Upgrades and revision of

Cilia Damiani – LAM

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

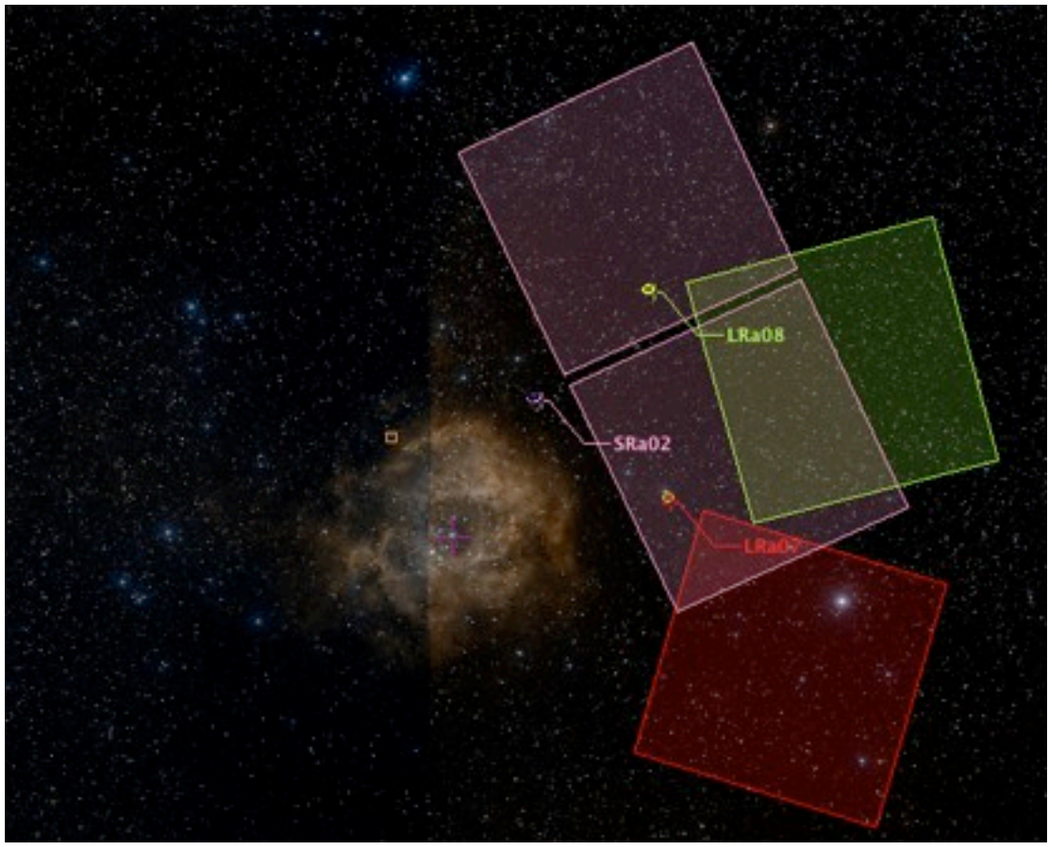
- Input catalog for the exoplanet/additional programs:
  - Field selection & target selection

