

# Status report of WISHES

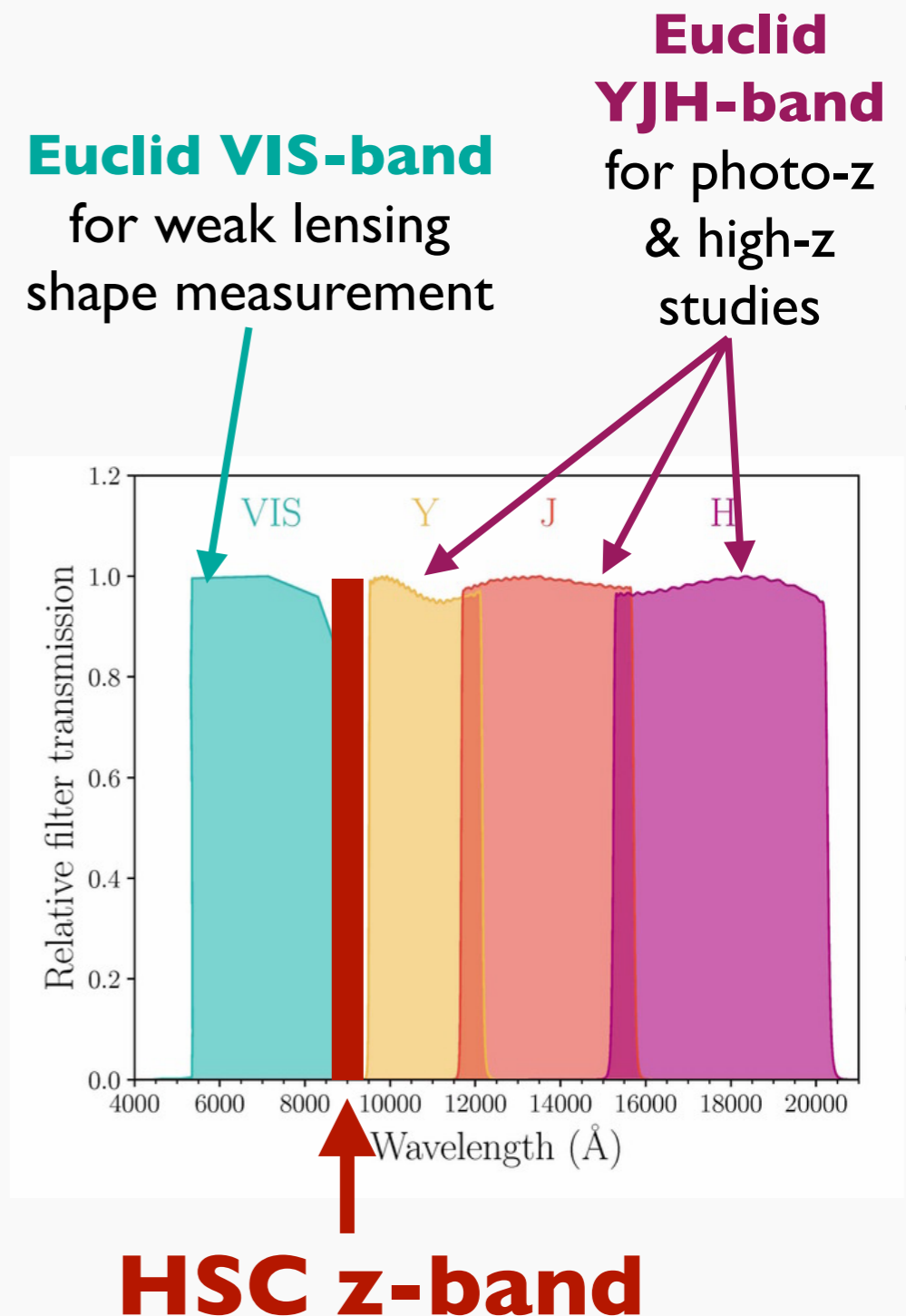
Masamune Oguri

(RESCEU/Physics/Kavli IPMU, Univ. of Tokyo)

