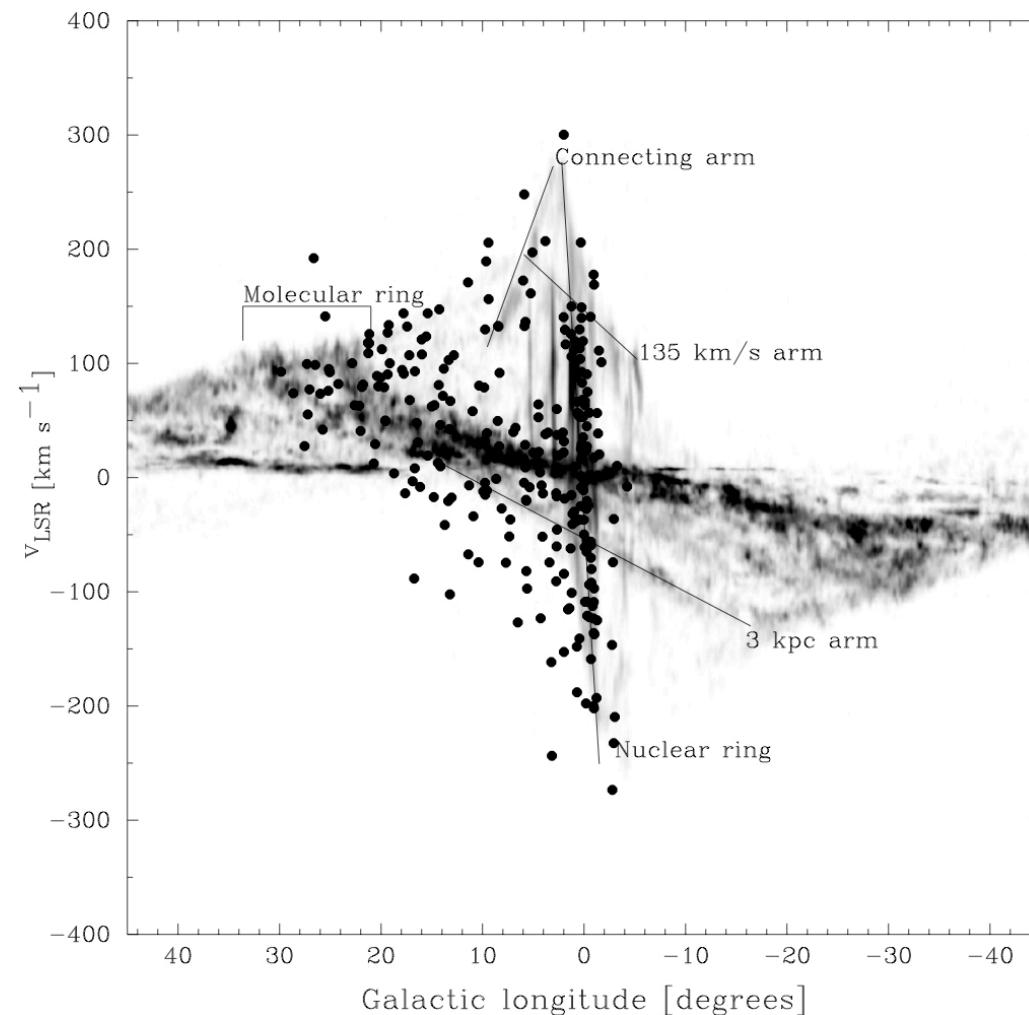


# Stellar tracers of the thin Disk component

Maria Messineo



# 86GHz SiO masing Late-tape stars in the inner Galaxy

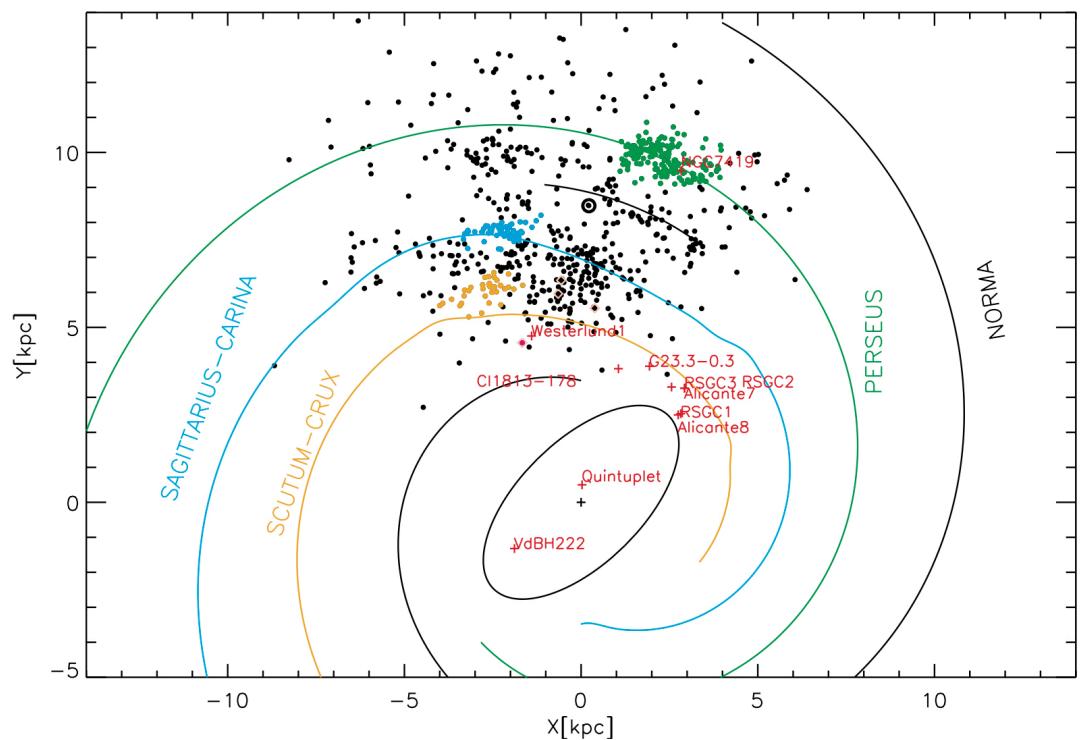


Universiteit  
Leiden

