

FMOS status report

2010.01.13

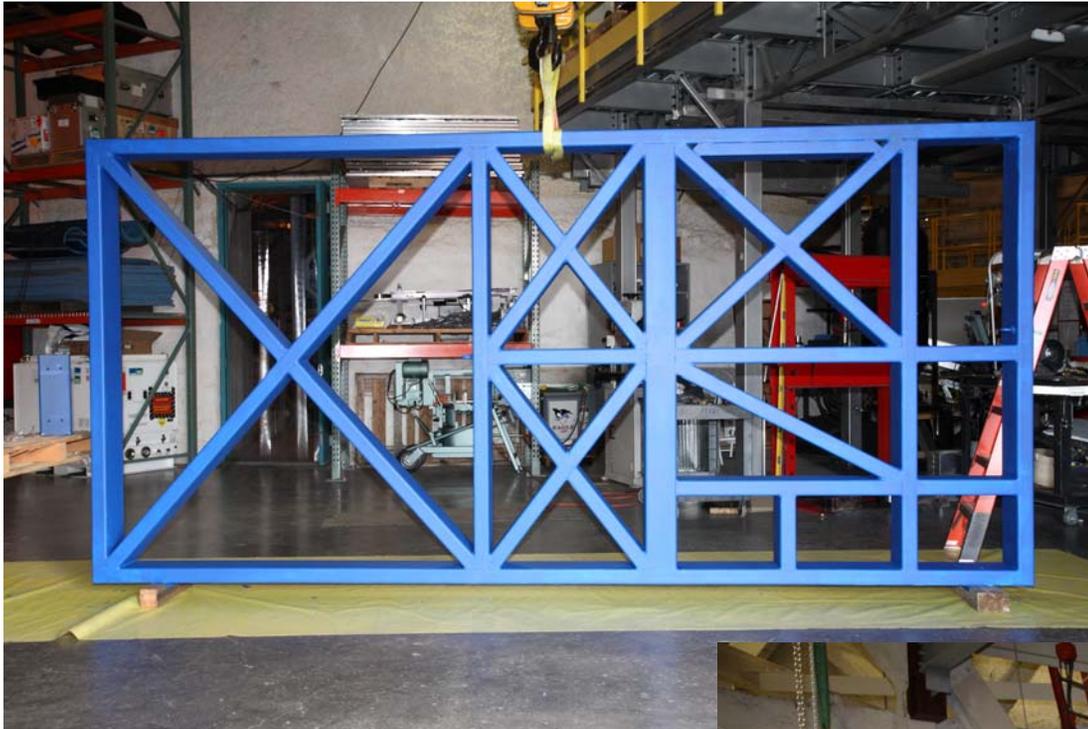
Naruhisa Takato and FMOS team

Engineering Observations

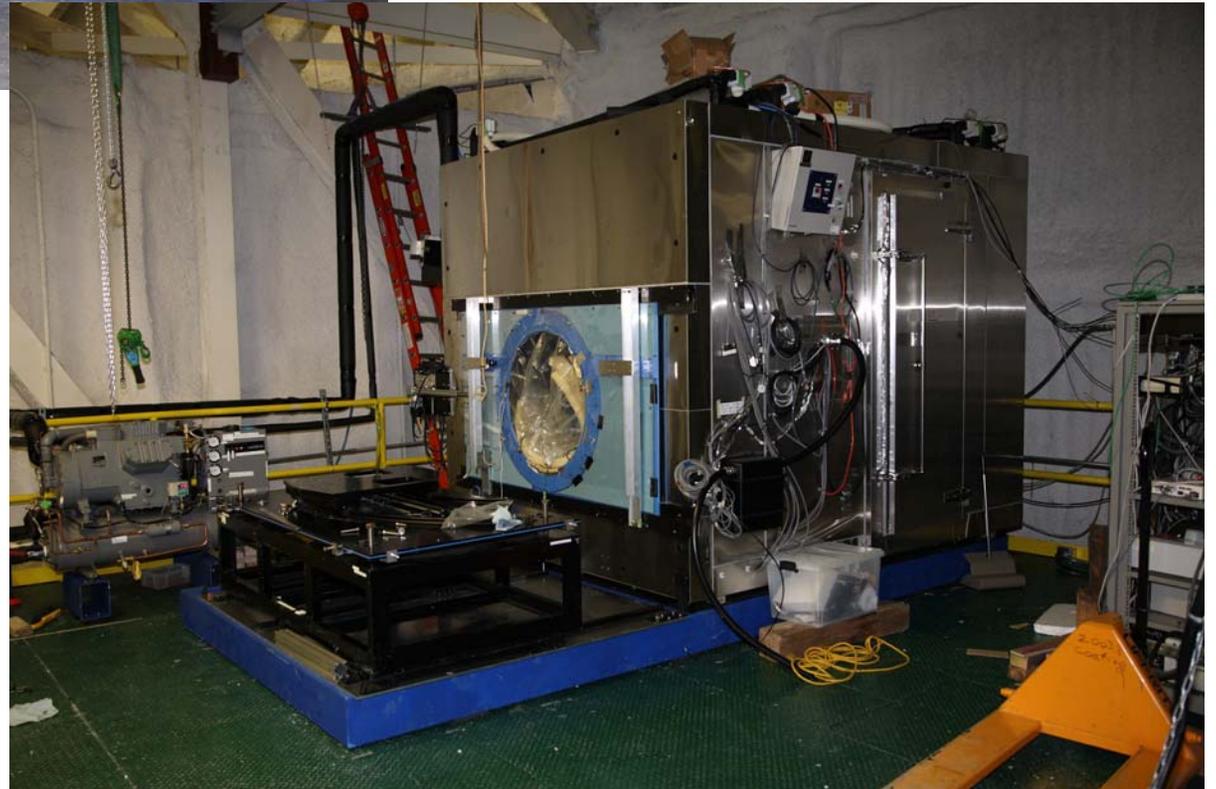
(Jan. 2009 – Jan. 2010)

- Mar. 11-12 (2)
 - ⇒ spectral shift and heater problem were found.
- May 13-14 (2)
 - ⇒ fixing software bugs, testing SOSS commands
- Oct. 05-06 (2)
 - ⇒ bad weather, testing SOSS commands
- Oct. 27-29 (3)
 - ⇒ performance evaluation for long exposure (BS)
- Nov. 30 - Dec. 02 (3)
 - ⇒ performance evaluation for long exposure (CBS)

