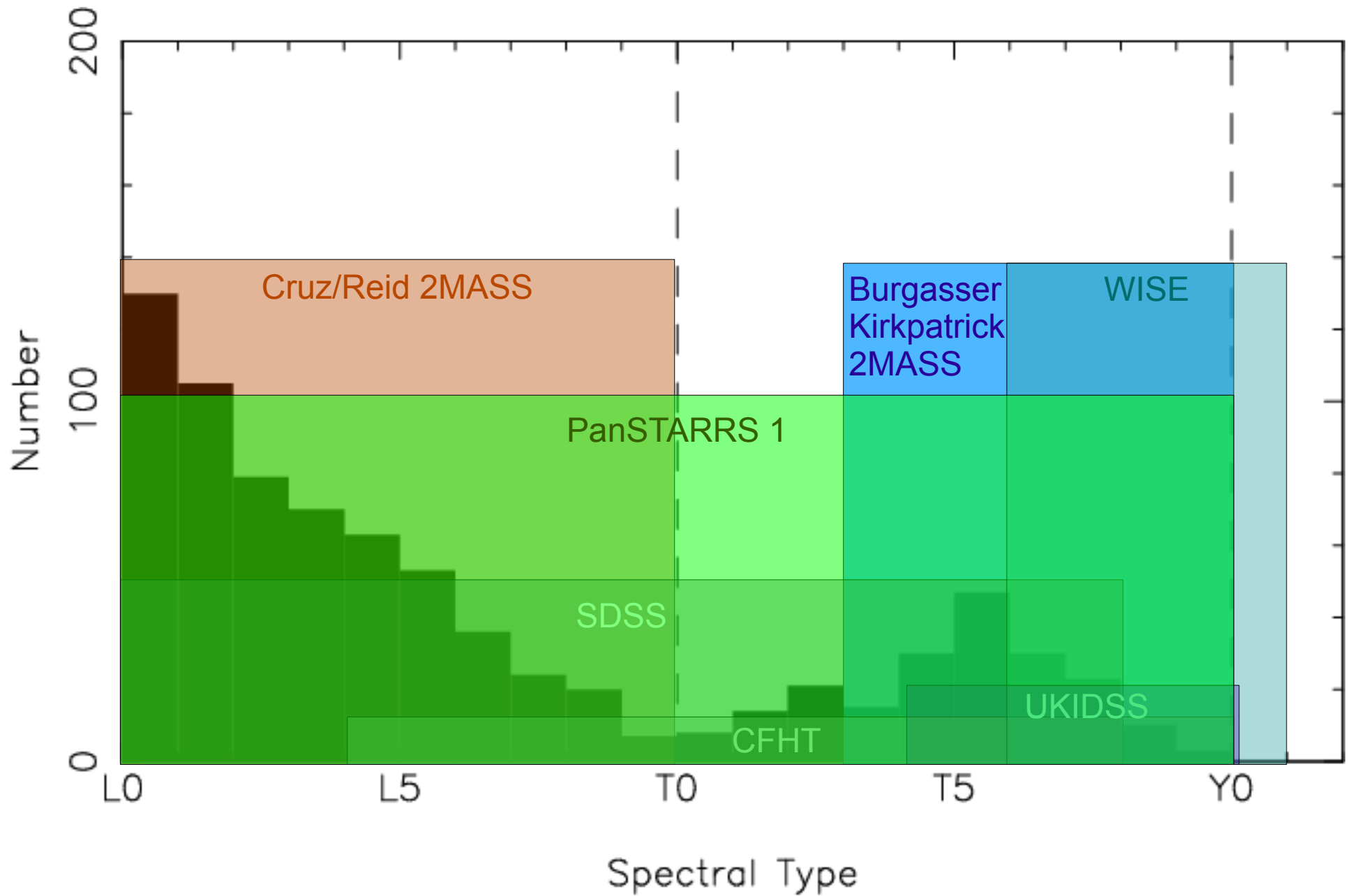


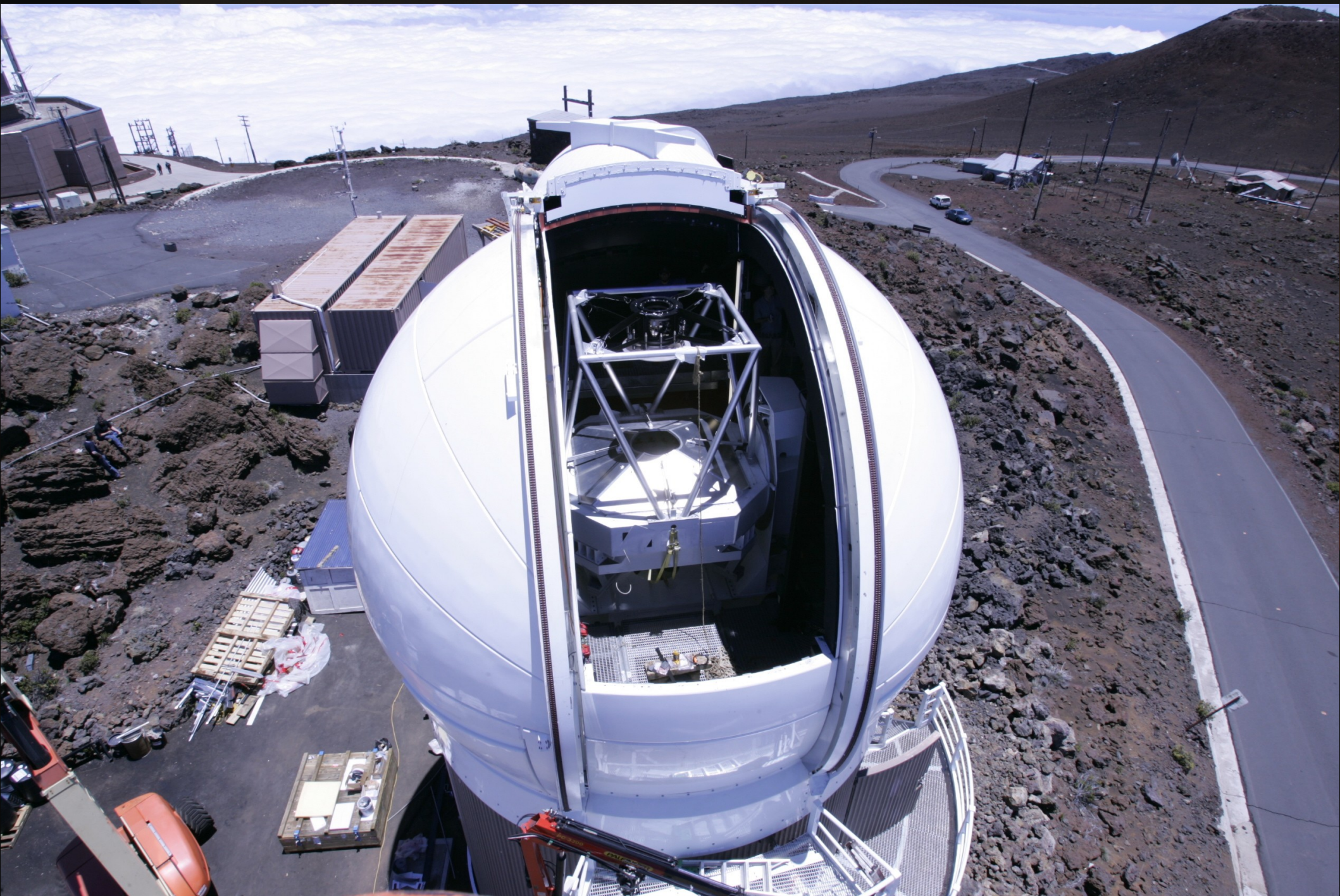
# A census of the local ultracool dwarf population with Pan-STARRS1, 2MASS and UKIDSS

Niall Deacon  
