Gemini Observatory Update

Subaru Users' Meeting

January 2022

https://www.gemini.edu/news/

Subaru/Gemini time exchange

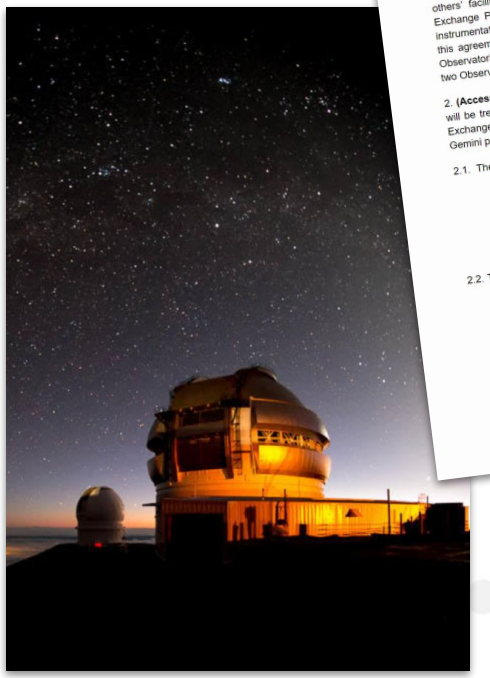
Subaru community == Gemini community members

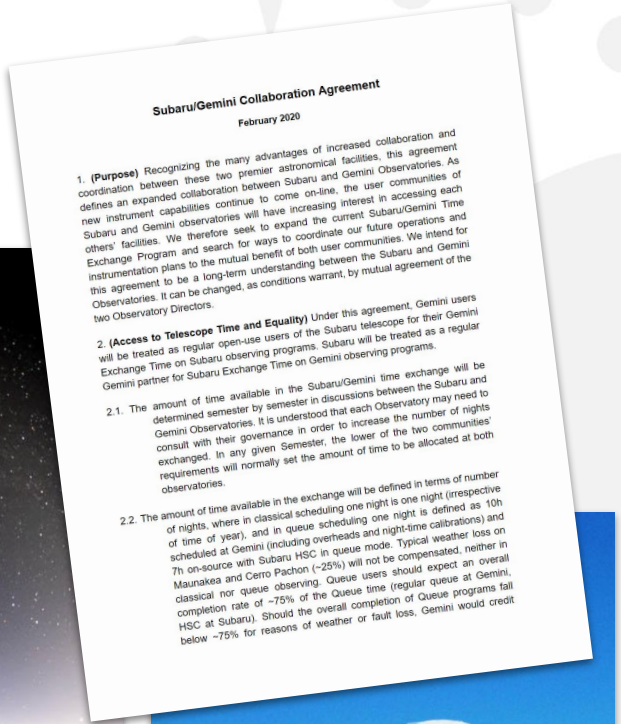
Access to:

- All modes
  - fast turnaround,
  - regular queue,
  - large and long (one at a time)
  - poor weather
- All offered instruments

2021 Publications:

8 from Subaru community use of Gemini





Subaru/Gemini Collaboration Agreement

February 2020

1. **(Purpose)** Recognizing the many advantages of increased collaboration and coordination between these two premier astronomical facilities, this agreement defines an expanded collaboration between Subaru and Gemini Observatories. As new instrument capabilities continue to come on-line, the user communities of Subaru and Gemini observatories will have increasing interest in accessing each others' facilities. We therefore seek to expand the current Subaru/Gemini Time Exchange Program and search for ways to coordinate our future operations and instrumentation plans to the mutual benefit of both user communities. We intend for this agreement to be a long-term understanding between the Subaru and Gemini Observatories. It can be changed, as conditions warrant, by mutual agreement of the two Observatory Directors.

2. **(Access to Telescope Time and Equality)** Under this agreement, Gemini users will be treated as regular open-use users of the Subaru telescope for their Gemini Exchange Time on Subaru observing programs. Subaru will be treated as a regular Gemini partner for Subaru Exchange Time on Gemini observing programs.

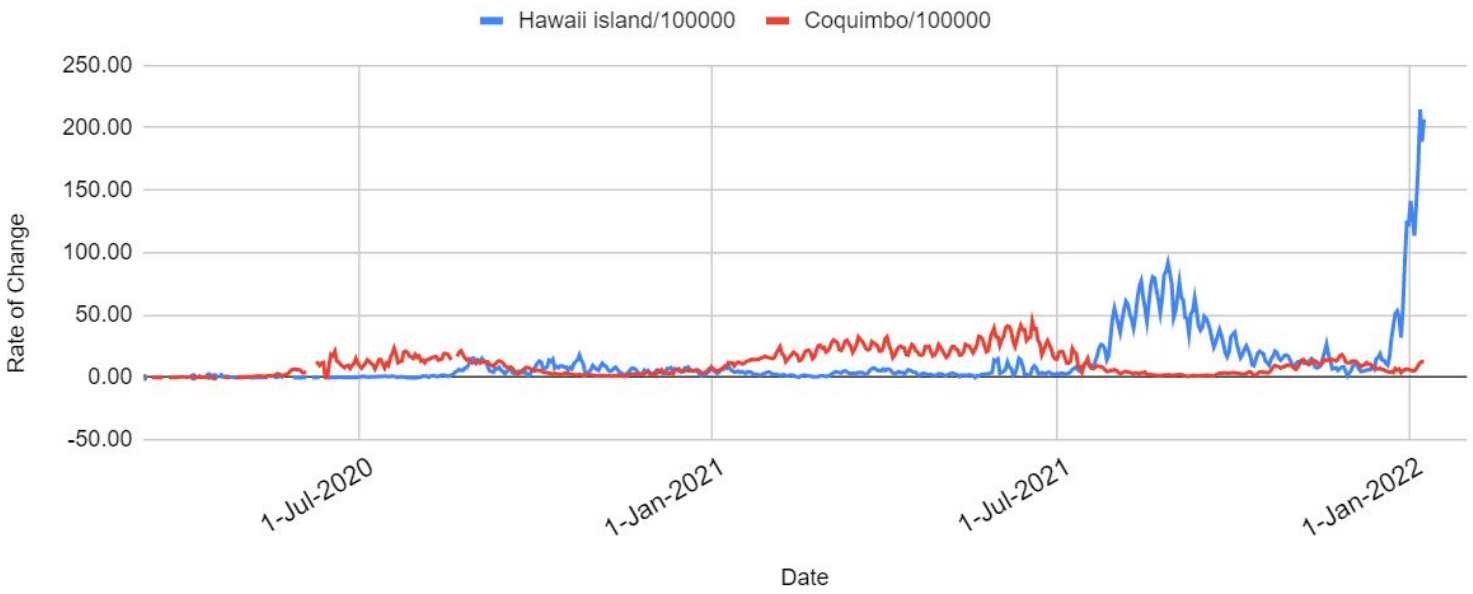
2.1. The amount of time available in the Subaru/Gemini time exchange will be determined semester by semester in discussions between the Subaru and Gemini Observatories. It is understood that each Observatory may need to consult with their governance in order to increase the number of nights exchanged. In any given Semester, the lower of the two communities' requirements will normally set the amount of time to be allocated at both observatories.

