

Final Agenda
of the Venera-D Landing Sites Selection and Cloud Layer Habitability Workshop
2 – 5 October, 2019
IKI RAS

Landing Site Theme

Day 1: 2 October 2019

10:00 – 10:20 L. Zelenyi, Welcome (from IKI)
Welcome to Conference: L. Zasova, A. Ocampo & T. Gregg

LS-Session 1: Engineering/Convener: Gregg & Kremic

10:20 – 10:40 **Zasova:** Venera-D update, including landing site constraints from orbit solution

10:40 – 11:00 **Sedykh:** The Venera-D Lander

11:00 – 11:20 ~~**Eismont:** Venera-D Orbits, landing site constraints~~

11:20 – 11:40 *Break*

11:40 – 12:00 **Gerasimov and Economou:** Venera-D lander payload instruments

12:00 – 12:20 **Zelenyi and Polyansky:** Venera-D Cameras/TV

12:20 - 12:50 *Discussion*

12:50 – 12:55 Logistics–Gorinov & Jessup

12:55 – 14:00 *Lunch*

LS-Session 2: Instruments and simulations/Convener: Gregg & Economou

14:00 – 14:20 **Kremic:** LLISSE (Venera-D Long Life Element) and SAEVe (Potential Contributed Element)

14:20 – 14:40 **Treiman:** CheMin-V,A Definitive Mineralogy Instrument for Landed Science on Venus

14:40 – 15:00(remote) **Schroder:** MIMOS II, miniaturized Mössbauer spectrometer for Venus surface investigation

15:00 – 15:05 **Izenberg:** APL's Venus Environment Chamber (AVEC) (*poster intro--lightning talk*)

15:05 – 15:10 **Kremic:** Glenn Extreme Environment Rig (GEER) (*poster intro--lightning talk*)

15:10 – 15:30 *Break (Scribe Meeting)*

15:30 – 16:30 *Discussion*

LS-Session 3: What do we know already? /Convener: Gregg & Ivanov

16:30 – 16:35 **Izenberg:** VEXAG documents, 2019 revisions (*poster intro--lightning talk*)

16:35 – 16:55 **Esposito:** VEXAG Landing Targets (2014 VEXAG workshop)

16:55 – 17:15 **Economou:** What do we know about Venus chemical composition ?

17:15 – 17:35 **Berger:** Surface-atmosphere interaction influences on in-situ Venus surface analyses

17:35 – 18:15 *Discussion*

18:15 – 18:30 *Day 1 Wrap-Up, Invitation to a.m. Posters*

Day 2: 3 October 2019

9:00 – 10:00 *Poster Session in main meeting room*

10:00 – 10:10 Welcome to Day 2 Oral Session & Logistics: Misha I. and Dima G.

LS-Session 4: Landing Site Selection/Convener: Economou & Kremic

10:10 – 10:30 **Mikhail Ivanov:** Landing Site Constraints

10:30 – 10:50 **Richard Ghail (presented by D. Titov):** Envision, European Concept of a Mission to Venus

10:50 – 11:10 **Jason Rabinovitch:** Global Characterization of Safe Landing Sites Using Venera Panoramas & Magellan

11:10 – 11:30 **Mikhail Ivanov:** High priority of tessera terrain for in situ analysis

11:30 – 11:45 **Tracy Gregg:** Potential landing site hazards in Venus' volcanic plains

11:45 – 12:00 *Break*

12:00 – 12:20 **Richard Ernst:** Evaluation of Landing Site Targets in the Alpha Regio Quadrangle

12:20 – 12:40 **Paul Byrne:** Mobile crustal blocks as landing site targets

12:40 – 13:00 **Patricia Beauchamp:** Potential landing sites for a complementary US Venus Flagship Mission

13:00 – 13:20 **Richard Ernst:** Site selection for geological testing of global warming models on Venus

13:20 – 14:20 *Lunch*

14:20 – 14:40 (*remote*) **Piero D'Incecco and Iván López:** Olapa Chasma – Idunn Mons: investigating recently active terrains

14:40 – 15:00 **Allan Treiman:** Cleopatra crater: Granite Mountains and Tellurium Snow?

15:00 – 15:20 *Break (Scribe meeting)*

15:20 – 17:30 *Discussion (Panel lead by Noam Izenberg; intro comments about camera from T. Gregg)*

17:30 – 18:30 **Workshop Welcome Reception in the Exhibition Hall**

Cloud Habitability Theme

4 October 2019 (Day 3)

10:00 – 10:15 **Ivan Polyansky: Landing Site Special Presentation: Descent Cameras**

10:15 – 10:20 Welcome to Cloud Habitability Sessions: Elyena & Ocampo

CH-Session 1, Habitability at Venus/ Conveners: Jessup & Zasova

10:20 – 10:40 **Michael J. Way:** Ancient Venus climate & Observational Constraints

10:40 – 10:50 **Shawn Domagal-Goldman:** Venus as an Exoplanet (*lightning talk*)

10:50 – 11:10 **Sanjay S. Limaye:** Case for Search of Bio-signatures on Venus

11:10 – 11:30 **Oleg Kotsyurbenko:** Terrestrial microorganisms from extreme environments as analogues to hypothetical microbial forms inhabiting Venus' clouds

