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PROFESSIONAL APPOINTMENTS

From 04.2023: **Professor (Tenure Track)**
Ludwig-Maximilians-Universität München, Germany

10.2021 – 03.2023: **Postdoctoral Scholar**
German Research Centre for Geosciences, Potsdam, Germany

10.2019 – 09.2021: **Marie Skłodowska-Curie Postdoctoral Fellow**
German Research Centre for Geosciences, Potsdam, Germany

04.2017 – 10.2019: **Postdoctoral Scholar**
German Research Centre for Geosciences, Potsdam, Germany

09.2013 – 12.2016: **Graduate Student Researcher**
Department of Earth Science, University of California, Santa Barbara, USA

06.2015 – 09.2015: **Intern**
ConocoPhillips, Houston, Texas, USA

03.2015 – 06.2015: **Instructor**
Department of Earth Science, University of California, Santa Barbara, USA

Parental Leave: Equivalent to 8 months full time:
First child: 100% from 01.2023-02.2023 | Second child: 50% from 10.2024 – 09.2025

EDUCATION

09.2011 – 03.2017: **PhD, Earth Science**
University of California, Santa Barbara, USA
PhD thesis: *Controls on uplift and planation of active structures in the foreland of the Tian Shan*
Thesis adviser: Douglas W. Burbank
Thesis committee: Bodo Bookhagen (U. Potsdam), Thomas Dunne (UCSB)

10.2007 – 06.2011: **BA & MSci, Natural Sciences (Geology), (First Class)**
University of Cambridge, Cambridge, UK
Top of the class in Geology in 2009 & 2010
MSci thesis: *The thermal aureole of the Skaergaard intrusion*
Thesis adviser: Marian B. Holness

07.2006: **French Baccalauréat & German Abitur**
Lycée International, Saint-Germain-en-Laye, France

AWARDS AND HONORS

2020: German Working Group for Geomorphology: Lecture award

2015: University of California, Santa Barbara: Alumni Graduate Award for Research Excellence

2013: Lloyd and Mary Edwards: Field Studies Fellowship

- 2011: University of California, Santa Barbara: Regents Special Fellowship
 2010: King's College, Cambridge: Scholarship for academic achievements
 2009: King's College, Cambridge: Scholarship for academic achievements
 2009: British Petrol: Scholarship for best undergraduate geologic mapping project

RESEARCH GRANTS AND FELLOWSHIPS (Total: €1,712,294 as PI | €10,000 as Co-PI)

- 2024: **European Research Council: Starting Grant (PI)**
 Project: *Floodplain Weathering (Flow)*
 Budget: €1,498,739
- 2021: **German Research Centre for Geosciences: Expedition Fund (Co-PI)**
 Project: *Impact of extreme events on sediment & biogeochemical fluxes*
 Budget: €10,000
- 2019: **European Union: Marie Skłodowska-Curie Individual Fellowship (PI)**
 Project: *Weathering in bedrock landslide deposits (WETSLIDE)*
 Budget: €162,806
- 2015: **Earthscope: Geochronology Award (PI)**
 Project: *Investigating deformation in the wake of the Yellowstone hotspot using markers along the Snake River*
 Budget: \$7,000
- 2014: **Geological Society of America: Graduate Student Research Grant (PI)**
 Additional support for project: *Using physical experiments to study the influence of sediment flux on river – fold interactions in western China*
 Budget: \$1,500
- 2014: **University of California, Santa Barbara, Earth Research Institute: Summer Fellowship (PI)**
 Additional support for project: *Using physical experiments to study the influence of sediment flux on river – fold interactions in western China*
 Budget: \$1,500
- 2013: **University of California, Santa Barbara, Department of Earth Science: Graduate Opportunity Award (PI)**
 Project: *Using physical experiments to study the influence of sediment flux on river – fold interactions in western China*
 Budget: \$4,000
- 2012: **German Academic Exchange Service (DAAD): Doctoral Student Scholarship (PI)**
 Project: *Active deformation in the Pamir-Tian Shan collision zone*
 Budget: €36,749

