

# Complete list of publications

Lucie Poulet

## Publications in international peer-reviewed journals

- Kuźma J, **Poulet L**, Fontaine J-P, Dussap C-G. *Modelling physical processes in higher plants using leaf replicas for space applications*. Comptes Rendus de l'Académie des Sciences, Mécanique, in press, accepted under the reference 20220698, 2023.
- Receveur A, **Poulet L**, Dalmas B, Gonçalves B and Vernay A. *Citizen science: How to extend reciprocal benefits from the project community to the broader socio-ecological system*. Quantitative Plant Biology, 3, E20, 2022. doi:10.1017/qpb.2022.16.
- Verseux C, **Poulet L** and de Vera J-P. *Editorial: Bioregenerative life-support systems for crewed missions to the Moon and Mars*. Front. Astron. Space Sci., 2022. 9:977364. doi: 10.3389/fspas.2022.977364.
- **Poulet L**, Engeling K, Hatch T, Stahl-Rommel S, Velez-Justiniano Y-A, Castro-Wallace S, Bunchek 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, 2021, doi: 10.3389/fspas.2021.733944.
- Johnson C M, Boles H O, Spencer L E, **Poulet L**, Romeyn M, Bunchek 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, Bunchek 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**, Dalmas B, Goncalves B, Noûs, C, Vernay A. *As researchers, we need to engage more into public outreach towards children in the future*. Journal of Futures Studies, 26(1):75–82, 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, 68:2565–2599, 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 CA. *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.

**Publications in peer-reviewed proceedings of international conferences (the speaker is underlined)**

- Kuźma J, Fontaine J-P, **Poulet L**, Dussap C-G. *Main focuses on the use of higher plant growth models for life support systems*. Proceedings of the 51<sup>st</sup> International Conference on Environmental Systems, St Paul, Minnesota, 2022 (Presentation).
- **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 (congrès annulé mais actes publiés).
- **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 (congrès annulé mais actes publiés).
- **Poulet L**, Dussap C-G, Fontaine J-P. *Modelling higher plants gas exchange in reduced gravity environment*. Proceedings 47<sup>th</sup> of the International Conference on Environmental Systems, Charleston, South Carolina, 2017 (Presentation).
- 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 44<sup>th</sup> International Conference on Environmental Systems, Tucson, Arizona, 2014 (Presentation).

**Publications in proceedings of international conferences (the speaker is underlined)**

- **Poulet L**, Poughon L, Dussap C-G. *Importance of a Modelling Approach for Bioregenerative Life-Support Systems*. Proceedings of the 73<sup>rd</sup> International Astronautical Congress (IAC), Paris, France, 2022 (Poster).
- **Poulet L**, Vernay A, Dalmas B, Vernay M, Delpuech P, Sinn T. *A Learning Method Based on on a mission to Mars for primary School Children*. Proceedings of the 68<sup>th</sup> International Astronautical Congress (IAC), Adelaide, Australia, 2017 (Presentation).
- Heinicke C, Dunn J, **Poulet L**, Meier A. *Evolution of Crew Work Routines in Autonomous, Long-Duration Mars Simulation Missions*. Proceedings of the 68<sup>th</sup> International Astronautical Congress (IAC), Adelaide, Australia, 2017 (Presentation).

- **Poulet L**, Massa G D, Wheeler R, 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 65<sup>th</sup> International Astronautical Congress (IAC), Toronto, Canada, 2014 (Presentation).
- **Poulet L**, Doule O. *Greenhouse Automation, Illumination and Expansion Study for Mars Desert Research Station*. Proceedings of the 65<sup>th</sup> International Astronautical Congress (IAC), Toronto, Canada, 2014 (Presentation).
- Burke J, **Poulet L**. *Architectures for Accommodating Lunar Plant Growth Demonstrations*. Proceedings of the 65<sup>th</sup> International Astronautical Congress (IAC), Toronto, Canada, 2014 (Presentation).
- **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 65<sup>th</sup> International Astronautical Congress (IAC), Toronto, Canada, 2014 (Presentation).
- **Eriksson K**, Doule O, **Poulet L**. *Architectural Concepts for a Lunar Greenhouse within the MELiSSA Framework*. Proceedings of the 65<sup>th</sup> International Astronautical Congress (IAC), Toronto, Canada, 2014 (Presentation).
- **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 65<sup>th</sup> International Astronautical Congress (IAC), Toronto, Canada, 2014 (Presentation).
- **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 (Presentation).
- **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 (Presentation).
- **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 (Presentation).
- **Labriet M**, **Poulet L**. *The missing step to building a lunar spaceport*. Proceedings of the AIAA Space Conference, San Diego, California, 2013 (Presentation).
- **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 64<sup>th</sup> International Astronautical Congress (IAC), Beijing, China, 2013 (Presentation).

