

Programme

Wednesday 25 November 2009

9:00-10:00: Registration, posters set up, coffee

09:45 – 10:00 Welcome and opening (ESA, ASI)

Session 1 - Observations of methane from orbit

Moderator: O. Witasse

10:00-10:35 Methane observations with PFS-MEX: an introductory historical overview, multiline observations and limb measurements (solicited)

Formisano, V.

10:35-10:50 PFS-MEX: Mapping methane in Martian atmosphere

Geminale, A.

10:50-11:05 Spatial distribution and temporal evolution of methane in the Martian atmosphere

Fonti, S.

Session 2: Ground-based observations of methane

Moderator: O. Witasse

11:05-11:25 Absolute measurements of Methane on Mars (solicited)

Mumma, M.

11:25-11:45 Methane and water on Mars: Maps of active regions and their seasonal variability (solicited)

Villanueva, G.

11:45-12:15 Coffee break

12:15-12:35 Measurement of the isotopic signatures of water on Mars: implications for studying methane (solicited)

Novak, P.

12:35-12:40 Poster presentation (3 minutes): High Spectral resolution heterodyne spectroscopy of methane at 7.8 μm

Sonnabend, G.

Session 3: Martian surface and subsurface data, and laboratory measurements relevant to the study of methane

Moderator: P. Mahaffy

12:40-12:55 Mapping ice deposits on Mars through subsurface radar sounding (solicited)
Orosei, R.

12:55-13:15 Morphology and Mineralogy of Methane Source Regions (solicited)
Wray, J.

13:15-13:30 The search for methane gas emission features in Nili Fossae, Syrtis Major, and Isidis Planitia, Mars
Komatsu, G.

13:40 Lunch

14:50-15:15 Surface conditions from thermodynamics of phyllosilicates and implications for the presence of methane on early Mars (solicited)
Chevrier, V.

15:15-15:35 Laboratory investigation of the role of heterogeneous processes in Martian methane variability (solicited)
Gough, R.

15:35-16:25 Discussion on the data sets available (from orbit, ground-based measurements, laboratory measurements, other data sets of interest)

16:25-16:55 Coffee break

Session 4: Origin of Martian methane

Moderator: S. Atreya

16:55-17:20 Methane and the Martian Habitability (solicited)
Atreya, S.

17:20-17:40 Production on Mars by photolysis of H₂O in the presence of CO (solicited)
Bar-Nun, A.

17:40-18:00 Methanogenesis in Terrestrial Permafrost: a Model for Methane Sources on Mars? (solicited)
Wagner, D.

18:00-18:20 Methane Sources and Sinks: The geobiology of the Arctic versus Mars (solicited)
Onstott, T.

18:20-18:25 Poster presentation (3 minutes): Abiotic methanogenesis carbonate reduction by hydrogen-bearing fluids: a mechanism for Martian methane
Lazar, C.

18:30-19:30 Welcome reception

Thursday 26 November 2009

Session 5: Storage, release, and delivery of methane

Moderator: V. Chevrier

09:00-9:15 Methane reservoirs on Mars: A story of migration, gas hydrates, traps, and a long production cycle
Ori, G.

09:15-09:35 Methane Emissions from Earth's Degassing: a Reference for Mars (solicited)
Etioppe, G.

09:35-09:50 Methane hydrates: A source for slow methane release on Mars? (solicited)
Elwood-Madden, M.

09:55-10:15 Metastable Methane Clathrate Particles as a Source of Methane to the Martian Atmosphere (solicited)
Chassefiere, E.

10:15-10:25 Poster presentations (3 minutes each)

The trapping of methane in Martian clathrate hydrates
Thomas, C.

Variability of Atmospheric Methane Induced by Adsorption in the Regolith
Meslin, P.-Y.

10:25-11:00 Discussion on origin, storage, release, and delivery of methane

11:00-11:30 Coffee break

Session 6: Atmospheric circulation and chemistry

Moderator: F. Forget and F. Lefèvre

11:30-11:50 Challenges raised by the observed variations of methane on Mars (solicited)
Lefèvre, F.

11:50-12:05 A short-Lived Trace Gas in the Martian Atmosphere: A General Circulation Model of the Likelihood of Methane
Chizek, M. R.

12:05-12:20 Argon: The Mixing Standard for Methane in Mars Atmosphere
Sprague, A. L.

12:20-12:35 The spatial and temporal variation of oxidant component in the
Martian atmosphere observed by MEX/PFS
Aoki, S.

12:35-12:50 Unusual CO behaviour in Martian atmosphere: a relation to methane?
Formisano, V.

12:50-13:05 Photochemically induced formation of Mars-relevant oxygenates and
methane from carbon dioxide and water
Wecks, M.

13:05-13:25 Poster presentations (3 minutes each)

The photochemistry and atmospheric lifetime of methane on Mars for evolving
atmospheric concentrations of carbon dioxide and the variability of the Mars
planetary boundary layer (PBL) based on measurements from the Viking 1 and 2
landers, Mars Pathfinder and Phoenix.
Levine, J.

Mars atmospheric circulation and chemistry detected in the submm domain
Hartogh, P.

