Gemini Program Platform

An Early Look at Gemini / NOIRLab's Next Generation Observing System

AAS 240
Exhibitor Theater
2022-Jun-16 @ 9am

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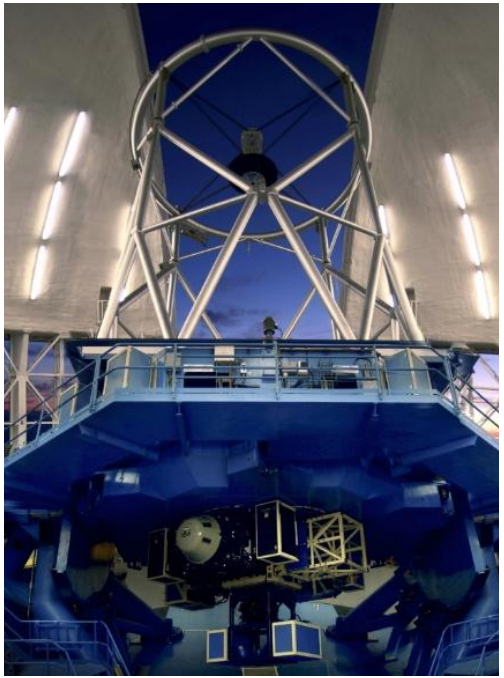
Gemini: twin 8-meter telescopes with coverage of both hemispheres

Gemini North in Hawaii

Gemini South in Chile

Gemini supports four facility instruments + AO at each site. (three + AO may be installed on the telescope)

Gemini North	Gemini South
GMOS-N	GMOS-S
GNIRS	FLAMINGOS-2
NIFS	GSAOI
NIRI	
ALTAIR (NGS & LGS)	GeMS (MCAO) LGS (5)



+Visitor instruments: `Alopeke & Zorro, GRACES, IGRINS, MAROON-X

Proposal Types

Regular Semester: (*once per semester)*
- Through the National Time Allocation Committees (NTACs)
- For regular proposals
- (oversubscription: ~2)

~70%

Large & Long Programs: (*once per year)*
- Through the Large Program TAC
- For large and/or long **ambitious** proposals (up to 6 sem)
- (oversubscription: >5)

20%

Fast Turnaround: (*once per month)*
- Peer reviewed
- For short, immediate, trial, and/or follow-up proposals
- (oversubscription: ~2)

10%

Director's Time: (*any time)*
- Chief scientist/Director approval
- For short, urgent projects

<5%

Poor Weather: (*any time)*
- Head of Science Operations approval
- For the worst conditions, bright targets

Observing modes

Queue: (time domain, special conditions)

95%

You submit your observations, we observe for you

You can look over our shoulders by *eavesdropping*!

Classical/Visitor: (special configurations, real-time decisions)

5%

You visit the observatory and conduct your observations

Priority Visitor Observing:

Come during a block, pick & choose the best time for your observations! Queue backup

Base Facility Operations:

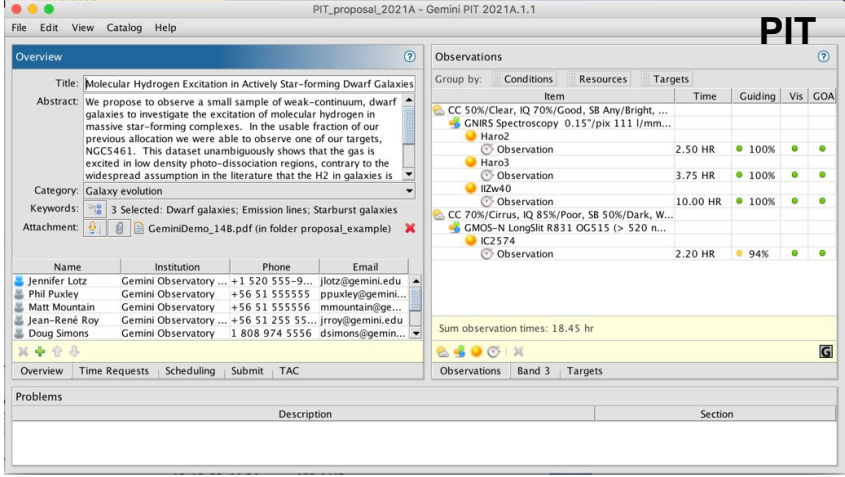
Most observing is from the sea level facilities.

