IPERCOOL

ISTITUTO NAZIONALE DI ASTROFISICA

UNIVERSITY OF HERTFORDSHIRE

SHANGHAI ASTRONOMICAL OBSERVATORY

OBSERVATORIO NACIONAL

IPERCOOL

EU staff-exchange network

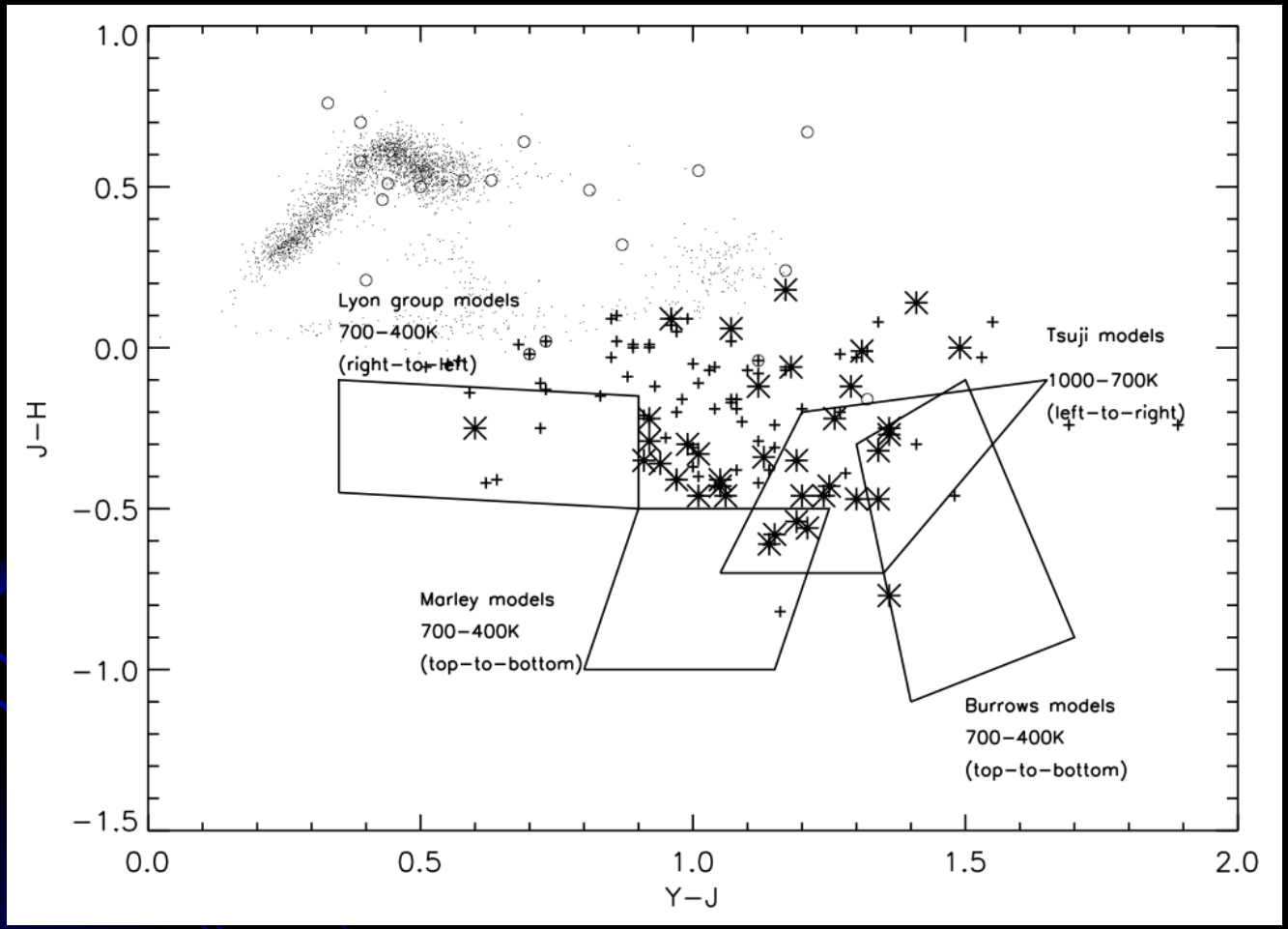
Interpretation and Parameterization of Extremely Red COOL dwarfs

