

Johan Gaume

SWITZERLAND

Johan Gaume (born 18 September 1985) is associate professor of alpine mass movements at ETH Zürich and at the WSL Institute for Snow and Avalanche Research SLF, Davos, Switzerland.

Research:

His research interest is in the initiation and propagation of gravitational mass movements with a particular focus on snow and avalanche mechanics, including the development of multiscale methods based on computational geomechanics validated using laboratory and field experiments. In 2018, he proposed a new approach based on a novel snow constitutive law and a numerical technique known as the Material Point Method to simulate both the release and flow at the slope scale (Gaume et al. 2018 Nature Communications). This model later allowed him and his group to discover a transition from sub-Rayleigh anticrack to supershear crack propagation during the release process of snow avalanches (Trottet et al. 2022, Nature Physics). His work on snow avalanches was extended to model glacier calving and tsunamis (Wolper et al. 2021, Communications Earth & Environment) as well as multiphase alpine mass movements (Cicoira et al. 2022. Engineering Geology). He is also known for proposing, together with his colleague Alexander M. Puzrin a plausible explanation to the Dyatlov Pass Incident, a famous Russian Cold case (Gaume and Puzrin, Communications Earth & Environment). His work improves the physical understanding of slope instability and mass flows with impacts on applied research related to risk assessment and management in mountainous regions.

Employment history:

| 2022 – | Associate Professor – ETH Zürich, Head of the Alpine Mass Movements Group |
|-------------|--|
| | ALMO, WSL Institute for Snow and Avalanche Research SLF, Davos |
| 2019 – 2022 | Assistant Professor – EPFL Lausanne, Head of the Snow and Avalanche Simulation |
| | Laboratory SLAB |
| 2016 – 2018 | Research and Teaching Associate – EPFL Lausanne, Laboratory of Cryospheric |
| | Sciences CRYOS |
| | Visiting Scholar - UCLA, Department of Mathematics, Los Angeles, USA, 2017 |
| | Visiting Scholar – UPenn, Computer Science Department, Philadelphia, USA, 2018 |
| 2013 – 2016 | PostDoc – WSL Institute for Snow and Avalanche Research SLF, Davos |
| 2009 – 2013 | PhD student – INRAE & Grenoble Alpes University, Grenoble, France |

Honors & Awards:

| 2023 | IUGG Early Career Scientist Award |
|------|---|
| 2018 | Eccellenza Professorial fellowship from the Swiss National Science Foundation SNSF |
| 2015 | Ambizione fellowship from the Swiss National Science Foundation SNSF |
| 2013 | Swiss Government Excellence Scholarship (SEFRI) |

Early Career Scientist Award (2023)