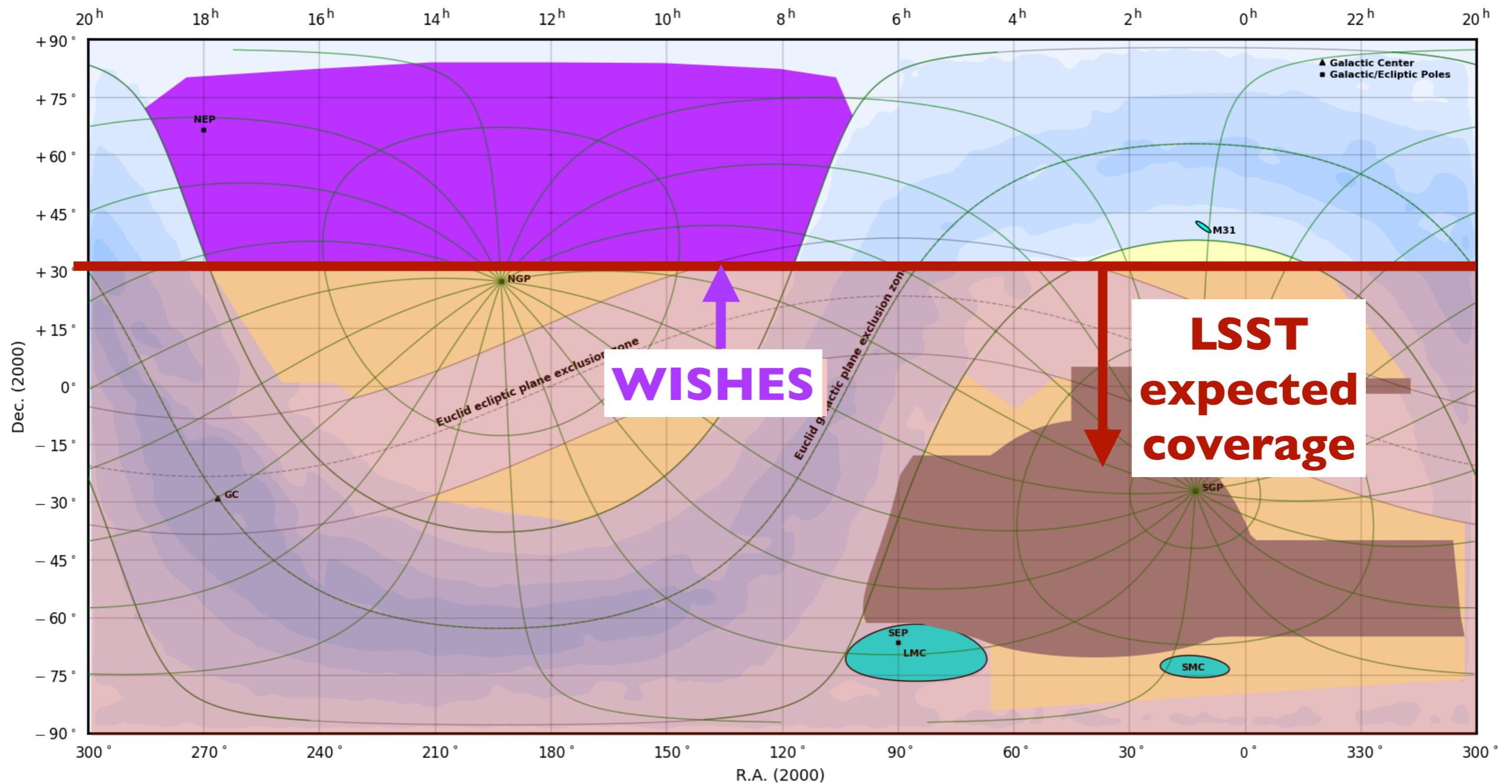
on behalf of the WISHES/UNIONS team

# WISHES for Euclid

- Euclid satellite (launch 2023) requires ground-based imaging for mission goal
- HSC z-band imaging survey (**40 nights, S20B-S23A**)
- improve photo-z of galaxies for **cosmic shear** to acceptable level, enable studies of **high-z quasars** and **clusters**



