

Curriculum Vitae

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Scientific career

2022-2024, postdoctoral research fellow, Space and Planetary Science Center, Khalifa University, Abu Dhabi

- Europa plumes, interaction of energetic ions with Europa/Io, predictions for JUICE measurements
- Visiting researcher ISSI Bern (August-September 2022). Topic: "Detecting Europa's water plumes", working with JUICE-PEP-NIM team.
- Contributing to development of new course on geology of the solar system.

2019-2022, ESA postdoctoral research fellow, ESA/ESTEC, the Netherlands

- Research topic: Activity and variability of the Galilean icy moons' exospheres: measurements, modelling and predictions in the context of the JUICE mission
- Scientific preparations of the JUICE mission.
- Science management: tasks in collaboration with JUICE project scientist
- Committees: Part of review committee for large grants (several 10k)
- Communication: media review of paper and press release proofreading for Hubble Space Telescope

2015-2018, PhD researcher (Physics, Magna Cum Laude), Max Planck Institute of Solar System Research, Germany; Swedish Institute of Space Physics (IRF), Kiruna; Braunschweig University of Technology, Germany

- [Thesis](#): "A search for signatures of Europa's atmosphere and plumes in Galileo charged particle data"
- Data analysis & modelling of particle dynamics

Education

MSc, 2012-2015	Aerospace Engineering: Space Flight, <i>Cum Laude</i> Thesis: "The feasibility of in-situ observations of Europa's water vapour plumes" <i>Delft University of Technology, the Netherlands, work conducted at Swedish Institute of Space Physics (IRF), Kiruna</i>
BSc, 2008-2012	Aerospace Engineering <i>Delft University of Technology, the Netherlands</i>

Awards and distinctions

- 2022: ESA champion 2021 first prize ([storytelling](#))
- 2020: Selected as 1 of 16 nominees out of 81 applications for the PhD cup (www.phdcup.be).
- 2020: Editors' Pick in AGU Advances digest for Huybrighs et al., 2020.
- 2020: Europlanet Science Congress - Science Flash - First Prize, 3 min improvised science presentation.

- 2019: Famelab Dutch national finals: competition for scientists to present their research in 3 minutes
- 2014: 'Bronzen Galileïprijs': awarded by Belgian astronomy society for popularisation of astronomy.

Grants

- Visiting scientist ISSI (August.-Sept. 2022): includes per diem 80 CHF/day, housing
- Postdoctoral fellowship Khalifa University (2022-2024). 528.00 AED + two conferences/year
- ESA postdoctoral research fellowship (2019-2021). 150.000 euro + three conferences and two research visits/year.

Leadership roles (scientific meetings & others)

- Workshop co-lead: '[Outer planet moon-magnetosphere interaction 2020](#)' ESA, 60+ participants, 2 days.
- Session main convenor 'Environments of outer planet moons: particles, plasma, fields and dust' [EPSC 2020](#). Session co-convenor: EGU2023, [EPSC 2021](#), [EGU 2020](#), [EPSC 2019](#), session chair [COSPAR 2020](#)
- 2019 – 2021. Europlanet Early Career Network: co-chair of working group on future research. Involves chairing meetings, organising talks, writing articles, conducting interviews.
- 2020: Early career social event, course on future research. EPSC, Granada/online
- 2017: local organizing committee & co-convenor: Rocks and Stars II, Göttingen

Educational tasks and supervision

2022: contributing to the development on a new course 'Geology of the solar system'.

- **Lectures** on icy moons

2020: **mentoring** of undergraduate student at EPSC conference

2019 – now: **supervision** of students as main supervisor

- 2 BSc students (2.5 months summer 2019, summer 2020)
- 1 MSc student (Sept. 2019 - June 2020), University Leiden

Reviewer

Journal of Geophysical Research, Space Physics; external reviewer for NASA panel, Planetary Science Journal

Science communication

- **Public talks:** 51 since 2016 ([overview and videos](#))
- **Popular science writing:** 14 contributions, blogs and paid articles for magazines ([overview](#))
- 2008 – 2015, youth organisation for astronomy Descartes (Cosmodrome, Belgium) Members: 40-50. Workload: 6-8hrs/week. President of organisation (2010-2013).

