

Final Programme 51st ESLAB Symposium

Last update: 05 December 2017, 18:00:00 (GMT)

Monday 04 December 2017

10:30 Conference Desk Open (on-site registration available). Posters Up.

Opening Session

Session Chair: B. Foing

12:00 Welcome & Logistics from Science & Local Organising Committees

12:05 Welcome from Head of Science Support Office, Arvind Parmar

12:20 B. Foing et al., 'Understanding Extreme Habitability with ESA Missions'

12:35 J.-P. Bibring [Keynote], 'Rosetta, Mars, and the emergence of life: genericity and contingencies'

13:00 Lunch

14:00 Welcome from Director ESTEC and TEC Directorate, Franco Ongaro

14:05 Welcome from ESA Director of Science, Alvaro Giménez-Cañete

2: Planetary habitability processes: accretion, evolution, impacts, ingredients

Session Chairs: K. Harriss, E. Sefton-Nash

14:20 O. Mousis [Invited], 'Formation of ices in the protosolar nebula and implications for the composition of outer planets'

14:40 A. Johansen [Invited], 'Forming volatile-rich planetesimals'

15:00 S. Berger, 'Quantifying the Effects of Temperature on Short Period Rocky Planets'

(rescheduled to a flash talk on Thursday 7 December at 14:40)

15:15 C. Avdellidou [Invited], 'Hypervelocity impacts and Habitability'

15:35 K. Harriss, 'Impact cratering and disruption on Icy bodies and landscapes'

15:50 D. Wilson, 'Measuring planetary chemistry via observations of remnant planetary systems at white dwarfs'

1: Habitability of Young Venus

Session Chair: B. Foing

16:05 J. Schirmack, 'Venus: from a Terrestrial Ocean to a Possible Habitat in the Lower Atmosphere'

16:20 S. Limaye, 'Could microorganisms cause the absorption of solar radiation in the Venus clouds?'

16:35 Announcement and Presentation of Young Researcher Awards

16:45 Posters Up

17:00 Welcome Drink

19:15 Conference Bus to Noordwijk

Tuesday 05 December 2017

3: Evolution of habitability and settings for origins of life at Earth

Session Chair: F. Westall

- 09:00 F. Westall [Invited], 'Habitability from a Microbial Point of View'
09:20 K. Moelling, 'Origin of Life on Earth by RNA and viruses'
09:35 H. Moors, 'Habitable planet Earth: We owe everything to microbes!'

4: Earth extreme habitats: natural (surface and subsurface), artificial and sustainable

Session Chair: F. Westall, M. Drinkwater

- 09:50 F. Hasan, 'Astrobiological Studies on Halophilic Psychrophiles Isolated from High Altitude cold region of North of Pakistan'
10:05 J-L. Bertaux [Keynote], 'Spectroscopy markers of habitability variables on Earth, Mars, Venus and planetary atmospheres'
10:30 M. Drinkwater, [Invited], 'Overview of ESA Earth Observation Programme and exemple of monitoring processes in extreme cryosphere'

11:05 Coffee Break

7A: Mars past, present, and future habitability

Session Chair: J. Vago, O. Korablev

- 11:35 D. Titov [Invited], 'Mars Express Highlights on Mars habitability'
11:55 S. Adeli, 'Investigating the chloride-rich deposits in the highlands of Terra Sirenum: implication on bio-signature preservation'
12:10 J. Campbell, 'Compositional Mapping of the Martian South Polar Residual Cap using hyperspectral data from CRISM'
12:25 J. L. Vago [Invited], 'Searching for Signs of Life with the ExoMars 2020 Rover'
12:45 H. Svedhem [Invited], 'ExoMars 2016 Trace Gas Orbiter'

13:00 Lunch

7B: Mars past, present, and future habitability

Session Chair: D. Titov

- 14:00 O. Korablev [Keynote], 'Mars atmospheric and surface spectroscopic diagnostics: Mars Express results and ExoMars update'
14:25 A. Riedo (poster flash talk), 'A miniature LIMS instrument for in situ chemical analysis of solids with high spatial resolution on planetary surfaces'
14:30 F. Da Pieve (poster flash talk), 'Response of potential new solar cells on the surface of Mars for assessing future habitability: a space weather and materials modelling study'

