

K.-Michael Aye

Curriculum Vitae

Laboratory for Atmospheric and Space Physics
University of Colorado at Boulder
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🌐 [michaelaye](https://www.michaelaye.com)

May 28, 2021

Educational Background

- 2005 **Ph.D.**, *High Energy Astrophysics*, University of Durham, UK.
- 1999 **German Diploma**, *Physics (Astronomy, Particle Physics)*, University of Heidelberg, Germany.
- 1995 **Pre-Diploma**, *Physics*, University of Konstanz, Germany.

Professional Appointments

- 2014 **Research Scientist II**, *Laboratory for Atmospheric and Space Physics*, University of Colorado, Boulder, CO.
Studying Saturn's Rings with ISS and UVIS data. Using HiRISE data to understand Martian CO₂ jets. LRO Diviner calibration and global analysis/thermal model fitting. PI and Co-I on NASA R&A projects.
- 2012-2014 **Postdoctoral Scholar**, *Earth, Planetary, and Space Sciences*, University of California, Los Angeles, CA.
Leading recalibration efforts for LRO Diviner Lunar Thermal Radiometer instrument.
- 2008-2012 **Deputy Project Manager, Research Scientist**, *Physikalisches Institut*, Universität Bern, Berne, Switzerland.
Deputy Project Manager for laser altimeter instrument BeLA on BepiColombo mission. 30% of my time devoted to research on Mars Polar Science using HiRISE, CTX, and CRISM data.
- 2005-2008 **Research Scientist**, *Max-Planck-Institut for Solar System Science*, Katlenburg-Lindau, Germany.
Dawn Framing Camera team. Duties included higher-level onboard software and ground operations during phase C/D. Operations planning lead for commissioning phase.

Publications (Planetary Science, Refereed)

Note: Publications in Conference Proceedings and in the field of Astrophysics are listed at the end of the CV.

Planetary — Refereed

- 2020 Andrew M. Annex, Ben Pearson, Benoît Seignovert, Brian T. Carcich, Helge Eichhorn, Jesse A. Mapel, Johan L. Freiherr von Forstner, Jonathan McAuliffe, Jorge Diaz del Rio, Kristin L. Berry, K.-Michael Aye, et al. “SpiceyPy: a Pythonic Wrapper for the SPICE Toolkit”. In: *Journal of Open Source Software* 5.46, p. 2050. DOI: [10.21105/joss.02050](https://doi.org/10.21105/joss.02050). URL: <https://doi.org/10.21105/joss.02050>.

Ganna Portyankina, Larry W Esposito, Klaus-Michael Aye, Candice J Hansen, and Ashar Ali. “Modeling the complete set of Cassini’s UVIS occultation observations of Enceladus’ plume”. In: *In revision at Icarus, arXiv preprint arXiv:2004.02663*. URL: <https://arxiv.org/abs/2004.02663>.

Ganna Portyankina, Candice J Hansen, and Klaus-Michael Aye. “How Martian araneiforms get their shapes: Morphological analysis and diffusion-limited aggregation model for polar surface erosion”. In: *Icarus* 342, p. 113217.

- 2019 K-Michael Aye, Megan E Schwamb, Ganna Portyankina, Candice J Hansen, Adam McMaster, Grant R M Miller, Brian Carstensen, Christopher Snyder, Michael Parrish, Stuart Lynn, Chuhong Mai, et al. “Planet Four: Probing springtime winds on Mars by mapping the southern polar CO₂ jet deposits”. In: *Icarus* 319, pp. 558–598. ISSN: 0019-1035. DOI: [10.1016/j.icarus.2018.08.018](https://doi.org/10.1016/j.icarus.2018.08.018).

G. Portyankina, J. Merrison, J.J. Iversen, Z. Yoldi, C.J. Hansen, K.-M. Aye, A. Pommerol, and N. Thomas. “Laboratory investigations of the physical state of CO₂ ice in a simulated Martian environment”. In: *Icarus* 322, pp. 210–220. ISSN: 0019-1035. DOI: <https://doi.org/10.1016/j.icarus.2018.04.021>.

E Sefton-Nash, J-P Williams, B Greenhagen, T Warren, J Bandfield, K-M Aye, F Leader, M A Siegler, P O Hayne, N Bowles, and D A Paige. “Evidence for ultra-cold traps and surface water ice in the lunar south polar crater Amundsen”. In: *Icarus*. ISSN: 0019-1035. DOI: [10.1016/j.icarus.2019.06.002](https://doi.org/10.1016/j.icarus.2019.06.002).