Supported Research Grants and fellowships (Total: €200,452 as Host | €135,000 as Co-Host)

- 2024: **DAAD PRIME Fellowship to Dr. Albert Cabré (Host)**
 Project: *Frequency-Magnitude relationships of debris flows in the Atacama Desert*
 Budget: €164,152
- CSC Fellowship to Ao Liu (Host)**
 Project: *Oxidative weathering during the Artinskian warming event*
 Budget: €24,300
- 2023: **Swiss Postdoctoral Fellowships to Dr. Yuezhi Zhong (Co-Host)**
 Project: *Impact of rock uplift on bedrock channel meandering and channel sinuosity*
 Budget: CHF 131,050

2022: CSC Fellowship to Sen Xu (Host)Project: *Links between erosion and weathering on the eastern Qinghai-Tibet Plateau*

Budget: €9000

STUDENT SUPERVISION

2025 – present: **PhD student (visiting)**. Ao Liu. CUG, Wuhan, China. Co-advisor*Oxidative weathering during the Artinskian warming event*2024 – present: **Postdoctoral Scholar**. Dr. Albert Cabré. LMU Munich, Germany. Primary advisor*Frequency-Magnitude relationships of debris flows in the Atacama Desert*2024 – present: **M.Sc. Thesis**. Kaja Schultz. LMU Munich, Germany. Primary advisor*Weathering at moderate erosion rates*2024: **B.Sc. Thesis**. Marcel Schwörer. LMU Munich, Germany. Primary advisor*Geology of anticlinal structures in the Oberstdorf region using the example of the Burgberg (Helvetikum)*2022: **PhD student (visiting)**. Sen Xu. Tianjin University, China. Co-advisor*Links between erosion and weathering on the eastern Qinghai-Tibet Plateau*2022 – 2024: **M.Sc. Thesis**. Monika Pfau. University of Potsdam, Germany. Primary advisor*Mobilisierung von organischem Kohlenstoff durch die Jahrhundertflut 2021 im Ahrtal*2020 – 2024: **M.Sc. Thesis**. Alexander Gessner. Free University of Berlin, Germany. Primary advisor*Quantifying timescales of organic matter build-up in landslide deposits: Insights from the Southern Alps of New Zealand*2018 – 2019: **M.Sc. Thesis**. Theresa Binder. University of Innsbruck, Austria. Primary advisor*Timescales of carbonate and silicate weathering in morainal hillslopes*2018: **Internship**. Adrian Greiner. German Research Centre for Geosciences. Primary advisor*Mapping of landslides, grain size analyses, assistance in fieldwork***TEACHING AND OUTREACH**

Since 2023: **Professor**. LMU München (9 contact hours per semester week)

Bachelor: Karten und Profile; Sedimentgeologische Profilaufnahme; Einführende und weiterführende Geländeübungen, Exogene Dynamik, Kartierübung Kreta, Tektonische Geomorphologie und Sedimentologie

Master & PhD: Graduate College, Advanced Earth Surface Dynamics

2022: **Guest lecturer**. Free University of BerlinSedimentology (Bachelor). **6h**2021: **Guest lecturer**. University of PotsdamEarth System Science (Bachelor). **1.5h**2020: **Guest lecturer**. Free University of BerlinSedimentary Systems: From source to sink (Master). **5.5h****Guest lecturer**. University of PotsdamEarth System Science (Bachelor). **1.5h**2019: **Guest lecturer**. Technical University of MunichEarth Surface Dynamics and Sedimentary Systems (Bachelor). **1.5h****Teaching assistant**. University of PotsdamA Systems Approach to Earth Sciences (Master of Public Management). **1h/week (12 weeks)**

