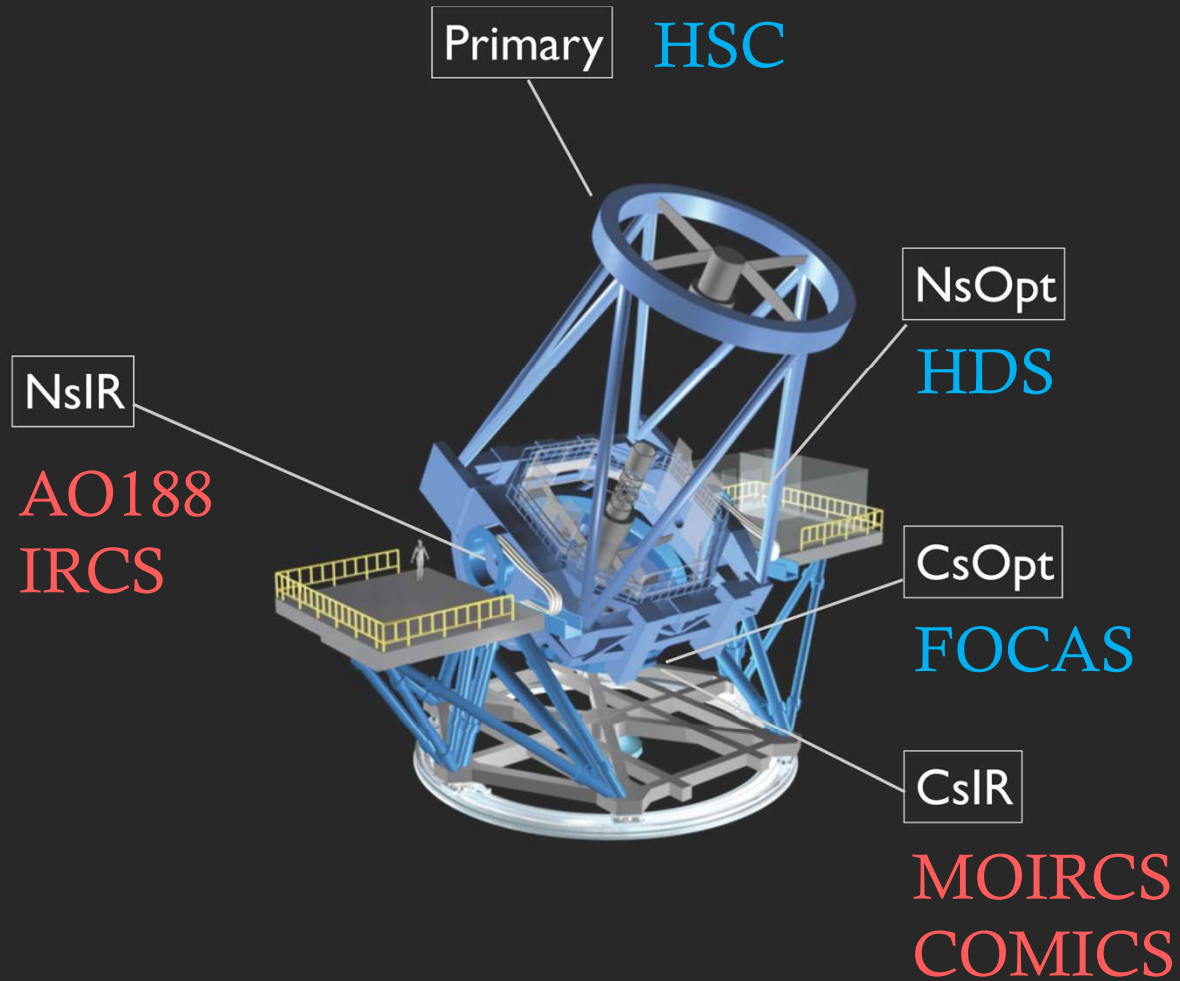


# Status of Existing Facility Instruments

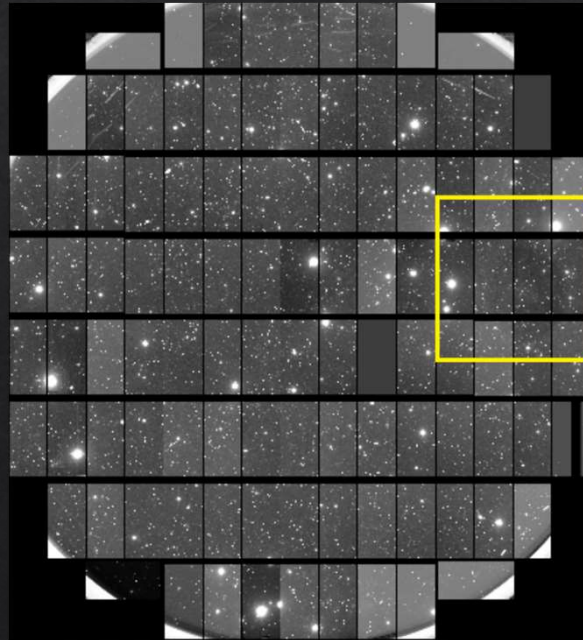
Takashi Hattori (Instrument Division, Subaru Telescope)

# Facility Instruments

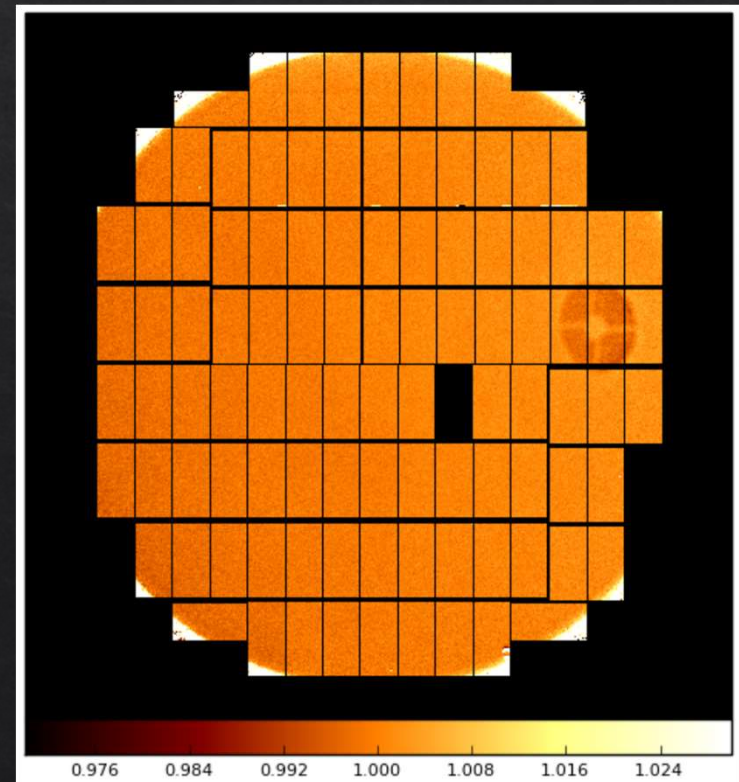