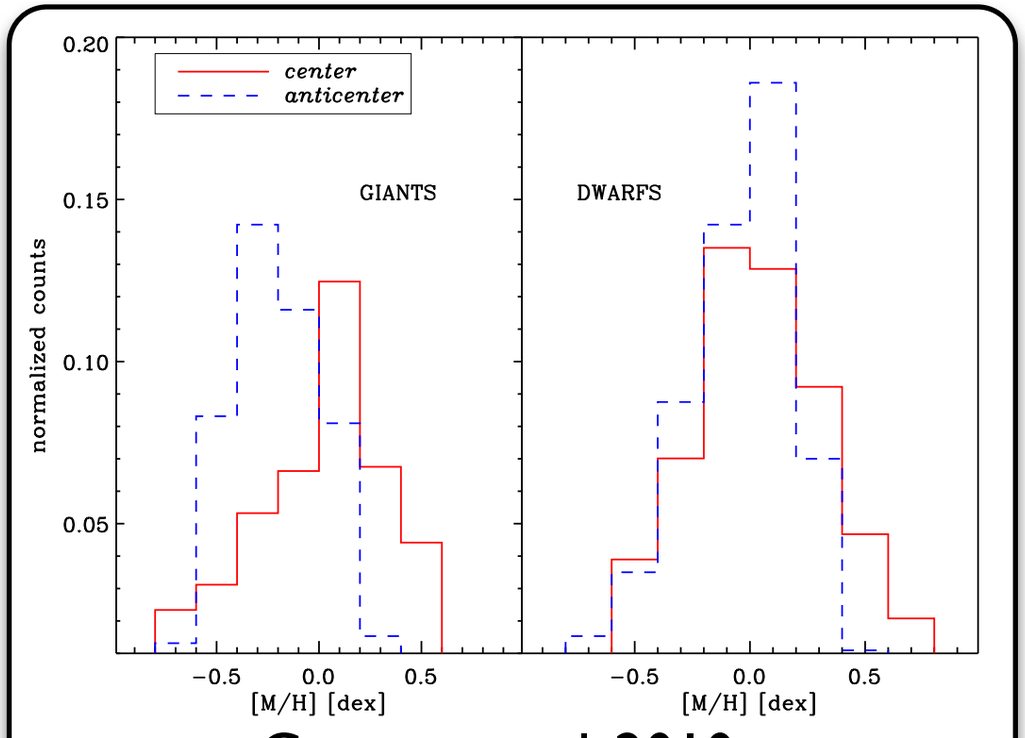
- Help false-positive early identification

- Help characterizing planets

- Statistical studies:
  - giant planet occurrence,
  - centre/anti-centre stellar properties, ...

LRa07 and LRa08 pointings





Gazzano et al. 2010

Goals

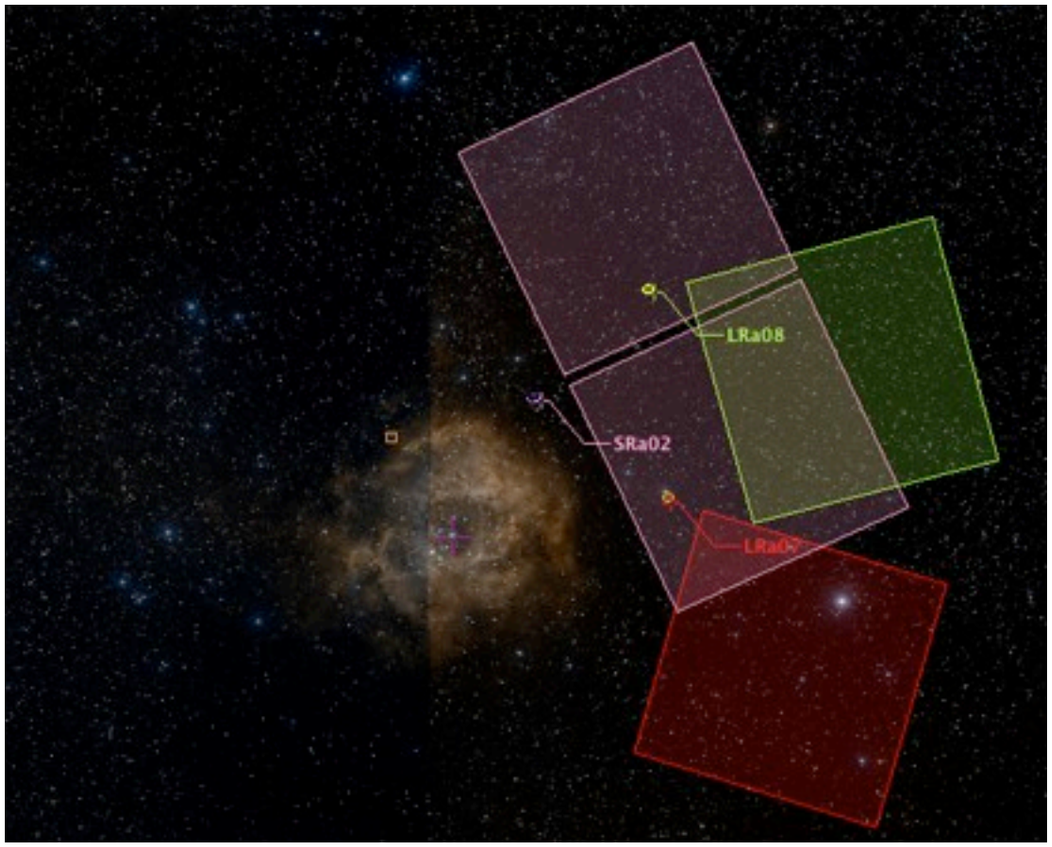
- A photometric catalog complete down to r'≈19