- 2018: **Guest lecturer.** University of Potsdam
Allgemeine Physische Geographie (Bachelor). **1.5h**
Guest lecturer. Free University of Berlin
Sedimentary Systems: From source to sink (Master). **4h**
- 2015: **Lecturer.** University of California, Santa Barbara
Geological Application of GIS (Bachelor). **5h/week (10 weeks)**
Teaching assistant. University of California, Santa Barbara
Geological Catastrophes (Bachelor). **1h/week (10 weeks)**
- 2014: **Teaching assistant.** University of California, Santa Barbara
Geological Application of GIS (Bachelor). **5h/week (10 weeks)**
Teaching assistant. University of California, Santa Barbara
Structural Geology (Bachelor). **3h/week (10 weeks)**
- 2012: **Teaching assistant.** University of California, Santa Barbara
Structural Geology (Bachelor). **3h/week (10 weeks)**
- 2015 – 2021: **Public outreach.** University of California, Santa Barbara
Science Line participant (Answering Science Questions from High School Students)
- 2018 – 2019: **Public outreach.** Participation at the “Potsdam long night of Sciences”. **4h**
- 2015: **Public outreach.** Participation in Science Nights at elementary schools. **6h**

SYNERGISTIC ACTIVITIES AND SERVICE

- Since 2023: **PhD committee member.** (Total 8, Chair 1)
- Since 2017: **Paper and proposal reviews** (87 reviews of 56 individual documents).
Agence Nationale de la Recherche (ANR), American Journal of Science (AJS); Applied Geochemistry; Catena; Chemical Geology; Earth and Planetary Science Letters (EPSL); Earth-Science Reviews; Earth Surface Dynamics (Esurf); Earth Surface Processes and Landforms (ESPL); Elements; Geology; Geomorphology; Geophysical Research Letters (GRL); Geosciences; GSA Bulletin (GSAB); Global and Planetary Change (GPC); JGR: Earth Surface; JGR: Solid Earth; Journal of Hydrology; Lithosphere; National Science Foundation (NSF); Nature; Nature Communications; Nature Geoscience; Science Advances; Sedimentology; Tectonics; Tectonophysics
- Since 2017: **Session (co-)convener at conferences** (Total 10)
GeoBerlin 2023: *Geomorphology and Sedimentology Beyond Boundaries*. Convener
Goldschmidt 2023: *Tectonic and climatic controls on continental weathering and erosion processes: a source to sink approach*. Convener
EGU 2022: *Processes and timescales of sediment production, transport, and deposition from source to sink*. Co-convener
MGM 2021: *Geomorphological impacts on water, nutrient and carbon cycles*. Convener
DGGV 2021: *Earth Surface Dynamics and Processes under Climatic and Tectonic Controls*. Co-convener
EGU 2021: *Processes and timescales of sediment production, transport, and deposition from source to sink*. Co-convener
EGU 2020: *The processes and timescales of sediment production, transport and deposition from source to sink*. Co-convener
EGU 2019: *Erosion, chemical weathering and sedimentation in mountain landscapes*. Co-convener
EGU 2018: *Chemical weathering, soil formation, and organic carbon mobilization across*

- spatial and temporal scales. Convener*
 AGU 2017: *Physical Experiments of Earth Surface Processes: Novel Results and Advances in Methods, Instrumentation, and Data Handling. Co-convener*
- 2019 – 2022: **Co-founder, network for climate action.** Employee initiative and network for climate action across all research centres within the Helmholtz Association
- 2019 – 2022: **Co-organizer, lecture series.** Earth Surface Dynamics distinguished lecture series across sections of the German Research Centre of Geosciences
- 2018 – 2019: **Co-organizer, seminar.** German Research Centre of Geosciences
- 2014: **Graduate student representative.** University of California, Santa Barbara
- 2013: **Co-organizer, graduate alumni career panel.** University of California, Santa Barbara
- 2012 – 2013: **Co-organizer, department seminar.** University of California, Santa Barbara
- 2008 – 2009: **Teaching committee member.** Department of Earth Sciences, University of Cambridge

