

Upgrades and revision of



Exodat

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on behalf of the Exodat team:

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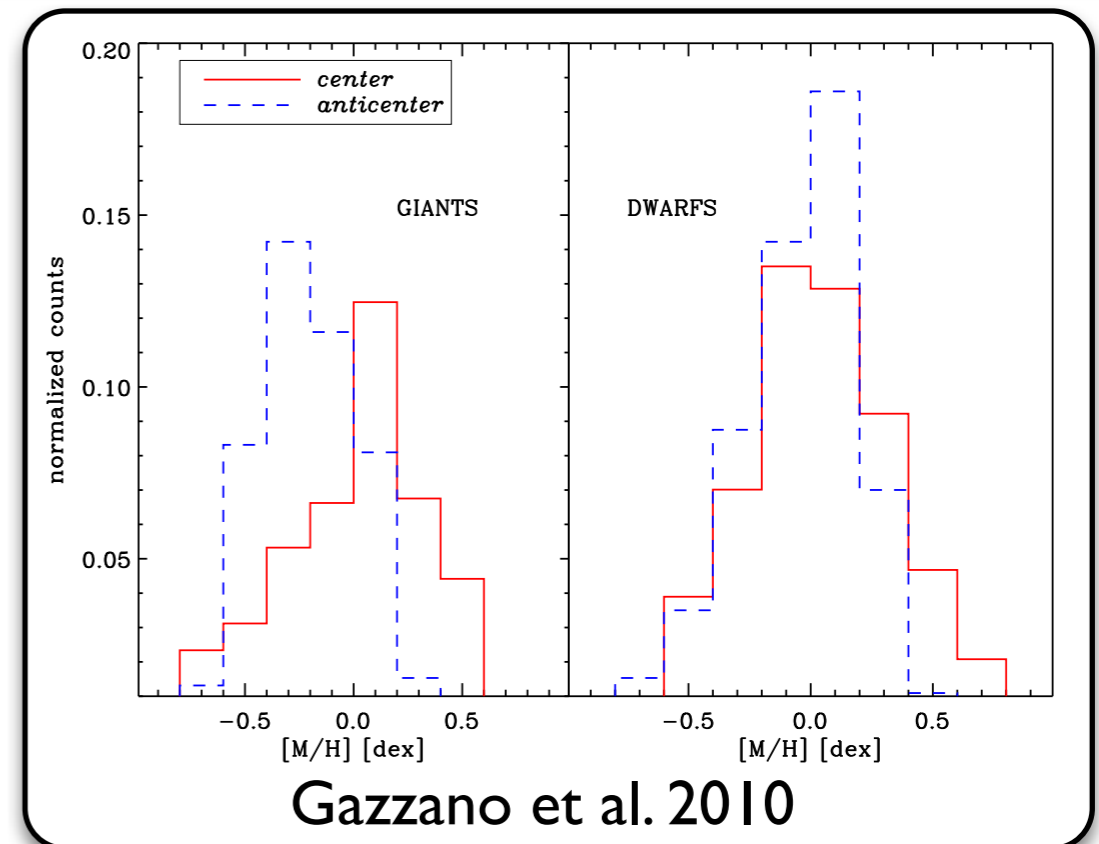
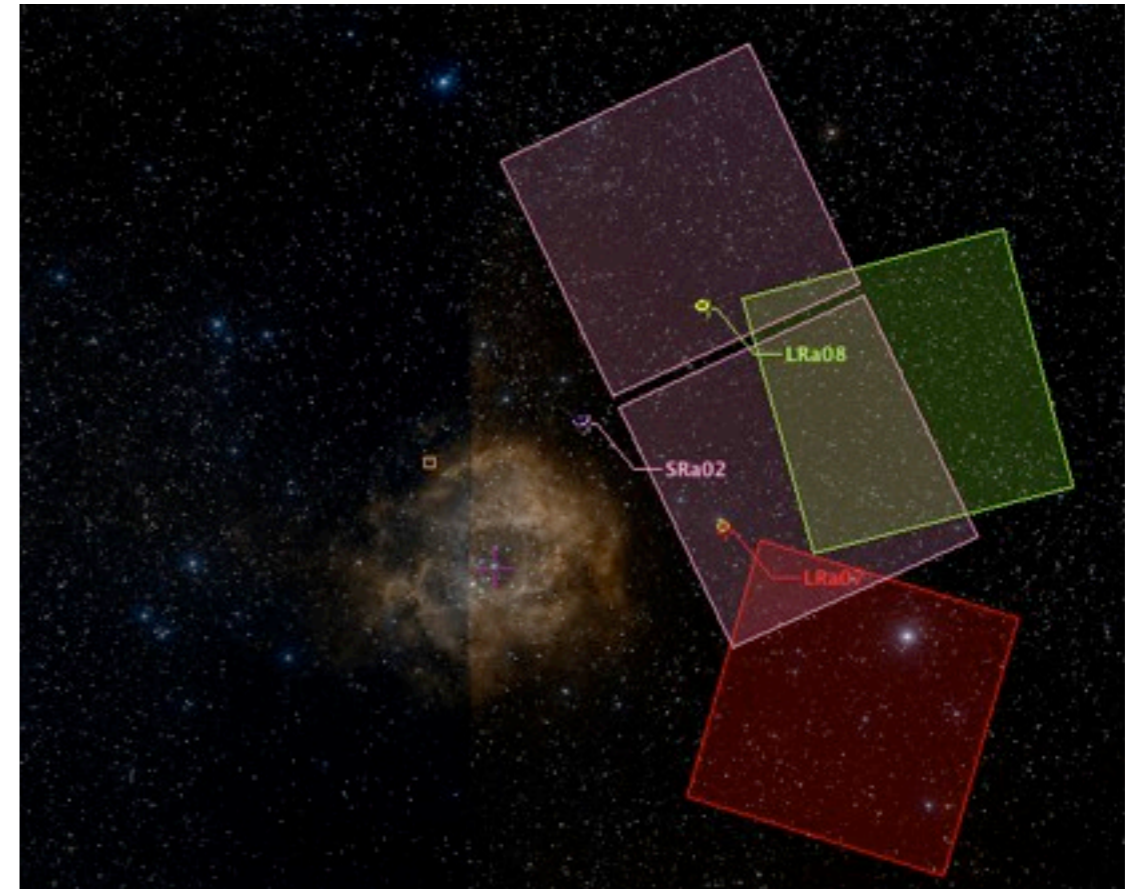
Outline

- Motivation and goals
- Successes and failures of Exodat
- The new database
- Future and legacy

Motivation

- Input catalog for the exoplanet/additional programs:
 - Field selection & target selection
- Help false-positive early identification
- Help characterizing planets
- Statistical studies:
 - giant planet occurrence,
 - centre/anti-centre stellar properties, ...

