



Early Career Researchers' conference

"The Early History of Planetary Systems and Habitable Planets"

August, 7-10., 2017 Tartu, Estonia

Report

Supported by Europlanet 2020 NA1
PS AERO 5020

General information

The conference was organized by the European Astrobiology Campus in cooperation with the COST Action TD1308 “Origins and Evolution of Life on Earth and in the Universe”, the Nordic Network of Astrobiology, Astrobiology Graduates in Europe (AbGradE) and Tartu University. The focus of the meeting was the formation and early development of planetary systems and their habitability. However, a broad range of contributions on other fields covered by astrobiology were welcome.

The program included nine sessions with nine invited speakers. Seven of them were young, but already well established researchers. Invited speakers were:

- Adrienne Kish, Museum of Natural History, Paris (FRA)
- Anna Łosiak, Polish Academy of Sciences (PLN)
- Bertram Bitsch, Lund University (SWE)
- Ed Schwieterman, University of California Riverside (USA)
- Erik Vigren, Uppsala University (SWE)
- Hervé Martin, Blaise Pascal University (FRA)
- Sean McMahon, Yale University (USA)
- Tina Šantl-Temkiv, Aarhus University (DNK)
- Uffe Gråe Jørgensen, University of Copenhagen (DNK)

The full programme of the conference is given in Appendix A.

Participants statistics

The meeting drew participants from all the world, people from as far as Chile, Zambia, Canada and the US attended the event. It was the largest event for early career astrobiologists so far. The number of participants and their distribution into different categories are detailed in the following table and all participants are listed in Appendix B:

Table 1: Categories of participants

Number of Participants	54
Participants from Inclusiveness countries	26
Female Participants	17
Male participants	37
Early career researchers	37
Amateur Participants	2
Non EU participants	12
Countries represented	20

Organisation

The event was tailored for early career researchers and graduate students. The aim was to create more relaxed atmosphere for starting scientists and graduate students to get their message across to the audience more at ease than it would have been in the overwhelming presence of prominent and established scientists. Presenters also had more time than usual at international scientific meetings to give their presentation, and at the end of each session we had allocated time for open discussion. Both of these arrangements got a lot of positive feedback from the audience and lecturers alike. However, we had imposed no age restriction to attend the conference.

The Scientific organizing committee (SOC) oversaw the planning of the program and inviting speakers. The conference organizers, both SOC and local organizers were (with one exception) early career researchers and graduate students themselves. The SOC consisted of the following people:

- Alex Price, The Open University (GBR)
- Arnas Drazdauskas, Vilnius University (LIT)
- Đorđe Marković, University of Belgrade (SER)
- Gianni Cataldi, Stockholm University (SWE)
- Mickaël Baqué, German Aerospace Center (DLR) (GER)
- Petra Schwendner, University of Edinburgh (GBR)
- Philippe Nauny, University of Glasgow (GBR)
- Ruth-Sophie Taubner, University of Vienna (AUT)
- Wolf Dietrich Geppert, Stockholm University (SWE)

Local organizers were as follows:

- Wolf Dietrich Geppert, Stockholm University (SWE)
- Kalle Kirsimäe, Tartu University (EST)
- Riho Mõtlep, Tartu University (EST)
- Mariann Külaviir, Tartu University (EST)
- Kairi Põldsaar, Tartu University (EST)

Media coverage

The conference also drew the attention of nationwide TV and radio networks. The most watched TV news broadcast (Kanal 2 - Reporter) made a short news story about the conference and an interview was given to the daily news program of Radio Kuku.

Social programme

As social programme, a walk through the old city of Tartu and a visit to Tartu Old Observatory (which once housed the world's most powerful telescope) were

organised on Wednesday 9th August afternoon. These low-cost excursions as well as the welcome barbeque were very appreciated by attendees and helped interaction between them.

Conclusion and further outlook

It can be concluded that the conference “The Early History of Planetary Systems and Habitable Planets” were very successful. Organizers received a lot of positive feedback from the participants for the organizational side and was regarded as fruitful for their future career. Participants also expressed the wish that further similar meetings will be held in future. Concrete plans are already emerging, thus the Tartu meeting will have an impact on European planetary research far beyond its duration.

Appendix A: Conference programme

Monday, August 7th	
16:00 – 20:00	Registration of participants Estonian Biocentre, Riia 23b
20:00 – 22:00	<i>Welcome reception & BBQ</i> <i>Vilde Ja Vine restaurant, Vallikraavi 4</i>

