
# Program

**Oral presentations are 15 minutes long (12 mn + 3mn questions)**

## Tuesday, January 17, 2017

**Registration: 9:00 - 9:30**

**Tuesday, 9:30- 11:20**

- Welcoming remarks.

### MARS METEOROLOGY: AN OVERVIEW & GENERAL ATTRIBUTES

**Chair:** Mike Wolff

### NEW LOCAL AND GLOBAL OBSERVATIONS

- Atmospheric Mars Entry and Landing Investigations & Analysis (AMELIA) by ExoMars 2016 Schiaparelli Entry Descent Module
  *F. Ferri, O. Karatekin, A. Aboudan, B. VanHove, C. Bettanini, G. Colombatti, S. Debei, N. Gerbal, S. Lewis, F. Forget*
- Global UV Imaging by MAVEN/IUVS: Diurnal Cloud Formation, Dust Storms and Atmospheric Scattering
  *N. M. Schneider, J. I. Deighan, S. K. Jain, A. D. Derks, M. S. Chaffin, M. Crismani, A. I. F. Stewart, W. E. McClintock, G. M. Holsclaw, B. M. Jakosky, F. Lefèvre, F. Montmessin, M. J. Wolff, A. Stiepen, M. H. Stevens, J. S. Evans, R. V. Yelle, D. Y. Lo, J. T. Clarke*
- MCS Observations of the Weather and Climate of Martian Northern Spring and Summer
  *D. M. Kass, A. Kleinböhl, P. O. Hayne, D. J. McCleese, J. T. Schofield, N. G. Heavens*
- Comparisons of Observations and Simulations of the Mars Polar Atmosphere
  *D. J. McCleese, A. Kleinboehl, D. M. Kass, J. T. Schofield, R. J. Wilson, S. Greybush*

  **Poster in this session**: In-situ atmospheric observations from heat shield pressure data: application to Mars Science Laboratory entry flight, status of ExoMars analysis.
  *B. Van Hove and O. Karatekin*

### THE WEATHER IN GALE CRATER

- Gale atmospheric Evolution along the first two Years on Mars of using REMS-MSL Data
  *J. Gómez-Elvira, I. Carrasco, A. Lepinette, M. Marín, L. Mora, S. Navarro, V. Peinado, J. Pla-Garcia, J. Torres, D. Viúdez-Moreiras, R. Urqui, M. de la Torre, C. Newman, G. M. Martínez, A-M. Harri, M. Genzer and the REMS team*
- An Overview of the Dust, $CO_2$ and Water Cycles on Mars as Revealed from In-Situ Environmental Data from the Viking to the Curiosity Rover
  *G. M. Martínez, A. De Vicente-Retortillo, A. G. Fairén, E. Fischer, M. Genzer, S. D. Guzewich, R. M. Haberle, A.-M. Harri, O. Kemppinen, M. Lemmon, C. Newman, N. Renno, M. Richardson, M. D. Smith, M. Torre-Juárez, A. R. Vasavada*

**11:20 -11:50 : Coffee break**

**Tuesday, 11:50 - 13:30:**

**Chair:** Sandrine Guerlet

- Gale Wind Speed Weibull Distribution Based on the First Two Years of REMS Wind Data
  *D. Viúdez-Moreiras, J. Gómez-Elvira, C. Newman, S. Navarro, M. Marin and the REMS team*

  **Poster in this session:** Observations and Simulations of Martian Weather, a Perspective with Data from MSL Curiosity
  *I. Ordonez-Etxeberria, R. Hueso, A. Sánchez-Lavega.*

### UNDERSTANDING ALL THIS WITH MODELS

- Topographic Circulations on Mars: Surface Pressure, Convective Boundary Layers and Network Implications
  *D. Tyler, J. R. Barnes, R. J. Wilson, J. Murphy*
- Assessing atmospheric thermal Forcing from surface Pressure Data: Separating thermal Tides and local Topographic Influence
  *R. J. Wilson, J. M. Murphy, D. Tyler,*
- A Climatological Description of MCS and MCD Thermal Profiles Using a Cluster Analysis
  *M. A. Lopez-Valverde, A. Cala-Hurtado, S. Jimenez-Monferrer, F. Gonzalez-Galindo, L. Montabone, E. Millour, T. Navarro, F. Forget, G. Marzo, S. Fonti*
- Major Challenges in Mars Climate Modeling: Dust, Clouds and Waves
  *F. Forget, C. Wang, A. Pottier, E. Millour, G. Gilli, M. Vals, V. Zakharov, A. Spiga, T. Navarro, L. Montabone.*
- The Challenge of Atmospheric Data Assimilation : Illustration with the LMD GCM, MCS Observations and a Kalman Filter Method
  *T. Navarro, E. Millour and F. Forget*

  **Poster in this session:** Eddy Diffusivity Mass Flux Parameterization for Non-Dusty Martian Boundary Layers: A Progress Report
  *N.G. Heavens, M.L. Witek, C.E. Newman*

  **Poster in this session:** Interoperable Mars Atmosphere Data Services
  *S. Erard, Z. Yin, B. Cecconi, E. Millou, A. Määttänen, P. Le Sidaner,*

