

# International Conference on Comparative Planetology: Venus-Earth-Mars

## PROGRAMME

### Day 1 - Monday, 11 May 2009

13:00	Opening by Håkan Svedhem, ESLAB 2009 Programme Committee Chair Welcome address by Richard Marsden, Head of the Research and Scientific Support department Video message from David Southwood, ESA Director of Science
	<b>Introduction Lecture</b> Chair: H. Svedhem
13:15	<u>Invited Tutorial</u> The Comparative Planetology, Climatology and Biology of Venus, Earth and Mars as Revealed by Past, Current and Future Space Missions <i>Taylor, F.W.</i> <i>Oxford University (United Kingdom)</i>
<b>Session 1</b>	<b>Interior &amp; Subsurface</b> Chairs: Sohl, Rosenblatt, Schumacher
14:15	<u>Invited Tutorial</u> Assessing the Structure of Planetary Interiors from Satellite and Ground-Based Geophysical Data: A Comparative Study of Venus, Earth and Mars <i>Rosenblatt, P.1; Dehant, V.1; Mocquet, A.2</i> <i>1Bruxelles Royal Observatory (Belgium) 2 Nantes University (France)</i>
14:45	A Simple Seismological Approach to Core Size Determination <i>Knapmeyer, M.</i> <i>DLR (Germany)</i>
15:05	Deep Vs. Shallow Origin of Gravity Anomalies, Topography and Volcanism on Earth, Venus and Mars <i>Werner, S.C.1; Steinberger, B.2; Torsvik, T.H.3</i> <i>1Continental Shelf Geophysics Group; 2Geological Survey of Norway (Norway), Geological Survey of Norway (Norway); 3Center for Geodynamics, Geological Survey of Norway (Norway)</i>
15:25	Tectonics on a One-Plate Planet: The Spatial Variability of the Martian Elastic Lithosphere Thickness and a Comparison with Earth's Continents <i>Grott, M.; Breuer, D.</i> <i>German Aerospace Center (Germany)</i>
15:45	Coffee break
16:15	<u>Invited Tutorial</u> Magnetic Fields and Planetary Dynamos <i>Christensen, U.R.</i> <i>Max Planck Institute for Solar System Research (Germany)</i>
16:45	How to Kickstart Planets: On the Influence of the Initial Conditions <i>Ziethé, R.; Benkhoff, J.</i> <i>ESA-ESTEC (Netherlands)</i>
17:05	Thermo-Chemical Convection and the Survival of Reservoirs of Dense Material in the Earth's Lower Mantle <i>Deschamps, F.; Tackley, P.J.</i> <i>ETH Zurich (Switzerland)</i>
17:25	Modelling the Thermo-Chemical Evolution of the Interiors of Earth, Venus and Mars <i>Tackley, P.1; Nakagawa, T.2; Keller, T.2; Armann, M.2; Deschamps, F.2; Connolly, J.3</i> <i>1ETH Zurich (Switzerland); 2Institut für Geophysik, ETH Zürich (Switzerland); 3Institute for Mineralogy and Petrology, ETH Zürich (Switzerland)</i>
17:45	Discussion
18:10	End of Session
<b>18:10</b>	<b>Welcome Reception</b>
19:30	Bus Departure to Hotels

## Day 2 - Tuesday, 12 May 2009

<b>Session 2</b>	
<b>Geology, Surface Chemistry and Mineralogy</b> Chairs: Basilevski, Rossi, Pinet	
09:00	<u>Invited Tutorial</u> Comparative View of Geology of Venus, Earth, and Mars <i>Basilevsky, A.1; Head, J.W.2</i> <i>1Vernadsky Institute of Geochemistry and Analytical Chemistry (Russian Federation); 2Department of Geological Sciences, Brown University (United States)</i>
09:30	Tectonic Rifting on Earth, Mars, and Venus <i>Hauber, E.1; Grott, M.1; Kronberg, P.2</i> <i>1DLR (Germany); 2TU Clausthal (Germany)</i>
09:50	Volcanic Rises and Upwelling: Hotspots on Venus, Earth and Mars <i>Stofan, E.1; Smrekar, S.E.2; Martin, P.3</i> <i>1Proxemy Research/UCL (United States); 2Jet Propulsion Laboratory (United States); 3University of Durham (United Kingdom)</i>
10:10	The Geologic Evolution of Mars: Episodicity of Resurfacing Events and Ages from Cratering Analysis of Image Data and Correlation with Radiometric Ages of Martian Meteorites <i>Neukum, G.1; Basilevsky, A.T.2; Kneissl, T.1; Chapman, M.G.3; van Gasselt, S.1; Michael, G.1; Jaumann, R.4; Hoffmann, H.5; Lanz, J.6</i> <i>1Freie Universität Berlin (Germany); 2Vernadsky Institute (Russian Federation); 3United States Geological Survey (United States); 4Freie Universität Berlin, German Aerospace Center (Germany); 5German Aerospace Center (Germany); 6Universität Stuttgart (Germany)</i>
10:30	Coffee break
11:00	<u>Invited Tutorial</u> Impact Cratering on Terrestrial Planetary Bodies <i>Ivanov, B.</i> <i>Russian Academy of Sciences (Russian Federation)</i>
11:30	Polar and Mountain Cold Trapping, "Glacial" Flow, and Glacial Processes and Landforms Involving Volatiles on Mars, Earth, and Venus (Yes, Venus!) <i>Kargel, J.</i> <i>University of Arizona (United States)</i>
11:50	Analogy between Gullies on Mars and on Earth: What Similarities? What Differences? <i>Mangold, N.1; Mangeney, A.2; Baratoux, D.3; Lucas, A.2; Bouchut, F.4</i> <i>1CNRS/LPG Nantes (France); 2CNRS/IPGP (France); 3OMP/CNRS (France); 4ENS/CNRS (France)</i>
12:10	Formation of Chaotic Terrains on Mars by Melting of Sub-Surface Ice: Mars and Earth <i>Zegers, T.1; Oosthoek, J.H.P.2; Rossi, A.P.3; Schumacher, S.4; Blom, J.C.5</i> <i>1Utrecht University (Netherlands); 2Dutch Geological Survey, TNO (Netherlands); 3ISSI (Switzerland); 4ESTEC (Netherlands); 5TU Delft (Netherlands)</i>
12:30	Comparative Views of Valley Networks on Mars from Mars Express Data and on Earth <i>Ansan, V.1; Mangold, N.2; Masson, P.3; Neukum, G.4</i> <i>1LPGN - University de Nantes-UMR6112 (France); 2LPGN - University de Nantes-UMR6112 (Falkland Islands Malvinas); 3IDES- UMR4881 (France); 4FU-Berlin (Germany)</i>
13:00	Lunch break
14:00	The Crust of Mars <i>Poulet, F.1; Bibring, J.-P.2</i> <i>1IAS (France); 2IAS University Paris Sud (France)</i>
14:20	Widespread Occurrence of Carbonate on Mars: Implications for Atmospheric Evolution <i>Palomba, E.1; Zinzi, A.2; Cloutis, E.3</i> <i>1IFSI-INAF (Italy); 2Dipartimento di Fisica, Università de L'Aquila (Italy); 3University of Winnipeg (Canada)</i>
14:50	Discussion
<b>Session 3</b>	
<b>Conditions for Life</b> Chairs: Gibson, Javaux	
15:10	<u>Invited Tutorial</u> Early Life on Earth and its Geological Context: Relevance for Mars <i>Westall, F.</i> <i>CNRS-Orléans (France)</i>
15:40	Coffee break