J -P Williams, J -P. Williams, B T Greenhagen, D A Paige, N Schorghofer, E Sefton-Nash, P O Hayne, P G Lucey, M A Siegler, and K Michael Aye. “Seasonal Polar Temperatures on the Moon”. In: *Journal of Geophysical Research: Planets* 124.10, pp. 2505–2521. DOI: [10.1029/2019je006028](https://doi.org/10.1029/2019je006028).

- 2018 Megan E Schwamb, Klaus-Michael Aye, Ganna Portyankina, Candice J Hansen, Campbell Allen, Sarah Allen, Fred J Calef, Simone Duca, Adam McMaster, and Grant R M Miller. "Planet Four: Terrains – Discovery of araneiforms outside of the South Polar layered deposits". In: *Icarus* 308, pp. 148–187. ISSN: 0019-1035. DOI: [10.1016/j.icarus.2017.06.017](https://doi.org/10.1016/j.icarus.2017.06.017).
- 2017 CJ Hansen, LW Esposito, K-M Aye, JE Colwell, AR Hendrix, G Portyankina, and D Shemansky. "Investigation of diurnal variability of water vapor in Enceladus' plume by the Cassini ultraviolet imaging spectrograph". In: *Geophysical Research Letters* 44.2, pp. 672–677.
- G Portyankina, CJ Hansen, and K-M Aye. "Seasonal Small-Scale Phenomena on Martian Polar Dunes". In: *LPI Contributions* 1961.
- Ganna Portyankina, Candice J Hansen, and Klaus-Michael Aye. "Present-day erosion of Martian polar terrain by the seasonal CO₂ jets". In: *Icarus* 282, pp. 93–103.
- E Sefton-Nash, J-P Williams, BT Greenhagen, K-M Aye, and DA Paige. "Diviner lunar radiometer gridded brightness temperatures from geodesic binning of modeled fields of view". In: *Icarus* 298, pp. 98–110.
- 2013 A Pommerol, T Appéré, G Portyankina, K-M Aye, N Thomas, and CJ Hansen. "Observations of the northern seasonal polar cap on Mars III: CRISM/HiRISE observations of spring sublimation". In: *Icarus* 225.2, pp. 911–922.
- A Pommerol, T Appéré, G Portyankina, KM Aye, N Thomas, and CJ Hansen. "Mars Polar Science V Edited By Jeffrey Moersch and Stephen M. Clifford". In: *Icarus* 225.2, pp. 911–922.
- Ganna Portyankina, Antoine Pommerol, Klaus-Michael Aye, Candice J Hansen, and Nicolas Thomas. "Observations of the northern seasonal polar cap on Mars II: HiRISE photometric analysis of evolution of northern polar dunes in spring". In: *Icarus* 225.2, pp. 898–910.
- SE Schröder, T Maue, P Gutiérrez Marqués, S Mottola, KM Aye, H Sierks, HU Keller, and A Nathues. "In-flight calibration of the Dawn Framing Camera". In: *Icarus* 226.2, pp. 1304–1317.
- 2012 Ganna Portyankina, Antoine Pommerol, Klaus-Michael Aye, Candice J Hansen, and Nicolas Thomas. "Polygonal cracks in the seasonal semi-translucent CO₂ ice layer in Martian polar areas". In: *Journal of Geophysical Research: Planets* 117.E2.

2011 A Pommerol, G Portyankina, N Thomas, K-M Aye, CJ Hansen, M Vincendon, and Y Langevin. "Evolution of south seasonal cap during Martian spring: Insights from high-resolution observations by HiRISE and CRISM on Mars Reconnaissance Orbiter". In: *Journal of Geophysical Research: Planets* 116.E8.

A Pommerol, N Thomas, M Affolter, G Portyankina, B Jost, K Seiferlin, and K-M Aye. "Photometry and bulk physical properties of Solar System surfaces icy analogs: The Planetary Ice Laboratory at University of Bern". In: *Planetary and Space Science* 59.13, pp. 1601–1612.

Book projects

2018

Dynamic Mars: Recent and Current Landscape Evolution of the Red Planet, Chapter "The Polar Regions", Co-Author for section: "CO₂-driven geomorphological processes", Elsevier.