6: Making the Moon/Mars habitable

Session Chairs: A. Kolodziejczyk, E. Sefton-Nash

- 14:35 B. H. Foing [Invited], 'Making the Moon Habitable: Science, Research, Technology & Innovation'
14:55 E. Sefton-Nash, 'PROSPECT: ESA's Package for Resource Observation and In-Situ Prospecting for Exploration, Commercial Exploitation and Transportation'
15:10 A. M. Kolodziejczyk [Invited], 'Space biology and space medicine in the Lunares habitat in Poland'

15:30 Coffee Break

- 16:00 T. Volkova [Invited], 'Safety and comfort for Moon and Mars habitats: key design considerations.'
16:20 J.L. Moro, 'Lunar Base 1 – Conceptual architectural design studies for a base on the Moon'

- 16:35** H. Ghassabian Gilan, 'Study of Isokinetic Structures and Applications for Expandable and Adaptive Habitats using in-situ Lunar Resources for Future Moon Surface Missions'
- 16:50** D. Cooper, 'Lunar Mission One: Paving the Way for Human Habitability on the Moon'
- 17:05** M. M. Mukadam, 'Moon Gait Pilot Experiment'

16: Special Outreach Presentation

Session Chairs: B. Foing, E. Sefton-Nash

- 17:20** C. Carreau [Invited], 'Our Solar System and planets formation, the appearance of life: A slideshow for the general public'
- 17:40** **Poster Session, authors in attendance (with refreshments and snacks)**
Chairs: C. Avdellidou, B. Foing
- 20:00** Conference Bus to Noordwijk

Wednesday 06 December 2017

5: Life support systems in Earth extreme places and in orbit, human spaceflight

Session Chairs: J.-P. de Vera, C. Heinicke

- 09:00** J.-P. De Vera [Invited], 'Space as a Tool for Astrobiological Exploration of the Solar System'
- 09:20** C. Heinicke [Invited], 'How to live on Mars'
- 09:40** C. Lasseur [Invited], 'MELiSSA: the European project of closed Life support system'
- 10:00** G. Detrell, 'Photobioreactor Technology for Microalgae Cultivation To Support Humans in Space with Oxygen and Edible Biomass'
- 10:15** M. Knie, 'Zooplankton for the production of biomass in bioregenerative life support systems in space'
- 10:30** T. Etheridge, 'Deep Space Petri-Pod, a new platform for astrobiology experiments beyond the van Allen belts'
- 10:45** K. Schlosser, 'Addressing Key Psychological, Social and Physiological Factors in Preparation for Long Duration Manned Missions – Suggested Adaptations of the Current Astronaut Selection and Training'
- 11:00** P. Clauwaert, 'Nitrogen recovery from urine in Space: a case for nitrification'
- 11:15** R. M. Giurgiu (poster flash talk), 'From Waste to Taste; Closing the MELiSSA Loops for escaping and sustaining the Earth habitat'

11:20 *Coffee Break*

8: Asteroids and small bodies habitats

Session Chairs: C. Avdellidou, R. Rudawska

- 11:45** M. Delbo [Invited], 'Sources of primordial matter in the asteroid belt'
- 12:05** M. C. De Sanctis [Invited], 'Latest results on Ceres from DAWN: ingredients for life?'
- 12:25** D. Koschny [Invited], 'Hazards from asteroid impacts and the Space Situational Awareness programme'
- 12:45** C. Sathiyavel, 'A New concept of Asteroid Mitigation using Expulsion Payload in Spacecraft system.'
- 13:00** *Lunch*
- 14:00** M. A. Barucci [Invited], 'Probing asteroids with remote sensing and sample return'

9: Outer solar system: Sub-surface Habitability at icy moons of Jupiter and Saturn