Memberships

- JUICE geophysics and magnetosphere working group

- Europlanet Society, AGU, IAU Junior member

Additional skills and training

- *Computer*: Python, IDL, Matlab, Java, Git, Spice, Linux, numerical simulations, data analysis
- *Science communication*: Summer School Science Communication (Leiden University, 5 days, July 2021), PhD cup media training (4 days, 2020), TU Delft Science Communication training session (2 half days, 2019), FameLab Masterclass in Science Communication (2 days, 2019)
- *Space*: Human Spaceflight (5 days, ESA) Design of Space Missions and Systems (5 days, ESA, 2020), EU & Space Policy (1 day ESA, 2020), Ladybird guide to Spacecraft Operations (4 day ESA, 2019)
- *COSPAR Leadership Workshop 2021 (3 half days)*
- *Languages*: Dutch (native), English (fluent), French (basic), Swedish (very basic)

Scientific publications (ORCID: [0000-0002-6279-3515](https://orcid.org/0000-0002-6279-3515))

Peer reviewed publications: 6	Submitted publications: 2	Publications in preparation: 3
Observation proposals: 1	White papers: 4	h-index: 3
Orals at conferences: 15	Posters at conferences: 18	Research seminars: 17

Peer reviewed publications, first author and papers led by students (***) denotes student supervised by me)

1. T. Winterhalder*** and **H.L.F. Huybrighs**. [Assessing JUICE's Ability to detect Europa Plumes in situ](#). (2021). *Planetary and Space Science*.
2. **H.L.F. Huybrighs**, E. Roussos, A. Blöcker, N. Krupp, Y. Futaana, S. Barabash, L. Z. Hadid, M. K. G. Holmberg and O. Witasse. (2021). [Reply to comment on "An Active Plume Eruption on Europa During Galileo Flyby E26 as Indicated by Energetic Proton Depletions."](#) *Geophysical Research Letters*.
3. **H.L.F. Huybrighs**, E. Roussos, A. Blöcker, N. Krupp, Y. Futaana, S. Barabash, L. Z. Hadid, M. K. G. Holmberg, O. Lomax and O. Witasse. (2020). [An Active Plume Eruption on Europa During Galileo Flyby E26 as Indicated by Energetic Proton Depletions](#). *Geophysical Research Letters*
4. **H.L.F. Huybrighs**, Y. Futaana, S. Barabash, M. Wieser, P. Wurz, N. Krupp, KH. Glassmeier, B. Vermeersen. (2017). [On the in-situ detectability of Europa's water vapour plumes from a flyby mission](#). *Icarus*.

Peer reviewed, co-authored

5. M.K.G. Holmberg, F. Cipriani, T. Nilsson, S. Hess, **H.L.F. Huybrighs**, L.Z. Hadid, G. Déprez, R. Wilson, M.W. Morooka, M. Felici. (2021) [The Cassini ion wake characteristics revealed by comparing Langmuir probe measurements and SPIS simulations: implications for in-situ data analyses and ion temperature estimates](#). *Journal of Geophysical Research: Space Physics*.
6. Gianluca Carnielli, M Galand, François Leblanc, L Leclercq, Ronan Modolo, A Beth, **H.L.F. Huybrighs**, X Jia. (2019) [First 3D test particle model of Ganymede's ionosphere](#). *Icarus*.

White papers (non-peer reviewed)

1. I. J. Cohen + 26 co-authors including **H. Huybrighs**. The case for studying other planetary magnetospheres and atmospheres in Heliophysics. NASA Solar and Space Physics (Heliophysics) Decadal Survey white paper. 2022.
2. P. Kollmann + 50 co-authors including **H. Huybrighs**. Jupiter's radiation belts as a target for NASA's Heliophysics Division. NASA Solar and Space Physics (Heliophysics) Decadal Survey white paper. 2022.
3. F. Crary, G.B. Clark, P. Delamere, C. Dong, R.W. Ebert, C. Harris, G. Hospodarsky, S. Hsu, **H. Huybrighs**, A. Kotova, T. Livengood, C. Paranicas, K. Retherford, E. Roussos, Y. Sarkango, J. Saur, J.R. Szalay, M. Vogt and L. Wang. (2021) The Magnetosphere of Jupiter: Moving from Discoveries Towards Understanding. White paper for NASA decadal survey. Bulletin of the AAS <https://doi.org/10.3847/25c2cfcb.9caa18e1>
4. P. Kollmann and 80 other authors including **H.L.F. Huybrighs**. Magnetospheric Studies: A requirement for addressing interdisciplinary mysteries in the Ice Giant systems. White paper for NASA decadal survey. Bulletin of the AAS. <https://doi.org/10.3847/25c2cfcb.d955f654>

Missions proposals

1. DOLPHIN The Dust Observatory to study the LIC, interPlanetary dust, and Heliospheric Interactions in our Neighborhood. V. Sterken + 40 coauthors including **H. Huybrighs**. 2022, ESA F-class proposal.