2019

Machine Learning in Planetary Science, Co-Editor, Elsevier.
in preparation

Awards

2018

NASA Group Achievement, *Cassini UVIS Science Team*.

2015

NASA Group Achievement, *LRO Diviner Science Ops. Team*.

2013

NASA Group Achievement, *LRO Diviner Science Team*.

2009

NASA Group Achievement, *Dawn Science Operations Team*.

2008

NASA Group Achievement, *Dawn Payload Team*.

2001

North-Holland Research Book Prize, *University of Durham, UK*.
"For achievements during the first year of the Ph.D. course."

Grants

PI

2020

2023

NASA PDART, *Cassini UVIS Data Product Enhancement*, 8 Co-Is at 6 different institutions, LASP, University of Colorado, Boulder, CO.
Amount: \$909,000 for 3 years

Co-I

2021

2024

NASA PDART, *A Universal PDS Data Reader*, PI: Chase Million, Million Concepts, 3 WM.

2020

2023

NASA CDAP, *Mesoscale Structures in Saturn's rings: Clues to Origin and Evolution.*, PI: Joshua Colwell, UCF, Funded: 3 WM.

2020
2023 **NASA Akatsuki Participating Scientist**, *Synergistic Observations of Venus: Nightside Imaging and Spectral Image Cubes in Conjunction with Akatsuki Observations*, PI: Eliot Young, SWRI, Funded: 3 WM.

2019
2022 **NASA SSW**, *Interaction of dusty polar cryo jets with the lower atmosphere on Mars II*, PI G. Portyankina, LASP, University of Colorado, Boulder, CO. Funded: 9 WM

2015
2019 **NASA SSW project NNX15AH36G**, *Interaction of dusty polar cryo jets with the lower atmosphere on Mars*, PI G. Portyankina, LASP, University of Colorado, Boulder, CO. Funded: 9 WM

Collaborator, Researcher

2021
2024 **NASA PDART**, *Cassini Ultraviolet Visualization Tool for Satellites and Rings*, PI: E. Royer, PSI.

2021
2024 **NASA CSSFP**, *Mars Mesospheric Cloud Citizen Science*, PI: A. Kleinboehl, JPL.

2021
2024 **NASA MDAP**, *Araneiforms on Mars: a window into the role of carbon dioxide sublimation on landscape modification*, PI: S. Diniega, JPL.

2020 **TREX**, *Lunar surface global particle size estimation via LRO Diviner cooling curves and thermal modeling.*, PI A. Hendrix, Co-I R. Ghent, Funded: 1 WM. Subcontract to LASP

PI (local)

2015 **LRO Diviner Phase E**, *Diviner calibration work*, UCLA subcontract to University of Colorado Boulder, with PI D. Paige. Amount: \$14,234

Fellowships

2000
2003 **Graduate School Fellowship**, University of Durham, UK.

Invited talks

2021 **Seminar speaker**, “How to create and maintain a scientific Python environment using conda”, Kharkiv National University, Ukraine.

2021 **Seminar speaker**, “Calibration of the LRO Diviner Lunar Radiometer Experiment”, Kharkiv National University, Ukraine.

2020 **Seminar speaker**, “Best practices for conda-based Python science analysis environments”, OpenPlanetary lunch seminar, April 2020.

https://www.youtube.com/watch?v=zL65J9c5_KU

2019 **Seminar speaker**, “Features of Saturn’s rings as seen by Cassini ISS.”, April, 2019, Kharkiv Observeraty, Kharkiv, Ukraine.

2016

Seminar speaker, “*Small scale structures and traveling features in Saturn’s rings and the importance of CO2 gas jets at the Martian southpole.*”, July, 2016, Institute of Astronomy & Astrophysics, Academia Sinica, Taipei, Taiwan.

2014

Citizen Science in Astronomy workshop, “*Planet Four Citizen Science project*”, March, 2014, Institute of Astronomy & Astrophysics, Academia Sinica, Taipei, Taiwan.

Conference Activity/Participation

Sessions (Co-)Convened

2020

AGU, “*Machine Learning in Planetary Science*”, Co-Convener, Poster session.

2019

AGU, “*Machine Learning in Planetary Science*”, Co-Convener, Poster session.

2018

AGU, “*Machine Learning in Planetary Science: Introductions and Applications*”, Primary Convener, Poster session.

2017

AGU, “*Rise of Machine Learning: Salvation for Planetary Science in Times of Increasing Data Volume and Complexity*”, Co-Convener, Oral and Poster session.