**13:30 - 15:30: Lunch break**

**Tuesday, 15:30 - 17:00**

**Chair:** Håkan Svedhem

### MARS EXPRESS: ALIVE AND KICKING

- MARS EXPRESS: Mission Status, Recent Findings and future Plans
  *D. Titov, A. Cardesin, P. Martin, T. Duxbury, F. Forget, M. Giuranna, F. González-Galindo, M. Holmström, R. Jaumann, A.Määttänen, F. Montmessin , R. Jaumann, R. Orosei, M. Pätzold, J. Plaut, and MEX SGS Team.*

- A "New" Scientific Camera around Mars, Getting Science with Visual Monitoring Camera onboard Mars Express
  *A. Cardesín Moinelo, A. Sánchez-Lavega, M. Almeida, D. Titov. , S. Wood, T. del Río-Gaztelurrutia, H. Chen Chen, R. Hueso, M Breitfellner, E. Grotheer and P. Martin.*
- 12 Years of atmospheric Monitoring by the planetary Fourier Spectrometer onboard Mars Express
  *Marco Giuranna, P. Wolkenberg, D. Grassi, A. Aronica, S. Aoki, V. Formisano, D. Scaccabarozzi, B. Saggin*

  **Poster in this session:** Still unexploited atmospheric OMEGA/MEx Observations
  *B. Gondet, J.-P. Bibring, M. Vincendon*

## MARS ATMOSPHERE GENERAL CIRCULATION AND DYNAMICS

- Mars in Context: Comparative Atmospheric Circulation of Terrestrial Planets
  *P. L. Read, F. Tabataba-Vakili, A. Valeanu, Y. Wang, R. M. B. Young*
- Forced & Free Atmospheric Waves in MRO/MCS Data: Observations and E-P Flux Divergences
  *D. Banfield and the MCS Science Team.*

**17:00 - 17:30 : Tea break**

**Tuesday, 17:30 - 19:00**

**Chair:** Michael Battalio

- Detection of Northern Hemisphere Transient Baroclinic Eddies at Gale Crater Mars
  *R.M. Haberle, M.A. Kahre, M. De La Torre, D.M. Kass, J.R. Barnes*
- Extratropical Weather Systems on Mars: Radiatively-Active Water Ice Cloud Effects
  *J.L. Hollingsworth, M.A. Kahre, R.M. Haberle, R.A. Urata, F. Montmessin .*
- Traveling Weather Systems in the Ensemble Mars Atmosphere Reanalysis System (EMARS)
  *Steven J. Greybush, R. J. Wilson, H. Gillespie, E. Kalnay, M. Wespetal, T. Nehrkorn, S. M. Leidner, R. Hoffman*
- Mars' Annular Polar Vortices: Cause and Stability
  *D. W. Waugh, A. D. Toigo, S. D. Guzewich, W. J. M. Seviour, R. K. Scott*
- Ertel Potential Vorticity, Bernoulli Streamfunction, Planetary-Scale Hydraulic Jumps, and Transonic Jet-Streaks in a Re-Analysis of the Martian Atmosphere
  *Stephen R. Lewis, Timothy E. Dowling, Mary Elizabeth Bradley, Peter L. Read*

  **Poster in this session.** Eddy Energetics of the Southern Hemisphere of Mars from the Mars Analysis Correction Data Assimilation (MACDA)
  *J. M. Battalio, I. Szunyogh and M. Lemmon.*

  **Poster in this session.** Transient Eddies in the Mars Atmosphere: Two Regimes
  *J.R. Barnes.*

  **Poster in this session.** Wavenumber-Frequency Spectra of Atmospheric Temperature, Zonal and Meridional Winds in Low Latitudes on Mars
  *K. Ogohara*

  **Poster in this session.** Spectrally resolved energetics of the Martian atmosphere
  *A. M. Valeanu, P.L. Read, F. Tabataba-Vakili, and L. Montabone*

**19:00 End of session**

**Evening event: "Flamenco show and dinner"** at *Peña la Platería* (Placeta de Toqueros, 7) in the Albaizin quarter (details given at the conference)

# Wednesday, January 18, 2017

**Wednesday, 10:00- 11:30**

**Chair:** Roland Young

## GRAVITY WAVES: A KEY PROCESS IN THE MARS ATMOSPHERE?

- Study of Gravity Waves Distribution and Propagation in the Thermosphere of Mars based on Mars Global Surveyor, Mars Odyssey, Mars Reconnaissance Orbiter And MAVEN Density Measurements
  *M. Vals, F. Forget, A. Spiga, L. Montabone, E. Millour*
- Gravity Waves and their Effects from the Martian Troposphere to Thermosphere
  *A. S. Medvedev, E. Yiğit, T. Kuroda, Ch. Mockel, P. Hartogh*
- Simulation of Gravity Wave Fields and Their Effects on the Large-scale Flow in the Martian Atmosphere Using a High-resolution General Circulation Model
  *T. Kuroda, A.S. Medvedev, P. Hartogh, E. Yiğit*
- On the Impact of Non-Orographic Gravity Waves in the LMD Mars Global Climate Model
  *G. Gilli, F. Forget, A. Spiga, T. Navarro, L. Montabone, E. Millour.*
- Sensitivity of Radiatively Active Water Ice Clouds on Gravity Wave Drag in the GEM-Mars GCM
  *L. Neary, F. Daerden*