# HSC

- ◇ a few issues on the data
  - ◇ a dark spot on the wide-field corrector lens
    - ◇ 2/27 – 10/4/2019
    - ◇ depth  $\sim 0.6\%$

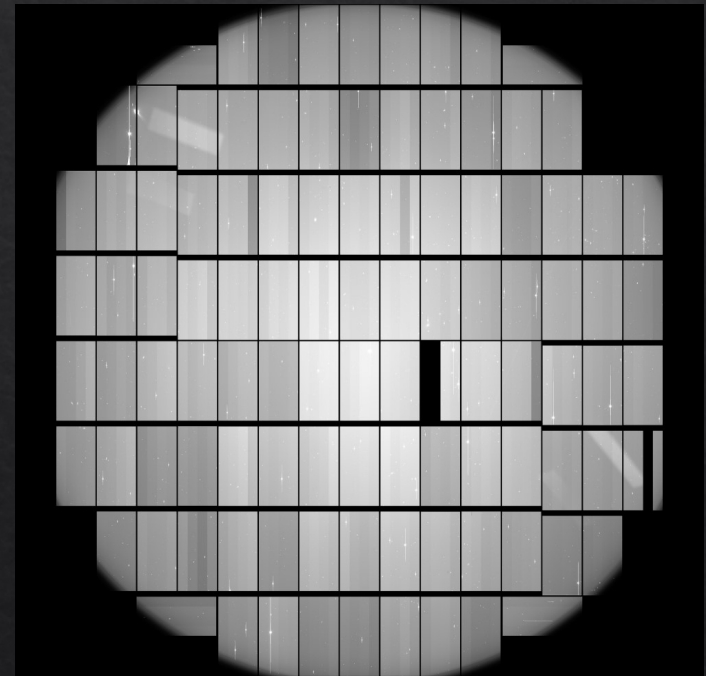


domeflat (June 2019 / Dec. 2018)