MPIA Heidelberg

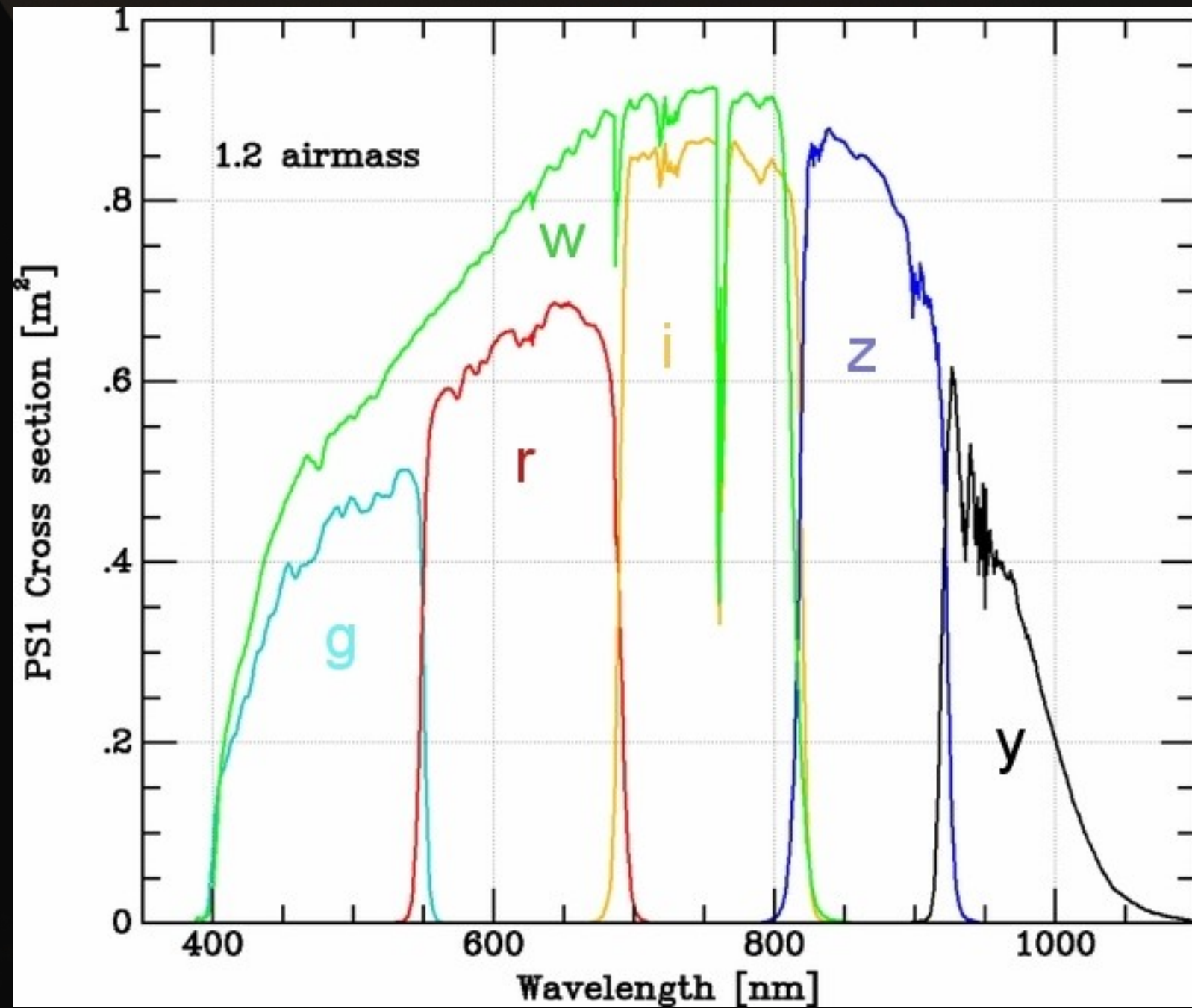
Michael Liu, Eugene Magnier, Brendan Bowler, Kimberley Aller,  
Will Best  
IfA Hawai`i