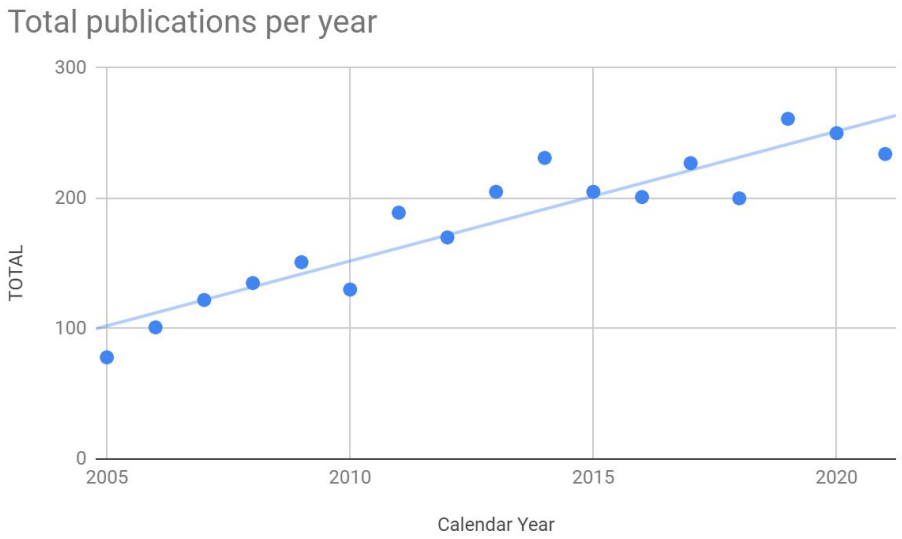
2.2. The amount of time available in the exchange will be defined in terms of number of nights, where in classical scheduling one night is one night (irrespective of time of year), and in queue scheduling one night is defined as 10h scheduled at Gemini (including overheads and night-time calibrations) and 7h on-source with Subaru HSC in queue mode. Typical weather loss on Maunakea and Cerro Pachon (~25%) will not be compensated, neither in classical nor queue observing. Queue users should expect an overall completion rate of ~75% of the Queue time (regular queue at Gemini, HSC at Subaru). Should the overall completion of Queue programs fall below ~75% for reasons of weather or fault loss, Gemini would credit

(Continued) impact of COVID-19

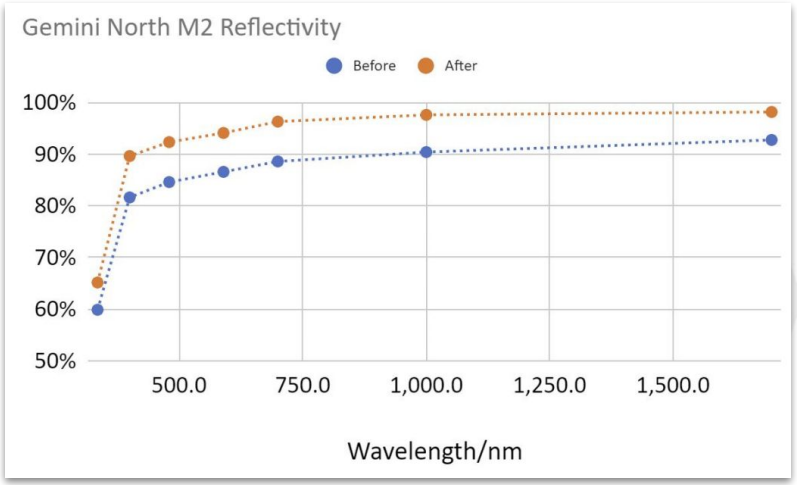
Impact of COVID-19

- Gemini has operated essentially continuously at both sites
- We curtailed visiting observing and visiting instrument offerings
- Team members operated `Alopeke, Zorro & MAROON-X remotely from the Mainland
- Facility instrument deliveries continued to be delayed (GHOST)





