

**Microsymposium 36  
Moscow, Russia  
October 14 –16, 2002**

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**Program**

**Monday • 14 • October**

- 9:15-9:30            Opening remarks  
E. Galimov and J. Head
- 9:30-16:00        Water on Mars  
Chairs: M. A. Kreslavsky, A. N. Rudoy, and K. E. Fishbaugh
- 9:30-10:00        I.G. Mitrofanov, M.L. Litvak, A.S. Kozyrev, A.B. Sanin, W. Boynton, C. Shinohara,  
D. Hamara and R. S. Saunders  
First results of Mars mapping of neutron flux by High Energy Neutron Detector,  
Mars Odyssey
- 10:00-10:30      M. L. Litvak, I. G. Mitrofanov, A.S. Kozyrev, A.B. Sanin, W. Boynton, C.  
Shinohara, D. Hamara and R. S. Saunders  
Seasonal variations of subsurface hydrogen as seen by High Energy Neutron  
Detector, Mars Odyssey
- 10:30-11:00      M.L. Litvak, A. T. Basilevsky, I. G. Mitrofanov, W. Boynton and R. S. Saunders  
Distribution of chemically bound water in surface layer of Mars based on data  
acquired by High Energy Neutron Spectrometer, Mars Odyssey
- 11:00-11:30      J.W. Head  
Mars polar cap evolution and potential fate of sublimation and melting products
- 11:30-12:00      K. E. Fishbaugh and J. W. Head III  
Possible basal ice in the Mars north polar cap
- 12:00-12:30      M. A. Kreslavsky and J. W. Head  
Morphology and stratigraphy of the young high-latitude ice-rich mantle in the  
northern lowlands of Mars
- 12:30-13:30      Lunch break
- 13:30-14:00      R.O. Kuzmin, I.A.Komarow, A.H.Kozlov and V.S. Isaev  
The comparative morphometric analysis of polygonal terrains on Mars and on  
the Earth high latitudes areas
- 14:00-14:30      S.M. Milkovich and J.W. Head, III  
Use of Fourier analysis to characterize polar layered deposits at the martian  
north pole
- 14:30-15:00      A. N. Rudoy  
Our knowledge about geologic-geomorphic evidence on catastrophic glacial  
superfloods in Siberian mountains: A review
- 15:00-15:30      A.A. Kostrikov  
On hydrodynamics of ice age Eurasian superpower torrents

- 15:30-16:00 M. A. Ivanov and J. W. Head  
Syrtris Major and Isidis Basin contact: Evidence for interaction between lava flows and volatile-rich sediments
- 16:00-16:30 Coffee break
- 16:30-18:00 Poster Session 1: Mars and General Planetology  
Chairs: G. G. Kochemasov and G. G. Michael
- A.A. Barenbaum  
Estimation of tectonic relaxation time of Mars surface using large asteroid craters distribution
- J.M. Dlugach and E.V. Petrova  
Aerosols in the martian atmosphere: What kind of new polarimetric observations could be useful
- H. Lahtela, J. Raitala, M. Aittola, V.-P. Kostama  
Classification of martian lacustrine targets for MEX-HRSC
- G.F. Makarenko  
Martian young volcanic areas have position like Earthen volcanic fields
- A. Horváth, T. Gánti, Sz. Bérczi, A. Gesztesi and E. Szathmáry  
Annual reappearance of biogenic dark dune spots on southern polar region of Mars
- S. Pershin  
Correlation of "chlorophyll" and water index on Mars surface
- A. Ovcharenko, Yu. Shkuratov, P. Pinet, A. Cord and Y. Daydou  
Additional characterization of martian regolith analogs used for spectral imaging by the facility of observatory Midi-Pyrénées
- J.A. Iluhina and J.F. Rodionova  
Automated making of the map of Isidis's basin
- Yu.I. Stakheev  
Regularities of the "mercury breath" of the Earth
- G.G. Michael  
Coordinate registration by automated crater recognition, ESA/ESTEC
- A.M. Shirenin  
Nonlinear algorithm of the parameters estimation of transformation between two coordinate systems of the planets
- S.G. Valeev  
Technique of the construction models EGF on the basis ARM - approach
- S.G. Valeev, G.R. Kadyrova and N.A. Chiglyakova  
The automated system processing experimental data (version 2.0)
- S.G. Valeev and T.E. Rodionova  
The software for decision of tasks estimation of astrodynamic constants
- S.G. Valeev and E.S. Sergeev  
Software package of processing of time series

