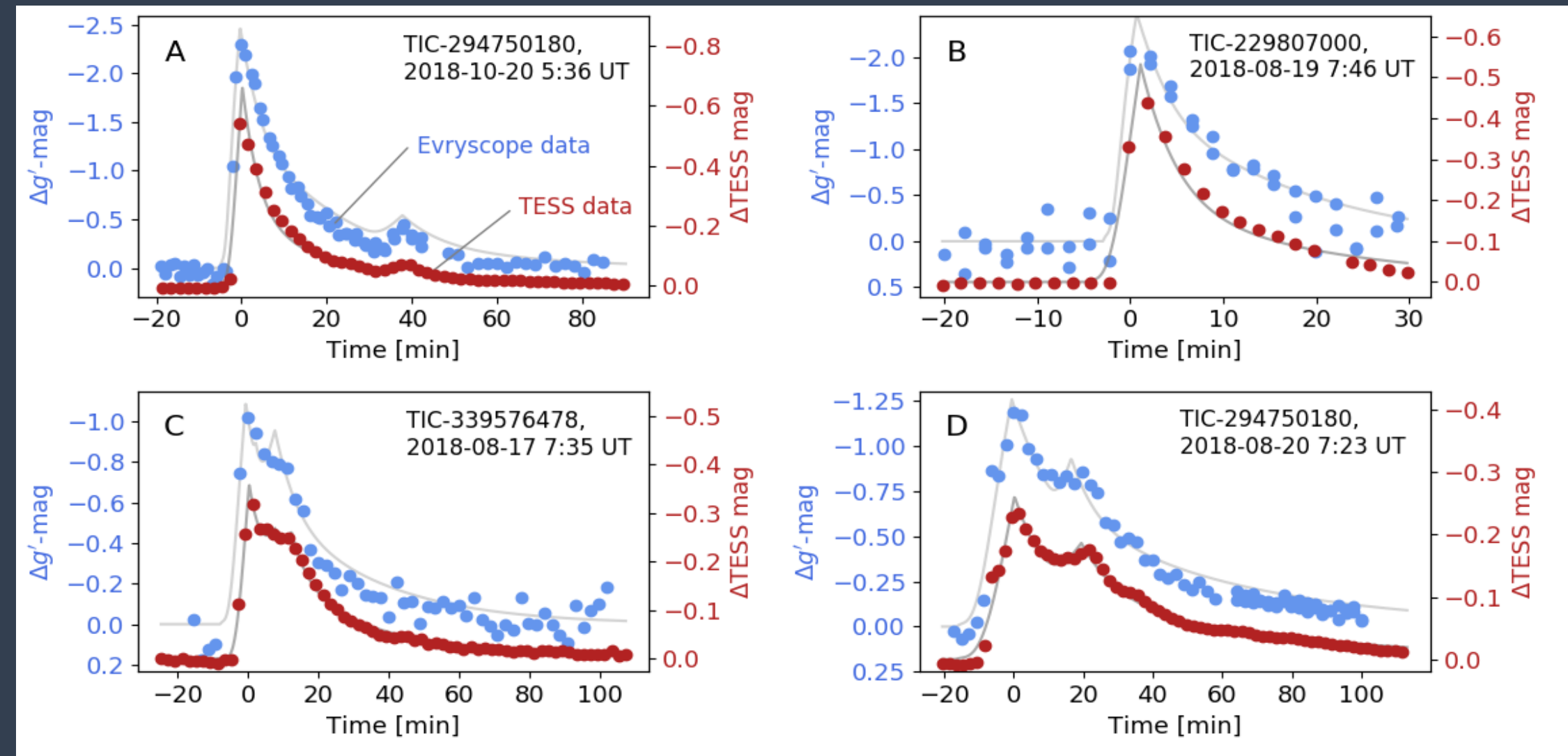


A missing piece of the habitability puzzle: M-dwarf superflare temperatures observed with multi-facility, multi-wavelength monitoring

