²/nm)

☐ **Extended source** having: (When this option is selected the image quality selection in section 3 of the ITC is disabled.)

- ☐ Gaussian profile with full width half maximum (including seeing) of: arcsec and spatially integrated brightness of: mag (e.g. 19.3 mag or 2e-17 W/m²/nm)
- ☐ Uniform surface brightness: mag/arcsec² (e.g. 21.6 mag/arcsec²)

with the above brightness normalisation applied in filter: at band

Spectral distribution [\(help\)](#)
Choose one SED, the redshift and extinction

☐ Library spectrum of a non-stellar object:

☐ Library spectrum of a star with spectral type:

☐ Single emission line at wavelength: μ m with line flux: erg/cm²/s and line width: km/s on a flat (in wavelength) continuum of flux density: erg/cm²/Å

☐ Model black body spectrum with temperature: K

☐ Model power law spectrum (B_ν ∝ λ^ν ∝ ν^{-α}) with α =

☐ User-defined spectrum read from file (page <1588)

with the spectrum mapped to a redshift: or a radial velocity: km/s

Instrument (IMOS North) and telescope configuration

Instrument optical properties [\(help\)](#)

Grating:

Filter:

Spectrum center wavelength: nm

Focal plane unit:

Detector properties [\(help\)](#)

OCD type: ☐ Hamamatsu array ☐ SEV DG legacy array

Detector binning (spatial direction): ☐ 1 (no binning) ☐ 2 or ☐ 4 pixels

Detector binning (spectral direction): ☐ 1 (no binning) ☐ 2 or ☐ 4 pixels

Ampl. gain:

Telescope configuration [\(help\)](#)

Mirror coating: ☐ aluminum ☐ silver

Instrument port: ☐ side-looking (3 reflectors)

Wavefront sensor for tip-tilt compensation: ☐ PWF8 ☐ CRWF8

Observing condition constraints

Note: you should read the [explanatory notes](#) for the meaning of the parameters and to ensure that your selected conditions are appropriate for the observing wavelength. Further details are available on the [observing condition constraints](#) pages.

Image quality: ☐ 20%/Best ☐ 70%/Good ☐ 85%/Poor ☐ Any

Sky transparency (cloud cover): ☐ 60%/Clear ☐ 70%/Clear ☐ 80%/Cloudy ☐ Any

Sky transparency (water vapour): ☐ 20%/Low ☐ 50%/Medium ☐ 80%/High ☐ Any

Sky background: ☐ 20%/Dark ☐ 50%/Dark ☐ 80%/Grey ☐ Any/Bright

Typical air mass during observation: ☐ <1.2 ☐ 1.8 ☐ 2.8

Details of observation

Calculation method [\(help\)](#)
Select calculation method (note: second method is not available for spectroscopy)

☐ Total S/N ratio resulting from: exposures each having an exposure time of: secs and with a fraction: of exposures that observe the source

☐ Total integration time to achieve a S/N ratio of: using an exposure time for each exposure of: secs and with a fraction: of exposures that observe the source

Analysis method (non IFU) [\(help\)](#)

☐ Software aperture that gives 'optimum' S/N ratio and with a sky aperture: times the target aperture

☐ Software aperture of diameter (or slit length): arcsec and with a sky aperture: times the target aperture

Analysis Method for Integral Field Unit (IFU) spectroscopy: [\(help\)](#)
Note: A single IFU element is a 0.2 arcsec diameter hexagon

Number of IFU fibres for sky: (250 for IFU residuals, 500 for IFU-2)

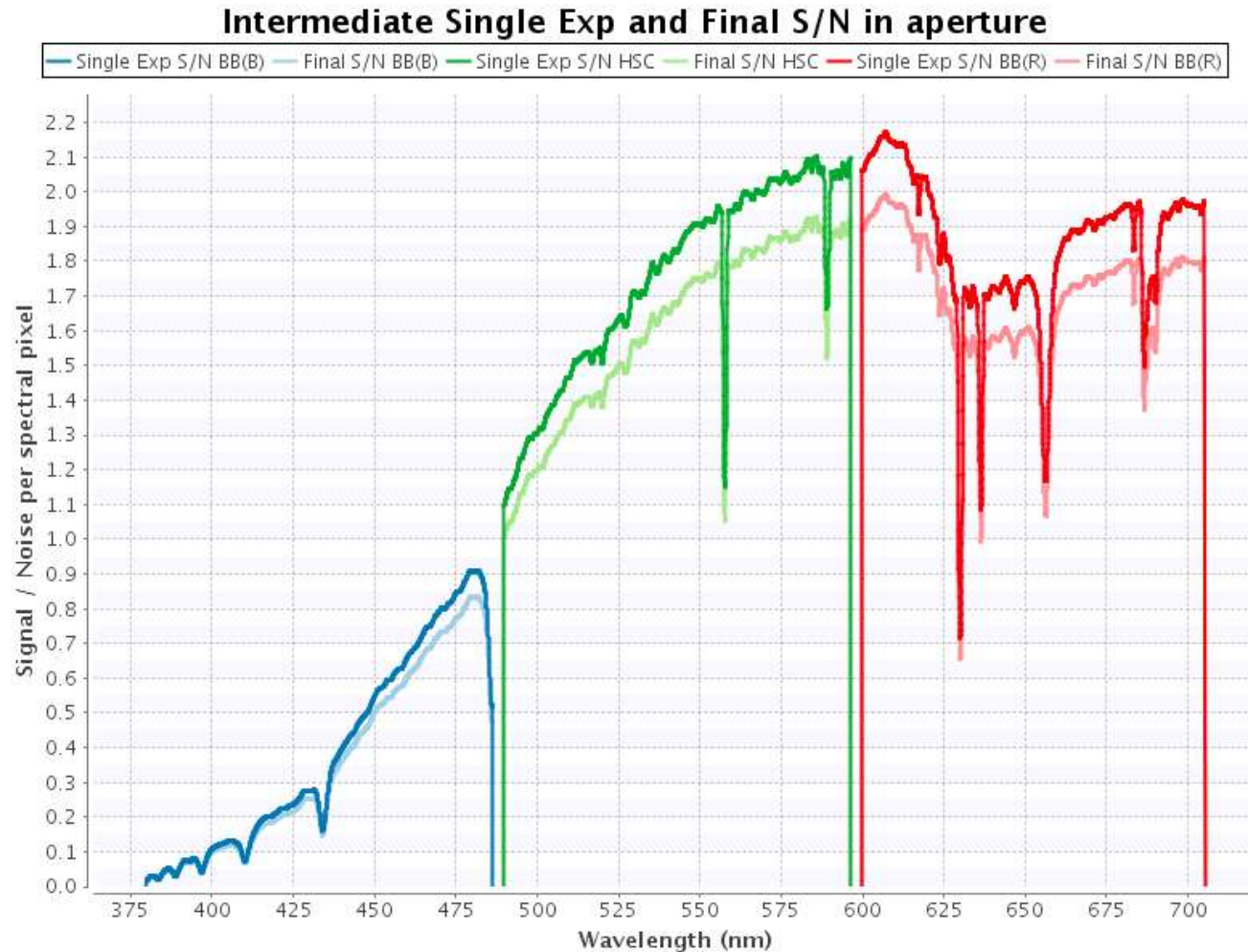
☐ Select an individual IFU element offset by: arcsec from the center

☐ Select multiple IFU elements along a radius with offsets of: to arcsec

Output:
For spectroscopy: ☐ autoselect or ☐ specify limits for plotted spectra (lower wavelength: μ m and upper wavelength: μ m)

Phase I: Proposal → ITC

And you get a preview of the expected S/N



“Submit this Proposal” button sends the proposal to the right place








Submit

Status: **Ready**

This proposal is ready for submission. Please double-check your PDF attachment and the generated cover material; once submitted, this proposal will be locked (but you will be able to open an editable copy).

Submit this Proposal

Open an Editable Copy

Partner	Status	Reference	Contact
 Chile	<input type="radio"/> None		
 United States	<input type="radio"/> None		
 University of H...	<input type="radio"/> None		
 Canada	<input type="radio"/> None		
 Brazil	<input type="radio"/> None		
 Argentina	<input type="radio"/> None		
 Republic of Korea	<input type="radio"/> None		

Overview

Time Requests

Scheduling

Submit

TAC

... then you wait about 3 months...

- For Queue and LLP proposals -

Proposals go from the proposer:

- to the National Time Allocation Committee (NTAC)
- to the International TAC
- to the Gemini Observatory

Answers and feedback sent back to proposers about 1.5 months before the start of the semester

... or wait 2 weeks!

- For FT proposals -

Proposals go from the proposer:

- to “competing” proposers
- to the Gemini Observatory

Successful programs start 1 month later.

... or do not wait at all!

