

# Giulia Magnarini

## Planetary Geologist

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**POST-DOCTORAL RESEARCHER ASSOCIATE,  
NATURAL HISTORY MUSEUM, LONDON, UK**

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### Professional experience

#### CURRENT POSITION:

(01/04/2024 – PRESENT) Post-Doctoral Researcher Associate, Natural History Museum, London, UK.  
*Project: Secondary Impact Craters as Absolute Stratigraphic Markers.*

#### PAST POSITIONS:

(01/04/2021-31/03/2024) Post-Doctoral Research Associate, Natural History Museum, London, UK.  
*Project: Recent and active processes on the Moon.*

(01/09/2011-30/11/2011) Assistant geologist (private engineer firm)

(01/10/2010-31/07/2011) Research Assistant, Italian National Research Council.  
*Project: Historical investigation of morphometric changes of Po River.*

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### Education

(2021) PhD in Planetary Geomorphology (University College London)  
*Dissertation: "Morphometric study of longitudinal ridges in long runout landslides on Mars, Earth, and the Moon."*

(2016) BSc in Planetary Sciences with Astronomy (Birkbeck College, University of London)  
*Dissertation: "Grain-size analysis at Gale Crater, Mars: Testing the applicability of automatic detection software."*

(2010) MSc in Geomorphology, Università degli Studi di Parma, Italy  
*Dissertation: "Historical analysis (1889-2010) of morphometric changes of the Taro River (Italian northern Apennines) due to anthropic impact."*

(2007) BSc in Earth Sciences, Università degli Studi di Torino, Italy

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### Funding and Awards

(2023) Marie Curie Fellowship – Seal of Excellence (85.4%)

(2022) University of Nantes Visiting Grant (£2000)

(2020) UCL Mathematical and Physical Sciences Faculty Education Award

(2019) Outstanding Student Presentation Award, AGU Fall Meeting

British Society for Geomorphology Grant to attend AGU (£750)

Royal Astronomical Society Grant to visit Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy (£150)

(2018) British Society for Geomorphology Grant to attend LPSC (£500)

Royal Astronomical Society Grant to attend LPSC (£700)

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### Involvement in International Conferences

(2023) Co-convenor at the 6th World Landslide Forum. *Session 'Landslides in the cold extremes'*

## Reviewer Activity

### JOURNALS

Nature Communications Earth and Environment (2); Geophysical Research Letters (1); Geology (1); Journal of Geophysical Research Solid Earth (2), Tectonophysics (1), Icarus (5).

### REVIEW PANELS

NASA Review Panel

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## Teaching experience

(2020-2021)

Covid-19 teaching experience (Department of Earth Sciences at UCL)  
- *Creation of virtual field trips content.*  
- *Designing two exercises of planetary geological mapping*

(2017-2020)

Teaching Demonstrator (Department of Earth Sciences at UCL)  
- *The Earth (1st yr). Introduction to fundamental Earth Sciences principles.*  
- *Surface Processes (1st yr). Surface and near-surface processes and products.*  
- *Independent Mapping (3rd yr). Planetary geology mapping using GIS software.*  
- *Crustal Dynamics, Mountain Building and Basin Evolution (3rd yr). Field trip Betics, Spain.*

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## Supervision and Mentoring

### MSc STUDENTS

(2023-2024)

Co-supervisor of A. Champagne (Imperial College). *Project: "Investigating aqueous history of West- Coprates Chasma, Mars, using spectral data"*

(2022-2023)

Co-supervisor of R. Chau (UCL). *Project: "Morphological changes in simulated lunar landslide structures affected by ground shaking"*

### SUMMER PROJECTS

(2023)

Supervision of BSc student A. Champagne (Imperial College). *Project: "Geological mapping of Western Coprates Chasma, Mars"*  
Supervision of BSc student A. Champagne (Imperial College). *Project: "Cataloguing < 10 km-long landslides on Mars for comparison with landslides in Iceland"*