# PS1 Surveys

## 3 $\pi$ Survey

6 x 2 images per filter over 3 years

Covers  $\frac{3}{4}$  of the sky

## Medium Deep Survey

Ten 7 sq.deg. fields

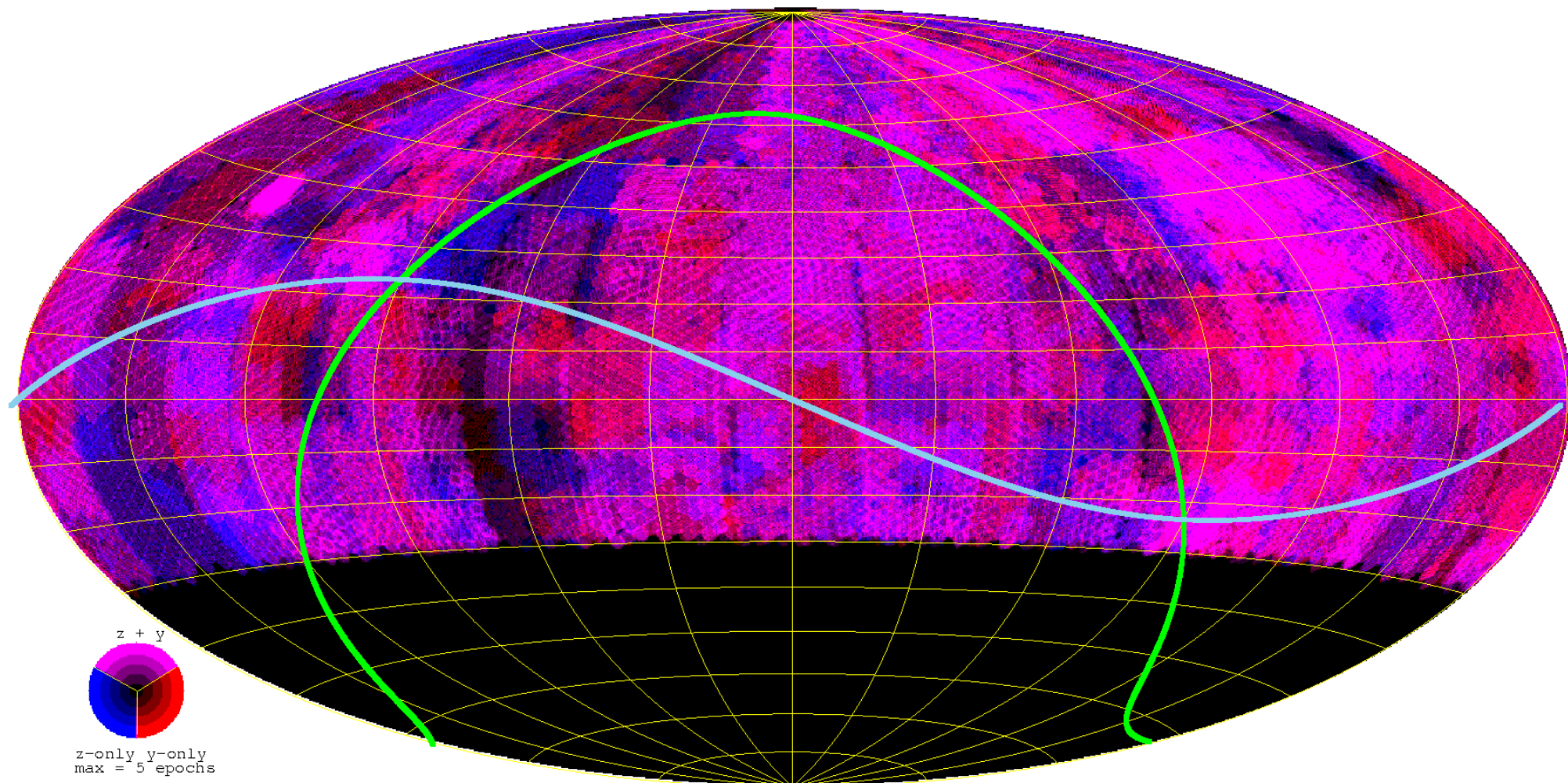
Roughly 35 x 8 observations per filter per year