16:10	Effects of Asteroid and Comet Impacts on the Atmospheric Evolution of Earth, Mars and Venus <i>Pham, L.B.S.; Karatekin, O.; Dehant, V.</i> <i>Royal Observatory of Belgium (Belgium)</i>
16:30	Terrestrial Field Research on Organics and Biomolecules at Mars Analog Sites <i>Ehrenfreund, P.1; Quinn, R.2; Martins, Z.3; Sephton, M.3; Peeters, Z.4; van Sluis, K.5; Foing, B.6; Orzechowska, G.7; Becker, L.8; Brucato, J.9; Grunthaner, F.7; Gross, C.10; Thiel, C.11; Wendt, L.10</i> <i>1Leiden Institute of Chemistry (Netherlands); 2SETI Institute (United States); 3ICL (United Kingdom); 4NASA Goddard (United States); 5University Delft (Netherlands); 6ESTEC (Netherlands); 7JPL (United States); 8John Hopkins (United States); 9INAF Arcetri (Italy); 10Freie Universität Berlin (Germany); 11MPI Goettingen (Germany)</i>
16:50	<u>Invited Tutorial</u> Extreme Life and Implications for Astrobiology <i>Amils, R.; Gomez, F.; González-Toril, E.; Rodríguez, N.; Aguilera, A.</i> <i>Centro de Astrobiología (INTA-CSIC) (Spain)</i>
17:20	Solar Forcing and the Evolution of Water on Earth, Venus and Mars <i>Lundin, R.</i> <i>Swedish Institute of Space Physics (Sweden)</i>
17:40	Discussion
18:00	Poster Sessions
19:45	Bus Departure to Hotels
<b>Poster Sessions</b>	
<p><u>Session 1 - Interior &amp; Subsurface</u></p> <p>P1.01 Information on the Interior of Mars, the Earth and Venus from Orbiters around these Terrestrial Planets <i>Rosenblatt, P.1; Dehant, V.1; Marty, J.C.2; Le Maistre, S.1; Van Hoolst, T.1</i> <i>1Royal Observatory of Belgium (Belgium); 2Observatoire Midi-Pyrénées (France)</i></p> <p>P1.02 Insight into the Interior Structure of Mars from Forced Nutations <i>Rivoldini, A.1; Van Hoolst, T.2; Dehant, V.2; Verhoeven, O.3; Mocquet, A.3</i> <i>1Observatoire Royal de Belgique (Belgium); 2Royal Observatory of Belgium (Belgium); 3Université de Nantes (France)</i></p> <p>P1.03 The Spinel-Perovskite Phase Transition in the Martian Mantle <i>Michel, N.; Forni, O.</i> <i>Université de Toulouse, UPS, CESR (France)</i></p> <p>P1.04 Pressure Dependence of the Viscosity: Influence on the Thermal Evolution for Planets of Mars- and Earth-size <i>Noack, L.; Stamenkovic, V.; Breuer, D.</i> <i>German Aerospace Center (DLR) (Germany)</i></p> <p>P1.05 Viscosity Variations Due to the Influence of Partial Melt: Implications for the Thermal Evolution of Mars and Earth <i>Plesa, A.C.; Breuer, D.</i> <i>German Aerospace Center (DLR), Institute of Planetary Research (Germany)</i></p> <p>P1.06 Mass-Radius Relations of Earth-like Planetary Bodies <i>Wagner, F.1; Sohl, F.2; Hussmann, H.2; Grott, M.2; Rauer, H.2</i> <i>1German Aerospace Center (DLR) (Germany); 2DLR Berlin (Germany)</i></p> <p>P1.07 Chaotic Terrains and What They Tell Us About the Geothermal Gradients on Mars and Earth <i>Schumacher, S.1; Zegers, T.E.2; Rossi, A.P.3</i> <i>1ESA-ESTEC (Netherlands); 2Faculty of Geoscience, Utrecht University (Netherlands); 3International Space Science Institute (Switzerland)</i></p>	

P1.08

Comparative TDEM Sounding Study of Martian and Earth's Frozen Rocks  
*Ozorovich, Y.; Lukomskiy, A.*  
*Space Research Institute (Russian Federation)*

P1.09

Reflection Systems for Planetary Geology: First ExoGeoLab Tests at ESTEC  
*Batenburg, P.1,2; Foing, B.H.1; Drijkoningen, G.3; Gill, E.2; Poulakis, P.4; Visentin, G.4; Page, J.1,4; Peters, S.1,6; Borst, A.1,6; Boche-Sauvan, L.1; Mahapatra, P.1; ExoGeoLab Team1*  
*1ESTEC ExoGeoLab SRE-S (Netherlands); 2Delft TU Aerospace Faculty (Netherlands); 3Delft TU Geology and Civil Engineering (Netherlands); 4ESTEC TEC Technology Directorate (Netherlands)*

Session 2 - Geology, Surface Chemistry and Mineralogy

P2.01

Evidences of Karst Landforms and Processes on an Evaporite Dome in East Tithonium Chasma (Mars)  
*Baioni, D.1; Zupan Hajna, N.2; Wezel, F.C.1*  
*1Urbino University (Italy); 2Karst Research Institute ZRC SAZU (Slovenia)*

P2.02

The Enhancement of Mars (MOLA) and Earth (SRTM) Digital Elevation Data Using Geophysical Filtering and Image Processing Techniques  
*Chacksfield, B.; Tragheim, D.G.*  
*British Geological Survey (United Kingdom)*

P2.03

Relief-Forming Potential of Terrestrial Planets Predicted by the Wave Planetology  
*Kochemasov, G.*  
*IGEM RAS (Russian Federation)*

P2.04

An Automated Classification of Mawrth Vallis  
*Koenders, R.1; Lindenbergh, R.C.1; Zegers, T.E.2*  
*1Delft University of Technology (Netherlands); 2Utrecht University (Netherlands)*

P2.05

An Impact Crater Detection Tool (ICDY) Applied to Martian and Terrestrial Digital Elevation Models  
*Krøgli, S.O.1; Dypvik, H.2; Chicarro, A.3; Rossi, A.P.4; Etzelmüller, B.2*  
*1University of Oslo (Norway); 2Department of Geosciences, University of Oslo (Norway); 3ESA/ESTEC, Solar System Missions Division (Netherlands); 4International Space Science Institute (ISSI) (Switzerland)*

P2.06

Potential Implications of a Common Origin for Outflow Systems on Venus, Mars, and the Moon  
*Leverington, D.*  
*Texas Tech University (United States)*

P2.07

Sub-Surface Melting in Ice on Mars  
*Möhlmann, D.*  
*DLR (Germany)*

P2.08

Radar Subsurface Sounding over the Putative Frozen Sea in Cerberus Palus, Mars  
*Orosei, R.1; Cartacci, M.2; Cicchetti, A.2; Federico, C.3; Flamini, E.4; Frigeri, A.3; Holt, J.W.5; Marinangeli, L.6; Noschese, R.1; Pettinelli, E.7; Phillips, R.J.8; Picardi, G.2; Plaut, J.J.9; Safaeinili, A.9; Seu, R.2*  
*1Istituto di Fisica dello Spazio Interplanetario, Istituto Nazionale di Astrofisica (Italy); 2Dipartimento INFOCOM, Università di Roma "La Sapienza" (Italy); 3Dipartimento di Scienze della Terra, Università di Perugia (Italy); 4Agenzia Spaziale Italiana (Italy); 5Institute for Geophysics, University of Texas at Austin (United States); 6International Research School of Planetary Sciences, Università degli Studi "Gabriele d'Annunzio" (Italy); 7Dipartimento di Fisica "E. Amaldi", Università Roma Tre (Italy); 8Southwest Research Institute, Boulder (United States); 9Jet Propulsion Laboratory, California Institute of Technology (United States)*

P2.09

EuroGeoMars Geological Observations and GPR Measurements

*Peters, S.T.M.1,6\**; *Borst, A.1,6\**; *Foing, B.H.1,\**; *Stoker, C.2,\**; *Kim, S.9*; *Wendt, L.8,\**; *Gross, C.8,\**; *Zhavaleta, J.2,\**; *Sarrazin, P.2,\**; *Blake, D.2*; *Ehrenfreund, P.10*; *Boche-Sauvan, L.1,\**; *Page, J.1,4*; *McKay, C.2*; *Batenburg, P.1,3,\**; *Drijkoningen, G.3*; *Slob, E.3*; *Poulakis, P.4*; *Visentin, G.4*; *Noroozi, A.3*; *Gill, E.3*; *Guglielmi, M.4*; *Freire, M.4*; *Walker, R.7*; *Sabbatini, M.5*; *Pletser, V.5,\**; *Monaghan, E.1,\**; *Ernst, R.1,\**; *Oosthoek, J.1*; *Mahapatra, P.1,\**; *Wills, D.1,\**; *Thiel, C.\**; *Petrova, D.\**; *Lebreton, J.P.1*; *Zegers, T.1*; *Chicarro, A.1*; *Koschny, D.1*; *Vago, J.1*; *Svedhem, H.1*; *Davies, G.6*; *Westenberg, A.11*; *Edwards, J.11*; *ExoGeoLab team1,4*; *EuroGeoMars team1,4,5*  
1ESTEC/SRE-S (Netherlands); 2NASA Ames (Netherlands); 3Delft TU Aerospace/ Geology and Civil Engineering (Netherlands); 4ESTEC TEC Technology Dir. (Netherlands); 5ESTEC HSF Human Spaceflight (Netherlands); 6VU Amsterdam (Netherlands); 7ESTEC Education Office (Netherlands); 8FU Berlin (Germany); 9JPL (Netherlands); 10Leiden/GWU (Netherlands); 11Mars society;  
\*EuroGeoMars crew