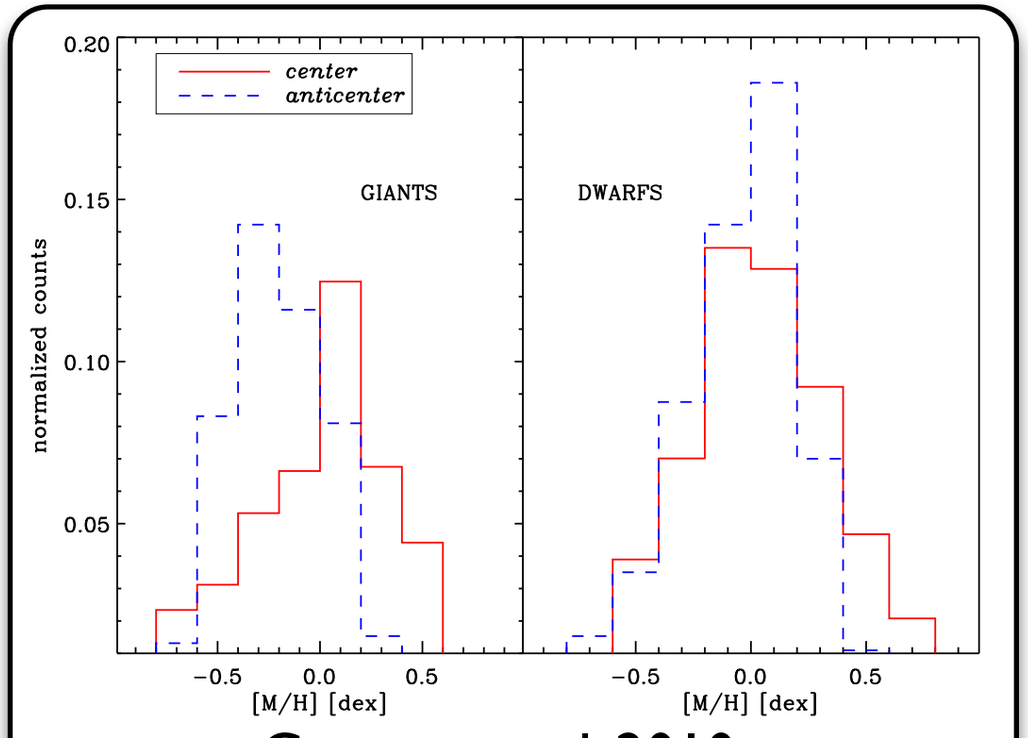
- Covering 2 areas of 20° radius centred at
  (α, δ)=(99°, 0°) and
  (α, δ)=(279°, 0°)

