Gemini Observatory Update - Recent Achievements & Future Challenges

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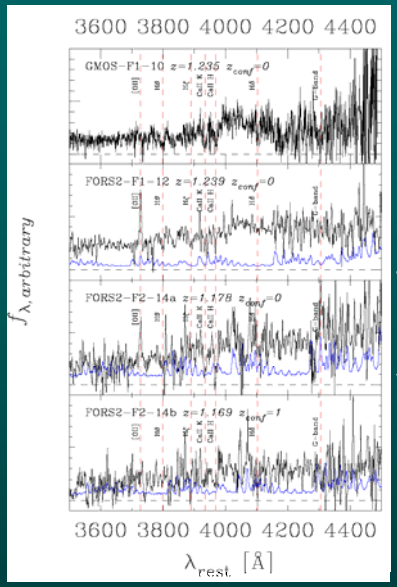
Subaru User Meeting

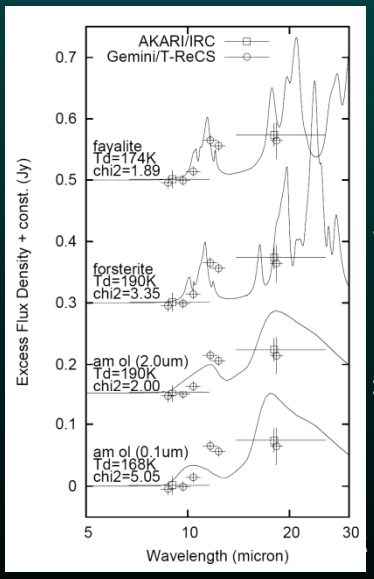
January - 2010

Recent Japanese Publications Using Gemini

- Tanaka, M., Lidman, C., Bower, R.~G., Demarco, R., Finoguenov, A., Kodama, T., Nakata, F., & Rosati, P. 2009, A&A, 507, 671 Star formation activities of galaxies in the large-scale structures at z = 1.2
  - GMOS
  - GS-2006B-Q-14
- Kajino, H., et al. 2009, ApJ, 704, 117, Lyman Break Galaxies at z ~ 5: Rest-Frame UV Spectra. III.
  - GMOS
  - GN-2007A-Q-18
  - GS-2007B-Q-206
- Fujiwara, H., et al. 2009, ApJL, 695, L88 Hot debris dust around HD 106797
  - TRECS
  - GS-2008A-C-5
- Kawara, K., et al. 2009, MNRAS, 1809 Stellar population and dust extinction in an ultraluminous infrared galaxy at z = 1.135
  - GMOS
  - GN-2007B-Q-20