**Announcement :**

The book "*The Atmosphere and Climate of Mars*" (Cambridge University Press) will be released in 2017
*R. M. Haberle, R. T. Clancy, F. Forget, M. D. Smith, R. W. Zurek and all the book authors.*

**11:30 - 12:00 : Coffee break**

**Wednesday, 12:00 - 13:40:**

**Chair:** Armin Kleinboehl

## THE DUST "CYCLE" (I.E. IS IT EVEN PERIODIC?)

## DUST IN GALE CRATER

- Aerosol Optical Depth as Observed by the Mars Science Laboratory REMS UV Photodiodes
  *M. D. Smith, M.-P. Zorzano, M. Lemmon, J. Martín-Torres, T. Mendaza de Cal*
- Variability of Dust Aerosol Particle Size at Gale Crater Using Mastcam and REMS UV Measurements
  *A. De Vicente-Retortillo, G. M. Martínez, N. O. Renno, M. T. Lemmon, M. de la Torre-Juárez*
- Dust Devils and Convective Vortices detected by MSL
  *H. Kahanpää, C. Newman, J. Moores, M.-P. Zorzano, S. Navarro, A. Lepinette, J. Martín-Torres, P. Valentín-Serrano, B. Cantor, M. T. Lemmon, A. Ullán, W. Schmidt*

  **Poster in this session:** A Quick Look Estimation of Optical Depth Measurements from the Rover Environmental Monitoring Station Ultraviolet Sensors
  *E. Mason, M. Lemmon, M. de la Torre, M. Smith*

  **Poster in this session:** Dust on Mars From Navcam and Hazcam Images on MSL
  *Hao Chen-Chen , Santiago Pérez-Hoyos, Agustín Sánchez-Lavega.*

  **Poster in this session:** The Mars Science Laboratory Dust Storm Campaign
  *S. D. Guzewich, C.E. Newman,M. de la Torre, M. Lemmon, E. Mason, M. Battalio,M-P. Zorzano Mier, J. Moores, C.A. Moore, J. L. Kloos, G.M. Martinez, M.D. Smith, and the MSL Science Team*

## DUST OBSERVATIONS FROM ORBIT

- Characterization of Dust Activity from MY27 to MY32 Observed by PFS-MEx
  *P. Wolkenberg, M. Giuranna, S. Aoki, A. Mahieux*
- On the Dustiest Locations on Mars from Observations
  *L. Montabone, B. Cantor, F. Forget, D. Kass, A. Kleinböhl, M. D. Smith, M. J. Wolff*
- Bridging the Scales: What Local Dust Storms can tell us about Regional and Global Dust Events and vice versa
  *N. G. Heavens*

  **Poster in this session:** Improvements in Limb Retrievals of TES Solarband and IR Data (and MCS Solarband Data)
  *M. J. Wolff, A. A. Pankine*

  **Poster in this session.** Developing a Unified TES and MGS Relational Database
  *A. Egan and S.C. R. Rafkin.*

**13:40 - 15:30: Lunch break**

**Wednesday, 15:30 - 16:55**

**Chair:** Scott Guzewich

## ARE DUST STORMS CONTROLLED BY ORBIT-SPIN COUPLING?

- Orbit-Spin Coupling and the Circulations of Planetary Atmospheres: Insights Gained from Numerical Modeling with the MarsWRF GCM
  *J. H. Shirley, M. A. Mischna*
- The Role of Dust Feedback on the Orbit-Spin Coupling Hypothesis of Global Dust Storm Formation on Mars
  *M. A. Mischna, J. H Shirley, C. E. Newman*
- Toward Simulating Realistic, Self-Consistent, and Potentially Predictable Dust Cycles and Storms in Mars Global Atmospheric Models
  *C. E. Newman, M. I. Richardson, M. A. Mischna, J. H Shirley*

## FROM LOCAL STORMS TO GLOBAL STORMS

- A Solar Escalator on Mars: Self-Lifting of Dust Layers by Radiative Heating
  *F. Daerden, J. A. Whiteway, L. Neary, L. Komguem, M. T. Lemmon, N. G. Heavens, B. A. Cantor, E. Hébrard, and M. D. Smith.*
- The Evolution, Dynamics and Structure of a Numerically Modeled Large Dust Storm on Mars
  *S. C. R. Rafkin, J. Pla-Garcia*

**16:55 - 17:25 : Tea break**

**Wednesday, 17:25 - 18:30**

**Chair:** Kazunori Ogohara

- The Effect of Model Resolution on Wind-Stress Dust Lifting within the LMD/UK Mars Global Circulation Model
  *R. M. Chapman, S. R. Lewis, M. Balme and L. J. Steele.*

  **Poster in this session.** Quantifying the Impact of Local Dust Storms on Martian Atmosphere Using the LMD/UK Mars Global Climate Model
  *A. El-Said, S.R. Lewis, M.R. Patel, F. Forget.*

  **Poster in this session:** Wind induced Dust Erosion in Low Gravity
  *M. Kruss, T. Demirci, G. Musiolik, B. Schrinski, G. Wurm*

  **Poster in this session.** Prevailing Dust Storms Over the Hellas Basin on Mars Around Southern Spring Equinox
  *K. C. Chow and K. L. Chan.*