- Spectral classification for all stars with 11 ≤r'≤16

- Gather all available information

LRa07 and LRa08 pointings



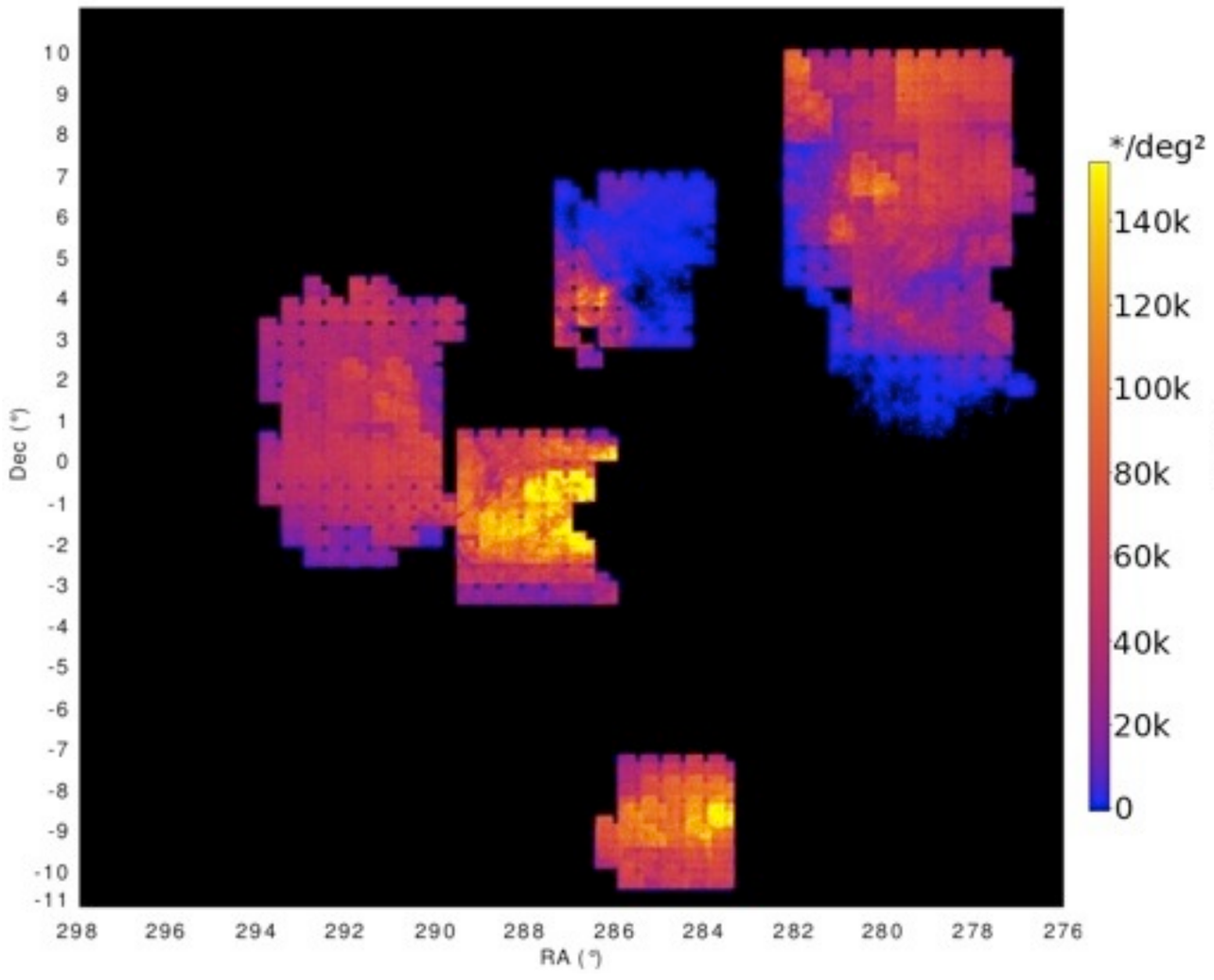


