

Dr. Lucie Poulet

WORK EXPERIENCE

University Clermont Auvergne (Clermont-Fd, France) – 1st March 2022 - present

Institut Pascal (*Postdoctoral Researcher*)

- Researcher in process engineering on closed loop systems in the frame of the ESA MELiSSA project.
- Mechanistic modeling of the loop compartments following the ALiSSE criteria.
- Lecturer on modeling of bioprocesses at the MELiSSA Summer University.
- Author and co-author of journal and conference publications and technical reports.

NASA - Kennedy Space Center (Florida, USA) – 31st January 2019 – 30th January 2022

Exploration Research and Technology Program office, Space Crop Production laboratory (*Postdoctoral Researcher*)

- PI and co-PI on projects in space food production in collaboration with national and international partners.
- Laboratory: hardware development and test of research apparatus for plant gas exchange measurements.
- Modelling: photosynthesis - ventilation interactions in low gravity environments with MATLAB and Fluent.
- Parabolic Flight: Science PI leading a team of scientist to test harvesting hardware in reduced gravity.
- ISS: experimental protocol for Advanced Plant Habitat; operational support for Veggie (payload preparation).
- Author and co-author of journal and conference publications and grant proposals.

University Clermont Auvergne (Clermont-Fd, France) – 5th January 2015 - 31st December 2018

Institut Pascal, Funding from CNRS and CNES (*Doctoral & Postdoctoral Researcher*)

- Researcher in process engineering applied to life-support systems. Developed models of plant growth in space.
- Team leader on parabolic flight experiment, 3 campaigns (CNES, ESA). Consulting on projects (ESA, academic).
- Author and co-author of journal and conference publications and technical reports.
- Teaching assistant of laboratory classes and guest lecturer in space-related graduate seminar.

DLR – German Aerospace Centre (Bremen, DE) – 4th December 2012 - 4th December 2014

Institute of Space Systems (*Research Associate*)

- Managed DLR collaboration on an ESA MELiSSA project aiming at designing a “Lunar Greenhouse Module”.
- Concurrent engineering studies (systematic approach to integrated product development): team leader, light and thermal analysis.

HI-SEAS (Hawaii Space Exploration Analog and Simulation) (USA) – 28th March 2014 - 25th July 2014

Second HI-SEAS Mars analogue mission (*Chief Scientist*)

- NASA funded program – 123 days – Evaluation of an astronaut-like crew’s interaction and performance under Mars-exploration conditions: communication delays and blackouts, close quarters, strict water and energy use, mandatory spacesuit for outside activities.
- Main research (psychological study): Evaluation of crew’s interaction and performances to prepare for long-duration space missions
- Personal research projects: assessment of four LED lighting systems and effect on wavelengths on plant growth, energy, crew time; assessment of plant growth on crew moral.

Purdue University (West Lafayette, USA) – 1st January 2011 - 30th November 2012

Dr. Mitchell’s Lab (*Graduate Research Assistant*)

- Experimental testing of a proof-of-concept LED grow lighting system on lettuces for future space applications.
- Coordinated and communicated with main supplier (ORBITEC) to analyse, identify and solve high-severity technical issues and select the next must-have features.

ESA - ESTEC (Noordwijk, NL) – 4th January 2010 - 30th June 2010

Life-Support Systems (LSS) section (*Intern*)

- Modelling and analysis of the ALiSSE energy criteria within the MELiSSA loop
- Identification of critical elements and recommendations for the future.

EDUCATION

University Clermont Auvergne (Clermont-Fd, France) – 5th January 2015 - 11th July 2018

Doctor of Philosophy – Process Engineering – Institut Pascal (GePEB)

Thesis: Definition of physical models for the prediction of higher plant growth in a reduced gravity environment for an application in life support system. **ESA MELiSSA Project** – Funding: **CNES, CNRS**.

International Space University (Florida, USA) – 2nd June 2012 - 4th August 2012

Space Studies Program – Partners: Florida Institute of Technology, NASA Kennedy Space Centre

Space engineering, Space Life & physical sciences, Business & management, Law & policy, Space & society.

Capstone Project: Development of a spaceports network in the Solar System – Life & Physical Sc. team leader.

Universpace (Toulouse, France) – 26th June - 9th July 2016

CNES Summer school on orbital systems - Partners: Supaero, ENAC.

Earth observation, orbital mechanics, space operations, science missions.