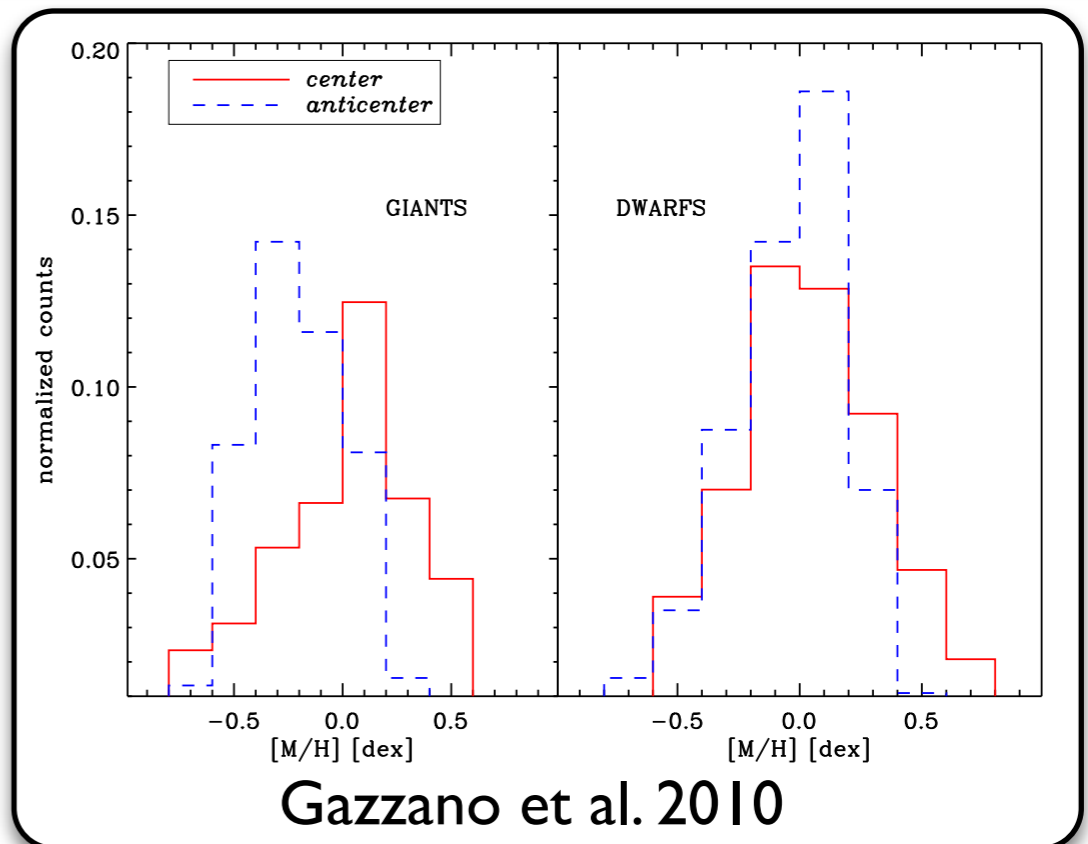
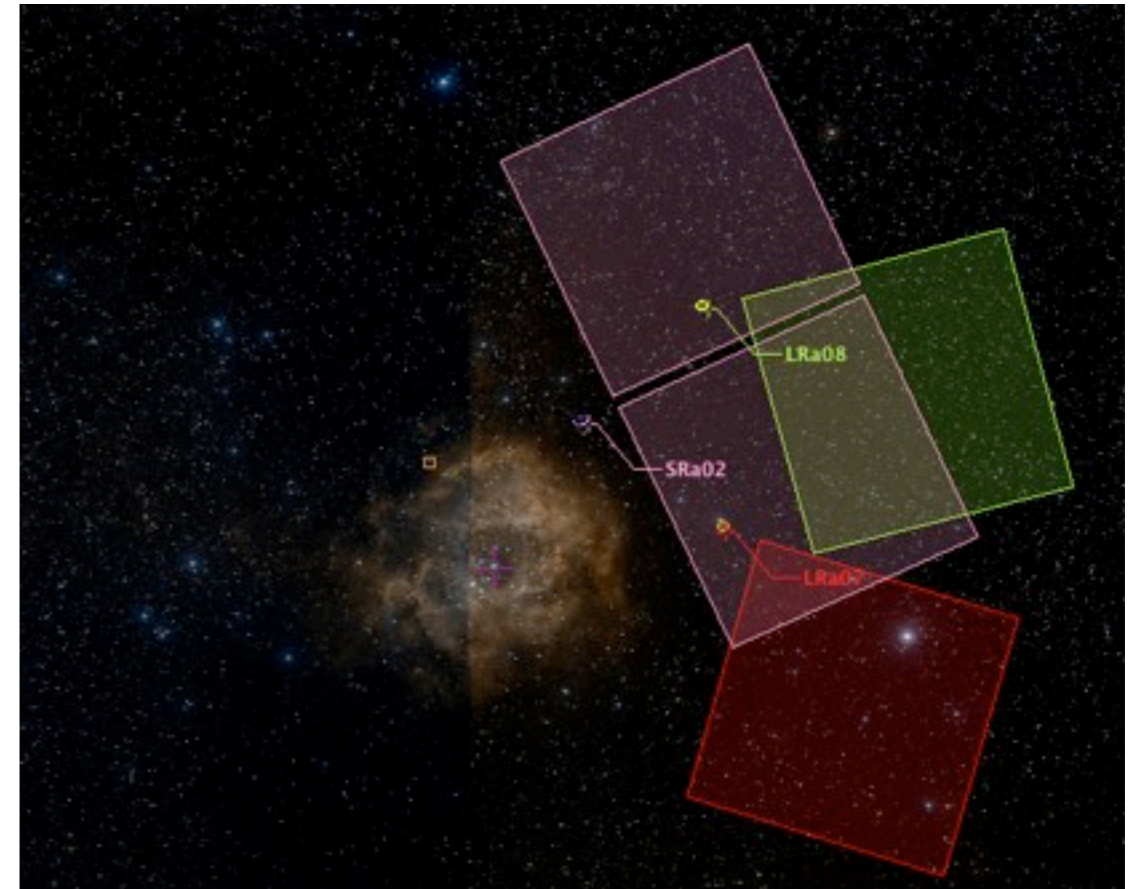
LRa07 and LRa08 pointings