- For PW or DDT proposals -

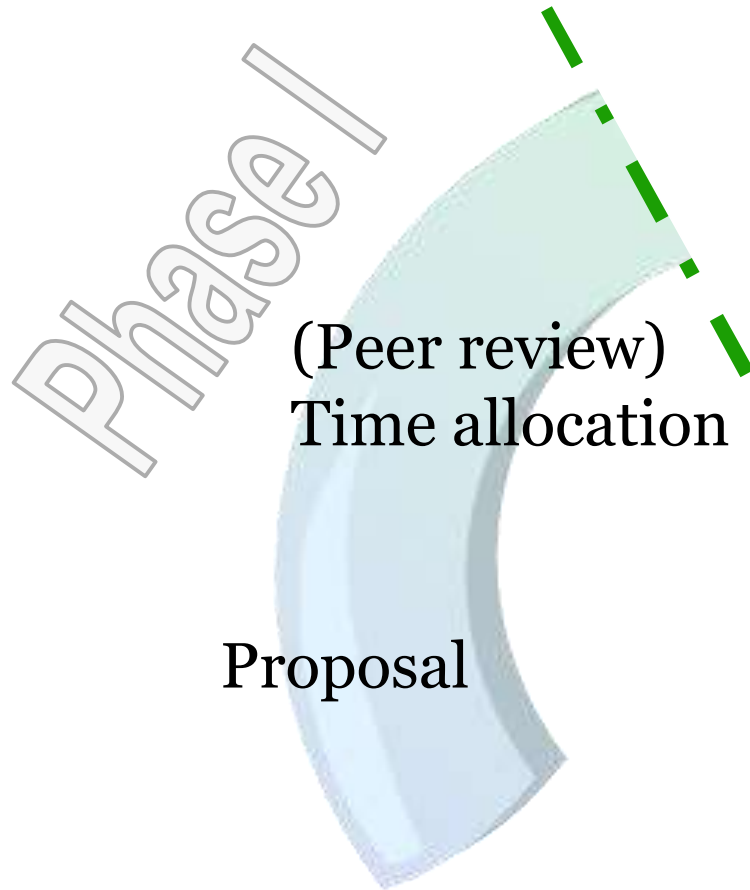
Proposals go from the proposer:

- straight to the Gemini Observatory

Successful programs could start on the same day!

Or the longest wait should not be longer than 1 week.

Any question about Phase I?



Proposal types:

Regular

Large & Long

Fast turnaround

Director Discretionary

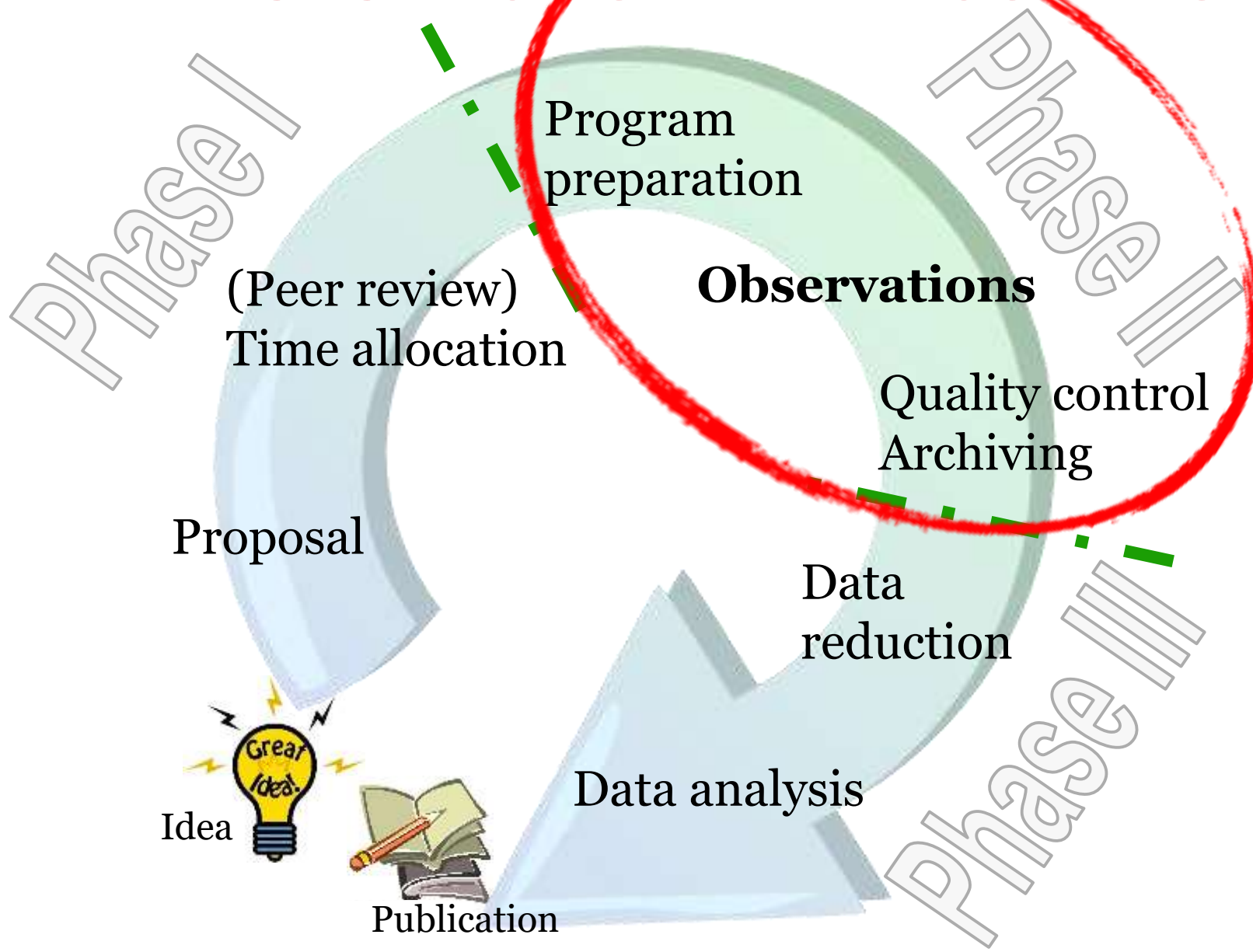
Poor Weather

ITC

PIT

Time allocation

THE LIFE CYCLE OF GEMINI PROGRAMS



Phase II: Program preparation → OT

Programs are prepared using the OT

Gemini OT - [GN-2017A-DD-6] Long Slit Spectroscopy of ULIRG with Type II Quasars

File Edit View Go Tools Help

Open Prev Back Forward Next Cut Copy Paste Plot Image Libraries Apply Reapply Queue

Conflict Sync

Gemini Science Program
Program information taken from the Phase 1 proposal.

Program Title

Program Reference GN-2018A-Q-501 (Queue, Band 2)

TOO Status None ☒ Notify PI

Principal Investigator / Contact

First Name Last Name

Support Phone

Investigator Email

Principal Support Email

Additional Support Email

Observing Time

Planned	Program	Partner	Allocated Program	Remaining Program
05:11:23	00:00:00	00:00:00	10:00:00	10:00:00

File Attachment \ Sync History \

Name	Size	Last Modified (UTC)	Description	Check?

Describe Mark Checked

OT video tutorial

COMPLETING PHASE II

Templates

Baseline: GMOS-S LongSlit

eta carina - [3] GMOS-S Im

II Zw40 - [3] GMOS-S Imagi

NGC5253 - [4] GMOS-S Lc

Haro2 - [1] GNIRS Spectro

IC2574 - [1] GNIRS Spectro

Haro3 - [1] GNIRS Spectro

Observation

Group

Note

Component

Iterator

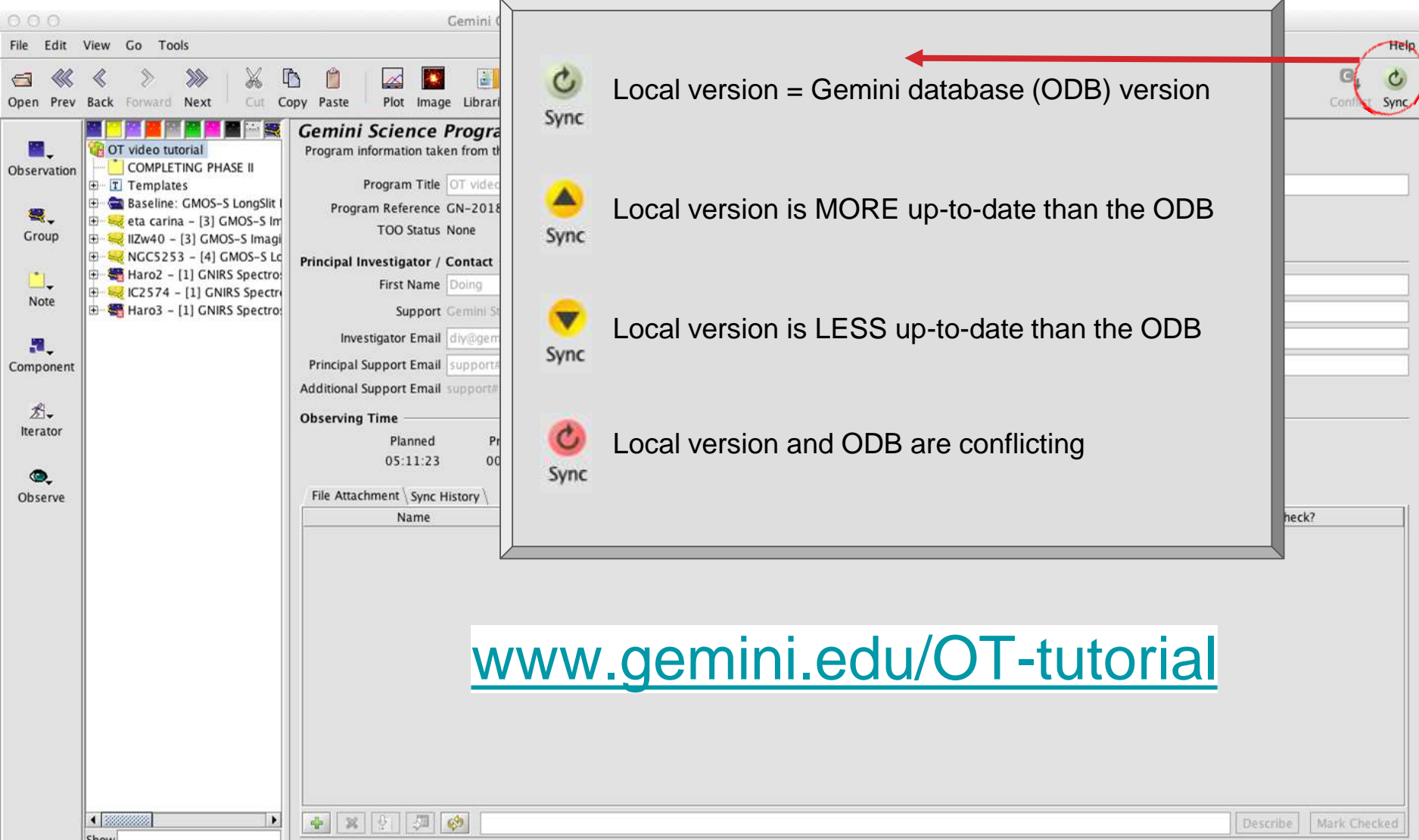
Observe

Show

www.gemini.edu/OT-tutorial

Phase II: Program preparation → OT

Local and Gemini versions are “Synced”



The screenshot shows the Gemini Science Program software interface. The top menu bar includes File, Edit, View, Go, and Tools. The toolbar contains icons for Open, Prev, Back, Forward, Next, Cut, Copy, Paste, Plot, Image, and Library. The left sidebar has buttons for Observation, Group, Note, Component, Iterator, and Observe. The main window displays the 'Gemini Science Program' title and program information. A red circle highlights the 'Sync' button in the top right corner, with a red arrow pointing from it to a legend box.