Tuesday, August 8th	
08:45 – 09:35	Registration of participants Estonian Biocentre, Riia 23b
9:35	Welcome speech
	Session 1. Formation of protoplanetary disks and planetary systems Chair: Riho Mõtlep
9:45	Invited talk: Formation of planets in protoplanetary discs Dr. Bertram Bitsch, Lund University, Sweden
10:30	<i>Coffee break</i>
11:00	Subaru/HiCIAO High-contrast Polarimetry Observation towards Protoplanetary Disk in Binary System Mr. Yi Yang, National Astronomical Observatory of Japan, Japan
11:30	On magnetic fields and what we can learn from polarimetry in protoplanetary disks Dr. Gesa H.-M. Bertrang, University of Chile, Chile
12:00	<i>Open discussion</i>
12:20 – 13:45	<i>Lunch</i>
	Session 2&3. Early history of Earth and other planets; Impacts and their role in the evolution of planets Chair: Philippe Nauny
13:45	Invited talk: Habitability vs. preservation on Noachian–Hesperian Mars and Precambrian Earth Dr. Sean McMahon, Yale University, USA
14:30	Warming early Mars with CH ₄ and SO ₂ Mr. Michael L. Wong, CALTEC, USA
15:00	The irradiation of pure methanol (CH ₃ OH) ices at 30 K using 1 KeV electrons Ms. Mayvis Musariri. Copperbelt University, Zambia
15:30	<i>Coffee break</i>
15:45	Invited talk: Impacts and their role in the evolution of Earth and planets Dr. Anna Łosiak, Polish Academy of Sciences, Poland
16:30	Close Encounters with the Solar System MSc. Santiago Torres. Leiden University, Netherlands
17:00	<i>Open discussion</i>
19:00	Poster session, Riia 23b <i>with buffet dinner</i>

Wednesday, August 9th	
	Session 4&5. Formation and evolution of planet and satellite atmospheres. Co-evolution of Earth's geosphere and biosphere and the evolution of life. Chair: Philippe Nauny
9:00	Invited talk: Ion chemistry in Titan's upper atmosphere Dr. Erik Vigren, Uppsala University, Sweden
9:45	MAVEN results on atmospheric evolution at Mars: Application to evolution of climate and habitability of exoplanets Prof. Bruce Jakosky, University of Colorado, USA
10:15	Cosmic ray processing of Polycyclic Aromatic Hydrocarbons: importance in protoplanetary disks Dr. Micelotta Elisabetta, University of Helsinki, Finland
10:45	<i>Coffee break</i>
11:15	Invited talk: Biological ice nucleation in clouds - a future atmospheric biosignature on exoplanets? Dr. Tina Šantl-Temkiv, Aarhus University, Denmark
12:00	Possible gas-phase formation routes of complex organic molecules in ISM : formamide and cyanomethanimine isomers Mrs. Fanny Vazart, Scuola Normale Superiore di Pisa, Italy
12:30	<i>Open discussion</i>
12:45 – 14:15	<i>Lunch</i>
	Session 6. Habitability and factors influencing it Chair: Mickael Baqué
14:15	Invited talk: An Introduction to Planetary Habitability and its Connection to the Search for Life Beyond Earth Dr. Edward Schwieterman, University of California Riverside, USA
15:00	The effect of varying atmospheric pressure upon habitability and biosignatures of Earth-like planets MSc. Egin Keles. Leibniz-Institut für Astrophysik Potsdam, Germany
15:30	<i>General discussion</i>
15:50	Guided walk in Tartu
20:00 – 22.00	<i>Dinner at Püssirohukelder, Lossi 28</i>

Thursday, August 10th

	<p>Session 7. Life in extreme Environments and its possible role in the Evolution of Life on Earth Chair: Ruth-Sophie Taubner</p>
9:00	<p>Invited talk: Hot, salty, and bitter - is the recipe for life extreme? Dr. Adrienne Kish, Museum of Natural History, Paris, France</p>
9:45	<p>Preservation of Raman biosignatures in cyanobacteria and green algae after space exposure Dr. Mickael Baqué, German Aerospace Center (DLR), Germany</p>
10:45	<i>Coffee break</i>
	<p>Session 8. The Quest for habitable extrasolar planets: Detection and characterisation Chair: Ruth-Sophie Taubner</p>
11:00	<p>Invited talk: Modelling and observing the first extrasolar planets with atmospheric signs of life. Dr. Uffe Gråe Jørgensen, University of Copenhagen, Denmark</p>
11:45	<p>High-precision Space Astrometry to Search for Nearby Terrestrial Exoplanets Dr. Anthony Ding Chen. State Key Lab. Chinese Academy of Space Technology</p>
12:15	<i>Open discussion</i>
12:30 – 14:00	<i>Lunch</i>
	<p>Session 9. New aspects of planetary evolution Chair: Gianni Cataldi</p>
14:00	<p>Invited talk: Early Earth evolution and habitability Prof. Hervé Martin, Blaise Pascal University, France</p>
14:45	<p>TRAPPIST-1 and the future of exoplanet searches Mr. Aswin Manohar, University of Bonn, Germany</p>
15:15	<p>The role of communication in science and astrobiology Ms. Arianna Ricchiuti. Planetario di Bari Sky-Skan, Italy</p>
15:45	<i>Open discussion</i>
15:55	Concluding Remarks
16:00	<i>Coffee break</i>
20:00 – 22:00	<p><i>Conference dinner</i> <i>Restaurant Dorpat, Soola 6</i></p>

