

# NEAR INFRARED [Fe II]-LINE GALACTIC PLANE SURVEY : UWIFE

LEE, HO-GYU (KASI) AND GEMSO TEAM

# TEAM MEMBERS

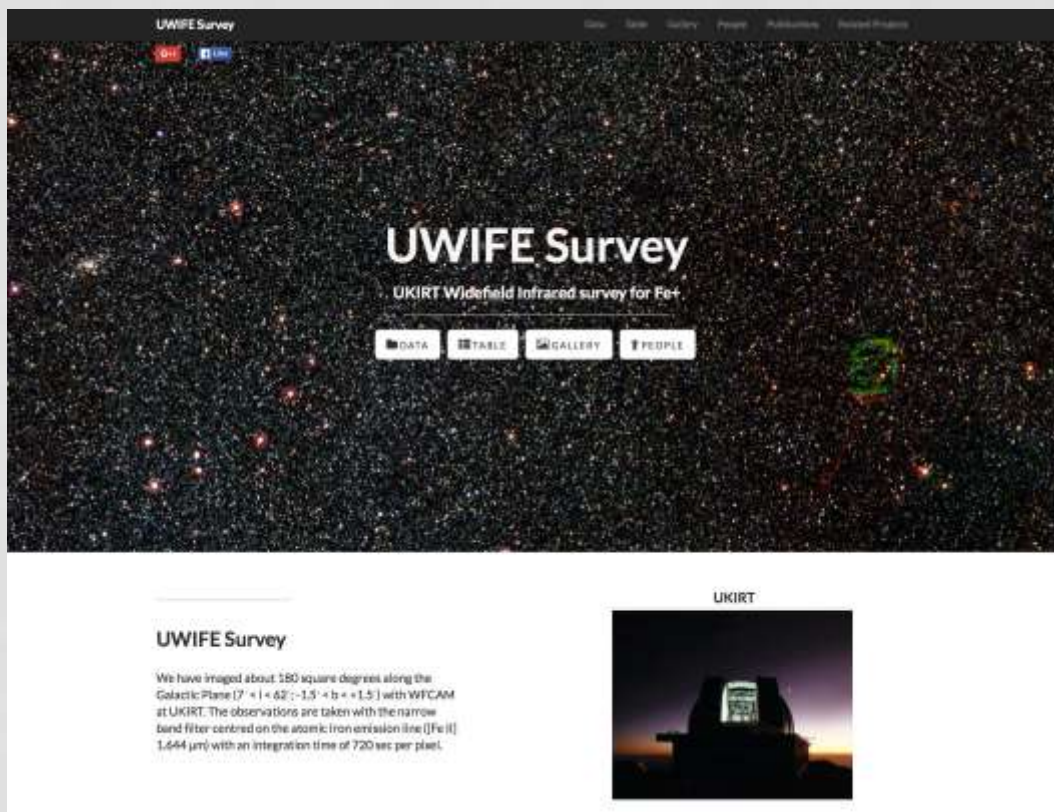
## Survey Team Members

Contact Jae-Joon Lee ([leejjoon@kasi.re.kr](mailto:leejjoon@kasi.re.kr)) for any inquiry.

Name	Institution
Jae-Joon Lee	KASI
Bon-Chul Koo	SNU
Yong-Hyun Lee	SNU
Ho-Gyu Lee	KASI
Jong-Ho Shinn	KASI
Hyun-Jeong Kim	SNU
Yesol Kim	SNU
Tae-Soo Pyo	Subaru
Dae-Sik Moon	Toronto
Ho-Gyu Lee	KASI
Moo-Young Chun	KASI
Dirk Froebrich	The University of Kent
Chris J. Davis	Liverpool John Moores University
Watson P. Varricatt	Joint Astronomy Centre
Jaemann Kyeong	KASI
Narae Hwang	KASI
Byeong-Gon Park	KASI

# UWIFE & 중대형망원경

- UWIFE : UKIRT Widefield Infrared survey for Fe+
- [gems0.kasi.re.kr/uwife](http://gems0.kasi.re.kr/uwife)