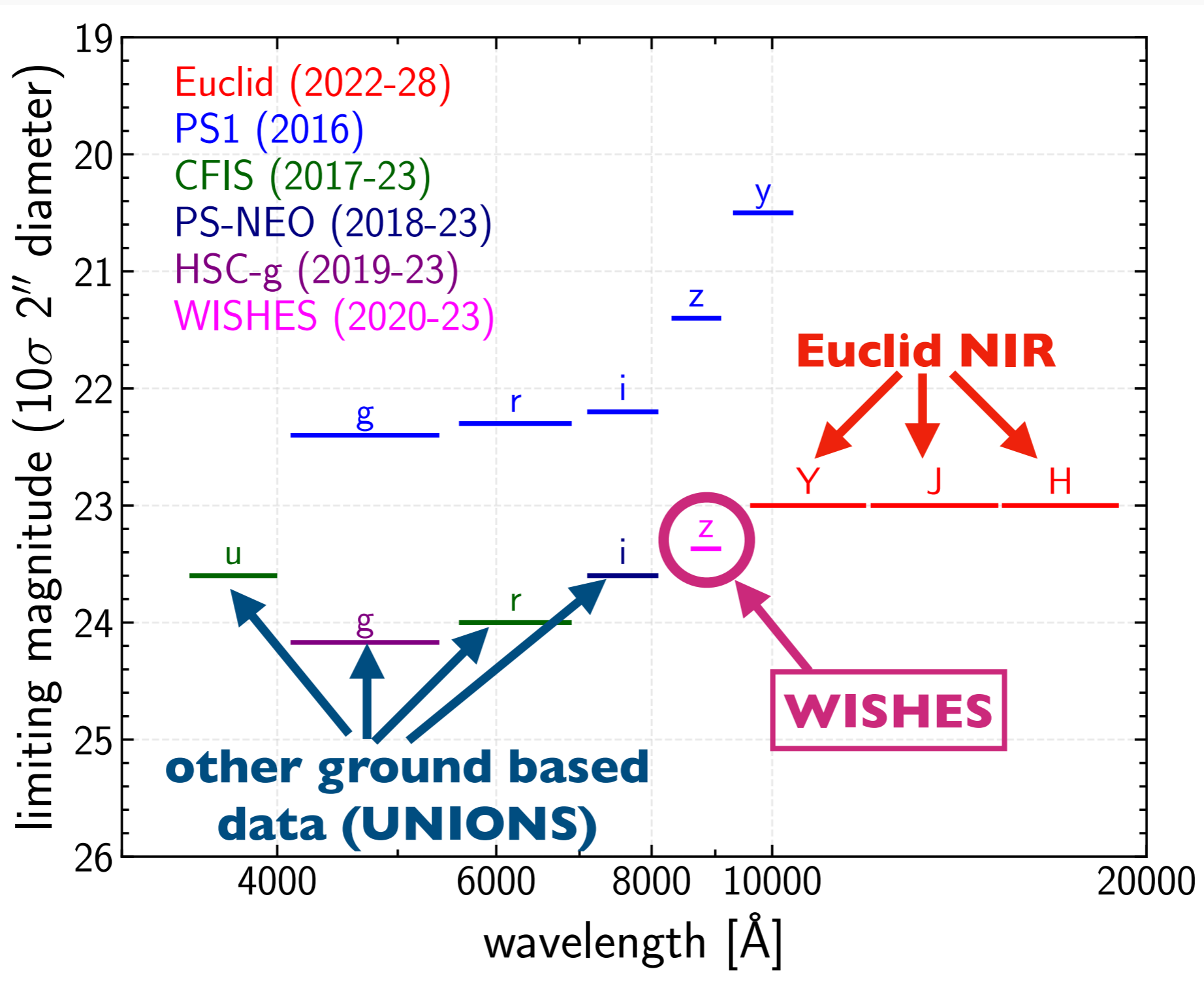
# Survey footprint



HSC Northern-hemisphere Ultra-Wide Survey footprint (HSC-NUWS) over the Euclid Wide Survey

- WISHES [z] & UNIONS (CFHT [u,r] + Pan-STARRS [i] + HSC [g]) : 4,500 deg.<sup>2</sup>
- Euclid wide space survey : 15,000 deg.<sup>2</sup> [Y,J,H + morphology + spectroscopy]
- DES [g,r,i,z] : 4,500 deg.<sup>2</sup>
- Euclid exclusion zone : 26,000 deg.<sup>2</sup> [galactic+ecliptic planes + dust]

# Target depth



# UNIONS

Hawaiian  
Islands



Pan-STARRS  
2 x 1.8m

CFHT  
3.6m



Subaru  
Telescope  
8.2m

from UNIONS wiki


**UNIONS = CFHT + Pan-STARRS + Subaru = Hawaiian alliance !**



# UNIONS Wiki

Homepage

Welcome to the UNIONS Wiki. This Wiki is intended as a repository for documents and as a place for collaboration within the UNIONS science collaboration.