Operations news

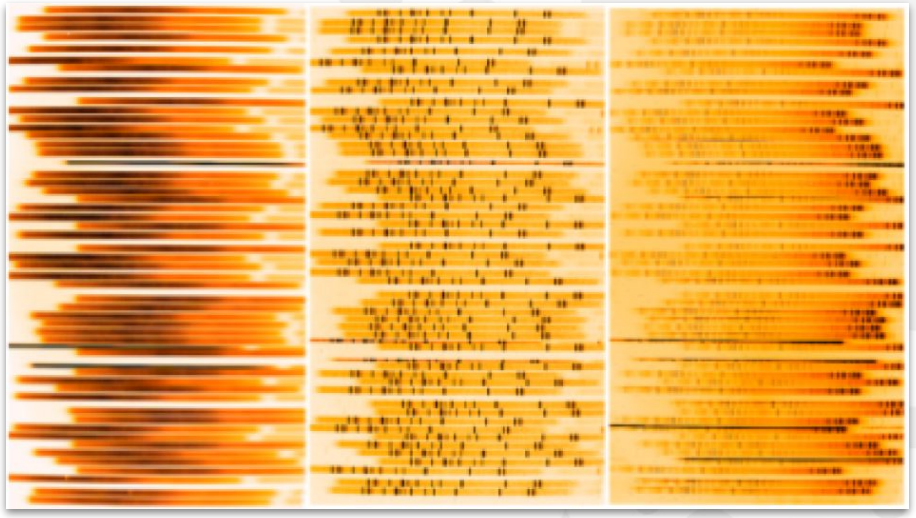


Gemini North

1. Altair is back (and soon the laser)
2. M2 coated in September shutdown
3. M1 coating postponed to 2022

Gemini South

1. M1 coating postponed to 2022
2. FLAMINGOS-2 working well again - MOS available in FT soon
3. GPI is off the telescope. Next stop: upgrade, then Gemini North



Both

1. No Visiting Instruments in 2022A (other than the “residents” - `Alopeke, Zorro and MAROON-X)
2. No visiting observers in 2022A

Instrument Development

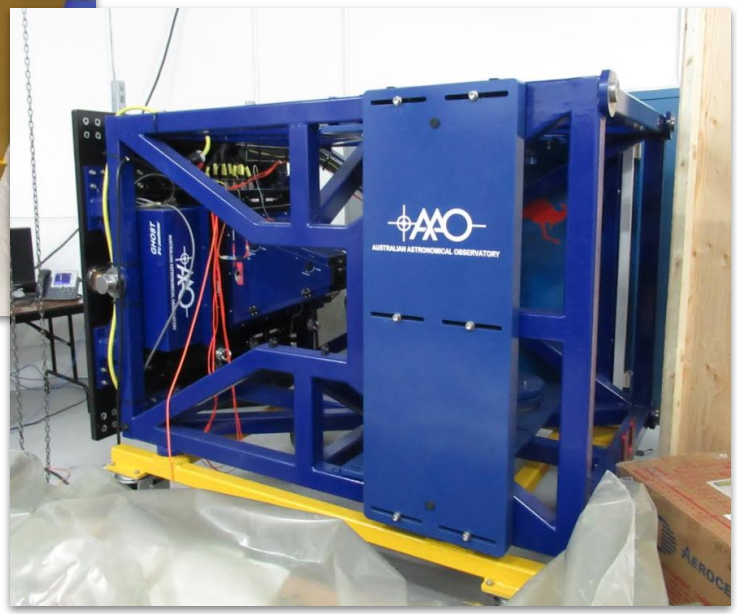
Development

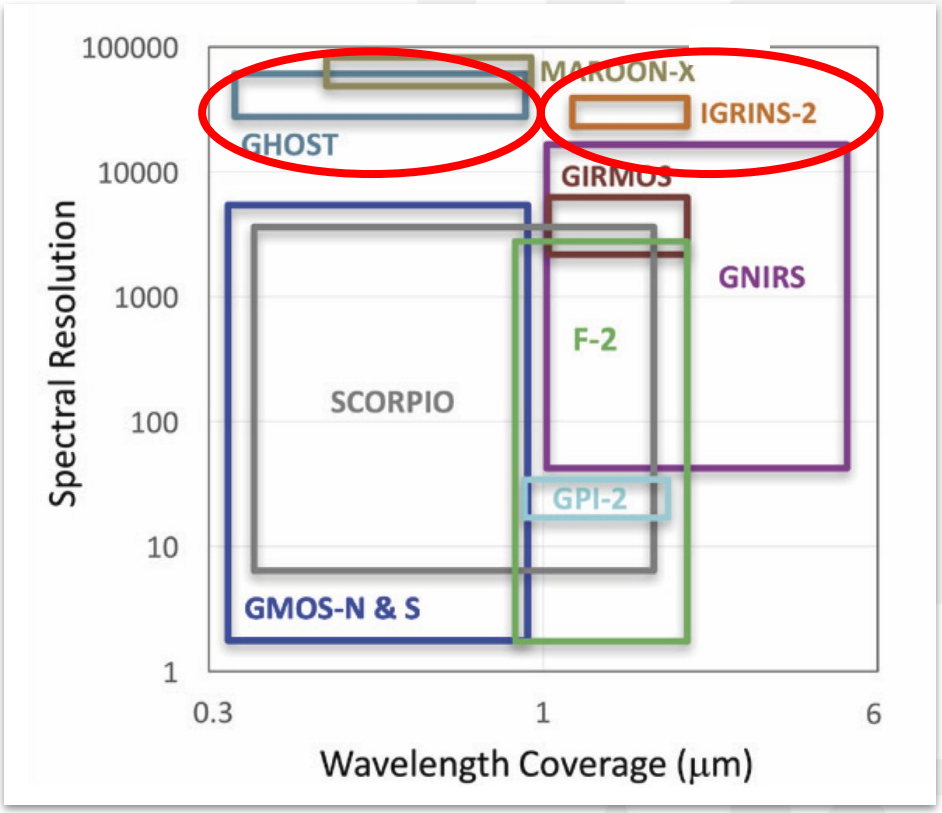
1. New Facility-Class Instruments
   - GHOST → GS (2022, delayed by COVID)
   - IGRINS2 → GN (2023)
   - GPI-2 → GN (2023)
   - SCORPIO → GS (2024)
   - GIRMOS → GN (~2027)
2. Instrument Upgrade Program
   - Community-driven: GNIRS IFUs (2022A/B, delayed by COVID)
3. Continued AO Development
   - GeMS: Base operations (project closing now), and Improving operational efficiency
   - GNAO (GLAO, LTAO)