**Presentations in international conferences and workshops without proceedings (the speaker is underlined)**

**Invited Talks**

- **Poulet L** and **Fritsche R**. *The Role of Plants as Food and Life Support for Exploration*. Keynote Talk, MELiSSA Conference, online, 2020.
- **Panéliste** in the special session *A Scientific “Wish List” for Research Facilities on the Moon* at the 69<sup>th</sup> International Astronautical Congress, Bremen, Germany, 2018.
- **Poulet L**. *Missions to Mars: Plants and Psychology*. Keynote Talk, Astroplant Challenge Workshop, Rotterdam, The Netherlands, 2017.

**Presentations**

- **Poulet L**, Maréchal F, Dussap C-G. *Space Greenhouse Design: towards a systematic methodology*. MELiSSA Conference, Toulouse, France, 2022 (Presentation).
- Johnson C, **Poulet L**, Spencer L, Romeyn M, Koss L, Torres J, Gooden J, Hummerick M, Boles H, Monje O, Massa G, Wheeler R. *Evaluating Microgreens Crop Readiness for Space Production*. MELiSSA Conference, Toulouse, France, 2022 (Presentation).
- **Poughon L**, **Poulet L**, Fiani F, Gerbi O, Thiron B, Gatti M, Mazzoleni E, Bucchieri L, Dussap C-G. *Model structuration and review for MELiSSA knowledge and control*. MELiSSA Conference, Toulouse, France, 2022 (Presentation).
- **Kuzma J**, **Poulet L**, Fontaine J-P, Dussap C-G. *Modelling physical processes in higher plants using leaf replicas for space applications*. MELiSSA Conference, Toulouse, France, 2022 (Presentation).
- **Aronne G**, Schiefloe, M, **Poulet L**, Jakobsen Ø M, Izzo L G, Kittang Jost A-I, Fontaine J-P, Dussap C-G. *Water Across the Plant Systems (WAPS): ground tests on hydration and air humidity to model plant growth for space experiments*. MELiSSA Conference, Toulouse, France, 2022 (Presentation).
- **Thiron B**, Fiani F, Gerbi O, Dussap C-G, **Poulet L**, **Poughon L**, Bucchieri L, Gatti M. *Design of the MELiSSA loop control strategy*. MELiSSA Conference, Toulouse, France, 2022 (Presentation).
- Dussap C-G, **Poulet L**, **Poughon L**, Bucchieri L, Fiani F, Audas C, Lasseur C. *Optimal System-in-system Control & Architecture: a system level representation of the MELiSSA loop*. 44<sup>th</sup> COSPAR Scientific Assembly, Athens, Greece, 2022 (Presentation).
- **Poulet L**, Zeidler C, Buncek 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?* Annual Meeting of the American Society of Gravitational and Space Research, Baltimore, USA, 2021 (Presentation).
- **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*. 43<sup>rd</sup> COSPAR Scientific Assembly, online, 2021 (Presentation).
- **Poulet L**, Massa G D, Wheeler R M, Dussap C-G. *Plant gas exchange mechanistic modeling taking into account multiple timeframes and gravity levels*. MELiSSA Conference, online, 2020 (Presentation).
- **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*. Annual

Meeting of the American Society of Gravitational and Space Research, Denver, USA, 2019 (Presentation).

- 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*. 42<sup>nd</sup> COSPAR Scientific Assembly, vol. 42, Pasadena, California, USA, 2018 (Presentation).
- **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*. International Space Life Sciences Working Group Workshop on bioregenerative Life Support Systems Workshop, Turin, Italy, 2015 (Presentation).
- 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*. Agrospace Conference, Sperlonga, Italy, 2014 (Presentation).
- **Poulet L**, Mitchell C A. *Smart-lighting for plant growth in space*. Annual Meeting of the American Society of Gravitational and Space Research, New Orleans, USA, 2012 (Presentation).
- **Poulet L**, Lamaze B, Lebrun J. *Preliminary approach of the MELiSSA loop energy balance*. 38<sup>th</sup> COSPAR Scientific Assembly, vol. 38, p. 4, Bremen, Germany 2010 (Presentation).