Yu.V. Barkin  
General regularities of the planet and satellite systems: Orbits, rotation and formations

M.G. Ferrandez, Yu.V.Barkin and J.M. Ferrandiz  
Ordered positions of formation centers of the Earth-like planets and moons

G. G. Kochemasov  
World of oscillations: Steps of the comparative wave planetology

G. G. Kochemasov  
Mars, Earth, Venus: Concerted properties of lithospheres and atmospheres connected with regular tectonic granulation of the planets

18:00-20:00 American buffet and slide session  
Chair: A. T. Basilevsky

## **Tuesday • 15 • October**

9:30-10:30 Future Missions

9:30-10:00 C. M. Pieters  
National Research Council report to NASA on solar system exploration priorities for the next decade

10:00-10:30 A.F. Chicarro  
Europe going to Mars and Venus - Mars and Venus Express twin missions

10:30-13:30 Venus Geology and History  
Chairs: J. W. Head and A. S. Krassilnikov

10:30-11:00 J.W. Head and A.T. Basilevsky  
Timing and rates of geological activity of Venus as deduced from analysis of impact crater population

11:00-11:30 I.V. Setyaeva and A.T. Basilevsky  
Classification of impact craters of Venus with  $D \leq 5$  Km based on degree of preservation of the associated radar-dark deposits

11:30-12:00 C. G. Cochran  
Depth/diameter ratios of impact craters on Venus

12:00-12:30 V.-P. Kostama and M. Aittola  
Distribution and classification of volcano-tectonic features of Venus

12:30-13:00 A.S. Krassilnikov and J.W. Head  
Novae on Venus: Scenarios of evolution

13:00-13:30 A. M. Abdrakhimov  
Geochemical comparison of Venus' rocks with terrestrial oceanic igneous rocks using the discriminant method

13:30-14:30 Lunch break

14:30-16:00 Icy and Stony Moons  
Chair: Yu. G. Schkuratov

- 14:30-15:00 O.L. Kuskov and V.A. Kronrod  
Europa: Thickness of an outer water-ice shell and core radii
- 15:00-15:30 L.V. Starukhina and Yu.G. Shkuratov  
Meteoroid swarm encounter as a mechanism of swirl formation
- 15:30-16:00 E.V. Sharkov and O.A. Bogatkov  
Comparative study of the Earth and the Moon: Key for understanding of origin and evolution of the solid planets of the Earth's group
- 16:00-16:30 Coffee break
- 16:30-18:00 Poster Session 2: Venus, Moon, and Future Missions  
Chairs: O. B. Khavroshkin and V. Kaydash
- M. Aittola and V.-P. Kostama  
Analysis of venusian coronae, arachnoids and novae on the basis of their geological environment
- N.V. Bondarenko  
Analysis of dark crater deposits in radar cross-section – Emissivity domain
- M.A. Ivanov, and J.W. Head  
Lakshmi Planum Quadrangle (V-7) Venus: Results of preliminary mapping
- M.A. Ivanov, and J.W. Head  
Geologic history of Lada Terra, Venus: Assessment from preliminary mapping of V-61, Mylitta Fluctus, and V-56, Lada Terra, Quadrangles
- N.N. Koronovsky  
Strike-slip displacements on Fortuna tessera
- N.N. Koronovsky  
Structural pattern of Alpha, Tellus and Fortune tessera
- A.S. Krassilnikov and J.W. Head  
Arachnoids on Venus: Structural analysis, classification and models of formation
- E.V. Pivchenkova and V.P. Kryuchkov  
Venus: Global mapping of ridge belt patterns
- C. M. Pieters C.T. Russell, A. Coradini, W.C. Feldman, R. Jaumann, A.S. Konopliv, T.B. McCord, L.A. McFadden, H.Y. McSween, S. Mottola, G. Neukum, C.A. Raymond, D.E. Smith, M. Sykes, B. Williams and M. Zuber  
DAWN at Vesta: Exploration, predictions, and surprises
- H. Hiesinger, J.W. Head III, U. Wolf, R., Jaumann and G. Neukum  
Lunar mare basalts: Results from crater size-frequency distribution measurements
- A. C. Cook, B. Semenov, M. S. Robinson, and T. T. Watters  
Assessing the absolute position accuracy of the Clementine UVVIS mosaic
- O.B. Khavroshkin and V.V. Tsyplakov  
Information content of meteoroid seismology by Nakamura's Catalog (NC): Two unknown periodicity