UWIFE Survey

UKIRT Widefield Infrared survey for Fe+

DATA TABLE GALLERY PEOPLE

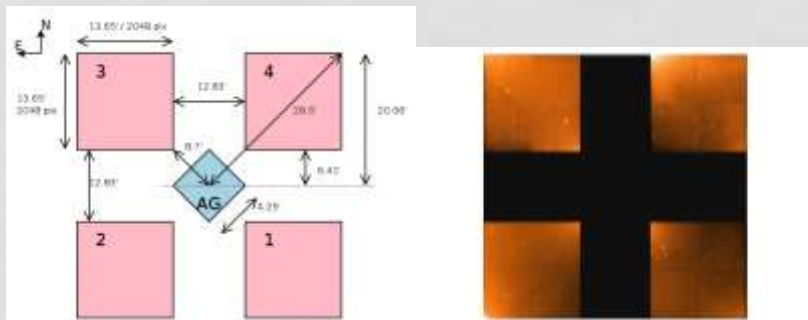
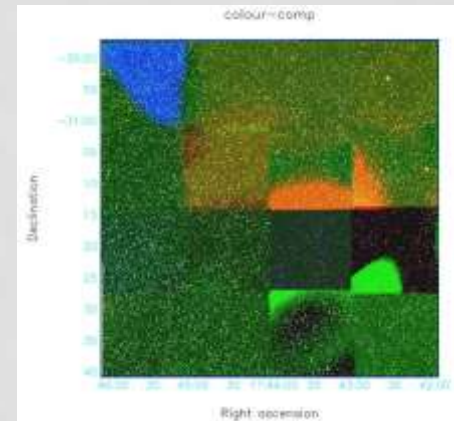
### UWIFE Survey

We have imaged about 180 square degrees along the Galactic Plane ( $l = 62^\circ \pm 1.5^\circ$ ,  $b = -1.5^\circ \pm 1.5^\circ$ ) with WFCAM at UKIRT. The observations are taken with the narrow band filter centred on the atomic iron emission line ([Fe II] 1.644  $\mu\text{m}$ ) with an integration time of 720 sec per pixel.