Gazzano et al. 2010

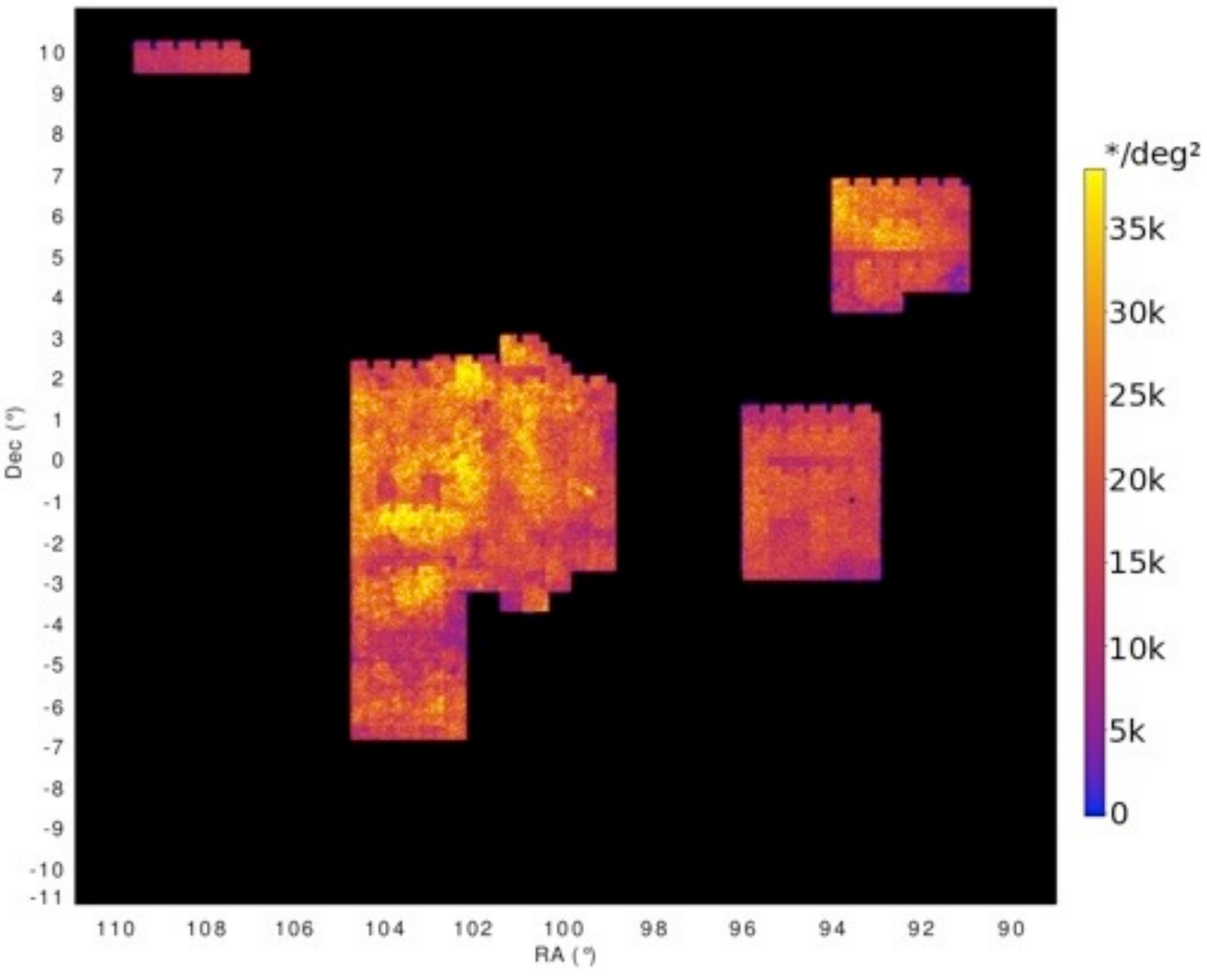
The OBS-CAT catalog

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

2MASS

CMC 14

DENIS

USNO-A2

USNO-B1

...