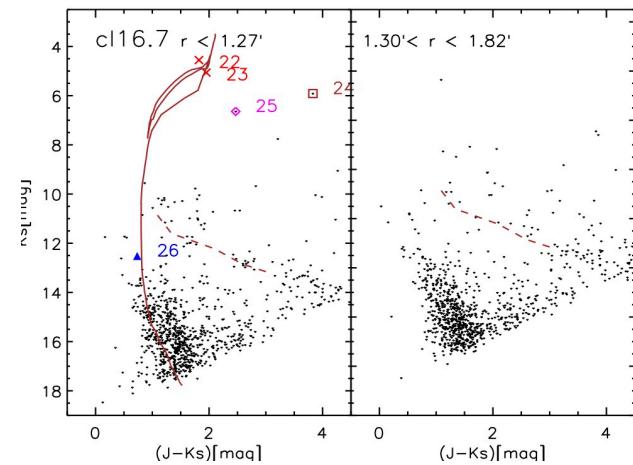
PhD thesis  
Supervisor Habing, H.

A&A, 393, 115-128, 2002

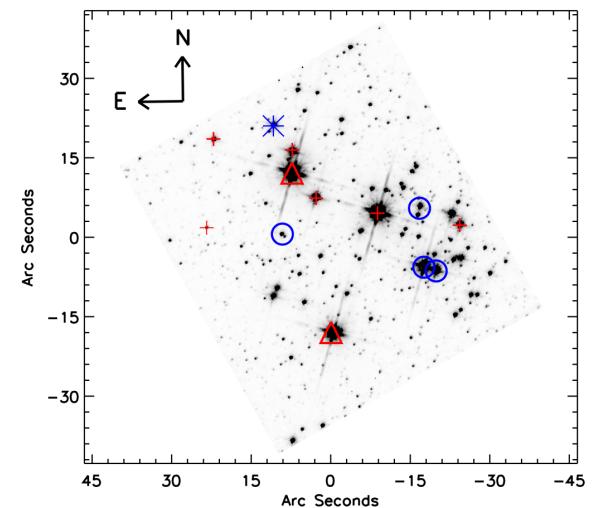
# Candidate red supergiants only 18% are members



A&A, 698, 282, 2025



A&A, 571, A43 (2014)