UKIRT

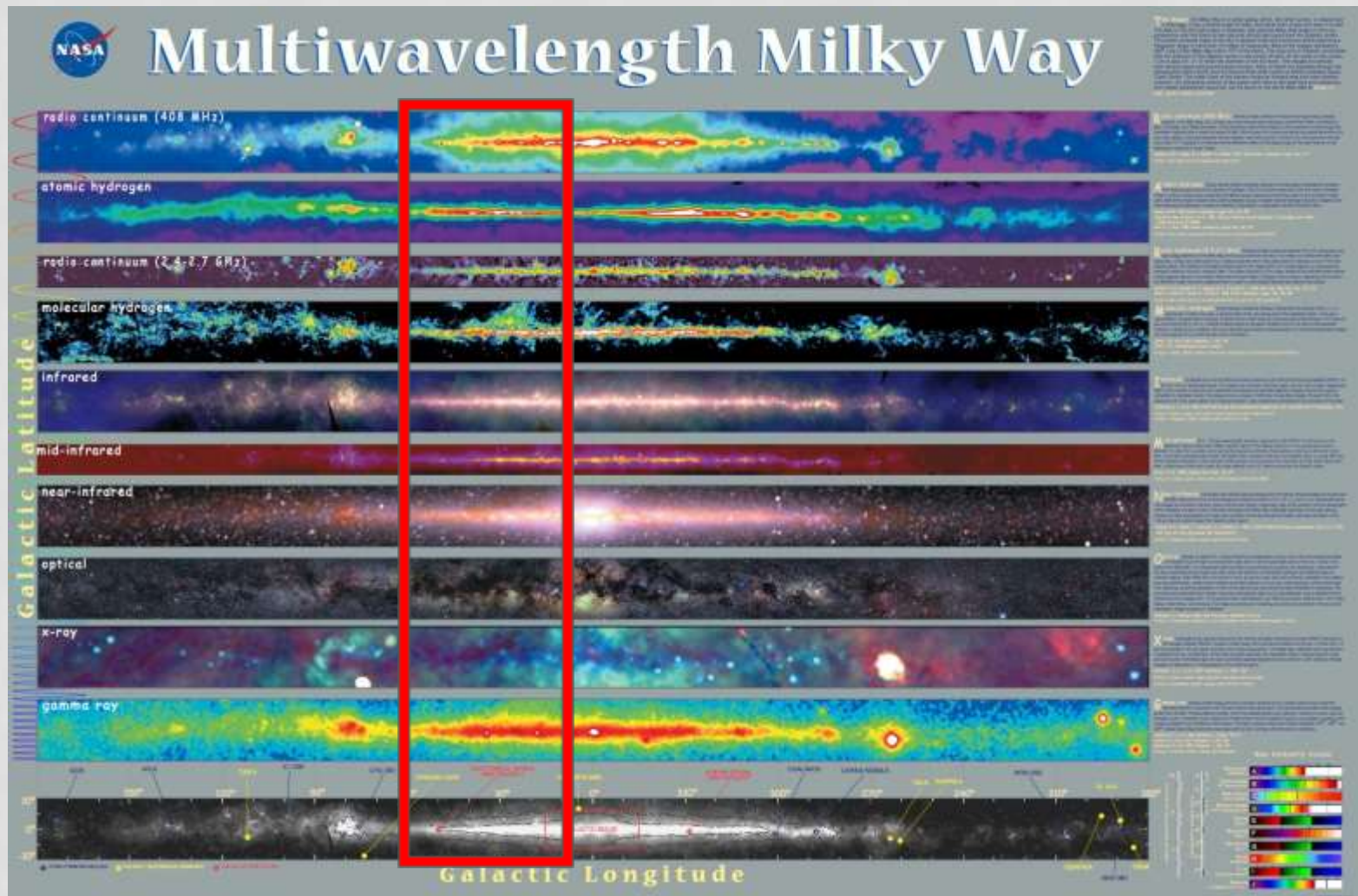
# TELESCOPE / INSTRUMENT

- UKIRT / WFCAM



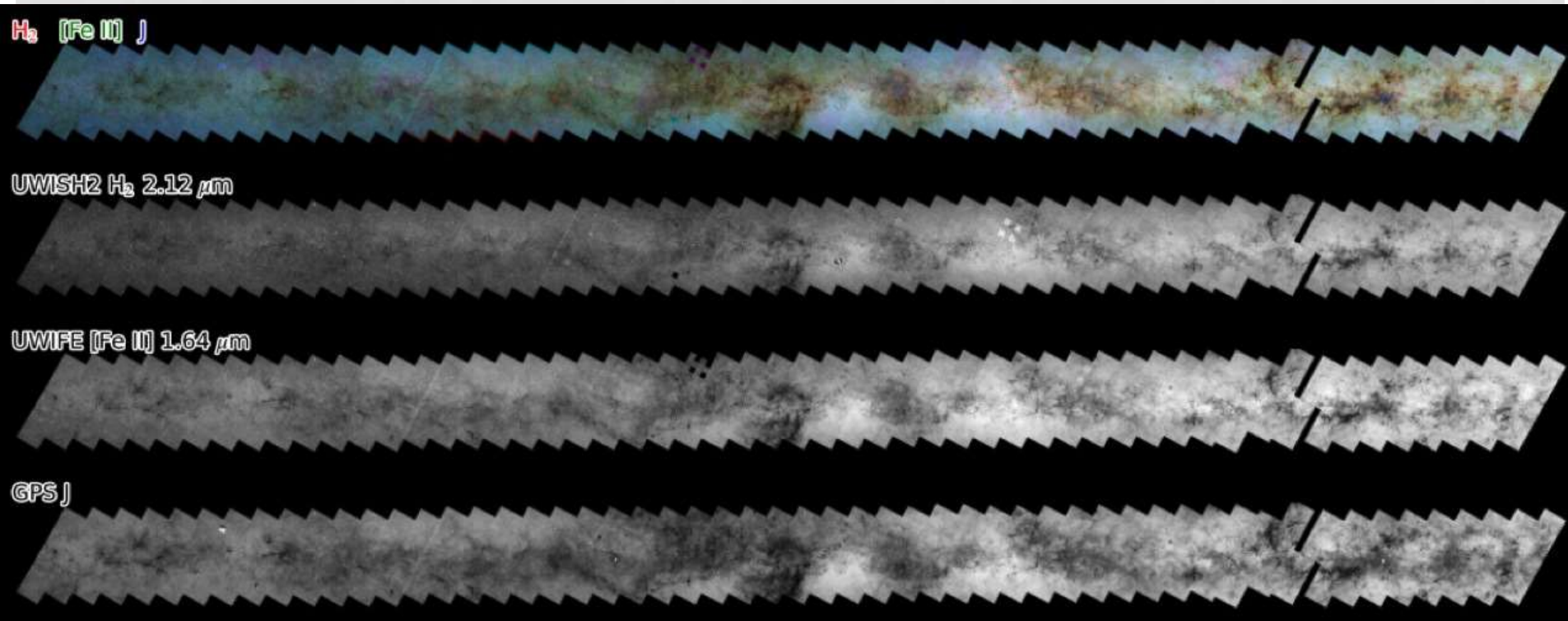
y4	y2	z4	z2
y3	y1	z3	z1
x4	x2	w4	w2
x3	x1	w3	w1