## Poster

- Boles H O, Johnson C M, **Poulet L**, Bermudez C, Massa, G D. *Harvesting Microgreens in Microgravity: Analysis of Six Different Methods*. Annual Meeting of the American Society of Gravitational and Space Research, Houston, USA, 2022 (Poster).
- Creuly C, Poughon L, **Poulet L**, Hennis T. *Astroplant: preliminary results from assembly and technical validation at UCA*. MELiSSA Conference, Toulouse, France, 2022 (Poster).
- **Poulet L**, Massa G, Wheeler R. *Potential of a plant gas exchange mechanistic model to predict plant transpiration in Veggie on ISS*. 43<sup>rd</sup> COSPAR Scientific Assembly, online, 2021 (Poster).
- Dalmas B, Goncalves B, **Poulet L**, Vernay A, Vernay M. *DECODER, a multidisciplinary scientific outreach journal to bring research closer to the classroom*. Annual Meeting of the European Geosciences Union, online, 2020 (Poster).
- Vernay A, **Poulet L**, Dussap C-G. *How plant ecology helps space discoveries? Focus on plant gas exchanges in weightlessness to improve spaceship ecosystem*. Functional Ecology Conference, Nancy, France, 2018 (Poster).
- **Poulet L**, Vernay A, Fontaine J-P, Dussap C-G. *A simple mechanistic model of higher plant gas exchanges in a reduced gravity environment*. Joint Agrospace and MELiSSA Workshop, poster, Rome, Italy, 2018 (Poster).
- **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*. International Symposium on New Technologies for Environment Control, Energy-saving and Crop Production in Greenhouse and Plant Factory (The GreenSys), Beijing, China, 2017 (Poster).
- **Poulet L**, Fontaine J-P, Dussap C-G. *Development of mechanistic models for plant growth in reduced gravity environments*. MELiSSA Workshop, Lausanne, Switzerland, 2016 (Poster).
- **Poulet L**, Mitchell C A. *Smart-lighting for plant growth in space*. Annual Meeting of the American Society of Gravitational and Space Research, San Jose, USA, 2011 (Poster).

### **National conference without proceedings (the speaker is underlined)**

- **Poulet L.** Fontaine J-P, Dussap C-G. *Development of mechanistic models for plant growth in reduced gravity environments*. CNES Young Researcher Day (JC2), Toulouse, France, 2016 (Presentation and Poster).
- **Poulet L.** Fontaine J-P, Dussap C-G. *Development of mechanistic models for plant growth in reduced gravity environments*. Annual meeting of the CODEGEPRA, Clermont-Ferrand, France, 2015 (Poster).

### **NASA New Technology Reports**

- Gildersleeve M., Taylor J., **Poulet L.**, Johnson C. *3D-Printed Microgreens Root Zone/Shoot Zone Separator Planting Box*. NASA New Technology Report KSC-14319, 2020.
- Metzmeier J. and **Poulet L.** *User Interface for Gas Exchange and Plant Growth Mechanistic Model and Simulation*. NASA New Technology Report KSC-14393, 2021.
- Johnson C., Macner A., Torres J., Alexander C., **Poulet L.**, Curry A., Spencer L., and Massa G.M. *Light Diffusing Harvest Pouch*. NASA New Technology Report KSC-14383, 2021.
- Alexander C., Johnson C., Perkins K., Torres J., **Poulet L.** *Microgreen Harvesting Bag Scissor Attachment*. NASA New Technology Report KSC-14405, 2021.
- Torres J. and **Poulet L.** et al. *Inverse Wells Lid Microgreens Growth Box*. NASA New Technology Report KSC-14429, 2022.
- Torres J., **Poulet L.**, Johnson C., and Massa G. M. *Guillotine Microgreens Growth Box (Lid with Cutter)*. NASA New Technology Report KSC-14472, 2022.
- Torres J., **Poulet L.**, Johnson C., and Massa G. M. *The Parabolic Microgreens Seed Wevel: Rapid Vacuum Powered Microgreens Seeding Method*. NASA New Technology Report KSC-14428, 2022.
- Johnson C., Torres J., Massa G. M., Richards J., Gleeson J., Hardy M., **Poulet L.** *uGrow Open-Source Precision Agriculture Imaging and Sensing Drone*. NASA New Technology Report KSC-14472, 2022.