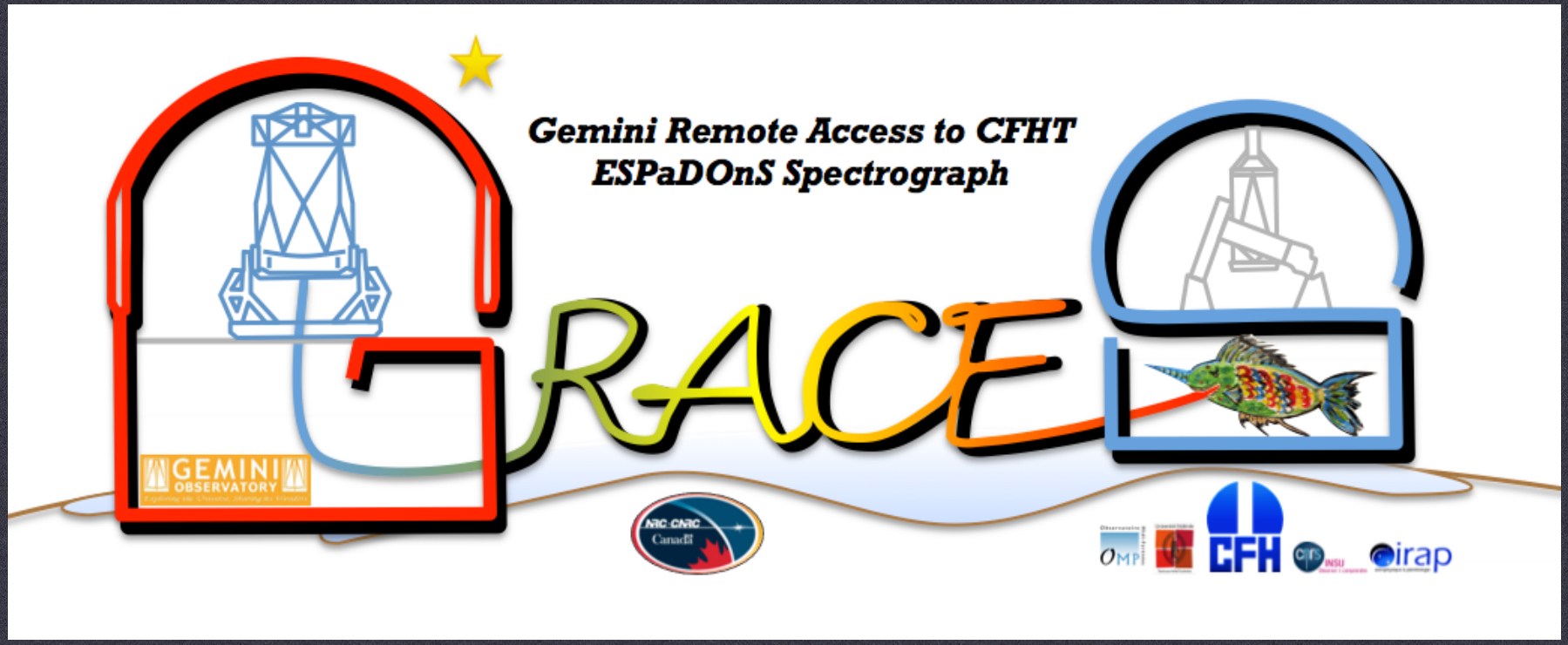


GRACES: REMOTE ACCESS TO CFHT-ESPADONS SPECTROGRAPH

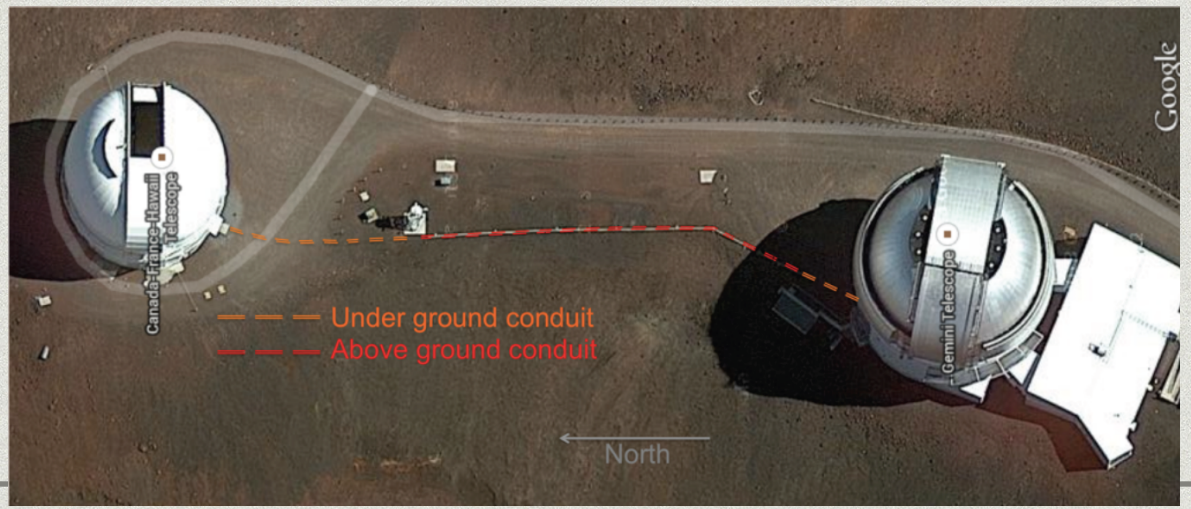
LISON MALO, GREG BARRICK, CLAIRE MOUTOU (CFHT)
ANDRÉ-NICOLAS CHENÉ, EDER MARTIOLI (GEMINI)

GRACES project goals

- Optical high resolution spectrograph accessible at Gemini
- CFHT/Gemini having the opportunity to work in close collaboration