Appendix B: List of Participants

	First name(s)	Last name	Title(s)	Sex	ECR	Non-EU	Affiliation	Country	ITC	E-mail
1	Aare	Abroi	PhD	Male			Estonian Biocentre	Estonia	Yes	aabroi@ebc.ee
2	Tavo	Ani	Mr.	Male	Yes		Tartu University	Estonia	Yes	tavo.ani@ut.ee
3	Umesh	Anilchandra Bhat	Mr	Male	Yes		ESTCUBE, University of Tartu	Estonia	Yes	umesh.bhat@estcube.eu
4	Mari-Liis	Aru	BSc	Female	Yes		Tartu University	Estonia	Yes	mariliisaru@gmail.com
5	Mickael	Baqué	Dr.	Male	Yes		German Aerospace Center DLR	Germany		mickael.baque@gmail.com
6	Gesa H.-M.	Bertrang	Dr.	Female	Yes	X	Universidad de Chile	Chile		info@gesabertrang.com
7	Bertram	Bitsch	Dr.	Male	Yes		Lund Observatory	Sweden		bert@astro.lu.se
8	Gianni	Cataldi	PhD	Male	Yes	X	Subaru Telescope/NAOJ	Japan		cataldi@naoj.org
9	Anthony Ding	Chen	Dr.	Male	Yes	X	SKL, Chinese Academy of Space Technology	China		cding@caltech.edu
10	Tõnis	Eenmäe	Mr	Male			Tartu Observatory	Estonia	Yes	tonis@to.ee
11	Wolf	Geppert	Prof. Dr.	Male			Stockholm University	Sweden		wgeppert@fysiik.su.se
12	Iaroslav	Iakubivskiy	Mr	Male	Yes		Tartu Observatory	Estonia	Yes	iaroslav.iakubivskiy@estcube.eu
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14	Uffe G.	Jørgensen	Dr.	Male			University of Copenhagen	Denmark		uffegj@nbi.dk
15	Engin	Keles	MSc	Male	Yes		Leibniz-Institut für Astrophysik Potsdam	Germany		ekeles@aip.de
16	Kalle	Kirsimäe	PhD	Male			Tartu University	Estonia	Yes	Kalle.kirsimae@ut.ee
17	Adrienne	Kish	Dr	Female			Sorbonne Universités	France		adrienne.kish@mnhn.fr
18	Timmu	Kreitsmann	MSc	Male	Yes		Tartu University	Estonia	Yes	timmu.kreitsmann@ut.ee
19	Margit	Kõiv-Vainik	PhD	Female	Yes	X	University of Montreal	Canada		k.margit@gmail.com
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21	Liisa	Lang	PhD	Female	Yes		Tartu University	Estonia	Yes	liisa.lang@ut.ee
22	Alexander	Lavrukhin	Mr	Male	Yes	X	Moscow State University	Russia	Yes	lavrukhin@physics.msu.ru
23	Kristjan	Leben	MSc	Male	Yes		Tartu University	Estonia	Yes	kristjan.leben@ut.ee
24	Anna	Losiak	dr	Female	Yes		Polish Academy of Sciences	Poland	Yes	anna.losiak@twarda.pan.pl
25	Aswin	Manohar	Mr.	Male	Yes		University of Bonn	Germany		s6asmano@uni-bonn.de

26	Herve	Martin	Prof.	Male			Blaise Pascal University	France		herve.martin@uca.fr
27	Sean	McMahon	Dr	Male	Yes	X	Yale University	USA		seanhmcmahon@gmail.com
28	Elisabetta	Micelotta	PhD	Female			University of Helsinki	Finland		elisabetta.micelotta@helsinki.fi
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39	Ivo	Riet	Mr.	Male	Ama- teur		Tartu City Council	Estonia	Yes	riet_ivo@hotmail.com
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41	Edward	Schwieterman	Dr.	Male	Yes	X	University of California, Riverside	USA		eschwiet@ucr.edu
42	Girts	Stinkulis	PhD	Male			Latvian University	Latvia	Yes	girts.stinkulis@lu.lv
43	Ruth-Sophie	Taubner	MSc.	Female	Yes		University of Vienna	Austria		ruth-sophie.taubner@univie.ac.at
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46	Eero	Vaher	BSc	Male	Yes		Leiden Observatory	The Netherlands		vaher@strw.leidenuniv.nl
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49	Erik	Vigren	PhD	Male	Yes		Swedish Institute of Space Physics, Uppsala	Sweden		erik.vigren@irfu.se
50	Ilze	Vircava	PhD	Female	Yes		Latvian Agricultural University	Latvia	Yes	ilze.vircava@gmail.com
51	Valdis	Vircavs	MSc	Male			Latvian University	Latvia	Yes	valdis.vircavs@gmail.com

52	Tomasz	Wisniowski	PhD	Male			Space Research Centre, Warsaw	Poland	Yes	tandem@mm.com.pl
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