  **Poster in this session:** High Resolution Simulations of Dust Devils and Global Circulation of the Martian atmosphere
  *Y. O. Takahashi, S. Nishizawa, H. Yashiro, Y. Sato, Y. Miyamoto, H. Tomita, Y.-Y. Hayashi, M. Odaka, M. Ishiwatari, K. Sugiyama, K. Nakajima, S. Takehiro*

  **Poster in this session:** Effects of Radiatively Active Clouds on Wind Stress Dust Lifting during Northern Hemisphere Summer on Mars
  *V. Jha , M. A. Kahre*

  **Poster in this session:** Investigating the Role of Advection Processes in Improved Martian Dust Assimilation Techniques for Exomars
  *P. M. Streeter, S. R. Lewis, M. R. Patel, L. J. Steele*

  **Poster in this session:** Regional and global dust storms on Mars investigated using data assimilation
  *T. Ruan, R. M. B. Young, P. L. Read, S. R. Lewis and L. Montabone*

## ELECTRIC DUST

- Modeling the Effects of Dust Size Distribution, Composition, and Charging Physics on the Electric Environment of Martian Dust Devils
  *E. L. Barth, W. M. Farrell and S. C. R. Rafkin.*

  **Poster in this session.** Simulating Triboelectric Charging of Chemically-Identical Grains under Near-Surface Martian Conditions
  *J.S. Méndez Harper, J. Dufek*

## DUST PROPERTIES

- Light Scattering by Martian Dust Analogues
  *O. Muñoz, J. EscobarCerezo, D. Guirado, F. Moreno*
- Properties of a Local Dust Storm on Atlantis Chaos, Mars
  *F. Oliva, A. Geminale, F. Altieri, G. Bellucci, F.G. Carrozzo, E. D'Aversa, G. Sindoni, D. Grassi*

  **Poster in this session**. Far Infrared Spectroscopic Parameters of Mars Atmospheric Aerosols and their Application to MCS Retrievals in High Aerosol Conditions
  *A. Kleinböhl, L. Chen, J. T. Schofield*

  **Poster in this session:** Aerosol Properties during the 2007 Global Dust Storm (MY28): Solar Infrared Occultation Observations by SPICAM
  *D. S. Betsis, A. A. Fedorova, O. I. Korablev, J.-L. Bertaux, F. Montmessin*

**18:30: Announcement (5')** :

- The "Cross Drive" Immersive Virtual Reality Tools demo at the poster session
  *M. Giuranna, A. Gerndt and the Cross Drive project team.*

**18:35 End of session**

**18:35 Posters & Snack session**

# Thursday, January 19, 2017

**Thursday, 10:00- 11:40**

**Chair:** Anni Määttänen

## THE $CO_2$ CYCLE

- Seasonal Evolution and Energy Budget of the South Residual Polar Cap of Mars from CRISM and HiRISE Observations
  *C. Pilorget, S. Douté, M. Vincendon*
- Near-Surface Non-Condensable Gas Enrichment in the Martian Polar Regions from MCS Surface Observations
  *S. Piqueux, A. Kleinböhl, P. Hayne, D. Kass, J. Schofield, D. McCleese, M. Richardson*

  **Poster in this session:** $CO_2$ Supersaturation by Atmospheric Waves in the Martian Polar Nights
  *K. Noguchi, T. Kuroda, H. Hayashi*

  **Abstract only:** An Improved Carbon Dioxide Snow Spectral Albedo Model: Application to Martian Conditions *D. Singh, M. G. Flanner*

## CLOUDS AND THE WATER CYCLE

### OBSERVATIONS

- Water Vapor and Aerosols from Chemcam Passive Sky Observations
  *T. H. McConnochie, M. D. Smith, M. J. Wolff, S. Bender, M. Lemmon, R. C. Wiens, S. Maurice, O. Gasnault, J. Lasue, P.-Y. Meslin, A.-M. Harri, M. Genzer, O. Kemppinen, G. M. Martínez, L. DeFlores, D. Blaney, J. R. Johnson, J. F. Bell III*
- Vertical Water Vapor Distribution at Phoenix
  *L. K. Tamppari and M. T. Lemmon*
- The Distribution of Mars Water Vapor Versus Altitude, Season, and Latitude as Derived from Global Comparisons of CRISM Retrieved and LMD GCM Simulated O2(1δg) Dayglow Profiles
  *R. T. Clancy, B. Sandor, M. Wolff, F. Lefèvre, T. Navarro, M. Smith, T. McConnochie, S. Murchie, H. Nair, and A. Toigo.*
- Water Vapor Retrievals over North Polar Craters with Ice Mounds: Constraints on Sublimation Rates
  *G.D. McDonald, L. Ojha, T.H. McConnochie, M.D. Smith, J.J. Wray*

**11:40 - 12:10 : Coffee break**

**Thursday, 12:10 - 13:45**

**Chair:** David Klassen

- Ice Cloud Retrieval in the Martian Atmosphere Using SPICAM/UV.
  *Y. Willame, A. C. Vandaele, B. Gondet, F. Montmessin.*
- The Distributions of retrieved Properties from Water Ice Clouds in the Martian Atmosphere using The OMEGA Imaging Spectrometer
  *K. S.Olsen, F. Forget, J.B.Madeleine,A. Szantai, J. Audouard, A. Geminale, F. Altieri, G. Bellucci, L. Montabone, M. J. Wolff*