- ▶ [Quick Links](#) (a one-stop page with important/popular UNIONS links)
- ▶ [Quick start guide](#) (quick introduction on how to get involved in UNIONS)
- ▶ [Wiki user guide](#)  (Wiki.js platform)

## Main content pages

*(you can also find pages by using the search function, which appears to work well)*

- ▶ [Members & Key documents](#)

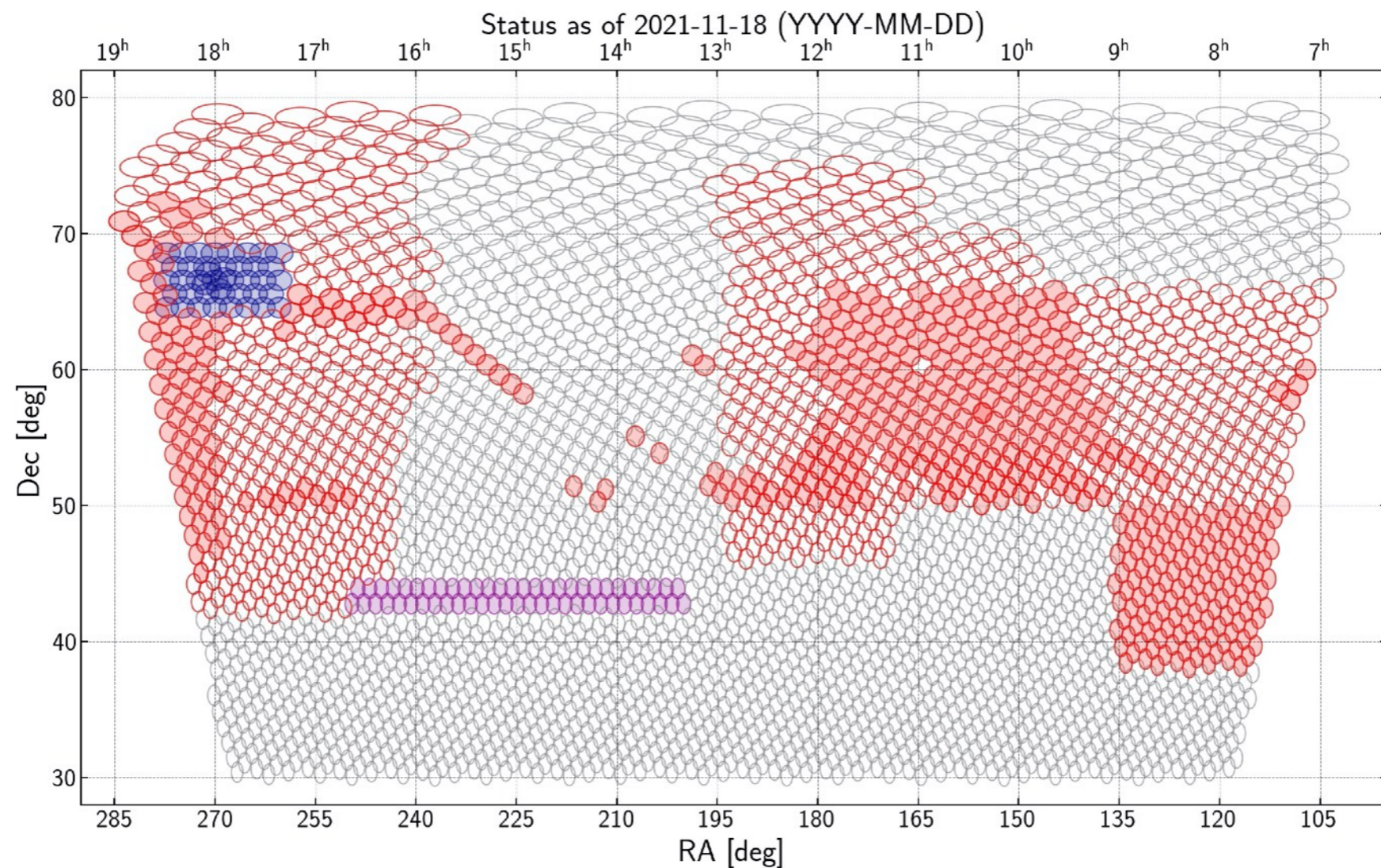
Collaboration Members, Contact Information and Key Documents: lists of co-Is, Steering Group composition, early-career members; key collaboration documents, including MoU, original proposals, SAC reports, etc.

