Astronomers have found two worlds around distant stars with such extreme weather they blow away even the wildest conditions in our own solar system.	*Animation excerpts*
[Titles]	*Opening titles*
Our Earth is pretty pleasant compared to the other planets in the solar system. The hottest day in the Sahara desert is downright chilly compared to the molten lead temperatures at the surface of Venus. And the worst category-5 hurricane is barely a dust devil next to the Earth-sized cyclones in the atmosphere of Jupiter.	*Host* *Corresponding photos to side*
Could there be other worlds out there with even wilder weather than we see in our solar system? Astronomers using NASA's Spitzer Space Telescope think they've found two that are all that and more.	*Spitzer animation*
Instead of just exoplanets, let's call them X-planets, since they've got the most extreme conditions we've ever seen. Their official names, HD 149026 b and HD 189733 b, are based on the catalog numbers of their host stars. Personally, I'm going to call them something unofficial but easier to remember: Cyclops and Storm, the hottest and windiest known planets.	*Host* *Labels and images to side*
Both of them are so-called "Hot Jupiters," a class of gas giants, like the outer planets in our solar system. But their orbits would fall well inside that of Mercury, and ***that*** makes them hot. It also makes their years short, taking only two or three Earth days to orbit their stars.	*NEW GFX* *Zoom in and out of solar system showing conext to Jupiter, Mercury*

Of course there's hot, and then there's HOT. Our first X-Planet, Cyclops, can be found in the constellation Hercules orbiting a sun-like star that's about 250 light years away.	*NEW GFX?* *Zoom through local starfield (can get from SCISS?)*
Its day side is a blistering 2,300 degrees Kelvin according to infrared Spitzer observations made by astronomer Dr. Joe Harrington and his team. That's a lot hotter than a blast furnace and sets the known record for planetary temperatures.	*Host* *Show temp labels including 3,700 F equiv.*
If we could actually see it, this Saturn-sized world wouldn't look like anything in our solar system. To reach such a high temperature, astronomers calculate that its atmosphere must absorb nearly all of the radiation from its nearby star.	*Tim's animation*
It's probably as black as this lump of coal. The only light from it would be the thermal glow from its sunward-facing hot spot. Cyclops may indeed look like a giant black eyeball with a glowing iris.	*Host* *Holding lump of coal* *NEW GFX: rotating globe to side*
A little closer to home, our other X-Planet Storm can be found in the constellation Vulpecula [vul-PECK-you-lah] at a distance of 63 light years.	*NEW GFX?* *Zoom through local starfield (can get from SCISS?)*
A team led by Dr. Heather Knutson carefully studied how Storm's brightness varied over the course of its orbit and derived the first-ever temperature map for an exoplanet. Unlike Cyclops, where the hot spot sits directly under the baking heat of its sun, on Storm it's shifted away by about 30 degrees.	*Tim's wrapper animation*

The researchers deduce this shift is caused by ferocious winds in the upper atmosphere that sweep the hot clouds around the planet before they can cool off much. The wind speeds could be as high as 9,600 km/hr, or 6,000 mi/hr. That's about 30 times faster than the jet streams in Earth's atmosphere!	*NEW GFX* *AE of labels on temp map still*
Storm's day side is about half as hot as Cyclops, but its night side only drops a couple hundred degrees due to the winds redistributing the heat.	*Host* *NEW GFX: rotating globe to side*
So how can we gather weather reports from worlds we can't even see directly? They're so far away their faint glow is completely blurred together with the much brighter light of their host stars.	*Tim's earlier star/planet blended light anim*
It's like trying to study a golf ball next to a searchlight. That's a hundred miles away. Using binoculars.	*Host?* *Simple GFX?*
Fortunately for astronomers, both Cyclops and Storm are "transiting" systems. Their planetary orbits are aligned nearly edge-on along our line of sight. When they transit in front of their stars we can learn a lot about them by measuring how much starlight they block.	*Host* *NEW GFX: motion-tracked solar system floating in palm, lifted into position*
But while stars are brightest in visible light, planets emit most of their light in the infrared. Proportionally this makes a big difference. They may still only account for less than a percent of the total light of the system, but amazingly that's enough for Spitzer's infrared detectors to measure!	*Tim's bar chart anim (already HD?)* *Cut to secondary eclipse animation (planet behind star)*

Those measurements are making astronomers the first interstellar weathermen. The 2007 record highs go to Cyclops and the record winds were logged on Storm. But records seldom last, and exoplanetary weather is a young field. Fortunately Spitzer will remain a powerful tool for studying exoplanets even after it runs out of coolant at the end of its primary mission . Expect to hear about hotter, windier, and even stranger X-Planets in the coming years.	*Host* *NEW GFX: two rotating worlds to side, names underneath*
For the Spitzer Science Center I'm Dr. Robert Hurt reminding you that there's a hidden, and extreme universe just waiting to be discovered.	