Goals

- A photometric catalog complete down to $r' \approx 19$
- Covering 2 areas of 20° radius centred at $(\alpha, \delta) = (99^\circ, 0^\circ)$ and $(\alpha, \delta) = (279^\circ, 0^\circ)$
- Spectral classification for all stars with $11 \leq r' \leq 16$
- Gather all available information

LRa07 and LRa08 pointings

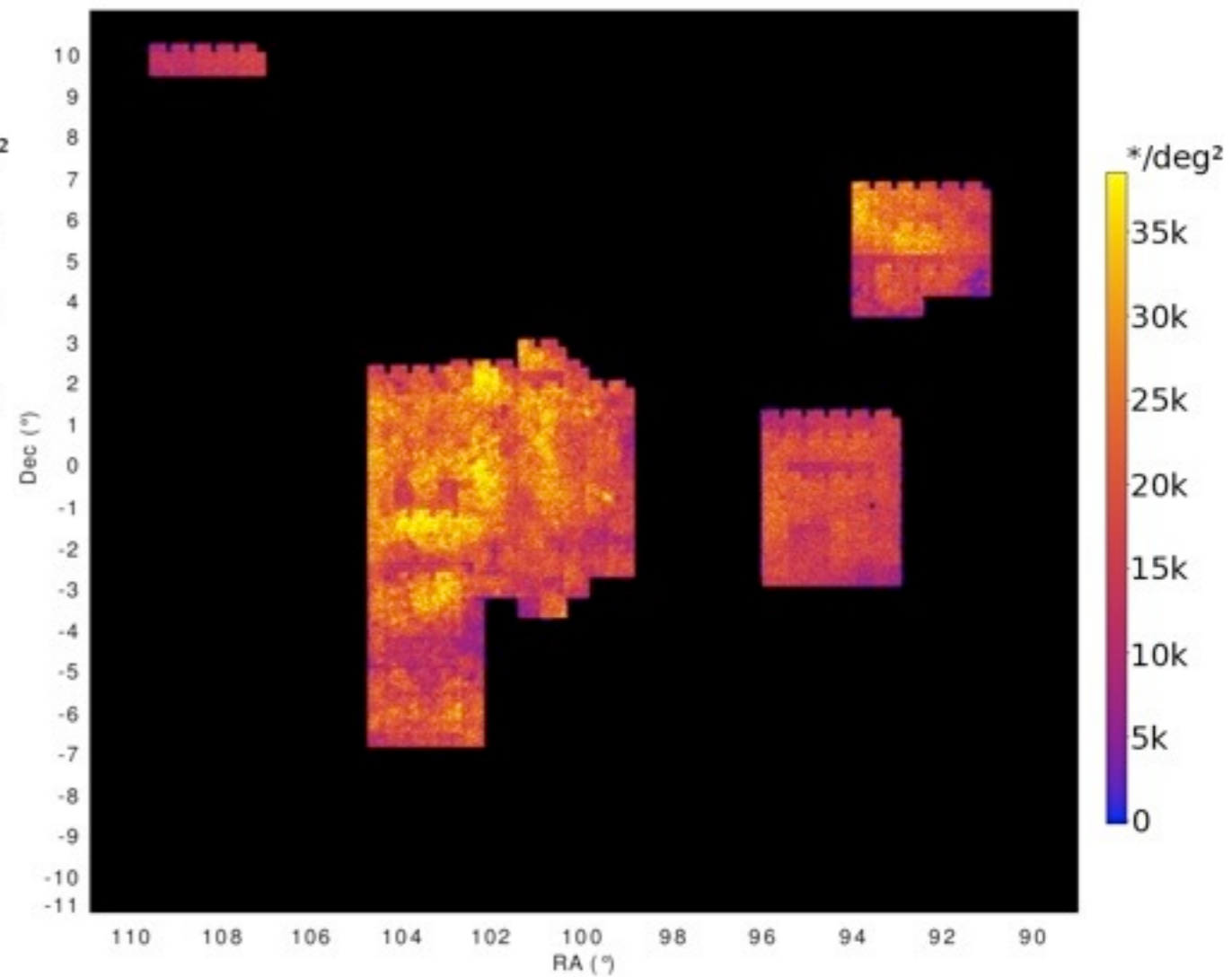
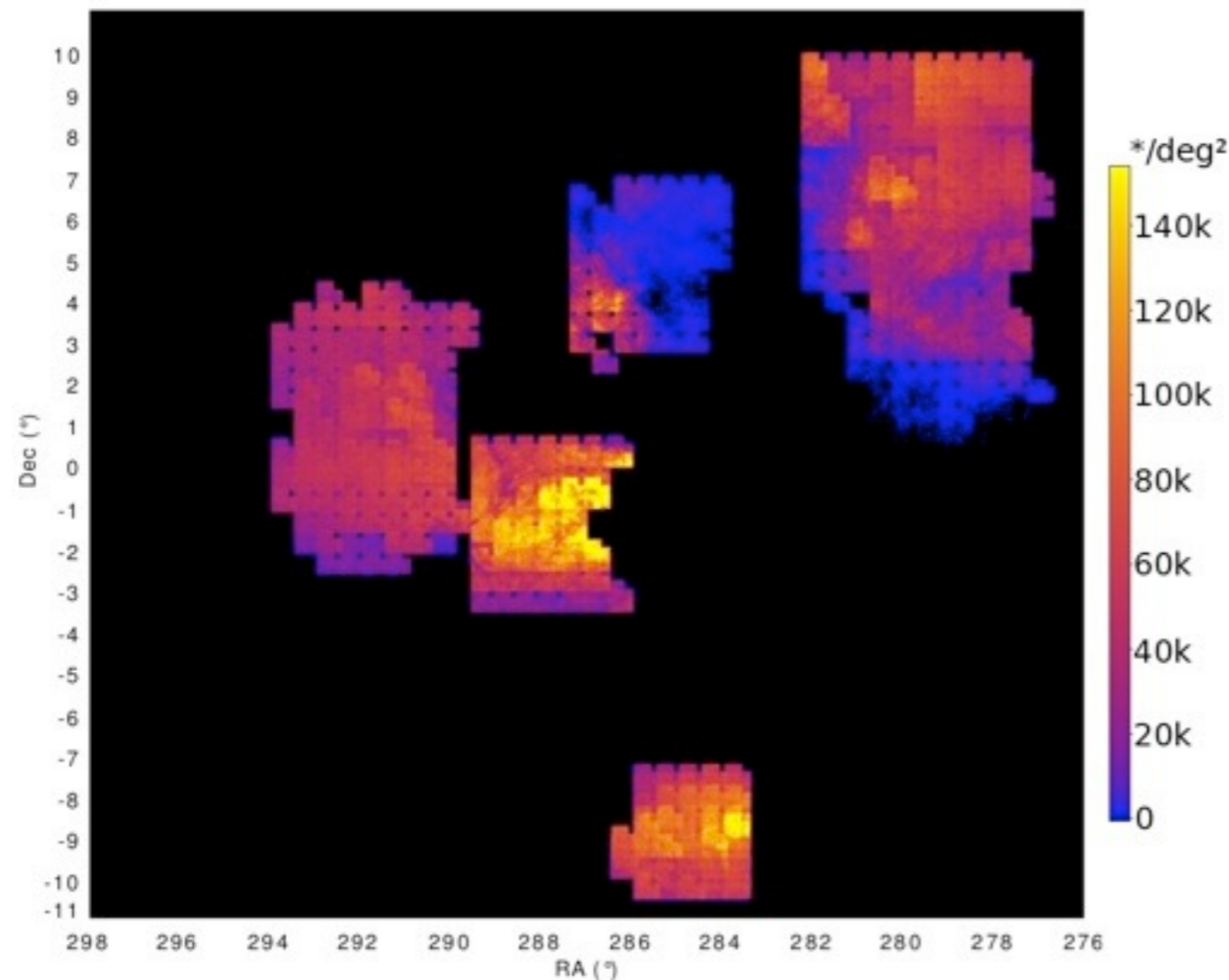