Purdue University (Indiana, USA) – August 16th 2010 - 5th May 2012

Master of Science – Aerospace Engineering – School of Aeronautics and Astronautics

Concentrations: Orbit mechanics, Spacecraft attitude dynamics, Optimization in Aerospace Engineering.

Optional classes: Cellular & molecular plant physiology, Plant growth & development.

Thesis: Smart LED lighting for major reductions in power and energy for plant lighting in space (partners: **NASA, ORBITEC**).

Lorraine National Polytechnic Institute (Nancy, France) – 1st September 2007 - 15th December 2011

Master of Science – General Engineering – School of Mines in Nancy

Concentrations: Production and Process of Energy. Fluid Dynamics, Heat & Mass Transfer, Numerical Analysis.

Internship Gap Year 2009 - 2010 – 3rd year (2010-2011) as a double diploma with Purdue University

COMPUTER AND LANGUAGE SKILLS

- Programming language / Software: Matlab, ANSYS Fluent, LaTeX, LabView, SAS.
- Languages: French (native), English, German (fluent, working languages), Italian, Russian (conversational), Portuguese (basic).

CERTIFICATIONS / QUALIFICATIONS

- FAA Private Pilot License (2012) – 135 hours.
- PADI Certifications: Rescue Diver (2020), Advanced Open Water (2016), Open Water (2014) – 36 dives.
- Emergency Breathing Device and Shallow Water Egress Training certificate by Survival Systems USA (2019).
- LICOR-6800 Photosynthesis Measurement Operator certificate (2019).

FUNDING / FELLOWSHIPS

- **2022** - Marie Skłodowska-Curie Actions Postdoctoral European Fellowship recipient.
- **2021** - NASA Internal Flight Opportunities funding.
- **2021** - NASA KSC Independent Research and Technology Development (IR&TD)
- **2018** - NASA Postdoctoral Program Fellowship recipient.
- **2018** - Clermont Auvergne Metropole parabolic flight campaigns funding.
- **2017** - ESA Continuously Open Research Announcement funding for 2 parabolic flight campaigns (2x3 flights).
- **2017** - CNES Parabole funding for one parabolic flight.
- **2015** - CNES and CNRS Doctoral Fellowship recipient.
- **2014** - Women in Aerospace Engineering Europe Travel Grant to attend and present at the IAC 2014.
- **2012** - ESA and CNES fellowships to attend the International Space University 25th Space Studies Program.
- **2010** - Dorothy Leet study Grant for my Master's degree in Aerospace Engineering at Purdue University.

AWARDS

- **2018** - 2nd Prize at the poster session of the international Agrospace-MELiSSA Workshop (Rome, IT).

- **2017** - Auvergne Student Entrepreneurship Award for the project “Retour à l’Ecole” (Clermont-Fd, FR).
- **2016** - First Jury and Audience Award in scientific outreach regional contest 3-Min Thesis (Clermont-Fd, FR).
- **2012** - Purdue University School of Aeronautics and Astronautics best scientific abstract (West Lafayette, IN).

SUPERVISING AND MENTORING ACTIVITIES

- 6 Bachelor’s level in-person and virtual NASA interns (one over 2 distinct internships) – Jan-May 2019, Jun-Aug 2019, Sept-Dec 2019, Jan-May 2020, June-Aug 2021, Sept - Dec 2021.
- 2 Master’s level students at the DLR Institute for Space Systems – Jul-Aug 2013 and Sept 2013-Feb 2014.

SCIENTIFIC SERVICE, MEMBERSHIPS, AND VOLUNTEERING

- **2021** - Jury member for Canadian Space Agency Deep Space Food Challenge.
- **Since 2021** - Co-chair of the International Conference on Environmental Systems outreach session (ICES 307).
- **2020-21** - Co-editor of a special issue on BLSS for the journal *Frontiers in Astronomy and Space Sciences*.
- **Since 2019** - Regular reviewer for academic journals.
- **Since 2019** - Member of the American Society of Gravitational and Space Research.
- **2017** - Organising team for the 2nd European Space Generation Workshop, Paris (France).
- **2017** - Organising team for the 4th edition of the congress Puy de la Recherche, Clermont-Ferrand (France).
- **Since 2015** - Member of the European Low Gravity Research Association.
- **2015 - 2017** - Member of the executive council of the French Mars Society.
- **2015 - 2017** - France National Point of Contact for the Space Generation Advisory Council.
- **Oct. 2014 - Aug. 2016** - Operational Ground Mission Support for the 8- and 12-month HI-SEAS missions (4h/week).