Observing proposals

1. ALMA observing proposal 'The complex chemistry of Enceladus' plumes'
S. Cazaux, Mauro Carniello, Yi-Jehng Kuan, Kelly Miller, Gianrico Filacchioni, Claudio Codella, Frank Postberg, Linda Podio, Andrea Raponi, **Hans Huybrighs**, Tara Bründl. Submitted April 2021.
Not selected.

Technical publications

1. O. Witasse, A. Solomonidou, L. Hadid, M. Holmberg, **H. Huybrighs**. *The JUICE Science Website Requirements Document*. 2021.
2. **H. Huybrighs**. *PEP internal charging study* (JUI-IRF-PEP-RP-009). 2014. 71 pages.

Scientific presentations

Oral presentations at international conferences: 15

Poster presentations at international conferences: 18

Research seminars: 17

Oral presentations at scientific conferences

- **Hans L.F. Huybrighs**, Rowan Dayton-Oxland, Thomas Winterhalder, Arnaud Mahieux, David Goldstein, Audrey Vorburger, André Galli, and Peter Wurz. *Detecting Europa's water plumes with JUICE's particle instruments*. European Planetary Science Congress. September 2022. Granada.
- Mika K.G. Holmberg, Caitriona Jackman, Matthew G.G.T. Taylor, Olivier Witasse, Jan-Erik Wahlund, Stas Barabash, Nicolas Altobelli, Fabrice Cipriani, Grégoire Déprez, and **Hans L.F. Huybrighs**. *Surface charging of JUICE in the solar wind*. European Planetary Science Congress. September 2022. Granada.
- **H. Huybrighs**, A. Blöcker, E. Roussos, C. van Buchem, Y. Futaana, M. Holmberg, C. Götz and O. Witasse. *The effect of Europa's perturbed electromagnetic fields and induced dipole on energetic proton depletions in the Alfvén wings*. Europlanet Science Congress. September 2021. Online.
- M.K.G. Holmberg, F. Cipriani, G. Déprez, C. Imhof, O. Witasse, N. Altobelli, **H. Huybrighs**. *Spacecraft charging of JUICE in the auroral zone of Ganymede*. Europlanet Science Congress. September 2021. Online.
- **H. Huybrighs**, C. van Buchem, A. Blöcker, E. Roussos, N. Krupp, V. Dols, Y. Futaana, S. Barabash, O. Witasse, M. Holmberg. *Plumes and atmospheric charge exchange as a cause of energetic ion losses near Europa and Io*. COSPAR Scientific Assembly. January 2021, Sydney, Australia. [Video](#).
- **H.L.F. Huybrighs**, E. Roussos, N. Krupp, M. Fraenz, Y. Futaana, S. Barabash. *Signatures of Europa's Atmosphere in Galileo Data*. Asia-Oceania Geophysics Society Congress 2019. Singapore. **Invited**
- **H.L.F. Huybrighs**, E. Roussos, N. Krupp, M. Fraenz, Y. Futaana, S. Barabash. *Signatures of Europa's atmosphere in Galileo EPD data*. Outer planet moon-magnetosphere interactions 2019, Selfoss, Iceland.
- **H.L.F. Huybrighs**, Elias Roussos, Norbert Krupp, Markus Fraenz, Yoshifumi Futaana, Stas Barabash, Karl-Heinz Glassmeier. *Are there signatures of active Europa plumes in Galileo in-situ data?* European Planetary Science Congress 2017, Vienna, Austria.
- **H. Huybrighs**, E. Roussos, N. Krupp, M. Fränz, Y. Futaana, S. Barabash, K.-H. Glassmeier. *The search for signatures of Europa plumes in Galileo in-situ data*. Rocks 'n' Stars II, 2017, Göttingen, Germany.
- **H. Huybrighs**, Y. Futaana, S. Barabash, M. Wieser, P. Wurz, N. Krupp, E. Roussos, M. Fränz, K.-H. Glassmeier, and B. Vermeersen. *Feasibility study of the in-situ detectability of Europa's neutral and plasma plumes from a flyby mission*. Europa-Enceladus Plumes Workshop, Caltech, October 15, 2016.
- **H. Huybrighs**, Y. Futaana, S. Barabash, M. Wieser, P. Wurz, N. Krupp, K.-H. Glassmeier, and B. Vermeersen. *Feasibility study of in-situ measurements of Europa's neutral and plasma plumes with JUICE/PEP*. Geophysical Research Abstracts Vol. 18, EGU2016-13425, 2016 EGU General Assembly 2016, Vienna.