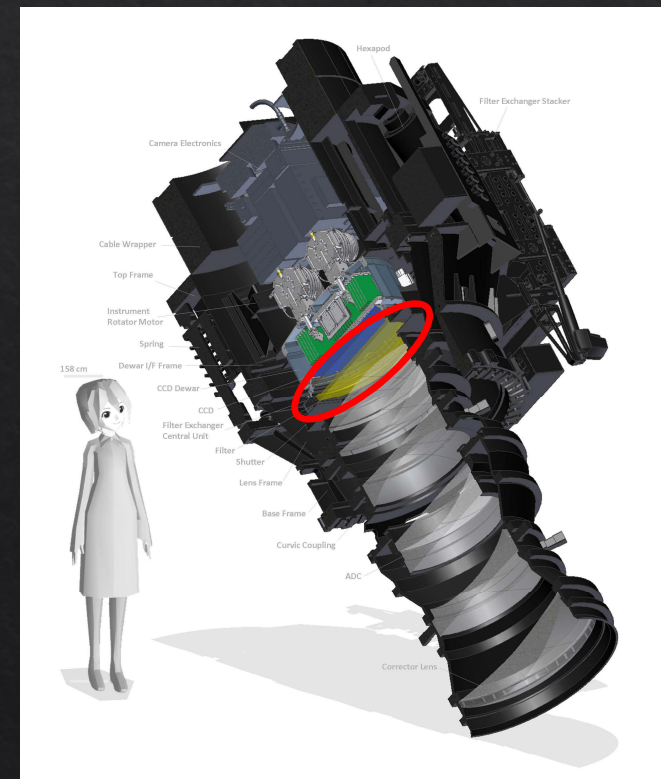
# HSC

- ◇ a few issues on the data
  - ◇ a dark spot on the wide-field corrector lens
    - ◇ 2/27 – 10/4/2019 (UT)
    - ◇ depth  $\sim 0.6\%$
  - ◇ stray light issue
    - ◇ 2/27 – 11/6/2019 (UT)
    - ◇ mainly in HSC-i2, -z, and -Y
    - ◇ at Elevation=40-60 (deg.)
    - ◇ due to a monitoring camera in the dome
- ◇ please check HSC web-page
  - ◇ <https://www.naoj.org/Observing/Instruments/HSC/index.html>



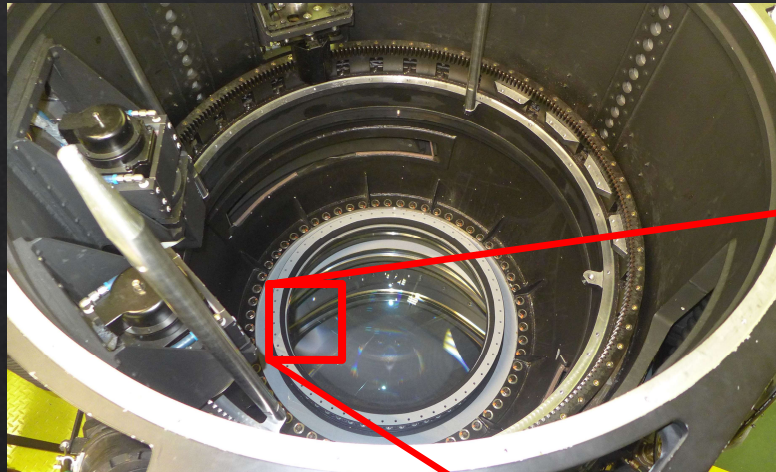
# HSC

- ◇ filter exchanger trouble on 9/20/2019
  - ◇ alarm in one of the actuators for FEU Central Unit
  - ◇ connection problem between the driver and actuator
  - ◇ observation cancelled from 9/20 to 9/25