PUBLICATIONS

Refereed Journal Publications

- **Poulet L**, Engeling K, Hatch T, Stahl-Rommel S, Velez-Justiniano Y-A, Castro-Wallace S, Bunckek J M, Monje O, Hummerick M, Khodadad C L M, Spencer L E., Pechous J, Johnson C, Fritsche R, Massa G D, Romeyn M W, O'Rourke A E and Wheeler R M. *Large-scale crop production for the Moon and Mars: current gaps and future perspectives*. *Frontiers in Astronomy and Space Sciences*, 8:733944, 2022, doi: 10.3389/fspas.2021.733944.
- Johnson C M, Boles H O, Spencer L E, **Poulet L**, Romeyn M, Bunckek J M, Fritsche R, Massa G D, O'Rourke A, Wheeler R M. *Supplemental Food Production With Plants: A Review of NASA Research*. *Frontiers in Astronomy and Space Sciences*, 8:734343, 2021, doi: 10.3389/fspas.2021.734343.
- **Poulet L**, Zeidler C, Bunckek J, Zabel P, Vrakking V, Schubert D, Massa G, Wheeler R. *Crew time in a space greenhouse using data from analog missions and Veggie*. *Life Sciences in Space Research*, 31:101–112, 2021, doi: 10.1016/j.lssr.2021.08.002.
- **Poulet L.**, Dalmás B., Gonçalves B., Noûs, C., Vernay A. *As researchers, we need to engage more into public outreach towards children in the future*. *Journal of Futures Studies* 2021, doi: 10.6531/JFS.202003 24(3).0002.
- Heinicke C., Adeli S., Baque M., Correale G., Fateri M., Jaret S., Kopacz N., Ormo J., **Poulet L.**, Verseux C. *Equipping an extraterrestrial laboratory: Overview of open research questions and recommended instrumentation for the Moon*. *Advances in Space Research*, 2021, doi: 10.1016/j.asr.2021.04.047.
- Heinicke C., **Poulet L.**, Dunn J., Meier A. *Crew self-organization and group-living habits during three autonomous, long-duration Mars analog missions*. *Acta Astronautica*, 182:160-178, 2021, doi: 10.1016/j.actaastro.2021.01.049.
- **Poulet L.**, Dussap C.-G. & Fontaine J.-P. *Development of a mechanistic model of leaf surface gas exchange coupling mass and energy balances for life-support systems applications*. *Acta Astronautica*, 175:517-530, 2020, doi: 10.1016/j.actaastro.2020.03.048.
- **Poulet L.**, Dussap C.-G. & Fontaine J.-P. *A physical modeling approach for higher plant growth in reduced gravity environments*. *Astrobiology*, 18(9):1093-1100, 2018, doi: 10.1089/ast.2017.1804.
- Zeidler C., Vrakking V., Bamsey M., **Poulet L.**, Zabel P., Schubert D., Paille C., Mazzoleni E., Domurath N. *Greenhouse Module for Space System: A Lunar Greenhouse Design*. *Open Agriculture*, 2(1):116-132, 2017, doi: 10.1515/opag-2017-0011.
- **Poulet L.**, Fontaine J.-P., Dussap C.-G. *Plant’s response to space environment: a comprehensive review including mechanistic modelling for future space gardeners*. *Botany Letters*, 163(3):337-347, 2016, doi: 10.1080/23818107.2016.1194228.
- **Poulet L.**, Massa G.D., Morrow R.C., Bourget C.M., Wheeler R.M., Mitchell C.A. *Significant Reduction in Energy for Plant-Growth Lighting in Space using Targeted LED Lighting and Spectral Manipulation*. *Life Sciences in Space Research*, 2:43-53, 2014, doi: 10.1016/j.lssr.2014.06.002.