- This collaboration will help demonstrate the commitment of CFHT/Gemini to share resources with other observatories on Maunakea.

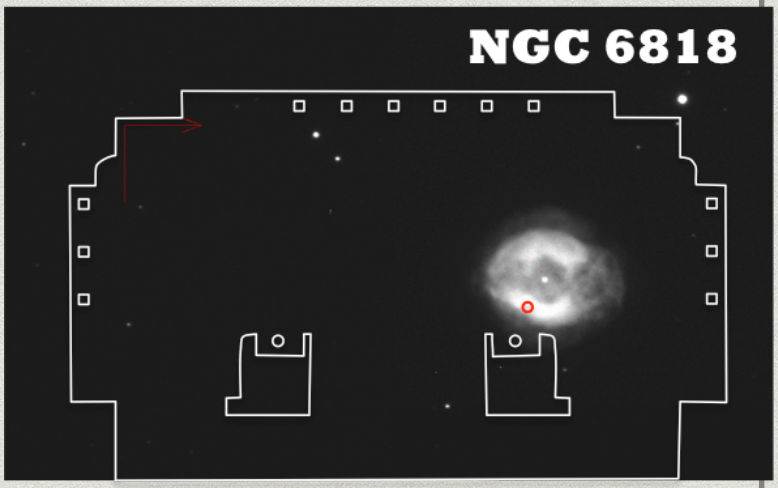
GRACES project

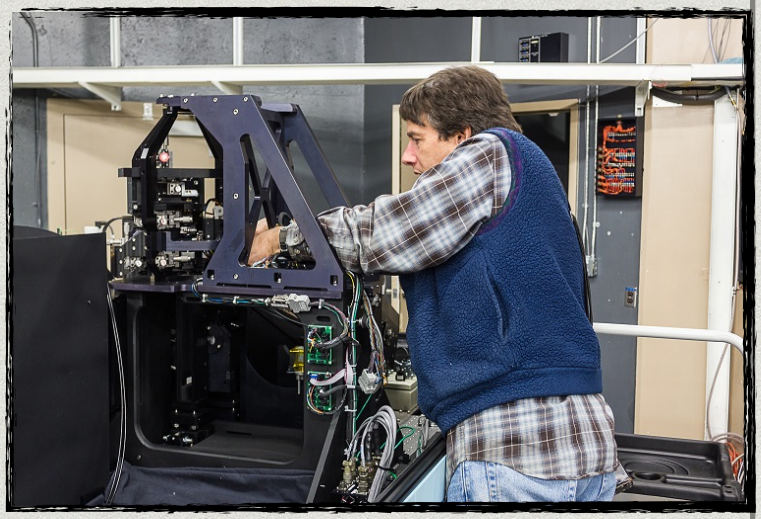
- Started in 2008
- A project managed by:
  - NRC: John Pazder, Andre Antony
  - CFHT: Greg Barrick, Tom Benedict, Tom Vermeulen + Eder Martioli, Claire Moutou, Lison Malo
  - Gemini: John White, P. Gigoux, + André-Nicolas Chené