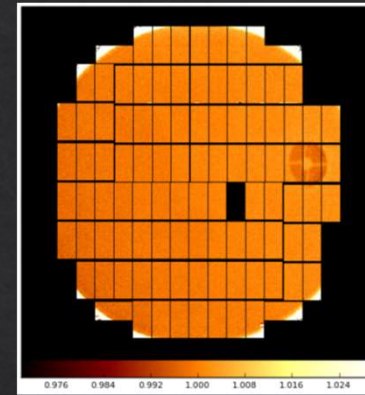


# HSC

- ◇ Cleaning of the wide-field corrector



POpt2 from the top



# HSC

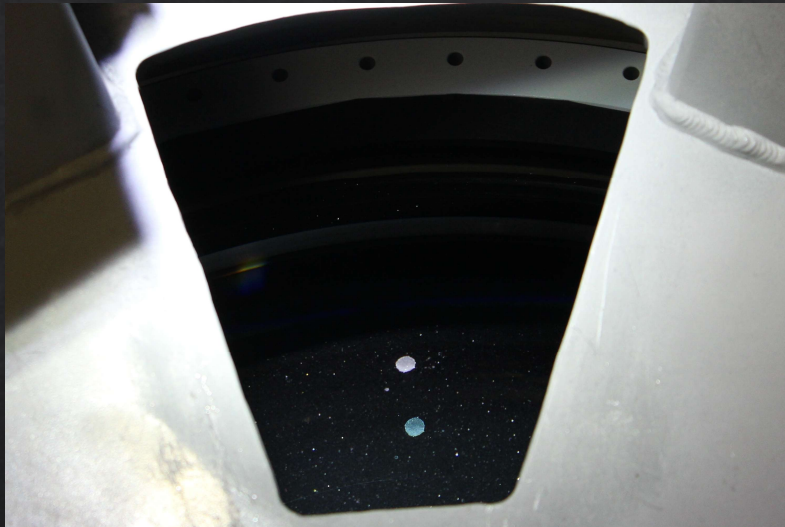
- ◇ Cleaning of the wide-field corrector



lens-cleaning specialist  
from CANON

# HSC

◇ Cleaning of the wide-field corrector



before

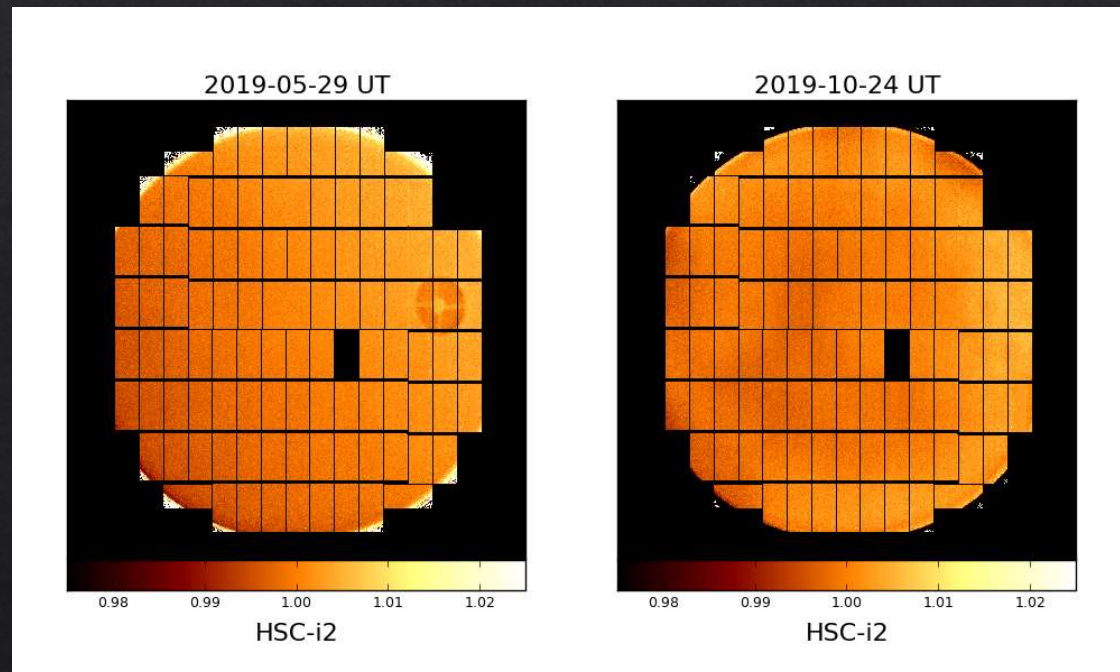


after



# HSC

- ◇ Cleaning of the wide-field corrector
  - ◇ domeflat before and after the cleaning (compared to Dec. 2018)
  - ◇ change of the overall pattern is probably due to CO<sub>2</sub> cleaning of the lens surface