Search for important minor gases in Martian atmosphere
Geminale, A.

Search for hydrogen peroxide in the Martian atmosphere
Formisano, V.

Search of SO₂ in the Martian atmosphere by ground-based submillimeter observation
Nakagawa, H.

The Formaldehyde Observation of 1969 and 1989: Analyses of the Observations and
Proposals for Interpretation
Muller, C.

13:25-13:50 Discussion on the atmosphere circulation and chemistry

13:50 Lunch

Session 7: Microbial life, metabolism in water ice, and biological experiments under Martian conditions

Moderator: B. Price

14:55-15:15 Microbial Life in Ice: Habitats, Metabolism, and Survival on Mars
(solicited)

Price, B.

15:15-15:30 Methanogenesis on Earth Today: Where, Who and How

Prieur, D.

15:30-15:45 The possibility of methane oxidation coupled to microbial perchlorate
respiration

Coates, J.D.

15:45-16:00 A sub-zero high Arctic methane seep: implications for Mars methane

Whyte, L.

16:00-17:30 Coffee break and poster session

List of posters:

1. High Spectral resolution heterodyne spectroscopy of methane at 7.8 μm

Sonnabend, G.

2. Abiotic methanogenesis carbonate reduction by hydrogen-bearing fluids: a
mechanism for Martian methane

Lazar, C.

3. The trapping of methane in Martian clathrates hydrates

Thomas, C.

4. Variability of Atmospheric Methane Induced by Adsorption in the Regolith

Meslin, P.-Y.

5. The photochemistry and atmospheric lifetime of methane on Mars for evolving
atmospheric concentrations of carbon dioxide and the variability of the Mars
planetary boundary layer (PBL) based on measurements from the Viking 1 and 2
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6. Mars atmospheric circulation and chemistry detected in the submm domain

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7. Search for important minor gases in Martian atmosphere

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8. Search for hydrogen peroxide in the Martian atmosphere

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9. Search of SO₂ in the Martian atmosphere by ground-based submillimeter observation
Nakagawa, H.
10. The Formaldehyde Observation of 1969 and 1989: Analyses of the Observations and Proposals for Interpretation
Muller, C.
11. Growth and Biomediated Mineral Alterations by Methanogens under Geochemical Conditions Similar to the Martian Subsurface
Chastain, B. K.
12. Determination of the surface concentrations of methane on Mars with MOMA
Steininger, H.
13. Using Laser Heterodyne Radiometry to Search for Methane on Mars
Passmore, R.L.
14. Robotic rigid vacuum airship for exploration of Mars
Pahari, S.
15. Detecting and characterizing Martian dust using spectropolarimeter SPEX
Stam, D.
16. Possible Influences of Aerosol Loading on the Measured Columns of Martian Atmospheric Constituents Including Methane
Muller, C.

DINNER

Friday 27 November 2009

09:00-09:20 Methanogens: A Model for Life on Mars (solicited)

Kral, T.

09:20-09:35 Methanogenic Activity in Rio Tinto, a Terrestrial Analogue of Mars

Amils, R.

09:35-09:50 Bacterial survival in Martian conditions

Galletta, G.

09:50-10:05 Zero-Valent Iron on Mars: an Alternate Energy Source for Methanogens

Chastain, B. K.

10:05-10:15 Poster presentations (3 minutes)

Growth and Biomediated Mineral Alterations by Methanogens under Geochemical Conditions Similar to the Martian Subsurface

Chastain, B. K.

10:15-11:00 Discussion on microbial life

11:00-11:30 Coffee break

Session 8: Future measurements of methane, related trace gases, and isotopes

Moderators: A. Chicarro and R. Zurek

11:30-11:50 Future in situ methane and related trace gas and isotope measurements with the Sample Analysis at Mars (SAM) instrument suite of the 2011 Mars Science Laboratory (MSL) (solicited)

Mahaffy, P.

11:50-12:10 Measuring Methane and its Isotopic Ratios $^{13}\text{C}/^{12}\text{C}$ and D/H With the Tunable Laser Spectrometer (TLS) on the 2011 Mars Science Laboratory (MSL) Mission (solicited)

Webster, C.

12:10-12:25 Studying methane and other trace species in the Mars atmosphere using a SOIR instrument

Drummond, R.

12:25-12:45 A New Mission Concept: The Search for Atmospheric Trace Gases in the Mars Atmospheric (solicited)

Zurek, R.

12:45-13:05 Posters presentations (3 minutes each)

Determination of the surface concentrations of methane on Mars with MOMA
Steininger, H.

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Passmore, R.L.

Robotic rigid vacuum airship for exploration of Mars
Pahari, S.

Detecting and characterizing Martian dust using spectropolarimeter SPEX
Stam, D.

Possible Influences of Aerosol Loading on the Measured Columns of Martian
Atmospheric Constituents Including Methane
Muller, C.

13:05-13:40 Discussion on future measurements

13:40 Lunch

14:50-16:00 General discussion, conclusions, closure of the symposium
S. Atreya, F. Forget, P. Mahaffy, and O. Witasse