Gemini Science Program
Program information taken from the





Program Title: OT video
Program Reference: GN-2018
TOO Status: None

Principal Investigator / Contact
First Name: Doing
Support: Gemini S
Investigator Email: diy@gem
Principal Support Email: support@
Additional Support Email: support@

Observing Time
Planned: 05:11:23
Pr: 00

File Attachment: Sync History
Name:

Legend:

-  Sync: Local version = Gemini database (ODB) version
-  Sync: Local version is MORE up-to-date than the ODB
-  Sync: Local version is LESS up-to-date than the ODB
-  Sync: Local version and ODB are conflicting

www.gemini.edu/OT-tutorial

Phase II: Program preparation → OT

The OT templates give the threads to use...

The screenshot displays the Gemini OT software interface. A red box highlights the 'Templates' section in the left sidebar and the corresponding template structure in the main window. The template structure is as follows:

- QCs- try to get the standard to complete this program
- Templates
 - [1] GMOS-N LongSlit R400_G5305 None Longslit 0.75 arcsec
 - [9] Longslit: Acq (point source)
 - Description
 - Observer Instructions
 - GMOS-N
 - Observing Log
 - Sequence
 - GMOS-N: Define the Longslit
 - GMOS-N: Slit image
 - GMOS-N: Through-slit Images
 - [10] Longslit: Science with GCALflats
 - Description
 - GMOS-N
 - Observing Log
 - Sequence
 - GMOS-N Sequence
 - GMOS-N Sequence

The interface also shows a 'Gemini Science Program' section with fields for Program Title, Program Reference, TOO Status, Principal Investigator, and Observing Time. A table at the bottom lists file attachments with columns for Name, Size, Last Modified (UTC), Description, and Check?.

Name	Size	Last Modified (UTC)	Description	Check?

www.gemini.edu/OT-tutorial

Phase II: Program preparation → OT

... so you can apply them to targets

Gemini OT - [GN-2017A-DD-6] Long Slit Spectroscopy of ULIRG with Type II Quasars

File Edit View Go Tools Help

Open Prev Back Forward Next Cut Copy Paste Plot Image Libraries Apply Reapply Queue

Gemini Multi-Object Spectrograph (North)
The GMOS North instrument is configured with this component.

Filter: None
Disperser: B1200_G5301
Order: 1 ☐ MOS pre-imaging
CCD manufacturer: HAMAMATSU

Exposure Time (sec): 120.0
Central Wavelength (nm): 520.0
☐ Use Nod & Shuffle

Position Angle: Fixed 0.00 °E of N
Focal Plane Unit: ☒ Built-in None
☐ Custom Mask MDF
Slit Width: Other

CCD Readout Translation Stage Regions of Interest ISS Port Nod & Shuffle

X Binning: 2 **Y Binning:** 2

Set the CCD Readout Characteristics

- ☒ Slow Read/Low Gain : Standard Science Mode
- ☐ Fast Read/Low Gain : Acquisitions / Rapid Readout
- ☐ Fast Read/High Gain : Bright Targets Imaging/Spectroscopy
- ☐ Slow Read/High Gain : Engineering Only
- ☐ Use 6 Amplifiers
- ☒ Use 12 Amplifiers

Resulting CCD Gain: 1.6
Mean read noise: 4.1
Number of amps: twelve

Problems

Description
A grating is defined but not a slit, mask or IFU

OT video tutorial
COMPLETING PHASE II
Templates
Baseline: GMOS-S LongSlit I
eta carina - [3] GMOS-S Im
II Zw 40 - [3] GMOS-S Imagi
NGC 5253 - [4] GMOS-S Lo
Haro 2 - [1] GNIRS Spectro
IC 2574 - [1] GNIRS Spectro
Haro 3 - [1] GNIRS Spectro
WOS
[302] GMOS-N Observa
[303] GMOS-N Observa
Observing Condition
Target: WR142
GMOS-N
Observing Log
Sequence
[304] GMOS-S Observa

Observation
Group
Note
Component
Iterator
Observe

Show

Phase II: Program preparation → OT

The OT has an embedded ITC!

Gemini OT - [GN-2017A-DD-6] Long Slit Spectroscopy of ULIRG with Type II Quasars

File Edit View Go Tools Help

Open Prev Back Forward Next Cut Copy Paste Plot Image Libraries Apply Reapply Queue

OT video tutorial
COMPLETING PHASE II
Templates
Baseline: GMOS-S LongSlit I
eta carina - [3] GMOS-S Im
II Zw 40 - [3] GMOS-S Imagi
NGC 5253 - [4] GMOS-S Lc
Haro 2 - [1] GNIRS Spectro
IC 2574 - [1] GNIRS Spectro
Haro 3 - [1] GNIRS Spectro
WOs
[302] GMOS-N Observa
[303] GMOS-N Observa
Observing Condition
Target: WR142
GMOS-N
Observing Log
Sequence
[304] GMOS-S Observa

Base Sequence Component

This component contains the sequence of operations that generates the observation science data.

Title: Sequence

Sequence \ Timeline \ ITC Imaging \ ITC Spectroscopy \

Conditions:

SB Any/Bright CC 80%/Cloudy IQ 85%/Poor WV Any Airmass 1.5

Analysis Method:

Target Aperture: ☒ Auto ☐ User arcsec
Sky Area: x target area

Data Labels	Images	Exposure Time (s)	Total Exp. Time (s)	Source Mag	Source Fraction	Peak (e-)	Peak (ADU)	Peak (%FW)	S/N Single Coadd	S/N Total
001-012	12	120.0	1440.0	12.96 V	1.00	976	598	0.78	73.99	251.88

Signal and Background in one pixel

— Signal BB(B) — SQRT(Background) BB(B) — Signal HSC — SQRT(Background) HSC — Signal BB(R) — SQRT(Background) BB(R)

Intermediate only

— Single Exp S/N BB(B) — Final S/N BB(B) — Single Exp S/N BB(R) — Final S/N BB(R)

OT Elevation curves



OT Elevation curves for any time of the year



Phase II: Program preparation → OT

OT position editor

Position Editor - img_dsaGemini_ra_2042144.340_dec_37422430.31_w_900_h_900.fits

File Edit View Go Graphics Catalog

Open Prev Back Forward Next Cut Copy Paste Plot Image

Tools: Browse, Drag, Erase

Create: GMOS OMFS, Off-axis, PWFS1, Tuning Star, PWFS2, User, Blind-offset

Target: Asterism, Guide, Target, Catalog

Field Of View: Acq Cam, PWFS, OMFS, Science

Auto Guide Search: Default (GMOS-N OMFS), GMOS-N OMFS, GN PWFS1, GN PWFS2, Off

Image Catalog: DSS Gemini, DSS ESO, DSS ESO (I), 2MASS-J, 2MASS-K

Program information taken

Program Title
Program Reference G
TOO Status N

Principal Investigator / Co-PI

First Name
Support G
Investigator Email d
Principal Support Email S
Additional Support Email sl

Observing Time

Planned
05:11:23

File Attachment Sync His

Name

1x -423.503 4215.0 20:21:46.22, +37:23:27.09 J2000 STScI/MAST Fpg

Describe Mark Checked

www.gemini.edu/OT-tutorial

I have got a program (in queue mode)!

So what?

- Will I get data?
- What should I do now? And when?
- What if something is wrong?
- What if there is something I don't understand?
- What if there is something I don't like?

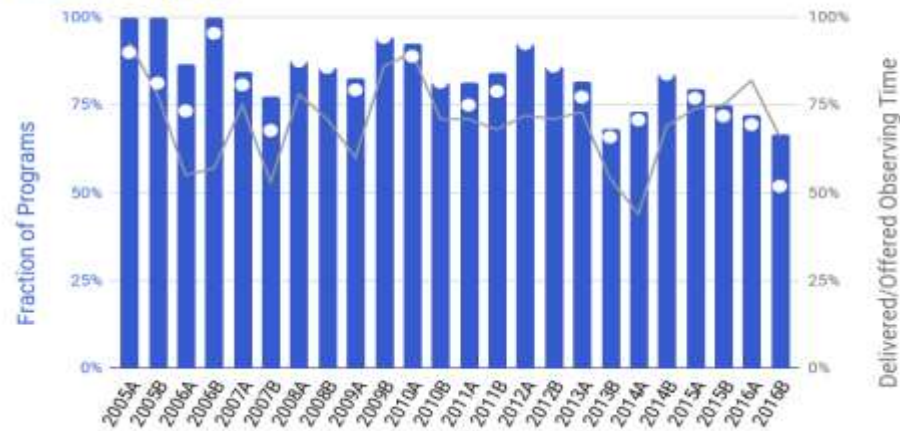
The likelihood to get data (in queue mode) depends on:

1. Program Band (1, 2, 3)
2. Program type (Q, LP, DD, FT, PW)
3. Program restrictions (timing windows, weather, frequency)
4. Program status (ToO, started, intru. configuration, ...)

