

CASE STUDIES ON MARS DUST STORMS AND EXPLORATION OF DUST CLIMATOLOGY L. S. A. L. Alketbi¹, A. Alshemeili¹, A. Mohamed¹, and C. Gebhardt¹. ¹United Arab Emirates University, National Space Science and Technology Center, Al Ain, UAE

Introduction: The dust cycle is a crucial component of the Martian atmosphere and climate. As widely known, dust greatly affects the thermal and dynamical state of the Martian atmosphere. Dust particles are radiatively active by absorbing solar radiation and absorbing/emitting infrared radiation. Thus, they heat the atmosphere and drive dynamical processes.

Moreover, the dust cycle has strong interannual variability. The latter is governed by the occurrence of dust storms which are not regular in time and highly event driven. Accordingly, knowledge on dust storms is extremely important for understanding the behavior of the Martian atmosphere and the evolution of the Martian climate.

Being a student research project, this study will analyze dust storms based on Mars Daily Global Maps (MDGMs) from the camera systems MRO/MARCI and MGS/MOC. The identification of dust storms in early development stages is followed by studying their temporal evolution. Particular attention is given to the origin, geographical pathway, and transition from small to large scale dust storms.

Based on this, we seek to provide some update on existing climatological studies which use similar data (e.g. MDGMs), but date back few years in time. We are particularly interested in the statistical analysis of dust storm characteristics such as source region, storm track and size, timing and duration.