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How would you sound on Mars?



NASA file

Astronauts on Mars would probably speak with each other on the surface through radio links — but if they were to pick up voices or sounds transmitted through Martian air, would they sound different? Acoustics experts say they would.

By Alan Boyle

4.1k

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If you could speak on Venus, you might sound like a deep-voiced Smurf — while on Mars, your voice could have the shallow ring of a higher-pitched Shrek. And if you enjoy the sound of a waterfall on Earth, wait until you hear what that tinkling would sound like on Titan. Researchers at the University of Southampton have simulated all these sounds, based on the physics of planetary atmospheres.

"This is the real deal," Tim Leighton, an acoustics professor at the British university, [said in a news release](#). "It's as close as we can get to the real sound of another world until a future probe or astronaut actually goes there and listens to what it really sounds like."

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The sounds are being shown off over the next week at the [Astrium Planetarium at INTECH](#), near Winchester, as part of a show titled "Flight Through the Universe."

"Hearing the sounds communicates ideas about the different atmospheres and highlights the sheer alienness of the other worlds in our solar system," planetarium manager Jenny Shipway said. "There is interest in this [software](#) from other planetariums worldwide, and we're very proud to be hosting this world first."

Simulation software

Leighton and his colleagues have been developing the audio simulation software for years, in part to determine what sounds a Titan probe might record if it were to [splash down in a lake of hydrocarbons](#) during a future space mission. The software can tweak the pitch and timbre of sounds ranging from thunder and whirlwinds to music and the human voice, depending on atmospheric composition, pressure and fluid dynamics.

"On Venus, the pitch of your voice would become much deeper," Leighton said. "That is because the planet's dense atmosphere means that the vocal cords vibrate more slowly through this 'gassy soup.' However, the speed of sound in the atmosphere on Venus is much faster than it is on Earth, and this tricks the way our brain interprets the size of a speaker."

He suggests that our brain has been fine-tuned this way "to work out whether an animal call in the night was something that was small enough to eat, or so big as to be dangerous." On other planets, however, that fine tuning can lead to different impressions.

"When we hear a voice from Venus, we think the speaker is small, but with a deep bass voice," Leighton said. "On Venus, humans sound like bass Smurfs."

He said the situation would be different on Mars. "The lower sound speed on Mars does not lower the pitch of the voice," Leighton told me in a follow-up email. "It makes the speaker seem slightly larger, but still in pitch. In fact, the atmosphere of Mars would raise the pitch of the speaker's voice slightly, because of a density effect."

Microphone missions

Other groups have produced [simulations of extraterrestrial sounds](#), based on their own assumptions about atmospheric effects. The nonprofit Planetary Society actually helped set up experiments to record and send back sounds from the Martian surface — but one mission that carried the [Mars Microphone](#) failed (Mars Polar Lander, in 1999), while a French mission that was due to carry another microphone was canceled (Netlander). NASA's Phoenix Mars Lander had a small microphone on its Mars Descent Imager, but it [produced no data](#) during that 2008 mission.

Leighton told me he didn't think the Planetary Society's simulated sounds were quite right, and he sent along a sampling of his own simulations. The differences between the sounds are actually subtler than I expected them to be, except for the Titanian waterfall, which actually sounds pretty alien. See what you think after listening to these sound clips:

- [A reading of "Mary Had a Little Lamb," Earth-style](#)
- ["Mary Had a Little Lamb" on Venus](#)
- ["Mary Had a Little Lamb" on Mars](#)
- ["Mary Had a Little Lamb" on Titan](#)
- [Waterfall on Earth](#), and the [simulated analog on Titan](#)
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In addition to Leighton, the Southampton team members who are researching extraterrestrial acoustics include Professor Paul White and M.Sc. students Nikhil Banda and Benoit Berges. Leighton has also worked with Andi Petculescu at the University of Louisiana at Lafayette to study how voices and musical instruments would sound on other worlds.

Alan Boyle is msnbc.com's science editor. Connect with the [Cosmic Log](#) community by "liking" the log's [Facebook page](#), following [@boyle on Twitter](#) or adding [Cosmic Log's Google+ page](#) to your circle. You can also check out "[The Case for Pluto](#)," my book about the controversial dwarf planet and the search for other worlds.

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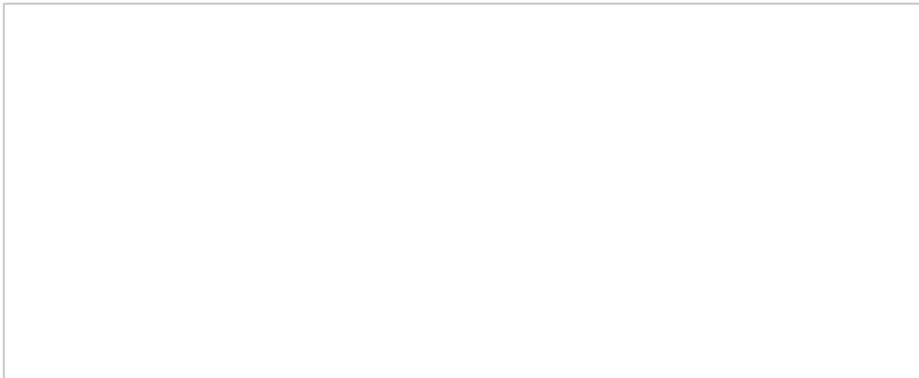
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