GRACES system

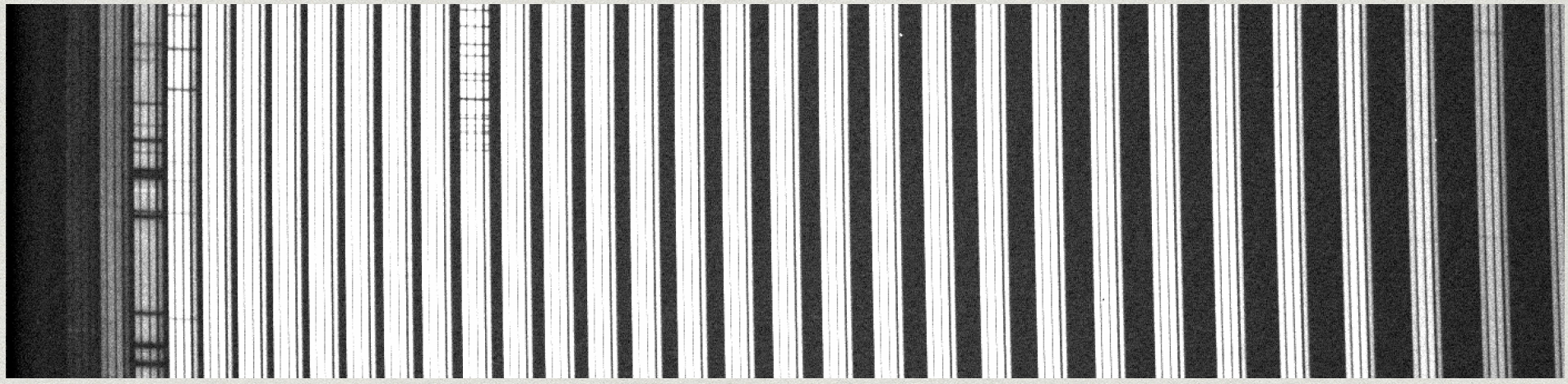
- Injection module (into GMOS)
- Optical fibers (2 x 270m)
  - FiberTech Optica (FRD<14%)
  - 80% transmittance
- Receiver unit @ CFHT
  - 4 slicers (1 fiber mode)
  - 2 slicers (2 fiber mode)
- Same detector
- No polarimetric module, No ADC