# SURVEY AREA



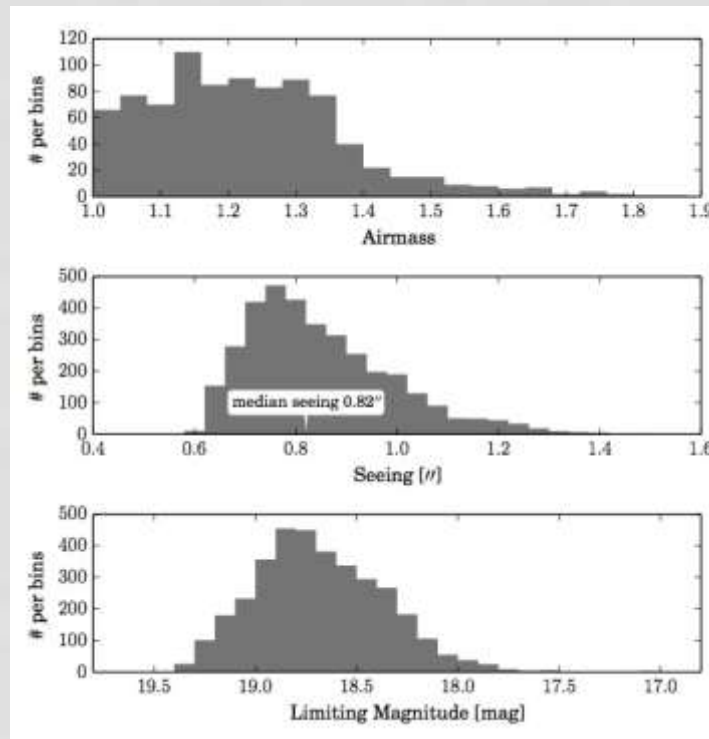
# UKIRT SISTER SURVEYS

- UWIFE [Fe II], UWISH2 H<sub>2</sub>, and GPS JHK



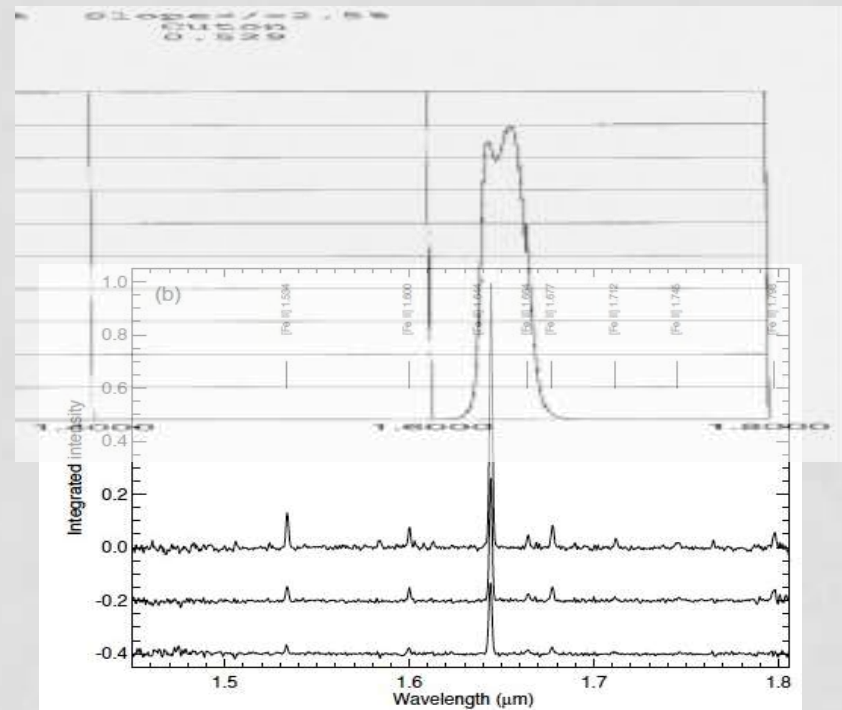
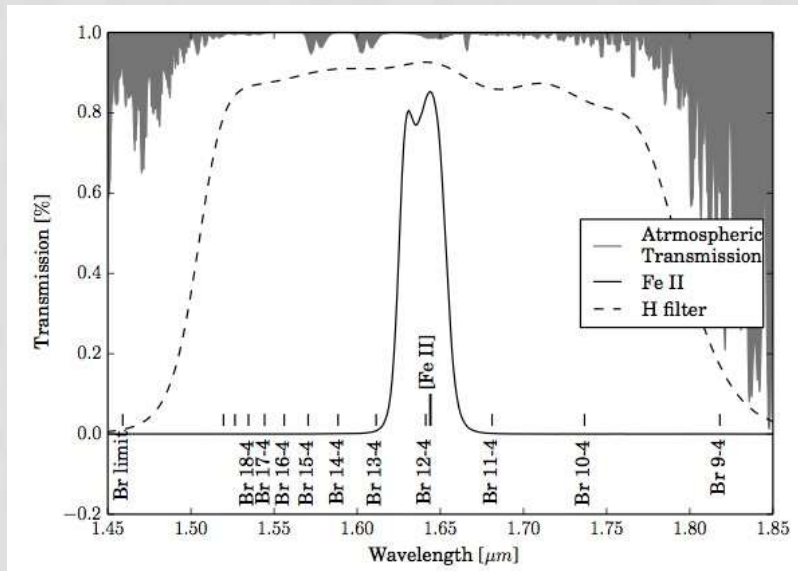
# OBSERVATIONS