P2.10

Image Analysis: Tools for the Recognition and Characterization of Planetary Surface Features

*Saraiva, J.1*; *Pina, P.2*; *Bandeira, L.2*; *Lira, C.2*; *Benavente, N.2*; *Barata, T.3*  
1IST (Portugal); 2CERENA / IST (Portugal); 3CG / UCoimbra (Portugal)

P2.11

Polygonal Patterns on Mars and Earth: Automated Characterization as a Basis for Comparison

*Saraiva, J.*; *Pina, P.*; *Bandeira, L.*; *Benavente, N.*  
CERENA / IST (Portugal)

P2.12

Mars Planetary Mapping Pilot Project

*Tragheim, D.G.1*; *Marsh, S.H.1*; *Pedley, R.C.1*; *Gunnink, J.L.2*; *Oosthoek, J.H.P.2*; *Muller, J.P.3*; *van Ruitenbeek, F.J.A.4*  
1British Geological Survey (United Kingdom); 2TNO/Deltares (Netherlands); 3Mullard Space Science Laboratory, University College London (United Kingdom); 4ITC (Netherlands)

P2.13

Some Features of the Earth, Venus and Mars Global Relief

*Lazarev, E.N.*; *Rodionova, J.F.*  
Sternberg State Astronomical Institute (Russian Federation)

P2.14

Methane as a Possible Inhibitor of Subsurface Oxidation by Atmospheric Hydrogen Peroxide at Mars

*Chassefiere, E.*  
LATMOS (France)

P2.15

Emissivity Measurements of Martian and Venusian Analogue Minerals

*Maturilli, A.1*; *Helbert, J.2*  
1DLR - German Aerospace Center (Germany); 2DLR - Institute of Planetary Research (Germany)

P2.16

Possible Surface Anomalies on the Northern Hemisphere of Venus as Observed by VIRTIS/VEX: First Analyses for Comparative Planetologic Studies

*Arnold, G.1*; *Haus, R.2*; *Kappel, D.3*; *Basilevsky, A.4*; *Drossart, P.5*; *Piccioni, G.6*  
1WWU Muenster, Institut fuer Planetologie; DLR Berlin, Institut fuer Planetenforschung (Germany); 2Astrofeinwerk GmbH (Germany); 3Institut fuer Planetologie, WWU Muenster (Germany); 4Vernadski Institute, Moscow (Russian Federation); 5LESIA, Observatoire de Paris, CNRS (France); 6IASF, Rome (Italy)

P2.17

A Hydrothermal System on Mars; Detection and Geological Context

*den Haan, J.1*; *Zegers, T.E.2*; *van Ruitenbeek, F.J.A.3*; *van der Werff, H.M.A.3*; *Rossi, A.4*  
1Utrecht University (Netherlands); 2Utrecht University, Faculty of Geosciences (Netherlands); 3Department of Earth Systems Analysis, International Institute of Geo-information Science and Earth (Netherlands); 4International Space Science Institute (ISSI) (Switzerland)

P2.18

Geochemistry of Utah Morrison Formation from EuroGeoMars Campaign

*Borst, A.1,6\**; *Peters, S.1,6\**; *Foing, B.H.1\**; *Stoker, C.2\**; *Wendt, L.8\**; *Gross, C.8\**; *Zhavaleta, J.2\**; *Sarrazin, P.2\**; *Blake, D.2*; *Ehrenfreund, P.10*; *Boche-Sauvan, L.1\**; *Page, J.1,4*; *McKay, C.2*; *Batenburg, P.1,3\**; *Drijkoningen, G.3*; *Slob, E.3*; *Poulakis, P.4*; *Visentin, G.4*; *Noroozi, A.3*; *Gill, E.3*; *Guglielmi, M.4*; *Freire, M.4*; *Walker, R.7*; *Sabbatini, M.5*; *Pletser, V.5\**; *Monaghan, E.1\**; *Ernst, R.1*; *Oosthoek, J.1*; *Mahapatra, P.1*; *Wills, D.1\**; *Thiel, C.\**; *Lebreton, J.P.1*; *Zegers, T.1*; *Chicarro, A.1*; *Koschny, D.1*; *Vago, J.1*; *Svedhem, H.1*; *Davies, G.6*; *Westenberg, A.11*; *Edwards, J.11*; *ExoGeoLab team1,4 & EuroGeoMars team1,4,5*

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P2.19

Geology and Geochemistry Highlights from EuroGeoMars MDRS Campaign

*Foing, B.H.1\**; *Peters, S.1,6\**; *Borst, A.1,6\**; *Wendt, L.8\**; *Gross, C.8\**; *Stoker, C.2\**; *Zhavaleta, J.2\**; *Sarrazin, P.2\**; *Blake, D.2*; *Ehrenfreund, P.10*; *Boche-Sauvan, L.1\**; *Page, J.1,4*; *McKay, C.2*; *Batenburg, P.1,3\**; *Drijkoningen, G.3*; *Slob, E.3*; *Poulakis, P.4*; *Visentin, G.4*; *Noroozi, A.3*; *Gill, E.3*; *Guglielmi, M.4*; *Freire, M.4*; *Walker, R.7*; *Pletser, V.5\**; *Monaghan, E.1\**; *Ernst, R.1\**; *Oosthoek, J.1*; *Mahapatra, P.1\**; *Wills, D.1\**; *Thiel, C.\**; *Lebreton, J.P.1*; *Zegers, T.1*; *Chicarro, A.1*; *Koschny, D.1*; *Vago, J.1*; *Svedhem, H.1*; *Davies, G.6*; *Westenberg, A.11*; *Edwards, J.11*; *ExoGeoLab team1,4 & EuroGeoMars team1,4,5*

*1ESTEC/SRE-S (Netherlands)*; *2NASA Ames (United States)*; *3Delft TU Aerospace/ Geology and Civil Engineering (Netherlands)*; *4ESTEC TEC Technology Dir. (Netherlands)*; *5ESTEC HSF Human Spaceflight (Netherlands)*; *6VU Amsterdam (Netherlands)*; *7ESTEC Education Office (Netherlands)*; *8FU Berlin (Germany)*; *10Leiden/GWU (Netherlands)*; *11Mars society*, *\*EuroGeoMars crew*

### Session 3 - Conditions for Life

P3.01

On the Possible Transfer of Microorganisms from Venus to Earth

*Wickramasinghe, N.C.*; *Wickramasinghe, J.T.*  
*Centre for Astrobiology, Cardiff University (United Kingdom)*

P3.02

Glaciopanspermia: Seeding the Terrestrial Planets with Life?