+

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) ⊗ transmission function of filters + a range of reddenings
- Best □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

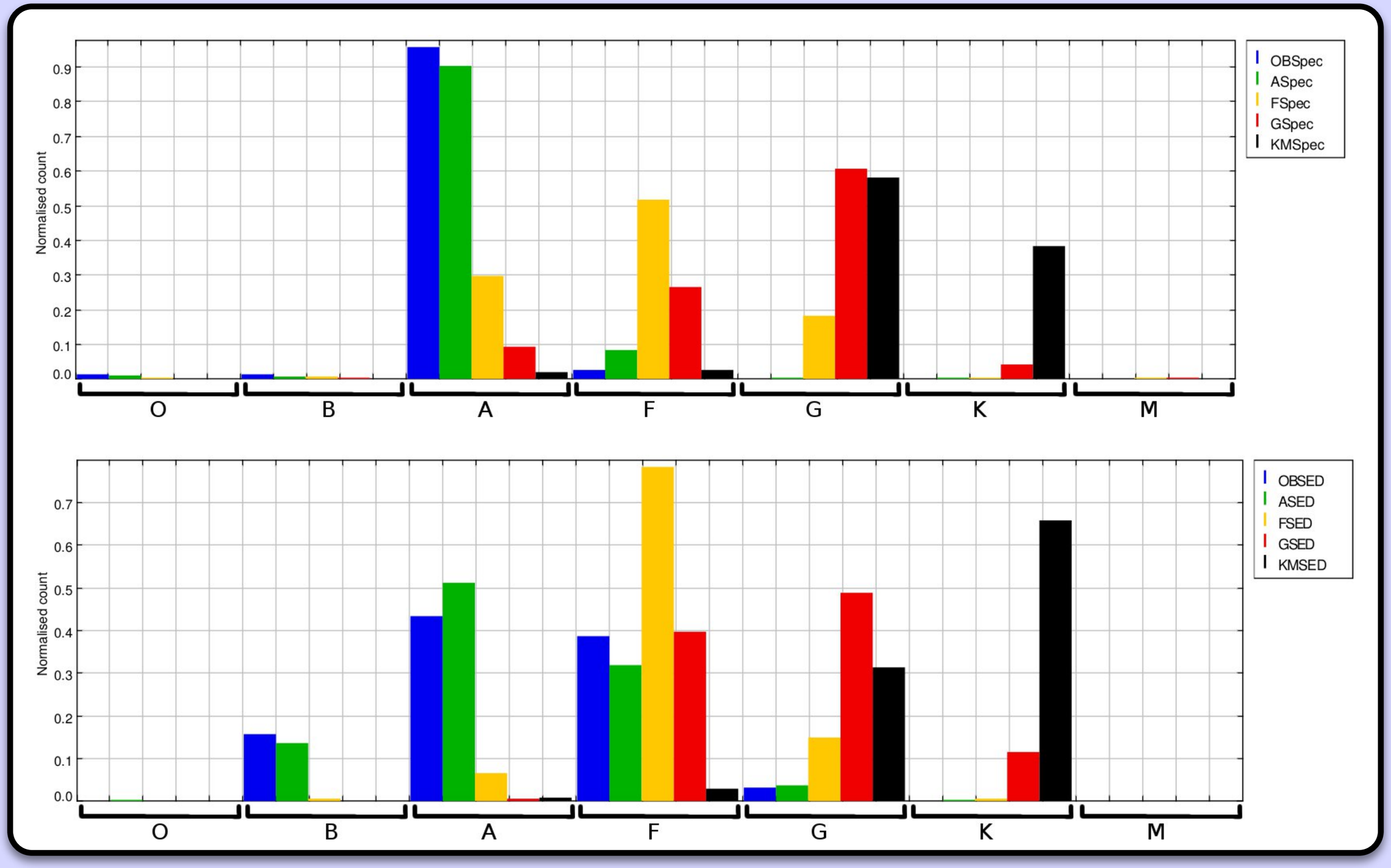
Guenther et al, 2012

Giants

	Spectro	SED
Spectro	100%	71%
SED	53%	