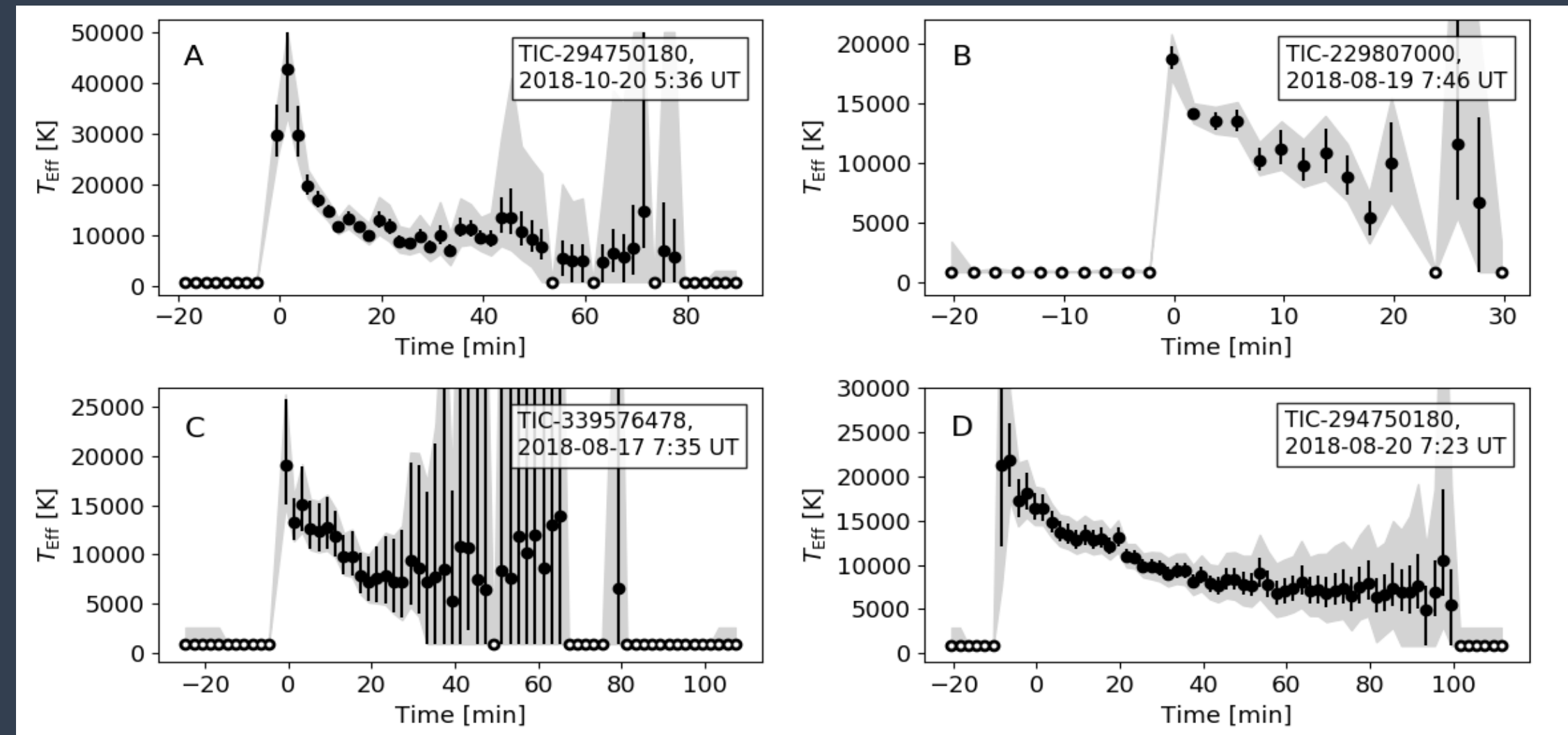
Ward Howard, Hank Corbett, Nicholas M. Law, Jeffrey K. Ratzloff, Nathan Galliher, Amy L. Glazier, Ramses Gonzalez, Alan Vasquez Soto