*Houtkooper, J.*  
*Justus-Liebig-University (Germany)*

### Session 5 - Climate and Atmospheric Dynamics

P5.01

Thermospheric Modeling of Mars and Venus

*González-Galindo, F.1*; *Forget, F.1*; *Lebonnois, S.1*; *López-Valverde, M.A.2*  
*1Laboratoire de Météorologie Dynamique, CNRS (France)*; *2Instituto de Astrofísica de Andalucía, CSIC (Spain)*

P5.02

Thermal Structures of Venus and Mars Atmospheres as Observed by Virtis Instruments

*Grassi, D.1*; *Coradini, A.1*; *Drossart, P.2*; *Migliorini, A.3*; *Piccioni, G.3*  
*1IFSI-INAF (Italy)*; *2Obs. de Paris-Meudon, LESIA (France)*; *3IASF-INAF (Italy)*

P5.03

Wave-mean Flow Interactions and Gravity Waves in the Atmospheres of Mars and Earth

*Medvedev, A.*; *Hartogh, P.*; *Kuroda, T.*  
*Max Planck Institute for Solar System Research (Germany)*

P5.04

Equatorial Semiannual Oscillations in the Atmospheres of Mars and Earth

*Kuroda, T.1*; *Medvedev, A.S.1*; *Hartogh, P.1*; *Takahashi, M.2*  
*1Max Planck Institute for Solar System Research (Germany)*; *2Center for Climate System Research, University of Tokyo (Japan)*

P5.05

Dynamics and Circulation of the Venus Atmosphere

*Mendonca, J.M.1*; *Read, P.L.1*; *Lewis, S.R.2*  
*1University of Oxford (United Kingdom)*; *2The Open University (United Kingdom)*

- P5.06  
Coherent Structures in Planetary Polar Vortices: A Laboratory View  
*Montabone, L.1; Wordsworth, R.2; Aguiar, A.3; Jacoby, T.4; McClimans, T.5; Read, P.L.4; Wilson, C.4*  
*1The Open University (United Kingdom); 2Universite Paris VI (France); 3Universidade de Lisboa (Portugal); 4University of Oxford (United Kingdom); 5SINTEF Fisheries and Aquaculture (Norway)*
- P5.07  
Thermal Wind in the Atmospheres of Venus and the Other Planets  
*Piccialli, A.1; Titov, D.V.1; Migliorini, A.2; Tellmann, S.3; Grassi, D.4; Piccioni, G.2; Paetzold, M.5*  
*1MPS, Katlenburg - Lindau (Germany); 2IASF/INAF, Rome (Italy); 3RIU-koeln university, Koeln (Germany); 4IFSI/INAF, Rome (Italy); 5RIU-Koeln university, Koeln (Germany)*
- P5.08  
Transport Barrier in the Middle Latitudes of Venus  
*Titov, D.1,2; Markiewicz, W.J.2; Piccioni, G.3; Drossart, P.4*  
*1Max Planck Institute for Solar System Research (Germany); 2MPS (Germany); 3INAF-IASF (Italy); 4LESIA, Observatoire de Paris (France)*
- P5.09  
Mesospheric Temperature Measurements on Mars and Venus by Observations of Non-LTE Emission of CO<sub>2</sub> using Infrared Heterodyne Spectroscopy  
*Kroetz, P.1; Sonnabend, G.1; Sornig, M.1; Stupar, D.1; Schieder, R.1; Lopez Valverde, M.A.2*  
*1University of Cologne (Germany); 2Instituto de Astrofisica de Andalucia (Spain)*
- P5.10  
Interferometric Measurements of Venus Mesospheric Wind  
*Sagawa, H.1; Hartogh, P.1; Gurwell, M.A.2; Rengel, M.1; Moullet, A.2*  
*1Max Planck Institute for Solar System Research (Germany); 2Harvard-Smithsonian Center for Astrophysics (United States)*
- P5.11  
Latitudinal and Local Time Distribution of the O<sub>2</sub> Infrared Nightglow and O Density in the Lower Thermosphere  
*Soret, L.1; Gerard, J.-C.1; Saglam, A.1; Piccioni, G.2; Drossart, P.3*  
*1ULG-LPAP (Belgium); 2INAF-IASF (Italy); 3LESIA (France)*
- P5.12  
Satellite-Derived Cloud Motion Winds in the Polar Regions of Earth and Mars  
*Santek, D.; Limaye, S.S.*  
*University of Wisconsin (United States)*
- P5.13  
Ultra-high Resolution Heterodyne Spectroscopy as a Tool to Study Atmospheric Dynamics of the Terrestrial Planets  
*Sonnabend, G.1; Sornig, M.2; Kroetz, P.2; Stupar, D.2; Schieder, R.2*  
*1University of Cologne (Germany); 2I. Physikalisches Institut, University of Cologne (Germany)*
- P5.14  
Ground-Based Wind Measurements at Venus Cloud Tops  
*Widemann, T.; Lellouch, E.*  
*Obs. Paris-Meudon/LESIA (France)*
- P5.15  
An High Resolution Mesoscale Model for Mars. Preliminary Results  
*Zinzi, A.1; Ferretti, R.1; Palomba, E.2; Visconti, G.1*  
*1Università di L'Aquila (Italy); 2IFSI-INAF (Italy)*
- P5.16  
Changes in the Martian Surface Composition Related to Water Cycle: Evidence for Atmospheric Wave Phenomena  
*Evdokimova, N.1; Rodin, A.A.1; Kuzmin, R.O.1; Fedorova, A.A.1; Maltagliati, L.2*  
*1IKI (Russian Federation); 2MPIS (Germany)*
- P5.17  
The Ultraviolet Nitric Oxide Emission in the Nightside Atmospheres of Venus and Mars  
*Cox, C.1; Gérard, J.-C.1; Bertaux, J.-L.2*  
*1Université de Liège (Belgium); 2Service d'Aéronomie du CNRS (France)*

### Day 3 - Wednesday, 13 May 2009

<b>Session 4</b>	<b>Atmospheric Chemistry and Clouds</b> Chairs: Crisp, Bézard
09:00	<u>Invited Tutorial</u> Atmospheric Chemistry on Venus, Earth, and Mars: Main Features and Comparison <i>Krasnopolsky, V.A.</i> <i>Department of Physics, Catholic University of America, Washington (United States)</i>
09:30	Observations of Night OH in the Mesosphere of Venus and Earth: A Comparative Planetology Perspective <i>Parkinson, C.1; Brecht, A.1; Bougher, S.1; Yung, Y.L.2</i> <i>1University of Michigan (United States); 2California Institute of Technology (United States)</i>
09:50	Oxygen Airglow Emissions on Venus and Mars <i>Migliorini, A.1; Altieri, F.2; Zasova, L.3; Piccioni, G.1; Bellucci, G.2; Cardesin Moinelo, A.5; Drossart, P.6; D'Aversa, E.2; Carrozzo, F.G.2; Gondet, B.7; Bibring, J.-P.7</i> <i>1IASF-INAF (Italy); 2IFSI-INAF Rome (Italy); 3IKI, Moscow (Russian Federation); 4ESAC-Madrid (Spain); 5LESIA-Observatoire de Paris (France); 6Institute d'Astrophysique Spatiale, Orsay (France)</i>
10:10	<u>Invited Tutorial</u> Clouds in the Terrestrial Planets <i>Montmessin, F.</i> <i>CNRS/UVSQ/IPSL (France)</i>
10:40	Mesospheric Clouds on Mars and on the Earth <i>Määttänen, A.1; Perot, K.1; Montmessin, F.1; Hauchecorne, A.1; Gondet, B.2; Scholten, F.3; Hoffmann, H.3; Hauber, E.3; Gonzalez-Galindo, F.4; Forget, F.4; Bibring, J.-P.2; Bertaux, J.-L.1</i> <i>1LATMOS (France); 2Institut d'astrophysique Spatiale (France); 3German Aerospace Center (DLR) (Germany); 4Laboratoire de Meteorologie Dynamique (France)</i>
11:00	Coffee break
11:25	Phoenix Lidar Observations of Dust, Clouds, and Precipitation on Mars and Earth <i>Whiteway, J.1; Komguem, L.1; Dickinson, C.1; Cook, C.1; Duck, T.2; Taylor, P.1; Davy, R.1; Seabrook, J.1; Fisher, D.3; Carswell, A.4; Daly, M.5; Popovici, V.1; Daerden, F.6</i> <i>1York University (Canada); 2Dalhousie University (Canada); 3Natural Resources Canada (Canada); 4Optech Inc. (Canada); 5MDA Space Missions (Canada); 6Belgian Institute for Space Aeronomy (Belgium)</i>
11:45	Discussion
12:00	End of Session
<b>Session 5</b>	<b>Climate and Atmospheric Dynamics</b> Chairs: Titov
12:00	<u>Invited Tutorial</u> Dynamics and Circulation Regimes of the Terrestrial Planets: The Big Picture? <i>Read, P.</i> <i>University of Oxford (United Kingdom)</i>
12:40	Modeling the Climate Systems of the Terrestrial Planets: Building Virtual Planets <i>Forget, F.1; Lebonnois, S.2; Hourdin, F.2; Millour, E.2; Madeleine, J-B.2; Wordsworth, R.2; Gonzalez-Galindo, F.2; Lefevre, F.3; Montmessin, F.3</i> <i>1LMD, IPSL (France); 2LMD (France); 3Latmos (France)</i>
13:00	Lunch break
14:00	The Mechanism of Superrotation: Comparing Venus and Titan with General Circulation Models <i>Lebonnois, S.; Hourdin, F.</i> <i>LMD/IPSL/Univ. Paris 6/CNRS (France)</i>
14:20	The Mesospheres of Earth and Mars <i>Hartogh, P.; Medvedev, A.S.; Sonnemann, G.R.</i> <i>MPS (Germany)</i>
14:40	Climatological Comparisons between the Earth and Venus Upper Atmospheres <i>Keating, G.M.1; Bougher, S.W.2; Theriot, M.E.1</i> <i>1The George Washington University (United States); 2University of Michigan (United States)</i>
15:00	Comparative Mesoscale Meteorology: the Case of Mars and the Earth <i>Spiga, A.1; Forget, F.2</i> <i>1LMD [IPSL/UPMC] (France); 2LMD [CNRS/UPMC] (France)</i>