## Solar System Sweetspot Survey

## Survey of M31

## Pan-planets Survey





z + y

z-only y-only  
max = 5 epochs

# PS1 + 2MASS

Second PS1 pass of the sky has been completed  
in z and y band

Combination with 2MASS gives us,

g, r, i, z, y + J, H, Ks

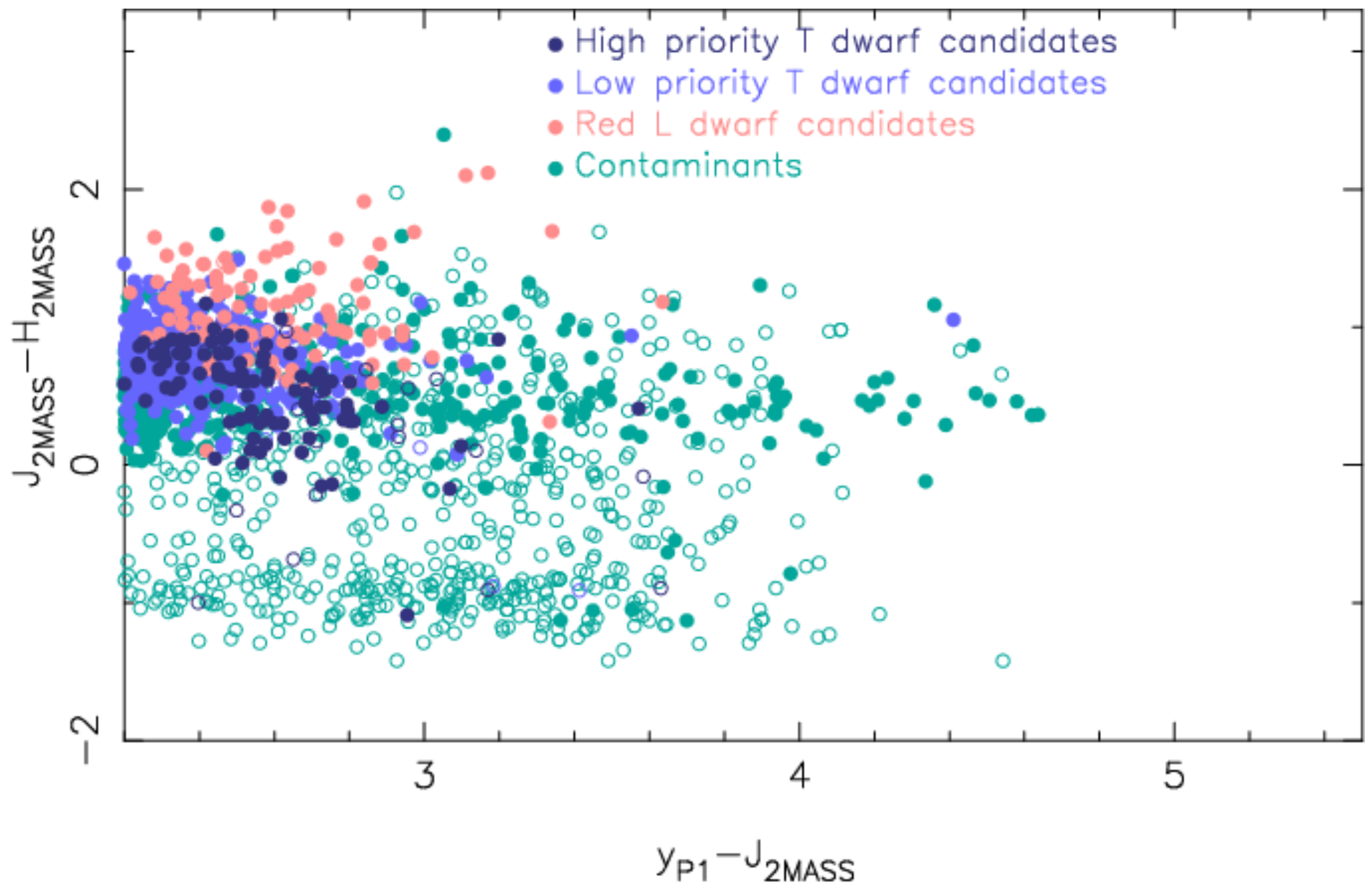
Proper motion baseline 10yrs

To depths of J=16.5 y=19.5 z=20.5

Working towards completing the PS1 census of  
the solar neighbourhood brown dwarf population