GRACES installation

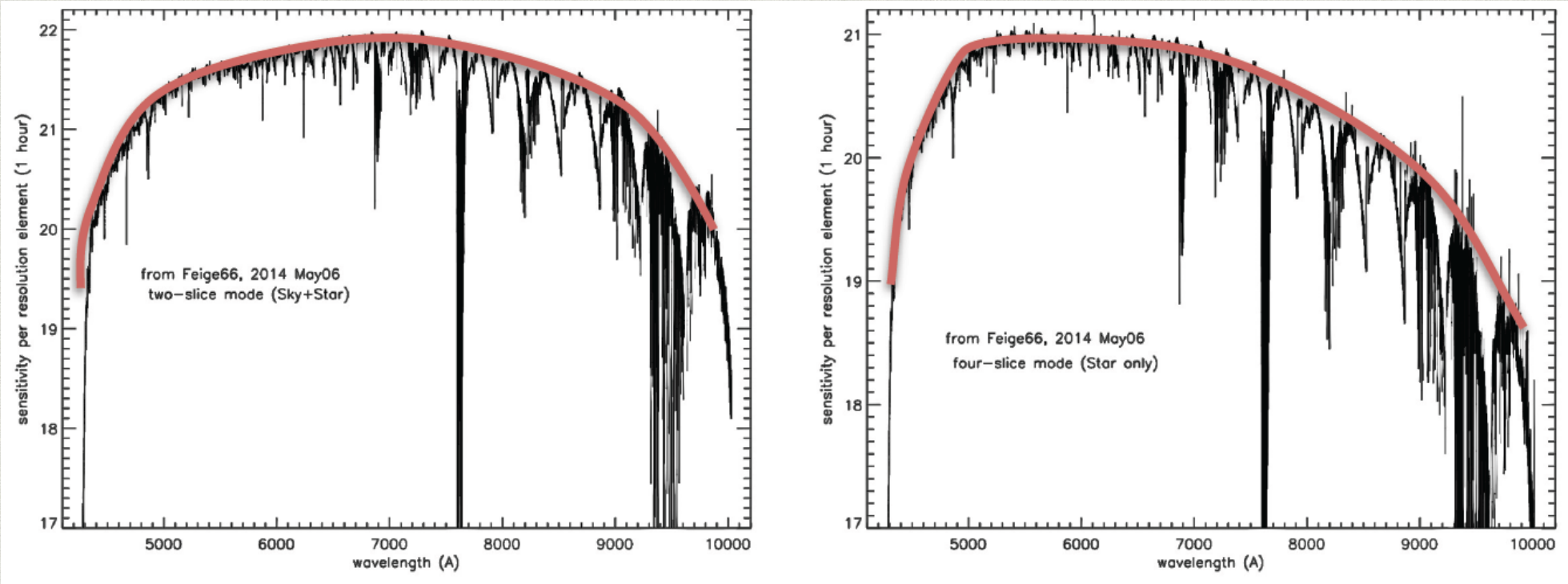
April-May 2014



- Feige 66: spectrophotometric standard
- Data have been reduced by CFHT and Eder Martioli using Opera

First light: May 6 2014

Performances: first light



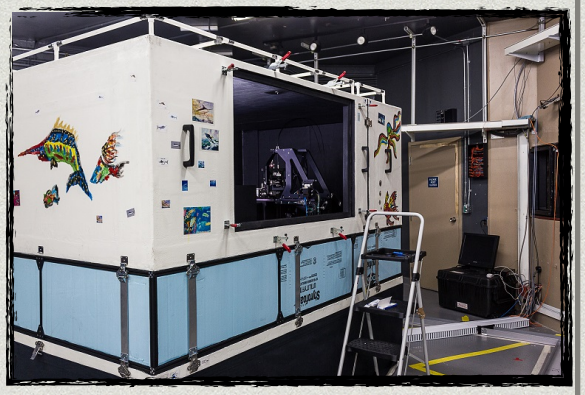
Chené et al. SPIE 2014

- Sensitivity in 1 hour
- 21.9mag (S+S), 21mag (Sonly)
- Throughput
- S+S: 10%, Star only: 8%
- Power Resolution = 40,000 (S+S) & 65,000 (Sonly)
- Wavelength coverage: 400nm - 1050nm

