MASSIVE OB ASSOCIATIONS IN THE ERA OF LARGE SPECTROSCOPIC SURVEYS

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In the coming years we will receive a vast amount of spectroscopic data of massive stars which will be supplemented by the wealth of astrometric and photometric data provided by the *Gaia* satellite. Released data will mean a major step forward in the study of massive stars, giving us the chance to create statistically significant samples to explore the role of almost any parameter.

OWN
B. Barbá
IACOB
S. Simón-Díaz
CAFÉ-BEANS
I. Negueruela
VFTS
C. Evans
WEAVE
GES
Gilmore & Randich
4MOST
De Jong
MONOS
J. Maíz-Apellániz
XSootU
J. Vink
GOSSS
J. Maíz-Apellániz
BLOeM
Bestenlehner &
And others...

Incoming large spectroscopic surveys will lead to an important improvement of our knowledge of star formation and evolution of star-forming regions and clusters, including our understanding of the dynamics and kinematics of OB associations and stellar groups. Fortunately, WEAVE and 4MOST are coming to complete (and improve) our view of Galactic massive stars.

WEAVE-SCIP
(PI Janet Drew)
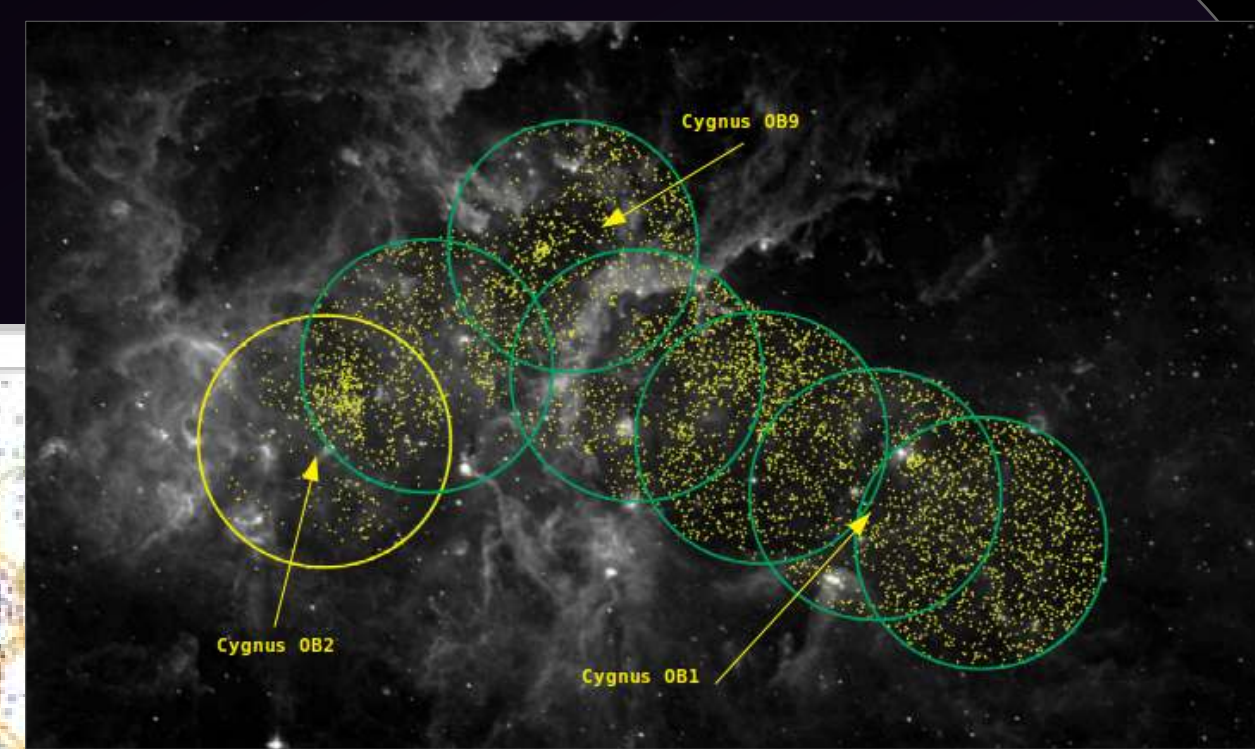
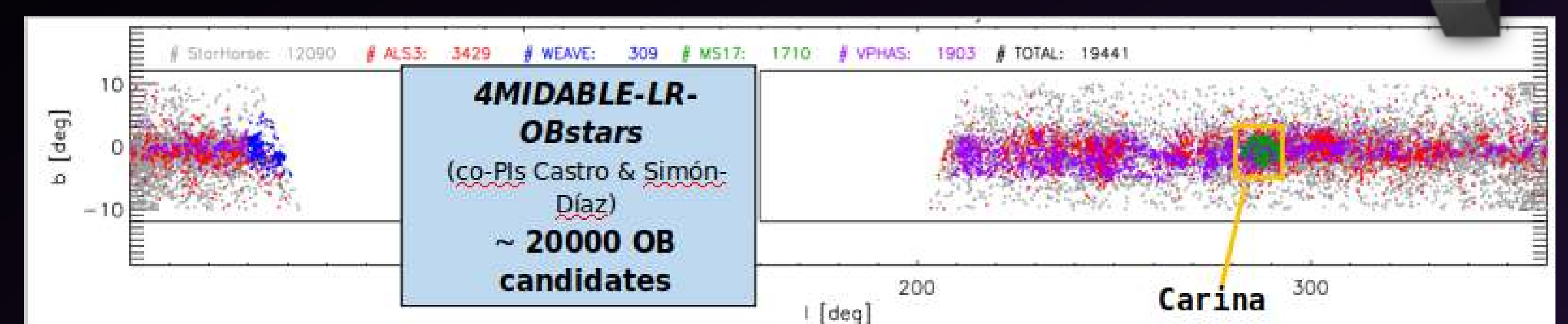Multi-epoch HR survey:
Cygnus-X (PI Artemio Herrero)