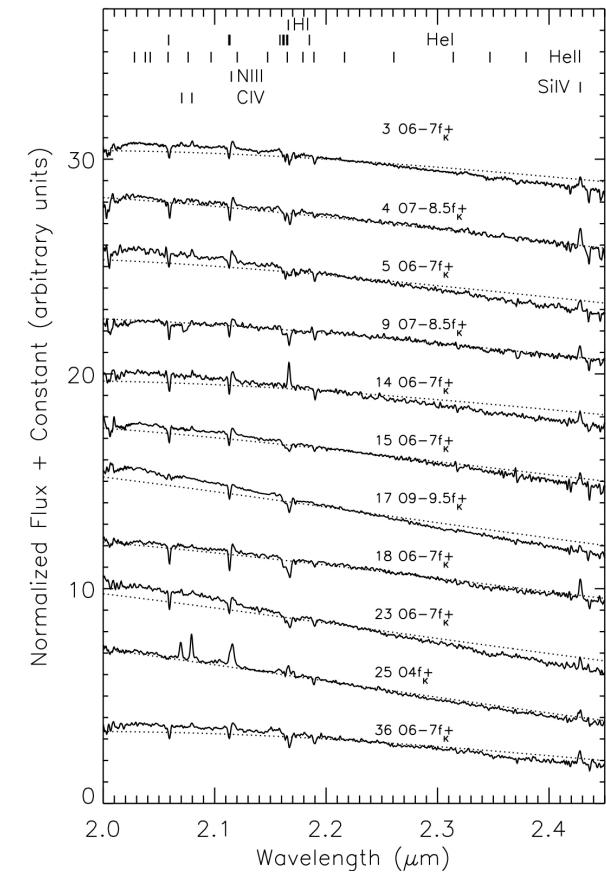
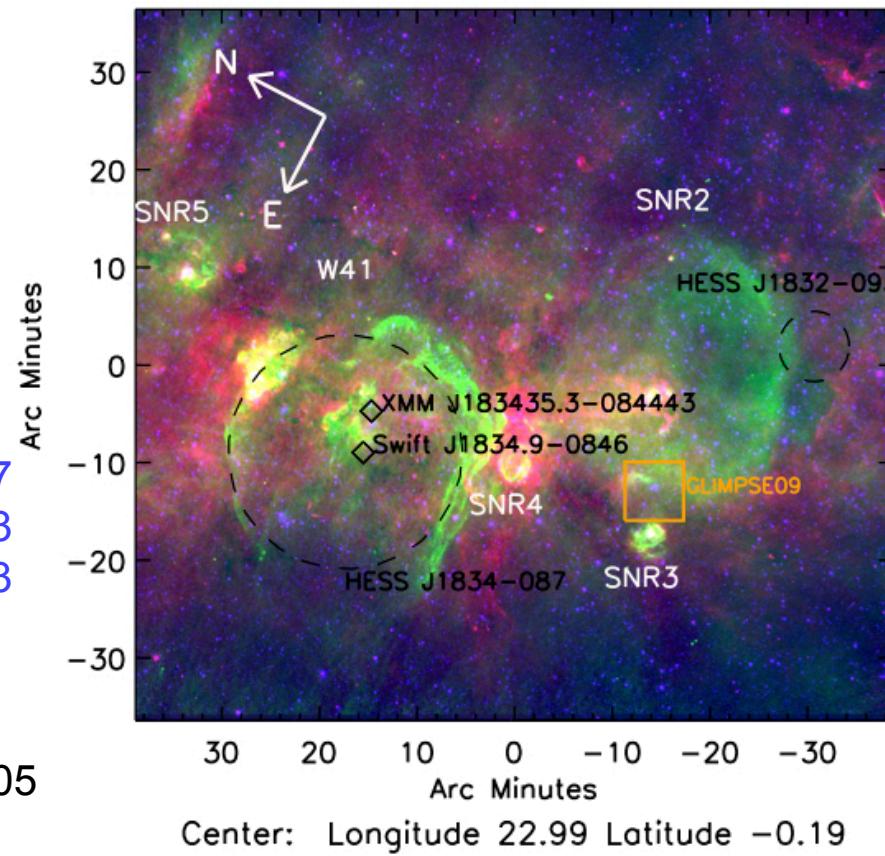
ApJ 708, 1241, 2010  
Center: R.A. 18 34 09.88 Dec -09 14 05.1

Blue = 3.6  $\mu$ m  
 GLIMPSE  
 Green = 20 cm  
 MAGPIS  
 Red = 8  $\mu$ m  
 GLIMPSE