15:20	Atmospheric Angular Momentum variations of Earth, Mars and Venus <i>Dehant, V.1; Karatekin, O.1; de Viron, O.2; Lambert, S.3; Van Hoolst, T.1</i> <i>1Royal Observatory of Belgium (Belgium); 2Institut de Physique du Globe de Paris (France); 3Observatoire de Paris (France)</i>
15:40	Coffee break
16:10	The Venusian Vortex and its Possible Relatives <i>Piccioni, G.1; Drossart, P.2</i> <i>1INAF (Italy); 2LESIA (France)</i>
16:30	Vortex Circulation on Venus <i>Limaye, S.</i> <i>University of Wisconsin (United States)</i>
16:50	Venus Lightning: Comparison with Terrestrial Lightning <i>Russell, C.T.1; Daniels, J.T.M.1; Zhang, T.L.2; Wei, H.Y.1</i> <i>1University of California, Los Angeles (United States); 2Austrian Academy of Sciences (Austria)</i>
17:10	Glaciations on Mars: Response to Orbital Variations Inferred from Climate Modelling, and Comparison with Earth <i>Madeleine, J.-B.1; Forget, F.1; Head, J.W.2; Montmessin, F.3</i> <i>1Laboratoire de Météorologie Dynamique (France); 2Planetary Group, Brown University (United States); 3Service d'Aéronomie (France)</i>
17:30	Discussion
18:00	End of Session
<b>18:30</b>	<b>Bus to Boat/Dinner</b>
19:00	Boat Departure
22:30	Bus Back to Hotels

#### Day 4 - Thursday, 14 May 2009

<b>Session 6</b>	<b>Aeronomy and Solar Wind Interaction</b> Chairs: Nagy, Witasse
09:00	<u>Invited Tutorial</u> The Solar Wind Interaction with Venus, Earth, and Mars: A Tutorial <i>Cravens, T.</i> <i>University of Kansas (United States)</i>
09:40	Solar Wind Interaction with Venus and Mars <i>Ma, Y.1; Nagy, A.F.2; Russell, C.T.1; Najib, D.3; Toth, G.3</i> <i>1IGPP, UCLA (United States); 2University of Michigan (United States); 3AOSS, University of Michigan (United States)</i>
10:00	Do Magnetospheres Really Shield Planetary Atmospheres from Solar Wind Interaction-Related Erosion? <i>Luhmann, J.1; Strangeway, R.J.2; Russell, C.T.2</i> <i>1University of California (United States); 2IGPP UCLA (United States)</i>
10:20	Venus, Earth, Mars: Comparative Ion Escape Rates <i>Barabash, S.</i> <i>Swedish Institute of Space Physics (Sweden)</i>
10:40	Coffee break
11:10	Imaging the Atmospheric Escape from Venus, Earth and Mars <i>Brandt, P.1; Sotirelis, T.1; Bazell, D.1; Barabash, S.2; Roelof, E.C.1</i> <i>1The Johns Hopkins University Applied Physics Laboratory (United States); 2The Swedish Institute of Space Physics (Sweden)</i>
11:30	Airglow and Aurora <i>Gerard, J.-C.</i> <i>LPAP, Université de Liège (Belgium)</i>
11:50	Carbon Dioxide Non-Lte Emissions in the Upper Atmospheres of Mars, Venus and Earth from Virtis Observations <i>Drossart, P.1; Lopez-Valverde, M.A.2; Piccioni, G.3; Coradini, A.4; Capaccioni, F.3; Gilli, G.2; Lopez-Puertas, M.2; Erard, S.1</i> <i>1Observatoire de Paris (France); 2CSIC, Granada (Spain); 3IASF-INAF, Rome (Italy); 4IFSI-INAF, Rome (Italy)</i>

12:10	Modelling the Atmospheric CO <sub>2</sub> 10-um Laser Emission at High Spectral Resolution in Mars and Venus <i>Lopez-Valverde, M.A.1; Sonnabend, G.2; Sornig, M.2; Kroetz, P.2</i> <i>1Instituto de Astrofísica de Andalucía / CSIC (Spain); 2I. Physikalisches Institut, University of Cologne (Germany)</i>
12:30	Non-Lte Co Limb Emission at 4.7 Um in the Upper Atmosphere of Venus, Mars and Earth: Observations and Modelling <i>Gilli, G.1; Lopez-Valverde, M.A.1; Funke, B.1; Lopez-Puertas, M.1; Drossart, P.2; Piccioni, G.3</i> <i>1Instituto de Astrofísica de Andalucía / CSIC (Spain); 2LESIA, Observatoire de Paris (France); 3IASF-INAF (Italy)</i>
13:00	Lunch break
14:00	Model Simulations of the Upper Atmospheres of Venus and Mars: Processes Regulating Solar Cycle Variability <i>Bougher, S.W.1; Brecht, A.1; McDunn, T.1; Bell, J.M.2</i> <i>1University of Michigan (United States); 2Southwest Research Institute (SwRI) (United States)</i>
14:20	Exosphere Temperature Variability at Earth, Mars and Venus <i>Forbes, J.M.1; Bruinsma, S.L.2</i> <i>1University of Colorado (United States); 2Centre Nationale D'Etudes Spatiales (France)</i>
14:40	Radiative Transfer of the Oxygen 130 nm Triplet in the Atmosphere of Mars and Venus <i>Barthelemy, M.1; Gronoff, G.1; Lilensten, J.1; Chaufray, J.-Y.2; Simon, C.3</i> <i>1Laboratoire de Planetologie de Grenoble (France); 2Southwest Research Institute (United States); 3Belgian Institute for Space Aeronomy (BISA) (Belgium)</i>
15:00	Comparative Aeronomy: Ionospheric Production for Terrestrial Planets <i>Mendillo, M.; Lombardi, R.; Matta, M.; Martinis, C.; Moore, L.; Withers, P.</i> <i>Center for Space Physics, Boston University (United States)</i>
15:20	Ion Transport in the Upper Ionospheres of Mars and Venus <i>Fränz, M.1; Dubinin, E.1; Nielsen, E.1; Angsmann, A.1; Woch, J.1; Barabash, S.2; Lundin, R.2; Fedorov, A.3</i> <i>1MPI fuer Sonnensystemforschung (Germany); 2Institutet Foer Rymdfysik (Sweden); 3CESR (France)</i>
15:40	Coffee break
16:10	Ionospheric Photoelectrons: Comparing Earth, Venus, Mars and Titan <i>Coates, A.J.1,2; Tsang, S.M.E.1,2; Wellbrock, A.1,2; Frahm, R.A.3; Winningham, J.D.3; Barabash, S.4; Lundin, R.4; Young, D.T.3; Crary, F.3</i> <i>1Mullard Space Science Laboratory, University College London (United Kingdom); 2Centre for Planetary Sciences at UCL/Birkbeck (United Kingdom); 3Southwest Research Institute (United States); 4Swedish Institute of Space Physics (Sweden)</i>
16:30	Observations of the Effects of Meteors on the Ionospheres of Venus, Earth and Mars <i>Withers, P.1; Christou, A.A.2; Mendillo, M.1; Paetzold, M.3; Peter, K.3; Tellmann, S.3; Vaubaillon, J.4</i> <i>1Boston University (United States); 2Armagh Observatory (United Kingdom); 3Rhenish Institute for Environmental Research (Germany); 4IMCCE (France)</i>
16:50	Comparative Study of the Ion Cyclotron Waves at Mars, Venus and Earth <i>Russell, C.T.1; Wei, H.Y.1; Zhang, T.L.2; Blanco-Cano, X.3</i> <i>1University of California Los Angeles (United States); 2Space Research Institute (Austria); 3Institute of Geophysics, UNAM (Mexico)</i>
17:10	Comparative Automated Multi-Dataset Analysis of the Martian and Venusian Time-Variable Plasma Environments <i>André, N.1; Jacquy, C.1; Fedorov, A.2; Budnik, E.3; Génot, V.1; Ferrier, C.2; Mazelle, C.2; Ceconi, B.4; Penou, E.2; Zhang, T.L.5; Rucker, H.5; Khodachenko, M.5; Lammer, H.5; Volwerk, M.5; Nakamura, R.5; Topf, F.5; Sauvaud, J.-A.2; Barabash, S.6; Lundin, R.6</i> <i>1CDPP/CESR, CNRS/Universite Paul Sabatier, Toulouse (France); 2CESR, CNRS/Universite Paul Sabatier, Toulouse (France); 3Noveltis, Ramonville Saint Agne (France); 4LESIA, Observatoire Paris-Meudon, Meudon (France); 5Space Research Institute, Austrian Academy of Sciences, Graz (Austria); 6Swedish Institute for Space Physics, Kiruna (Sweden)</i>
17:30	Discussion
18:00	Poster Sessions
19:45	Bus Departure to Hotels

