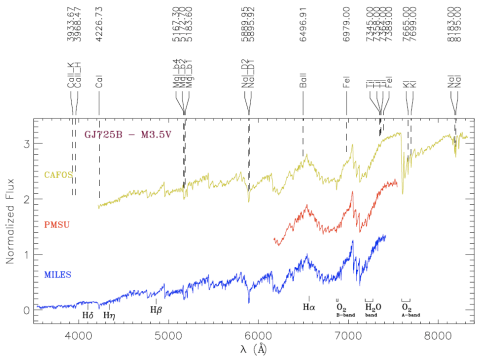
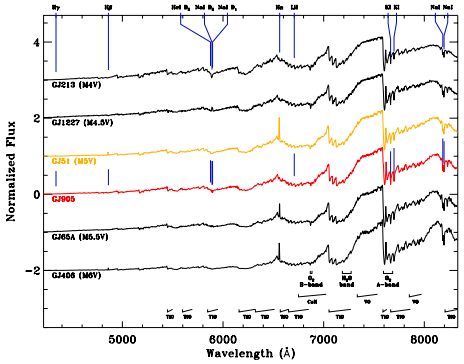
PPVI 3. Low-resolution spectroscopy of M dwarfs with CAFOS at Calar Alto

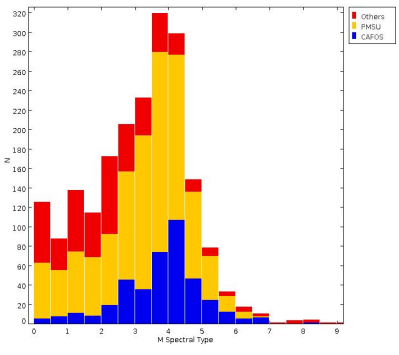
R. Mundt[1], F. J. Alonso-Floriano[8], J. A. Caballero[10], A. Klutsch[8], D. Montes[8], J. C. Morales[4], M. Cortés-Contreras[8], I. Ribas[4], A. Reiners[5], A. Quirrenbach[3], P. J. Amado[2] and the CARMENES Consortium[1,2,3,4,5,6,7,8,9,10,11]

[1]**Max-Planck-Institut für Astronomie** • [2]Instituto de Astrofísica de Andalucía • [3]Landessternwarte Königstuhl • [4]Institut de Ciències de l'Espai • [5]Institut für Astrophysik Göttingen • [6]Instituto de Astrofísica de Canarias • [7]Thüringer Landessternwarte Tautenburg • [8]Universidad Complutense de Madrid • [9]Hamburger Sternwarte • [10]Centro de Astrobiología • [11]Centro Astronómico Hispano-Alemán – Calar Alto Observatory

We conduct long observational campaigns with CAFOS at the 2.2. m Calar Alto telescope to obtain low-resolution (R~1500) spectra of poorly-known M dwarfs and candidates that are bright enough to be considered as potential CARMENES targets. We perform a spectral-type classification of the targets by comparing their acquired spectra with those of spectral-type standard stars observed during the same observing runs, and using spectral indices well calibrated for M dwarfs, such as TiO-*n*, CaH-*n*, VO-*n* and PC-*n*. We also measure chromospheric activity indicators. Up to now, over 400 M dwarfs have been observed and analysed, many of which had not been spectroscopically investigated yet.

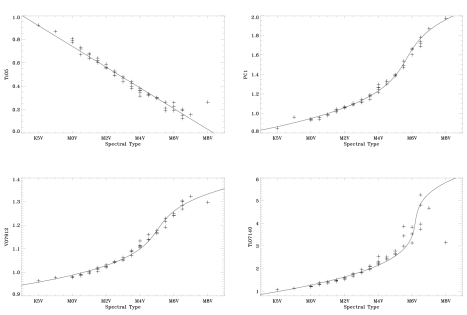


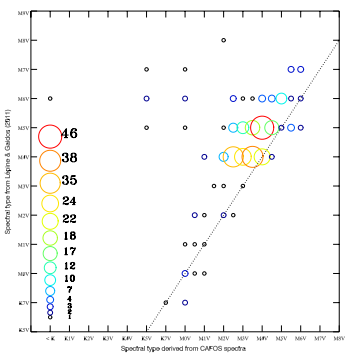


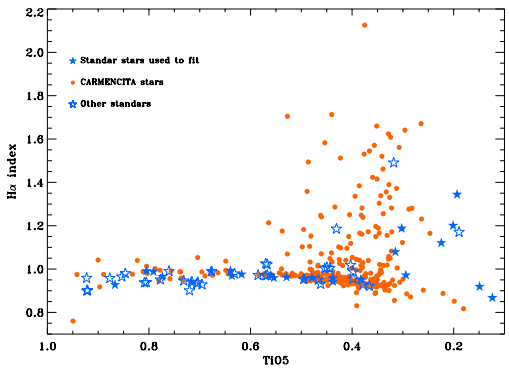


Top left. **Comparison of wavelength coverage** of CAFOS (top), PMSU (middle) and MILES (bottom); we lose Hδ and the Ca H&K doublet at the bluest end, but win the alkali doublet at the reddest end. ★ *Top middle*. **Example of a best-spectral-type cross-match** with our CAFOS data; for each half subtype, we have defined three reference stars, of which one is a prototype standard star. By comparison with PMSU, our spectra-typing uncertainty is 0.5 subtype. ★ *Top right*. **Distribution of stars** in CARMENCITA (poster 2) as a function of spectral type and its origin (blue: CAFOS; yellow: PMSU; red: other sources).

Bottom left. Four representative **spectral index-spectral type diagrams**; for each CAFOS spectrum, we derive 28 spectral indices (Kirkpatrick et al. 1991; Reid et al. 1995, Martín & Kun 1996; Martín et al. 1996, 1999; Hawley et al. 2002; Lépine et al. 2003; Slesnick et al. 2006; Shkolnik et al. 2011; Seeliger et al. 2011), which complement our χ^2 and best-match SpT determinations. ★ *Bottom middle*. **Comparison between spectral types** measured by us on CAFOS spectra and determined by Lépine & Gaidos (2011) from <*V*> − *J* colour. ★ *Bottom right*. **Hα index as a function of TiO5 index** (i.e., spectral type) for our preliminary CAFOS sample.







http://carmenes.caha.es/
Poster 2K055 @ PPVI