Oral presentations by students supervised by me

- T. Winterhalder, **H. Huybrighs**. *JUICE's ability of in situ plume detection in Europa's atmosphere*. Europlanet Science Congress, September 2021. Online, oral requested.
- R. Dayton-Oxland **H. Huybrighs**, A. Mahieux, D. Goldstein, T. Winterhalder. *Impact of using a collisional plume model on detecting Europa's water plumes from a flyby*. Outer planet moon - magnetosphere interaction workshop 2020. ESA/ESTEC

- C. van Buchem, **H. Huybrighs**, A. Blöcker, V. Dols, O. Witasse, and Y. Miguel. *Energetic proton depletion near Io: atmospheric charge exchange and inhomogeneous magnetic and electric fields*. European Planetary Science Congress 2020. Granada/Online.

Poster presentations at scientific conferences

- **Hans Huybrighs**, Aljona Blocker, Elias Roussos, Christiaan van Buchem, Mika Holmberg, Charlotte Goetz, Yoshifumi Futaana, Olivier Witasse, Ioannis Kourakis. *The effect of perturbed fields, charge exchange and plumes on energetic proton depletions during the Galileo flybys of Europa*. Magnetospheres of Outer Planets 2022. Liege.
- **Hans Huybrighs**, Aljona Bloecker, Elias Roussos, Christiaan Van Buchem, Yoshifumi Futaana, Mika Holmberg, Charlotte Goetz and Olivier Witasse. *The Effect of Europa's Perturbed Electromagnetic Fields and Induced Dipole on Energetic Proton Depletions in the Alfvén Wing*. AGU fall meeting 2021, New Orleans.
- **H. Huybrighs**, A. Blöcker, E. Roussos, C. van Buchem, Y. Futaana, M. Holmberg, C. Götz and O. Witasse. *The effect of Europa's induced dipole and plumes on energetic proton depletions in the Alfvén wings*. Magnetospheres of Outer Planets (MOP). July 2021. Online.
- M.K.G. Holmberg, F. Cipriani, T. Nilsson, S. Hess, **H.L.F. Huybrighs**, L.Z. Hadid, G. Déprez, R. Wilson, M.W. Morooka, M. Felici. *Simulations of the Cassini spacecraft charging and ion wake: implications for in-situ data analyses and ion temperature estimates in Saturn's inner magnetosphere*. Magnetospheres of Outer Planets (MOP). July 2021. Online.
- **H. Huybrighs**, A. Blöcker, E. Roussos, C. van Buchem, N. Krupp, Y. Futaana, S. Barabash, M. Holmberg, and O. Witasse. *Energetic proton depletions near Europa: the effect of plumes, atmospheric charge exchange, Alfvén wings and the wake*. American Geophysical Union Fall Meeting 2020.
- **H. Huybrighs**, A. Blöcker, E. Roussos, C. van Buchem, N. Krupp, Y. Futaana, S. Barabash, M. Holmberg, O. Witasse. *Energetic proton depletions near Europa: the effect of plumes, atmospheric charge exchange, Alfvén wings and the wake*. Outer planet moon - magnetosphere interaction workshop 2020. ESA/ESTEC
- **H. Huybrighs**, A. Blöcker, E. Roussos, C. van Buchem, N. Krupp, Y. Futaana, S. Barabash, M. Holmberg, and O. Witasse. *Energetic proton depletions near Europa: plumes, atmospheric charge exchange and Alfvén wings*. European Planetary Science Congress 2020. Granada/Online.
- M. Holmberg, F. Cipriani, G. Déprez, C. Imhof, O. Witasse, N. Altobelli, **H. Huybrighs**, and J.-E. Wahlund. *Variability of the plasma environment of the Jovian magnetosphere and implications for future particle and fields measurements by JUICE*. European Planetary Science Congress 2020. Granada/Online.
- **H. Huybrighs**, C. van Buchem, A. Blöcker, E. Roussos, N. Krupp, V. Dols, F. Yoshifumi, S. Barabash, O. Witasse, M. Holmberg. *Energetic ion depletions near Europa and Io: the effect of plumes and atmospheric charge exchange*. European Geophysical Congress 2020, Vienna/online
- M. Holmberg, F. Cipriani, **H. Huybrighs**, L. Hadid, G. Deprez. *How are the Cassini in-situ measurements affected by the presence of the spacecraft? Spacecraft - plasma interaction simulation results compared to in-situ measurements*. The 16th Spacecraft Charging Technology Conference 2020, Florida, US.
- **H. Huybrighs**, E. Roussos, N. Krupp, M. Fränz, Y. Futaana, S. Barabash, A. Blöcker, V. Dols, and O. Witasse. *Energetic ion depletions near the Galilean moons: atmospheric interaction and indications of the charge state*. European Planetary Science Congress, 2019, Geneva.
- **H.L.F. Huybrighs**, E. Roussos, N. Krupp, M. Fraenz, Y. Futaana, S. Barabash, K.-H Glassmeier. *Signatures of Europa's atmosphere in Galileo EPD data during the E12 flyby*. Magnetospheres of Outer Planets 2018.
- G. Carnielli, M. Galand, R. Modolo, F. Leblanc, A. Beth, **H.L.F. Huybrighs**, X. Jia *Constraining Ganymede's neutral and plasma environment through numerical simulations of its ionosphere*. Magnetospheres of Outer Planets 2018.