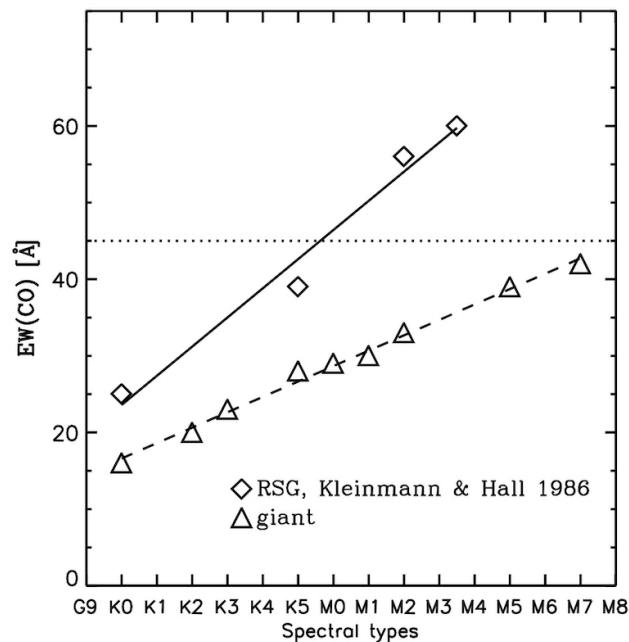
SNRs from:  
 Green 1991  
 Helfand et al. 2006  
 2=G22.7-0.2  
 3=G22.7583-0.4917  
 4=G22.9917-0.3583  
 5=G23.5667-0.0333

High-energy  
 Aharonian et al. 2005  
 Laffon et al. 2011  
 Mukherjee et al. 2009  
 Kargaltsev et al. 2012

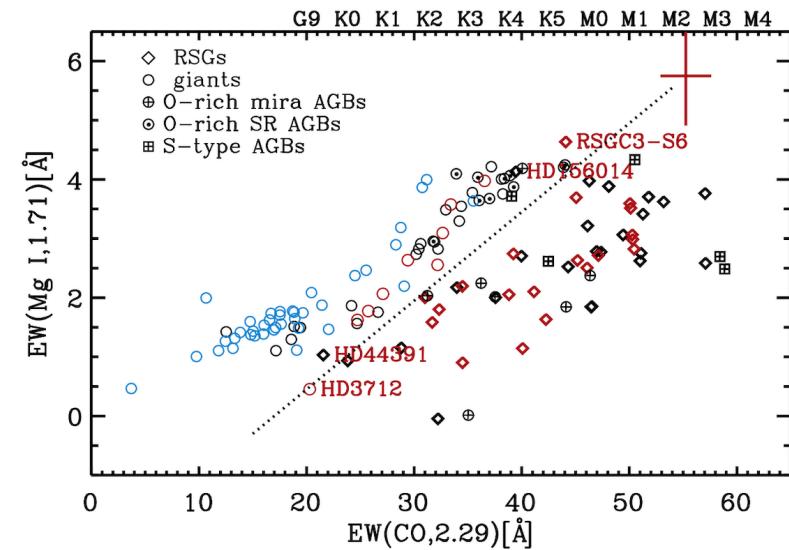
## The G23.3-0.3 giant molecular complex