High-Resolution Spectroscopy

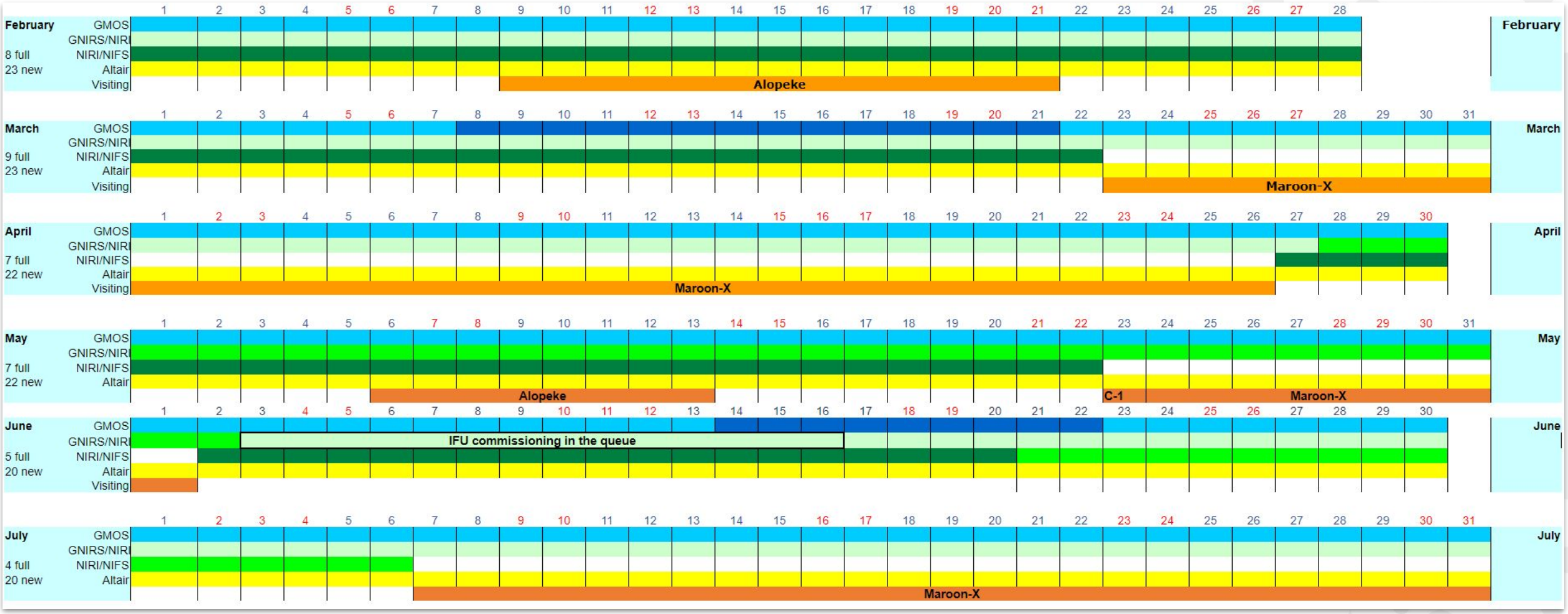
Available Now: IGRINS (south) MAROON-X, GRACES (north)

Coming Soon: GHOST (south) IGRINS-2 (north)