Sessions Chaired

2019

4th Planetary Data Workshop, “*NEW TOOLS AND SERVICES FOR PLANETARY DATA PROCESSORS AND USERS I*”, Co-Chair, Oral session, June 19, 2019.

2018

AGU, “*Machine Learning in Planetary Science: Introductions and Applications*”, Co-Chair, Poster session, Dec 10–14, 2018.

2017

AGU, “*Rise of Machine Learning: Salvation for Planetary Science in Times of Increasing Data Volume and Complexity*”, Co-Chair, Oral and Poster session, Dec 11, 2017.

2016

6th International Conference on Mars Polar Science and Exploration, “*Surface Expression of Seasonal Processes I*”, Co-Chair, Oral Session, Sep 6, 2016.

Workshops given

2020

OpenPlanetary Virtual Conference OPvCon, “*How to live peacefully with Ana/Mini/Conda*”, June 2020, <https://www.youtube.com/watch?v=U3UZBeTDYmw>.

Papers presented (since 2013)

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- A vertical timeline on the left side of the page, with horizontal lines extending to the right. Blue dots mark the years from 2014 to 2020. The years are listed in blue text to the left of the dots.
- 2020 **7th International Conference on Mars Polar Science and Exploration**, *Polar Vortex Investigations Using MRO MCS Data*, **Talk**, January 2020, Ushuaia, Argentina.
- 2019 **4th Planetary Data Workshop**, *pyRISE and Other Planetary Science Python Tools*, **Talk**, June, 2019, Flagstaff, AZ.
- 2019 **LPSC #50**, *LRO Diviner Re-Calibration and Its Effect on Volatile Research.*, Poster, April, 2019, Houston, Tx.
- 2018 **AGU**, *Texture of Saturn's C Ring Plateaus as seen by Cassini ISS*, **Talk**, Dec, 2018, Washington, D.C..
- 2018 **Late Mars workshop**, *Planet four: Mapping the Southern Polar CO2 Jet Deposits*, **Talk**, Oct 1–2, 2018, Houston, TX.
- 2018 **Planetary Science Informatics and Data Analytics**, *Successful Design Patterns in the Day-to-Day Work with Planetary Mission Data*, Poster, April 24–26, 2018, St. Louis, MO.
- 2018 **LPSC #49**, *Martian Polar SmallSat Explorer (MAPSE)*, Poster, March 19–23, 2018, Houston, TX.
- 2018 **LPSC #49**, *Probing the Martian South Polar Winds by Mapping CO2 Jet Deposits*, **Talk**, March 19–23, 2018, Houston, TX.
- 2017 **AGU**, *Confirmation of a traveling feature in Saturn's rings in Cassini Imaging Science Subsystem data*, Poster, Dec, 2017, New Orleans, LA.
- 2017 **Third Planetary Data Workshop**, *Repeating Patterns in the Day-to-Day Work with Planetary Mission Data*, Poster, June 12–15, 2017, Flagstaff, AZ.
- 2017 **LPSC #48**, *Science Results from the PlanetFour Citizen Science Project*, Poster, March 20–24, 2017, The Woodlands, TX.
- 2016 **AAS/DPS #48**, *Searching for a traveling feature in Saturn's rings in Cassini Imaging Science Subsystem data*, Poster, Oct 2016, Pasadena, CA.
- 2016 **Sixth International Conference on Mars Polar Science and Exploration**, *Planet Four: From Imaging to Quantitative Analysis of Seasonal Activity at the Martian South Pole*, **Talk**, Sep 5–9, 2016, Reykjavik, Iceland.
- 2016 **LPSC #47**, *Analysis Pipeline and Results from the PlanetFour Citizen Science Project*, Poster, March 2016, The Woodlands, TX.
- 2016 **LPSC #47**, *Searching for Structure in the Rings of Saturn*, Poster, March 2016, The Woodlands, TX.
- 2015 **AAS/DPS #47**, *First results of the PlanetFour Citizen Science project*, Poster, Nov 2015, Washington, DC.
- 2014 **Eight International Conference on Mars**, *Investigation of Polar Seasonal Fan Deposits Using Crowdsourcing*, Poster, July 14–18, 2014, Pasadena, CA.