Refereed International Conferences with proceedings (presenter is underlined)

- **Poulet L.**, Vernay A., Goncalves B., Dalmas B., Vernay M. *A Multidisciplinary Scientific Outreach Journal Designed for and Made by Middle and High School Students to Bring Research Closer to the Classroom*. Proceedings of the International Conference on Environmental Systems, 2020 (cancelled conference but published proceedings).
- **Poulet L.**, Gildersleeve M.K., Koss L.L., Massa G.D., Wheeler R.M. *Development of a photosynthesis measurement chamber under different airspeeds for applications in future space crop-production facilities*. Proceedings of the International Conference on Environmental Systems, 2020 (cancelled conference but published proceedings).
- **Poulet L.**, Dussap C.-G., Fontaine J.-P. *Modelling higher plants gas exchange in reduced gravity environment*. Proceedings 47th of the International Conference on Environmental Systems, Charleston, South Carolina, 2017.
- **Bamsey M.**, Zabel P., Zeidler C., **Poulet L.**, Schubert D., Kohlberg E., Graham T. *Design of a Containerized Greenhouse Module for Deployment to the Neumayer III Antarctic Station*. Proceedings of the 44th International Conference on Environmental Systems, Tucson, Arizona, 2014.

Research Monograph

- **Poulet L.** *Developing physical models to understand the growth of plants in reduced gravity environments for applications in life-support systems*. PhD dissertation, University Clermont Auvergne, 2018.

International Conferences with proceedings (presenter is underlined)

- **Poulet L.**, Vernay A., Dalmas B., Vernay M., Delpuch P., Sinn T. *A Learning Method Based on a Mission to Mars for Primary School Children*. Proceedings of the 68th IAC, Adelaide, Australia, 2017.
- Heinicke C., Dunn J., **Poulet L.**, Meier A. *Evolution of Crew Work Routines in Autonomous, Long-Duration Mars Simulation Missions*. Proceedings of the 68th IAC, Adelaide, Australia, 2017.
- **Poulet L.**, Massa G.D., Wheeler R.M., Gill T., Steele C., Morrow R.C., Swarmer T.M., Binsted K., Hunter J. *Demonstration test of electrical lighting systems for plant growth in HI-SEAS analog Mars habitat*. Proceedings of the 65th IAC, Toronto, Canada, 2014.
- **Poulet L.**, Doule O. *Greenhouse Automation, Illumination and Expansion Study For Mars Desert Research Station*. Proceedings of the 65th IAC, Toronto, Canada, 2014.
- Burke J., **Poulet L.** *Architectures for Accommodating Lunar Plant Growth Demonstrations*. Proceedings of the 65th IAC, Toronto, Canada, 2014.
- Caraccio A.J., **Poulet L.**, Hintze P E, Miles J D. *Investigation of Bio-regenerative Life-Support and Trash-to-Gas Experiment on a 4-month Mars Simulation Mission*. Proceedings of the 65th IAC, Toronto, Canada, 2014.
- Eriksson K., Doule O., **Poulet L.** *Architectural Concepts for a Lunar Greenhouse within the MELiSSA Framework*. Proceedings of the 65th IAC, Toronto, Canada, 2014.
- Maiwald V., Schubert D., **Poulet L.** *Advice from Ares: Enhancing Habitat and Life-Support System design with Martian and Lunar Analogue Test site missions*. Proceedings of the 65th IAC, Toronto, Canada, 2014.
- Doule O., **Poulet L.** *Ergonomy of Head Mounted Displays Inside Analog Spacesuit - Mars Analog Extravehicular Activities*. Proceedings of the AIAA Space Conference and Exposition, San Diego, California, 2014.
- Zabel P., Bamsey M., Schubert D., **Poulet L.**, Zeidler C. *Mobile Greenhouse Test Facility Design for Analogue Testing at the German Neumayer III Antarctic Station*.
- **Poulet L.**, Schubert D., Zeidler C., Zabel P., Maiwald V., David E., Paillé C. *Greenhouse Modules and Regenerative Life-Support Systems for Space DLR Greenhouse*. Proceedings of the AIAA Space Conference and Exposition, San Diego, California, 2013.
- **Poulet L.**, Labriet M., Singh Derewa C. *A detailed analysis of the lunar and Phobos nodes within the OASIS spaceports network*. Proceedings of the AIAA Space Conference, San Diego, California, 2013.
- Labriet M., **Poulet L.** *The missing step to building a lunar spaceport*. Proceedings of the AIAA Space Conference, San Diego, California, 2013.
- Singh Derewa C., **Poulet L.**, Labriet M., Loureiro N., Puteaux M. *Establishment of a lunar base by coupling lunar in situ resources utilization and bioregenerative life support systems within the oasis network of spaceports*. Proceedings of the 64th IAC, Beijing, China, 2013.