(2022)

Supervision of BSc student S.V. Anand (University of Manchester). *Project: "Cataloguing lunar granular flows"*

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## Field Research

### LEADING

(2022 – 12 DAYS)

Northern Iceland. *Drone imagery acquisition, in-situ geomorphological observations of 4 long runout landslide deposits.*

(2018/2019 – 10 DAYS)

Iquique, Northern Atacama, Chile. *Drone imagery acquisition, in-situ geomorphological observations of a 4-km-long landslide deposit, detailed mapping of internal structures of the deposit*

### OTHER FIELD EXPERIENCE

(2019 – 2 WEEKS)

Tian Shan Mountains, Kyrgyzstan. *'Rockslides and related phenomena' Summer School.*

(2018/2019 – 10 DAYS)

Bolfin Fault, Atacama Desert, Chile. *Project: From earthquake nucleation to arrest. Drone imagery acquisition, structural mapping.*

(2018 – 4 DAYS)

Cornwall, UK. *Science4CleanEnergy project (S4CE). Drone imagery acquisition, structural mapping.*

(2010 – 10 DAYS)

Tagliamento River floodplain, Italy. *Italian National Institute of Oceanography and Experimental Geophysics (OGS). Setting geophones for seismic acquisition.*

(2009 – 1 WEEK)

Taro River floodplain, North-East Italy. *Italian National Institute of Oceanography and experimental Geophysics (OGS). Setting geophones for seismic acquisition.*

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## Seminar Talks and Lectures

- (2024) STFC Planetary Surfaces Summer School, UK. *‘Combining remote sensing with fieldwork and laboratory experiments’*.
- (2023) - Centre for Astrobiology, Madrid, Spain. *‘Recent and active surface processes on the Moon’*.  
- Open University, UK. *‘Recent and active surface changes in Taurus-Littrow Valley, Apollo 17 landing site’*.
- (2022) - Centre for Planetary Sciences, UCL/Birkbeck, London, UK. *‘Recent surface changes in Taurus-Littrow Valley, Apollo 17 landing site’*.
- (2021) - University of Manchester, UK. *‘The Apollo 17 Light Mantle avalanche: A recent long runout landslide on the Moon’*.  
- Pontificia Universidad Catolica de Chile. *‘A large-scale landslide in northern Chile and inferences for similar structures on planetary bodies’*.  
- University of Sheffield, UK. *‘Longitudinal ridges in long runout landslides: Linking morphology to emplacement mechanisms’*.
- (2019) - Centre for Planetary Sciences, UCL/Birkbeck, London, UK. *‘The Apollo 17 landslide(s)’*.  
- Natural History Museum, London, Mars Research Group, UK. *‘Long runout landslides on Mars’*.  
- Imperial College London, Research Basin Group, UK. *‘Long runout landslides: A planetary geology study’*.  
- Instituto de Astronomia y Ciencias Planetarias, Universidad de Atacama, Chile. *‘Long runout landslides: A journey from Mars to Chile’*.

## Public Engagement

- (2024) Natural History Museum Lates – *OSIRIS-Rex/Bennu sample return mission*
- (2023) Natural History Museum Lates – *Spacesuits and Fashion*.  
Bluedot Festival, UK
- (2022) Royal Society Summer Science Exhibition. *The story of the Whincombe meteorite*.
- (2021) Royal Astronomical Society Public Lecture. *“Mega Landslides on Mars, Earth, and the Moon.”*
- (2020) Science Week Speaker, SMART Edu Club Ireland.  
SoapBox Science London Speaker.
- (2019) Guerilla Scientist at Intergalactic Travel Bureau, Lambeth Country Show, London.
- (2017) Royal Astronomical Society, engagement with under-represented communities
- (2016) UKSEDS outreach, Imperial College Science Festival.  
UKSEDS, ‘25 Years in Space – Helen Sharman celebration’, Imperial College.  
UKSEDS outreach, Natural History Museum Science Day.  
Astrobiology Society of Britain, STARRS project, Primary Schools