total: 12 nights

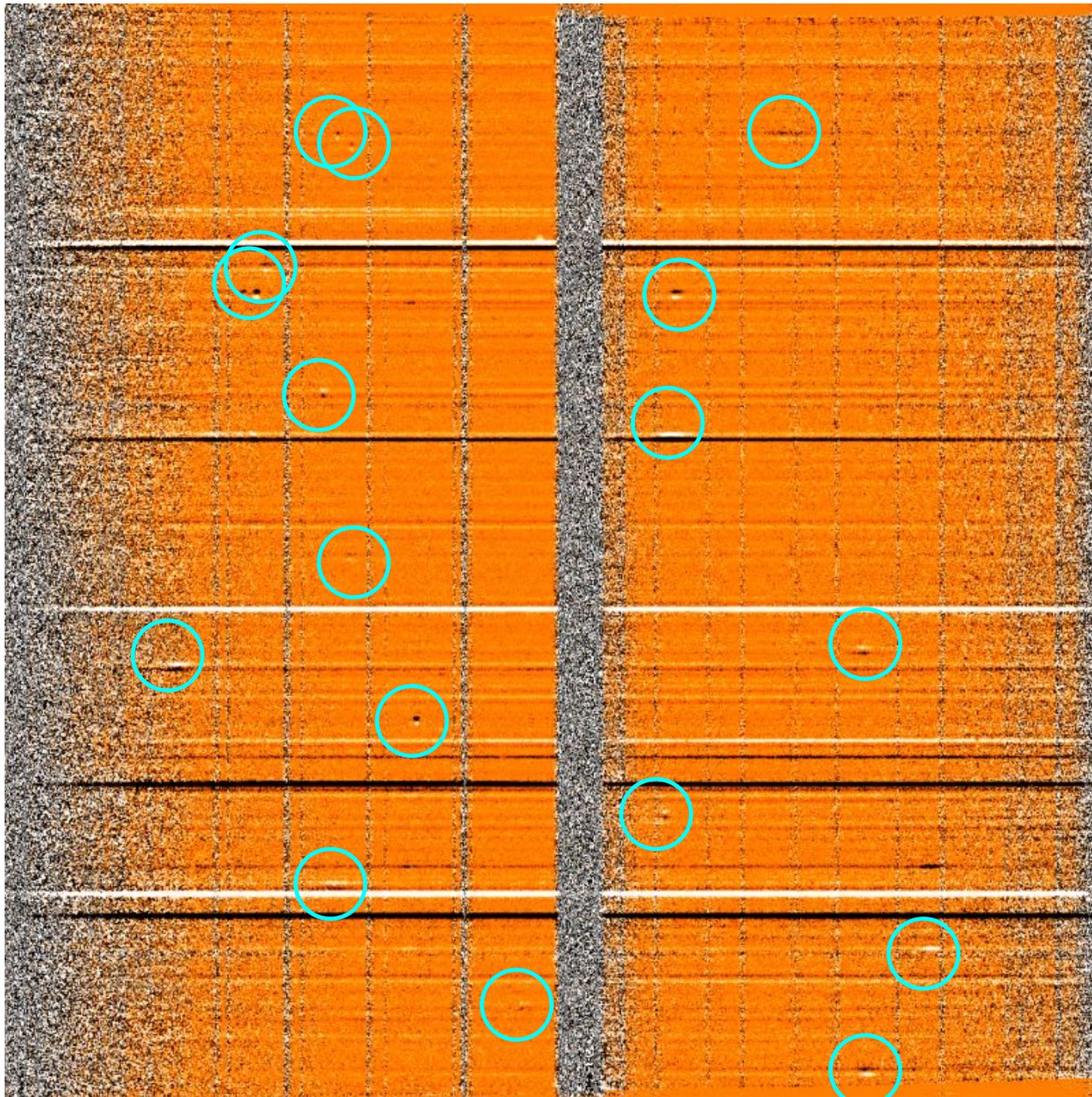


Countermeasure for the spectral shift



S10A Open Use

- Shared risk
- only IRS1 / Low-resolution mode
- 197 fibres / ($\lambda = 0.9 \sim 1.8 \mu\text{m}$), $R=500$
- Start in May, 2010



