# TEPCat: The Transiting Extrasolar Planet Catalogue

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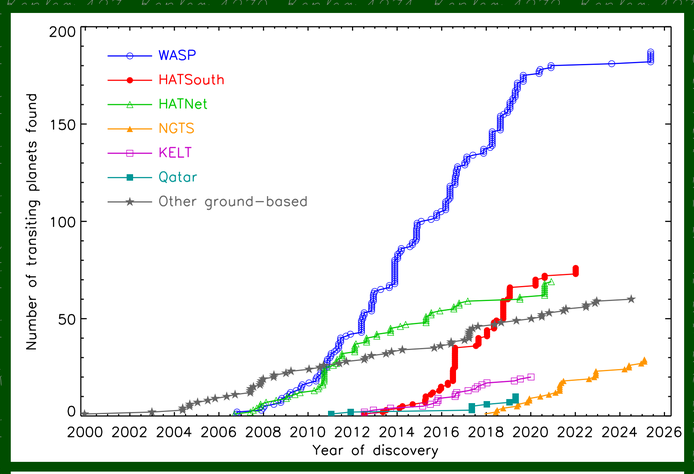
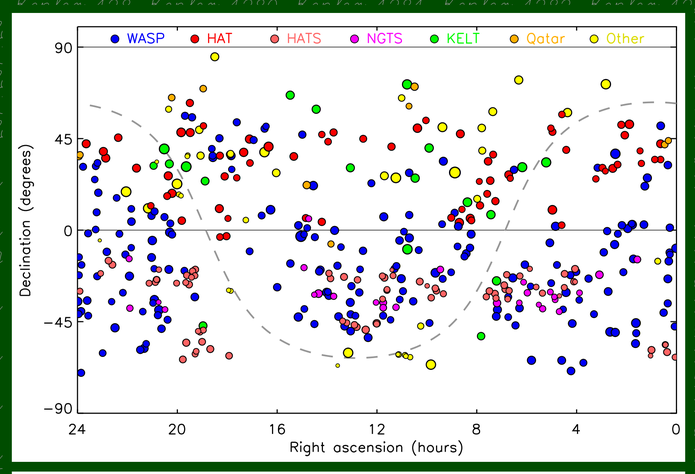
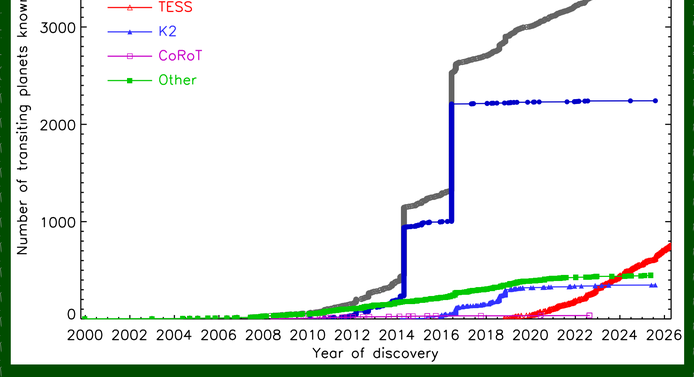
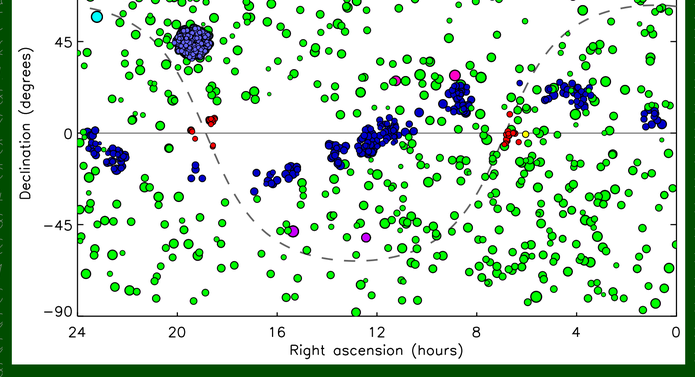
http://www.astro.keele.ac.uk/jkt/tepcat/




Plot of the number of known TEPs as a function of time. The upper panel shows discoveries made using data from ground-based telescopes. The lower panel shows all discoveries, plus subdivisions into those from the *Kepler*, TESS, K2 and CoRoT space missions. The keys give the symbols and colours used for each line. Two plots have been used to highlight the early discoveries, which were all ground-based, as well as the huge number of more recent systems found from space.