  **Poster in this session.** Water Vapor in the Middle Atmosphere of Mars during the Southern Summer Season by SPICAM/MEX
  *A. Fedorova, D. Betsis, O. Korablev, J.-L. Bertaux, F. Montmessin, L. Maltagliati, Clarke J.*

  **Poster in this session.** Construction of a 4D water ice cloud database from Mars Express / OMEGA observations - Derivation of the diurnal Martian cloud life cycle
  *A. Szantai, J. Audouard, F. Forget, J.-B Madeleine, A. Pottier, E. Millour, B. Gondet, Y.Langevin, J.P. Bibring*

## MODELLING THE WATER CYCLE AND CLOUDS

- Updates on Modeling the Water Cycle with the NASA Ames Mars Global Climate Model
  *M. A. Kahre, R. M. Haberle, J. L. Hollingsworth, F. Montmessin, A. S. Brecht, R. Urata, D. R. Klassen, M. J. Wolff*
- Nighttime Convection by Water-Ice Clouds on Mars
  *A. Spiga, D. P. Hinson, J.-B. Madeleine, T. Navarro, E. Millour, F. Forget, F. Montmessin*

  **Poster in this session.** Hydrological Cycle in the General Circulation Model of the Martian Atmosphere
  *D. S. Shaposhnikov, A. V. Rodin, A. S. Medvedev, P. Hartogh*

  **Poster in this session.** Modeling MARCI and TES Aphelion Cloud Belt Optical Depth Peak Differences with the Ames MGCM
  *D. R. Klassen, M. A. Kahre, M. J.Wolff, R. M. Haberle, J. L. Hollingsworth*

  **Poster in this session:** Significance of Topography-driven Vertical Transport on the Global Water Cycle on Mars *R. A. Urata, M. Kahre, J. Hollingsworth.*

  **Poster in this session:** Simulation of the Water Cycle Including HDO/H2O Isotopic Fractionation on the Present Mars Using Dramatic MGCM *T. Kuroda*

## BRINES ON MARS

- Experimental Recreation of the diurnal Cycle at the Phoenix landing Site – Investigating the Formation and Persistence of Brine
  *E. Fischer, G. M. Martínez, N. O. Renno*
- Laboratory Studies of Deliquescence and Adsorption at the Surface of Mars with Raman Scattering
  *G. Nikolakakos, J. Whiteway*

**13:45 - 15:30: Lunch break**

**Thursday, 15:30 - 16:50**

**Chair:** Zachary Girazian

## MARS MESOSPHERE AND THERMOSPHERE REVEALED

### TEMPERATURES AND WINDS

- Temperature Profiles and Wave Structures observed with IUVS/MAVEN Stellar Occultations
  *H. Gröller, R. V. Yelle, T. Koskinen, F. Montmessin, G. Lacombe, S. Jain, J. Deighan, N. M. Schneider, H. Nakagawa, A. S. Medvedev*
- Variability of the Thermospheric Temperature and Wind Structure of Mars: MAVEN NGIMS Measurements and Corresponding Global Model Simulations
  *S. W. Bougher, K. J. Roeten, P. R. Mahaffy, M. Benna, M. K. Elrod, J. M. Bell, B. M. Jakosky.*
- Martian Thermosphere in MAVEN/IUVS Data and MPI-MGCM
  *C. Mockel, A. S. Medvedev, P. Hartogh, E. Yiğit, H. Nakagawa, N. Terada, T. Kuroda, K. Seki, S. Evans, N. M. Schneider, S.K. Jain, J. I. Deighan, W. E. McClintock, B. M. Jakosky, D. Lo,*
- Study of the Mars thermospheric Temperatures during the southern polar Winter
  *F. González-Galindo, M.A. López-Valverde, A. CalaHurtado, E. Millour, F. Forget*
- Non-LTE Retrievals of $CO_2$ in the Martian Atmosphere from OMEGA limb data
  *S. Jiménez-Monferrer, B. Funke, M. A. Lopez-Valverde, M. Garcıa-Comas, M. Lopez-Puertas*

**16:50 - 17:20 : Tea break**

**Thursday, 17:20 - 19:00**

**Chair:** Matt Fillingim

### UPPER ATMOSPHERE COMPOSITION

- Atmospheric Abundances Retrieved from IUVS/MAVEN Stellar Occultations
  *R. V. Yelle, H. Gröller, T. Koskinen, F. Montmessin, G. Lacombe, F. Lefèvre, S. Jain, J. Deighan, N. M. Schneider*