0.9 μm

1.8 μm

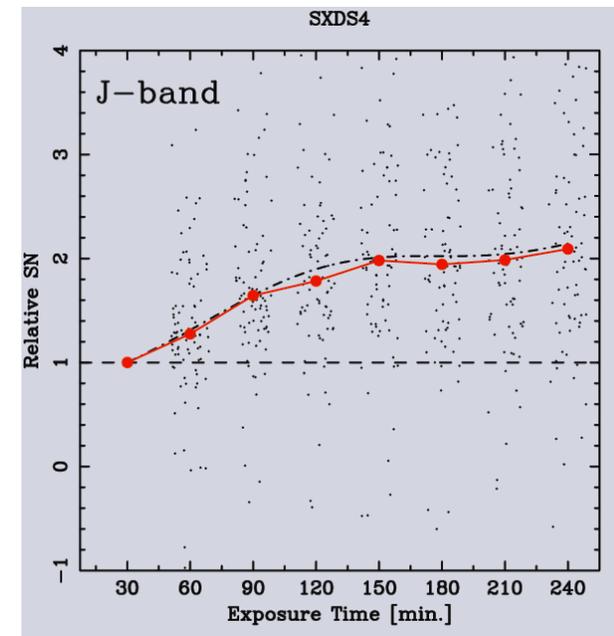
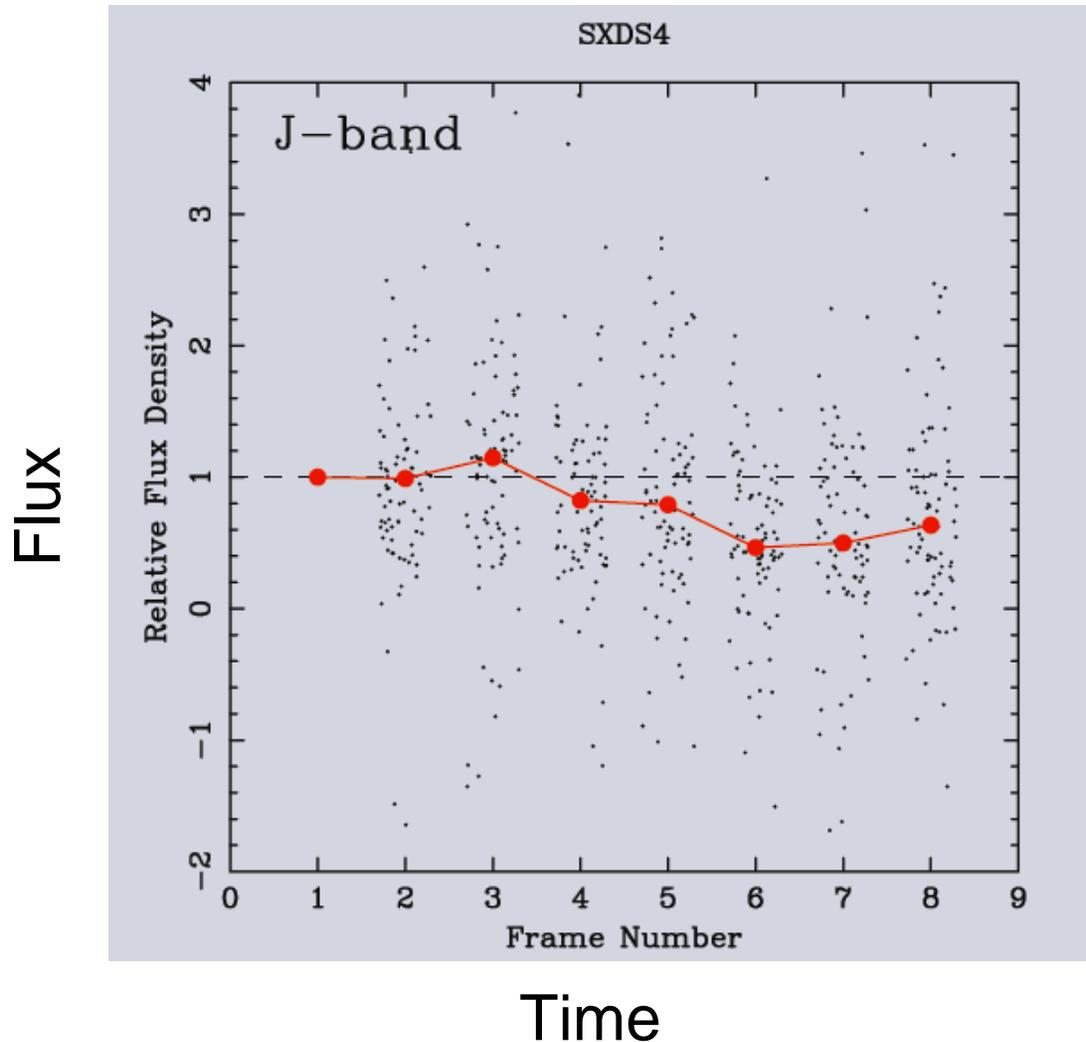
Current Performance

(please see posters by Kawate, Yabe and Sumiyoshi)

Low-resolution mode, S/N=5, 1 hr on-source exposure

- Continuum (AB magnitude)
in typical condition: J ~ 19 mag, H ~ 19 mag
in good condition : J ~ 20.9 mag, H ~20.9 mag
- Emission line
 $\sim 1 \times 10^{-16} \text{ erg cm}^{-2} \text{ s}^{-1}$

Keeping fibres on the objects is the most important for obtaining high S/N



$S/N \sim \sqrt{t}$, if no flux loss
from fibres

Yabe, et al.

Overhead of observations

- Fibre configuration is needed every time before an exposure to minimize flux loss
⇒ overhead ~ 40%
- Need further investigations for determine the flux loss during observations.

Outstanding issues

- IRS2 open use
 - detector itself shows strange behavior
⇒ need to find tricky operation method
 - refrigerator problem
 - then, evaluate the performance
- IRS1
 - High-resolution mode ($R=2200$) evaluation
 - refrigerator adjustment to cool down additional few degree C
- Upgrade VPH gratings and mosaic gratings to increase optical throughput, especially in J-band

Only IRS1/Low-resolution mode might be open in S10B
(the same as S10A)