- G. Carnielli, M. Galand, R. Modolo, F. Leblanc, A. Beth, **H.L.F. Huybrighs**, X. Jia. *Constraining Ganymede's exosphere through numerical simulations of its ionosphere and Galileo observations*. European Planetary Science Congress 2018
- **H.L.F. Huybrighs**, E. Roussos, N. Krupp, M. Fraenz, Y. Futaana, S. Barabash, K.-H. Glassmeier. *The search for active Europa plumes in Galileo plasma particle detector data: the E12 flyby*. AGU fall meeting 2017. New Orleans, US.
- **H. Huybrighs**, E. Roussos, N. Krupp, M. Fraenz, Y. Futaana, S. Barabash, K.-H. Glassmeier. *The search for Europa plume signatures in Galileo plasma particle data*. Magnetospheres of Outer Planets 2017. Uppsala, Sweden.
- N.Krupp, M. Fraenz, E. Roussos, **H. Huybrighs**, S. Barabash, P.C. Brandt, C. Paranicas, D.G. Mitchell, Joseph Westlake, K. Khurana, X. Jia. *Electron measurements in the low latitude magnetosphere of Jupiter and in the vicinity of the Galilean moons: Current knowledge and future investigations with the PEP JEI and JoEE sensors onboard the JUICE spacecraft*. Magnetospheres of Outer Planets 2017. Uppsala, Sweden.
- **H. Huybrighs**, E. Roussos, N. Krupp, M. Fraenz, Y. Futaana, S. Barabash, and K.-H. Glassmeier. *The search for Europa plume signatures in Galileo in-situ data*. DPG Frühjahrstagung 2017 (German Physical Society Spring Meeting), Bremen, March 14, 2017.

Research seminars

- Europa's water plumes. Arizona State University, USA. November 2022
- Europa's water plumes. Royal Observatory, Belgium. October 2022.
- Europa's water plumes. ETHZ, Zurich, Switzerland. September 2022.
- Europa's water plumes. University of Bern, Switzerland. August 2022
- Detecting Europa's water plumes using energetic protons. MSSL, UK. May 2022.
- Detecting Europa's water plumes using energetic protons. Imperial College, London. May 2022.
- Europa's water plumes. Technical University of Delft. October 2020. **Invited**
- Europa's water plumes. European Space Agency Science Seminar. June 2020. **Invited**
- Europa's water plumes. Advanced concepts team European Space Agency. April 2020. **Invited**
- Signatures of plumes and atmospheric charge exchange in energetic ion data from Europa. ESA, November 2019.
- How do Jupiter's icy moons interact with the magnetosphere? Leiden University, July 2019. **Invited**
- Europa's water plumes, will we get to detect them with JUICE? ESAC, June 2019. **Invited**
- Europa's plumes and atmosphere, what we can (still) learn from Galileo's charged particle data. Technical University of Delft. March 2019. **Invited**
- *Getting something out of nothing. The search for Europa plume signatures in Galileo particle detector data*. Swedish Institute of Space Physics (IRF). 8th of June 2017. **Invited**
- *Tasting Europa's ocean The search for Europa plume signatures in Galileo particle detector data*. Max Planck Institute for Solar System Research. 10th of May 2017.
- *In-situ detectability of Europa's water vapour plumes*. Max Planck Institute for Solar System Research. 6th of July 2016.
- *Tasting Europa's ocean: the feasibility of in-situ observations of Europa's water vapour plumes*. Swedish Institute of Space Physics (IRF). 19th of Nov 2015. *PEP internal charging study: the results*. Swedish Institute of Space Physics (IRF). 20th of Feb 2014.