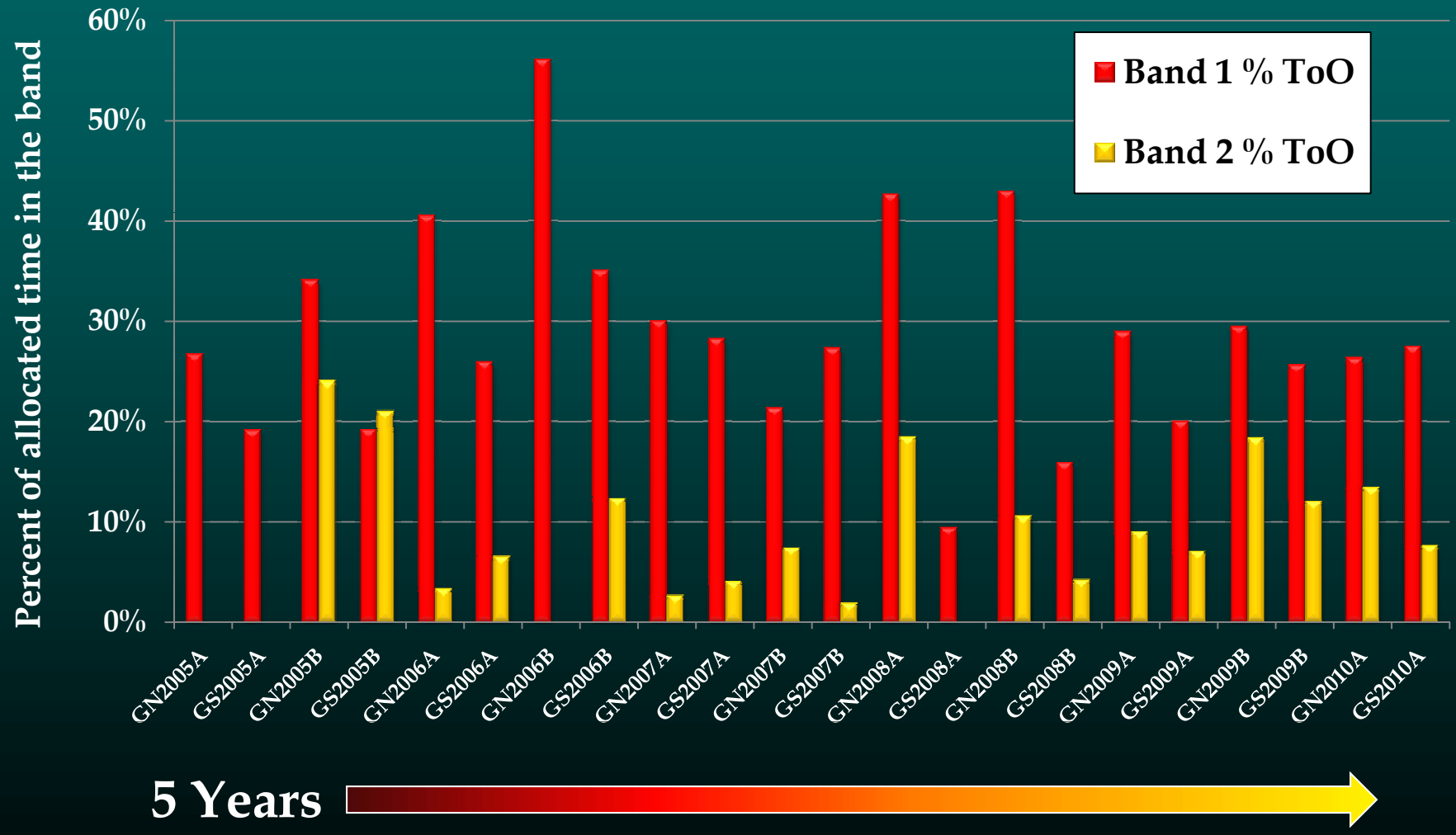


Tanaka, et al. 2009



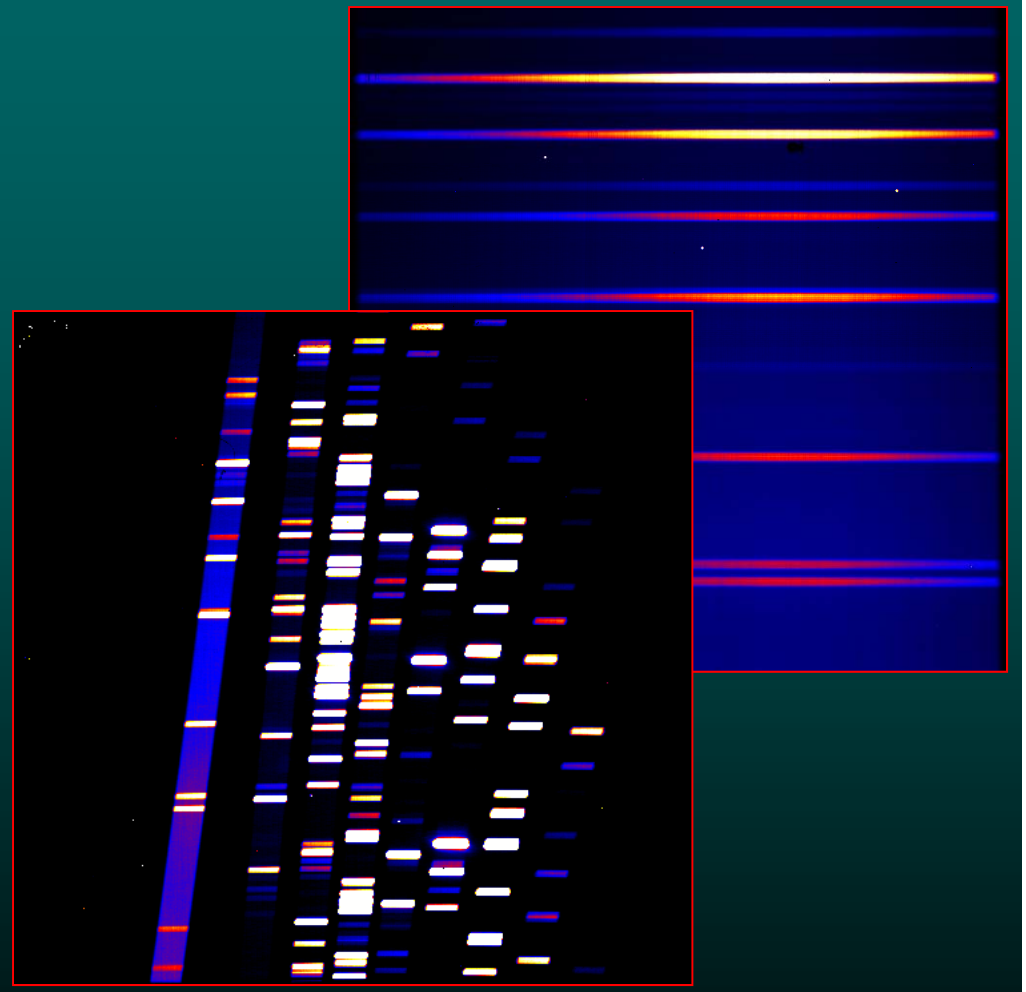
Fujiwara, et al. 2009

Target of Opportunity Observations at Gemini



GNIRS

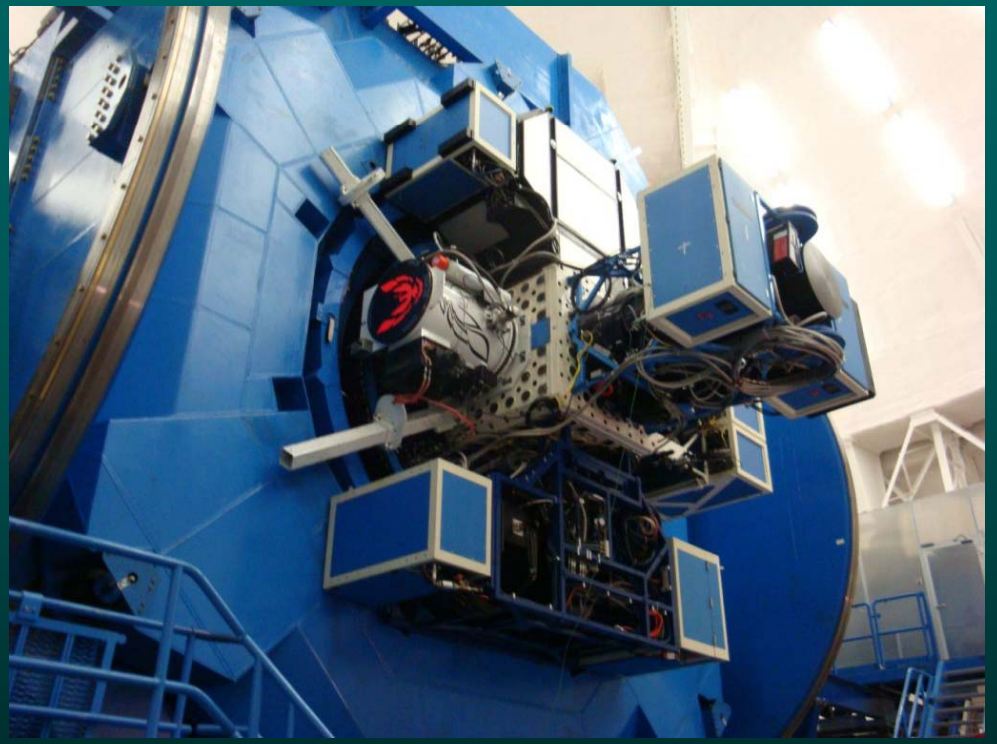
- GNIRS is nearly fully integrated in the HBF lab
- Cold tests, focused primarily on mechanism performance and functionality, have just been completed
- Three cold cycles are planned as we sequentially bring all GNIRS systems back on-line
- Current plan calls for first light at GN in Q2 2010