## Poster Sessions

### Session 4 - Atmospheric Chemistry and Clouds

P4.01

The Origin of Methane in Martian Atmosphere: The Hypothesis of Metastable Methane Clathrate Particles

*Chassefiere, E.*

*LATMOS (France)*

P4.02

H<sub>2</sub>O and H<sub>2</sub>O<sub>2</sub> Mapping on Mars near Summer Solstice: Further Evidence for Heterogeneous Chemistry

*Encrenaz, T.1; Greathouse, T.K.2; Bitner, M.A.2; Kruger, A.J.3; Richter, M.J.3; Lacy, J.H.4; Bézard, B.5; Fouchet, T.5; Lefèvre, F.6; Forget, F.7; Atreya, S.K.8*

*1Paris Observatory (France); 2SwRI, San Antonio (United States); 3University of California Davis (United States); 4University of Texas at Austin (United States); 5LESIA, Paris Observatory (France); 6LATMOS, CNRS, Paris (France); 7LMD, CNRS, Paris (France); 8University of Michigan, Ann Arbor (United States)*

P4.03

Quantifying Photochemical Catalytic Cycles Near the Martian Atmospheric Surface

*Grenfell, J.L.1; Stock, J.2; Lehmann, R.3; Rauer, H.2*

*1Technische Universität Berlin (Germany); 2Institut für Planetenforschung, DLR Berlin (Germany); 3Alfred-Wegener-Institut für Polar- und Meeresforschung (Germany)*

P4.04

Hydroxyl Detection on Venus and Earth, and Implications for Ozone

*Migliorini, A.1; Piccioni, G.1; Cardesin Moineo, A.2; Gérard, J.-C.3; Drossart, P.4*

*1IASF-INAF, Rome (Italy); 2ESAC-Madrid (Spain); 3LPAP, Univ. de Liège (Belgium); 4LESIA-Observatoire de Paris (France)*

P4.05

Comparison of O<sub>2</sub> IR and NO UV Night Airglow Variations on Mars and Venus

*Brecht, A.1; Bougher, S.W.1; Gerard, J.C.2; Rafkin, S.3; Foster, B.4*

*1University of Michigan (United States); 2University of Liege (Belgium); 3Southwest Research Institute (United States); 4High Altitude Observatory (United States)*

P4.06

Sensitivity Study of Water Vapor Total Column Measurements Using Elodie Archive at Observatoire De Haute-Provence from 1994 To 2004

*Alkasm, S.; Sarkissian, A.*

*LATMOS (France)*

P4.07

Effects of Different Atmospheric Dust Loading on the Retrieval of Surface Albedo of Mars

*Zinzi, A.1; Palomba, E.2; Rinaldi, G.2; D'Amore, M.3*

*1Università di L'Aquila (Italy); 2IFSI-INAF (Italy); 3DLR-PF (Germany)*

P4.08

Sulfuric Acid in the Clouds of Terrestrial Planets

*McGouldrick, K.1; Toon, O.B.2; Grinspoon, D.H.1*

*1Denver Museum of Nature & Science (United States); 2University of Colorado (United States)*

P4.09

Updating CO<sub>2</sub> Spectroscopic Line List using Mars and Venus Spectra

*Vandaele, A.C.1; Villanueva, G.2; Bertaux, J.-L.3; Borkov, Y.4; Drummond, R.5; Mahieux, A.5; Montmessin, F.3; Mumma, M.2; Novak, R.6; Perevalov, V.4; Tashkun, S.4; Wilquet, V.5*

*1Inst for Space Aeronomy (Belgium); 2NASA Goddard Space Flight Center (United States); 3LATMOS (France); 4Laboratory of Theoretical Spectroscopy, Institute of Atmospheric Optics (Russian Federation); 5Planetary Aeronomy, Belgian Institute for Space Aeronomy (Belgium); 6Iona College (United States)*

## Session 6 - Aeronomy and Solar Wind Interaction

### P6.01

Solar Wind Parameters Throughout the Heliosphere from Multi-Spacecraft Measurements

*Fedorov, A.1; Opitz, A.1; Wurz, P.2; Szego, K.3; Sauvaud, J-A.1; Luhmann, J.4; Galvin, A.B.5; Barabash, S.6*

*1CESR (CNRS-UPS) (France); 2Physics Institute, University of Bern (Switzerland); 3KFKI, Research Institute for Particle and Nuclear Physics (Hungary); 4SSL, University of Berkeley (United States); 5SSC, University of New Hampshire (United States); 6IRF, Kiruna (Sweden)*

### P6.02

Comparative Investigation of the Terrestrial and Venusian Interface with the Shocked Solar Wind: Kinetic Modeling and Observations by Cluster and Venus Express

*Echim, M.1; Maggiolo, R.1; Voitcu, G.2; Zhang, T.L.3; Lundin, R.4*

*1Belgian Institute for Space Aeronomy (Belgium); 2Institute for Space Sciences Bucharest (Romania); 3Space Research Institute, Austrian Academy of Sciences, Graz (Austria); 4Swedish Institute of Space Physics, Kiruna (Sweden)*

### P6.03

Intercomparison of Global Models and Measurements of the Martian Plasma Environment

*Holmstrom, M.1; Brain, D.2; Bougher, S.3; Brecht, S.4; Boesswetter, A.5; Chanteur, G.6; Dubinin, E.7; Duru, F.8; Fang, X.9; Fedorov, A.10; Fraenz, M.7; Halekas, J.2; Harnett, E.11; Jarvinen, R.12; Kallio, E.12; Ledvina, S.4; Liemohn, M.3; Ma, Y.13; Modolo, R.14; Nagy, A.3; Najib, D.3; Nilsson, H.1; Simon, S.15; Terada, N.16; Walker, R.13*

*1Swedish Institute of Space Physics (Sweden); 2UC Berkeley (United States); 3University of Michigan (United States); 4Bay Area Research Corporation (United States); 5ITP Braunschweig (Germany); 6CETP (France); 7Max Planck Institute, Katlenburg-Lindau (Germany); 8University of Iowa (United States); 9University of Colorado (United States); 10CESR (France); 11University of Washington (United States); 12Finnish Meteorological Institute (Finland); 13UCLA (United States); 14University of Versailles (France); 15University of Cologne (Germany); 16NICT (Japan)*

### P6.04

The Atmospheric Origin of Cold Ion Escape from Mars

*Lundin, R.; Barabash, S.; Holmstrom, M.; Nilsson, H.; Yamauchi, M.*

*Swedish Institute of Space Physics (Sweden)*

### P6.05

Comparative Investigatons of Planetary Electromagnetic Environments

*Ferencz, Cs.; Lichtenberger, J.*

*Eotvos University (Hungary)*

### P6.06

Particle Circulation Model in the Martian/Venus Environment: Atmospheric Sputtering