# Separating giants and red supergiants

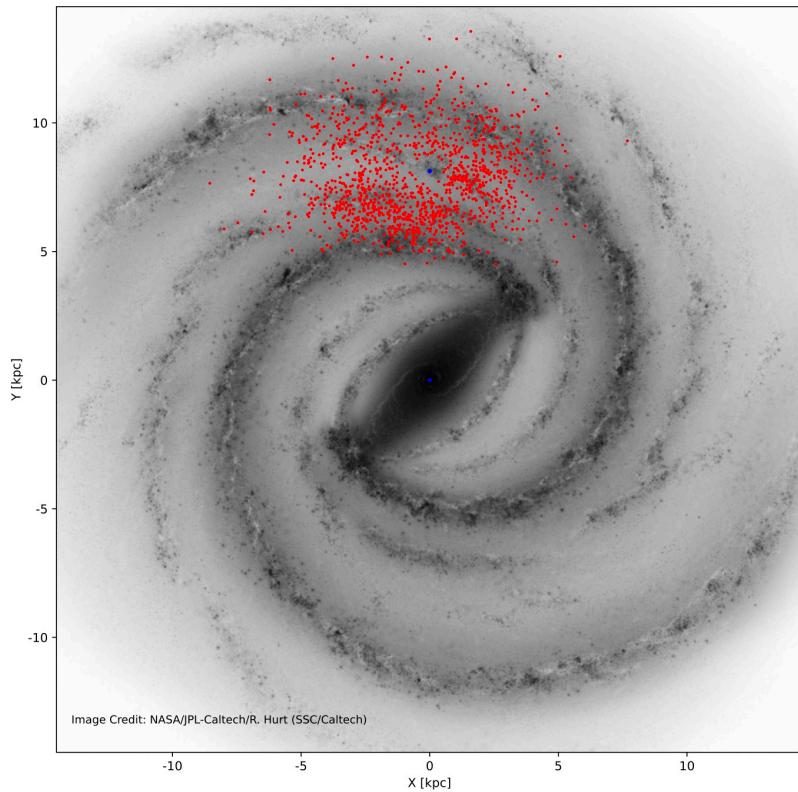


Messineo, Zhu, Menten, Ivanov, Figer,  
Kudritzki, Chen ApJ, 822, L5, 2016

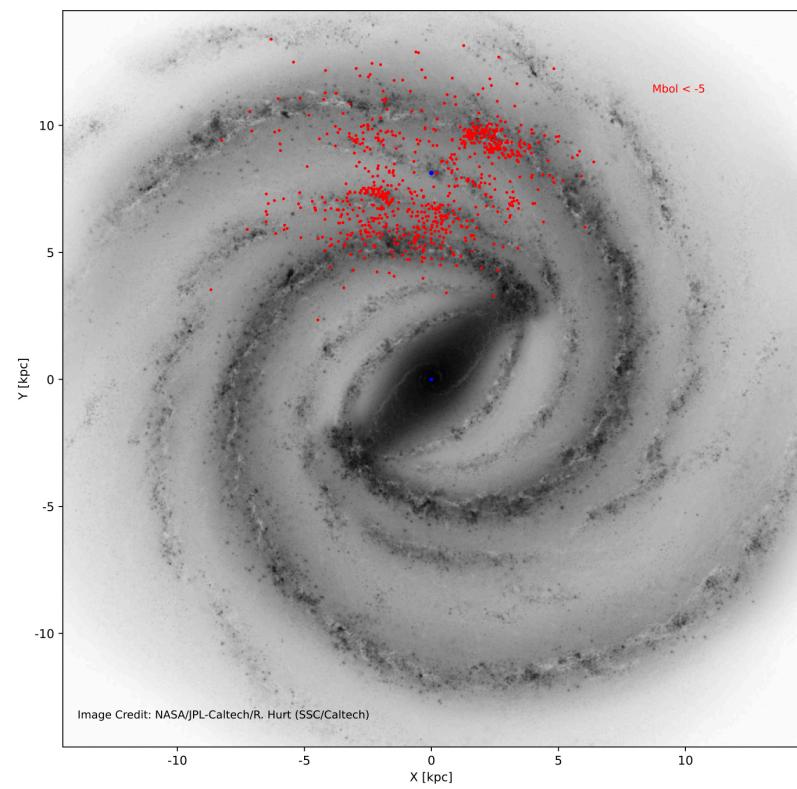


Messineo M., Figer D.F., Kudritzki R.-P., Zhu Q., Menten K. M., Ivanov V.D., & Chen C.-H. R. 2021, AJ, 162, 187