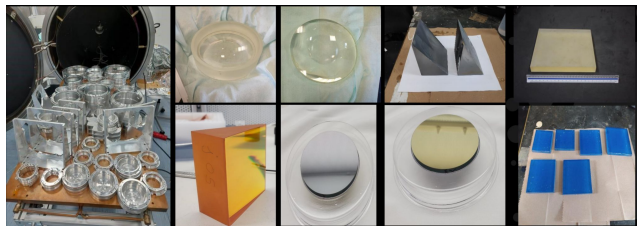
MAROON-X

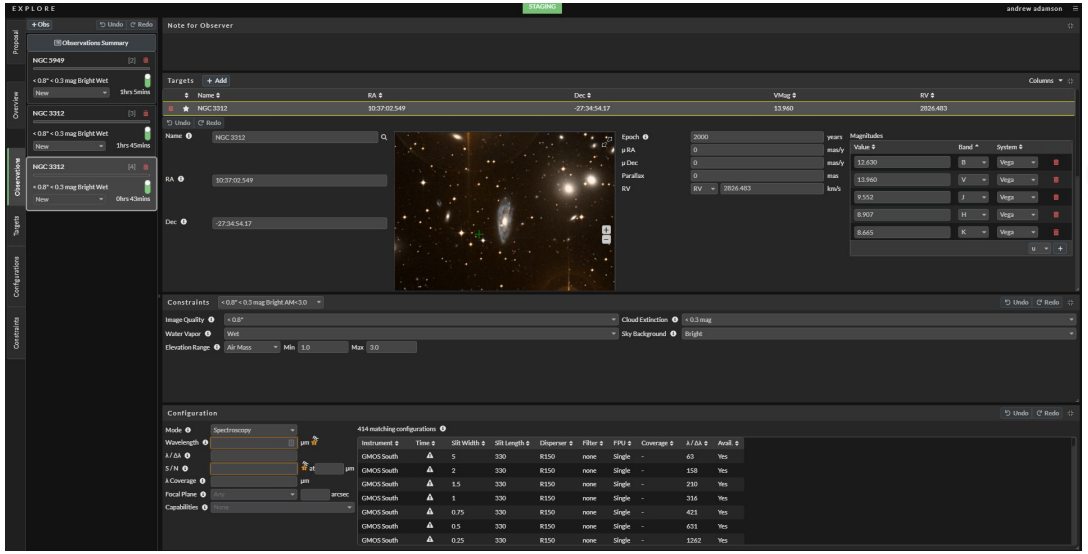

February
GMOS
GNIRS/NIRI
8 full
NIRI/NIFS
23 new
Altair
Visiting
Alopeke
March
9 full
23 new
Maroon-X
April
7 full
22 new
May
IFU commissioning in the queue
C-1
June
5 full
20 new
July
4 full

Preparing for Rubin/LSST

Preparing for Rubin/LSST

Scorpio - wide-band transient follow-up imager and spectrometer
(in build phase)





New end-to-end Software for Users

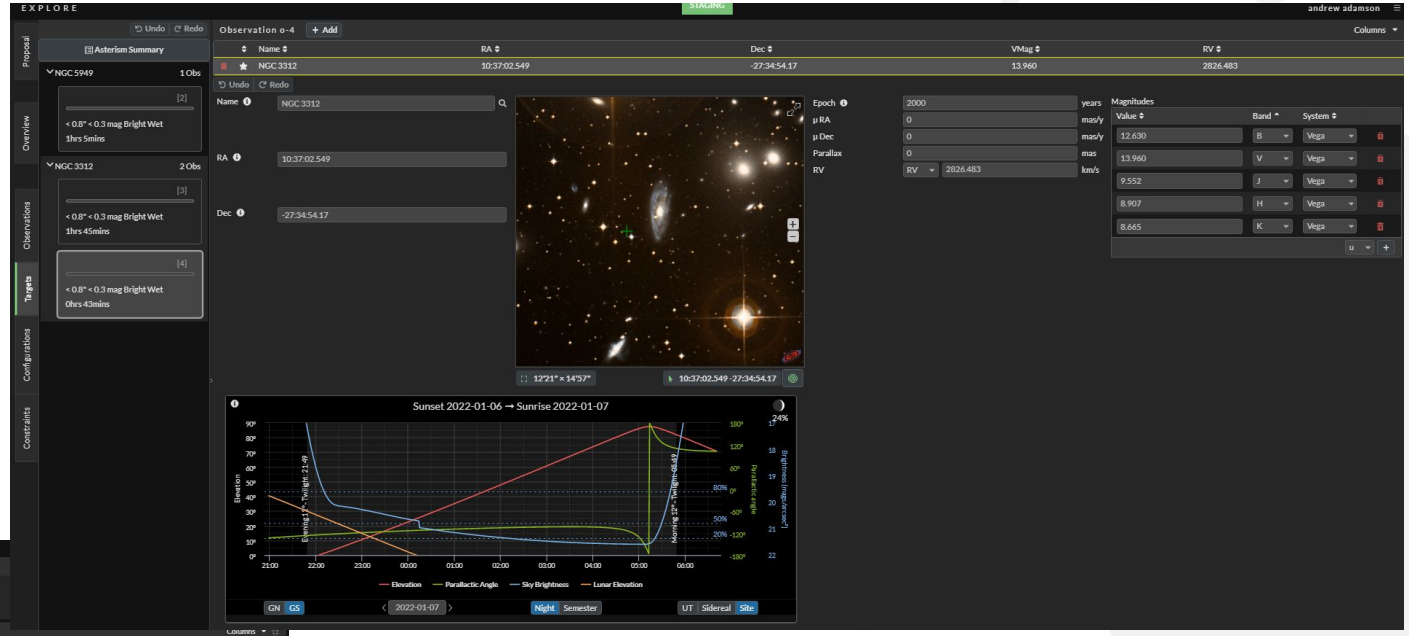
New data reduction software, including pipeline DR for rapid-response modes