- 2012 and 2013
- Exposure : 1h/tile
- ~ 220 tiles



# [Fe II] FILTER

- Filter response & example emission line spectrum

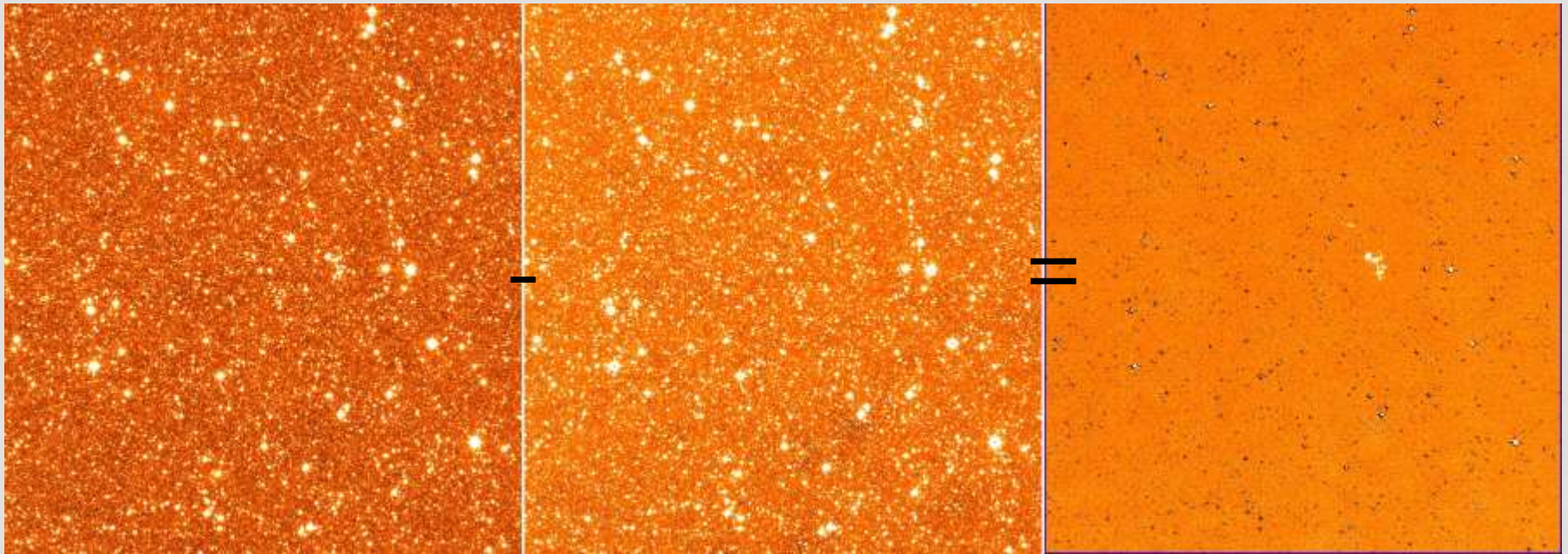


Spectra from SNR G11.2-0.3  
(Lee et al. 2013)