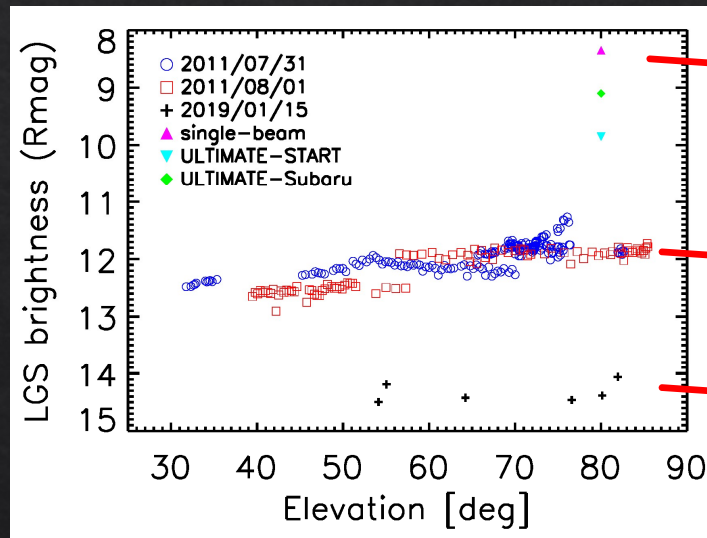


# HDS

- ◇ stable operation overall
- ◇ small problems
  - ◇ VxWorks board computer trouble
  - ◇ VxWorks host computer disk trouble
  - ◇ Cross-Disperser gear replacement (to be done in December)
- ◇ overhaul maintenance for mechanical and control systems will be required in near future

# LGS/AO188

- ◇ decommission of the original Laser Guide Star system in S19B
  - ◇ degraded performance
  - ◇ maintenance load



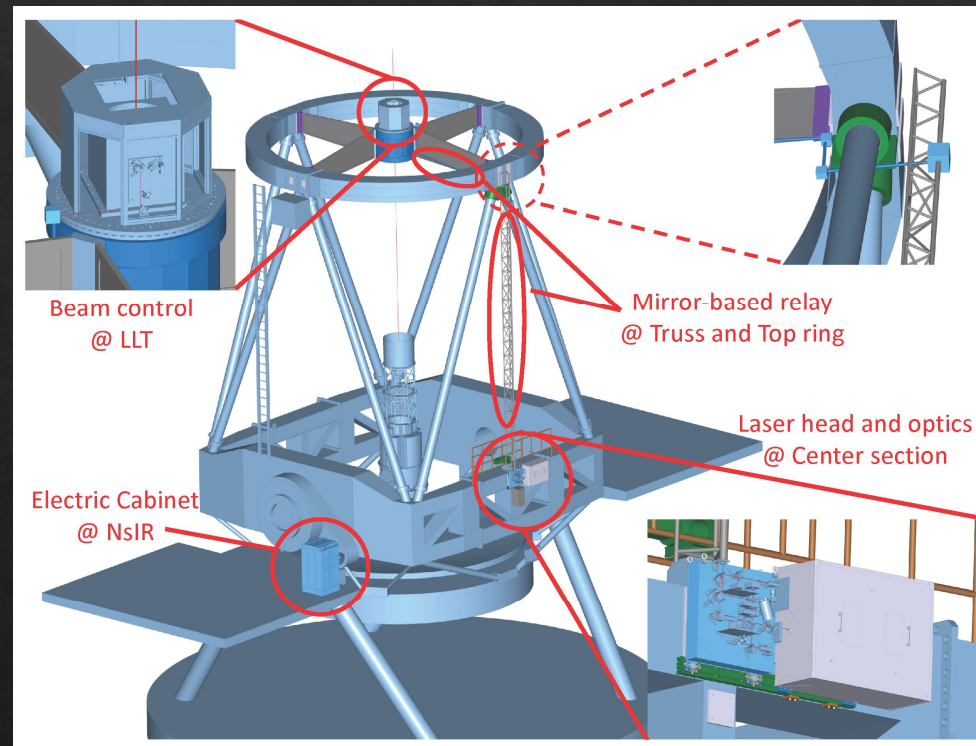
new LGS

performance in 2011

performance in 2019

# LGS/AO188

- ◇ new Laser Guide Star Facility
- ◇ with a TOPTICA 20W laser



P29 (Mieda et al.)