- ▶ [Scientific activities](#)

Records of who is doing what and who is interested in what, grouped by science topic, with links to individual collaboration pages hosted on this Wiki. ***It is expected these pages will be added to and updated frequently by all active collaboration members as projects progress.***

- ▶ [Publications](#)

# Current status of observations

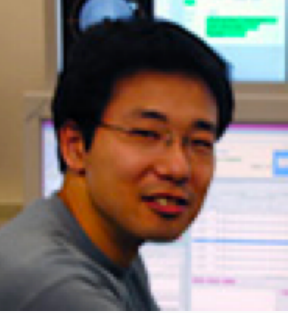


**S20B-S21B**  
**total**  
**completion**  
**rate ~ 40%**

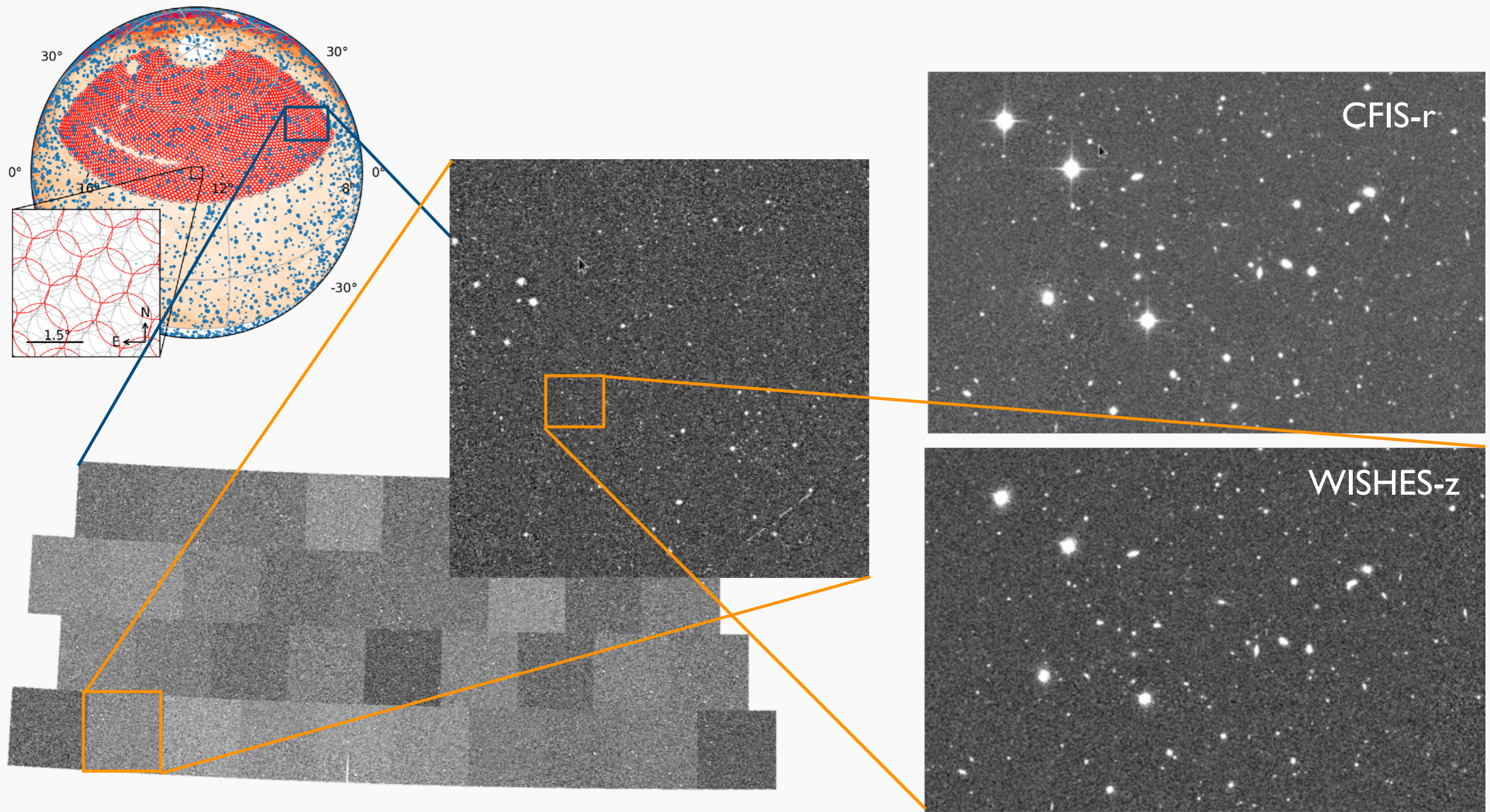
