

The hills and valleys of Earth's largest salt 'flat'

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Using a new twist on standard Global Positioning System (GPS) technology, a team of scientists has found that Earth's largest salt flat is rougher than expected, according to a new report led by Adrian Borsa of Scripps Institution of Oceanography at UC San Diego and published in *Geophysical Journal International*.

Borsa and his team studied the salar de Uyuni in southwestern Bolivia, which is both a popular tourist destination and a potential calibration site for Earth-orbiting scientific instruments. It had never before been surveyed on this scale using modern techniques.

Although the salar appears to be perfectly flat to the eye, by applying an innovative method of error correction to their data, the team was able to identify broad features ranging in height from a few centimeters to half a meter and extending over distances of tens of kilometers or more.

Earlier maps do not show any surface relief on the salar de Uyuni. By mapping the surface to the accuracy of a few centimeters, the research team uncovered previously hidden features -- hills, ridges and valleys -- and opened the salar for use as a ground reference site for highly accurate satellite-based ranging instruments. "We had no idea these features existed," said Dr. Borsa, "but they matter to anyone who uses the salt flat to calibrate satellite altimeters."

The scientists' most unexpected finding was that the broadest topographic features on the salar correlate well with the increase in the

strength of gravity at the surface that results from dense rock buried underneath salar sediments. Just as the ocean surface rises over denser seamounts, the salar surface also rises and falls to reflect the subsurface density variations. This effect has never before been observed on land.

Source: Wiley-Blackwell

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