Session Chairs: O. Witasse, B. Sherwood

- 14:20** A. Coustenis [Invited], 'Habitability potential of icy moons around giant planets and the JUICE mission'
- 14:40** F. Klenner, 'Mass spectrometry of astrobiologically relevant organic material - Implications on future space missions to ocean worlds in the outer Solar System'
- 14:55** N. A. Khawaja, 'Organic compounds in ice grains from the subsurface ocean of Enceladus'
- 15:10** O. Witasse [Invited], 'JUICE: A European Mission to Jupiter and its Icy Moons'
- 15:30** B. Sherwood, 'Program Options to Explore Ocean Worlds'
- 15:45** M. Gomes Rachid (poster flash talk), 'Processing of Cometary surface by swift ions'
- 15:50** *Coffee Break*

10: Effects of space weather and Astrophysical hazards

Session Chair: P. Ubertini

- 16:20** H. Lammer [Invited], 'Evolution of Atmospheres, Outgassing History, and Water Inventories of terrestrial planets'
- 16:40** D. Müller [Invited], 'Understanding our star and its influence on Earth with SOHO'
- 17:00** V. Nwankwo, 'Effects of Space weather on the ionosphere and LEO satellites' orbital trajectory in equatorial, low and middle latitude'
- 17:15** S. Pilling, 'Effect of ionizing radiation (X-rays and Cosmic rays) on frozen worlds'
- 17:30** P. Ubertini [Invited], 'High energy astrophysical hazards for habitability'

11: Planetary protection and measuring extreme biomarkers

Session Chair: G. Kminek

- 17:50** G. Kminek [Invited], 'Protecting solar system bodies from us'
- 18:10** J. Rummel [Invited], 'Protecting our Planet from Extraterrestrial Life: Safe Solar System Exploration'

Special JWST Presentation

Session Chair: B. Foing

- 18:30** P. Ferruit [Invited], 'JWST Status and prospects for habitability studies'
- 19:00** Buses from ESTEC to Restaurant La France, Oegstgeest

Symposium Dinner

- 19:15** Arrival/aperitif
- 19:30** Dinner
- 21:30** Bus La France to Noordwijk
- 22:30** Bus La France to Noordwijk

Thursday 07 December 2017

14A: Finding and Characterising Habitable Exoplanets: Proxima Centauri, Trappist-1 and beyond

Session Chair: A. Heras

- 09:00** M. Turbet [Keynote], 'Global climate models and extreme habitability'

- 09:25 J-P. Beaulieu [Invited], 'Microlensing survey and exoplanets'
- 09:45 I. Ribas [Invited], 'The habitability of Proxima Centauri b'
- 10:05 M. Davies [Invited], 'Exoplanetary systems dynamics and habitability'
- 10:25 E. Bolmont [Invited], 'Habitability in the Trappist-1 and other exoplanetary systems around red dwarfs'
- 10:45 J. Gale, 'Potential for Life on Trappist-1 and other Red Dwarf Planets'

11:00 Coffee Break

- 11:20 M. Popp [Invited], 'Climate variations on water-rich circumbinary planets and their impact on habitability'
- 11:40 A. Struminsky, 'Radiation Environment near Exoplanets'
- 11:55 A. Wandel, 'On the bio-habitability of Red Dwarf planets and estimating the abundance of biotic planets with future telescopes'

14B: Finding and Characterising Habitable Exoplanets: Proxima Centauri, Trappist-1 and beyond

Session Chair: I. Snellen

- 12:10 M. Davies, I. Ribas [Invited], 'CHEOPS: Characterising Exoplanet Satellite' – ESA's first S-class mission'
- 12:25 A. Heras [Invited], 'The PLATO space mission and the quest for habitable worlds'
- 12:40 (rescheduled 5 Dec) G. Tinetti [Invited], 'Discriminating habitable worlds from their atmospheric composition'

13:00 Lunch

14B: Finding and Characterising Habitable Exoplanets: Proxima Centauri, Trappist-1 and beyond (continued)