Approximate start date – September 2010

Parallaxes of L and T dwarfs

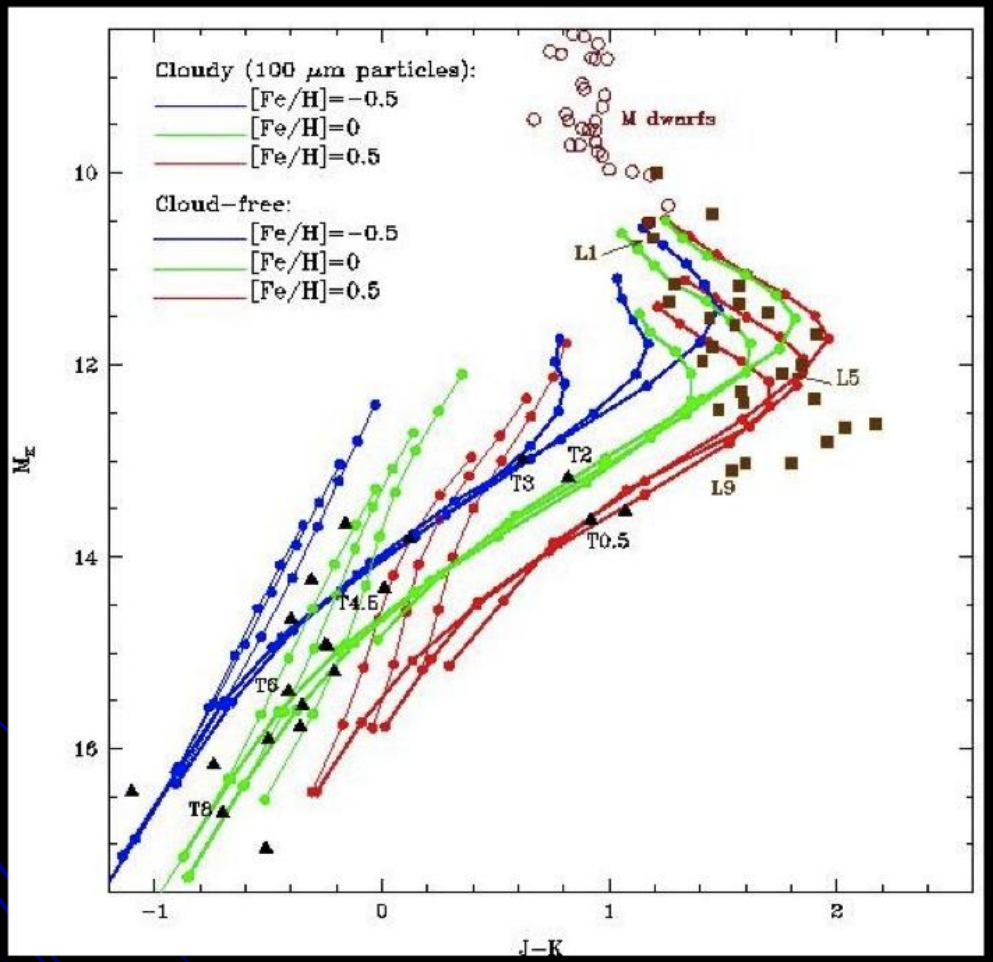
- Luminosity
- Space velocity
- Resolve model degeneracies
  - e.g. surface gravity and metallicity
- Identification of binarity
- Benchmarks for follow-up for faint companions