The OBS-CAT catalog

Density of Observations

Centre

Anti-centre



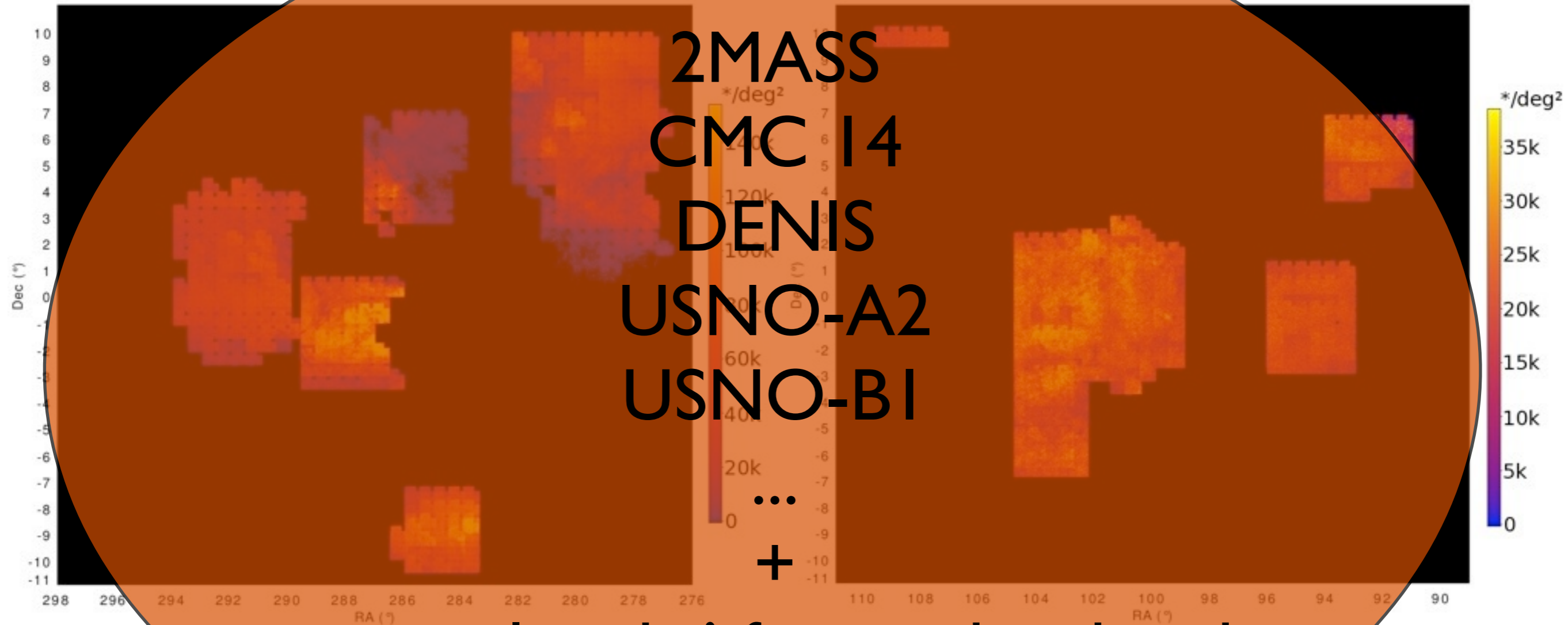
Number of stars observed in each direction by filter

Region	U	B	V	r'	i'
Center	743581	9515748	9515646	9515631	9508860
Anti-center	0	1637996	1639627	1639933	1640414

and others ...