Session Chair: M. Davies

- 14:00 A. Quirrenbach [Invited], 'Characterizing Habitable Exoplanets with Interferometry'
- 14:20 I. Snellen, 'Atmospheric characterization of extrasolar planets: from hot Jupiters to Earth-like planets'
- 14:35 M. K. Jagadeesh (poster flash talk), 'Indexing of exoplanets in search for potential habitability: application to Mars-like worlds'

13: Engineering of travel to and exploration of Extreme Habitable Worlds

Session Chair: B. Foing

- 14:40 S. Berger, (poster flash talk), 'Quantifying the Effects of Temperature on Short Period Rocky Planets' (*rescheduled*)
- 14:45 G. Ortega Hernando [Invited], 'Technology Roadmaps for Moon and Mars Exploration'
- 15:05 V. Hipkin [Invited], 'Moon & Mars Sample Return Analogue Deployment Validation'
- 15:25 J. Manca, 'Next generation solar cells for powering extreme habitable worlds : light-weight, flexible and printable-on-demand'

15:40 Coffee Break

- 16:05 S. P. Worden [Keynote], 'Breakthrough Starshot Initiative'

16A: Education, outreach, societal, philosophical & artistic views on "Extreme Habitable Worlds"

Session Chair: J. De Dalmau

- 16:30 E. Chatzichristou [Invited], 'Europlanet 2020 RI Education and Outreach projects focusing on Extreme Habitable Worlds'
- 16:50 P. Evellin, 'EuroMoonMars workshop and simulation at ESTEC'

- 17:05** S. Aloserij, 'What our future heritage can be: the purpose of an archive and library on the moon'
- 17:20** A. Ricchiuti, 'The role of communication in science and astrobiology'
- 17:35** M. Waltemathe, E. Hemminger 'Teaching With Astrobiology. Enhancing Science And Technology Awareness In Humanities And Social Science Students.'
- 18:00** Introduction to Performance Session: Extremely Habitable Art
- 18:05** M. Prokofieva (Piano)& ESTEC Space Strings, 'Bringing Bach, Elgar, Verdi, Rubinstein, Grieg, Handoshkin, Chopin onto Habitable Worlds', A. Arkhanskaya "Visual Art performance"
- 19:00** *Social & Music event in Newton Foyer*
- 19:00** Conference Bus to Noordwijk
- 20:00** Conference Bus to Noordwijk

Friday 08 December 2017

12: Stellar, interstellar and interplanetary ingredients for extreme habitability

Session Chairs: R. Rudawska, L. d'Hendecourt

- 09:00** L-S. d'Hendecourt [Invited], 'From Astrochemistry to Astrobiology? The importance of cosmic ices for astrochemical and prebiotic evolution'
- 09:20** M. Guedel [Invited], 'Stellar and interplanetary ingredients for extreme habitability'
- 09:40** J. Dworkin [Invited], 'Synthesis of Extreme Organics in Meteorites'
- 10:00** J. Sanz-Forcada [Invited], 'The role of X-rays in exoplanet evolution and habitability'
- 10:20** J. Zender [Invited], 'Monitoring space weather: from SOHO, PROBA2 to the future'
- 10:40** J. Jackman, 'Stellar Flares Detected By NGTS'
- 10:55** *Coffee Break*

16B: Education, outreach, societal, philosophical & artistic views on "Extreme Habitable Worlds"

Session Chairs: T. Alvarez, B. Foing

- 11:30** T. Alvarez [Invited], 'Cave Dwellers, Eskimos, Tuaregs: Anthropological Lessons for Human Adaptation to Space Environments'
- 11:50** S. Guinard, 'Philosophical aspects of space exploration and human spaceflight: the ecopolitics of sharing place with non-human others in outer space'
- 12:05** M.S. Khan, 'Educational Outreach towards Manned Exploration of Mars and beyond'
- 12:20** C. Martin (poster flash talk), 'Architectural Distancing from the Exit Strategy: the Habitability of Extreme Worlds Versus the Extreme Habitability of Worlds'

Wrap Up & Closing

Session Chair: B. Foing

- 12:25** [Selected Session Chairs] Panel Wrap-Up: 'ESLAB 51 Highlights' & closing
- 13:00** End of ESLAB51