SELECTED WORKSHOPS AND TRAINING ACTIVITIES

- 2021: Unlearning Racism in the Geosciences (URGE). Pod member.
- 2018: Leopoldina Symposium, Earth Surface Shaping by Biotic Processes. Leopoldina National Academy of Sciences, Halle, Germany. 4 days
- 2016: Hooking undergraduates into geophysics data and methods (GPS, Lidar, InSAR, SfM photogrammetry) through societally important issues. AGU Fall Meeting 2016. San Francisco, USA. 1 day
- 2016: Optically stimulated luminescence short course. Utah State University, Logan, USA. 2 weeks
- 2013: Introduction to salt tectonics. Exxon Mobile short course. University of California, Santa Barbara, USA. 1 day
- 2012: Integrated basin analysis and hydrocarbon systems. Exxon Mobile short course. University of California, Santa Barbara, USA. 1 day
- 2012: Future Earth: Interactions of Climate and Earth-surface Processes. Summer Institute on Earth-surface Dynamics. St. Anthony Falls Laboratory, Minneapolis, USA. 10 days
- 2012: LIDAR short course. University of California, Davis, USA. 2 days

PROFESSIONAL FIELD WORK EXPERIENCE

- 2024: **Black Forest, Germany:** *Water sampling for chemical analyses. 2 days*
Alps, Switzerland: *Sediment sampling for microbial analyses, 1 day*
- 2022: **Eifel region, Germany:** *Water and sediment sampling for chemical analyses. 3 days*
- 2020: **Central Apennines, Italy:** *Water and sediment sampling for chemical analyses. 2 weeks*
Southern Alps, New Zealand: *Water, sediment, and soil sampling for chemical and sedimentological analyses. Drone surveys for topographic analyses. 5 weeks*
- 2019: **Orkney, UK:** *Servicing seismic stations. 1 week*
- 2018: **Northern Apennines, Italy:** *Water sampling for chemical analyses. 1 week*
Alps, Switzerland: *Water and soil sampling for chemical analyses, participation in soil irrigation experiments. 2 weeks*
- 2017: **Southern Alps, New Zealand:** *Water, sediment, and soil sampling for chemical and sedimentological analyses. Drone surveys for topographic analyses. 4 weeks*
Central and southern range, Taiwan, *Drone flights for topographic analyses, water, sediment, and soil sampling for chemical and sedimentological analyses. 5 weeks*

- 2016: **Snake River, Wyoming & Idaho, USA:** *Terrace sediment sampling for optically stimulated luminescence dating.* 2 weeks
- 2015: **Tian Shan, China:** *Terrace sediment sampling for cosmogenic nuclide dating.* 3 weeks
- 2013: **Tian Shan, China:** *Geomorphic and structural mapping, GPS surveying of terraces, terrace sediment sampling for cosmogenic nuclide dating.* 4 weeks
- 2012: **Tian Shan, China:** *Geomorphic mapping, GPS surveying of terraces, terrace sediment sampling for optically stimulated luminescence dating.* 4 weeks

LABORATORY EXPERIENCE

- 2017 – 2019: Major cation and anion measurements in water. German Research Centre for Geosciences.
- 2018: Measurements of ¹³C isotopes of dissolved inorganic carbon in water. Petrographic and Geochemical Research Centre, Nancy, France
- 2016: Optically Stimulated Luminescence dating. Utah State University, Logan, USA
- 2014 – 2016: Cosmogenic Nuclide dating of ¹⁰Be in quartz. University of California, Santa Barbara & University of Potsdam
- 2014: Physical Experiments. St. Anthony Falls Laboratory, Minneapolis, USA
- 2013: Cosmogenic Nuclide dating of ³⁶Cl in carbonates. New Mexico Tech, Socorro, USA
- 2011 – 2013: Inductively coupled plasma mass-spectrometry for U-Pb dating of zircons. University of California, Santa Barbara & University of Potsdam
- 2010 – 2012: Cathodoluminescence & optical microscopy. University of Cambridge, UK