Phase II: Observations → expectations

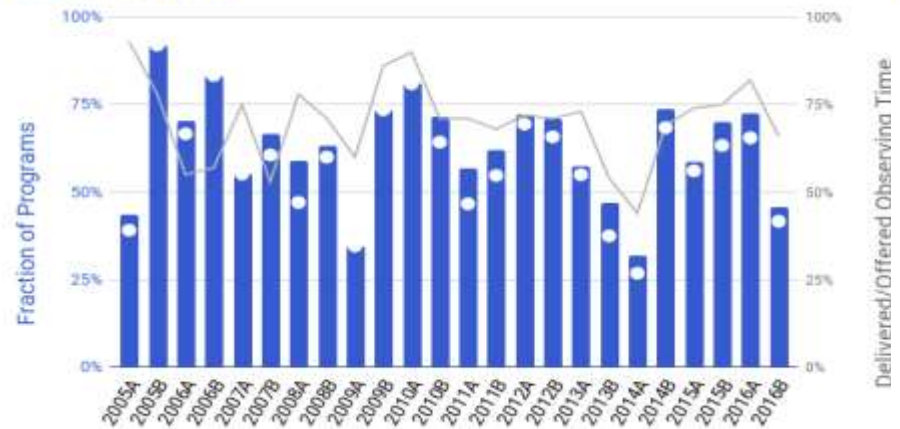
The likelihood to get data depends on 1. the Band

GN Band 1 Queue

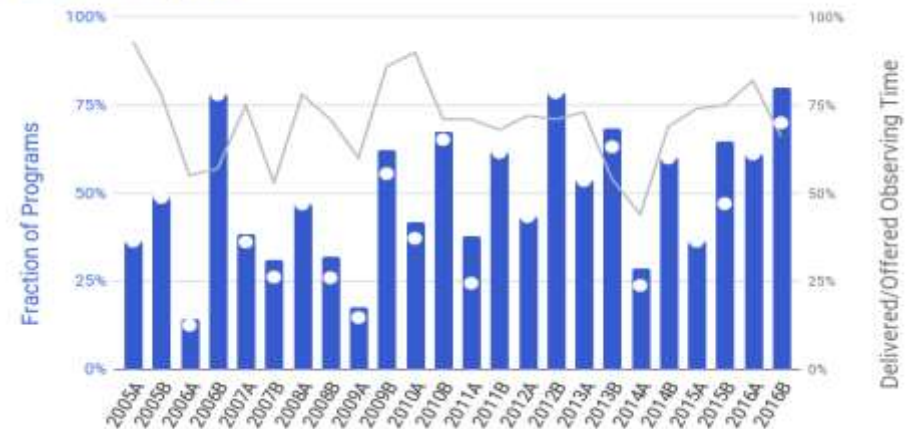


- Band 1 has absolute priority
- Band 3 are “fillers”
- Band 2 are successful when the semester goes well

GN Band 2 Queue



GN Band 3 Queue





Phase II: Observations → expectations

The likelihood to get data depends on 2. the program type



(Priority increases from bottom to top)

DD	FT	Q	LP	Others
Band 1				
		Band 1	Band 1	
Band 2				
		Band 2	Band 2	ENG
		Band 3		
				Band 4 (PW)

NOTE: this is a methodology

The likelihood to get data depends on 3. the program restrictions

- **Timing Windows:** Timing windows matter, and observations can be scheduled in better conditions than requested if needed to try and meet a timing window.
- **Time frequency:** Same as for Timing Windows, time frequency requirement is followed (after the priority based on the Bands has been considered).
- **Weather constraints:**
 - *Best weather conditions* (IQ20%, CC50%) happen 10-15% of the time.
 - Execution in better than requested conditions will on average lead to lower completion rates!
 - *Water Vapor* and *Sky Background* restrictions are taken into account.

NOTE: this is a methodology

The likelihood to get data depends on 4. the program status

- **Standard ToOs:** Submitted during the day and need to be done before their windows end. You need to do a best effort to get these, but there is some flexibility.
- **Rapid ToOs:** Take absolute priority at the moment they are triggered (after the priority based on the Bands has been considered).
- **Current completion:** At equal priority level otherwise, programs that have been started should get priority. However, QC can give a near 80% complete program higher priority than a >80% complete program.
- **R.A.:** Earlier targets take priority if we are about to lose them (after the priority based on the Bands has been considered)
- **Instrument configuration:** Between two equivalent programs, one can take priority if it needs the same configuration as a higher priority program.
- **Known thesis projects:** They are completed first

NOTE: this is a methodology

Queue mode VS Classical mode

Queue

- Scheduled on daily basis
- Multiple programs per night
- 3 instrum.+AO each night
- Ran by staff
- Flexible with weather

Classical

- Scheduled ahead of time
- 1 program at a time
- 1 (or few) instrument(s)
- Ran by the research team
- No control on weather

NOTE: both are prepared with the same
Observing Tool

Or a mix of both? **PRIORITY VISITOR mode**

Priority Visitor Observing mode is a scheduled visit to:

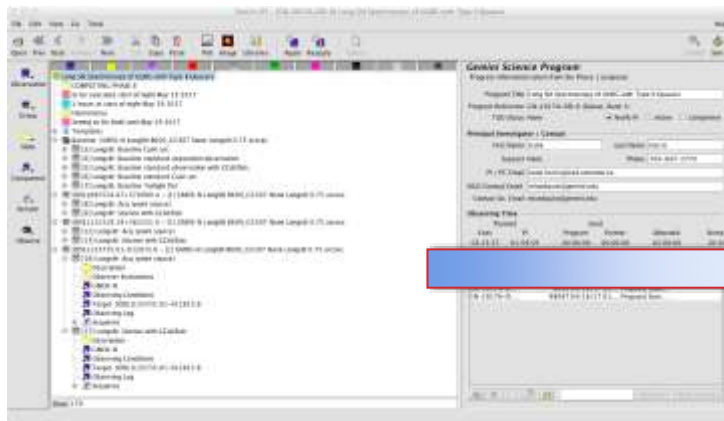
1. Run your program (would conditions allow)
 2. Run the queue (if not your program)
- Same expectations as for Queue, but you get the “Classical” experience.

Bring One, Get One! Gemini subsidizes US\$2000 for student coming with You!



First ‘BOGO’, Allison Noble (U. of Toronto), at Gemini South

And magics happens at night!



Cloud-based archive

archive.gemini.edu

Gemini Observatory Archive Search GS-2009B-Q-32 20091116

https://archive.gemini.edu/searchform/cols=CTOWEQ/GS-2009B-Q-32/notengineering/imaging/20091116/NotFail

CS * Observations * QC * Weather * Paperwork * temp * Data * Gemini website project *

Gemini Observatory Archive [Help](#) - [About](#) - [Misc Files](#) achene ▾

PI/Col Name: (leave empty for Any) (no punctuation; separate with spaces)

Program ID: GS-2009B-Q-32 (or Obs. ID / Data Label. Exact Match)

UTC Date: 20091116 (YYYYMMDD or start - end)

Instrument: GMOS-S (Select GMOS for GMOS-N and GMOS-S)

Obs. Class: Any (help)

Obs. Type: Any (help)

Mode: Imaging (Imaging / Spectroscopy etc)

Adaptive Optics: Any (help)

Program Title: (leave empty for Any) (no punctuation; separate with spaces)

Target Name: (leave blank for Any) (Name of Target)

Resolver: None Resolve (Name Resolver)

RA: (leave blank for Any) (HH:MM:SS.ss or decimal degrees)

Dec: (leave blank for Any) ([+-]DD:MM:SS.ss or decimal degrees)

Search radius: (leave blank for 180 arcsec) (arcsecs or decimal degrees)

Raw / Reduced: Any (Select data by processing state)

Advanced Options ▾ (click to show / hide) **Column Selection ▾** (click to show / hide)

GMOS

Exposure Time: (leave blank for Any) (Exposure Time)

Binning: Any (CCD Binning)

Disperser: Any (GMOS Gratings)

Filter: Any (GMOS filters)

Mask: Any (custom mask) (Focal Plane Mask)

Nod&Shuffle: Any (Nod and Shuffle)

Readout Speed: Any (Readout Speed)

Readout Gain: Any (Readout Gain)

ROI: Any (Region of Interest)

Search Reset to previous search Start Over Search ObsLogs Only Search Programs Only (help on buttons)

Search Results **Load Associated Calibrations** **Load Associated Observation Logs**

Key: [P] to preview an image of the data in your browser. [D] to download that one file. [A] to see program Abstract and PI / Co-I details. [L] to see observing Log entries. Use the check boxes to select a subset of the results to download, or if available a download all link is at [the end of the table](#). Click the filename to see the full header in a new tab. Click anything else to add that to your search criteria. You can also [save these results as JSON](#).