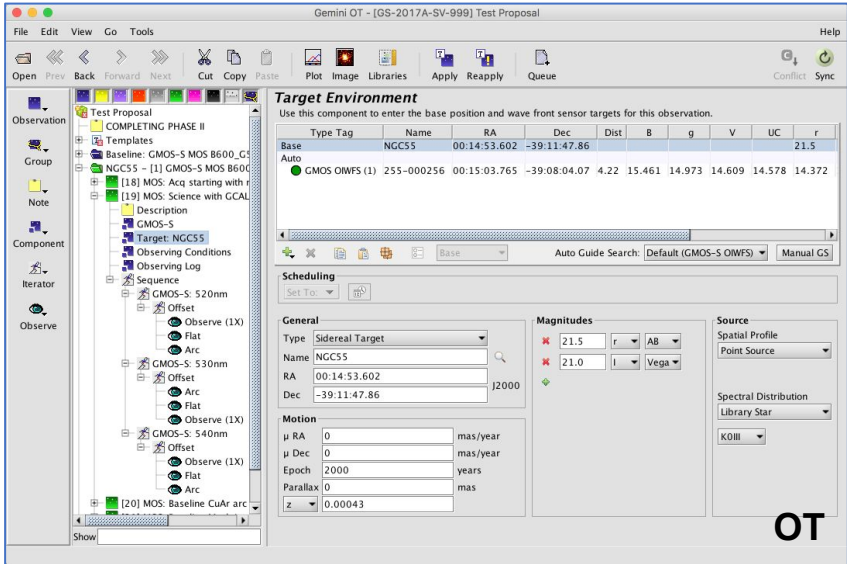
Remote observing by PIs is not currently offered

The current PIT and OT have been in use for nearly 20 yrs

- Phase I Tool (PIT) - proposal submission
- Observing Tool (OT) - Observation preparation, execution, time accounting
- Many needed usability and infrastructure changes cannot be done with the current software.

⇒ Time to start fresh!





What is the Gemini Program Platform (GPP)?

- A suite of web-based applications for proposal submission, observation editing, observation execution, and logging. They are oriented toward science goals and automation rather than low-level instrument configurations.
- An automated real-time scheduler for both telescopes.
- A single observing database in the cloud.
- A collection of secure web APIs to all services to facilitate advanced user tasks, reporting, and automation.
- “Explore” is the primary application - it will be used for capability discovery, proposal preparation & submission, and observation preparation