- 2014
●
LPSC #45, *Diviner Monitoring of Coldest Lunar Polar Regions*, Poster, Mar 17–21, 2014, The Woodlands, TX.
 - 2013
●
AGU Fall Meeting, *Emissivity and Anisothermality Studies at the Lunar Poles with Diviner's Far Infrared Channels*, Poster, Dec 2012, San Francisco, CA.
 - 2013
●
LPSC #44, *The Coldest Place on the Moon*, Poster, Mar 18–22, 2013, The Woodlands, TX.
- Discussant
- 2017
●
Planetary Data Workshop, *Software Developer Breakouts and PDS Tools (Program)*, Software and Tools demonstrations, Flagstaff, AZ.
 Using Anaconda to setup and manage your scientific programming environment.

Teaching Experience

University of Colorado at Boulder

- 2017
●
Substitute Instructor, *Space Policy*, Astrophysical & Planetary Sciences Dept, Nov 2017.
- 2016
●
Instructor of Record, *Computational Techniques*, Astro. & Phys. Sciences Dept, Summer 2016.
 Evaluation: <https://fcq.colorado.edu/UCBdata.htm>

Teaching Assistant

- 2009
■
2011
Tutor for Physics I and II, *Physics Minor Undergraduates (Geology, Pharmacy)*, University of Bern, Switzerland.
- 2000
■
Tutor for Physics Undergraduates labs, University of Durham, UK.
- 2003
■
2000
●
Tutor for Theoretical Mechanics, University of Heidelberg, Germany.

Mentoring

- 2020
■
Summer Student, *NSF Research Experience for Undergraduates*, LASP, CU Boulder, CO.
 Co-Mentoring of Chelsey Drake. Topic: Influence of small-scale topography on seasonal activity in martian polar regions: a study using HiRISE digital terrain models (DTM). [AGU 2020 Poster](#)
- 2019
■
Summer Student, *NSF Research Experience for Undergraduates*, LASP, CU Boulder, CO.
 Mentoring of S. Badri. Topic: Analysis of Planet Four Jet eruptions surface feature catalog. [AGU 2019 Poster](#)
- 2018
■
2019
●
Undergraduate Honors student, Z. Alfalah: Supporting data analysis of our Planet Four catalog.

2018

2019

2017

2015

2016

Undergraduate student, C. Abod: Establishing a new Citizen Science project for analysis of Saturn Rings images.

Summer student, *NSF Research Experience for Undergraduates*, LASP, CU Boulder, CO.

Co-mentoring of summer student (C. Hatcher). The student presented the results at [DPS 2017](#)

Member of mentornet.net, Successful remote mentoring of two undergraduate students.

Service to Profession

Book (editor), in prep.

2019

2020

Machine learning for Planetary Science, *Editors: Helbert, J., D'Amore, M., Aye, M., Kerner, H.*, Elsevier, signed publishing agreement.

White paper

2020

The role of (Open Source) Software in Planetary Science, *Aye, K.-M., Million, C, Annex, A.*, 2020, [Link to Document](#).

2017

The Value of Participating Scientist Programs to NASA's Planetary Science Division, *Louise M. Prockter, Wheeler, M. R., Aye, K.-M. et al.*, 2017, [Link to Document](#).

General

2017

Updating Goals document for Mars Exploration Program Analysis Group (MEPAG).

Increasing significance of Martian polar science in the MEPAG Goals. Updates due to recently performed investigations by MAVEN.

2016

Board member of OpenPlanetary organization, *Responsible for all things Python.*

"Share, discuss and improve your data, tools, workflow and overall knowledge of our Solar System"

2016

2018

2015

2016

NASA's Ocean World Roadmap team.

Dwornik Award Judge for Undergraduate and Graduate Research, LPSC 2015/2016.

Software and Data support

2018

Founding Member of the Planetary Software Technical Steering Committee (formerly ISIS3 TSC), *This steering committee discusses best practices and mentors the development of any Planetary Science related software packages*, [Link](#).

- 2019 **Founding Member of the PlanetaryPy Technical Committee**, *This technical committee focuses on developing a set of well-documented and tested Python packages for planetary science*, [Link](#).
- 2018 **Member of NASA MAPSIT Special Action Team**, *Review of the current status and future of the USGS' software portfolio, including ISIS3*, [Report](#).
- 2012 **Data readers and other software**, *All developed as open source and freely available on [github](#)*.

Manuscript reviews

- 2020 **JGR Planets**.
- 2019 **Springer Nature**.
- 2018 **Geophysical Research Letters**.
- 2017 **Icarus**.