# IMAGES

- Continuum subtraction
  - Line or abnormal stellar color objects



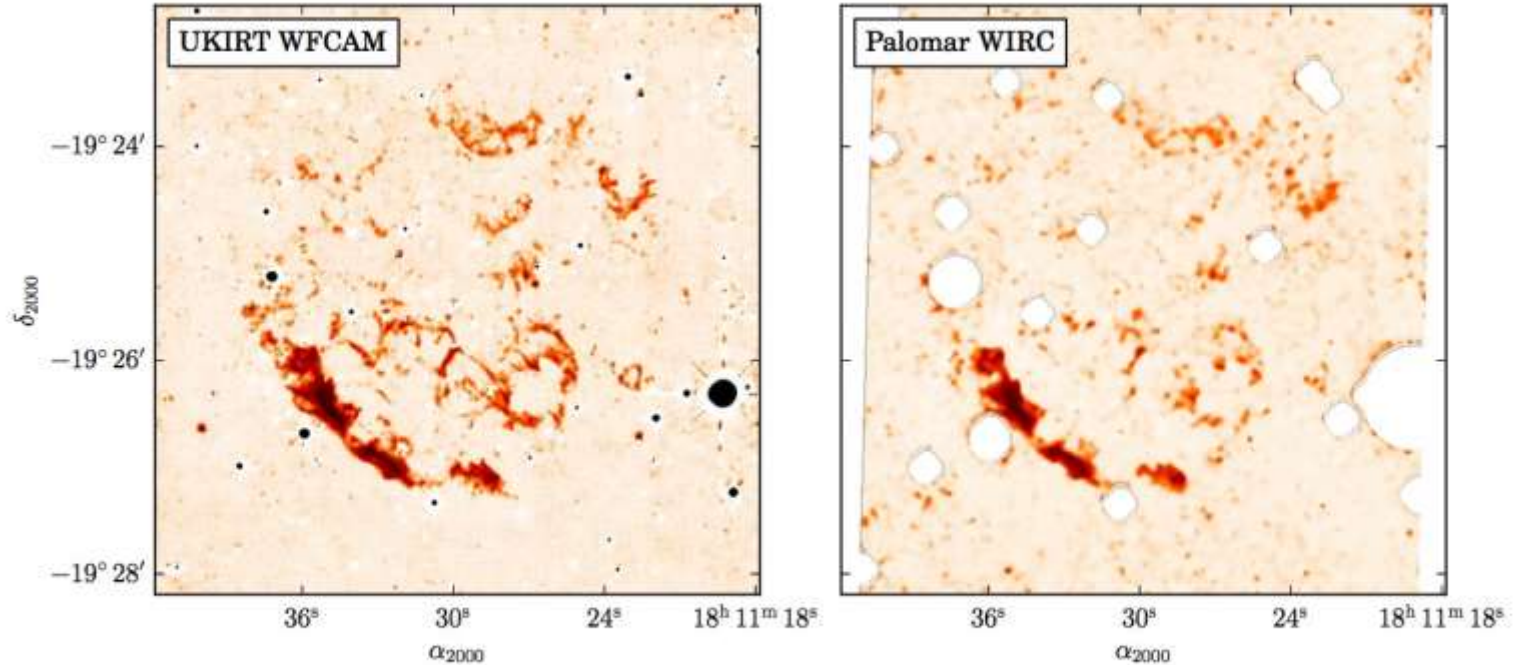
[Fe II] filter

H filter

[Fe II] - H

# IMAGE COMPARISON

- UKIRT and Palomar



**Figure 4.** (left) UWIFE image of the SNR G11.2–0.3, which was taken with the new [Fe II] 1.644  $\mu\text{m}$  filter installed in WFCAM. (right) Image of same region taken with [Fe II] 1.644  $\mu\text{m}$  filter on WIRC in Palomar Hale telescope (Koo et al. 2007).

# DATA ARCHIVE

- Use sftp ([gems0.kasi.re.kr/uwife/data.html](http://gems0.kasi.re.kr/uwife/data.html)) :

## UWIFE Preliminary Data Access

The observed [Fe II] images (products of CASU pipeline) are available from the following location. Also available are continuum subtracted (H-band subtracted) images.


You should connect via "sftp".

- ip : 103.8.230.113
- port : 7774
- login name : gems0\_public

The password is gems0. For easy access to the server, send me (lee.j.joon@gmail.com) your public ssh key.

- Tile identification ([gems0.kasi.re.kr/uwife/table.html](http://gems0.kasi.re.kr/uwife/table.html))

