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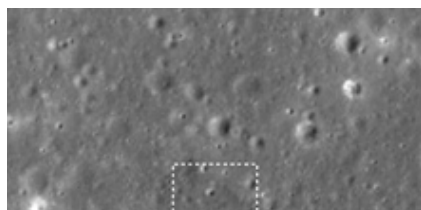
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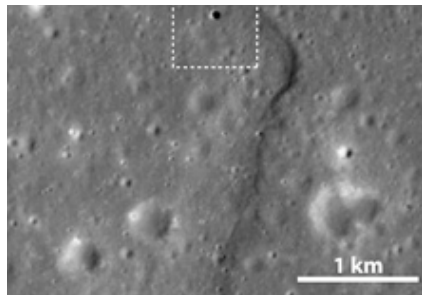


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Space agencies can't resist the dream of setting up a [moon](#) base for their astronauts, even though killjoy experts have recently [questioned the usefulness](#) of such a plan. Despite those naysayers, NASA has already ramped up efforts to [map the lunar surface](#) and even [crashed an empty rocket](#) into the surface to search for accessible water. Now, a Japanese space probe has found a big hole on the moon's surface that scientists



hope could house a lunar base some day.

Japan's Kaguya spacecraft recently captured pictures of the curious dark hole, which may open onto a large underground lava tube [[National Geographic News](#)]. If the hole does in fact lead to a lava tube, it would provide perfect shelter from the moon's harsh environment.

Lava tubes form on Earth after a volcanic eruption creates underground rivers of lava that flow to the surface. After the rivers dry out, a long hole in the ground is left behind. Volcanic activity on the moon occurred sometime between 3 and 2.5 million years ago, so scientists have searched for lava tubes, but have never found one before now. Finding such an opening could be a boon for possible human exploration of the moon. Since the tubes may be hundreds of meters wide, they could provide plenty of space for an underground lunar outpost. The tubes' ceilings could protect astronauts from space radiation, meteoroid impacts and wild temperature fluctuations [[New Scientist](#)].

The hole under study is around 300 feet deep, so it's too big to simply be a crater. Curiously, it is also in the middle of a rill—a long winding line on the moon's surface that is thought to be evidence of an underground channel where lava once flowed. However some scientists say astronauts may not simply be able to rappel down the hole, since it may be blocked by millions of years of rubble. The NASA moon orbiter [LRO](#) should be able to take more picture of the opening for further study. The findings from the Kaguya spacecraft will be published in the journal [Geophysical Research Letters](#).

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80beats is edited by Eliza Strickland, and written by Andrew Moseman and Brett Israel. This team darts through each day's science news faster than the ruby-throated hummingbird that beats its wings 80 times per second. Send ideas and praise to [[estrickland at discovermagazine dot com](mailto:estrickland@discovermagazine.com)].

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