Panels

- 2019 **NASA ROSES review panel member**.
- 2016 **NASA ROSES review panel member**.
- 2015 **PDS product review panel member**, *OSIRIS-REX Laser altimeter*.
- 2014 **NASA ROSES review panel member**, *PICASSO*.
- 2009-2010 **Co-Chair Space Sciences proposal evaluation panel**, *Portuguese Foundation for Science and Technology (FCT)*.

Extra Training

- 2001 **Science communication course**, *University of Durham, UK*.
- 2000-2003 **Participant in UK pilot project**, *Key Skills — Making Connections*, acquired Level 4 “Communications”, University of Durham, UK.

Community Involvement/Outreach

- 2018 **Public speaking**, *Astro on Tap*, Denver, CO.
Presentation on Planet Four project
- 2016 **Grand Award Judge**, *Colorado Science and Engineering Fair*, Colorado State University, CO.
- 2014 **Outreach: Citizen Science**, *Planet Four*, Surface image analysis, over 130,000 participants.
Founding science team member and principal data analyst



Middle school science classes, *University of California*, Los Angeles.

Outreach, *Public demonstrations of Astromony and Physics at diverse outreach events*, (all locations of my professional appointments).

Media Coverage



Podcast Interview, *Update on Planet Four project during LPSC 2017*, Mars related podcast “[We Martians](#)”, [Episode 21](#).

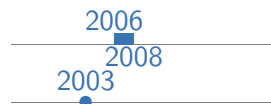


Podcast Interview, Hour-long interview about Citizen Science project Planet Four for Mars related podcast “[We Martians](#)”, [Episode 4](#).

Professional Skills

Programming	Python, C/C++, FORTRAN, (no)SQL Databases
Software quality	Git(Hub), CI(Travis), Auto-docs
Software/modeling packages	MODTRAN, REBOUND (n-body), OpenFOAM (CFD), 3D design (Sketchup), Hyperion (Rad.Transfer)
Other Skills	LaTeX, Jupyter Notebook/Lab, Jira/Confluence (both used at current employer), Zoom Teleconference Management, Communication, Organization, Translations (German/English)

Other Professional Experiences



Space-related news blogging, <https://raumfahrer.net>, Germany.



Postgraduate representative IT strategy committee, University of Durham, UK.



Summer School Assistant, *Open University Experimental Physics*, University of Durham, UK.



Summer School Les Houches, *Accretion Disks, Jets and High Energy Phenomena in Astrophysics*, NATO Advanced Study Institute Euro SummerSchool, Les Houches, France.



System administrator, Durham Gamma-Ray Astronomy group, 10 PCs (Linux, Win98, XP), University of Durham, UK.



Summer School Alpbach, *Extragalactic Astronomy and Cosmology from Space*, Alpbach, Austria.



Assistant Beam Operator, Accelerator facility, Max-Planck-Institute for Nuclear Physics, Heidelberg, Germany.

Other Certificates

Programming Certified Associate LabView Programmer

Languages

German Native

English Fluent

Russian Basic Proficiency in Reading, Writing, Speaking

French Beginner's Proficiency in Reading, Writing, Speaking

Spanish Beginner's Proficiency in Reading, Writing, Speaking

Affiliations

Scientific

2015

American Astronomical Society (AAS), *Division of Planetary Sciences (DPS)*.

2012

American Geophysical Union (AGU).

1999

Deutsche Physikalische Gesellschaft (German Physical Society).

2018

1999

Deutsche Astronomische Gesellschaft (German Astronomical Society).

Other

2016

Board of Directors for OpenPlanetary, Responsible for Python related issues (<https://openplanetary.org>).

"Share, discuss and improve your data, tools, workflow and overall knowledge of our Solar System"

References

Larry W. Esposito

Professor

Laboratory for Atmospheric and Space Physics

University of Colorado

Boulder, CO

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David A. Paige

Professor
Earth, Planetary, and Space Sciences
University of California
Los Angeles, CA
✉ dap@mars.ucla.edu
☎ +1 (310) 825 4268

Nicolas Thomas

Professor
Physikalisches Institut
Universität Bern
Berne, Switzerland
✉ nicolas.thomas@space.unibe.ch
☎ +41 31 631 44 06

Other Publications (Planetary Science Conference Proceedings and Astrophysics)

Planetary — Conference Proceedings

2020 K-M Aye, BT Greenhagen, and JP Williams. “Investigating the Possibility of Super-Resolution Reconstruction of LRO Diviner Data”. In: *Lunar and Planetary Science Conference*. 2326, p. 3011.