red open circles: pointings in queue

red filled circles: pointings that were already observed

**We appreciate the HSC queue team for the big help and support!**



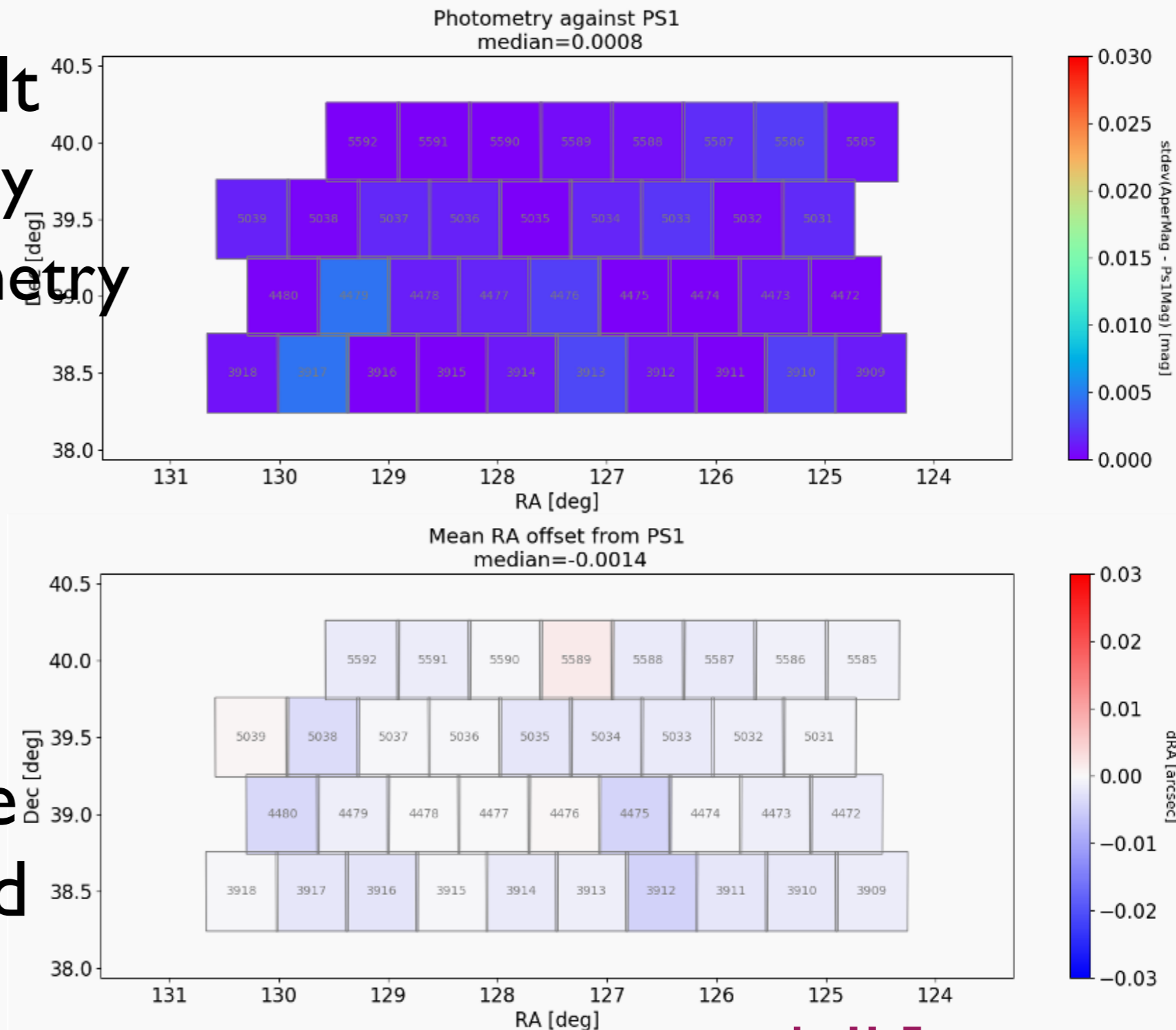
# Survey data reduction



tiling matched to CFIS (CFHT) coadd

# Quality assessment

- preliminary result
  - $\approx 1\%$  photometry
  - $\approx 10$  mas astrometry
- comparable to HSC-SSP
- only I-band
- goal is to achieve this in multi-band

