Episodic Dust Storm Observations in Martian Year 36 and 37, by the EXI Camera of the Emirates Mars Mission. Claus Gebhardt[1,2], Bijay K. Guha[2], Roland M. B. Young[3], Michael J. Wolff[4], [1]Department of Physics, College of Science, United Arab Emirates University, Al Ain, United Arab Emirates, [2]National Space Science and Technology Center, United Arab Emirates University, Al Ain, United Arab Emirates, [3]Department of Physics, SUPA, University of Aberdeen, King's College, Aberdeen, UK, [4]Space Science Institute, Boulder, CO, USA.

Introduction: The Emirates Mars Mission (EMM, [1,2]) provides unique observations of Mars dust storms. The high-altitude orbit of EMM makes that possible. The EMM camera EXI (Emirates Exploration Imager, [3]) takes images of dust storms. EXI observed various dust storms since the beginning of the EMM Science Phase in Martian Year 36, solar longitude 49 (May 2021).

Data and Methods: The observation of episodic dust storm events in Martian Year 36 included different scientific highlights. EMM observed some dust storms over hours. This resulted in sequences of many dust storm images at a (sub-)hourly time step. That includes the formation and evolution of local dust storms [4,5] and large regional dust storms [6]. Some example for (sub-)hourly images of a local dust storm is shown in Figure 1.

Results: We provide an update on episodic dust storm observations by the EMM camera EXI. The focus are recent dust storm observations in the Martian Years 36 and 37. Another goal is more study on dust storm dynamics by consistency checks with data from numerical models.

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References: [1] Amiri H. E. S. et al. (2022) SSR, 218, 4. [2] Almatroushi H. et al. (2021) SSR, 217, 89. [3] Jones A. R. et al. (2021) SSR, 217, 81. [4] Gebhardt C. et al. (2023) GRL, 50, e2023GL105317. [5] Gebhardt C. et al. (2022) GRL, 49, e2022GL099528. [6] Wolfe, C. A. et al. (2023) JGR: Planets, 128, e2023JE007794.

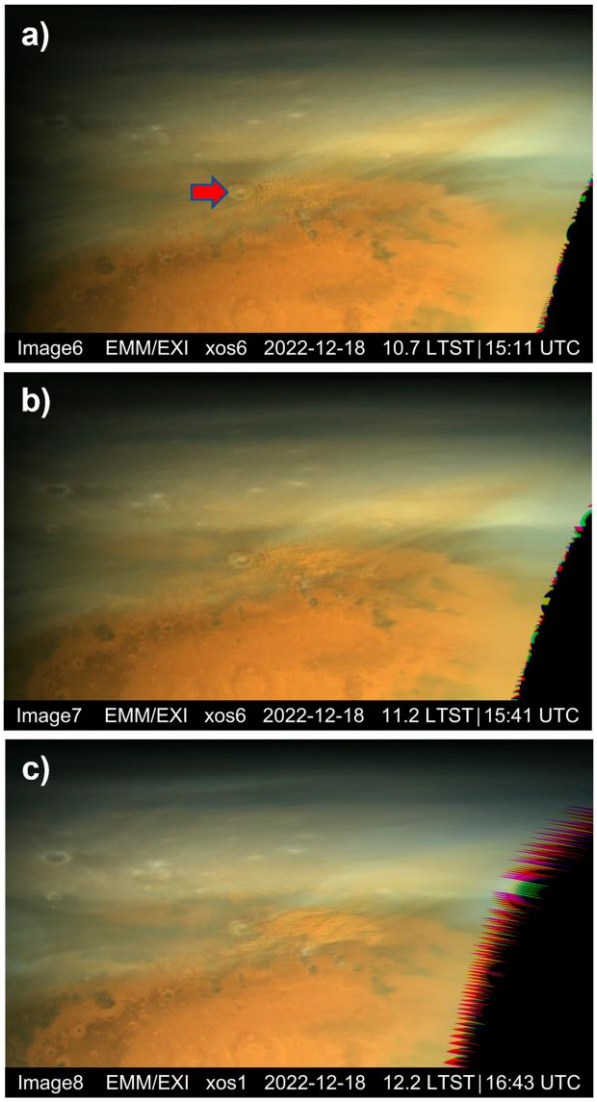

Figure 1: The EMM camera EXI took thirteen images in 7-8 hours on 18 December 2022. That includes images a) to c), shown here. These images show the growth of a local dust storm. The local dust storm is East of Lyot Crater, which is highlighted by an arrow in image a). The source of this figure is [4].