K-M Aye and PO Hayne. “Polar Vortex Investigations Using MRO MCS Data”. In: vol. 2099, p. 6079.

CJ Hansen, K-M Aye, S Diniega, P Hayne, A McEwen, G Portyankina, and ME Schwamb. “Dynamic Seasons on Mars—Polar Images and Investigations”. In: vol. 2099, p. 6019.

AR Hendrix, T Holt, A Verbiscer, K Primm, KN Singer, E Royer, RJ Wilson, G Portyankina, K-M Aye, A Parker, et al. “Planetary Science Public Engagement at the Farmers Market”. In: *Lunar and Planetary Science Conference*. 2326, p. 2492.

R Jerousek, J Colwell, M Lewis, L Benyamine, C Singleton, K Aye, and M Tiscareno. “Mesoscale structures in Saturn’s rings from UVIS autocorrelations”. In: *AAS/Division for Planetary Sciences Meeting Abstracts*. Vol. 52. 6, pp. 513–04.

Hannah Rae Kerner, Klaus-Michael Aye, Mario D’Amore, Jörn Helbert, and Abigail Azari. “Machine Learning for Planetary Science I”. In: *AGU Fall Meeting 2020*. AGU.

LE McKeown, S Diniega, G Portyankina, and KM Aye. "A Review of Martian CO₂ Sublimation Processes and Their Field and Laboratory Analogs". In: vol. 2099, p. 6075.

G Portyankina, K-M Aye, ME Schwamb, CJ Hansen, and T Michaels. "Near-Surface Winds and Seasonal Surface Phenomena Analyzed by the Planet Four Project". In: vol. 2099, p. 6062.

G Portyankina, CJ Hansen, and K-M Aye. "Sand, Wind, and Ices on Mars: How Sandy Environments Facilitate Erosion by CO₂ Jets". In: vol. 2188, p. 3036.

G Portyankina, T Michaels, K Aye, M Schwamb, and C Hansen. "Derived South Polar Martian Winds Interpreted Using Mesoscale Modeling". In: *AAS/Division for Planetary Sciences Meeting Abstracts*. Vol. 52. 6, pp. 308–01.

S Vierling, S Ali-zade, E Young, M Bullock, C Cantrall, K Aye, Y Lee, J Peralta, and R Baena. "Venus Cloud Tracking Methods and Applications for Akatsuki, IRTF, and Nordic Optical Telescope Images". In: *AAS/Division for Planetary Sciences Meeting Abstracts*. Vol. 52. 6, pp. 505–07.

J-P Williams, BT Greenhagen, DA Paige, N Schorghofer, E Sefton-Nash, PO Hayne, PG Lucey, MA Siegler, and K-M Aye. "Mapping Seasonal and Diurnal Temperatures in the Polar Regions with LRO Diviner". In: vol. 2241, p. 5105.

2019 K-M Aye. "LRO Diviner Re-Calibration and Its Effect on Volatile Research". In.

K-M Aye. "pyRISE and Other Planetary Science Python Tools". In: vol. 2151. 4th Planetary Data Workshop.

K-M Aye, G Portyankina, C J Hansen, T I Michaels, and M E Schwamb. "Geophysical CO₂ Gas Jet Modeling: Initial Set-Up". In: vol. 2089.

Shahad Badri, Klaus-Michael Aye, and Ganna Portyankina. "Planet Four: CO₂ jets formed by basal sublimation in Mars' southern polar regions". In: *AGU Fall Meeting 2019*. AGU.

C J Hansen, K M Aye, G Portyankina, et al. "Interannual Variability of Seasonal Activity in Mars' South Polar Region Dubbed "Manhattan"". In: adsabs.harvard.edu.

G Portyankina, K-M Aye, C J Hansen, and M E Schwamb. "Mars Spring Seasonal Ice Cleaning as Detected by Planet Four Project". In.

G Portyankina, K-M Aye, M E Schwamb, C J Hansen, and T Michaels. "Planet Four Pursuit of Studying Seasonal Activity and Spring Atmosphere with Citizen Science". In: vol. 2089.

J P Williams, B T Greenhagen, D A Paige, et al. "Seasonal Variations in South Polar Temperatures on the Moon". In: adsabs.harvard.edu.

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