Centre

Anti-centre



interpolated r' from other bands

Spectral typing from photometry

- Dwarfs and giants are separated in a color-color or color-magnitude diagram.
- Mags are compared with SEDs from stellar templates library (454 objects) \otimes transmission function of filters + a range of reddenings
- Best χ^2 yields LC, ST, E(B-V)
- Limitations:
 - reddening + early type = late type
 - degeneracies : giants/dwarfs/binaries
 - limited libraries

Performances need assessment ...

Comparison with spectroscopy

The sample

N	\bar{V}	V_{\max}	V_{\min}
11464	13.5	9.5	16.45

Guenther et al, 2012

Dwarfs	Spectro	SED
Spectro	100%	84%
SED	92%	

1 out of 6 stars classified dwarfs by SED are giants

Comparison with spectroscopy

The sample

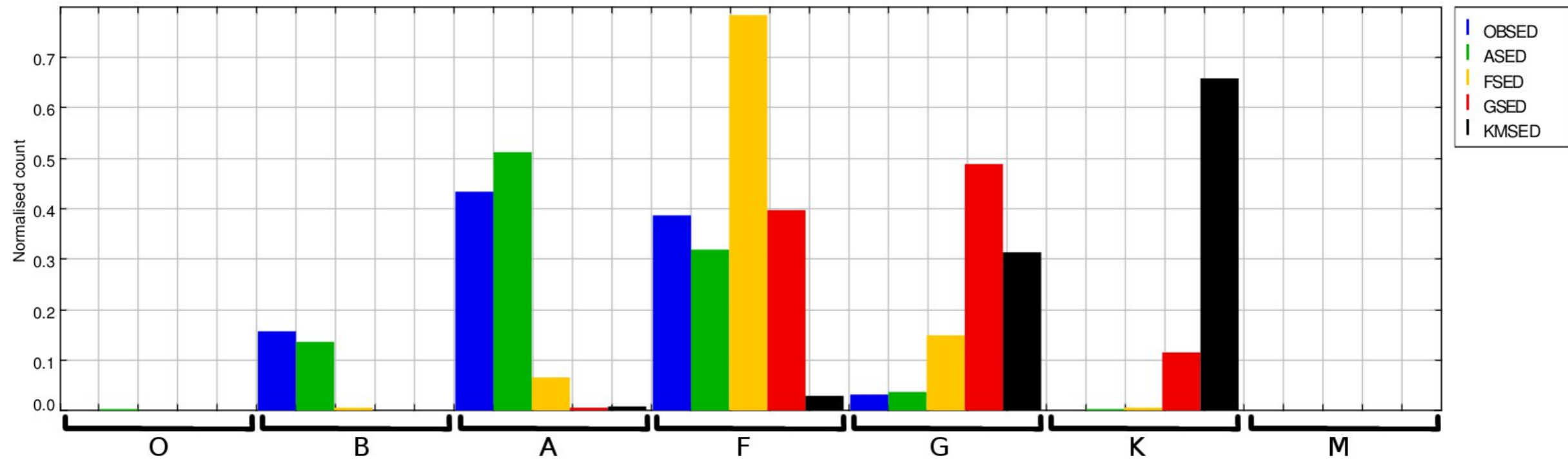
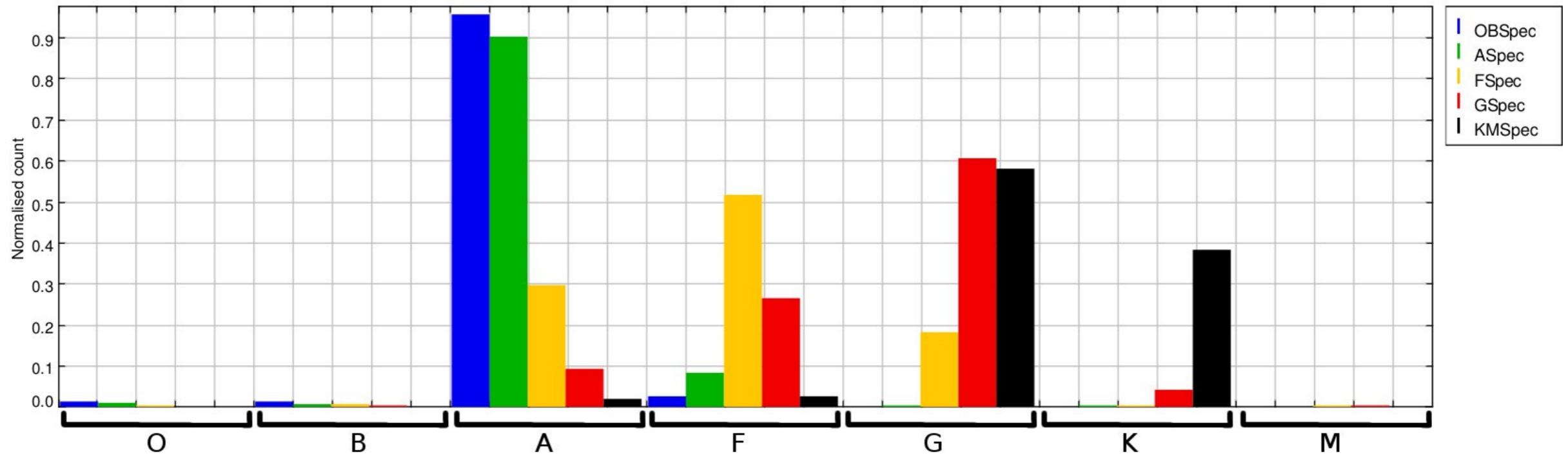
N	\bar{V}	V_{\max}	V_{\min}
11464	13.5	9.5	16.45