Plot of the sky positions of the known transiting planetary systems. The upper and lower panels show discoveries made using ground- and space- based telescopes. The grey dashed line is the ecliptic. It can be seen that ground-based surveys mostly avoided the crowded fields near the galactic plane. The space-based survey plot is dominated by discoveries from TESS, which has observed most of the sky, and smaller concentrations of points from the *Kepler*, K2 and CoRoT missions.

TEPCat catalogues the physical properties of all known transiting planetary systems. It is regularly updated and freely available at the URL above in multiple formats (`html`, `ascii`, `csv`) as well as relevant plots. It collects the observable and physical properties of transiting extrasolar planets (TEPs), brown dwarfs (BDs) and their host stars. It is widely used in the community for sample definition, observation planning, population studies and target selection. It was originally introduced by Southworth (2011, MNRAS, 417, 2166) and is described by Southworth (arXiv: 2602.23102). All plots in this poster were generated using the version as of 2026/03/01, at which point 3830 planets and brown dwarfs were catalogued.

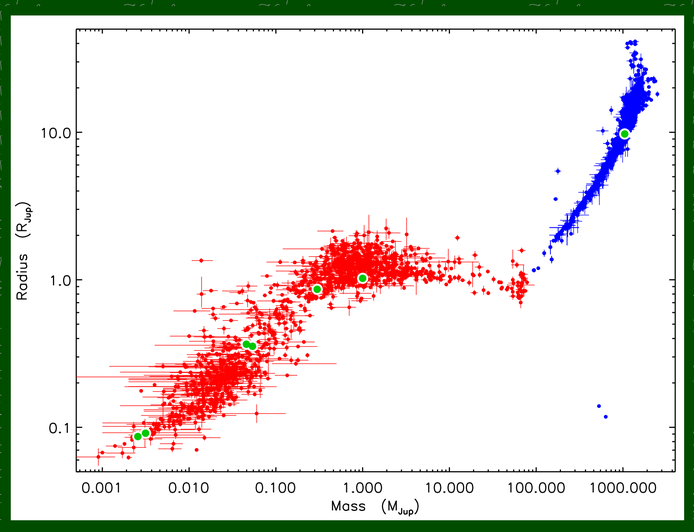
Information included:

- Planet: mass, radius, gravity, density, equilibrium temperature
- Star: mass, radius, gravity, density, effective temperature, metallicity
- Orbit: semimajor axis, eccentricity, reference transit time, orbital period
- Obliquity: true and sky-projected obliquities
- Observables: discovery date, RA, Dec, $V$ and $K$ magnitudes, transit depth and duration
- Other: errorbars for all relevant quantities, reference to discovery paper and most recent study

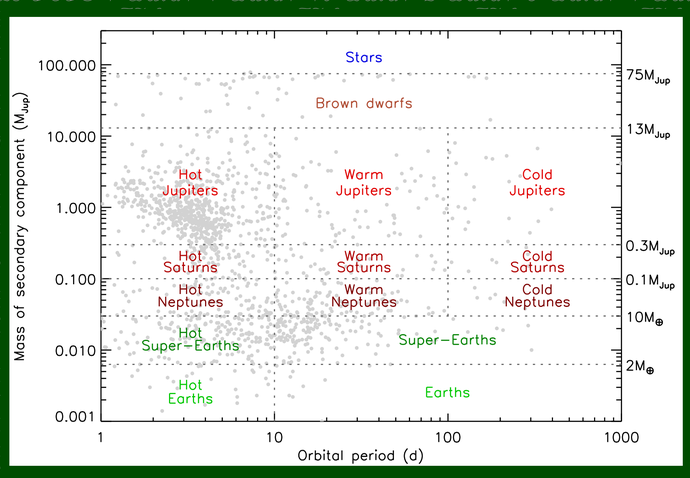
Other content:

- Summary table of the number of known planets
- Current plots of planet properties
- Changelog since September 2013
- The current content of TEPCat is archived for reference on the first day of each month

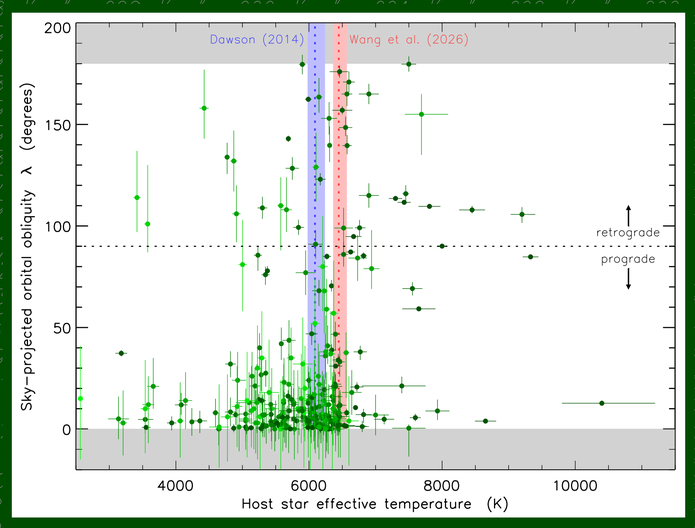
If you use TEPCat please reference the description paper, which will shortly be published in the journal *Universe* (Southworth, arXiv:2602.23102).




Mass-radius plot of the objects in TEPCat. Blue points mark the primary objects (stars) and red points the secondary objects (TEPs and BDs). The properties of largest solar-system objects are shown in green for reference. It can be seen that the TEPs and BDs have a much larger astrophysical scatter than low-mass stars. The two objects in the lower-right corner of the plot are WD 1856+534 ($M_{\rm A} = 0.61\,{\rm M}_{\odot}$, $R_{\rm A} = 0.012\,{\rm R}_{\odot}$) and ZTF J2038+2030 ($M_{\rm A} = 0.51\,{\rm M}_{\odot}$, $R_{\rm A} = 0.014\,{\rm R}_{\odot}$). The former hosts a giant planet ($M_{\rm b} < 5.2\,{\rm M}_{\rm Jup}$, $R{\rm b} = 0.95\,{\rm R}_{\rm Jup}$) and the latter a BD ($M_{\rm b} = 62\,{\rm M}_{\rm Jup}$, $R{\rm b} = 0.76\,{\rm R}_{\rm Jup}$).




Schematic diagram for classifying planets according to their masses and orbital periods. The various categories of planets are labelled. The boundary masses are shown on the right. The grey points in the background are all the secondary components (TEPs and BDs) included in TEPCat.




Sky-projected orbital obliquity ($\lambda$) measurements in TEPCat. The green points are $\lambda$ measurements colour-coded according to the sizes of their error bars: more uncertain measurements are shown in lighter green so they do not unduly dominate the plot. Only measurements with uncertainties below 30° are plotted. Values of $\lambda$ outside ±180° are moved into this interval by adding or subtracting 360°. The absolute values of $\lambda$ are plotted, and regions outside the interval [0,180°] are grey-shaded. Two proposed boundaries between hot and cool stars are plotted for reference: $T_{\rm eff} = 6090^{+150}_{-110}$ from Dawson (2014, ApJ, 790, L31) and $T_{\rm eff} = 6447^{+85}_{-119}$ from Wang et al. (2026, ApJ, 996, L7).