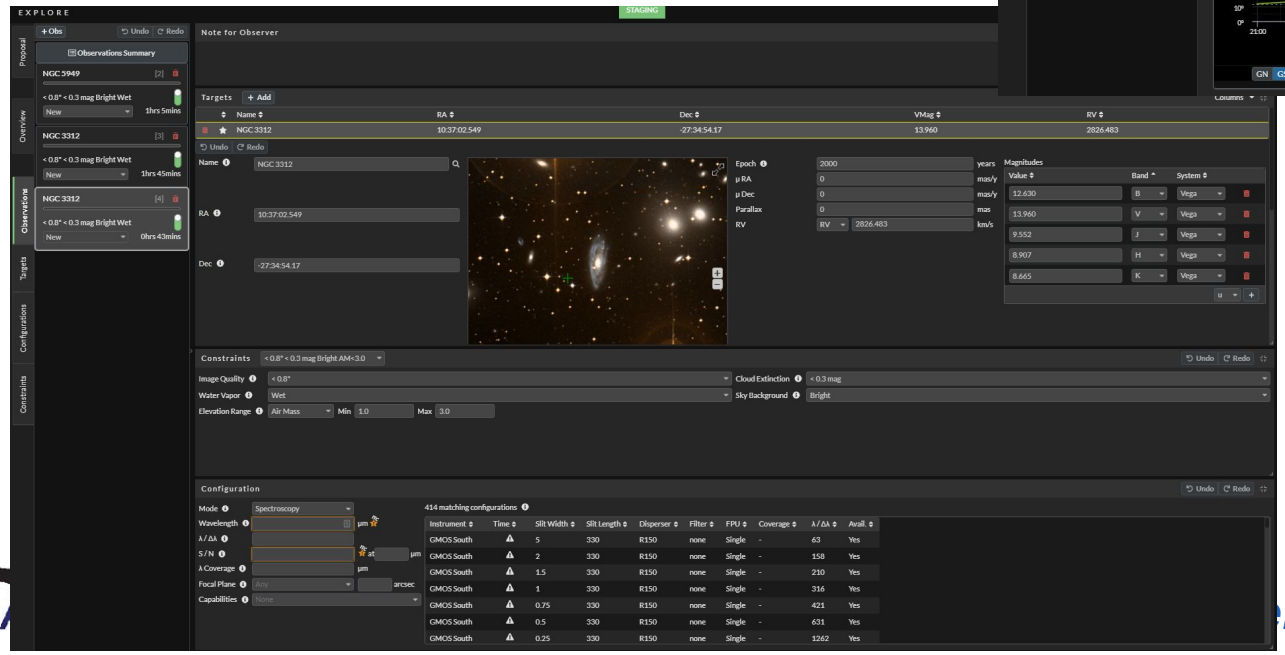
New User Tools: The GPP

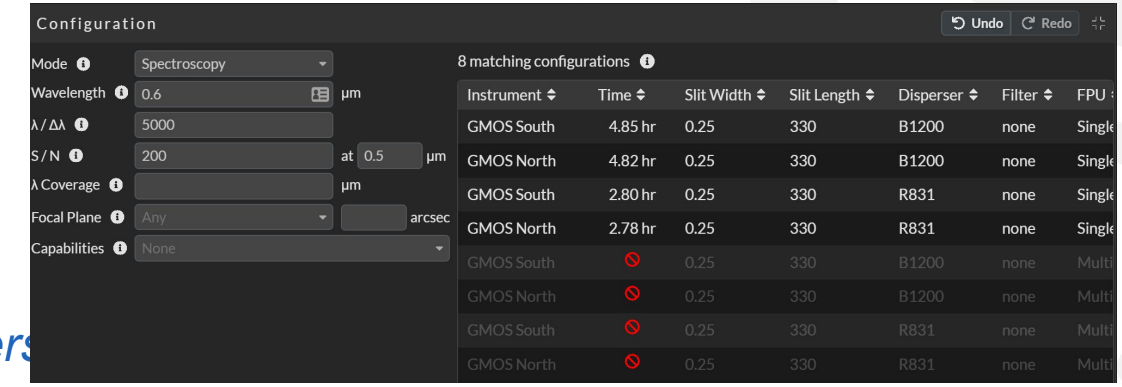
GPP (Gemini Program Platform)

Work progressing on:

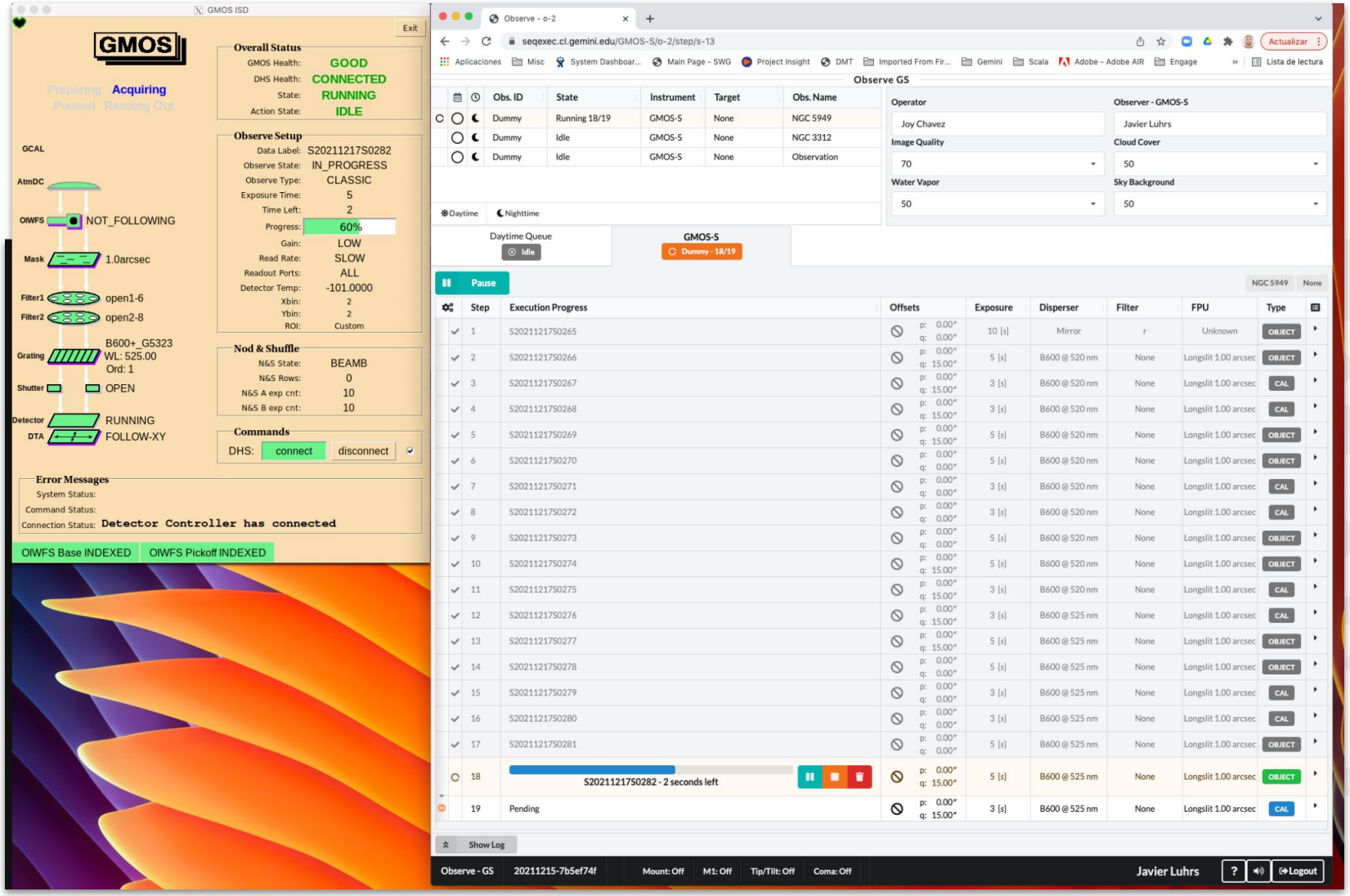
1. User tools
2. “Phase 0”
3. Proposal system
4. Central database
5. Automatic scheduler