Guenther et al, 2012

Giants	Spectro	SED
Spectro	100%	71%
SED	53%	

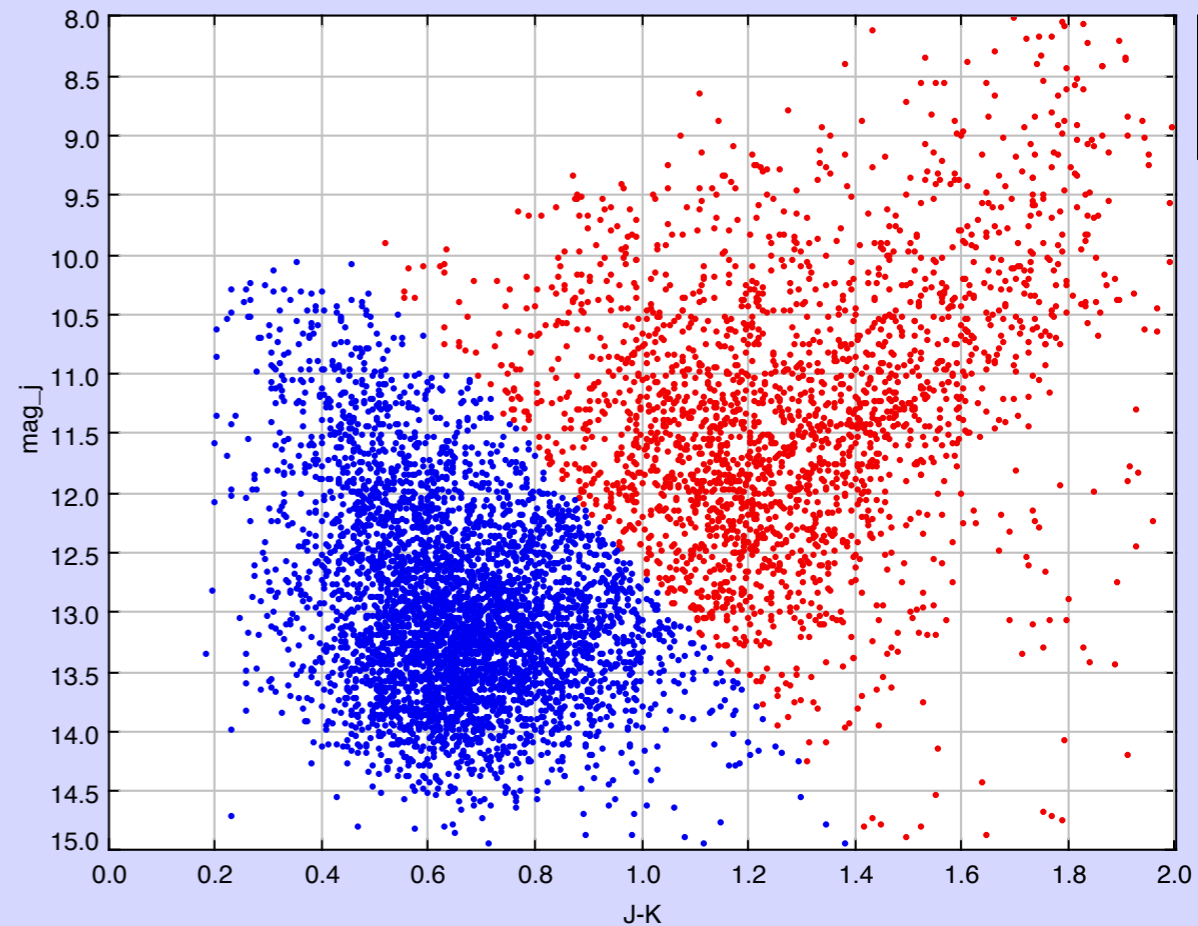
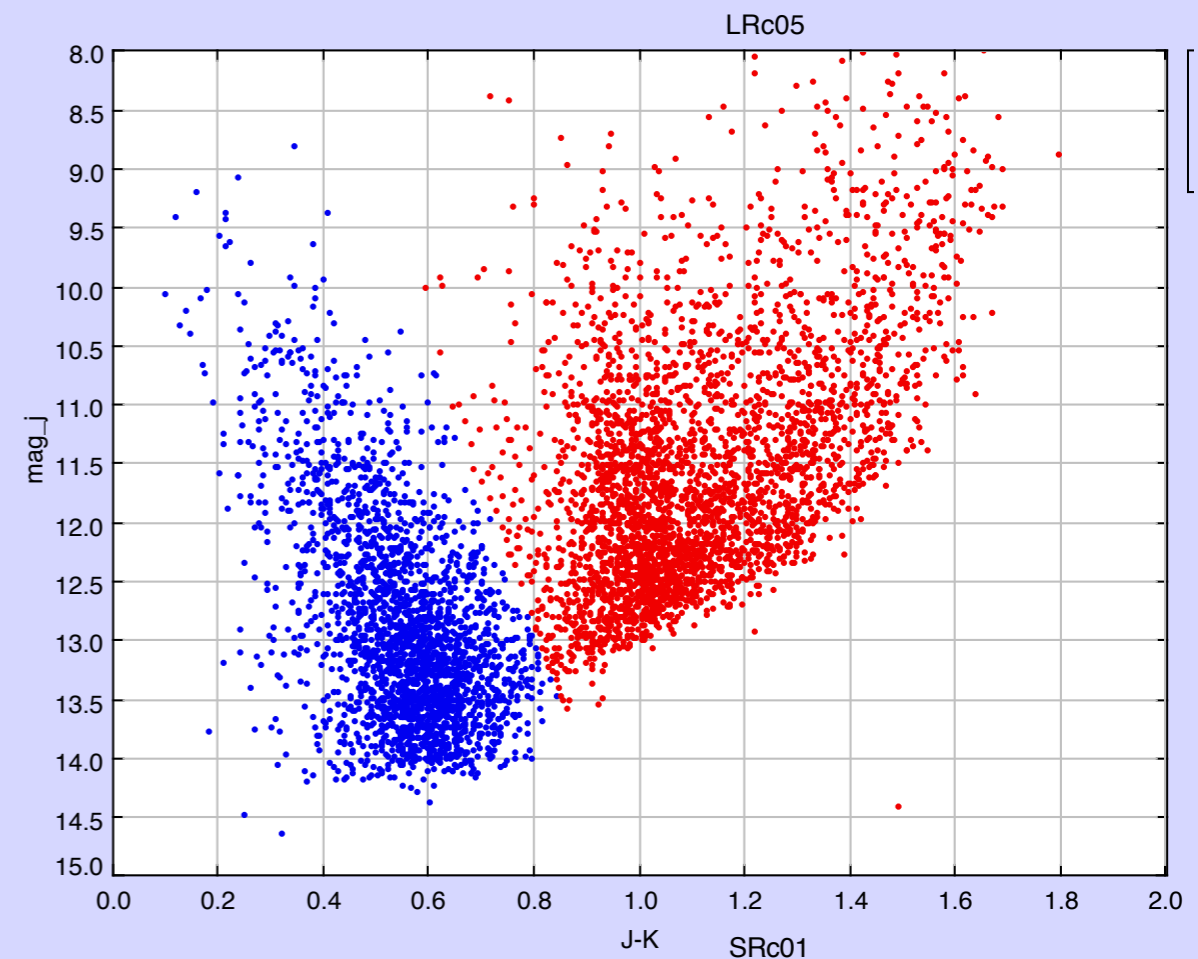
1 out of 3 stars classified giants by SED are dwarfs