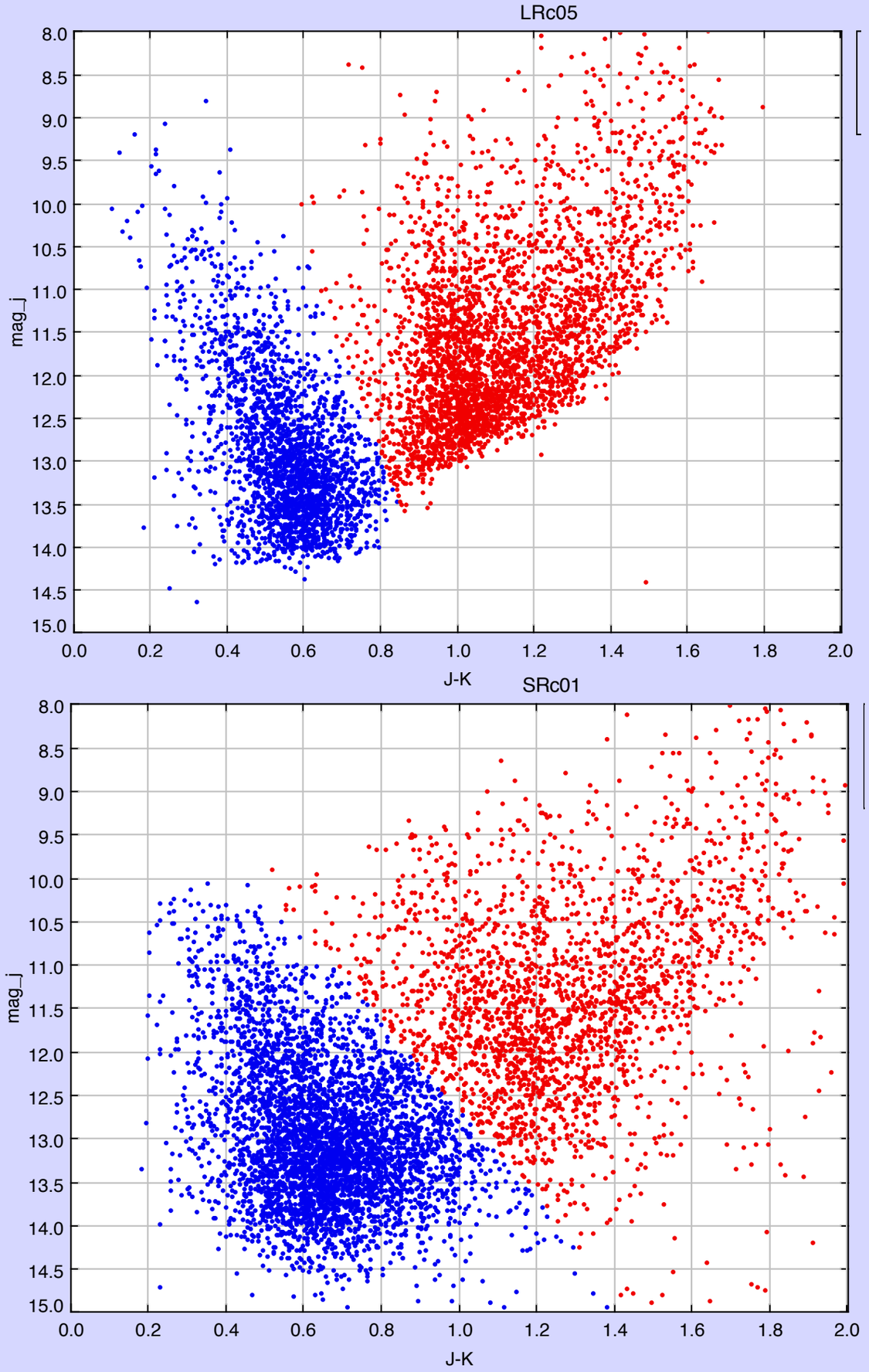
1 out of 3 stars classified giants by SED are dwarfs

Dwarfs in both classification but ...



Improvements

- Level 1 SED: *a posteriori*
  - Cut off magnitude in color-magnitude diagram adapted for each fields.
  - Use templates for binaries
- More magnitudes, better magnitudes?