Cold spectra in the lab!

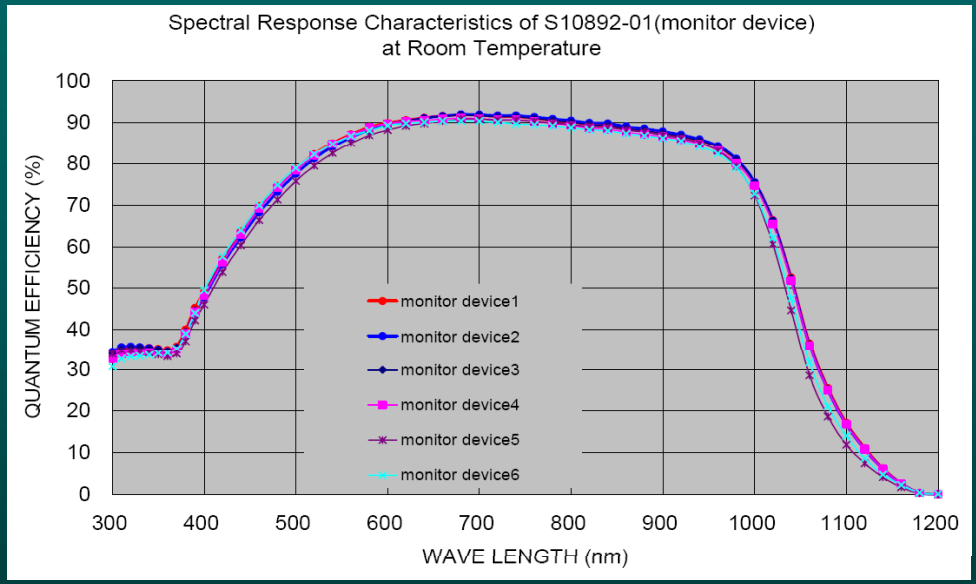
FLAMINGOS-2

- F-2 was delivered by the Univ. of Florida to Gemini-S, where it received top priority to expedite installation and commissioning
- First light achieved – *an enormous and long awaited milestone…*
- While progress has been good, considerable work remains before we release F-2 for general use…