Phase B: New additions in 2015

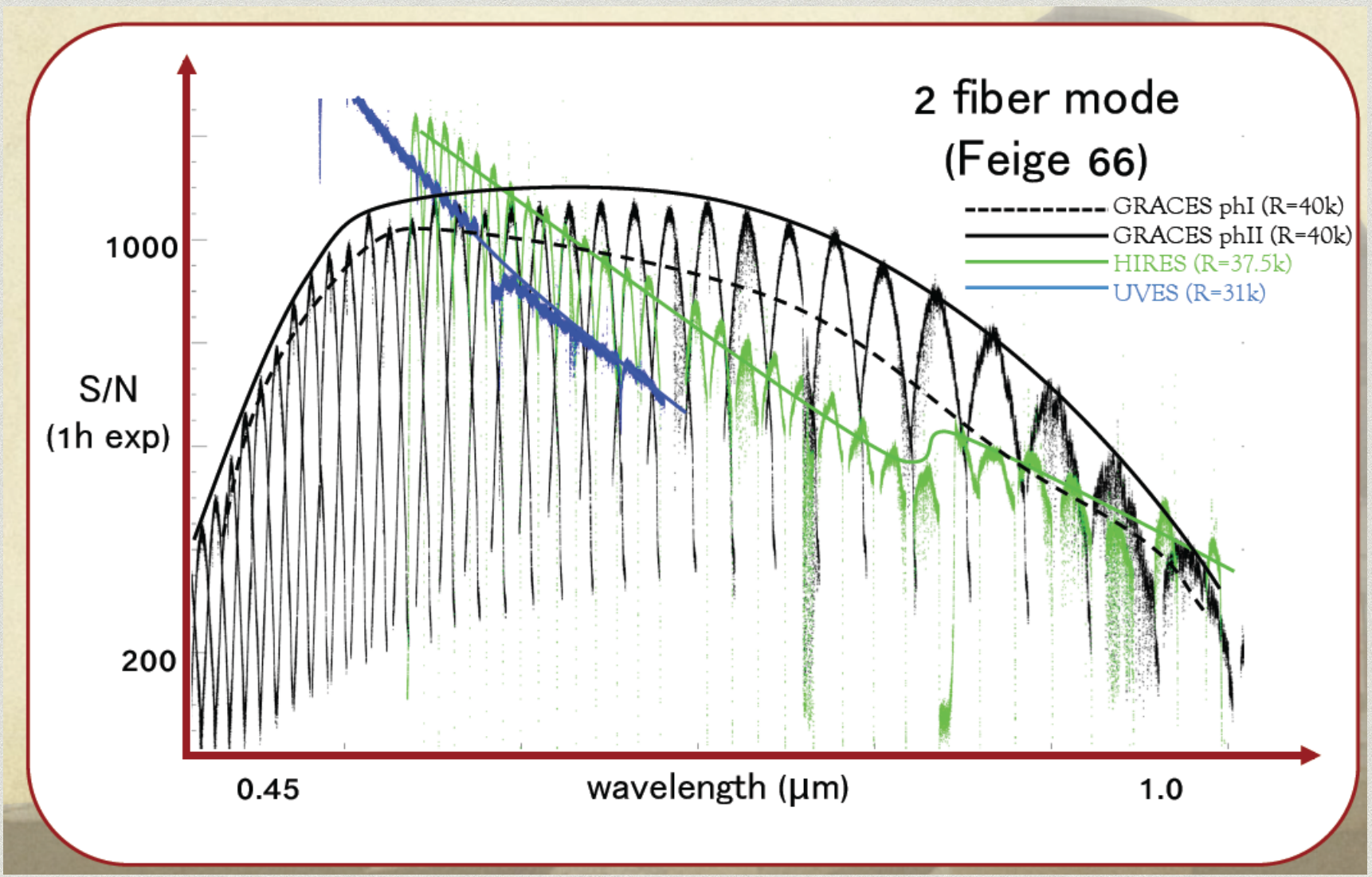
- silver coated mirror
- thermal enclosure
- guiding central wavelength

	Sensitivity (mag)	Throughput
2014-1fiber	21	8%
2015-1fiber	21.5	10.5%
2014-2fibers	21.9	10%
2015-2fibers	22.4	13%