OTHER RELEVANT EXPERIENCE

Analytical skills

Digital Elevation analysis and stream network analysis, *ArcGIS and Matlab*
 Image analysis, *Matlab and Adobe Photoshop*
 Data analysis, statistics, and modelling, *Matlab*
 Data visualization, *ArcGIS and Adobe Illustrator*
 Geologic and geomorphic mapping, *ArcGIS and Google Earth*

Language proficiency

German (native), English (professional), French (professional working)

INVITED FIRST AUTHOR TALKS

- 2025: **International keynote talk.** Steepest Descent (EGU), Vienna, Austria
The sensitivity of the carbon cycle to mountain building
Department Seminar. China University of Geosciences, Wuhan, China
The sensitivity of the inorganic carbon cycle to erosion: Constraints from active mountain ranges
- 2024: **Society seminar.** German Sedimentology Lunch, Germany
The sensitivity of the inorganic carbon cycle to erosion: Constraints from active mountain ranges
Research group seminar. Tongji University, China
The sensitivity of the inorganic carbon cycle to erosion: Constraints from active mountain ranges
Research group seminar. Technical University of Munich, Germany
The sensitivity of the inorganic carbon cycle to erosion: Constraints from active mountain ranges
Research group seminar. ETH Zurich, Switzerland
The sensitivity of the inorganic carbon cycle to erosion: Constraints from active mountain ranges

- 2023: **Department Seminar.** University of Kiel, Germany
The sensitivity of the inorganic carbon cycle to erosion: Constraints from active mountain ranges
- Department Seminar.** University of California, Santa Barbara, USA
Non-linear impacts of erosion on the inorganic carbon cycle: Constraints from active mountain ranges
- 2022: **International conference talk.** Goldschmidt, Hawaii, USA
Erosion and chemical weathering of siliceous rocks at the supply and kinetic limits
- Research group seminar.** University of Oxford, UK
The impact of erosion on the inorganic carbon cycle: Constraints from active mountain ranges
- Job Interview seminar.** University of Salzburg, Austria
Of Sediments and Solutes – Linking Weathering and Erosion across Earth's Surface
- Department seminar.** Colorado State University, USA
The impact of erosion on the inorganic carbon cycle: Constraints from silicate, carbonate, and sulfide weathering in southern Taiwan
- Department seminar.** University of Potsdam, Germany
The impact of erosion on the inorganic carbon cycle: Constraints from silicate, carbonate, and sulfide weathering in southern Taiwan
- Job Interview seminar.** Ludwig Maximilian University of Munich, Germany
Of Sediments and Solutes – Linking Weathering and Erosion across Earth's Surface
- 2021: **Society seminar.** Munich GeoCenter
Impact of erosion on chemical weathering and the carbon cycle: Constraints from southern Taiwan
- Research group seminar.** University of Cambridge, UK
The impact of erosion on the co-variation of silicate, carbonate, and sulfide weathering
- Job Interview seminar.** University of Oxford, UK
Of Sediments and Solutes – Linking Weathering and Erosion across Earth's Surface
- Society seminar.** German Working Group for Geomorphology
Chemical Signatures of Landscapes
- 2020: **Research group seminar.** Victoria University of Wellington, New Zealand
Erosion-driven CO₂ emission due to coupled silicate, carbonate and sulfide weathering
- 2019: **International conference talk.** European Geosciences Union, Vienna, Austria
Temporal changes in rock uplift rates of folds in the foreland of the Tian Shan and the Pamir from geodetic and geologic data
- 2018: **Department seminar.** Free University of Berlin, Germany
Controls on channel migration and the lateral erosion by rivers
- Research group seminar.** University of Salzburg, Austria
Links between channel migration, landsliding, and chemical weathering
- Research group seminar.** Petrographic and Geochemical Research Centre, Nancy, France
Controls on the lateral erosion by rivers
- Research group seminar.** Swiss Federal Institute of Technology (ETH), Zurich, Switzerland
Controls on the lateral erosion by rivers
- 2016: **Research group seminar.** University of California, Los Angeles, USA
Rates and mechanics of fold uplift and lateral bedrock planation in a convergent foreland basin
- Research group seminar.** California Institute of Technology (Caltech), Pasadena, USA
Fluvial planation of actively uplifting anticlines