End to end testing of GPP



Reducing Data: DRAGONS

DRAGONS - data reduction

Since last year:

- DRAGONS v3 - consolidates imaging reduction and includes GMOS Longslit quick-look

GMOS Imaging	DRAGONS
NIRI Imaging	DRAGONS
GNIRS Keyhole Imaging	DRAGONS
Flamingos-2 Imaging	DRAGONS
GSAOI Imaging	DRAGONS, plus Disco-Stu
GMOS longslit spectroscopy	Gemini IRAF for science reduction, DRAGONS for quicklook
Any other spectroscopy	Gemini IRAF
Decommisioned Instruments	Gemini IRAF

DRAGONS Documentation

https://dragons.readthedocs.io/

Gemini North AO Development

GNAO+GIRMOS

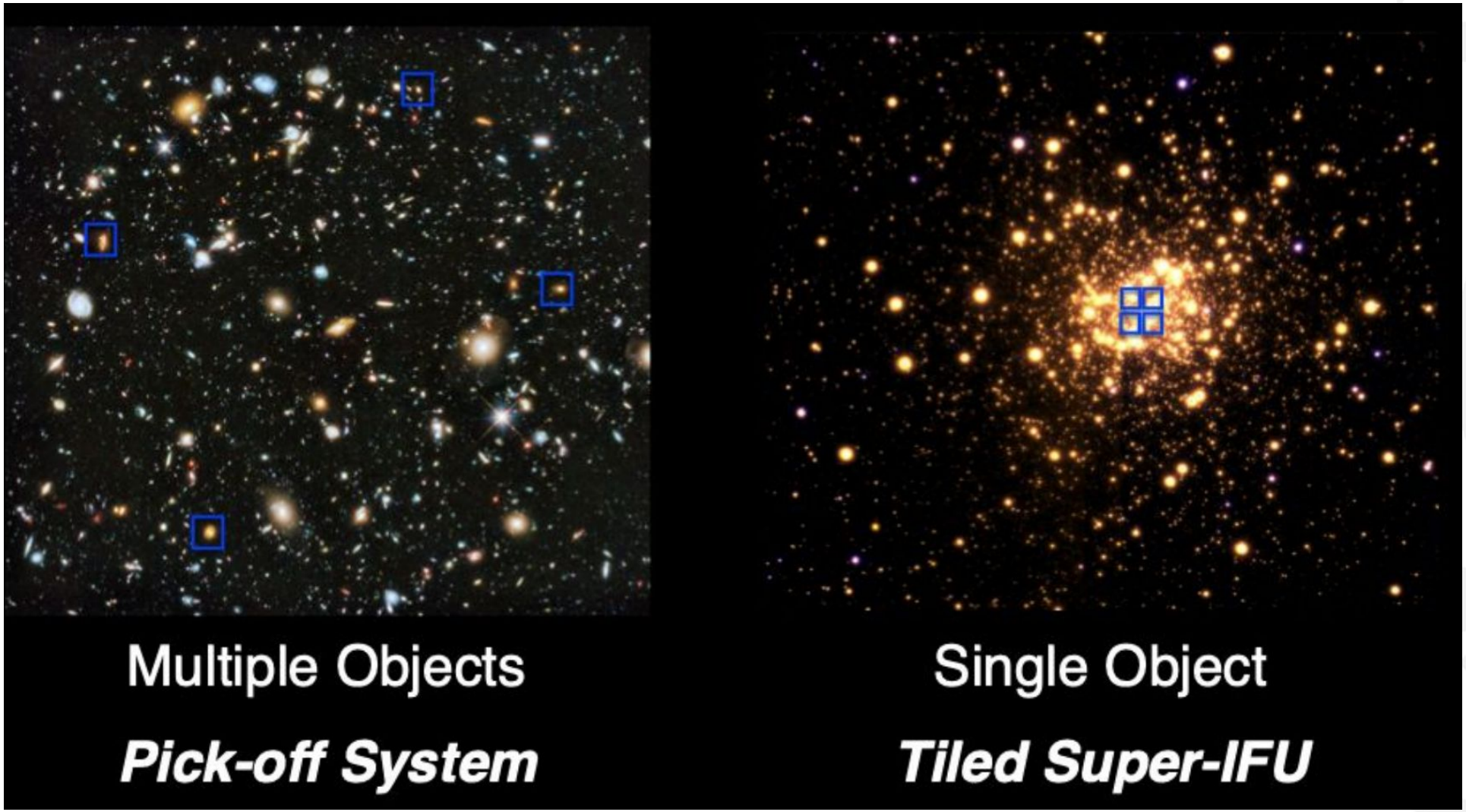
GNAO

- State-of-the-art Adaptive Optics (AO) facility for Gemini North
  - Wide field ground layer AO (GLAO) correction over a 2’ circular FOV
  - Laser tomography AO (AO) correction over ~20”x20”
- Provides corrected wavefront to GIRMOS for spectroscopy and imaging science *operating in the nightly queue*.