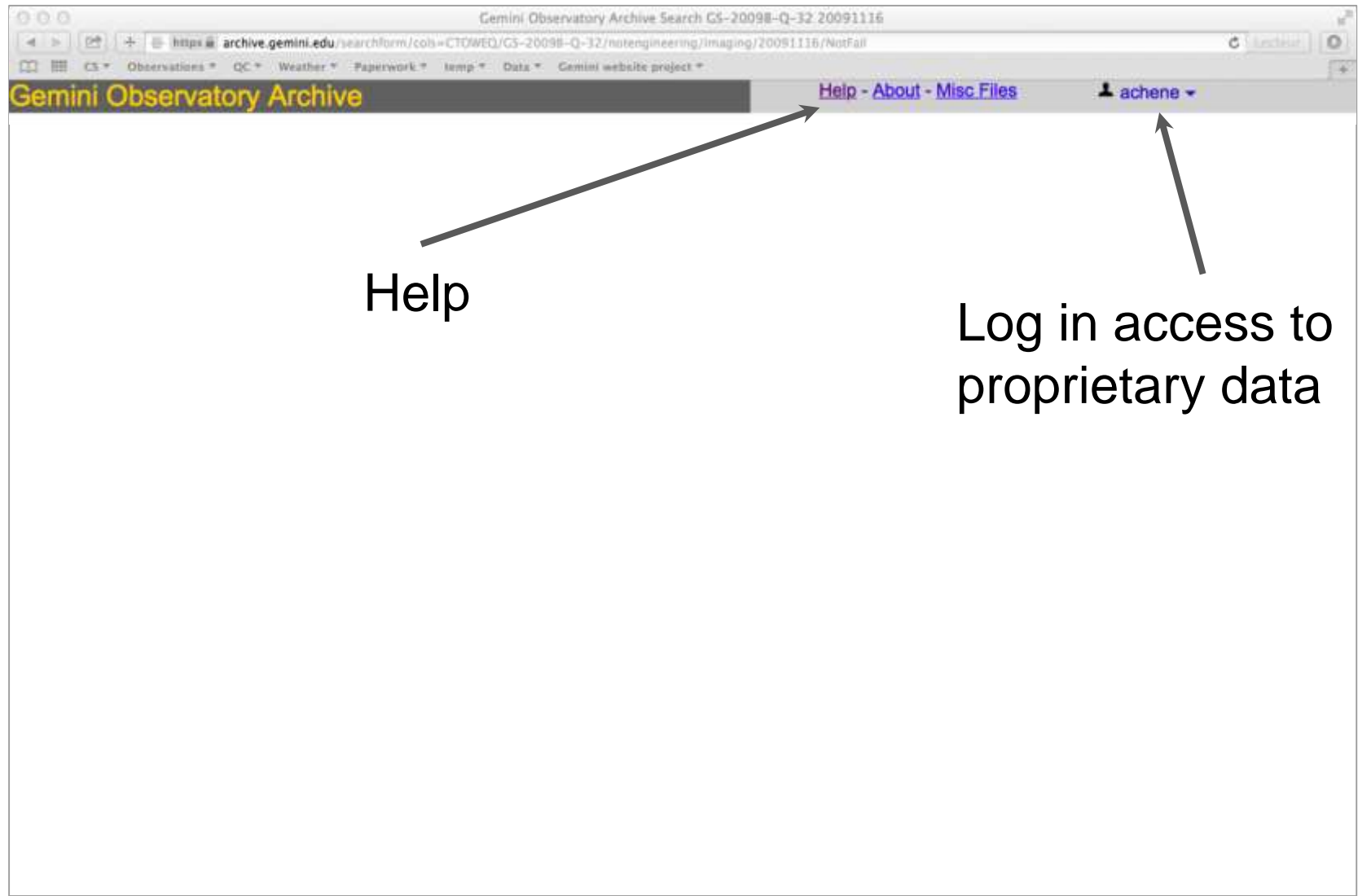
Download	Filename	Data Label	UT Date Time	Inst	Class	Type	Object	WaveBand	ExpT	QA
[P] [D] <input type="checkbox"/>	imgS20091116S0064_add.fits	GS-2009B-Q-32-17-001-MRG-ADD	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0064.fits	[A] [L] GS-2009B-Q-32-17-001	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0065.fits	[A] GS-2009B-Q-32-17-002	2009-11-16 07:50:07	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0066.fits	[A] GS-2009B-Q-32-17-003	2009-11-16 07:51:11	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0067.fits	[A] GS-2009B-Q-32-17-004	2009-11-16 07:55:28	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass

Mark All Files Download Marked Files

Download all 5 files totalling 0.03 GB - this is always available at [this link](#)

Cloud-based archive

archive.gemini.edu



Cloud-based archive

archive.gemini.edu

The screenshot shows the Gemini Observatory Archive Search web interface. The browser address bar displays the URL: <https://archive.gemini.edu/searchform/cols=CTD/WEQ/GS-2009B-Q-32/notengineering/imaging/20091116/NotFail>. The page title is "Gemini Observatory Archive Search GS-2009B-Q-32 20091116". The search form includes the following fields and options:

- PI/Col Name:** (leave empty for Any) (no punctuation; separate with spaces)
- Program ID:** GS-2009B-Q-32 (or Obs. ID / Data Label. Exact Match)
- UTC Date:** 20091116 (YYYYMMDD or start - end)
- Instrument:** GMOS-S (Select GMOS for GMOS-N and GMOS-S)
- Obs. Class:** Any (help)
- Obs. Type:** Any (help)
- Mode:** Imaging (Imaging / Spectroscopy etc)
- Adaptive Optics:** Any (help)
- Program Title:** (leave empty for Any) (no punctuation; separate with spaces)
- Target Name:** (leave blank for Any) (Name of Target)
- Resolver:** None (Resolve (Name Resolver))
- RA:** (leave blank for Any) (HH:MM:SS.ss or decimal degrees)
- Dec:** (leave blank for Any) ([+/-]DD:MM:SS.ss or decimal degrees)
- Search radius:** (leave blank for 180 arcsec) (arcsecs or decimal degrees)
- Raw / Reduced:** Any (Select data by processing state)
- Advanced Options** (click to show / hide)
- Column Selection** (click to show / hide)

Search by:

- PI name
- Program ID
- Instrument
- Mode
- Observing mode
- Program title
- Sky position
- Target name (can use name resolver)
- etc.

Cloud-based archive

archive.gemini.edu

Result of the search!

Search Reset to previous search Start Over Search ObsLogs Only Search Programs Only ([help on buttons](#))

Search Results Load Associated Calibrations Load Associated Observation Logs

Key: [P] to preview an image of the data in your browser. [D] to download that one file. [A] to see program Abstract and PI / Co-I details. [L] to see observing Log entries. Use the check boxes to select a subset of the results to download, or if available a download all link is at [the end of the table](#). Click the filename to see the full header in a new tab. Click anything else to add that to your search criteria. You can also [save these results as JSON](#).

Download	Filename	Data Label	UT Date Time	Inst	Class	Type	Object	WaveBand	ExpT	QA
[P] [D] <input type="checkbox"/>	mrqS20091116S0064_add.fits	GS-2009B-Q-32-17-001-MRG-ADD	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0064.fits	[A] [L] GS-2009B-Q-32-17-001	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0065.fits	[A] GS-2009B-Q-32-17-002	2009-11-16 07:50:07	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0066.fits	[A] GS-2009B-Q-32-17-003	2009-11-16 07:51:11	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0067.fits	[A] GS-2009B-Q-32-17-004	2009-11-16 07:55:28	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass

Mark All Files Download Marked Files

Download all 5 files totalling 0.03 GB - this is always available at [this link](#)

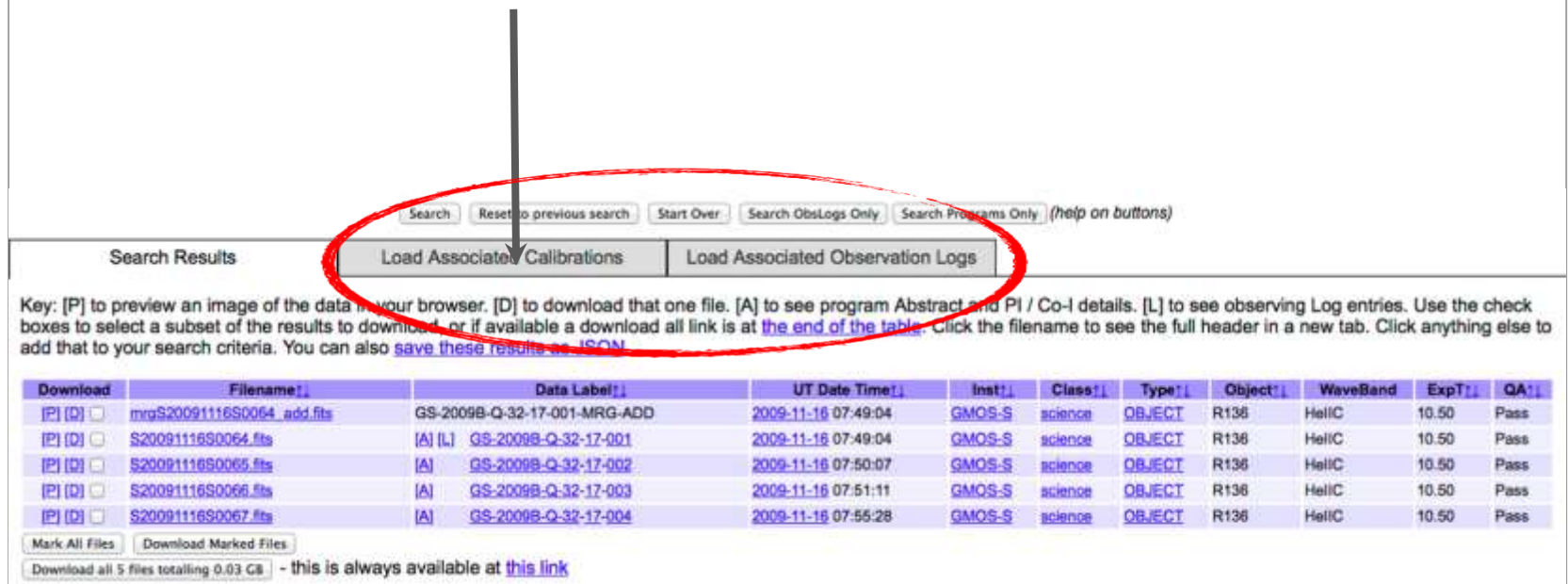
Cloud-based archive

archive.gemini.edu

Result of the search!