See G. Barrick poster

Comparison with other instruments



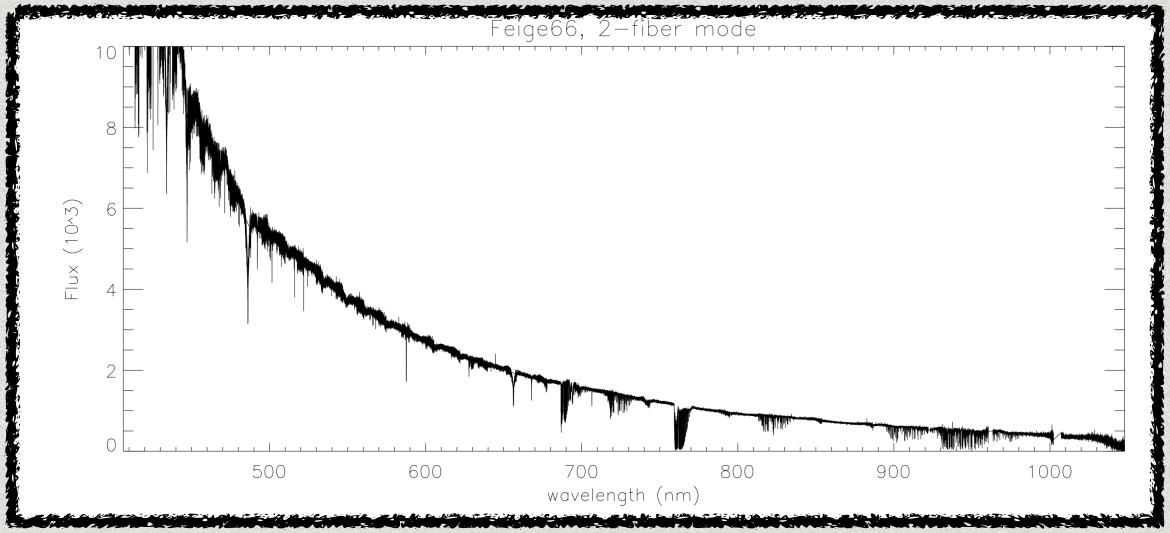
André-Nicolas Chené

Science verification

June & July 2015

- Feige66
- M101
- NGC6946
- NGC6818

- Alpha-element-rich star
- Solar Twin
- Asteroid
- X-ray binary candidate



- Data reduced by Opera reduction software

http://www.gemini.edu/sciops/instruments/july-2015-onsky-tests

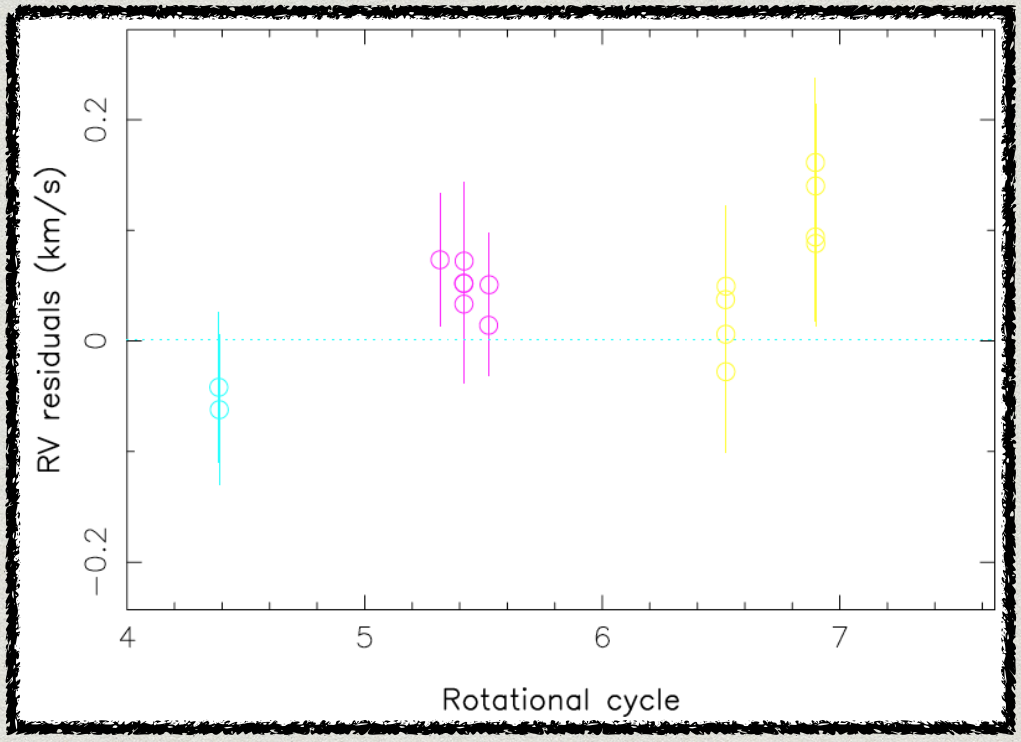
Early Science