# LGS/AO188

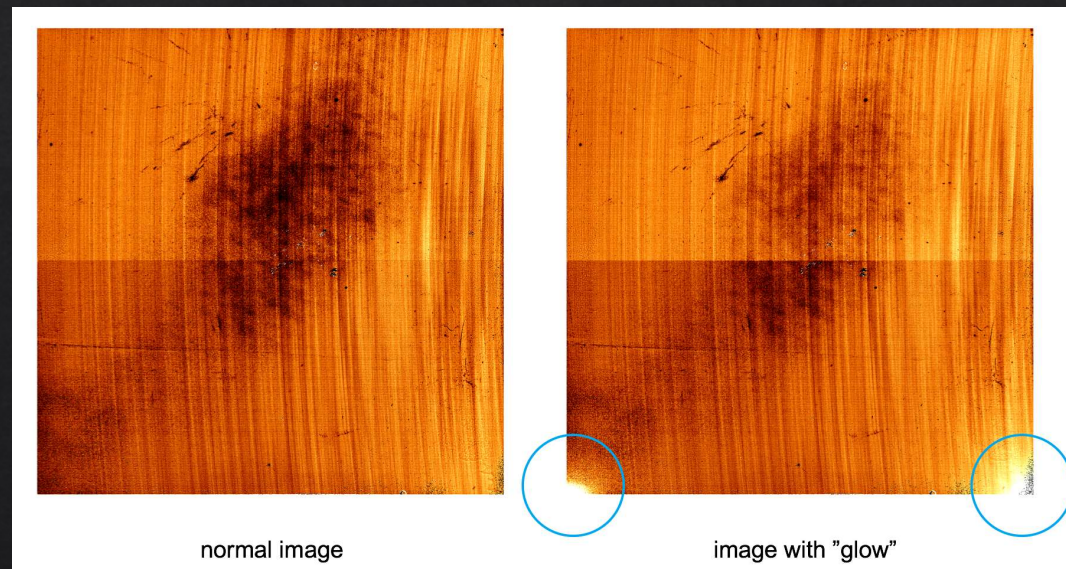
- ◇ new Laser Guide Star Facility
  - ◇ fabrications in this FY
  - ◇ first light in May 2020 or early S20B
  - ◇ target for open-use : from mid-S20B

# LGS/AO188

- ◇ new Real Time System (RTS)
  - ◇ successfully finished NGS-mode integration
  - ◇ will start **open-use NGS-mode observation soon**
  - ◇ still ongoing items
    - ◇ LGS-mode integration which will be opened when the new LGS system starts the operation in S20B
    - ◇ tests for performance improvement
      - ◇ high speed control
      - ◇ advanced control (predictive control, auto-tuning)

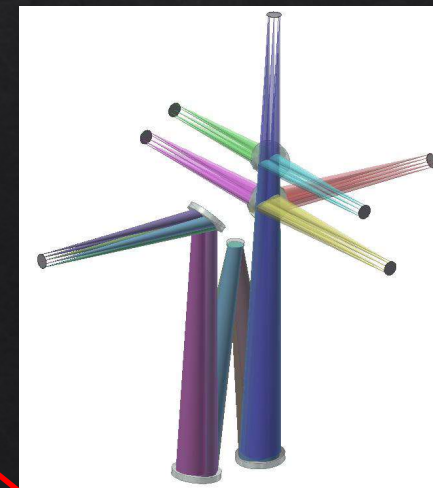
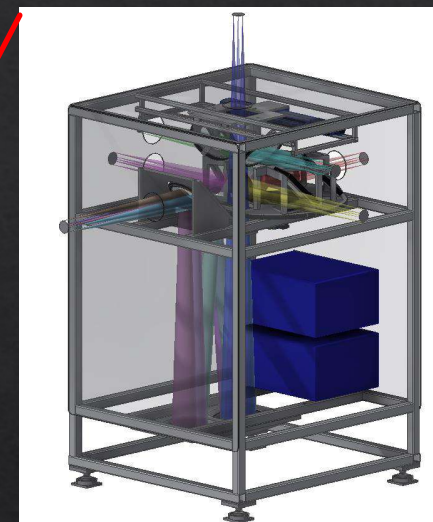
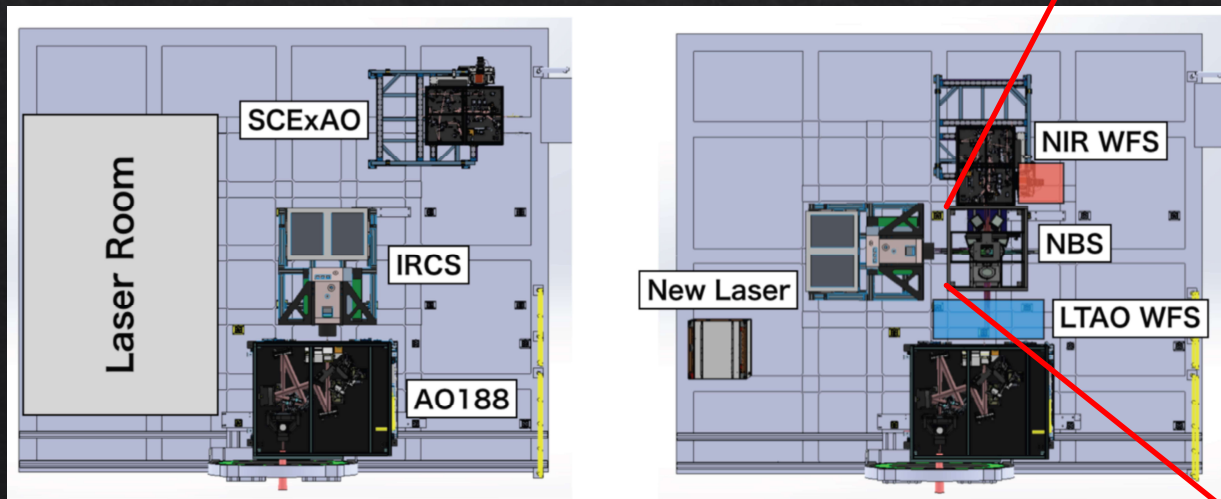
# IRCS