*Rinaldi, G.1; Mura, A.2; Mangano, V.2; Milillo, A.2; Orsini, S.2*

*1INAF (Italy); 2IFSI-INAF (Italy)*

### P6.07

Hot Hydrogen Ion Precipitation in the Martian Ionosphere in the Vicinity of Strong Crustal Magnetic Field Anomalies and a Comparison with Earth and Venus Conditions

*Parkinson, C.1; Liemohn, M.1; Fang, X.2*

*1University of Michigan (United States); 2University of Colorado (United States)*

### P6.08

Hot Oxygen Atoms in Venus Exosphere

*Groeller, H.1; Lichtenegger, H.I.M.1; Lammer, H.1; Kulikov, Yu.N.2; Shematovich, V.I.3*

*1Space Research Institute (Austria); 2Polar Geophysical Institute (Russian Federation); 3Institute of Astronomy (Russian Federation)*

### P6.09

Modelling Non-LTE Emissions by CO<sub>2</sub> at 4.3-um in the Upper Atmospheres of the Terrestrial Planets

*Lopez-Valverde, M.1; Lopez-Puertas, M.1; Funke, B.1; Gilli, G.1; Garcia-Comas, M.1; Drossart, P.2; Piccioni, G.3*

*1Instituto de Astrofísica de Andalucía / CSIC (Spain); 2LESIA, Observatoire de Paris (France); 3IASF-INAF (Italy)*

### P6.10

Some Aspects of Venus, Earth and Mars Upper Atmosphere Superrotation

*Bespalov, P.1; Savina, O.N.2*

*1Institute of Applied Physics, Russian Academy of Sciences (Russian Federation); 2State Technical University (Russian Federation)*

P6.11

Energy Per Ion Pair In Planetary Upper Atmospheres

*Simon, C.1; Liliensten, J.2; Gronoff, G.2; Menager, H.2; Barthelemy, M.2*

*1Belgian Institute for Space Aeronomy (Belgium); 2Laboratoire de Planetologie de Grenoble (France)*

P6.12

Ionospheric Photoelectrons at Venus - A Preliminary Statistical Review

*Tsang, S.1; Coates, A.J.1; Jones, G.H.1; Frahm, R.A.2; Winningham, J.D.2; Fedorov, A.3; Barabash, S.4; Lundin, R.4*

*1Mullard Space Science Laboratory, University College London (United Kingdom); 2Southwest Research Institute (United States); 3Centre d'Etude Spatiale des Rayonnement (France); 4Swedish Institute of Space Physics (Sweden)*

P6.13

Mars and Venus: An Observed Interaction Region Near the Top of the Ionosphere

*Winningham, J.D.1; Coates, A.J.2; Lundin, R.3; Duru, F.4; Gurnett, D.A.4; Sharber, J.R.1; Frahm, R.A.1; Tsang, S.M.E.2; Delva, M.5; Zhang, T.L.5*

*1Southwest Research Institute (United States); 2Mullard Space Science Laboratory, University College London (United Kingdom); 3Swedish Institute of Space Physics (Sweden); 4University of Iowa (United States); 5Space Research Institute, Austrian Academy of Science (Austria)*

P6.14

Permanent Layer in the Venus Lower Ionosphere

*Gavrik, A.; Gavrik, Yu.A.; Samoznaev, L.N.; Kopnina, T.F.*

*Kotel'nikov Institute of Radio Engineering and Electronics of RAS (Russian Federation)*

P6.15

How to Derive Neutral Density Profiles from Electron Density Measurements

*Witasse, O.1; Brelly, P.-L.2; Patzold, M.3; Tellmann, S.3; Hausler, B.4; Vandaele, A.-C.5; Wilquet, V.5; Mahieux, A.5; Drummond, R.5; Villard, E.6; Montmessin, F.7; Bertaux, J.-L.7*

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P6.16

Structure and Dynamics of the Ionopause of Venus

*Angsmann, A.1; Dubinin, E.1; Fränz, M.1; Martinecz, C.1; Woch, J.1; Barabash, S.2; Pätzold, M.3; Zhang, T.L.4*

*1MPI for Solar System Research (Germany); 2IRF, Kiruna (Sweden); 3Rheinisches Institut für Umweltforschung (Germany); 4Institut für Weltraumforschung, Graz (Austria)*

P6.17

The High Latitude Ionospheres of Venus and Earth at Solar Minimum

*Wood, A.; Grande, M.; Pryse, S.E.; Kidd, P.; Whittaker, I.C.; Fallows, R.A.*

*Aberystwyth University (United Kingdom)*

P6.18

An Interoperable Web-based Service Offered Through the EuroPlaNet/IDIS Plasma Node Usable for Planetary Plasma Data Exploitation and Comparative Studies: Application to the Martian and Venusian Environments

*André, N.1; Topf, F.2; Budnik, E.3; Gangloff, M.1; Hitier, R.4; Pallier, E.5; Zhang, T.L.2; Fedorov, A.5; Jacquey, C.1; Rucker, H.2; Génot, V.1; Ceconi, B.6; Khodachenko, M.2; Mazelle, C.5; Penou, E.5; Sauvaud, J.-A.5; Barabash, S.7; Lundin, R.7*

*1CDPP/CESR, CNRS/Universite Paul Sabatier, Toulouse (France); 2Space Research Institute, Austrian Academy of Sciences, Graz (Austria); 3Noveltis, Ramonville Saint Agne (France); 4Co-Libri, Montreal (France); 5CESR, CNRS/Universite Paul Sabatier, Toulouse (France); 6LESIA, Observatoire Paris-Meudon, Meudon (France); 7Swedish Institute for Space Physics, Kiruna (Sweden)*

#### Session 7 - Evolution

P7.01

The History of Water on Venus: a Scenario Accounting for Present Neon and Hydrogen Isotopic Ratios

*Gillmann, C.1; Chassefiere, E.2; Lognonne, P.1*

*1IPGP (France); 2LATMOS/IPSL (France)*

P7.02

How was the Present-Day Martian Atmosphere Formed?

*Gillmann, C. 1; Lognonne, P. 1; Chassefiere, E. 2; Leblanc, F. 2  
1IPGP (France); 2LATMOS/IPSL (France)*

P7.03

Mantle Degassing and Atmospheric Evolution: An Application to Mars and Venus

*Morschhauser, A.; Grott, M.; Breuer, D.*

*Institute of Planetary Research, German Aerospace Center (DLR), Berlin (Germany)*

P7.04

Investigation of Extreme Solar Events Based on Accelerometer Data from Leo Satellites

*Krauss, S. 1; Hausleitner, W. 2*

*1Austrian Academy of Sciences (Austria); 2Space Research Institute, Austrian Academy of Sciences (Austria)*

#### Session 8 - Future Missions

P8.01

Mission Architecture Trades for an ASRG-Enabled Discovery-Class Balloon Mission

*Balint, T.; Baines, K.H.; Nuclear Polar VALOR Study Team*

*Jet Propulsion Laboratory / California Institute of Technology (United States)*

P8.02

Future Radioscience Missions with Landers and Orbiters to Mars and other Terrestrial Bodies

*Dehant, V. 1; Mitrovic, M. 1; Le Maistre, S. 1; Yseboodt, M. 1; Rosenblatt, P. 1; Van Hoolst, T. 1;  
Chicarro, A. 2*

*1Royal Observatory of Belgium (Belgium); 2ESA/ESTEC (Netherlands)*

P.8.03

The SOIR Instrument - Results from Venus and Possibilities for Mars

*Drummond, R. 1; Vandaele, A-C. 1; Daerden, F. 1; Neefs, E. 1; Mahieux, A. 1; Wilquet, V. 1;*

*Montmessin, F. 2; Bertaux, J-L. 2*

*1Belgian Institute for Space Aeronomy (Belgium); 2Service d'Aeronomie (France)*

P8.04

Advanced Mössbauer Spectrometer MIMOS II for ExoMars and other Missions

*Klingelhöfer, G. 1; Blumers, M. 1; Bernhardt, B. 2; Lechner, P. 3,4; Girones Lopez, J. 1; Maul, J. 1;  
Strüder, L. 4,5; dUston, C. 6; Brückner, J. 7; Henkel, H. 2*

*1University Mainz (Germany); 2Von Hoerner&Sulger GmbH (Germany); 3PNSensor, München (Germany); 4MPI Halbleiterlabor, München (Germany); 5MPI für Extraterrestrische Physik, Garching (Germany); 6CESR, Toulouse (France); 7MPI Chemie, Mainz (Germany)*

