Abstract
Young massive clusters are key to map the Milky Way’s structure, and near-IR large area sky surveys have contributed strongly to the discovery of new obscured massive stellar clusters: the MASGOMAS group (IAC, Spain) using 2MASS and the Star Cluster Group at the Astronomy Institute of the Universidad de Valparaíso (Chile), using the ESO public survey VVV.

The preliminary tests of our systematic search ended in the discovery of three cluster candidates in the direction of the Scutum-Centaurus arm base. The systematic search is focused on OB-type star candidates, filtered using three photometric cuts:
1. $K_s < 12 \text{ mag}$
2. Red (J-Ks) colour
3. $0.2 < Q_W < 0.2$

One case example: Masgomas-4
(Ramírez Alegría et al. in press)

Masgomas-4 is a double-core cluster; Ramírez Alegría et al. (2014) and Masgomas-6 (data under analysis. The cluster contains a star with broad emission lines).

The colours of objects with such a broad emission line are very distinctive in the near-IR photometry and thus easy to identify. Therefore, we use it for selecting clusters. We have detected two such objects in the Masgomas-6 region.

The near-IR spectra was obtained with ISAAC/VLT, an IR imager and spectrograph (1 to 5 μm) mounted on the Nasmyth focus of UT3. For the observations we have used a slit width of 0.3 arcsec, obtaining a resolution of R~3000.

The spectra were classified using the same set of template spectra than the MASGOMAS group, but including the spectral catalogues of Martins et al. (2007), Liermann et al. (2009), Mauerhan et al. (2011) & Davies et al. (2011)

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A tale of two projects: MASGOMAS and VVV Stellar Clusters
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MASGOMAS projects:
Project aims
Young massive clusters are key to map the Milky Way’s structure, and near-IR large area sky surveys have contributed strongly to the discovery of new obscured massive stellar clusters: the MASGOMAS group (IAC, Spain) using 2MASS and the Star Cluster Group at the Astronomy Institute of the Universidad de Valparaíso (Chile), using the ESO public survey VVV.

Project methods
Three photometric cuts are applied to detect potential clusters:
1. $K_s < 12 \text{ mag}$
2. Red (J-Ks) colour
3. $0.2 < Q_W < 0.2$

Identification
For the observations we have used a slit width of 0.3 arcsec, obtaining a resolution of R~3000.

The spectra were classified using the same set of template spectra than the MASGOMAS group, but including the spectral catalogues of Martins et al. (2007), Liermann et al. (2009), Mauerhan et al. (2011) & Davies et al. (2011)

Group publications:
1) New Galactic star clusters discovered in the VVV Survey (Borissova et al. 2011) II (Borissova et al. 2014, in press): Both papers present a list of cluster candidates discovered in the Galactic disc (Paper I) and the bulge (Paper II).

2) Massive open star clusters using the VVV survey (Chené et al. 2012), II (Chené et al. 2013) & III (Ramírez Alegría et al. 2014): Series of papers which explain the general method (I), present the discovery of 6 clusters with WR stars (II) and the second cluster located in the far edge of the Galactic bar (III).

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VYV Clusters (UdV group): The clusters candidates studied in this group were selected from the catalogue presented by Borissova et al. (2011), based on the visual inspection of ZYJHKs images from the ESO public survey VVV (Minniti et al., 2010, and Saito et al., 2012). These candidates are located in the Galactic disc, with 296º < l < 348º.

Based on the statistically decontaminated CMDs of the cluster candidates, we selected a group for spectroscopic follow-up. The spectroscopic data, used for spectral classification and individual distance estimates, is complemented with VVV-Sk2 pipeline photometry (Mauro et al. 2013), an automated software based on ALLFRAME (Stetson 1994) and optimized for VISTA PSF photometry.

Spectroscopic follow-up: The near-IR spectra was obtained with ISAAC/VLT, an IR imager and spectrograph (1 to 5 μm) mounted on the Nasmyth A focus of UT3. For the observations we have used a slit width of 0.3 arcsec, obtaining a resolution of R~3000.

The spectra were classified using the same set of template spectra as the MASGOMAS group, but including the spectral catalogues of Martins et al. (2007), Liermann et al. (2009), Mauerhan et al. (2011) & Davies et al. (2012).

One case example: VVV CL086

According to the individual distance estimates for two early type stars (O9 and B0V), VVV CL086 is located at the far edge of the Galactic bar (6–11 kpc). It is known that the close edge of the bar hosts massive cluster (mostly RSG clusters), but the far edge has still remained unexplored. VVV CL086 is the second massive cluster found in this region of the Galaxy (first one is Mercer&71, Davies et al. 2012).

The decontaminated CMD shows that the cluster contains earlier and more massive stars (to be confirmed spectroscopically), and its age is > 1.0 Myr and < 5.0 Myr, based on isochrone fitting to the pre-main sequence turn-on point (main sequence isochrones by Lejeune & Schaerer 2001, and pre-main sequence by Siess et al. 2000).