- ◇ some issues with the detector electronics
  - ◇ unstable behavior (especially after instrument exchanges)
  - ◇ glow-pattern
    - ◇ due to the lack of good clock/bias boards
    - ◇ need to switch the configuration to select CAM or SPG detector to be free from the “glow-pattern”



# NsIR beam switcher

- ◇ switching mechanism for NsIR instruments
  - ◇ collaboration with AAO
    - ◇ detailed design starting from this FY
  - ◇ reduce the load for instrument exchange
  - ◇ new capabilities

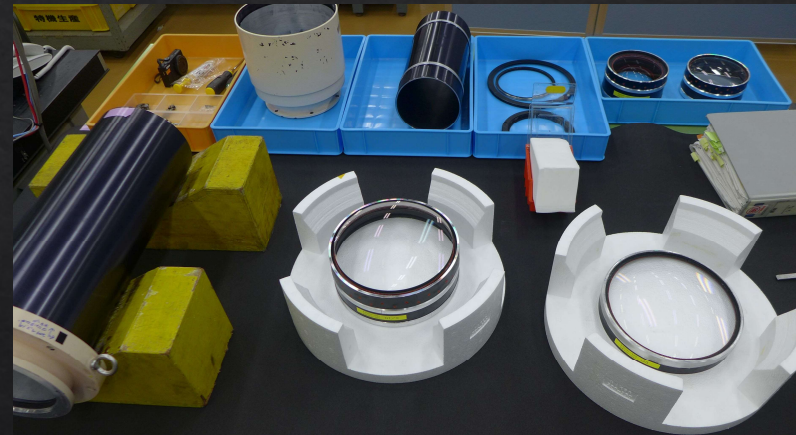




# FOCAS



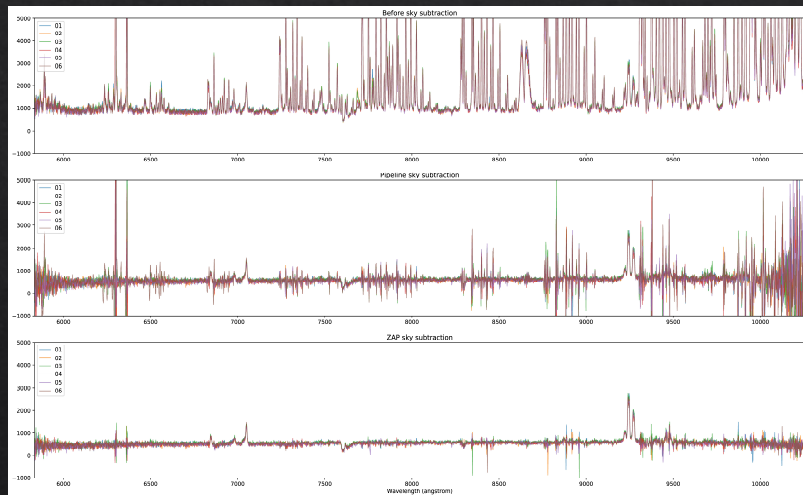
- ◇ recovery from the damage by Hurricane Lane
  - ◇ lens unit disassembly and cleaning in Japan (Nikon Mito Plant)
  - ◇ observation resumed in April 2019