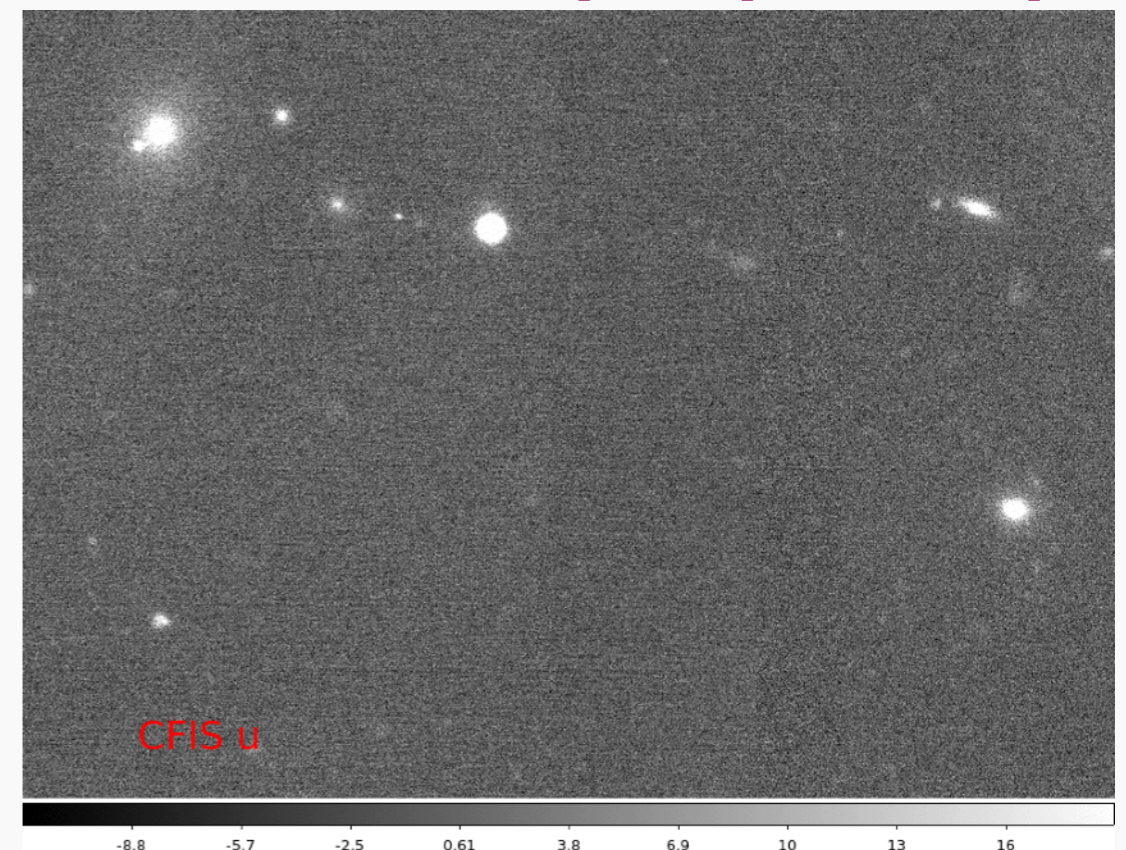


by H. Furusawa

# Toward multi-band catalog

- first step: coadd w/ CFIS (CFHT) tiling pattern, catalog-based cross-matching to create multi-band catalog
- goal: forced photometry of CFIS/Pan-STARRS/HSC images

by Stephen Gwyn



# Current status of data reduction

- patches observed in S20B are reduced and coadded
- object catalog in that region is being created and will be ready very soon
- it will be combined with other UNIONS data for kick-starting first multi-band analysis including WISHES data

# Summary

- WISHES is an HSC z-band imaging survey over 4,500 deg<sup>2</sup> of the northern sky
- survey and analysis ongoing
- WISHES/UNIONS is open to any Japanese researches just like HSC-SSP