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Deltas in Xanthe Terra as seen by the High Resolution Stereo Camera (HRSC)

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HRSC images taken in MEX orbits 894, 905, and 927 show several fans and delta-like deposits both at the mouths of channels debouching into impact craters and within the valleys incised into the Xanthe Terra highlands. These fluvial and possibly lacustrine deposits may contain important information about the hydrologic and climatic conditions at the time of their formation. We constructed Digital Elevation Models (DEM) and multispectral orthoimages from HRSC stereo data, DEM from Mars Orbiter Laser Altimeter (MOLA) data, and mosaics from Themis-IR nighttime images and Mars Orbiter Camera (MOC) images. We concentrate on two deposits in impact craters (a larger one at 11.75°N/313.16°E and a small one 8.5°N/312°E). The larger deposit is situated at the mouth of Sabrina Vallis. Using HRSC stereo data (Fig. 1), we calculated a surface area of about 220 km2 and a volume of $>$6 km3 (as compared to a size of 115 km2 and a volume of $<$6 km3 of the fan-deposit described by Malin & Edgett [2003]). MOC images show that at least the lower distal parts of the deposit displays a fine-scale layering at the limit of the MOC image resolution (few meters per pixel). The smaller deposit is situated inside a small, 6 km-diameter impact crater. The most distal portion of the Nanedi Valles system breaches the wall of this crater at its southern rim. The deposit is clearly made of material transported down Nanedi Valles. Its surface shows a distributary pattern of conduits. The small crater also has a possible outlet at its eastern rim, which connects to the Hypanis Valles system in the north. The assemblage of landforms here might be indicative of clastic sedimen-

tation in a standing body of water. From the morphology and morphometry of these deposits, and from the analyses of the transport processes inside Nanedi Vallis, we try to put constraints on the hydrological and climatic evolution of the Xanthe Terra region.