CONFERENCE TALKS AND POSTERS

International Conferences (presenter is underlined)

- **Poulet L.**, Zeidler C, Bunchek J, Zabel P, Vrakking V, Schubert D, Massa G, Wheeler R. *Crew Time Requirements in Future Space Greenhouses - What can we infer from current analog and space missions?* **Talk** at the annual meeting of the American Society of Gravitational and Space Research, Baltimore, USA, 2021.
- **Poulet L.**, Massa G., Wheeler R. *Potential of a plant gas exchange mechanistic model to predict plant transpiration in Veggie*

- on ISS. **Poster** at the 43rd COSPAR Scientific Assembly, online, 2021.
- Heinicke C., Adeli S., Baque M., Correale G., Fateri M., Jaret S., Kopacz N., Ormo J., **Poulet L.**, Verseux C. *Laboratory on the moon: equipping and testing of a habitat laboratory for the scientific exploration of the moon by humans*. **Talk** at the 43rd COSPAR Scientific Assembly, online, 2021.
- **Poulet L.**, Massa G., Wheeler R., Dussap C.-G. *Plant gas exchange mechanistic modeling taking into account multiple timeframes and gravity levels*. **Talk** at the MELiSSA Conference, online, 2020.
- Dalmas B., Goncalves B., **Poulet L.**, Vernay A., Vernay M. *DECODER, a multidisciplinary scientific outreach journal to bring research closer to the classroom*. **Poster** presented at the Annual Meeting of the European Geosciences Union, online, 2020.
- **Poulet L.**, Vernay A., Duchez D, Saudreau M, Sharif H, Kondyli V, Dussap C.-G., Massa G, Wheeler R. *A multidisciplinary modeling approach of plant gas exchange in reduced gravity environments*. **Talk** at the Annual Meeting of the American Society of Gravitational and Space Research, Denver, USA, 2019.
- Vernay A., **Poulet L.**, Dussap C.-G.. *How plant ecology helps space discoveries? Focus on plant gas exchanges in weightlessness to improve spaceship ecosystem*. **Poster** presented at the Functional Ecology Conference, Nancy, France, 2018.
- Panelist in the special session “A Moon Laboratory” at the 69th International Astronautical Congress, Bremen, Germany, 2018.
- Dussap C.-G., Paille C., Fontaine J.-P., **Poulet L.**, and Bucchieri L. *Development of the atmospheric system of the MELiSSA plant compartment based on a mechanistic model of plant growth and gas exchanges*. **Talk** at the 42nd COSPAR Scientific Assembly, vol. 42, Pasadena, California, USA, 2018.
- **Poulet L.**, Vernay A., Fontaine J.-P., Dussap C.-G.. *A simple mechanistic model of higher plant gas exchanges in a reduced gravity environment*. **Poster** presented at the joint Agrospace and MELiSSA workshop, poster, Rome, Italy, 2018.
- **Poulet L.**, Fontaine J.-P., Dussap C.-G., Paille C.. *Modeling Plant Gas Exchanges with a Mass and Energy Balance Coupling in Reduced Gravity Environments*. **Poster** presented at the International Symposium on New Technologies for Environment Control, Energy-saving and Crop Production in Greenhouse and Plant Factory (The GreenSys), Beijing, China, 2017.
- **Poulet L.**, Fontaine J.-P., Dussap C.-G.. *Development of mechanistic models for plant growth in reduced gravity environments*. **Poster** presented at the MELiSSA Workshop, Lausanne, Switzerland, 2016.
- **Poulet L.**, Dussap C.-G., Creuly C, Poughon L, Fontaine J.-P., Lasseur C. *Multi-scale approach as a prerequisite for modelling bioregenerative LSS: MELiSSA approach*. **Talk** at the International Space Life Sciences Working Group Workshop on bioregenerative Life Support Systems Workshop, Turin, Italy, 2015.
- **Poulet L.**, Mitchell C A. *Smart-lighting for plant growth in space*. **Talk** at the Annual Meeting of the American Society of Gravitational and Space Research, New Orleans, USA, 2012.
- **Poulet L.**, Mitchell C A. *Smart-lighting for plant growth in space*. **Poster** presented at the Annual Meeting of the American Society of Gravitational and Space Research, San Jose, USA, 2011.
- **Poulet L.**, Lamaze B., Lebrun J. *Preliminary approach of the MELiSSA loop energy balance*. **Talk** at the 38th COSPAR Scientific Assembly, vol. 38, p. 4, Bremen, Germany 2010.