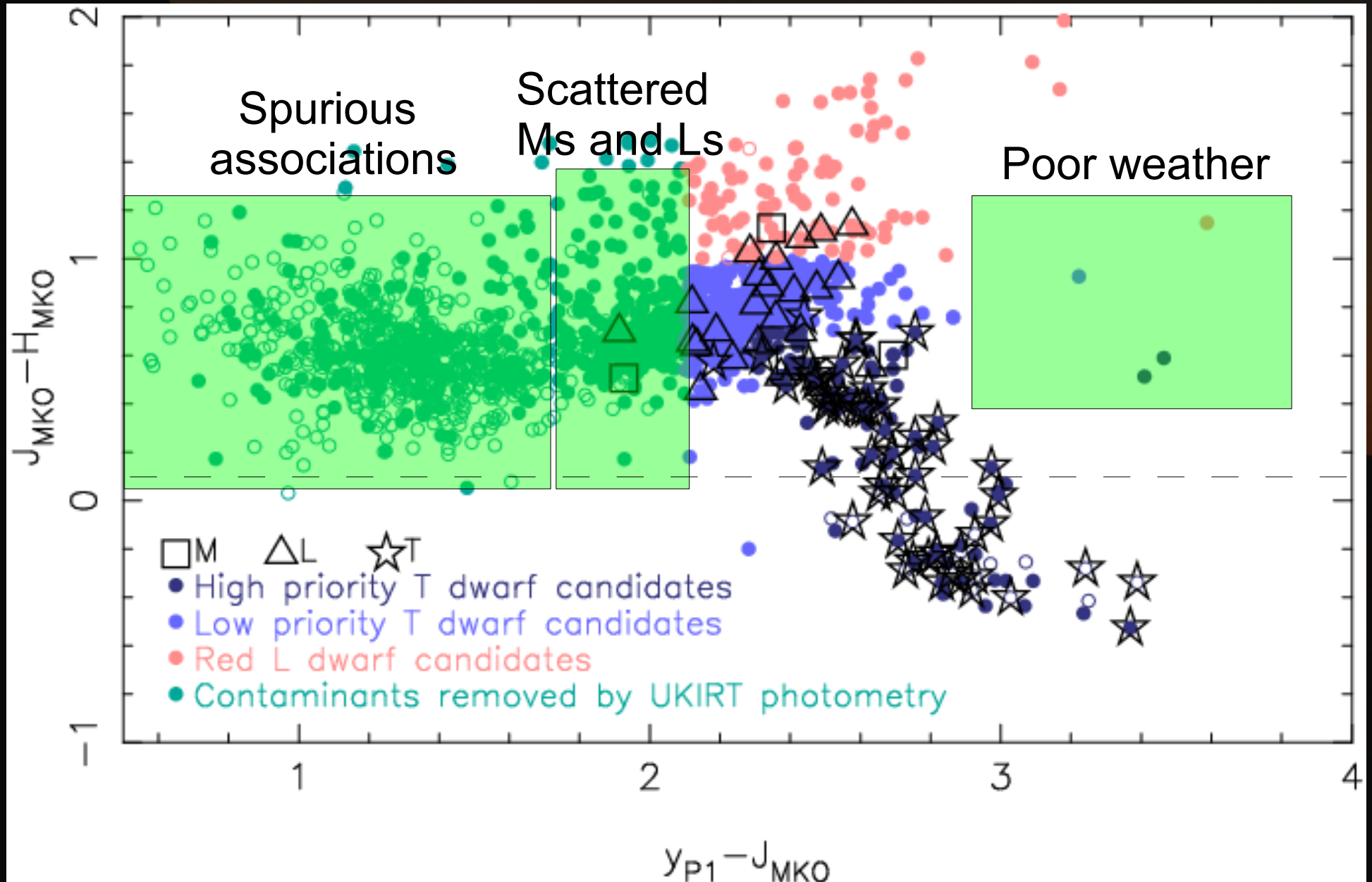
# PS1 + 2MASS selection



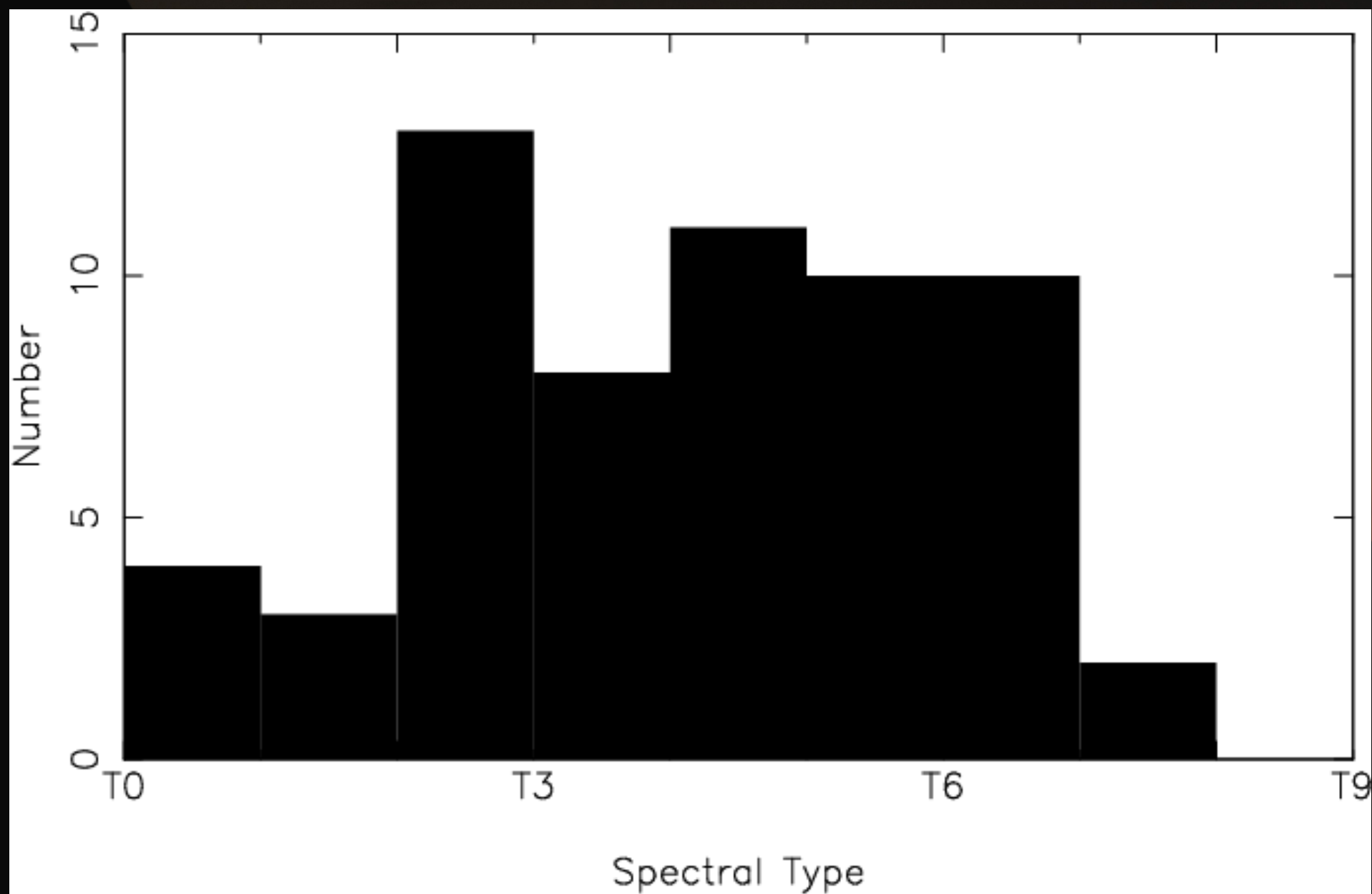


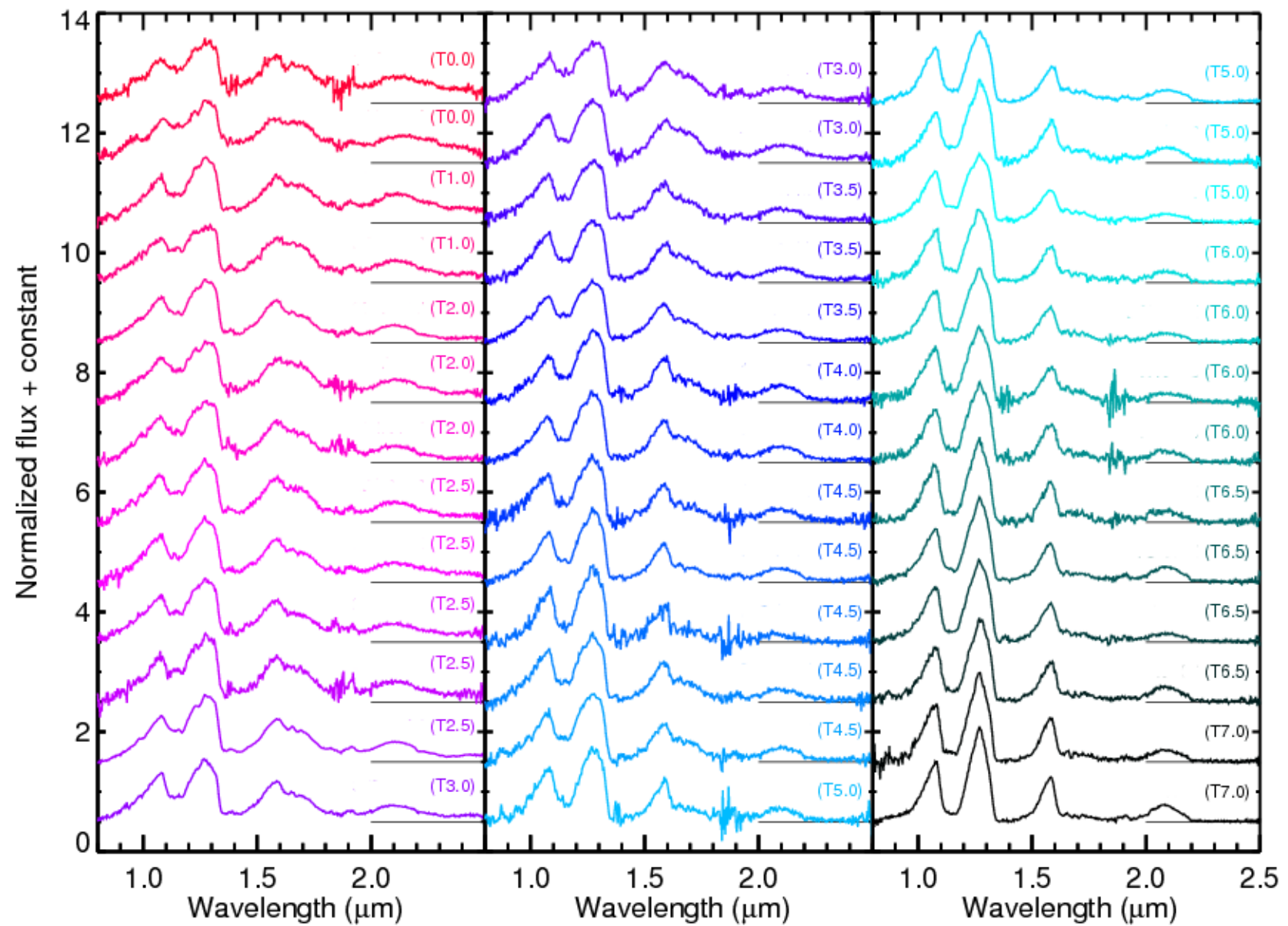


# PS1 + UKIRT selection

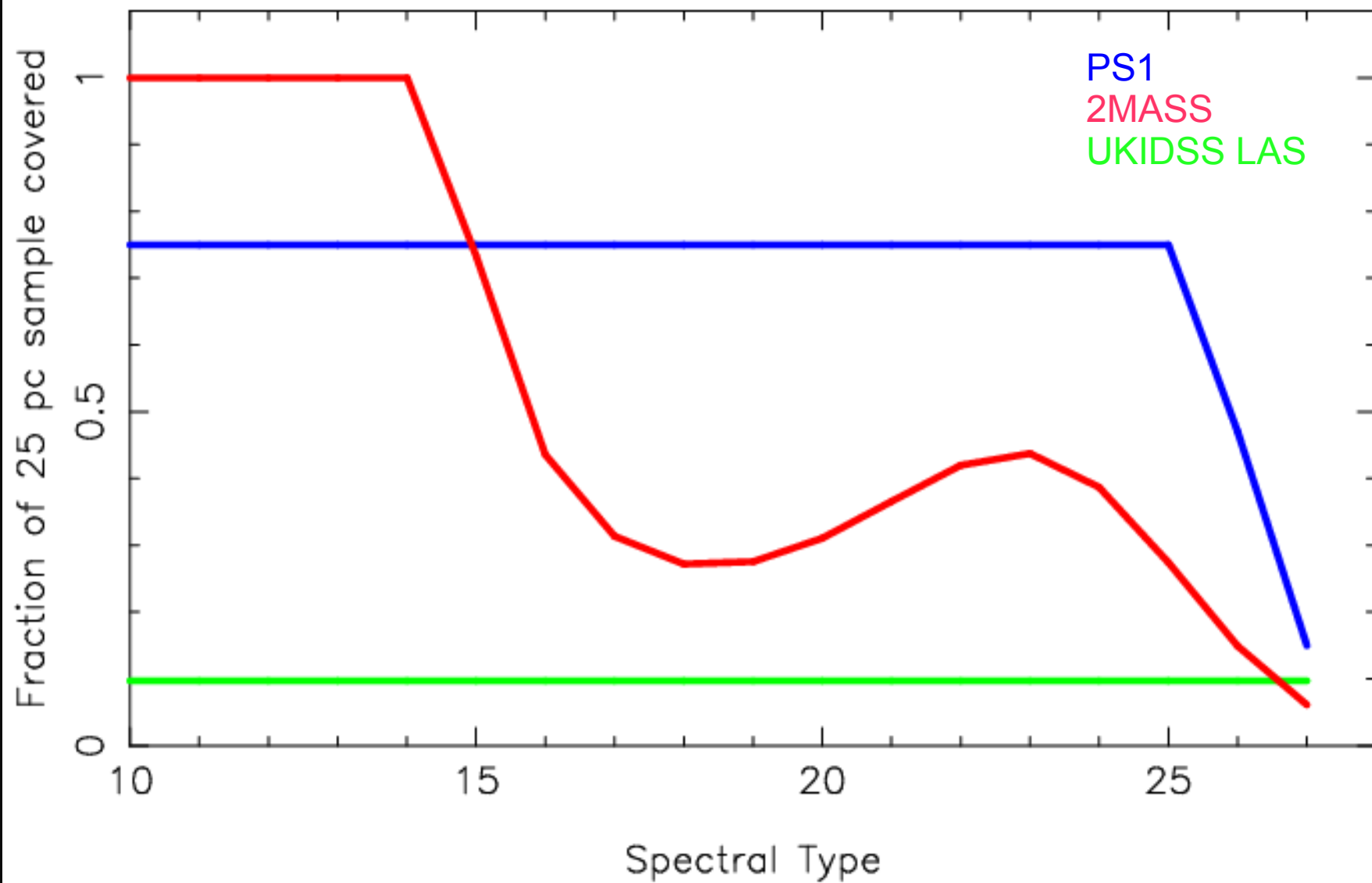