11:30 – 11:50 **David H. Grinspoon (*remote*):** Considerations of energy, biomass limits and cloud microphysical implications of a putative Venus cloud biosphere

11:50 – 12:10 **Break**

12:10 – 12:30 **Vladimir Kompanichenko:** Evaluation of Possible Origin of Life in Early Venus in Case of Available Liquid Water

12:30 – 12:50 **Valeriy Snytnikov:** Chemical basis of a hypothetical life on Venus

12:50 – 12:55 **Logistics-- Jessup & Gorinov**

12:55 – 14:10 **Lunch**

CH-Session 2, Viability (Candidates and Processes)/ Conveners: Elyena & Oleg Kotsyurbenko

14:10 – 14:30 **Jaime A. Cordova:** Investigating the Viability of Microorganisms in a Venus Cloud Analog

14:30 – 14:50 **Rakesh Mogul:** Venus' Spectral Profiles and the Potential for Microbial Life in the Clouds

14:50 – 15:10 **Arif Husain Ansari:** UV-absorbance and survival mechanism of potential bacteria in Venus clouds

15:10 – 15:30 **Mark Bullock (*remote*):** Venus atmospheric chemistry and possible metabolic pathways for microbial organisms

15:30 – 15:50 **Tetyana Milojevic:** Metallophilic extreme thermoacidophiles: potential biosignatures in the Venusian clouds

15:50 – 16:10 **Break (Scribe meeting)**

16:10 – 16:20 **Discussion Preamble**

16:20 – 17:30 **Discussion**

17:30 – 17:40 **Discussion Review**

17:40 – 17:50 **Break**

CH-Session 2b, Venera-D Spacecraft Support and a.m. Poster Invitation/ Convener: Jessup

17:50 – 18:05 **Anastasia Kosenkova, Poster Preview Talk: Venera-D: Spacecraft and Orbits (*lightning talk*)**

5 October 2019 (Day 4)

9:00 – 10:00 *Poster Session across from main meeting room*

CH-Session 3, Origin and Survivability/ Conveners: Limaye & Oleg Kotsyurbenko

- 10:00 – 10:20 **Anatoli Pavlov:** Permanent infecting of the Venus upper atmosphere by transfer of terrestrial microorganisms through the ejected dust particles from Earth and Mars.
- 10:20 – 10:40 **Margarita Kruchkova:** High stability of mycobiota from desert soils to the impact of ionizing radiation (100 kGy) at low temperature and pressure
- 10:40 – 11:00 **Grzegorz Słowik:** Observation of the life cycle of extremophilic bacteria of the genus *Acidophilus* under the conditions of the reconstituted Venus atmosphere

11:00 – 11:20 *Logistics (pizza money collection, dinner head count) & Break*

11:20 – 12:30 *Discussion*

12:30 – 13:30 *Pizza lunch in main session room*

CH-Session4, Detection Mechanisms/ Conveners: Limaye & Jessup

- 13:30 – 13:50 **David J. Smith:** Methods for sampling bioaerosols in Earth's troposphere and stratosphere
- 13:50 – 14:10 **Diana M. Gentry:** Bioaerosol Sampling Considerations for In Situ Analysis
- 14:10 – 14:30 **Satoshi Sasaki:** Life-signature Detection Microscope for Cloud Layer Particles
- 14:30 – 14:50 **Mark Bullock (remote):** Venus atmospheric chemistry and possible metabolic pathways for microbial organisms

14:50 – 15:00 *Break*

15:00 – 15:15 **Kevin Baines:** Aerosol Mass Spectrometer for characterizing the Venus Cloud Habitability Zone

15:15 – 15:30 **Jason Rabinovitch:** Aerobots to Explore Venusian Clouds

15:30 – 15:50 *Break (Scribe Meeting)*

15:50 – 16:10 *Plenary: Mary Voytek: Venus Astrobiology Exploration, NASA perspective*

16:10 – 17:30 *Discussion of Big Questions, Panel lead by Voytek, Jessup & Kotsyurbenko*

17:30 – 17:45 *Break*

17:45 – 18:15 *Meeting Wrap Up, Review of Actions and Next Steps*

18:15 – 19:00 *Take Metro to Celebratory Dinner @Mama Gochi, Bolshaya Dmitrovka 5/6 s.1*

19:00 – 21:00 *Celebratory Dinner*

Posters:

Zasova et al. the Venera-D Mission Concept Fact Sheet

Gilmore et al. NASA Venus Flagship Mission Concept

Hall et al. the NASA Aerial Platform Study: *Aerobots to Explore Venusian Clouds*

Izenberg et al. APL's Venus Environment Chamber (AVEC)

Izenberg et al. Venus Exploration Analysis Group (VEXAG) roadmap documents

Kremic et al. Glenn Extreme Environment Rig (GEER)

Belov et al. Multiple stress-tolerance of culturable bacteria from extreme habitats: astrobiological implication

An Archive of the Meeting Abstracts for the Landing Site theme may be found here:

http://venera-d.cosmos.ru/uploads/media/Landing_Sites.zip

An Archive of the Meeting Abstracts for the Cloud Habitability theme may be found here:

<http://venera-d.cosmos.ru/uploads/media/Habitability.zip>