Major Milestone	Estimated Dates*
Conceptual Design Review	May 2022
Preliminary Design Review	May 2023
Critical Design Review	May 2024
AOB Manufacturing Readiness Review	FY24
Factory Acceptance Test (Pre-delivery Acceptance Review)	Q2 FY27
Onsite Acceptance Test (Post-delivery Acceptance Review)	Q4 FY27
GNAO Facility - First Light	Q1 FY28

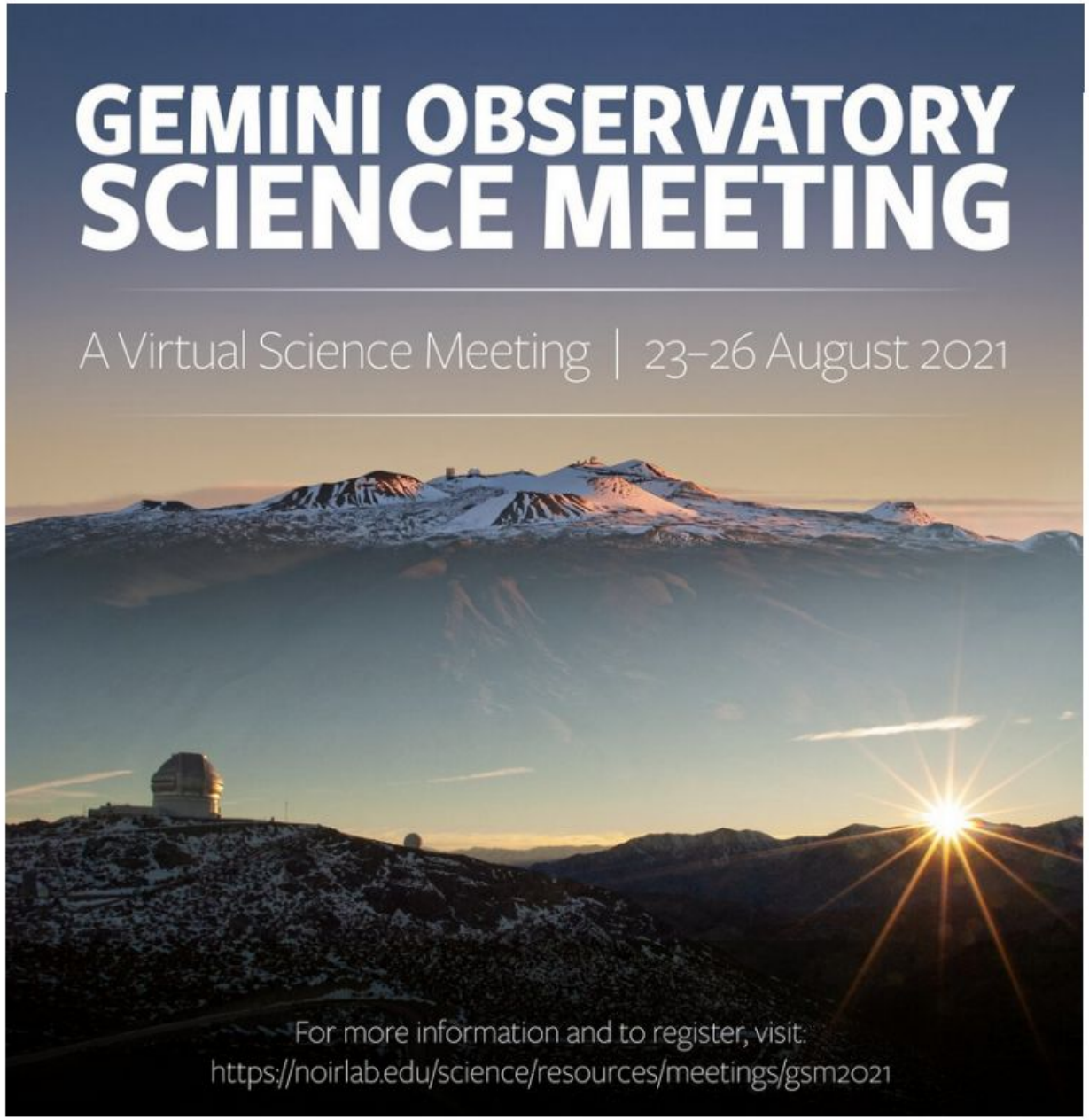
* Dates will be determined by the downselected AOB Phase B plan

GIRMOS


Multiple Objects
Pick-off System
Single Object
Tiled Super-IFU

GEMINI OBSERVATORY SCIENCE MEETING

A Virtual Science Meeting | 23–26 August 2021



For more information and to register, visit:
https://noirlab.edu/science/resources/meetings/gsm2021

Gemini Observatory Science Meeting

Gemini Observatory invites its international user community to Seoul, Korea, for a celebration of forefront access to the entire sky, and a preview of the even more exciting things to come. Hosted by the partnership's newest member, this special Science Meeting will feature the latest scientific results from Gemini, news on current instrumentation projects, updates on operations developments, fabulous dining, and lively discussion of Gemini's strategic plans for the coming decade. Come join us in Seoul!

25–29 July 2022
Seoul, Republic of Korea

For information and registration:
noirlab.edu/gsm2022

LOC SOC

Credit: International Gemini Observatory/NOIRLab/NSF/AURA. Acknowledgment: PI: Patrick Hartigan (Rice University). Image processing: Patrick Hartigan (Rice University), Travis Rector (University of Alaska Anchorage), Mahdi Zamani & Davide de Martin