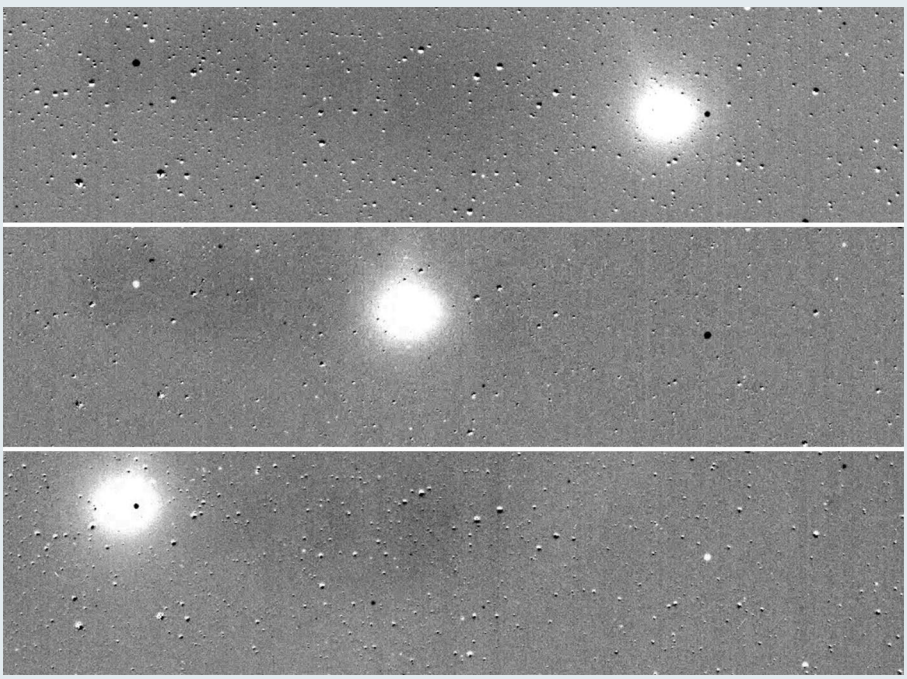
EXOPLANETS

Cometary photobomb

It will not be the reason the Transiting Exoplanet Survey Satellite (TESS) is remembered, nor will it be a part of its enduring legacy, but among the first images acquired by this space telescope and diffused to the public will always be … those of a comet (pictured). TESS, which was launched on 18 April of this year, started to acquire data for testing on 25 July. And on that very day it managed to serendipitously obtain a sequence of images of comet C/2018 N1, itself discovered by the NEOWISE mission only one month earlier. The whole sequence, which can be viewed as a video, shows other interesting features in addition to the comet, such as several moving asteroids and, towards the end, a faint beam that was attributed to stray light coming from Mars (which was particularly bright at the time).

As its name suggests, TESS's scientific objective is not to obtain images of comets. During its nominal two-year primary mission, it will survey the sky almost in totality through a series of pointing swaths in order to detect new extrasolar planets. In this sense, TESS sets itself in continuity with the Kepler spacecraft, which coincidentally has almost exhausted its fuel at the time of writing. TESS will not have any such fuel-related limitations, as the orbit insertion manoeuvres were performed so well that it will have stable operation until ~2038. TESS, in any case, will use a different hunting strategy to Kepler: if the latter was staring at the same sector of the sky (approximately 0.25% of the total) in order to increase transit sensitivity and have the possibility of capturing planets with long orbital periods, TESS's all-sky monitoring will generate a much larger sample of stars to search for planets, albeit at a more limited distance (200–300 light years, compared with ~3,000 for Kepler). Projections indicate that TESS will be able to discover several times more exoplanets than the already prolific Kepler (2,650 confirmed detection as of mid-August 2018), including several tens of Earth-sized ones.



Credit: Massachusetts Institute of Technology/NASA's Goddard Space Flight Center

In comparison to such grand scales, a comet's image is mostly anecdotal. However, the imaging could have helped to study the sensitivity and the response of the detector to faint light and moving targets for TESS's science observations. And indeed this work has already begun: the TESS Science Team has started looking for planet candidates in the more than 1,000 transits detected by preliminary analysis of TESS's first data. ❐

Luca Maltagliati

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