Research group seminar. University of Potsdam, Germany
Climatically controlled erosion of actively uplifting anticlines – evidence from physical experiments and field data

Research group seminar. German Research Centre for Geosciences, Potsdam, Germany
Climatically controlled erosion of actively uplifting anticlines – evidence from physical experiments and field data.

PEER REVIEWED ARTICLES

2025

- [22] Turowski, J.M., McNab, F., **Bufo, A.**, Tofelde, S. (2025). Width evolution of channel belts as a random walk. **Earth Surface Dynamics**, 13(1), 97-117

2024

- [21] Erlanger, E., **Bufo, A.**, Paris, G., D’Angeli, I., Pisani, L., Kemeny, P.C., Stammeier, J., Haghypour, N., Hovius, N. (2024). *Geodynamics modulate deep CO₂ degassing and control of the central Apennines carbon budget.* **Nature Geoscience**, 17(5), 465-471
- [20] Xu, S., Li S-L., **Bufo, A.**, Zhong, J., Wen, H., Chen, S., Li, L. (2024). *Escalating carbon concentrations and fluxes in warming montane rivers draining the Qinghai-Tibet Plateau.* **Environmental Science & Technology**, 58(16), 7032-7044.
- [19] Turowski, J.M., **Bufo, A.**, Tofelde, S. (2024). *A process-based model for fluvial valley width.* **Earth Surface Dynamics**, 12(2), 493-514
- [18] **Bufo, A.**, Rugenstein, J.K.C., Hovius, N. (2024). *CO₂ drawdown from weathering maximized at moderate erosion rates.* **Science**, 383(6687), 1075-1080
- [17] Xu, S., **Bufo, A.**, Li S.L., Erlanger, E.D., Ran, L., Zhong, J., Yang, C.J., Zhang, L., Ma, T., Sachse, D. (2024). *Erosional modulation of the balance between alkalinity and acid generations from rock weathering.* **Geochimica et Cosmochimica Acta**, 368, 126-146

2023

- [16] Roda-Boluda, D.C., Schildgen, T.F., Wittmann, H., Tofelde, S., **Bufo, A.**, Prancevic, J., Hovius, N. (in press). *Elevation-dependent periglacial and paraglacial processes modulate tectonically-controlled erosion of the Western Southern Alps, New Zealand.* **Journal of Geophysical Research: Earth Surface**, 128(11), e2023JF007271

2022

- [15] Tofelde, S., **Bufo, A.**, Turowski, J.M. (2022). *Hillslope sediment supply limits alluvial valley width.* **AGU Advances**, 3, e2021AV000641
- [14] **Bufo, A.**, Cook, K.L., Galy, A., Wittmann, H., Hovius, N. (2022). *The effect of lithology on the relationship between denudation rate and chemical weathering pathways – evidence from the eastern Tibetan Plateau.* **Earth Surface Dynamics**, 10(3), 513-530
- [13] Tuzlak, K., Pederson, J.L., **Bufo, A.**, Rittenour, T.M. (2022). *Patterns of incision and deformation on the southern flank of the Yellowstone hotspot from terraces and topography.* **Geological Society of America Bulletin**, 134(5-6), 1319-1333

2021

- [12] Erlanger E.D., Rugenstein, J.K.C., **Bufo A.**, Picotti V., Willett, S.D. (2021). *Controls on Physical and Chemical Denudation in a Mixed Carbonate-Siliciclastic Orogen.* **Journal of Geophysical Research: Earth Surface**. 126(8), e2021JF006064
- [11] **Bufo, A.**, Hovius, N., Emberson, R., Rugenstein, J.K.C., Galy, A., Hassenruck-Gudipati, H., Chang, J-M. (2021). *Co-variation of silicate, carbonate and sulfide weathering drives CO₂ release with erosion.* **Nature Geoscience**, 14(4), 211-216