LR survey: whole Northern Galactic plane

Up to ≈ 9-10 kpc
~ 2 × 10^4 OB stars
(candidates)

galactic latitude

WEAVE-SCIP LR footprint + spatial distribution of the OB star candidates (A. de Bu...

Cygnus 003
Cygnus 002
Cygnus 001

The WEAVE-SCIP survey will use MOS capabilities to obtain mid-resolution spectra of thousands of stars along the Northern Galactic disc. Moreover, a high-resolution survey in Cygnus-X will provide multi-epoch spectra of hundreds of massive OB stars in the area.

4MOST-4MIDABLE
(PIs Cristina Chiappini & Ivan Minchev)

StarHorse: 12090   ALS3: 3429   WEAVE: 309   MS17: 1710   VPHAS: 1903   TOTAL: 19441

4MIDABLE-LR-OBstars
(co-PIs Castro & Simón-Díaz)
~ 20000 OB candidates

b [deg]
l [deg]
Carina
200   300

4MIDABLE-LR will provide the largest spectroscopic follow-up of *Gaia* (adding key information to the *Gaia* RVS) in the Southern Hemisphere and thereby allow us to view the Milky Way as a whole stellar system by providing a 3D chrono-chemokinematical map of the Milky Way stellar disk and bar-bulge
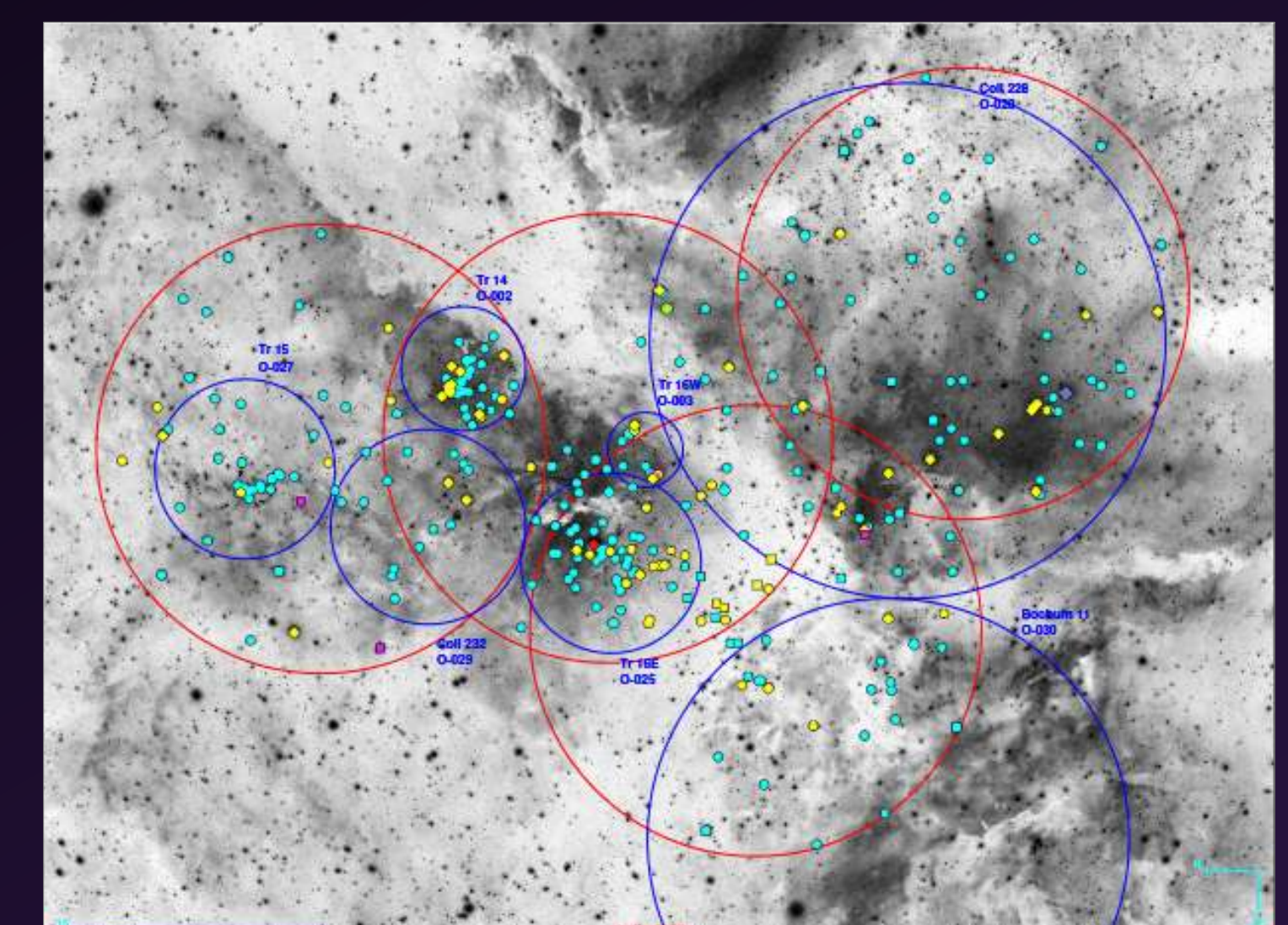
Nearly 20000 OB candidates are included in 4MIDABLE-LR-OB sub-survey (co-PIs S. Simón-Díaz & N. Castro), which will be covering several OB associations such as the Carina Nebula (and complement GES data)

The MEIGAS project: *A multi-wavelength exploration of star-forming regions, young clusters and associations* (PI S.R.Berlanas)

WE aim to conduct comprehensive studies in the major Galactic (and extragalactic) star-forming regions, young clusters and OB associations. We will use *Gaia* + spectroscopic data from large spectroscopic surveys (GES, WEAVE, 4MOST, XSHOOTU, BLOeM, etc.) + dedicated observing proposals at different wavelength ranges (IR, UV, gamma and X-ray regimes).

MEIGAS

Why multi-wavelength? Because we need to achieve crucial and complementary information to adequately characterize these regions and their stellar content, something imperative not only to complete their stellar census but to improve our understanding of star formation and poorly known evolutionary pathways of massive stars.

In a first phase, the MEIGAS project focuses on determining for the first time ever whether the empirical rotational distribution of massive OB stars is universal or not by inspecting rotational properties of their massive stellar populations in different environments (MW, LMC, SMC), giving us the key chance to estimate the frequencies associated to the different evolutionary channels. It will allow us to assess the relative frequency of the different channels of binary evolution under well known, homogeneous conditions, thus resolving a serious problem for present-day evolutionary models and scenarios of massive stars.