1. 40 M-dwarf superflares observed simultaneously with Evryscope and TESS



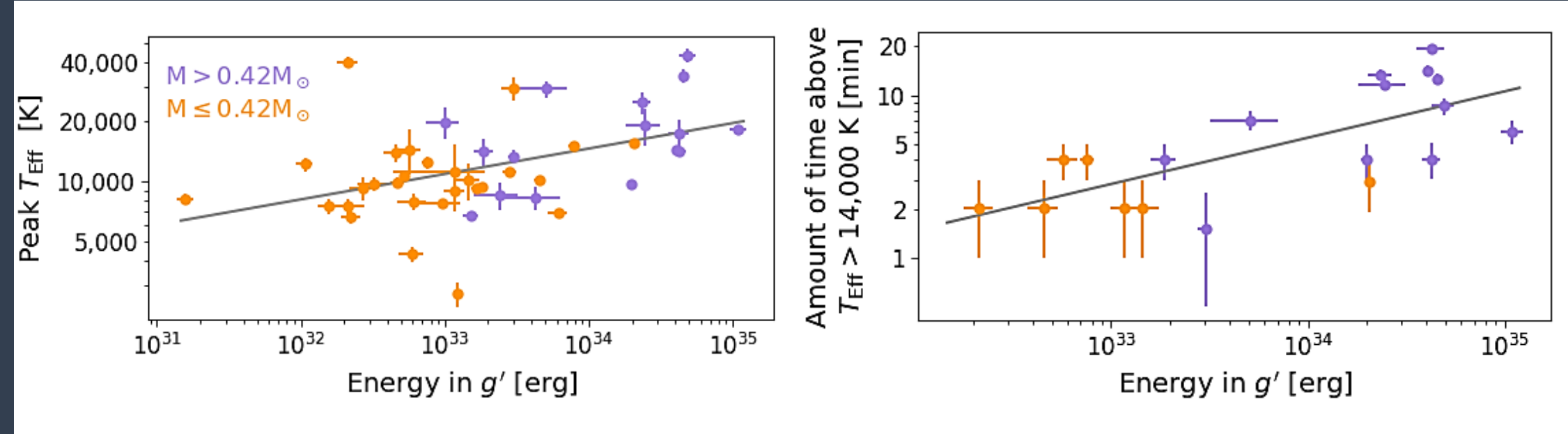
2. Estimate blackbody temperatures

Temperatures of all superflares estimated at 2 min cadence from g'/T broadband flux ratio