Calibration and Logs relevant to the observations.

Calibrations association includes all baseline calibrations (e.g., biases, flats, ards, standard star).



Search Results

Key: [P] to preview an image of the data in your browser. [D] to download that one file. [A] to see program Abstract and PI / Co-I details. [L] to see observing Log entries. Use the check boxes to select a subset of the results to download, or if available a download all link is at [the end of the table](#). Click the filename to see the full header in a new tab. Click anything else to add that to your search criteria. You can also [save these results as JSON](#).

Download	Filename	Data Label	UT Date Time	Inst	Class	Type	Object	WaveBand	ExpT	QA
[P] [D] <input type="checkbox"/>	mrqS20091116S0064_add.fits	GS-2009B-Q-32-17-001-MRG-ADD	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0064.fits	[A] [L] GS-2009B-Q-32-17-001	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0065.fits	[A] GS-2009B-Q-32-17-002	2009-11-16 07:50:07	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0066.fits	[A] GS-2009B-Q-32-17-003	2009-11-16 07:51:11	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0067.fits	[A] GS-2009B-Q-32-17-004	2009-11-16 07:55:28	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass

Mark All Files Download Marked Files

Download all 5 files totalling 0.03 GB - this is always available at [this link](#)

Result of the search!

- Mark all files
- Download marked files
- Download all

[D] for download

Search (help on buttons)

Search Results

Key: [P] to preview an image of the data in your browser. [D] to download that one file. [A] to see program Abstract and PI / Co-I details. [L] to see observing Log entries. Use the check boxes to select a subset of the results to download, or if available a download all link is at [the end of the table](#). Click the filename to see the full header in a new tab. Click anything else to add that to your search criteria. You can also [save these results as JSON](#).

Download	Filename	Data Label	UT Date Time	Inst	Class	Type	Object	WaveBand	ExpT	QA
[P] [D] <input type="checkbox"/>	mrpS20091116S0005_add.fits	GS-2009B-Q-32-17-001-MRG-ADD	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S0005.fits	[A] [L] GS-2009B-Q-32-17-001	2009-11-16 07:49:04	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S00065.fits	[A] GS-2009B-Q-32-17-002	2009-11-16 07:50:07	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S00066.fits	[A] GS-2009B-Q-32-17-003	2009-11-16 07:51:11	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass
[P] [D] <input type="checkbox"/>	S20091116S00067.fits	[A] GS-2009B-Q-32-17-004	2009-11-16 07:55:28	GMOS-S	science	OBJECT	R136	HellC	10.50	Pass

Download all 5 files totalling 0.03 GB - [this is always available at this link](#)

Cloud-based archive

archive.gemini.edu

About the archive:

- Hosted by Amazon web services
- Data shows up ~**1 minute** after it is observed
- 800 registered users
- Estimated 400 searches per day!

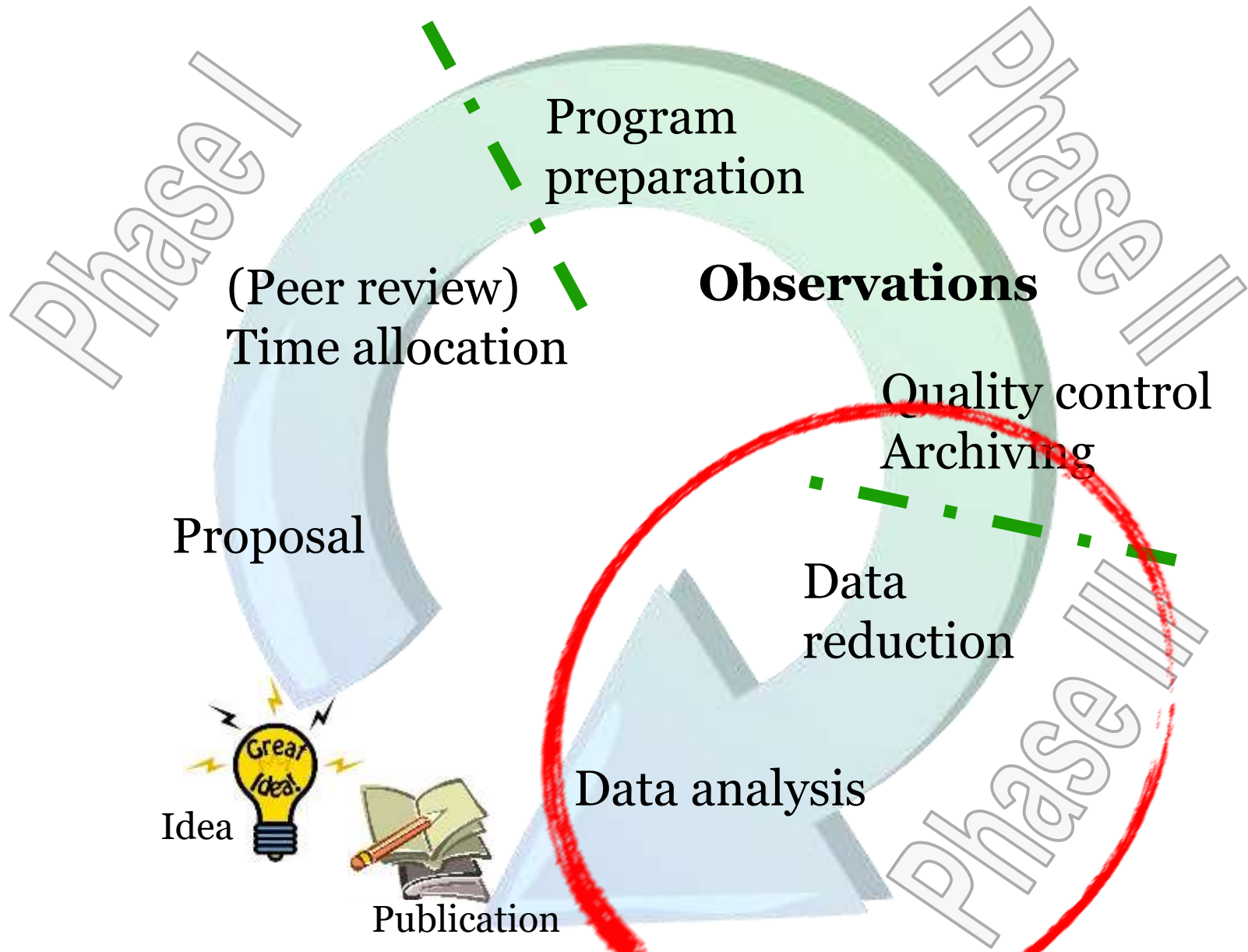
Accessing data with scripts?

- Application Programmer Interface (API) provided for searching the archive and downloading data.
- Results in JSON

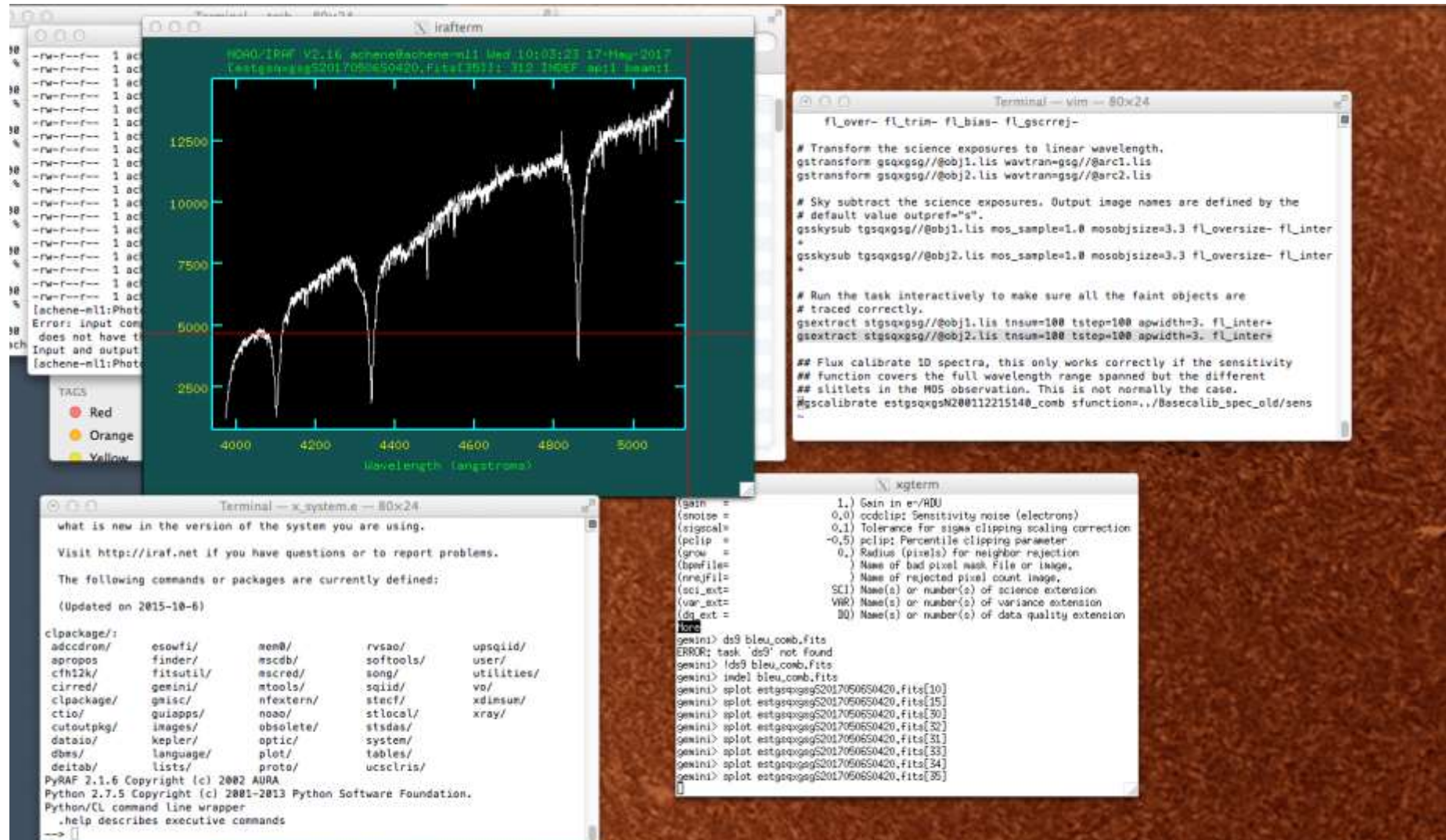
Any question about Phase II?