Posters

- P01** A. Nikolaou, 'Duration of magma ocean in the early Earth with a grey and a H₂O steam atmosphere'
- P02** N. Feshangfaz, 'Survival of halophilic archaeon Halovarius luteusgen. nov., sp. nov., to desiccation, simulated Martian UV radiation and vacuum in comparison to Bacillus atrophaeus'
- P03** S. Romanchuk, 'Species of plant Brassicaceae as a component of an autotrophic element of bioregenerating life support systems of a spacecraft'
- P04** T. Sassen, 'Investigating phage-related threats to the MELiSSA loop'
- P05** A. Oren, 'R-evolution of architecture'
- P06** C. Martin, 'Architectural Distancing from the Exit Strategy: the Habitability of Extreme Worlds Versus the Extreme Habitability of Worlds'
- P07** M. Waltemathe, 'A Historic Choice of Number: The Planetary Protection Requirement for Ocean World Exploration'
- P08** E. Palle, 'Biosignatures across time'
- P09** L. Ksanfomaliti, 'Signs of Hypothetical Flora and Fauna of the Planet Venus: Returning to Archive of the Old Tv-Experiments'
- P10** A. Wandel, 'Potential for Life on Trappist-1 and other Red Dwarf Star Planets'
- P11** J.-P. P. De Vera, 'Is Recent Mars A Habitable Planet? - Microorganisms From New Terrestrial Mars Analog Habitat Sites In The Permafrost Of Continental Antarctica Survive Mars Simulation Experiments In The Lab And In Space'
- P12** B. Foing, A. Lillo, P. Evellin et al, 'ILEWG EuroMoonMars research technology and simulation'
- P13** P. Evellin, B. Foing, A. Lillo et al, '2017 EuroMoonMars Analog Habitat Preparation and Simulation at ESTEC'
- P14** A. Lillo, B. Foing, P. Evellin et al, 'Remote operations of ExoGeoLab lander at ESTEC and LunAresbase'
- P15** V. Guinet, M. Monnerie, B. Jehannin, A. Cowley, C. Jonglez, B. Foing, 'Preparation of human telerobotics operations using EAC and ESTEC facilities'
- P16** C. Stoker, J. Clarke, B. Foing, K. Martin, 'Mineralogical and organic properties of samples from MDRS Mars Desert Research Station; analog study for MSL Curiosity'
- P17** M. Offringa, B. Foing, C. Jonglez, 'UV-VIS NIR and FTIR spectroscopy of MoonMars analogues'
- P18** D. Wills, B. Foing, 'Gamma-Ray bursts spectral structure and implications For life'
- P19** N. Verschoor, B. Foing & WDKA Applied Art students, 'King of Mars: Exploring and Creating Space'
- P20** N. Verschoor, B. Foing & WDKA Applied Art students, 'King on The MoonVillage'
- P21** M. Gomes Rachid (poster flash talk), 'Processing of Cometary surface by swift ions'
- P22** F. Da Pieve (poster flash talk), 'Response of potential new solar cells on the surface of Mars for assessing future habitability: a space weather and materials modelling study'
- P23** M.K. Jagadeesh (poster flash talk), 'Indexing of exoplanets in search for potential habitability: application to Mars-like worlds'
- P24** R. M. Giurgiu (poster flash talk), 'From Waste to Taste; Closing the MELiSSA Loops for escaping and sustaining the Earth habitat'
- P25** A. Riedo (poster flash talk), 'A miniature LIMS instrument for in situ chemical analysis of solids with high spatial resolution on planetary surfaces'
- P26** D. Winterhalter, 'A Systematic Search of the Nearest Stars for Exoplanetary Radio Emission: Strong Radio Bursts from ROSS 614 AB'
- P27** K. Isaak et al., 'CHEOPS: CHaracterising ExOPlanet Satellite'
- P28** K. Isaak, 'Observing with CHEOPS'
- P29** M. Turšič, 'Becoming an Oikos'