P.V. Litvin and J.F. Rodionova  
A morphometric analysis of the South Pole-Aitken Basin

V. Omelchenko, Yu. Shkuratov, D. Stankevich, V. Kaydash, C. Pieters and P. Pinet  
Comparison of two methods for determination of the lunar surface composition

A.I. Ivliev, L.L. Kashkarov and G.V. Kalinina  
The degree of shock-thermal reworking of the lunar regolith individual silicate grains: Track thermoluminescence analysis

D. Petrov, Yu. Shkuratov, V. Omelchenko, V. Kaydash and E. Kozlova  
How dark are shadowed areas of lunar craters: Estimates with Clementine UVVIS data

V.V. Shevchenko and E.A. Kozlova  
Permanently shaded areas at the lunar poles during the period of regression of the line of nodes

V.V. Shevchenko, S.G. Pugacheva, P. Pinet, S. Chevrel and Y. Daydou  
Photometric analysis of lunar features and composition of ejecta terrains

L.V. Starukhina and Yu.G. Shkuratov  
Do over mature lunar soils exist: A brightening effect

## Wednesday • 16 • October

- 9:30-11:30 Impact Cratering, Comets, Meteorites, Remote Sensing  
Chairs: E. A. Kozlova and Yu. G. Schkuratov
- 9:30-10:00 S. Damiani and J.P. Barriot  
Modeling the ejecta blanket on Eros' surface
- 10:00-10:30 V.A. Alexeev  
Ablation of meteorites
- 10:30-11:00 Yu. Shkuratov, C. Pieters, D. Stankevich, V. Omelchenko and V. Kaydash  
New estimations of the lunar surface composition with Clementine images and lunar sample data: Preliminary results
- 11:00-11:30 E. A. Kozlova and V.V. Shevchenko  
Permanently shaded areas at the lunar poles during the period of regression of the line of nodes
- 11:30-12:30 Lunch break
- 12:30-15:00 General Planetology, Life  
Chairs: Yu. V. Barkin and S. Franck
- 12:30-13:00 Yu.V. Barkin  
Nature of tectonic activity of the planets and satellites
- 13:00-13:30 A.B. Makalkin  
High-velocity collisions of protosatellite bodies in the Jovian and Saturnian nebulae and consequences for the material
- 13:30-14:00 S. Franck, C. Bounama, W and von Bloh

On the habitability of Earth and Mars

- 14:00-14:30 A. Horváth, T. Gánti, Sz. Bérczi, A. Gesztesi and E. Szathmáry  
DS-biomarker hypothesis is supported by water data of Mars Odyssey
- 14:30-15:00 S. Pershin  
Life on Mars and Antarctica can be supported by water under extremely low, 200 K, temperature
- 15:00-15:30 Coffee break
- 15:30-16:30 Poster Session 3: Impact Cratering, Comets, Meteorites, Life  
Chairs: V. A. Alexeev and I. B. Kosarev

V.A. Alexeev, V. D. Gorin and G. K. Ustinova  
Meteorite data on solar modulation of galactic cosmic rays in the heliosphere during four solar cycles

L.L. Kashkarov, A.I. Ivliev, G.V. Kalinina, Z.A. Lavrentjeva, A.Yu. Lyul, and N.S. Kuyunko  
Low-level thermal and shock influence on the Pesyanoe Aubrite matter

Z.A. Lavrentjeva and A.Yu. Lyul  
Enstatite meteorites: The trace element chemistry of mineral constituents - clues to their origin

A.Yu. Lyul, Z.A. Lavrentjeva and G.M. Kolesov  
Elemental distribution in the certain fractions from Norton County aubrite

O.N. Nikitushkina, A.A. Bajkova  
Some peculiarities of the impact mechanism of crater formation in metals

I.B. Kosarev and I.V. Nemtchinov  
Radiation flashes during meteoroid penetration through atmospheres of giant gaseous planets

T. Öhman, D. Badjukov, J. Raitala and C. Lorenz  
Kara revisited

K. Ojala, D. Badjukov, J. Raitala, T. Öhman and C. Lorenz  
Landsat TM classification of the Arctic Kara impact crater tundra, Russia