Observational reality



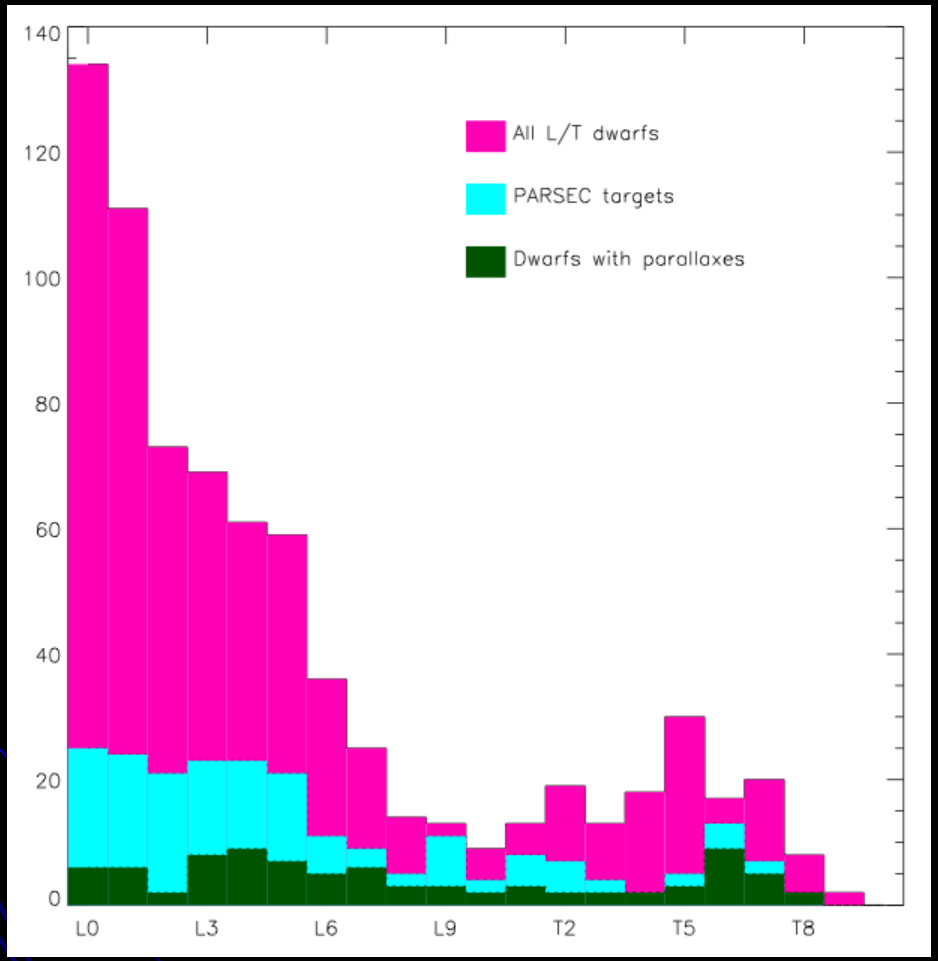
Update of Pinfield et al. 2006

Sensitivity to theory

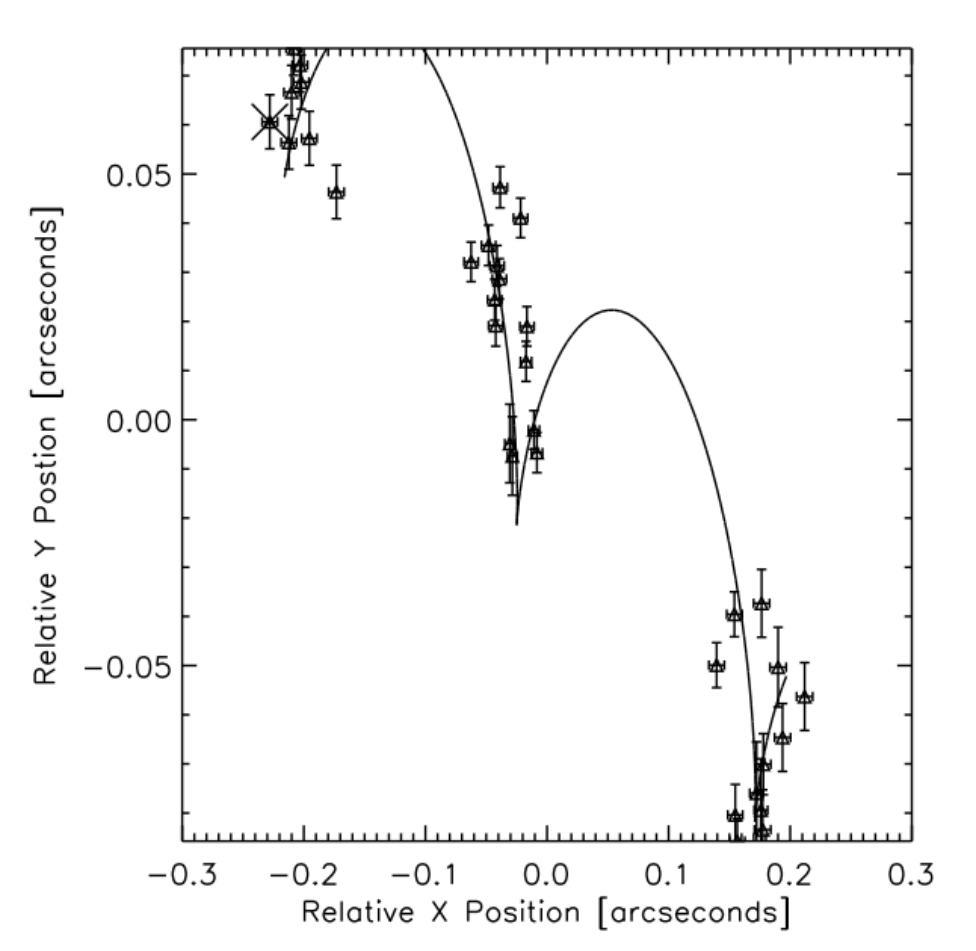


Burrows et al. 2007