National Conferences (presenter is underlined)

- **Poulet L.**, Fontaine J.-P., Dussap C.-G.. *Development of mechanistic models for plant growth in reduced gravity environments*. **Talk and Poster** presented at the Journée CNES Jeunes Chercheurs (JC2), Toulouse, France, 2016.
- **Poulet L.**, Fontaine J.-P., Dussap C.-G.. *Development of mechanistic models for plant growth in reduced gravity environments*. **Poster** presented at the CODEGEPPRA Annual Meeting, Clermont-Ferrand, France, 2015.

PUBLIC OUTREACH

Actions towards schoolchildren and students

- **Since 2019** - Editor & founder (with a team of 5) of DECODER, a scientific outreach journal for and by school students.
- **2017 & 2018** - Initiation (with a team of 10) of an award-winning outreach project in 2 primary schools.
- **2016-2018** - Chronicle at the local Campus radio to discuss latest space news and main space topics.
- **Since 2014** - Regular presentations to elementary, middle, and high school students.

Selected talks

- **2018** - Space Bites Lectures (ESA), “[How to Survive on Another Planet](#)”.
- **2016** - TEDxClermont speaker, “[Space Research to Live Sustainably on Earth](#)”, in French.
- **2015** - TEDxMines Nancy speaker, “[Un Aller Simple pour Mars](#)”, in French.

Selected TV, radio, and online shows

- **2021** - Speaker for the podcast [La Fabrique de l’Espace](#), in French.
- **2021** - ARTE [Live Event for Mission Alpha 1st EVA](#), in French.

- **2021** - CNES Event “[Espace: les femmes aux avant-postes!](#)”, in French.
- **2021** - La Rotonde Event, “[After Rotonde](#)”: [L'exploration martienne](#), in French.
- **2020** - French TV channel TMC “[La French Touch](#)”, in French.
- **2020** - TEDxConversation, “[Le confinement, une étape de la recherche spatiale](#)”, in French.
- **2020** - Radio Campus 63 and RCF, “[Le décollage de Crew Dragon](#)” and “[Retourner sur la Lune](#)”, in French.
- **2018** - Disruptive Innovation Festival Session (Ellen MacArthur Foundation) “[54 Million Kilometres from Home](#)”.
- **2018** - France Inter, Le Temps d’Un Bivouac, “[Mars comme si vous y étiez](#)”, in French.
- **2017** - France Inter, La Tête Au Carré “[La Science en Apesanteur](#)”, in French.
- **2017** - France 24 English “[Could Mars be our Planet B?](#)”.
- **2016** - German TV channel SWR, Sag Die Wahrheit “Mars Experiment”, in German.
- **2015** - French TV channel France 2, Comment ça va bien! “[Objectif Mars](#)”, in French.

RELEVANT RESEARCH EXPEDITIONS AND FIELD TRIPS

Expeditions

- **LUNARES Mars and Moon base simulator** (Pila, Poland) – 8th - 22nd October 2017

15-day mission in a crew of 6 in a Mars-analogue habitat, isolation, confined spaces, and circadian rhythms study.

Crew Engineer – 3D-printing of everyday life objects and spare parts; study of IR cameras uses on EVAs.

- **MDRS - Mars Desert Research Station** (Utah, USA) – 4th - 18th February 2014 and 24th January - 7th February 2015

15-day missions in a crew of 6 in an isolated Mars-analogue habitat in the Utah desert with close quarters and strict water-use rules.

- Crew 148 *Commander and GreenHab Officer* – Emergency procedures for fire or depressurization of the habitat
- Crew 135 *Executive Officer and GreenHab Officer* – Extreme environment habitat reliability and redundancy

Field trips

- **AdvancingX** (Lake Tahoe in California, USA) – 14th September 2019

Test subject in underwater and lava tubes challenges to develop a tool to optimize team design for space missions.

- **University of Freiburg Department of Sport Science at Novespace** (Bordeaux, France) – 31st October 2018

Parabolic Flight Test Subject in an experiment to assess calf muscle activation and mechanics during jumps within 0.1g to 2.0g.

- **Planète Mars - Mars Cave Exploration Simulation** (Petites-Dales cave in Normandy, France) – 28th May 2016

Testing procedure and equipment: walking, crawling, climbing down with rope and descender wearing a mock spacesuit.

HOBBIES AND INTERESTS

Piloting, Diving, Trail running, CrossFit, Climbing, High altitude skiing, Astrophysics & Cosmology, Gardening, Violin.