- Nitric Oxide Nightglow Mapping from IUVS Images and Implications for Seasonal transport in Mars' Mesosphere
  *A. Stiepen, A. I. F. Stewart, S. K. Jain, N. M. Schneider, J. I. Deighan, F. Gonzàlez-Galindo, J.-C. Gérard, M. H. Stevens, S. Bougher, Z. Milby, J. S. Evans, M. S. Chaffin, W. E. Mcclintock, J. T. Clarke, G. M. Holsclaw, F. Montmessin, F. Lefèvre, D. Y. Lo, B. M. Jakosky*
- MAVEN/IUVS Dayglow Observations: Martian Thermospheric Response to Solar EUV and XUV
  *S. K. Jain, A. I. F. Stewart, J. I. Deighan, N. M. Schneider, M. M. J. Crismani, M. S. Chaffin, W. E. McClintock, E. M. B. Thiemann, F. Eparvier, B. M. Jakosky, M.H. Stevens, J. S. Evans, P.C. Chamberlin*
- Martian ultraviolet Aurora : Results of Model Simulations
  *J.-C. Gérard, L. Soret, V.I. Shematovich, D.V. Bisikalo*
- Recent Simulation of the Martian Upper Atmosphere from Global Circulation Model and Global Exospheric Model and First Comparisons with MAVEN/IUVS Observations
  *J-Y. Chaufray, F. Leblanc F. Gonzalez-Galindo, M.A Lopez-Valverde, F. Forget, J. Deighan, M.S. Chaffin, N.M. Schneider, S. Jain, F.G. Eparvier, E.M.B. Thiemann, B. Jakosky and P.C. Chamberlin.*
- High Altitude Water Powers Mars H Escape
  *M.S. Chaffin, J. Deighan, N.M. Schneider and A.I.F. Stewart.*

**Poster in this session:** A global empirical Model of the Thermosphere of Mars based on in situ Mass Spectrometer Data
*Z. Girazian, P. Mahaffy, M. Benna, M. Elrod, D. Drob, S. Bougher*

**Poster in this session:** Seasonal Variations of the Atomic Oxygen on Mars' Upper Atmosphere Derived from the O I 130.4 nm Triplet Observed by MAVEN/IUVS
*J-Y. Chaufray , J. Deighan, N.M. Schneider, S. Jain, A.I.F. Stewart, M.S. Chaffin, F.G. Eparvier, E.M.B. Thiemann, B. Jakosky, J.T Clarke, P.C. Chamberlin.*

**Poster in this session:** Three Types of Aurora observed by MAVEN/IUVS: Implications for Mars' upper Atmosphere Energy Budget
*K. Connour, N.M. Schneider, S.K. Jain, J.I. Deighan, M.S. Chaffin, A. Stiepen, C. Nasr, D. Brain, X. Fang, A.I.F. Stewart, M.J. Crismani, W.E. McClintock, G.M. Holsclaw, B. Jakosky, J.T. Clarke, M. Mayyasi, J.S. Evans, J.C. Gerard, L. Soret, D. Larson, D.L. Mitchell, C.O. Lee, R. Lillis,C. Mazelle, J.S. Halekas, M.H. Stevens, F. Lefevre, F. Montmessin,*

**Poster in this session.** Global Simulation of UV atmospheric Emissions
*F. González-Galindo, M.A. López-Valverde, F. Forget, A. Stiepen, J.C. Gérard, N.M. Schneider, S.K. Jain, J. Deighan, J.L. Bertaux*

**Poster in this session:** Total Atmospheric Loss from Upper-Atmospheric Structure of $^{36}Ar/^{38}Ar$ Observed by MAVEN
*M. Slipski, B. M. Jakosky, M. Benna, P. Mahaffy, M. K. Elrod, R. Yelle, S. Stone, N. Alsaeed*

**Poster in this session:** Using ionospheric Currents to infer ionospheric electric Fields and thermospheric Winds from MAVEN Observations
*M. O. Fillingim, A. Fogle, P. Dunn, J. P. McFadden, J. E. P. Connerney, P. R. Mahaffy, M. Benna, R. E. Ergun, L. Andersson*

**Poster in this session:** A Persistent Meteoric Metal Layer in Mars' Atmosphere
*M. M. J. Crismani, N. M. Schneider, J. M. C. Plane, J. S. Evans, S. K. Jain, J. D. Carrillo-Sanchez, M. H. Stevens, J. I. Deighan, M. S. Chaffin, R. V. Yelle, A. I. F. Stewart, W. McClintock, J. Clarke, A. Stiepen, G. M. Holsclaw, F. Montmessin, & B. M. Jakosky.*

**Abstract only:** Composition, vertical Structure, and Variability of the Nightside Ionosphere of Mars.
*Z. Girazian, P. Mahaffy, M. Benna, M. Elrod, R. Lillis*

**19:00 End of session**

**Conference Dinner** at "*Carmen de los Mártires*", close to the Alhambra.

- Bus leaves from the *Hotel Granada Center* at 20:15
- You can directly walk to the place, to be there at 20:45

# Friday, January 20, 2017

**Friday, 10:00- 11:40**

**Chair:** Séverine Robert

## HIGH-ALTITUDE CLOUDS ON MARS

- Characterization of High Altitude Clouds at the Martian Limb and Terminator Using MAVEN IUVS Observations
  *J. Deighan, M. H. Stevens, N. M. Schneider, S. K. Jain, F. Lefèvre, M. Wolff, F. Montmessin, A. Stiepen, J. S. Evans, M. S. Chaffin, M. Crismani, R. V. Yelle, D. Y. Lo, A. I. F. Stewart, W. E. McClintock, J. T. Clarke, G. M. Holsclaw, B. M. Jakosky.*
- Gravity Wave-induced High Altitude Ice Clouds on Mars
  *E. Yigit, A. S. Medvedev, P. Hartogh, T. Kuroda, D. E. Siskind*
- Micrometeoric Ablation Biproducts as a High Altitude Source for Ice Nuclei in the Present Day Martian Atmosphere
  *V. L. Hartwick, O. B. Toon*

**Poster in this session:** Mapping the Mesospheric $CO_2$ Clouds on Mars
*A. Leboucher, A. Määttänen, J. Audouard, B. Gondet, F. Montmessin*