“PARSEC programme” on ESO 2.2m WFI



First results



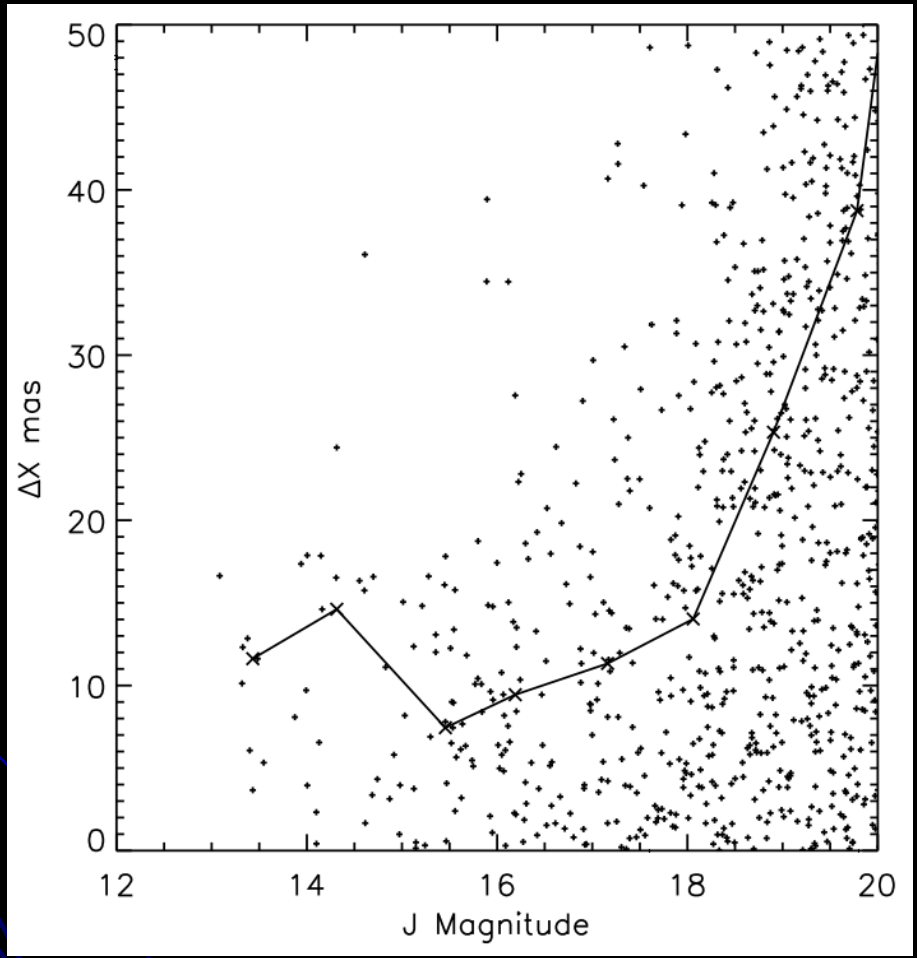
Andrei et al., in prep

Preliminary parallaxes

Table 3: Parallaxes and proper motions for a sample of PARSEC L-dwarfs.