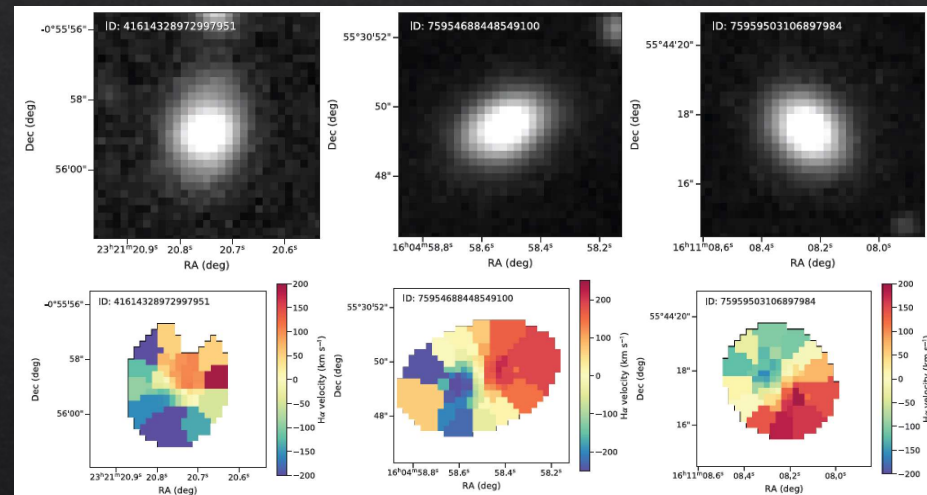
# FOCAS

◇ IFU

◇ successfully started open-use observation from 6/27/2019



sky subtraction

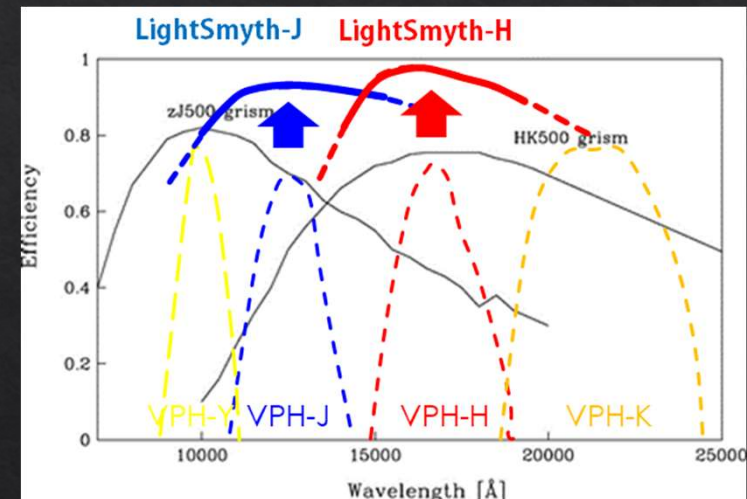


HSC-i image and velocity field

Onodera (IFU conference in 2019)

# MOIRCS

- ◇ LightSmyth high efficiency grism
  - ◇ Grant-in-Aid (Kakenhi) project (PI:Kodama)
  - ◇ J- and H-band grisms
- ◇ schedule
  - ◇ assembly and testing
    - ◇ J-band : done
    - ◇ H-band : December to January
  - ◇ installation : February to March 2020
  - ◇ on-sky test : April to July 2020
  - ◇ open-use from S20B?



# MOIRCS

- ◇ Vignetting by MOS Rails – Fixed in Feb. 2019
- ◇ MCSMDP – now fully works with nuMOIRCS data (June 2019)
- ◇ Possible hibernation from S20B
  - ◇ because of the science operation of SWIMS and to reduce the operation cost
  - ◇ “Subaru Near Future” discussion session on 11/20 (from 5pm)

# Summary 2019

## Prime Focus

HSC	Issues on data, WFC cleaning
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## Nasmyth

AO188	LGS upgrade, new RTS commissioning
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IRCS	Issues with detector electronics, NsIR beam switcher
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HDS	Stable but small issues, necessity for future maintenance
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## Cassegrain

FOCAS	Recovery from Hurricane damage, IFU open-use
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MOIRCS	Grism upgrade, possible hibernation
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COMICS	Decommission after S20A
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