# Candidate red supergiants from Gaia DR3



Red giants/ AGBs



cRSGs

A&A, 698, 282, 2025

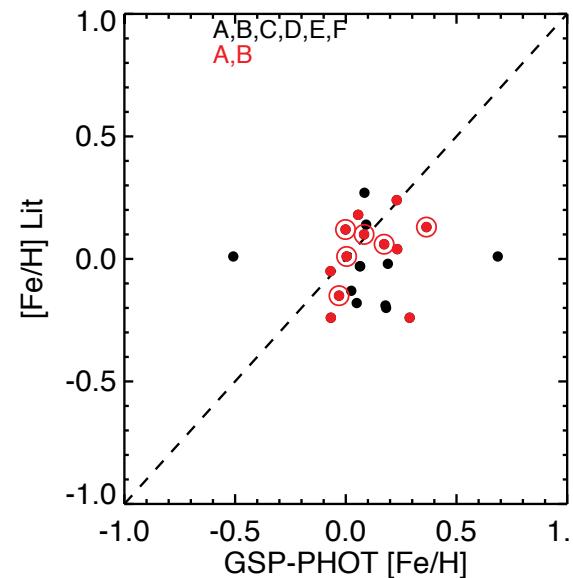
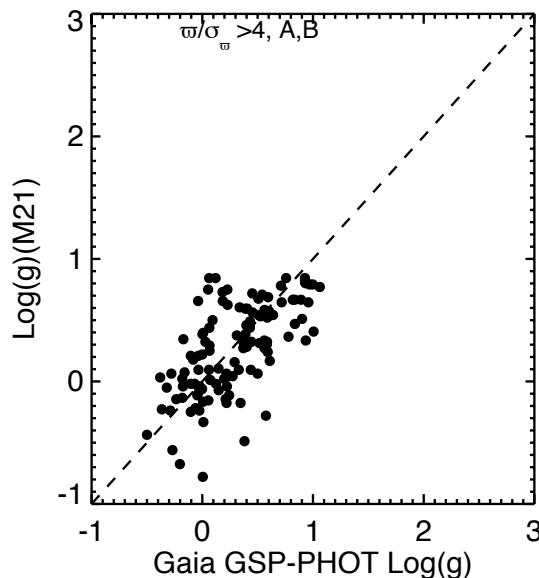
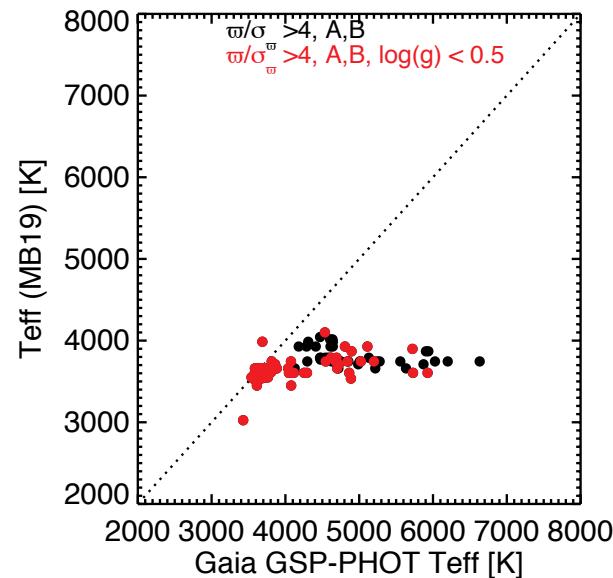
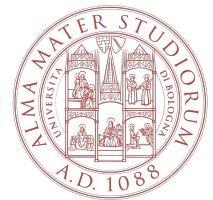
# Gaia-DR3 APIS parameters of RSGs:



---

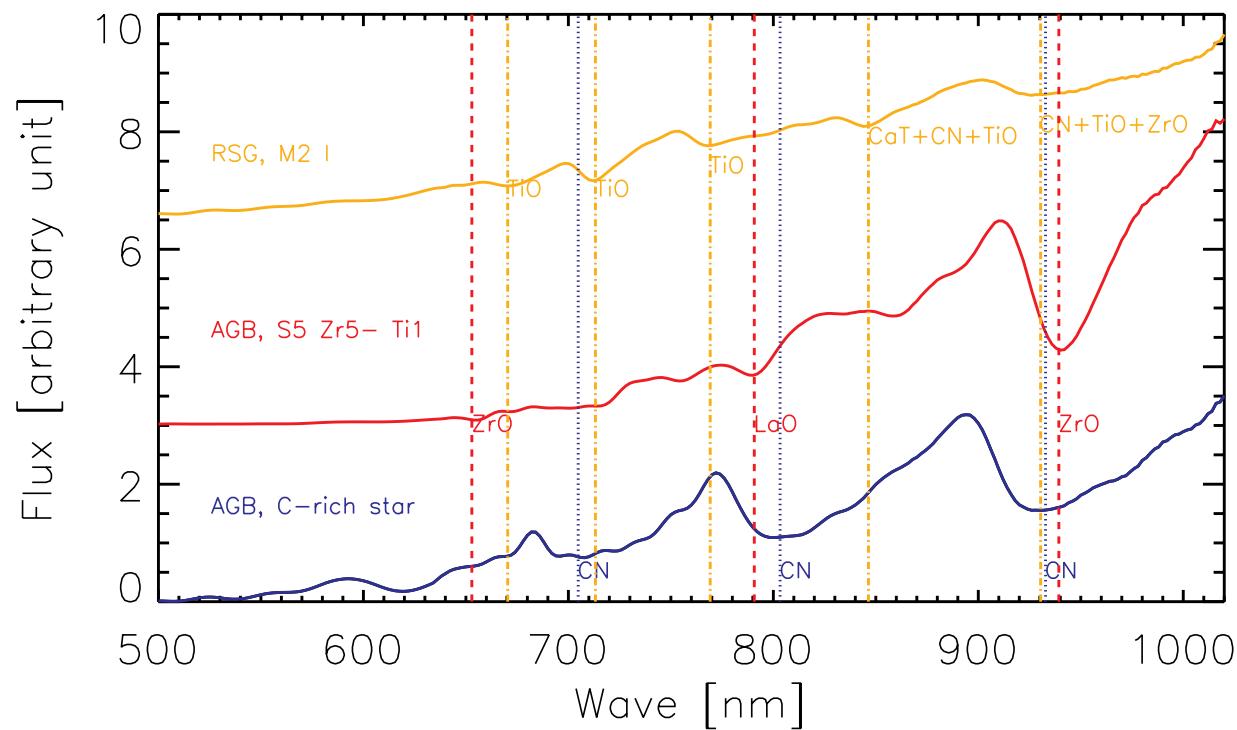
Based on 500 known RSGs from the catalog of Messineo & Brown  
(2019) -- areas A & B