**Survey Identification Table**

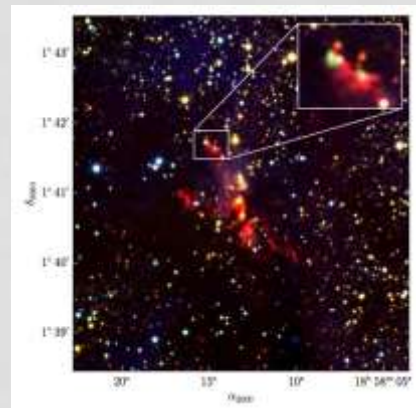


Gal: RA, or l    Dec, or b    Search Box size in deg.    Search    Clear

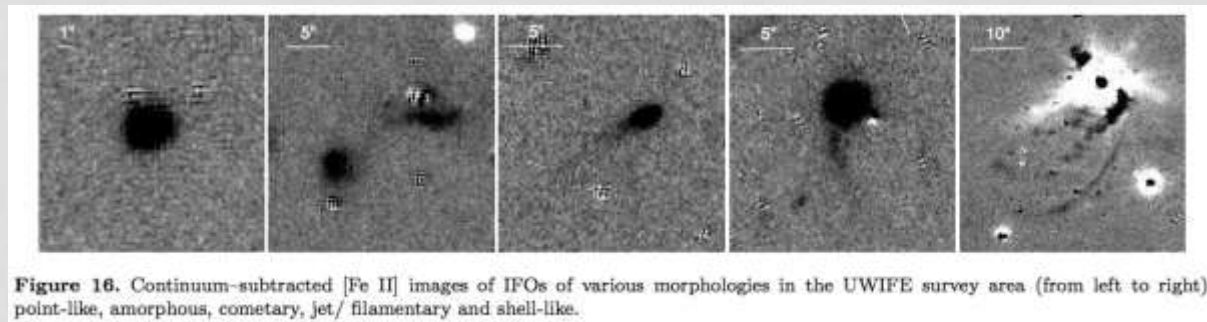
UWIFE ID	Title	l	b	R.A.	Dec.
0	<a href="#">Fell_fm2_15:58</a>	7.21	0.36	270.1287	-22.5412
1	<a href="#">Fell_fm2_15:59</a>	7.64	-0.4	271.08	-22.5412
2	<a href="#">Fell_fm2_15:64</a>	8.23	0.36	270.677	-21.6604

# EXAMPLE OBJECTS

- Massive star forming region



- IFO (Ionized Fe Object)



- UWIFE IFO catalog will be generated

- PN

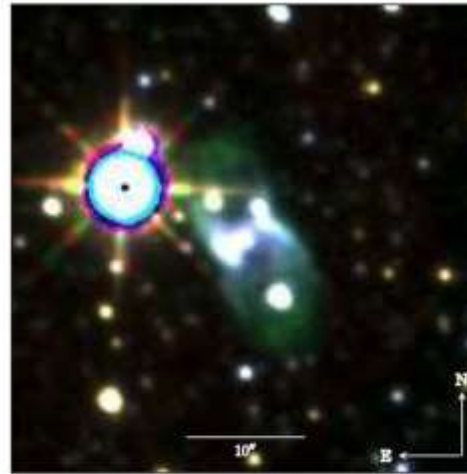


Figure 13. RGB composite image of PN M 1-51. The color scheme is same as in Figure 10. This is one of the PN showing [Fe II] emission without H<sub>2</sub>.

- SNR

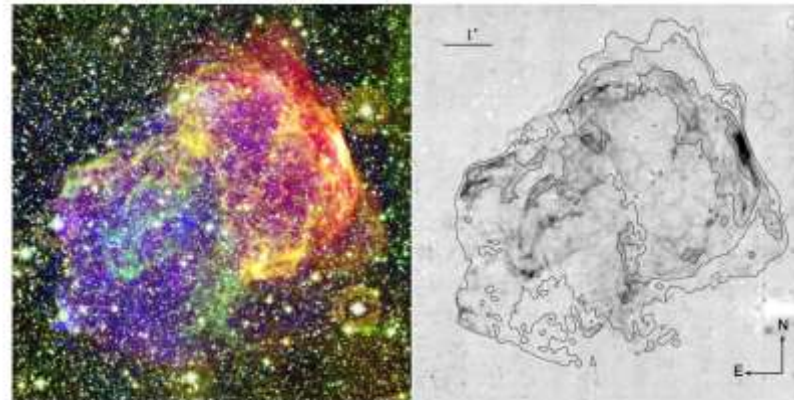
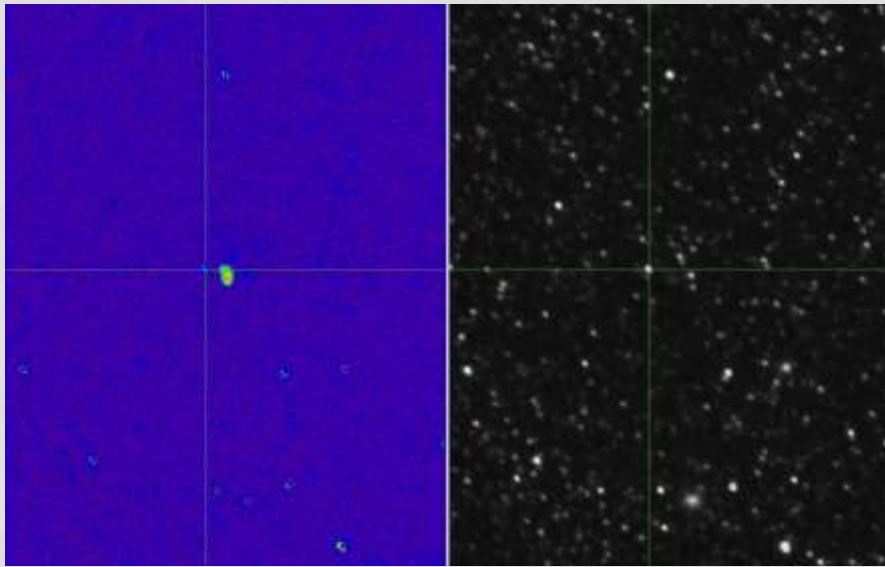