O.I. Yakovlev, Yu.P. Dikov, M.V. Gerasimov and F. Wlotzka  
Possible signatures of vaporization effects in impact glasses

S. Bondarenko, A. Ovcharenko and Yu. Shkuratov  
Simulating photometry of planetary regolith analogs with a new laboratory instrument: Initial results

I. Dulova, Yu.V. Kornienko and V.V. Pugach  
On image matching at determination of surface relief by the photometric method

V.P. Perelygin, Yu.V. Bondar, L.L. Kashkarov, L.I. Kravets, R. Brandt, W. Susinger, P. Vater and G.P. Kniazeva  
On search and identification of track due to the spontaneous fission of super heavy element nuclei ( $Z = 110$ ) in extraterrestrial phosphate crystals

G.K. Ustinova  
Isotopic fractionation of primordial noble gases in the strong shock waves at the early stage of the solar system

M. V. Gerasimov, E.N.Safonova and Yu. P. Dikov  
On the possibility of synthesis of complex organic molecules during an impact

E. Zubko and Yu. Shkuratov  
Mechanisms of negative polarization for planetary regolith and comet dust

I.B. Kosarev and I.V. Nemtchinov  
IR flashes induced by meteoroid impacts onto the Pluto's surface

M Benna, J.-P. Barriot, and W. Kofman  
Characterization of comet 46P/Wirtanen's nucleus interior using radio-waves sounding data (ROSETTA Space Mission – CONSERT Experiment)

16:30 Adjourn

#### Print Only Abstracts

G.A. Burba, V.P. Shashkina, V.P. Kryuchkov, M.A. Ivanov  
The global geologic mapping of Venus: Progress in 2002 and the current status report on Vernadsky/Brown VENGLOBGEK project

J.L. Dickson and J.W. Head  
Large Hesperian proglacial lake in Schmidt Valley, Mars: 2: Evidence for marginal pitted sandar deposits

K. E. Fishbaugh and J. W. Head III  
Characteristics of a basal unit outcrop beneath the Mars north polar cap

E. R. Fuller and J. W. Head, III  
Proposing a high volatile content in the equatorial layered deposits including the Medusae Fossae Formation, Mars

G. J. Ghatan and J. W. Head  
Cavi Sisyphi, Mars: Nature, origin and initial mapping with MOLA data

J.W. Head and D.R. Marchant  
Mountain glaciers on Mars?: Characterization of western Tharsis Montes fan-shaped deposits using MGS data

J.W. Head and D.R. Marchant  
Mountain glaciers on Mars?: Western Arsia Mons fan-shaped deposit ridged facies as cold-based glacier dump moraines

J.W. Head and J.L. Dickson  
Large Hesperian lake in Schmidt Valley near the south pole of Mars: 3: Evidence for lake ice-sheet contact deposits

J.W. Head and L. Wilson  
Diatremes and kimberlites 1: Definition, geological characteristics and associations

J.W. Head and L. Wilson

Diatremes and kimberlites 2: Integrated model of the ascent and eruption of kimberlitic magmas and production of crater, diatreme, and hypabyssal facies

J.W. Head and J.L. Dickson

Large Hesperian lake in Schmidt Valley: 4: Candidate sapping valleys on the pitted plain

J.W. Head, P. Russell, M. Hecht and J. B. Garvin

Korolev Crater, Mars: Characteristics and origin of volatile-rich deposits in the crater interior

H-P. Jons

CO<sub>2</sub> – Hydrates as driving forces in recent exogenic dynamics on Mars?

H-P. Jons

On the origin of the Mediterranean Sea and its surrounding mountain ranges (i.e. the Anti-Pacific) exclusively by permanently west-east acting forces as consequence of the trurnit – cycle

R.O. Kuzmin and T.V. Shingareva

Phobos-Grunt Mission: A morphologic characteristic of the proposed landing site

G. W. Patterson and J. W. Head

Triple junctions as an indicator of tectonic boundaries on Europa

P.S. Russell and J.W. Head

Probing for groundwater in the northern lowlands of Mars

D.E. Shean and J.W. Head

New observations of the Pavonis Mons lobate deposits

D.E. Shean and J.W. Head

Cold based glacial origin of the Pavonis Mons lobate deposits

B.M. Webb and J.W. Head III

A tool for evaluating multiple martian data sets: An atlas of volcanic landforms and deposits on Mars