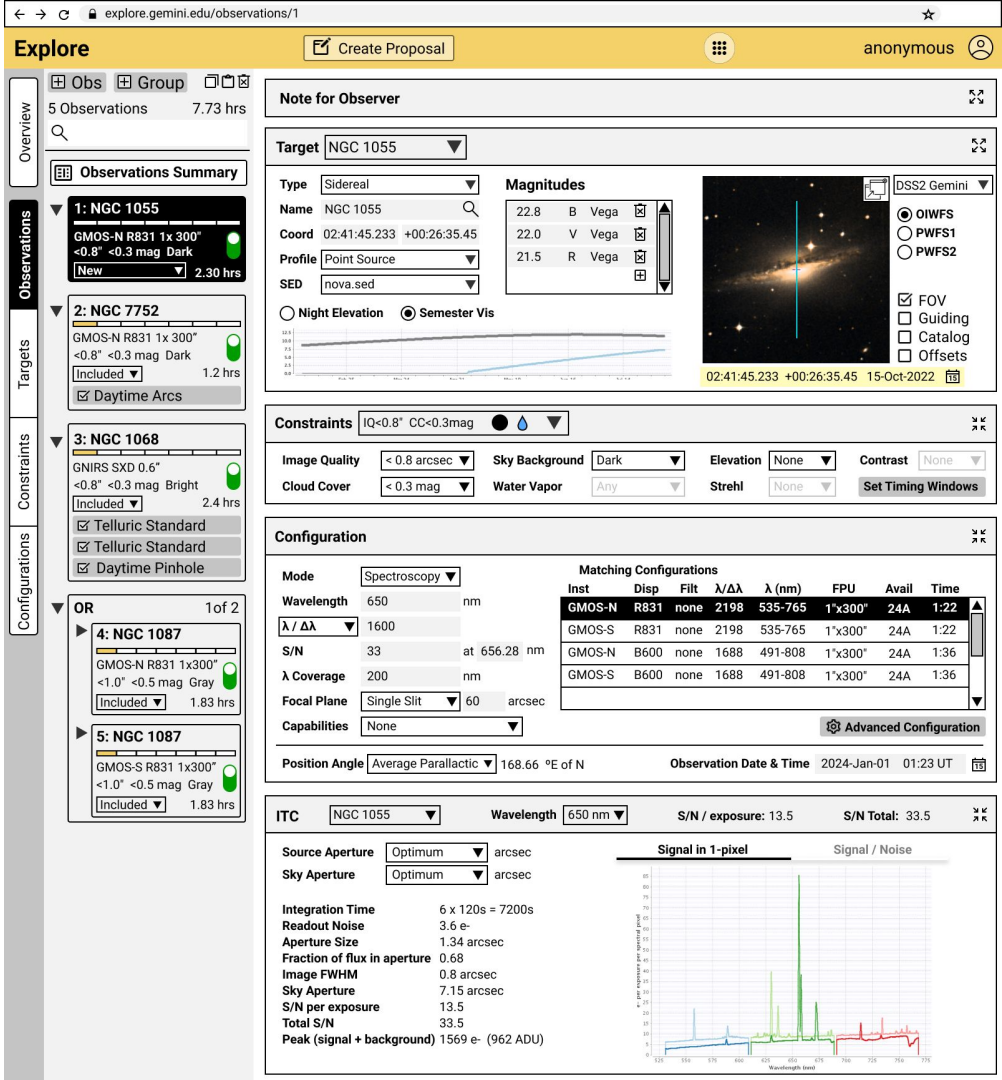
Today (without Explore)	With Explore
Read web pages to investigate instruments and their capabilities	Enter what you need for your science (wavelength, spectral resolution, etc)
Use the ITC web-form to calculate how much time you will need.	Enter your desired S/N
Download the Phase-I Tool to write and submit your proposal	No download required. Enter your abstract, attach your PDFs, and click “submit”
Download the Observing Tool and use templates and follow examples to construct your observations	No download required and your observations are automatically generated.

Today (without Explore)	With Explore
You will have separate programs for Gemini North and Gemini South	One program will include observations for both telescopes
Iterate with your contact scientist to check every change	Simple changes require no human checking
You must keep your acquisitions and calibrations synchronized with your science observations	Acquisitions and calibrations are integrated and will always have the correct configuration
Include a note about any relative scheduling of your observations	Use a logical scheduling group
Make sure your standard stars are a good match	Standard stars are automatically selected to yield the optimal match

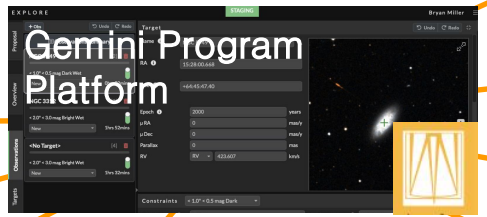
Explore

Capability discovery, proposal & observation preparation

- On-source constraints
- Built-in ITC
- Automatic sequence generation
- Embedded calibrations
- Logical AND / OR groups
- North & South in same program
- Bulk editing, undo, built-in help
- Proposal resubmission



Demo



Target List

Observing Requirements

Possible instrument configurations

Signal-to-Noise

Target Visibility

Observations & Calibrations

ORCID authentication

Sci & Tech Justification

Proposal Submission

Observatory Schedule & Status

Observation Status & Logs

Night Logs