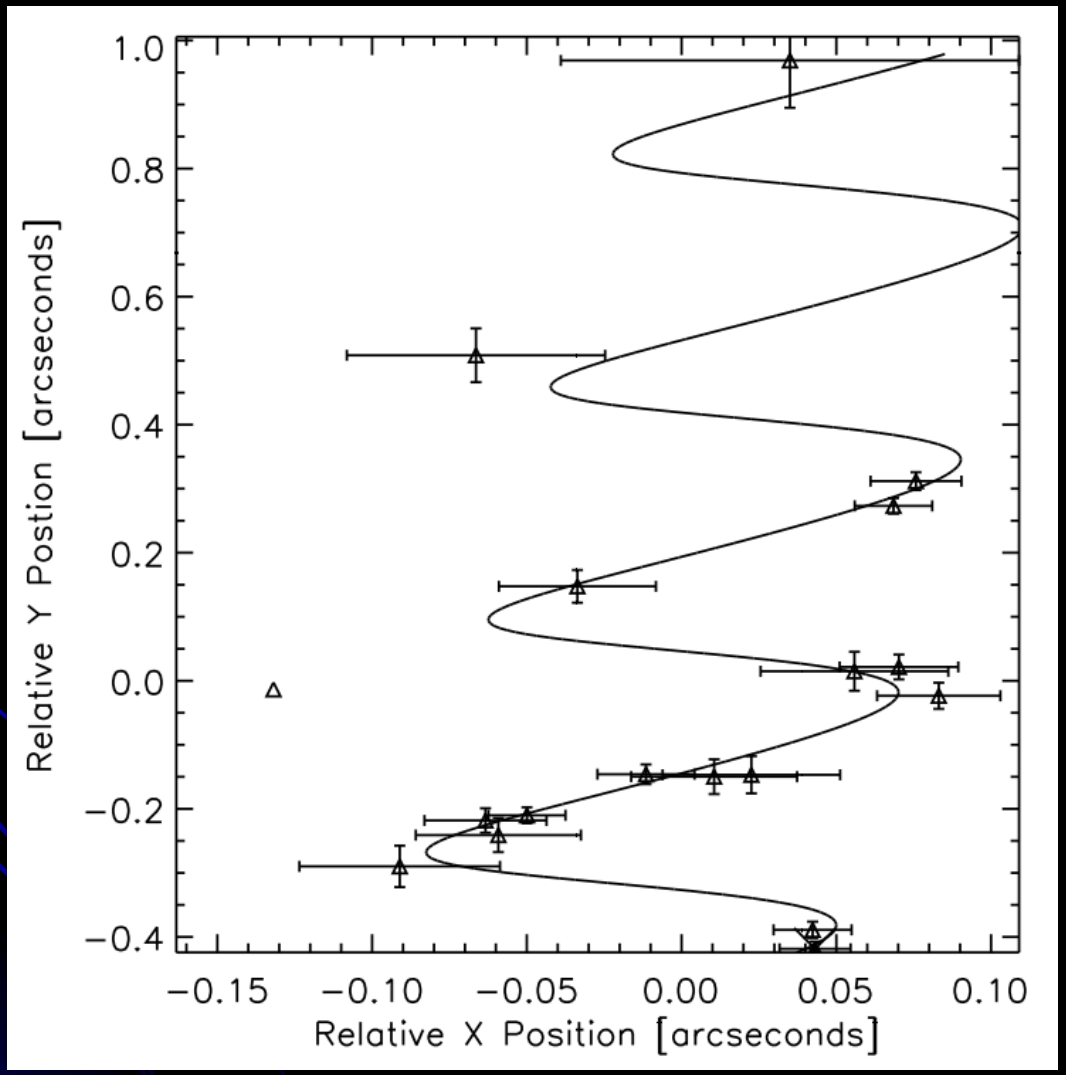
ID	α h:m:s	δ d:':"	N_*, N_f	π mas	μ_α mas/yr	μ_δ mas/yr	ΔT yrs	COR mas
0539-00	5:39:51.9	- 0:58:58.3	31, 12	82.0 ± 3.1	157.0 ± 4.8	321.6 ± 3.9	1.40	1.13
0641-43	6:41:18.5	-43:22:28.0	14, 29	55.7 ± 5.7	215.9 ± 8.9	612.8 ± 9.0	1.95	1.00
0719-50	7:19:32.0	-50:51:41.3	22, 34	32.6 ± 2.4	198.1 ± 3.2	-61.4 ± 3.9	1.98	0.90
0835-08	8:35:42.2	- 8:19:21.7	9, 20	117.3 ± 11.2	-519.8 ± 7.7	285.4 ± 10.5	1.96	1.08
0909-06	9:09:57.3	- 6:58:18.8	20, 23	42.5 ± 4.2	-184.0 ± 2.5	20.7 ± 3.0	2.08	1.19
1004-33	10:04:39.5	-33:35:21.9	16, 22	54.8 ± 5.6	243.5 ± 4.0	-253.2 ± 3.4	2.06	9.51
1018-29	10:18:58.5	-29:09:54.2	32, 23	35.3 ± 3.2	-340.8 ± 1.8	-94.0 ± 2.7	2.08	1.01
1539-05	15:39:42.1	- 5:20:41.5	17, 18	64.5 ± 3.4	603.1 ± 2.6	105.0 ± 3.4	2.06	1.12
1705-05	17:05:48.4	- 5:16:46.9	96, 17	44.5 ± 12.0	110.9 ± 12.1	-115.5 ± 7.1	1.98	0.59
1750-00	17:50:24.5	- 0:16:13.6	29, 39	108.5 ± 2.6	-398.3 ± 3.1	195.3 ± 3.4	2.08	0.56

