Elodie GLOESENER

PhD in Planetary Sciences

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Education

2019 **PhD in Planetary Sciences**, *Université catholique de Louvain, Belgium,*
Dissertation: Methane clathrate hydrate stability in the Martian subsurface and outgassing scenarios.

2012 **MSc. in Space Sciences**, *Université de Liège, Belgium.*

2010 **BSc. in Physical Sciences**, *Université de Liège, Belgium.*

Research experience

June 2021 – present **B.A.E.F. Postdoctoral Research Fellow**, *JPL/Caltech, USA,*
Stability of methane clathrate hydrates on Titan.

Oct. 2019 – May 2021 **Postdoctoral Researcher**, *Université catholique de Louvain, Belgium,*
Modelling of subsurface – atmosphere exchanges on Mars.

Oct. 2016 – Sep. 2019 **Researcher**, *Royal Observatory of Belgium / Université catholique de Louvain, Belgium,*
Investigation of the surface and subsurface water environment, atmospheric trace gases and their sources using the data acquired by the ESA ExoMars TGO.

Oct. 2013 – Sep. 2016 **FRIA Research Fellow**, *Royal Observatory of Belgium,*
Methane clathrate hydrate stability in the Martian subsurface and outgassing scenarios.

Nov. 2013 – Jan. 2014 **Intern**, *JPL/Caltech, USA,*
Experimental measurements of the effect of ammonia on the stability of clathrate hydrates and implications for outgassing on Titan.

Oct. 2012 – Sep. 2013 **Research assistant**, *Royal Observatory of Belgium / Royal Belgian Institute for Space Aeronomy, Belgium,*
Stability of methane clathrate hydrates and thermal modelling of the Martian subsurface.

Awards & fellowships

2020 **B.A.E.F. postdoctoral research fellowship:** Laboratory and modelling studies on the stability of clathrate hydrates on Titan.

2013 **FRIA fellowship** from F.R.S. – FNRS: Clathrate hydrates and the thermal and atmospheric evolution of Mars.

2012 **Odissea prize** from the Euro Space Society.

2012 **Wallonie Espace Award**.

Advising

Internships: Co-advisor of several students since 2015 on different subjects.

- Heat and water vapor transfer in the Martian subsurface using COMSOL Multiphysics.
- Analysis of CRISM cube-data: Martian surface albedo information and identification of ice on Mars by NOMAD.
- Thermal modelling of Didymos' moon.

Master theses: Co-advisor of 4 students since 2018.

- Study of liquid brines on Martian slopes.
- Heat effect of meteorite impacts on the degassing of methane trapped in Mars' icy soil.
- Impacts on Mars.
- Liquid water on present-day Mars.

Scientific responsibilities

- InSight Science Team Collaborator, 2020-present.
- Early Career Officer of the Europlanet Society Benelux Hub, 2020-present.
- Member of the EOS project ET-HOME (Evolution and Tracers of Habitability On Mars and the Earth), 2018-present.
- Member of the BRAIN-be project SCOOP (Towards a SynergistiC study Of the atmOsphere of terrestrial Planets), 2015-2019.
- Member of the EU H2020 project UPWARDS (Understanding Planet Mars With Advanced Remote-sensing Datasets and Synergistic Studies), 2015-2018.
- Member of EGU PS division Early Career Scientist Team, 2013-2017.
- Member of EGU PS division Outreach Team, 2013-2017.
- Member of the Interuniversity Attraction Pole Planet TOPERS (Planets: Tracing the Transfer, Origin, Preservation, and Evolution of their ReservoirS), 2012-2017.

Skills

Languages:

- Mother tongue: French.
- Fluent in English.
- Basic knowledge in Dutch.

Computer skills:

- Experienced with FORTRAN, Matlab.
- Good knowledge of C++ and Java.
- Basics of Mathematica.
- Microsoft office, LaTeX.

Peer-reviewed publications

1. **Gloesener, E.**, Karatekin, Ö., and Dehant, V., 2021. Stability and composition of CH_4-rich clathrate hydrates in the present martian subsurface, *Icarus* 353, 114099.
2. Pla-García, J., Rafkin, S. C. R., Karatekin, Ö., and **Gloesener, E.**, 2019. Comparing MSL Curiosity rover TLS-SAM methane measurements with Mars Regional Atmospheric Modeling System (MRAMS) atmospheric transport experiments, *J. Geophys. Res. Planets*, doi:10.1029/2018JE005824.
3. Temel, O., Karatekin, Ö., **Gloesener, E.**, Mischna, M. A., and van Beeck, J., 2019. Atmospheric transport of subsurface, sporadic, time-varying methane releases on Mars, *Icarus* 325, 39-54.
4. Dehant, V., et al. (incl. **Gloesener, E.**), 2016. PLANET TOPERS: Planets, Tracing the Transfer, Origin, Preservation, and Evolution of their ReservoirS, *Origins of Life and Evolution of Biospheres* 46(4), 369-384.
5. Vu, T., **Gloesener, E.**, Choukroun, M., Ibourichene, A., and Hodyss, R., 2014. Experimental study on the effect of ammonia on the phase behavior of tetrahydrofuran clathrates, *J. Phys. Chem. B*. 118, 13371-13377.

Invited Talks

Gloesener, E., and Gillmann, C., 2017. Habitability of past and present Mars, *Joint symposium of the BNCGG and the UNITER doctoral school "Earth and Life Interactions",* Louvain-la-Neuve, Belgium.

Gloesener, E., Karatekin, Ö., Dehant, V., 2015. Modeling gas transport in the Martian subsurface, *EGU General Assembly*, Vienna, Austria.

Communications

Over 15 first-author abstracts presented at national and international conferences and workshops (AGU Fall Meeting, EGU General Assembly, Europlanet Science Congress, International Conference on Mars, Moscow Solar System Symposium, Astrobiology FNRS contact group, etc…).