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## Media, Blog and Podcast

- (2023) Blog post for Planetary Geomorphology Image of the Month. [Slope Deformation Associated with Recent Tectonism in Taurus-Littrow Valley, Apollo 17 Landing Site](#).  
CBC interview – *Upcoming Russian and Indian lunar missions*.  
[https://youtu.be/px9v15ZJ85w?si=EhHk8HwsE\\_W9QOBT](https://youtu.be/px9v15ZJ85w?si=EhHk8HwsE_W9QOBT)
- (2021) Guest at The Cosmic Cast Podcast. [S3E8: The Unexplained landslides of Mars](#)  
EGU Geodynamic Division Blog, [Sliding across the Solar System – The missing origin of gigantic landslides](#)
- (2019) Blog post for The Conversation. [Mars: we may have solved the mystery of how its landslides form](#)  
Blog post for Planetary Geomorphology Image of the Month. [3D reconstruction of long runout landslides on Mars](#).
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## Publication List

### IN REVIEW

(2024)

**Magnarini G.**, Mitchell T. M., Grindrod P. M., Bell S. K., Joy K. H., Eckley S. A., Zeigler R. A., Schmitt H. H., Shearer C., ANGSA Science Team (2024) 3D and 2D clast analysis of Apollo 17 core sample 73002: insights into the Light Mantle dynamics and regolith reworking. *Journal of Geophysical Research: Planets*

### PEER-REVIEWED

(2024)

**(7) Magnarini, G.**, Champagne A., Morino C., Philippe M., Beck C., and Conway S. (2023) Long runout landslides with associated longitudinal ridges in Iceland as analogues of martian landforms. *Earth Surface Dynamics*, <https://doi.org/10.5194/esurf-2023-13>.

(2023)

**(6) Magnarini, G.**, Grindrod, P., and Mitchell, T.M. Evidence of recent slope deformation and the lasting effect of local subsurface geometry in Taurus-Littrow Valley, Apollo 17 landing site. *Journal of Geophysical Research: Planets*, 128, e2022JE007726. <https://doi.org/10.1029/2022JE007726>. (Citations: 1)

**(5) Magnarini, G.**, Aretusini, S., Mitchell, T.M., Pennacchioni, G., Di Toro, G. and Schmitt, H.H. (2023) Friction experiments on lunar analogue gouges and implications for the mechanism of the Apollo 17 long runout landslide. *Journal of Geophysical Research: Planets*, 128, e2022JE007520. <https://doi.org/10.1029/2022JE007520>.

(2021)

**(4) Magnarini, G.**, Mitchell, T.M., Grindrod, P., Goren, L., and Browning, J. (2021). Implication of longitudinal ridges for the mechanics of ice-free long-runout landslides. *Earth and Planetary Science Letters*, 574, 117177. <http://dx.doi.org/10.1016/j.epsl.2021.117177>. (Citations: 10)

**(3) Magnarini, G.**, Mitchell, T.M., Grindrod, P., Schmitt, H., Petro, N. E. (2021). Scaling relationship between the wavelength of longitudinal ridges and the thickness of long runout landslides on the Moon. *Journal of Geophysical Research: Planets*, 126, e2021JE006922. <http://dx.doi.org/10.1029/2021je006922>. (Citations: 1)

(2) Gomila, R., et al. (including **Magnarini, G.**) (2021). Frictional melting in hydrothermal fluid-rich faults: Field and experimental evidence from the Bolfín Fault Zone (Chile). *Geochemistry, Geophysics, Geosystems*, 22, e2021GC009743. <https://doi.org/10.1029/2021GC009743>. (Citations: 5)

(2019)