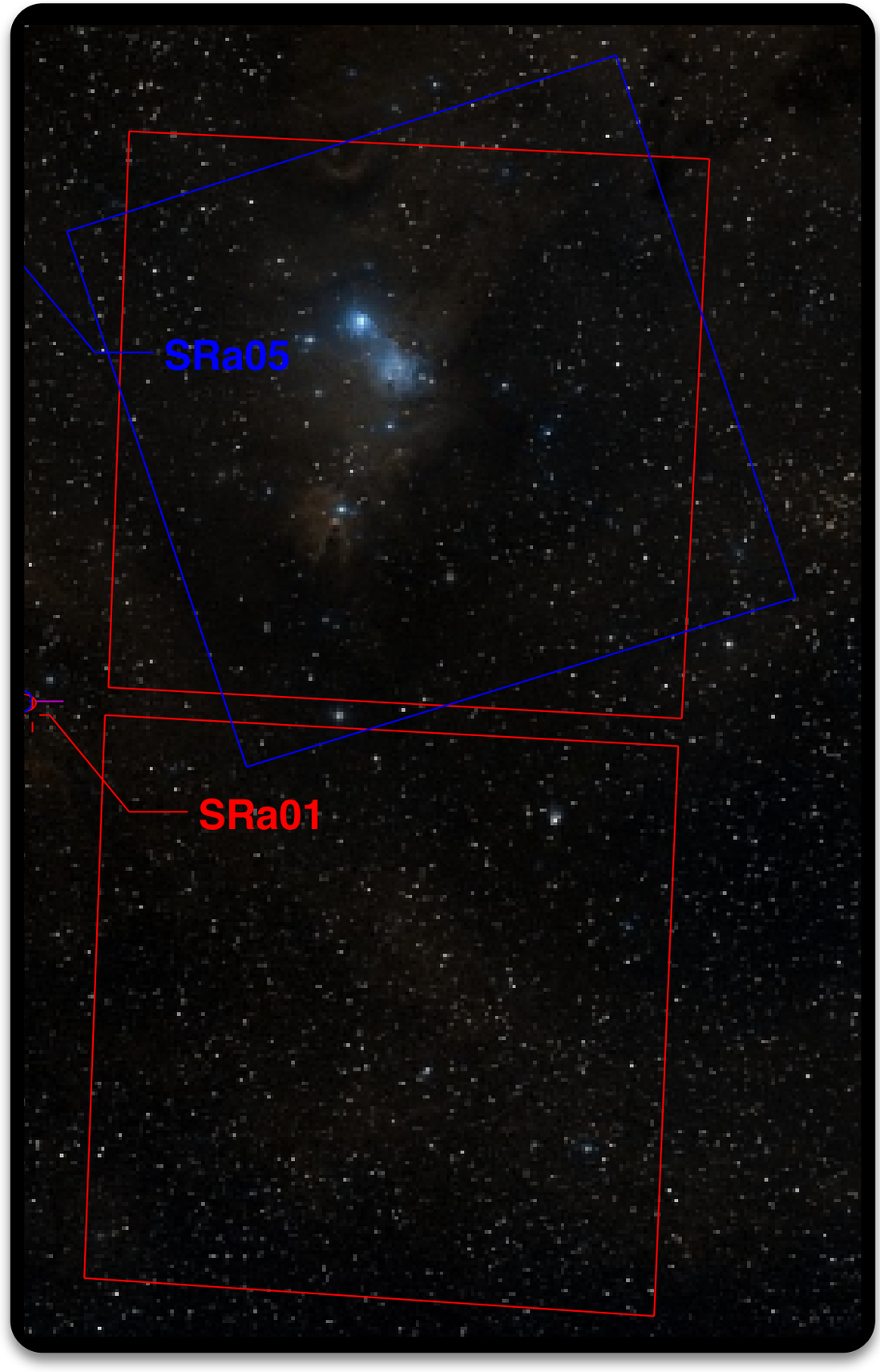
Cross-match issues

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 ≈ 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
  - L1 contamination
  - CVC (Debossher 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 ≈ 20**
- Mean positions errors at epoch 2000.0 are **0.1-0.3”**
- **OBS-CAT** data still available
- User friendly