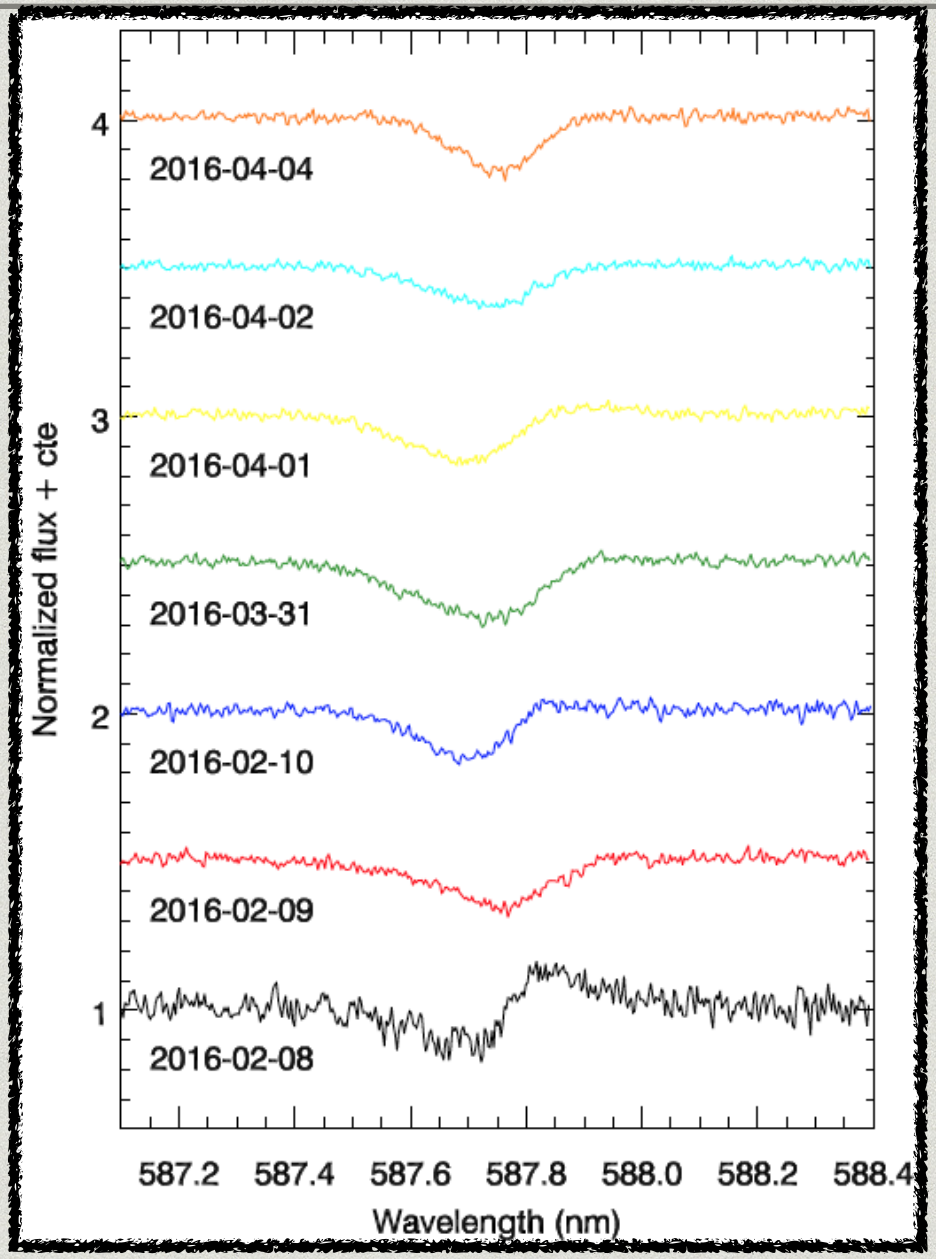
- GRACES is used as a visitor instrument since 2015B
  - 15 programs in 15B -> 21 nights
  - 10 programs in 16A -> 25 nights (approx.)
  - 16B : third most popular instrument at G-North

- Chemical abundances analysis
- Kinematics + search for planet using precise RVs
- Globular cluster
- Accretion/wind property

Early Science

- Monitoring of planetary candidate (J-F Donati, C. Moutou, L. Malo)