3. Newly-derived scaling laws

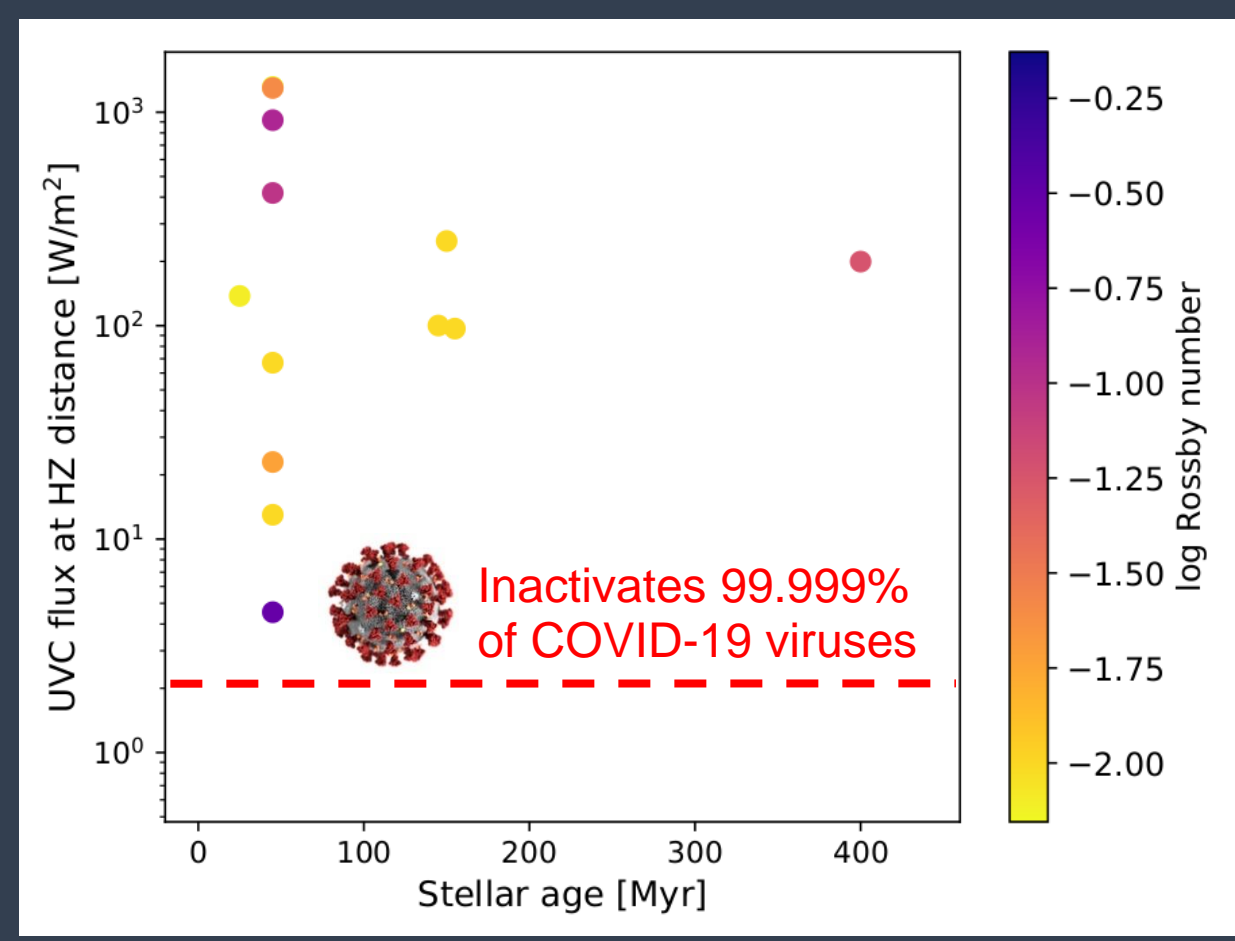
For the first time, M-dwarf superflare temperatures are shown to increase with energy in a statistical sample.



4. Habitability impacts of hot flares

We find HZ planets orbiting <200 Myr stars often receive 10^2 to 10^3 W m⁻² of UV-C radiation during superflares

Proxima b likely experienced significant water loss from the long-term effects of a time-averaged XUV flux of <1 W m⁻² (Ribas *et al* 2016)



Presenter: Ward Howard (on the postdoc job market)

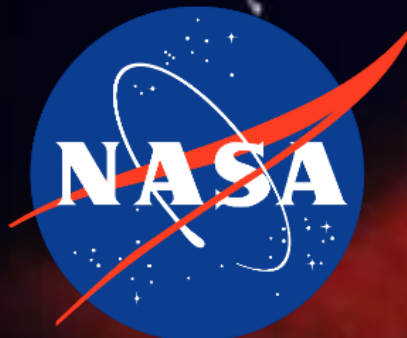
The largest superflares are hotter! From the first statistical sample of M-dwarf superflares observed at 2 min cadence with multi-color, multi-facility photometry.



Howard et al. 2020, ApJ 902, 115 (arXiv:2010.00604)



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