“UKIDSS T dwarf programme” errors in mas

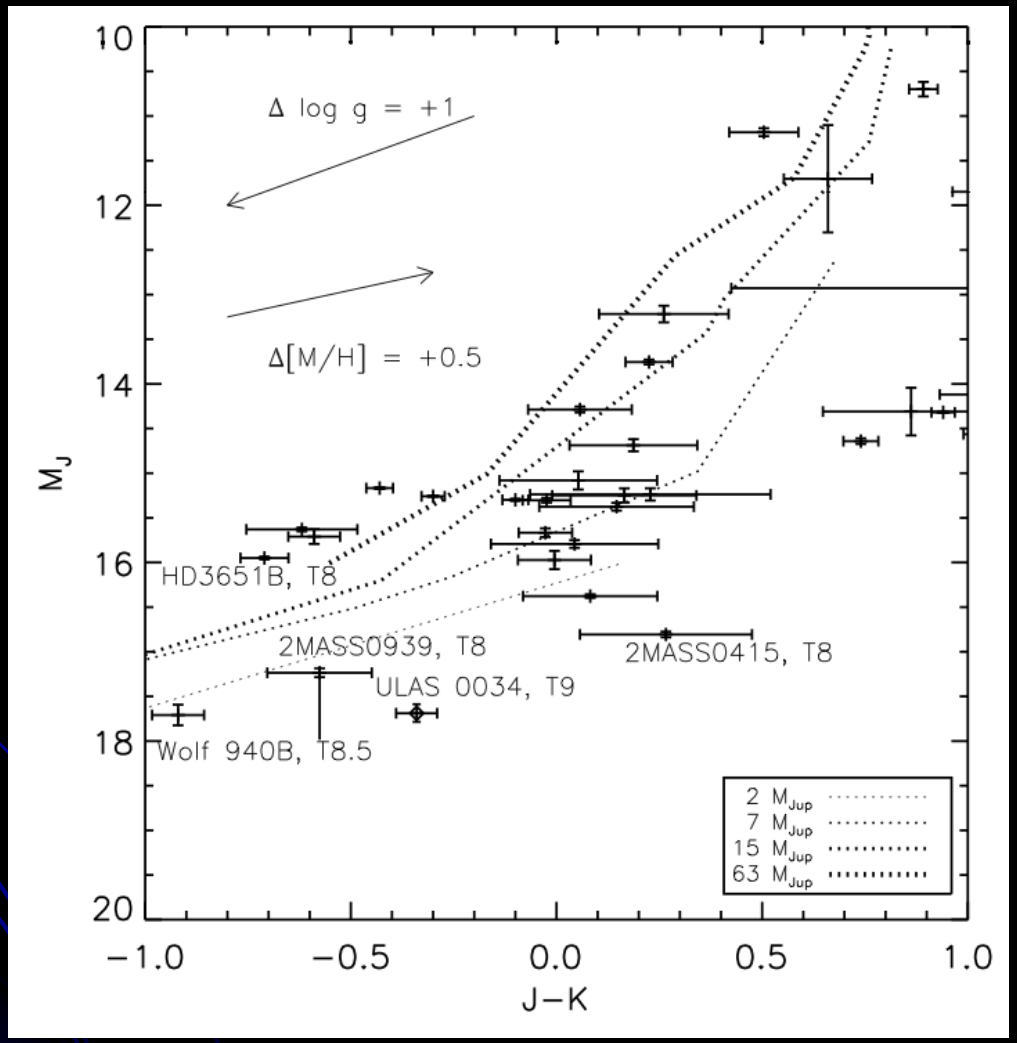


Smart et al. 2010

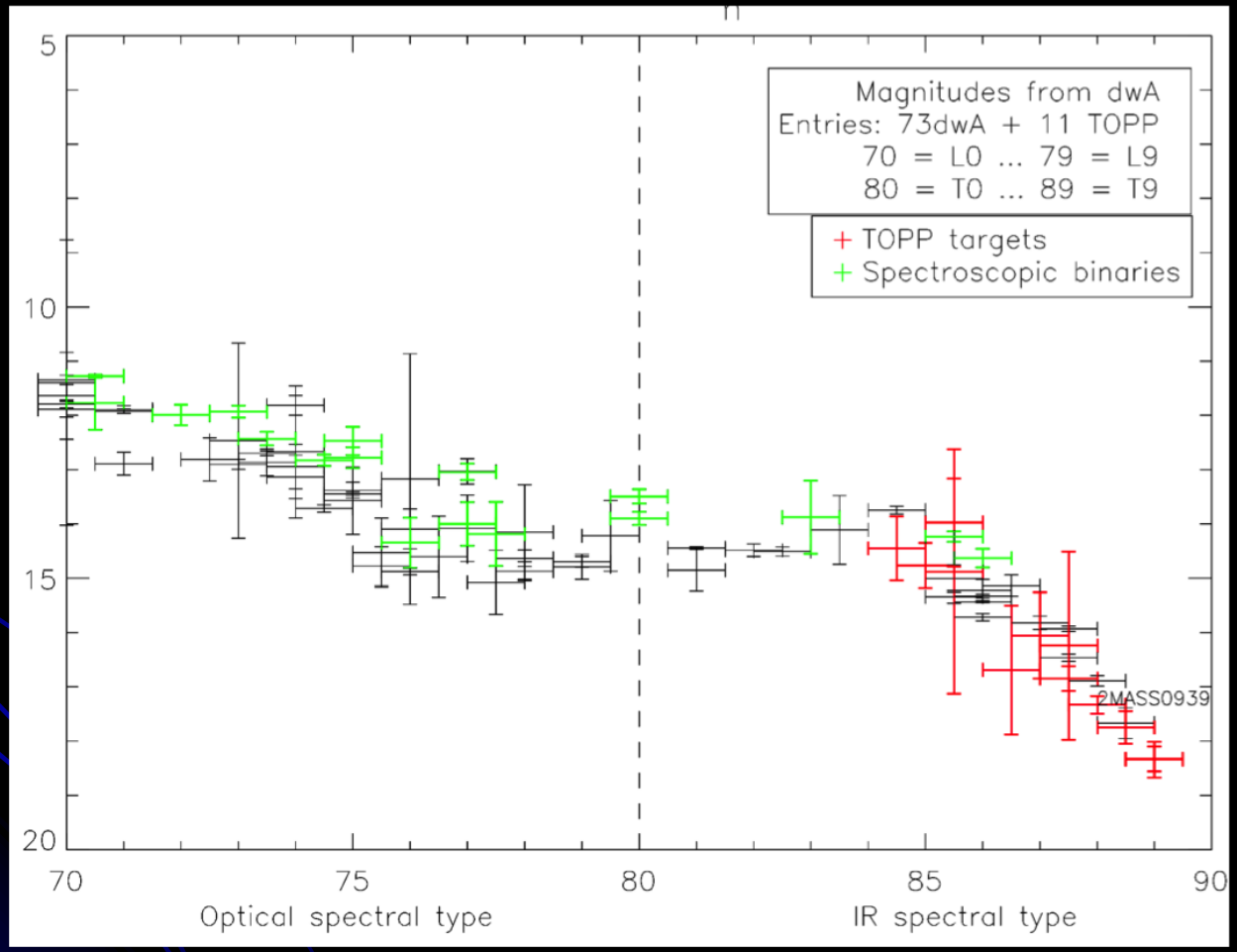
ULAS J003402.77-005206.7



Very low luminosity



Initial UKIDSS parallaxes



Marocco et al., in prep

Future

- More parallaxes programmes

NTT, Soar, Calar Alto

- Follow-up spectrscopy and high contrast imaging
- New objects please?