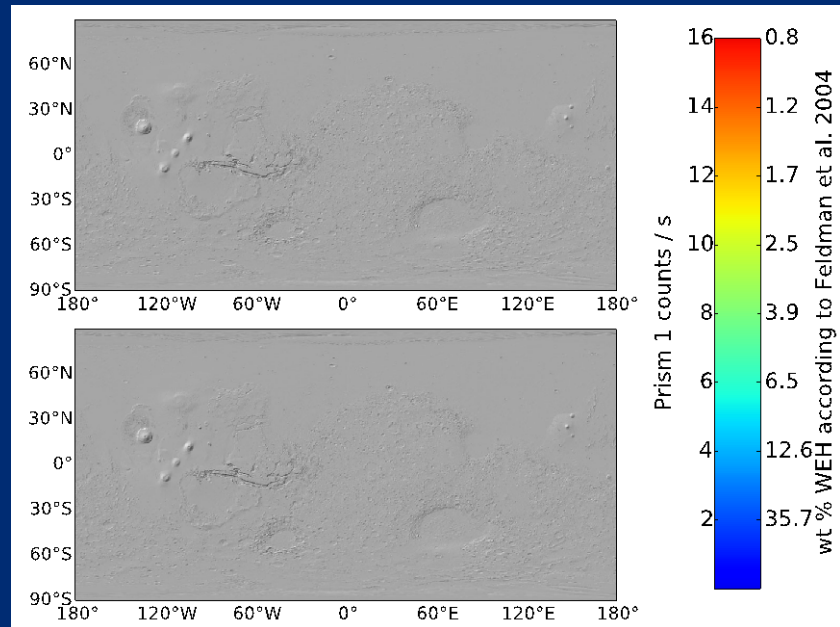


# A Fresh Look at Older Mars Odyssey Neutron Spectrometer Data Yields a Surprise at the Equator

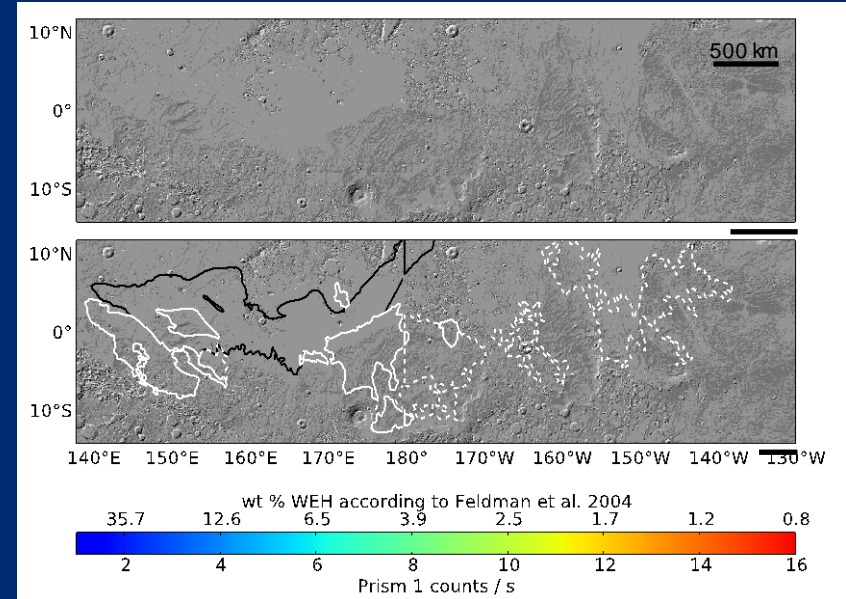
Image-reconstruction has improved the spatial resolution of Mars Odyssey Neutron Spectrometer (MONS) data, which show where H exists near the surface, by a factor of 2 (*left-hand figure*).

This improvement revealed H enhancements, potentially in the form of water, that were previously too small to be seen. The Medusae Fossae Formation



(MFF), where radar-sounding has suggested the presence of low-density volcanic deposits or water ice, was found to be the most H-rich equatorial region. If the detected H were in the form of water then it would constitute over 35 % of the mass of parts of the deposit (Water Equivalent Hydrogen, WEH, *right-hand figure*), consistent with the presence of excess, pore-filling ice.

However, at the equator ice is not stable at any depth. Thus the deposit's continued presence, perhaps as hydrated minerals, is surprising.



Figures: MONS epithermal data before (above) and after (below) reconstruction. In the above figure, the white contours show the lobes of the MFF and the black contour outlines a lava flow. The black bars in the bottom right of the panels show the resolutions of the two data sets.

**An improved-resolution map of the MONS epithermal neutron data was created and reveals substantial, unexpected H deposits near the equator.**