**(1) Magnarini, G.**, Mitchell, T.M., Grindrod, P., Goren, L., and Schmitt, H. (2019). Longitudinal ridges imparted by high-speed granular flow mechanisms in Martian landslides. *Nature Communications*, 10, 4711. <https://doi.org/10.1038/s41467-019-12734-0>. (Citations: 25)

### CONFERENCE PRESENTATIONS

(selection of first author and other contributions / \*\*Invited)

(2024)

**Magnarini G.**, Mitchell T. M., Grindrod P. M., Bell S. K., Joy K. H., Eckley S. A., Zeigler R. A., Schmitt H. H., Shearer C., ANGSA Science Team (2024) 3D and 2D clast analysis of Apollo 17 core sample 73002: insights into the Light Mantle dynamics and regolith reworking, EPSC, 9-13 September, Berlin, Germany. (Talk)

**Magnarini G.**, Grindrod P. M., Mitchell T. M. (2024) Taurus-Littrow Valley, Apollo 17 landing site: Slope deformation and sample analysis, BPSC, 19-21 June, Leicester, UK (Talk)

(2023)

**Magnarini G.**, Champagne A., Morino C., Beck C., Philippe M., Salese F., Fairén A., Decaulne A., Conway S.J. (2023) Can long runout landslides with longitudinal

ridges be used as paleoclimatic marker in Iceland and on Mars? 6th World Landslide Forum, 14-17 November, Florence, Italy (Poster)

**\*\* Magnarini G.** (2023) Surface processes on the Moon, Mars, and Earth, GeoBerlin, 3-8 September, Berlin, Germany (Invited Talk)

**Magnarini G.**, Bell S. K., Eckley S. A., Joy K. H., Morris R. V., Mitchell T. M., Grindrod P. M., Schmitt H. H., Shearer C. K., ANGSA Science Team (2023) investigation of the light mantle landslide emplacement dynamics through clast fabric and morphology in the apollo 17 core sample 73002, European Lunar Symposium (Poster)

**Magnarini G.**, Grindrod P. M., Mitchell T. M. (2023) Slope Deformation Associated with Recent Tectonism and the Lasting Effect of Local Subsurface Geometry in the Taurus-Littrow Valley, Apollo 17 Landing Site, EGU (Talk)

Beck C., Ertlen-Font M., Conway S., Philippe M., **Magnarini G.**, Morino C. (2023) Molards as proxies of mountain permafrost degradation: direct comparison of experimental studies and field observations, EGU.

**Magnarini G.**, Grindrod P. M., Mitchell T. M. (2023) Evidence of recent slope deformation and the lasting effect of local subsurface geometry in the Taurus-Littrow Valley, Apollo 17 landing site, Abstract 1055, LPSC (Poster)

Grindrod P. M. and **Magnarini G.** (2023) 42 Years of impact cratering at the Apollo 15 landing site, Abstract 1114, LPSC (Poster)

(2022)

**Magnarini G.**, Mitchell T., Aretusini S., Pennacchioni G., Di Toro G., Schmitt H. (2022) Friction experiments on anorthosite-bearing gouges and implications for the mechanism of the Light Mantle avalanche in Taurus-Littrow Valley, Abstract 2023, Apollo 17 – ANGSA Workshop, Lunar Planetary Institute (Talk)

**\*\* Magnarini G.** (2022) The geomorphological record of long runout landslides in the Solar System, SGI (Italian Geological Society) Annual Meeting, 19-21 September, Turin, Italy (Invited Talk)

**Magnarini G.**, Grindrod P. M., Mitchell T. M. (2022) Evidence of recent slope deformation and the lasting effect of local tectonic stress in Taurus-Littrow Valley, the Moon, BPSC, 21-24 June. (Talk)

**Magnarini G.**, Aretusini S., Mitchell T., Di Toro G., Schmitt H. (2022) Friction experiments on anorthosite-bearing gouges and implications for the mechanism of the light mantle avalanche in Taurus-Littrow Valley, European Lunar Symposium (Poster)