Dwarfs in both classification but ...



Improvements

- Level I SED: *a posteriori*
 - Cut off magnitude in color-magnitude diagram adapted for each fields.
 - Use templates for binaries
- More magnitudes, better magnitudes?



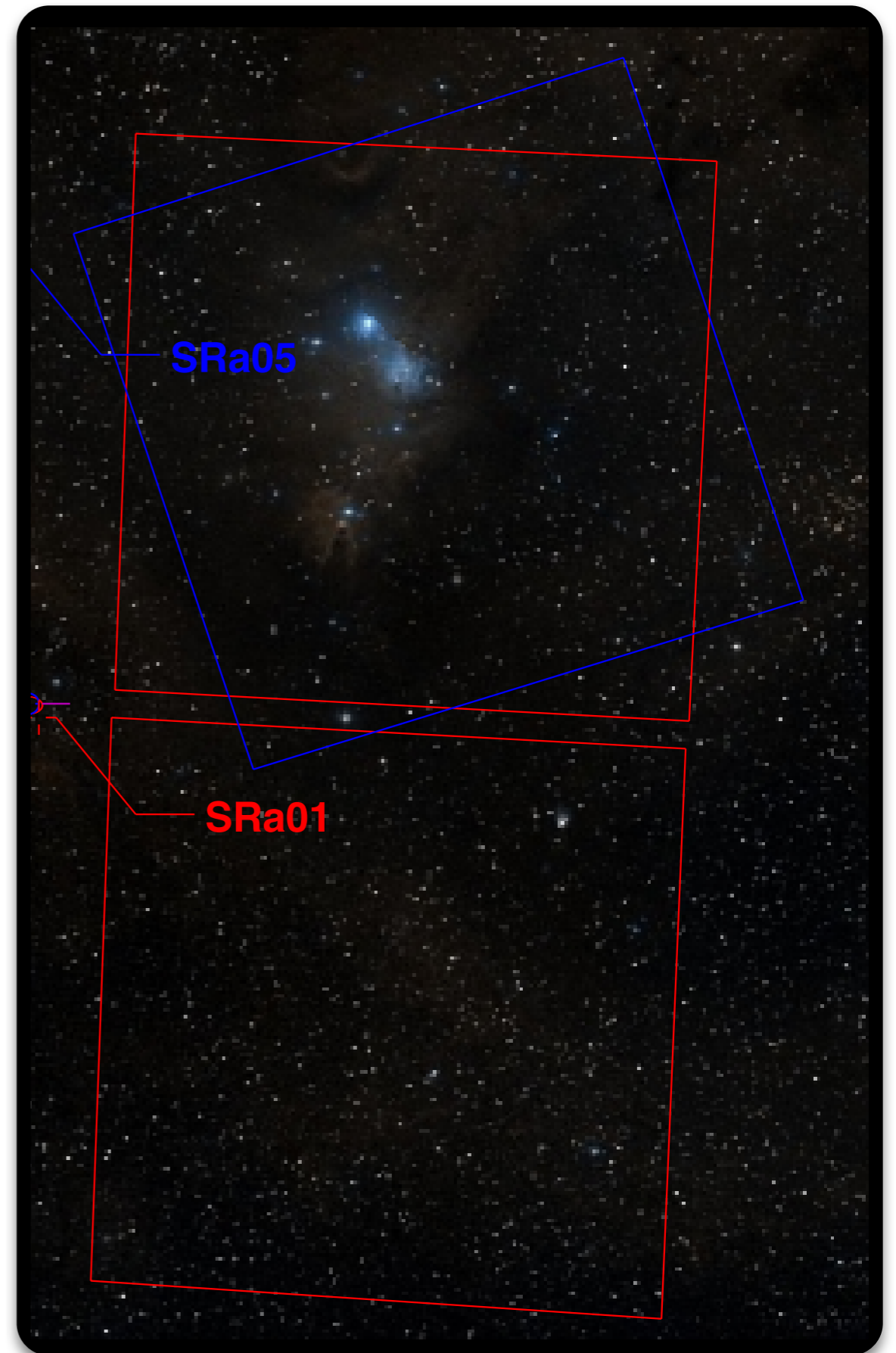
Cross-match issues

The SRa05 issue

- Re-observation of a cluster
- High scientific stakes
- ~ 3000 common targets

- 118 SRa01 targets lost
- 132 SRa01 targets with different corot-id in SRa05
 - cross-match trouble

Impact on contamination? on spectral type?