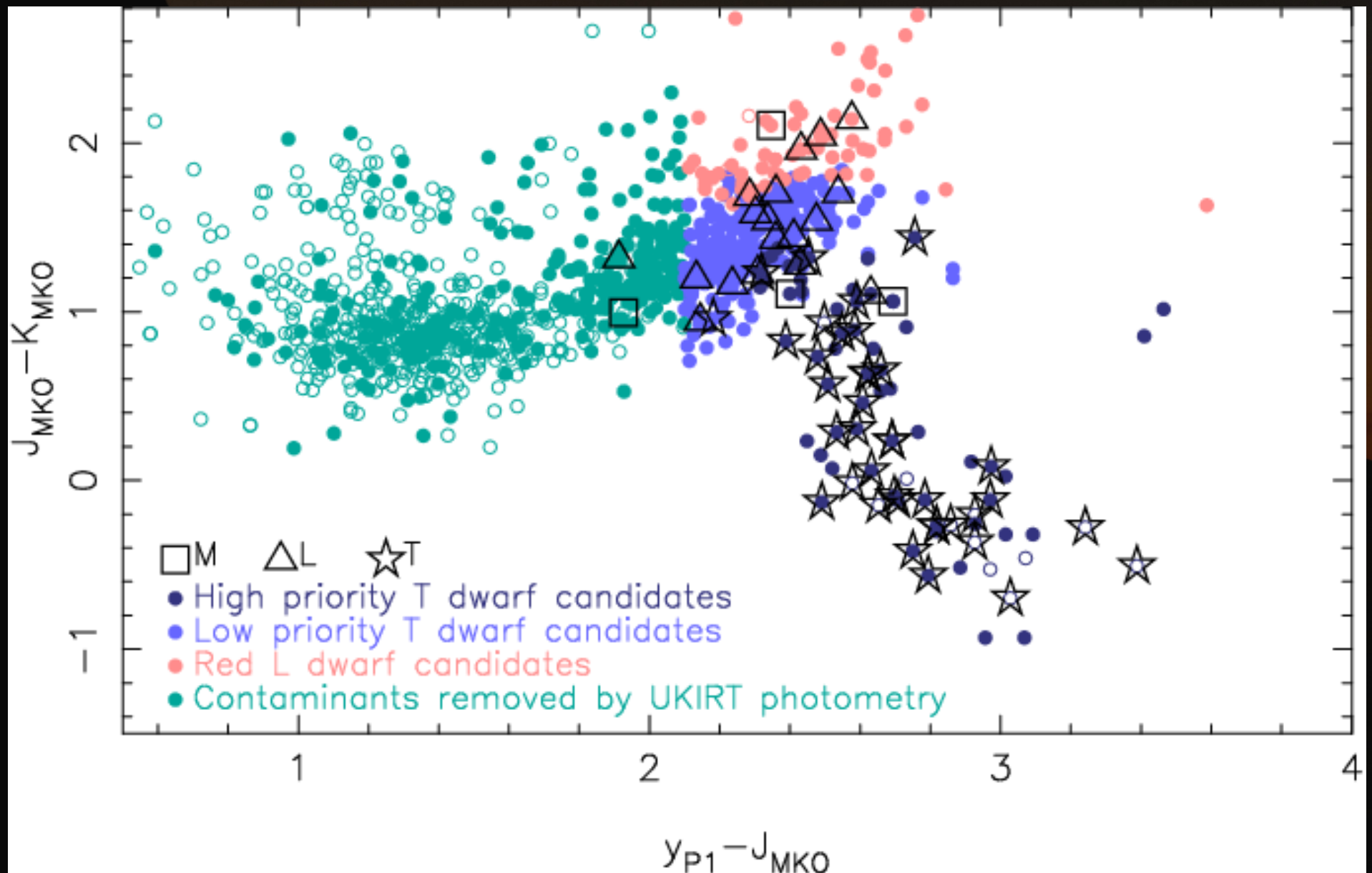








# Pan-STARRS1 and UHS





# Summary

Pan-STARRS1 has been fully operational for 2 years and has mapped the northern sky in multiple filters

We have discovered 60+ new, bright T dwarfs using PS1 data and 2MASS

Future PS1 only will provide a sample of the solar neighbourhood selected by proper motion and parallax to T5 and also identify nearer, cooler objects

Pan-STARRS1 + UHS will provide a powerful tool for studying the ultracool dwarf population

Also ongoing search for common proper motion companions see Deacon, ApJ in press