**Magnarini, G.**, Grindrod P. M., Mitchell T. M. (2022) Evidence of recent and continuous slope deformation of the South Massif, Taurus-Littrow Valley, on the Moon, Abstract 1089, LPSC (Poster)

(2021)

**\*\* Magnarini, G.**, Mitchell T. M., Grindrod P. M., and L. Goren (2021) Longitudinal ridges in long runout landslides: On the applicability of high-speed granular flow mechanisms, EGU (Invited Talk)

(2020)

**\*\* Magnarini, G.**, T. M. Mitchell, P. M. Grindrod, and L. Goren (2020) Longitudinal ridges in long runout landslides: Are high-speed granular flow mechanisms applicable?, Abstract U005-09, AGU Fall Meeting, online, (Invited Talk)

(2019)

**Magnarini G.**, Mitchell T., Grindrod P., Goren L., Schmitt H. (2019) Long runout landslides: Morphological features and internal structures of the final deposit as keys to understand mechanisms involved during emplacement, Abstract MR2A-06, AGU Fall Meeting, 9-13 December, San Francisco, USA (Talk)

**Magnarini G.**, Mitchell T., Grindrod P., Goren L., Schmitt H. (2019) Morphometric analysis of the Coprates Labes landslide (Mars) and the El Magnifico landslide (Earth): a comparative planetary geology study of long runout landslides, BSG Annual Meeting, 9-11 Sept., Sheffield, UK. (Talk)

**Magnarini G.**, Aretusini S., Mitchell T., Di Toro G., Schmitt H. (2019) Friction experiments on anorthosite gouges: Implications for the mechanisms of long runout landslides on the Moon, 7th European Lunar Symposium, Manchester, UK, 21-23 May. (Poster)

Di Toro G., Fondriest M., Mitchell T., Gomila R., Jensen E., Sommacampagna C., Masoch S., Bistacchi A., **Magnarini G.**, Faulkner D., Cembrano J., Mittempergher S. (2019) Frictional melting in fluid-rich faults (Bolfín Fault Zone, Chile), Abstract 3962, EGU.

(2018) Sanchez-Roa C., Mitchell T., **Magnarini G.**, Cotton L., Gutmanis J., Browning J., Meredith P., Jones A., Oelkers E., Pridham L., Chappell P. (2018) Characterization of fractured networks in geothermal reservoirs: from field outcrops to laboratory measurements, The Geology of Fractured Reservoirs - The Geology Society, London.

**Magnarini G.**, Mitchell T., Grindrod P., Goren L., Schmitt H. (2018) Origin of longitudinal ridges and furrows associated with long runout landslides: The case study of a martian landslide, Abstract 1527, 49th LPSC, The Woodlands, TX, 19-23 Mar. (Talk)

(2017) **Magnarini G.**, Mitchell T., Grindrod P., Goren L., Schmitt H. (2017) Origin of longitudinal ridges and furrows observed in long runout landslides, Abstract P24C-03, AGU Fall Meeting, 11-15 December, New Orleans, USA (Talk)

(2016) Grindrod P.M. and **Magnarini G.** (2016) Grain-size analysis at Gale Crater, Mars: Testing the applicability of automatic detection software, GSA Annual Meeting, Paper No. 20-3. (Poster)

(2011) Turitto O. and **Magnarini G.** (2011) Historical analysis as a tool to identify planimetric and altimetric variations in a river channel: The case study of Po River at Casale Monferrato (Northwestern Italy), Geitalia - VIII Earth Sciences Italian Forum, Turin, ISSN 1972 1522.

(2010) Chelli A., Clerici A., **Magnarini G.**, Perego S., Ruffini A. and Tellini C. (2010) Tools for river channel morphodynamic assessment: the G.I.S of Taro River (Province of Parma, Italy), ASITA National Conference, Brescia, ISBN 978-88-903132-5-7.

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