GMOS-N CCD Upgrades

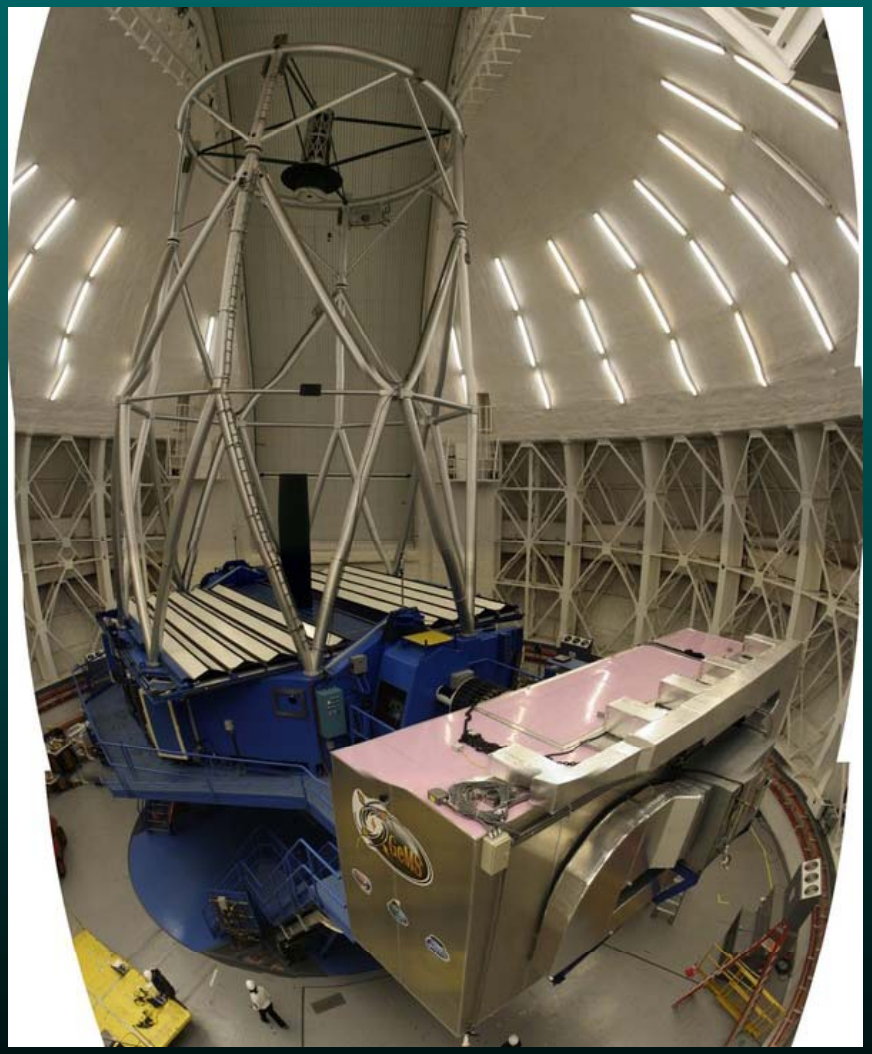
- 3 fully depleted CCDs have been delivered by Hamamatsu
- HIA is now under contract to perform the retrofit of the new detectors and controller
- Anticipate detector swap-out in mid 2010
  - Fastest HIA can complete the work and reflects Gemini's desire to not pull GMOS-N out of service during a period of peak demand