The new database

- A unique source and reference : the **PPMXL** Catalog of Positions and Proper Motions on the ICRS
- Determined by combining USNO-B1.0 and 2MASS astrometry.
- Complete from the brightest stars down to about **V \approx 20**
- Mean positions errors at epoch 2000.0 are **0.1-0.3''**
- About 65 610 000 stars
- **B, R** and **I** band from USNO-B1.
- **J, H, K** from 2MASS
- **V** band from PPMX
- Indicative cross-match with OBS-CAT, CMC14, UCAC2, USNO-A2
- **Careful** cross-match for observed stars
- Update of the contamination L0 and L1
- Spectral type not updated yet

The new database

- Stars in the eyes
 - B, V, R, I, J, H, K bands
 - ST and LC (SED)
 - L0 contamination
 - Link to OBS-CAT U, B, V, r', i photometry
- CoRoT Targets
 - instrumental setup
 - link to light curve
 - LI contamination
 - CVC (Debosscher et al 2009)
- Object of interest
 - transit properties (Deleuil et al in prep)



<http://cesam.oamp.fr/exodat/>

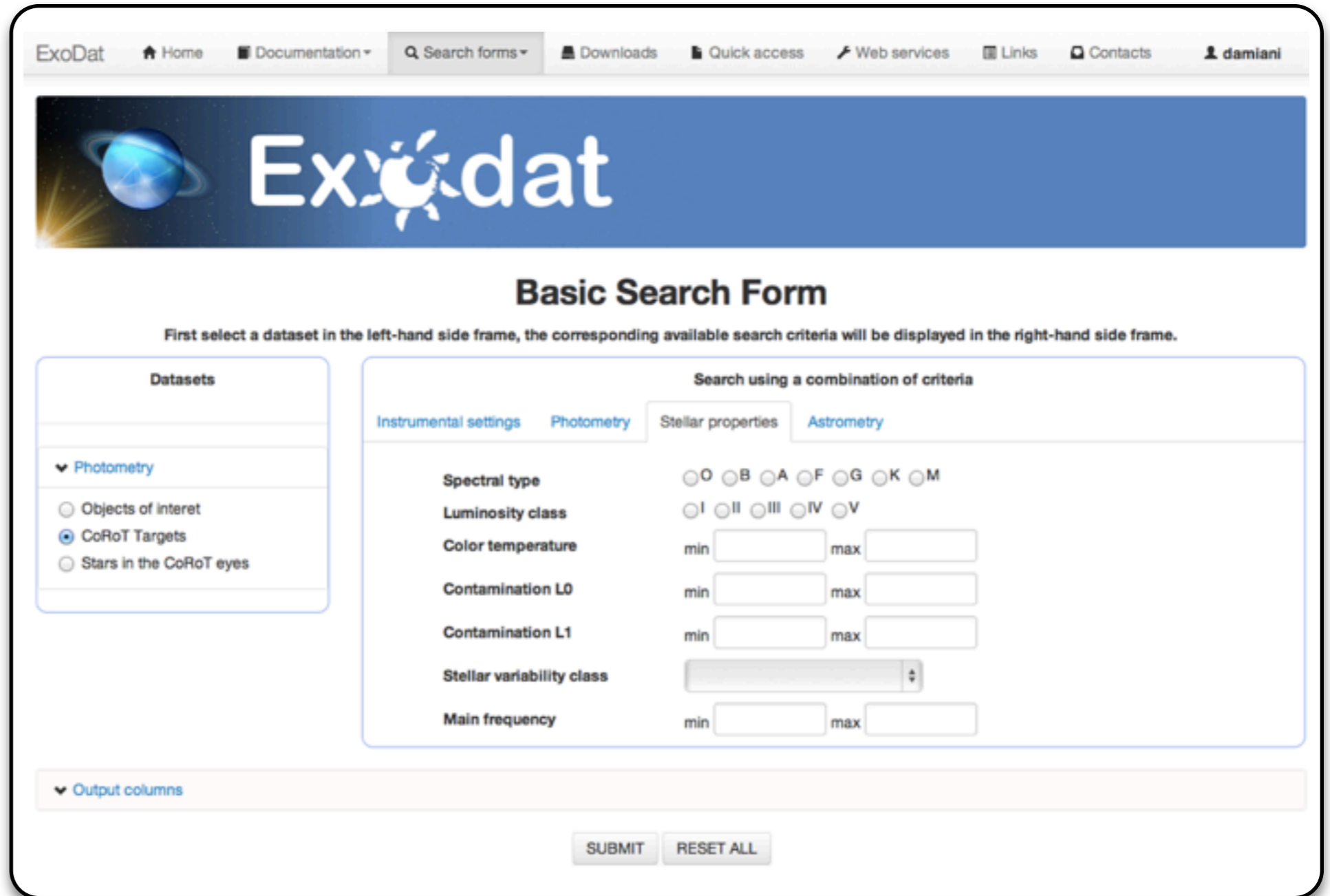
- Search by criteria
- Search by list (corot-ids or positions)
- Cone search

Next steps

- Result of spectroscopic surveys
- Improvement of LC & ST
- Prepare CoRoT legacy = gather all data available, reference in CDS, ...

Conclusion

- A **single** reference catalog
- Complete from the brightest stars down to about **$V \approx 20$**
- Mean positions errors at epoch 2000.0 are **0.1-0.3''**
- **OBS-CAT** data still available
- User friendly



The screenshot shows the ExoDat website's search interface. At the top, there is a navigation bar with links for Home, Documentation, Search forms, Downloads, Quick access, Web services, Links, Contacts, and a user profile for 'damiani'. Below the navigation bar is a blue header with the ExoDat logo and a planet illustration. The main content area is titled 'Basic Search Form' and includes a instruction: 'First select a dataset in the left-hand side frame, the corresponding available search criteria will be displayed in the right-hand side frame.'

The search form is divided into two main sections:

- Datasets:** A list of datasets under the 'Photometry' category, including 'Objects of interest', 'CoRoT Targets' (selected), and 'Stars in the CoRoT eyes'.
- Search using a combination of criteria:** A section with tabs for 'Instrumental settings', 'Photometry', 'Stellar properties', and 'Astrometry'. The 'Stellar properties' tab is active, showing search criteria for Spectral type (radio buttons for O, B, A, F, G, K, M), Luminosity class (radio buttons for I, II, III, IV, V), Color temperature (min and max input fields), Contamination L0 (min and max input fields), Contamination L1 (min and max input fields), Stellar variability class (dropdown menu), and Main frequency (min and max input fields).

At the bottom of the form, there is a section for 'Output columns' and two buttons: 'SUBMIT' and 'RESET ALL'.