**Poster in this session:** Mars $CO_2$ Ice Clouds Properties from OMEGA/MEx Observations Coupled to Radiative Transfer Modeling
*C. Pilorget, A. De La Gorce, M. Vincendon, B. Gondet, J.-P. Bibring*

**Poster in this session:** A Complete $CO_2$ Ice Clouds Model for GCMs and Mesoscale Models
*J. Audouard, A. Määttänen, C. Listowski, F. Forget, A. Spiga and E. Millour.*

## PHOTOCHEMISTRY

- Mars Ozone mapping with MAVEN IUVS
  *F. Lefèvre, F. Montmessin, N. M. Schneider, J. Deighan, S. K. Jain, A. I. F. Stewart, M. S. Chaffin, M. Crismani, W. E. McClintock, G. M. Holsclaw, B. M. Jakosky, A. Stiepen, D. Y. Lo, R. Yelle, J. T. Clarke*
- On the Link between Martian Total Ozone and Potential Vorticity
  *J. A. Holmes, S. R. Lewis, M. R. Patel*
- Hydrogen Peroxide on Mars during Northern Summer: Observations and Models
  *T. Encrenaz, T. Fouchet, B. Bézard, T. K. Greathouse,, F. Lefèvre , F. Montmessin, S. K. Atreya*

**Poster in this session:** Vertical Distribution of Ozone at the Terminator on Mars
*A. Määttänen, F. Lefevre, S. Guilbon, C. Listowski, F. Montmessin*

**Poster in this session:** Ground-Based High-Resolution Infrared and Submillimeter Searches for the Release of Volcanic Gases on Mars
*A. SJ. Khayat, G. L. Villanueva, M. J. Mumma, A. T. Tokunaga*

**Poster in this session:** NASA Ames Mars GCM with Photochemisty: Modeling $O_2$ IR Nightglow Emission *A. S. Brecht, M. Kahre*

**Poster in this session:** Improved GEM-Mars GCM with Atmospheric Chemistry
*F. Daerden, L. Neary, R. T. Clancy, M. D. Smith.*

**Poster in this session:** Transient Layers of Atmospheric Methane on Mars after Surface Release: a Model Study
*S. Viscardy, F. Daerden, L. Neary*

**Poster in this sesssion:** $CH_4$-rich Clathrate Hydrate Stability Zone in the present Martian Subsurface
*E. Gloesener, O. Karatekin, V. Dehant,*

**Poster in this session:** Gas Transport in Martian Regolith by Thermal Creep
*A. Kraemer, T. Steinpilz, M. Koester, J. Teiser, G. Wurm*

**11:40 - 12:10: Coffee break**

**Friday, 12:10 - 13:40**

**Chair:** Laura Kerber

## EARLY MARS & PALEO-CLIMATES

- Mars Climate History: A Geological Perspective
  *J. W. Head*
- The Ice-Covered Lakes Hypothesis in Gale Crater: Implications for the Early Hesperian Climate
  *A. M. Kling, R. M. Haberle, C. P. McKay, T. F. Bristow, F. Rivera-Hernandez,*
- Reducing Greenhouse Solutions on Early Mars
  *R. Wordsworth, Y. Kalugina, S. Lokshtanov, B. Ehlmann, J. Head, C. Sanders, H.Wang*
- Catastrophic events: possible solutions to the Early Mars enigma
  *M. Turbet, F. Forget, V. Svetsov, O. Popova, C. Gillmann, O. Karatekin, Q. Wallemacq, J.W. Head, R. Wordsworth*
- Impact Cratering as the Cause of Climate Change, Atmospheric Alteration, and Late Noachian Valley Network Formation on Mars: an Assessment
  *A. M. Palumbo, J. W. Head*

**13:40 - 15:30: Lunch break**

**Friday, 15:30 - 16:50**

**Chair:** Colin Wilson

- Progress in Climate/Groundwater Modeling of Ancient Mars
  *A. Soto, J. C. Andrews-Hanna, D. G. Horvath*
- Photochemical Escape of the Martian Atmosphere, Today and through Time
  *R. J. Lillis, J. Deighan, J. L. Fox, S.W. Bougher, Y. Lee, M. Combi, F. Leblanc, T. E. Cravens, A. Rahmati, B. M. Jakosky.*

  **Poster in this session.** Late Noachian Icy Highlands Climate Model: Exploring the Possibility of Transient Melting and Fluvial/Lacustrine Activity through Peak Temperatures
  *A. M. Palumbo, J. W. Head, R. D. Wordsworth*

  **Poster in this session:** Exploring Post-Impact Climate Conditions for Early Mars with the Ames GCM
  *K. E. Steakley, J. R. Murphy, M. Kahre, R. Haberle.*

  **Poster in this session:** Formation of the Martian Polar Layered Deposits: Quantifying Polar Water Ice and Dust Deposition in Present and Past Orbital Epochs with the NASA Ames Mars General Circulation Model
  *J. A. Emmett and J. R. Murphy .*