# Gaia-DR3 APIS parameters of RSGs: FAILURE for K I stars temperatures



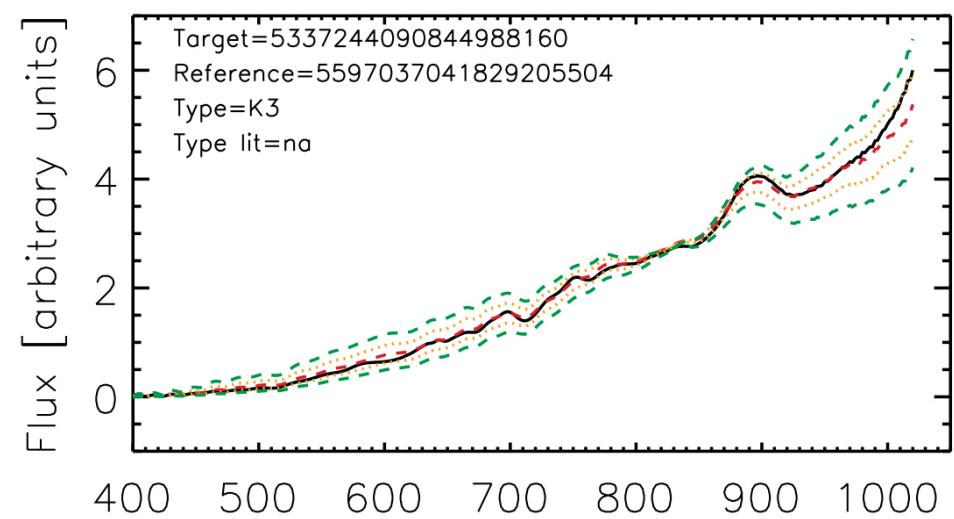
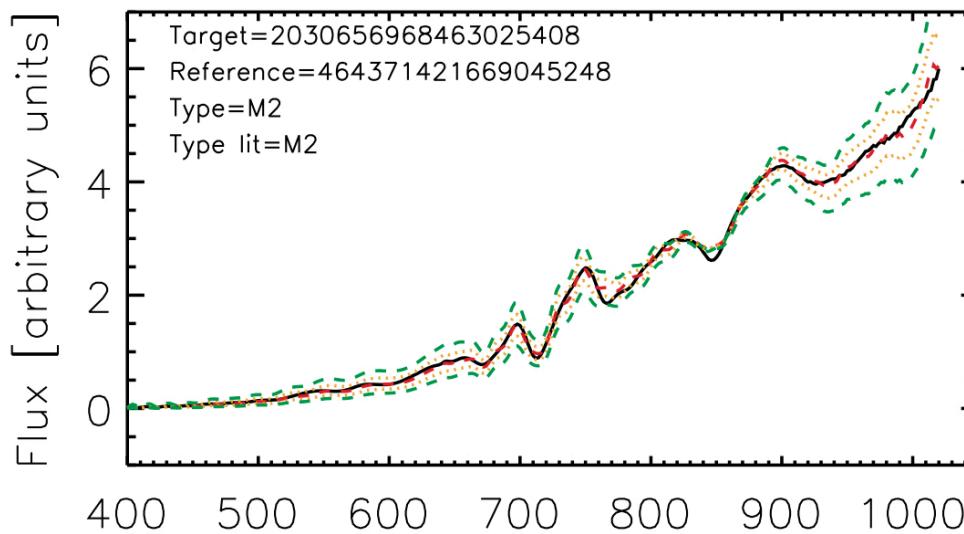
Stars are from the catalog of Messineo M., Brown, A. G. A. 2019, Messineo (2023)

# Gaia-DR3 BPRP spectra of AGBs and RSGs



Messineo (2023)

# Gaia-DR3 BPRP spectra of cRSGs



The total  $A_{Ks}$  is measured with the naked (J-Ks) and (H-Ks) colours of RSGs by Koornneef (1983). Spectral types are inferred using reference stars, and comparing their Gaia DR3 BPRP spectra.