P8.05

Raman Spectroscopy for Mineral and Organic Analysis on Mars within the ExoMars Mission

*Rull, F. Centro de Astrobiología (Spain)*

P8.06

The Venus Exploration Analysis Group (VEXAG): Priorities for Future Venus Exploration

*Stofan, E. 1; Allen, M. 2; Baines, K. 2; Balint, T. 2; Bullock, M. 3; Cutts, J. 2; Glaze, L. 4; Grinspoon, D. 5; Mackwell, S. 6; Thompson, T. 2*

*1Proxemy Research/UCL (United States); 2Jet Propulsion Laboratory (United States); 3Southwest Research Institute (United States); 4Goddard Space Flight Center (United States); 5Denver Museum of Nature and Science (United States); 6Lunar and Planetary Institute (United States)*

P8.07

Upcoming Science Activities in Support of ESA's ExoMars Mission

*Vago, J.L.; Haldemann, A.F.C.; the ExoMars Project Team*

*European Space Agency (Netherlands)*

P8.08

The Cyborg Astrobiologist: Teaching Computers to Find Uncommon or Novel Areas of Geological Scenery in Real-time

*Wendt, L. 1,9; Gross, C. 1; McGuire, P.C. 1,2,3; Bonnici, A. 4; Foing, B.H. 5; Souza-Egipsy, V. 2,6; Bose, R. 3; Walter, S. 1; Ormö, J. 2; Díaz-Martínez, E. 2,7; Oesker, M. 8; Ontrup, J. 8; Haschke, R. 8; Ritter, H. 8 1Freie Univ. Berlin, Germany, 2Centro de Astrobiología (INTA/CSIC), Torrejón de Ardoz, Madrid, Spain, 3Mc-Donnell Center for the Space Sciences, Washington Univ., St. Louis, USA, 4Dept. Systems and Control Engineering, Univ. Malta, 5ESTEC, Noordwijk, Netherlands, 6Univ. Málaga, Spain, 7Geological Survey of Spain (IGME), Madrid, Spain, 8Technische Fakultät, Univ. Bielefeld, Germany*

	<p>P8.09  Venera D - Russian Mission to Venus  <i>Korablev, O.I.1; Vorontsov, V.A.2; Zasova, L.V.1; Basilevsky, A.T.3; Ekonomov, A.P.1; Ignatiev, N.I.1; Khavroshkin, O.B.4; Lipatov, A.N.1; Moshkin, B.E.1</i>  1IKI RAS, Moscow (Russian Federation); 2Lavochkin Ass., Moscow (Russian Federation); 3GEOKHI, RAS, Moscow (Russian Federation); 4IFZ RAS, Moscow (Russian Federation)</p>
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## Day 5 - Friday, 15 May 2009

<b>Session 7</b>	<b>Evolution</b> Chairs: Grinspoon, Lammer
09:00	<p><u>Invited Tutorial</u>  The Divergent Evolution of Venus, Earth and Mars  <i>Grinspoon, D.</i>  <i>Denver Museum of Nature &amp; Science (United States)</i></p>
09:40	<p>Aspects of the evolution of the atmosphere of Mars and Venus  <i>Gillmann, C.</i>  <i>IPGP (France)</i></p>
10:00	<p>Early Evolution of Mars and the Earth: A Reappraisal  <i>Bibring, J.-P.; Poulet, F.</i>  <i>IAS (France)</i></p>
10:20	<p>The Abundances and Isotopic Ratios of Noble and Light Gases: Clues to the Origin and Evolution of Venus, Earth, and Mars  <i>Baines, K.1; Atreya, S.K.2; Grinspoon, D.3; Zahnle, K.4</i>  1Jet Propulsion Laboratory, California Institute of Technology (United States); 2University of Michigan (United States); 3Denver Museum of Nature and Science (United States); 4NASA/Ames Research Center (United States)</p>
10:40	Coffee break
11:10	<p>Earth, Venus and Mars were Developed on the Same Scenario: Evidence from Geological and Petrological Data  <i>Sharkov, E.; Bogatkov, O.</i>  <i>Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry RAS (Russian Federation)</i></p>
11:30	<p>The Stability of Early Earth's Nitrogen Atmosphere  <i>Lichtenegger, H.1; Lammer, H.1; Khodachenko, M.L.1; Kulikov, Yu.N.2; Groeller, H.1; Griessmeier, J.M.3</i>  1Space Research Institute (Austria); 2Polar Geophysical Institute (Russian Federation); 3ASTRON (Netherlands)</p>
11:50	<p>The Hydrogen Corona of Earth, Venus and Mars, and Possible Implication for Atmospheric Evolution  <i>Bertaux, J.-L.1; Chaufray, J.Y.2; Quémerais, E.1</i>  1LATMOS/CNRS (France); 2South West Research Institute (United States)</p>
12:10	<p>Escape of Heavy Hot Atoms from Early Mars  <i>Groeller, H.1; Lammer, H.1; Lichtenegger, H.I.M.1; Shematovich, V.I.2; Kulikov, Yu.N.3</i>  1Space Research Institute (Austria); 2Institute of Astronomy (Russian Federation); 3Polar Geophysical Institute (Russian Federation)</p>
12:30	Discussion
13:00	End of Session
13:00	Lunch break
<b>Session 8</b>	<b>Future Missions</b> Chairs: Chicarro, Satoh
14:00	<p>JAXA's Planetary Exploration Activities: Current and Near Future  <i>Nakamura, M. Satoh, T.</i>  <i>Japan Aerospace Exploration Agency (Japan)</i></p>
14:40	<p>Overview of NASA's Flagship Class Venus Mission Study  <i>Balint, T.1; Benz, A.C.1; Bullock, M.A.2; Senske, D.A.1; Campbell, B.A.3; Chassefiere, E.4; Colaprete, A.5; Cutts, J.A.1; Glaze, L.6; Gorevan, S.7; Grinspoon, D.H.8; Hall, J.L.1; Hashimoto, G.L.9; Head, J.W.10; Hunter, J.11; Johnson, N.12; Kerzhanovich, V.V.1; Kiefer, W.S.13; Kolawa, E.A.1; Kremic, T.6; Kwok, J.H.1; Limaye, S.S.14; Mackwell, S.J.13; Marov, M.Y.15; Ocampo, A.C.16; Peterson, C.E.1; Schubert, J.17; Spilker, T.1; Stofan, E.R.18; Svedhem, H.19; Titov, D.V.20; Treiman, A.H.13</i>  1Jet Propulsion Laboratory / California Institute of Technology (United States); 2Southwest</p>

	<p><i>Research Institute (United States); 3Smithsonian Institution (United States); 4Service d'Aeronomie (France); 5NASA / Ames Research Center (United States); 6NASA/Goddard Space Flight Center (United States); 7Honeybee Robotics (United States); 8Denver Museum of Nature and Science (United States); 9Kobe University (Japan); 10Brown University (United States); 11NASA / Glenn Research Center (United States); 12NASA / Goddard Space Flight Center (United States); 13Lunar and Planetary Institute (United States); 14University of Wisconsin, Madison (United States); 15Keldysh Institute of Applied Mathematics (Russian Federation); 16NASA HQ (United States); 17University of California at Los Angeles (United States); 18Proxemy Research (United States); 19ESA, Noordwijk (Netherlands); 20Max Planck Institute for Solar System Research (Germany)</i></p>
15:00	<p>Russian Plans for Mars and Venus <i>Korablev, O.</i></p>
15:20	<p>The ESA Exploration Programme - Programmatic <i>Coradini, M.</i> <i>ESA HQ (France)</i></p>
15:40	<p>Coffee break</p>
16:10	<p>The ESA exploration programme - Science Rationale <i>Chicarro, A.</i> <i>ESA-ESTEC (Netherlands)</i></p>
16:30	<p>The European Venus Explorer: A Mission for Better Understanding the Climate Evolution of Terrestrial Planets <i>Chassefière, E.; the EVE Team</i> <i>LATMOS-IPSL/ UVSQ-CNRS-UPMC, Université P &amp; M Curie (France)</i></p>
16:50	<p>Discussion</p>
17:00	<p>Meeting Summary and Concluding Remarks <i>Saunders, S.</i> <i>NASA (United States)</i></p>
17:30	<p>End of Conference</p>
17:45	<p>Bus to Schiphol</p>