## FUTURE OBSERVATIONS

- The NOMAD Spectrometer Suite on the ExoMars 2016 Orbiter: Current Status (Invited paper)
  *I. R. Thomas, A. C. Vandaele, E. Neefs, B. Ristic, L. Hetey, A. Mahieux, S. Robert, F. Daerden, C. Depiesse, J. P. Mason, M. R. Patel, J. J. Lopez Moreno, G. Bellucci, and the NOMAD team*
- Science Investigation of the Atmospheric Chemistry Suite on Exomars TGO (Invited paper)
  *O. Korablev, N.I. Ignatiev, A.A. Fedorova, A.Yu.Trokhimovskiy, A.V. Grigoriev, A.V. Shakun, F. Montmessin, F.Lefevre, F. Forget.*
- The Micro-ARES experiment as part of the DREAMS meteorological suite onboard Schiaparelli: a promise and a demise
  *F. Montmessin, G. Déprez, O. Witasse, R. Trautner, F. Vivat, R. Hassen-Kodja, P. Granier, L. Lapauw, J.-J. Berthelier, F. Esposito, S. Debei, A. Aboudan, C. Bettanini*

**16:50 - 17:20 : Tea break**

**Friday, 17:20 - 18:45** **Chair:** Manish Patel

- Atmospheric sciences on INSIGHT 2018 (invited paper)
  *D. Banfield, A. Spiga et al.*
- Wind Noise and Sound Propagation Experiments in the Aarhus Mars Atmosphere Simulation Chamber
  *R. D. Lorenz, J. Merrison, J. J. Iversen*
- Emirates Mars Mission (EMM) Overview (invited paper)
  *O. Sharaf, S. Amiri, S. AlMheiri, M. Wali, Z. AlShamsi, A. AlRais, I. AlQasim, K. AlHarmoodi, N. AlTeneiji, H. Almatroushi, Me. AlShamsi, Ma. AlShamsi, E. AlTeneiji, A. AlJanaahi, M. McGrath, P. Withnell, N. Ferrington, H. Reed, B. Landin, D. Brain, J. Deighan, M. Chaffin, G. Holsclaw, G. Drake,. C. Edwards, , M. Wolff, R. Lillis,.M. Smith, F. Forget.*
- Mars Atmospheric Measurements planned at Exomars 2020 Surface Platform (invited paper)
  *D. Rodionov, O. Korablev, L.M. Zelenyi, J. Vago*
- Atmospheric Science with the Mars 2020 Rover (invited paper)
  *J A. Rodriguez Manfredi et al.*

  **Poster in this session.** Retrieval of gas and aerosols vertical profiles by means of limb observations considering multiple scattering of the PFS/MEx and NOMAD/ExoMars instruments
  *A. Mahieux, G. Bellucci, S. Aoki, P. Wolkenberg, H. Iwabuchi, Y. Kasaba, H. Nakagawa, M. Giuranna, A.C. Vandaele*

  **Poster :** Preparing for the Retrievals of Temperature vertical Profiles from ExoMars TGO/ACS spectra
  *S. Guerlet, T. Fouchet, T.,F. Forget, N., Ignatiev, O. Korablev*

  **Poster in this session:** Synergistic Atmospheric Retrievals: Martian CO as a Test-Case
  *S. Robert, F. Montmessin, S. Ferron, F. Altieri, G. Bellucci, A. Geminale, M. Giuranna, G. Sindoni, S. Aoki, A. Piccialli, A. C. Vandaele*

  **Poster in this session:** Scientific Payload of the Emirates Mars Mission : Emirates Exploration Imager (EXI) *M. AlShamsi, M. Wolff, M. Khoory, A. Jones, G. Drake, and the EXI Team.*

  **Poster in this session:** Scientific Payload of the Emirates Mars Mission: Emirates Mars Infrared Spectrometer (EMIRS) Overview
  *E. Altunaiji, C. S. Edwards, M. D. Smith, P. R. Christensen, and the EMIRS Team*

  **Poster in this session**: Scientific Payload of the Emirates Mars Mission: Emirates Mars Ultraviolet Spectrometer (EMUS) Overview
  *H. Almatroushi, F. Lootah, G. Holsclaw, J. Deighan, M. Chaffin and the EMUS Team, R. Lillis, M. Fillingim, S. England,*

  **Poster in this session**: Emirates Mars Ultraviolet Spectrometer's (EMUS) Prediction of Martian EUV Disk Emissions *F. Lootah, J. Deighan, M. Fillingim*

  **Poster in this session**: An average empirical FUV Model of Airglow for Oxygen OI 135.6 nm Emission Line in the Martian Atmosphere for Emirates Mars Ultraviolet Spectrometer Instrument Simulator
  *H. Almatroushi,* J. *Deighan, M. Fillingim, S. Jain and N. Schneider.*

  **Poster in this session:** Observing Atmospheric Angular momentum variations with LaRa (Lander Radioscience) onboard the 2020 ExoMars surface platform
  *O. Karatekin, V. Dehant and S. LeMaistre*

  **Poster in this session.** Meteorological Predictions for Mars2020 Exploration Rover High-Priority Landing Sites *J. Pla-García, S. C. R. Rafkin, A. G. Fairen*

  **Poster in this session.** A Submillimeter Sounder For Measuring Martian Winds Water Vapor and Temperature
  *L. K. Tamppari, N. J. Livesey, W. G. Read, G. Chattopadhyay, R. T. Clancy, F. Forget, P. Hartogh*

**19:00 End of meeting**

**20:00***: Optional visit of the Alhambra*