Exoplanet – planets outside Solar System
Exoplanet passing between host star and observer
Measurable dip in brightness
Used to constrain planetary parameters
Composition, classification, atmosphere and habitability

Image credit: NASA's Goddard Space Flight Centre
TESS

- Transiting Exoplanet Survey Satellite
- All-sky survey – 200,000 bright stars
- 26 sectors, 24x96 degrees
- Full-frame images, light curves
- TOIs (Tess Objects of Interest) verified with ground-based follow-up

Image credit: NASA's Goddard Space Flight Centre
NGTS

- **Next Generation Transit Survey**
- Paranal Observatory, Chile
- Array of 12 telescopes (0.2m)
- Searching for Neptune-sized and super-Earth planets
- High precision – down to 3 Earth radii (West et al, 2019)[1]
- Follow-up on TESS transit candidates

Image credit: G. Lambert, NGTS
CURRENT AND FUTURE WORK

- Plotting TESS light curves (Python)
- Modelling transits in **EXOFAST**
- Using BLS algorithm to search for exoplanets in NGTS and TESS light curves
- Integrating follow-up data
- Analysing dataset in terms of Transit Timing Variations (TTVs)
- New planetary systems: **TOI-836**

Gliese-581 (artist’s impression)
Image credit: ESO
HATS-30 – LIGHT CURVE (SECTOR 2)

Key:
- TESS data
- EXOFAST model