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The 2018 Martian Global-Scale Dust Storm over the South Pole studied with VMC onboard Mars Express

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The Visual Monitoring Camera (VMC) on Mars Express has been regularly obtaining wide and narrow angle color images of Mars since 2007. The instrument was initially an engineering camera transformed into an outreach instrument but its observations of Mars proved to have scientific capabilities for a number of studies of atmospheric processes where global views of the planet or limb images are particularly useful (Sánchez-Lavega et al., Icarus, 299, 194, 2018; J. Geophys. Res., 123, 3020, 2018). The 2018 (MY 34) Global-Scale Dust Storm started on Acidalia Planitia around May 30-31 (Ls $\sim$184º) and developed over months. Based on frequent VMC images obtained since June 17 we show that the storm penetrated the South Polar Cap around June 23-25 (Ls $\sim$199º) with the dust extending across a large part of the pole. In this work we measure the horizontal motions of aerosols using cloud tracking in VMC images. We find peak velocities of 110$\pm$10m/s at a distance of 1500km from the South Pole. An analysis of VMC limb images shows that the dust reached in some places altitudes of 50-70 km.