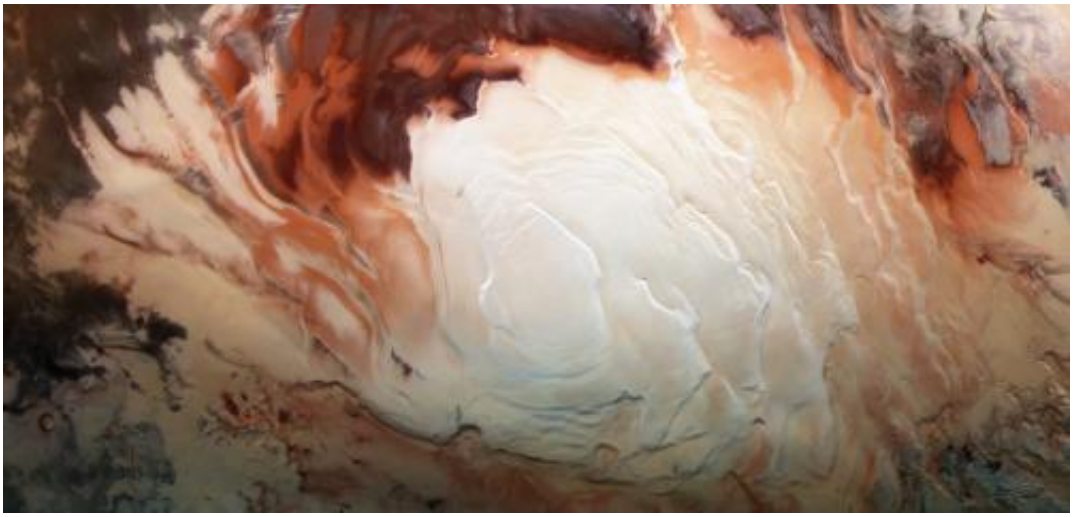
Image: The icy cap at Mars' south pole

February 10 2015



Credit: ESA/DLR/FU Berlin / Bill Dunford

Swirls of chocolate, caramel and cream – this image is definitely one to trigger sweet-toothed cravings. Smooth cream-coloured plateaus surrounded by cocoa-dusted ridges interspersed with caramel-hued streaks create a scene reminiscent of a cosmic cappuccino.

This picture is, perhaps surprisingly, from ESA's Mars Express, which has been exploring and imaging the martian surface and atmosphere since 2003. We may be used to seeing numerous images of red and brown-hued soil and ruddy landscapes peppered with craters, but the Red Planet isn't always so red.

The bright white region of this image shows the icy cap that covers

Mars' south pole, composed of frozen water and carbon dioxide. While it looks smooth in this image, at close quarters the cap is a layered mix of peaks, troughs and flat plains, and has been likened in appearance to Swiss cheese.

The southern cap reaches some 3 km thick in places, and is around 350 km in diameter. This icy region is permanent; in the martian winter another, thinner ice cap forms over the top of it, stretching further out across the planet and disappearing again when the weather warms up.

The cap is around 150 km north of Mars' geographical south pole and Mars Express has shed light on why this ice cap is displaced. Deep impact craters – notably the Hellas Basin, the largest impact structure on the entire planet at 7 km deep and 2300 km across – funnel the strong winds that blow across Mars towards its southern pole, creating a mix of different low- and high-pressure systems. The carbon dioxide in the polar cap sublimates at different rates in these regions with contrasting pressure, resulting in the cap's lopsided structure.

Mars Express imaged this area of Mars on 17 December 2012, in infrared, green and blue light, using its High Resolution Stereo Camera. This image was processed by Bill Dunford, using data available from the ESA Planetary Science Archive.

Provided by European Space Agency