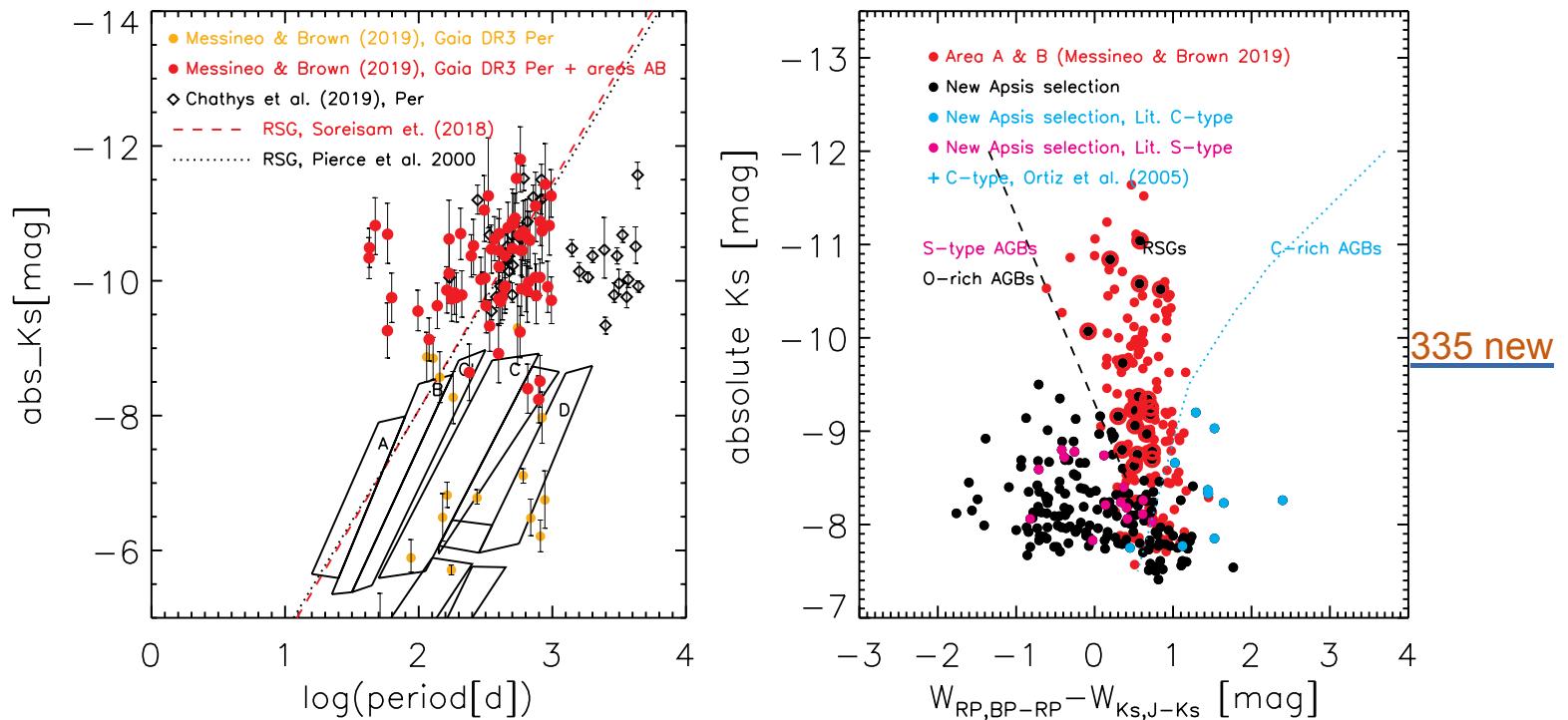
# Gaia-DR3 photometric selection of AGBs and RSGs



RSG  
 $\text{Ampl}(K) < 0.25 \text{ mag}$   
 Wood et al. (1983)

$\text{Ampl}(I) = 2.2 \text{ Ampl}(J)$   
 Messineo (2022)

87/1060  
 have periods  
 $\text{Ampl}(G) < 0.5 \text{ mag}$



Stars are from the catalog of Messineo M., Brown, A. G. A. 2019, Fig. from Messineo (2023) Color as in Abia et al. (2023)  
 AGB sequences A, B, C', C, D are from Riebel et al. (2010)