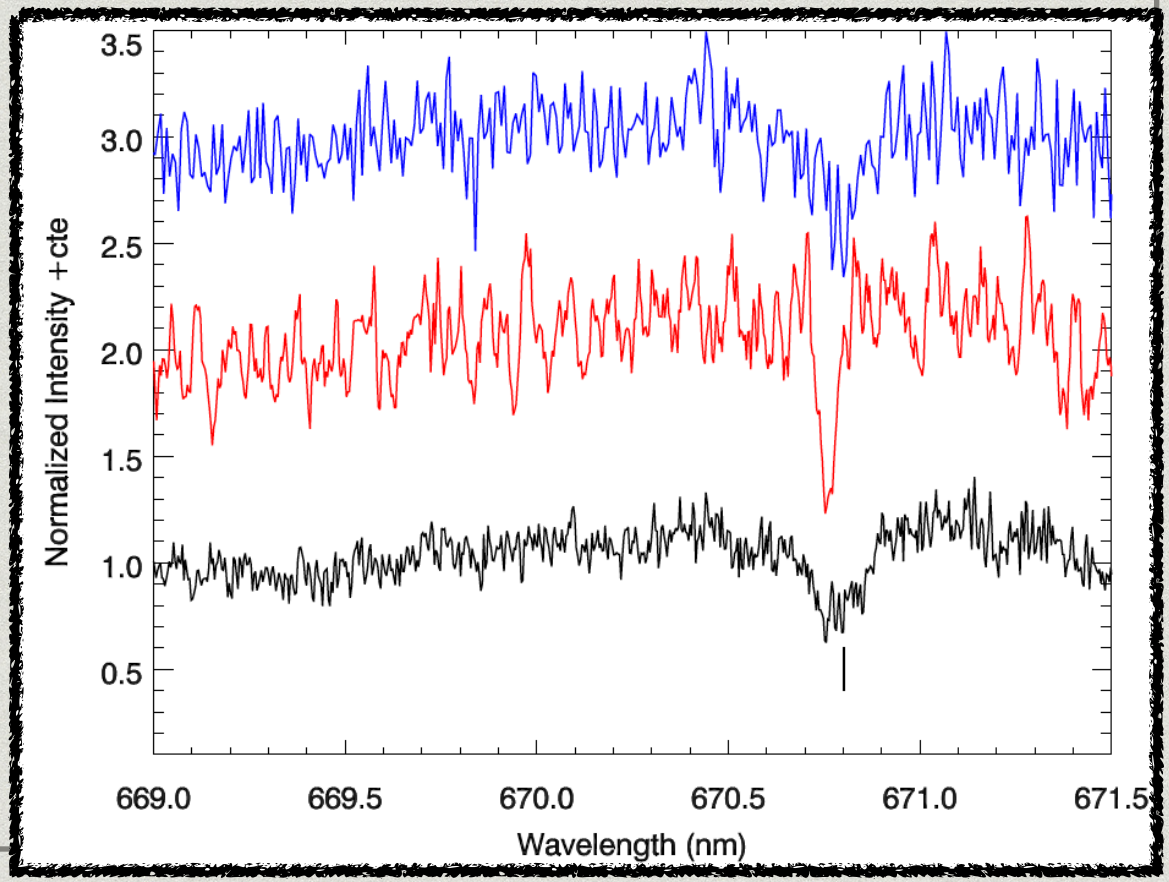
- Central stars of planetary nebulas (R. Mendez)

Early Science

- Goal: Identification and characterization of very low-mass and brown dwarf candidate members of nearby young associations

- Team: J. Gagné, L. Malo, R. Doyon, E. Artigau, D. Lafrenière

- Observations: young M6-L3 candidates, too faint for ESPaDOnS@CFHT



Publications

- Based on science verification data :
  - First letter published (Nov 2015) in A&A

LETTER TO THE EDITOR

KIC 9821622: An interesting lithium-rich giant in the *Kepler* field★

E. Jofré[1,2], R. Petrucci[1,2], L. García[1] and M. Gómez[1,2]

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e-mail: emiliano@oac.uncor.edu
[2] Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina

  - First paper published (March 2016) in MNRAS

GRACES observations of young [α/Fe]-rich stars

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Thanks!