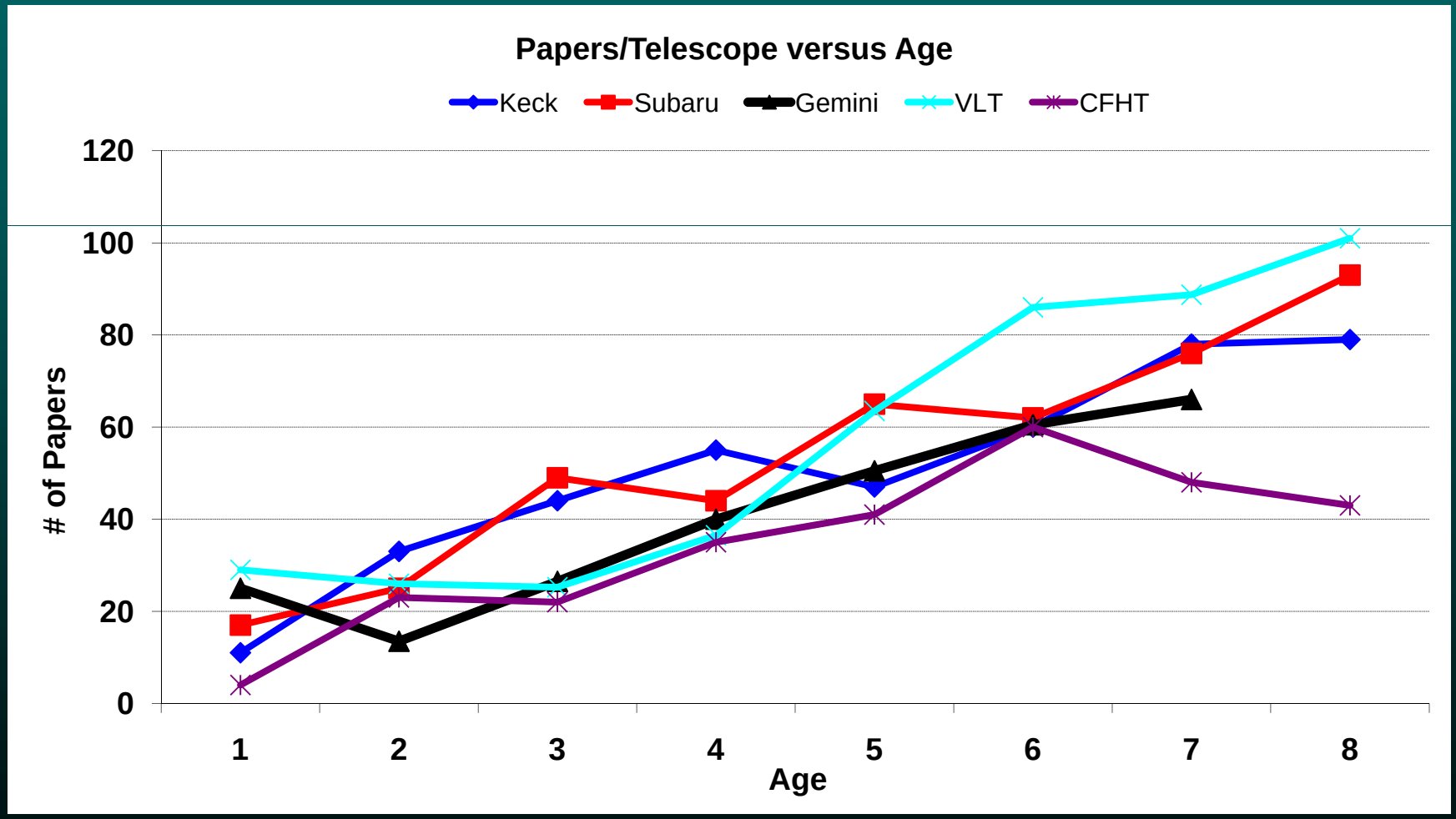
QE Plots for new GMOS-N CCDs

GEMINI OBSERVATORY *MCAO*

- Progress made on several fronts, most notably the installation of the Laser Service Enclosure on the Nasmyth service platform of Gemini-S
- Critical path defined by rework needed in EOST delivered electronics cooling system and LMCT provided laser
- Laser delivery anticipated in 2-3 months from LMCT



