Creating an (Almost) All Sky Near Infrared Catalogue Nicholas Cross (IfA, Edinburgh) njc@roe.ac.uk





The Wide Field Astronomy Unit (WFAU) archive UKIRT-WFCAM and VISTA data. These are the fastest NIR survey telescopes. Each telescope has observed a range of different surveys: ultra deep, hemisphere, Galactic Plane, variability etc.

The shallowest surveys are >3 mag (K<18 mag) deeper than 2MASS and <1" seeing, but all are released separately, so a combined survey will be a significant improvement on 2MASS.

WFCAM and VISTA data can be accessed through the WSA, http://wsa.roe.ac.uk and VSA

http://surveys.roe.ac.uk/vsa

This will be useful for cross-survey science, e.g. all-sky photometric redshift catalogues, e.g. 2MPZ, Bilicki et al. 2014, ApJS, 210, 9.

The surveys are almost complete and cover most of the sky where $\delta < 60^{\circ}$. North of this cannot be reached by UKIRT. Over the next few years most of the gaps will be filled in.

We are designing an all sky NIR catalogue as a separate database to act as an overlayer that contains all sources from all surveys. Each main survey has a unique *programmeID* (PID) across WFCAM and VISTA, and within each survey the sourceIDs are running numbers starting from $2^{32}PID + 1$, meaning that they are already unique across the whole sky.





A seamless catalogue.

To create a seamless catalogue, sources in overlapping frame sets have to be assigned primary or secondary. We already do this within a survey, based on number of band-passes with good quality detections and distance from optical axis. For multiple surveys, some surveys are much deeper, or are observed in different filter combinations, such as VIKING and UDS in the region below. Perhaps a better solution is to have a different *sourceID* for each filter.



UDS, VISTA-VIKING and VISTA-VIDEO, showing AB mag limit in K/K_s . VIDEO and UDS have similar depths, about 2-3 mag deeper than VIKING, but UDS is only observed in J, H, K bands, not Z and Y.

Existing survey only databases will contain all the metadata and image links, specialist catalogues curves etc. All-sky catalogue will contain a seam catalogue across all surveys.

latabases will contain all the image links, specialist catalogues, light- talogue will contain a seamless urveys.	Expected total sources	~5x10 ⁹	
	Expected unique sources	~4x10 ⁹	
	Expected unique K<18. sources	~2.5x10 ⁹	
	Expected unique J<19. sources	~3x10 ⁹	
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