Figure 15. *Left:* Color composite figure of 3C 391, composed of 1.4 GHz radio continuum (red), H<sub>2</sub> 2.122  $\mu$ m (yellow), [Fe II] 1.644  $\mu$ m (green), and Chandra X-ray (blue) images (Helou et al. 2006; Froebrich et al. 2011; Chen et al. 2004). *Right:* Continuum-subtracted [Fe II] image. Superimposed are VLA 1.4 GHz radio contours with intensity levels of 2.0, 5.0, 17, 35, and 60 mJy beam<sup>-1</sup> and the beam size of 0".2  $\times$  0".4.

# RELATED OBSERVATIONS

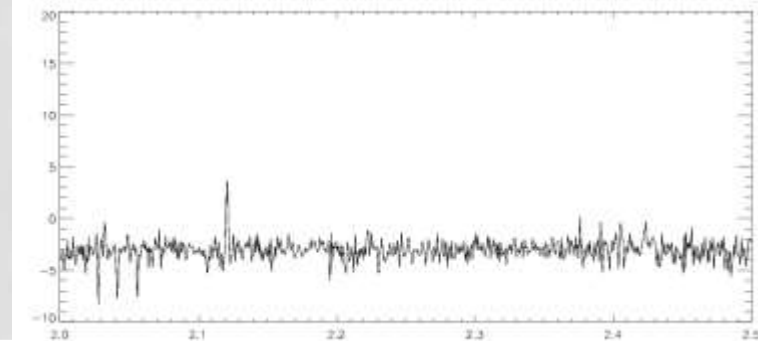
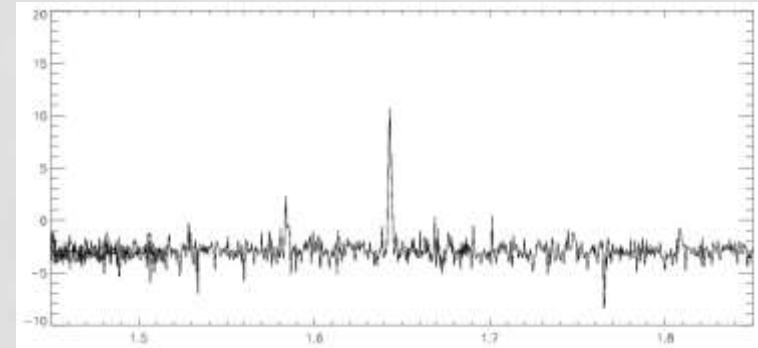
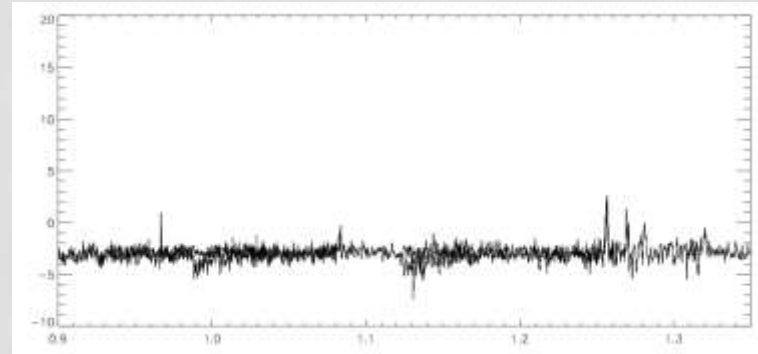
- IGRINS high-resolution spectroscopy of
  - YSOs, IFOs, LBVs, SNRs
- Gemini/PHOENIX spectroscopy of LBV
  - Jae-Joon Lee
- Gemini observations of massive YSO
  - Hyun-Jeong Kim (next talk)
- Gemini narrow band imaging of LBVs
  - Jae-Joon Lee
- Gemini spectroscopy of SNRs
  - Ho-Gyu Lee
- Subaru PAH imaging of SNR
  - Ho-Gyu Lee
- ..... and more

# GEMINI SPECTRA OF SNR IN M33



[Fe II] - H

H



# SUMMARY

- UWIFE survey
  - Inner Galactic plane imaging survey using [Fe II]
  - Star-(non)subtracted images are available
- Complementary to other MW surveys
  - in addition to UWISH2 and GPS JHK
- Additional Information
  - [gems0.kasi.re.kr/uwife](http://gems0.kasi.re.kr/uwife)
- Can be used for your paper or observing proposal!!!