Gemini's Comparative Publication Rate



Evaluating Gemini's End-to-End Queue Process

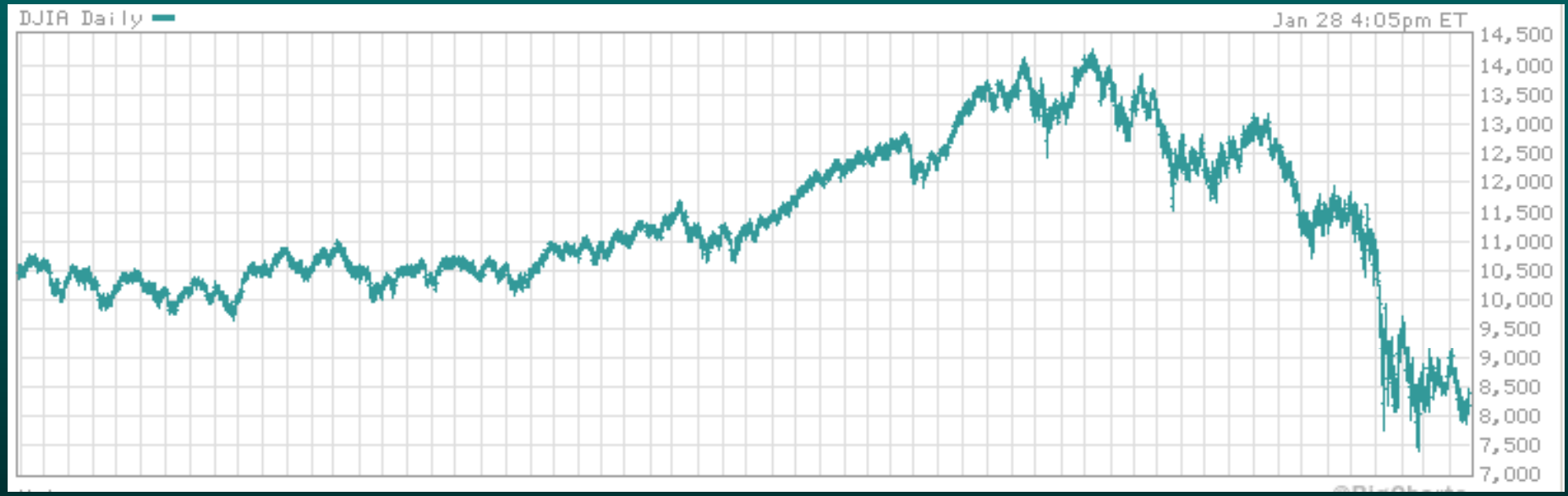
Program Type	# of Papers	Average Impact
Science Band 1	153	5.60
Science Band 2	89	3.46
Science Band 3	41	2.21
Science Band 4	11	1.39
Classical	41	3.06
Commissioning	5	0.87
Discretionary	55	1.62
Demo Science	5	0.82
Payback	2	1.42
Science Verification	12	0.93
All Papers*	438	3.62

*** This includes papers whose source of data could not be identified**


Future Challenges…

The World Economy Effects Gemini…

US Stock Market Performance Over Last 5 Years



The World Economy Effects Gemini…

- **Like essentially all other observatories, Gemini was impacted by the global economic crisis –**
  - **Developed contingency plans in the event of 5% or 10% budget cuts in 2009**
  - **Froze positions (twice)**
  - **Aspen**
  - **Withdrawal of UK…**

Future Challenges - Funding

- During the November 2009 Gemini Board meeting, the UK announced its intention to withdraw from the Gemini Partnership effective 31 Dec. 2012
  - The remaining partners all committed to remain within the Gemini partnership beyond the expiration of the current International Agreement

Future Funding Uncertainties

- Our 2010 funding proposal for operations was approved, nonetheless, adapting to the loss of a ~25% partner like the UK is obviously a major challenge…
  - The Board will hold a special retreat in mid March 2010 to discuss future funding scenarios/constraints and their impact on operations and development at Gemini
  - The Gemini Directorate is now studying options on the assumption of 7-10% budget cuts in each of 2011, 2012, and 2013 and report them to the Board at their retreat…

Gemini Distinctions We Aim to Preserve…

- Gemini is capable of targeting any object in the sky
- Our science operations queue is world class in its efficiency, achieving open shutter and acquisition times that are second to none
- Gemini's ability to react to targets of opportunity is exceptional as demonstrated by our observations of supernovae, GRB's, etc.
- Data are distributed in a matter of minutes from each telescope to the CADC archive nightly, making it possible for Gemini PI's to access their data with speed and ease
- Gemini's thermal infrared sensitivity is unmatched from the ground
- Gemini's investment in adaptive optics technologies will leave both telescopes with advanced laser AO systems, the hallmark of which will be our multi-conjugate laser AO system at Gemini-S

Summary

- Gemini reached a number of important scientific and technical achievements since “last we met”
- 2010 stands to be a year of triumph (GNIRS, F-2, etc.) and challenges (budget cuts)
- We nonetheless remain optimistic about Gemini’s future, and seek opportunities to share it with Subaru…

Exploring the Universe, Sharing its Wonders