THE LIFE CYCLE OF GEMINI PROGRAMS



Current data processing based on IRAF



What the software does and does not do:

- **DOES** remove detector, instrument, telescope, and atmospheric effect
- **DOES** process the data in a format ready for science (e.g., raw to x,y,wavelength cube for IFU)
- **DOES** covers all facility instrument, past and present
- **DOES NOT** include analysis tools

Phase III: Data Reduction → software

All softwares and packages available through our website

www.gemini.edu/sciops/data-and-results

Using AstroConda installation!



GEMINI OBSERVATORY

Science Public/Images About Careers Contact Google Custom Search Search

Change page style: Default

Data and Results
Gemini Observatory > Sciops

Introduction
This section provides information about Gemini data. All queries regarding Gemini data should be made through the [Gemini HelpDesk](#). For problems specifically with the Gemini IRAF package, please first look at the [Data Reduction Support](#) page before submitting a HelpDesk request.

1. After the Data are taken

- [New Data Notification](#): Nightly email notification of new data.
- [Quality Assessment](#): Criteria used to assess data quality, and associated header keywords.
- [Gemini Observatory Archive](#): The new archive is now the primary conduit to download Gemini data.

2. Understanding and Processing the Data

- [Understanding the Data Formats](#): Brief description of Gemini's multi-extension FITS format.
- [Getting Started with Gemini data and the Gemini IRAF package](#).
- [Processing Software](#): Portal to the Gemini Data Processing Software.
- [Data Reduction Support](#) and [Known Problems](#) with the Gemini IRAF package.
- [Data Workshops](#): Summaries and links to Gemini data related workshops, including data reduction tutorials.
- [Data Reduction User Forum](#): User-supported location for trading ideas, scripts and best practices, and taking part in user-driven public discussions of data reduction processes and strategies.
- [US NGO data reduction portal](#): Discussion of and links to data reduction procedures for all current Gemini instruments.

3. Publishing Results

- [Gemini Publications](#): Papers by Gemini users and staff.
- [Acknowledging Gemini](#): How to acknowledge Gemini data, including archival data.

Left Sidebar:

- Announcements
- Contact
- Library
- PIO
- Sciops**
 - Gemini Home
 - Telescopes and Sites
 - Science Visitors at Gemini
 - Observing With Gemini
 - Instruments
 - Instrumentation & Development
 - Queue Scheduling
 - Data and Results**
 - New Data Notification
 - Quality Assessment
 - Gemini Observatory Archive
 - Data Formats
 - Getting Started
 - Processing Software
 - Data Reduction Support
 - Data Workshops
 - Gemini Publications
 - Acknowledging Gemini
 - PI/Observer Feedback
 - Gemini Research Staff
 - Helpdesk
 - Statistics

Future of Gemini Data Reduction with Python and Astropy!

- IRAF was first released in 1986, and last full support from NOAO was in 2015
- Astropy is a strong and active community
- DRAGONS:
 - User optimizable data reduction pipeline
 - Modern programming and Open source!
 - New instruments **GHOST** and **OCTOCAM**
 - Currently used at Gemini for Data Quality control
 - Public release to come

Do not hesitate to contact us!

- For any issue with the data:
 - gemini.edu/sciops/helpdesk/ - HELPDESK
 - sus_inquiries@gemini.edu - support email
 - contact your **Gemini Contact Scientist** for a phone or Skype/Zoom/telecon call
- To share your experience, or your code:
 - drforum.gemini.edu

**For rapid HelpDesk support,
please include:**

- System information such as
 - Operating system,
 - AstroConda version,
 - Gemini package version
- List of filename of the minimum data set to reproduce the problem, including calibration files
- The exact command you are issuing
- The full input parameter list (from the lpar dump)

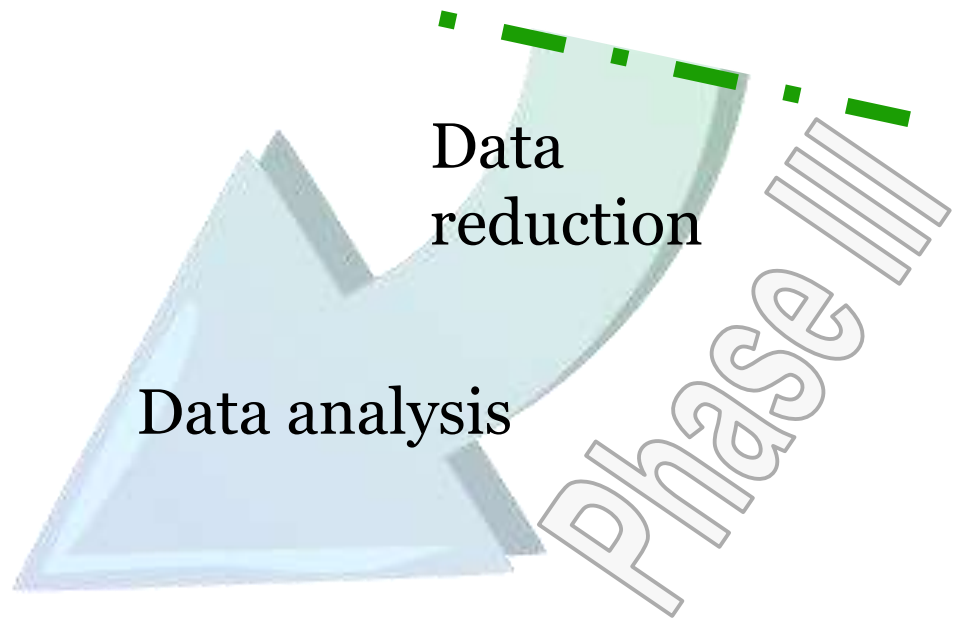
Any question about Phase III?

Data Reduction:

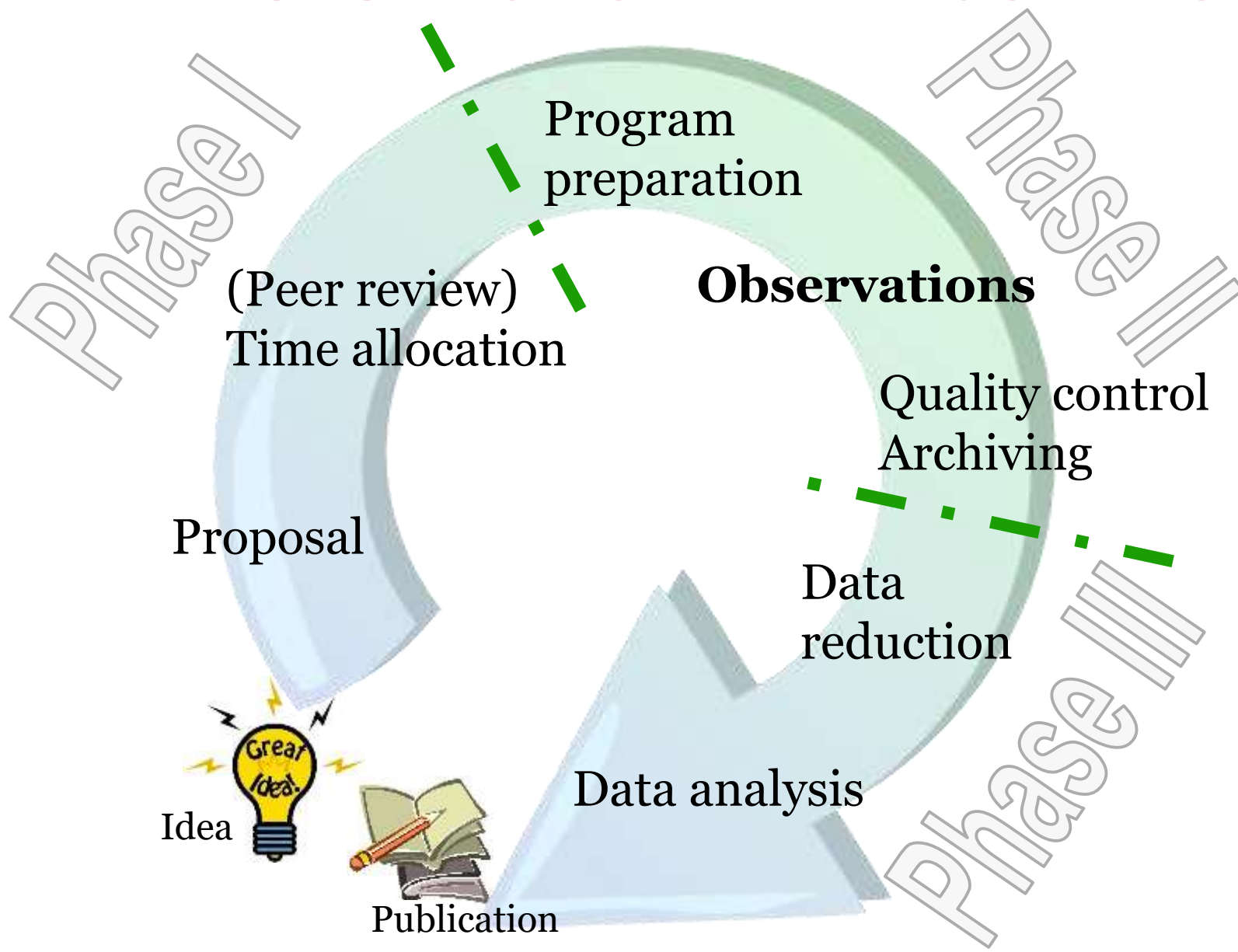
Current software

Future software

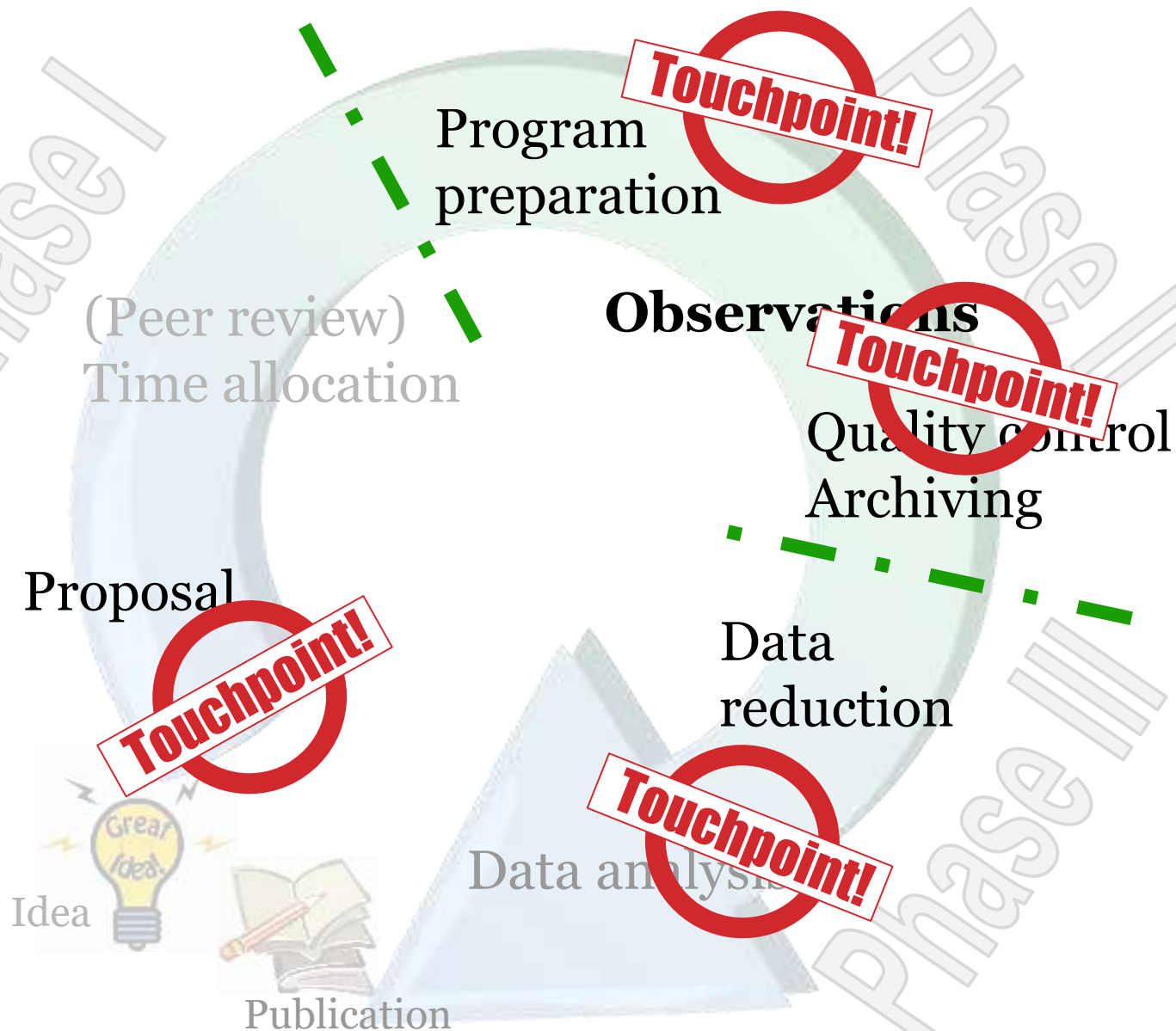
Support



THE LIFE CYCLE OF GEMINI PROGRAMS



THE LIFE CYCLE OF GEMINI PROGRAMS



Support offered to Gemini science users

A program is a collaborative effort between the PI (and research team) and the Gemini staff.

Its success can depends on how we communicate!

So, do not hesitate to :

- Use the helpdesk
- Contact your NGO
- Contact the Contact Scientist
- Contact the Heads of Science Operation
- Answer surveys

And the “collaboration” goes even beyond!

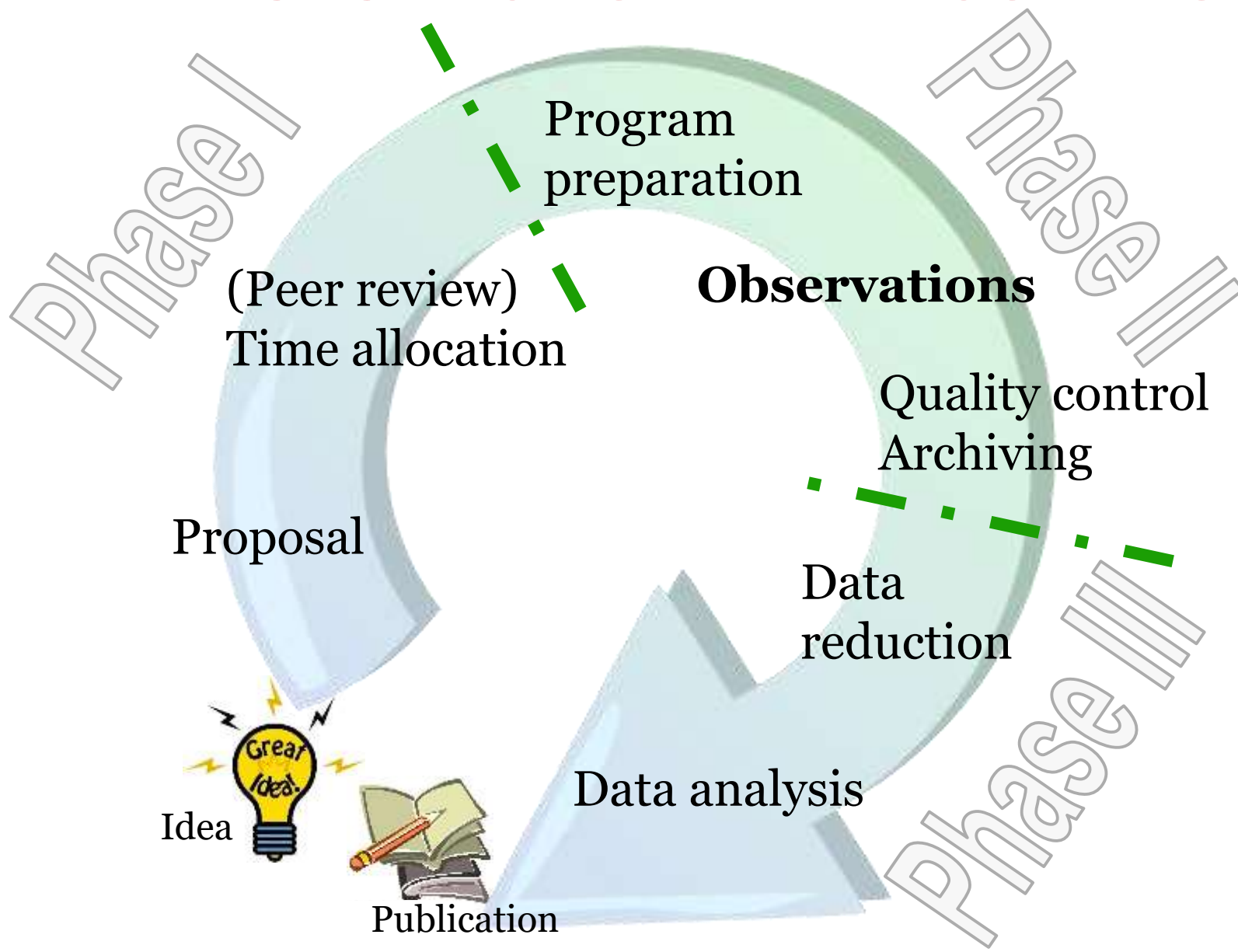
- Your **science team**
- The members of your **National TAC** and the **ITAC**
- Your **National Gemini Office** (NGO) and **Contact Scientist**
- The **Queue Coordinator** (a trained PhD astronomer)
- The **Science Operation Specialist** (who operate the telescope, observes and checks the data)
- **Engineers teams** and **technical support teams** (checking and fixing instruments and telescope faults)
- The **Data Reduction Software** group
- **Administration team** (who organizes your visit)
- And more...

A low-angle photograph looking up at three workers on a large blue industrial structure. One worker is on a blue metal platform on the left, another is on an orange scissor lift in the center-right, and a third is at the bottom center, seen from behind. The structure has various pipes and mechanical components. The sky is visible in the background.

**160 people working
on many levels to
make your research
possible**

**Gemini North laser upgrade
15 February 2018**

THE LIFE CYCLE OF GEMINI PROGRAMS



THE LIFE CYCLE OF GEMINI PROGRAMS