2020

- [10] Savi, S., Tofelde, S., Wickert A.W., **Bufo, A.**, Schildgen, T.F., Strecker, M.R. (2020). *Interactions between channels and tributary alluvial fans: channel adjustments and sediment-signal propagation*. **Earth Surface Dynamics**, 8(2), 303-322

2019

- [9] Hoffmann, J., **Bufo, A.**, Caers J. (2019). *Morphodynamic Analysis and Statistical Synthesis of Geomorphic Data: Application to a Flume Experiment*. **Journal of Geophysical Research: Earth Surface**, 124(11), 2561-2578
- [8] **Bufo, A.**, Turowski, J.M., Burbank, D.W., Paola, C., Wickert, A.D., Tofelde, S. (2019). *Controls on the lateral migration rate of braided channel systems in coarse non-cohesive sediment*. **Earth Surface Processes and Landforms**, 44(14), 2823-2836
- [7] Tofelde, S., Savi, S., Wickert A.W., **Bufo, A.**, Schildgen, T.F. (2019) *Alluvial channel response to environmental perturbations: Fill-terrace formation and sediment-signal disruption*. **Earth Surface Dynamics**, 7(2), 609-631

2017

- [6] **Bufo, A.**, Burbank, D.W., Liu, L., Bookhagen, B., Chen, J., Qin, J., Li, T., Thompson Jobe, J.A., Yang, H. (2017). *Variations of Lateral Bedrock Erosion Rates Control Planation of Uplifting Folds in the Foreland of the Tian Shan, NW China*. **Journal of Geophysical Research: Earth Surface**, 122(12), 2431-2467
- [5] Thompson Jobe, J.A., Li, T., Chen, J., Burbank, D.W., **Bufo, A.** (2017). *Quaternary Tectonic Evolution of the Pamir-Tian Shan Collision Convergence Zone, Northwest China*. **Tectonics**, 36(12), 1944-19194
- [4] **Bufo, A.**, Bekaert, D., Hussain, E., Bookhagen, B., Burbank, D.W., Thompson, J.A., Chen, J., Li, T., Langtao, L., Gan, W. (2017). *Temporal changes in rock uplift rates of folds in the foreland of the Tian Shan and the Pamir from geodetic and geologic data*. **Geophysical Research Letters**, 44(21), 10977-10987

2016

- [3] **Bufo, A.**, Paola, C., Burbank, D.W. (2016). *Fluvial bevelling of topography controlled by lateral channel mobility and uplift rate*. **Nature Geoscience**, 9(9), 706-710
- [2] Topal, S., Keller, E., **Bufo, A.**, Koçyiğit, A. (2016). *Tectonic geomorphology of a large normal fault: Akşehir fault, SW Turkey*. **Geomorphology**, 259, 55-69

2014

- [1] **Bufo, N. A.**, Holness, M. B., Humphreys, M.C.S. (2014). *Contact Metamorphism of Precambrian Gneiss by the Skaergaard Intrusion*. **Journal of Petrology**, 55, 1595-1617

OTHER PUBLICATIONS

-
- Bufo, A.**, von Blanckenburg, F. (2023), *Wasser als Regulator des Erdklimas*. **System Erde**, 13(1), 18-23
- Bufo, A.**, Hovius, N., Emberson, R., Rugenstein, J.K.C., Galy, A., Hassenruck-Gudipati, H., Chang, J-M. (2021). *Major element stream water chemistry, compiled 10Be erosion rates, and analyses of weathering across an erosion-rate gradient in in southern Taiwan*. **GFZ Data Services**. Dataset
- Bufo, N. A.** (2017). *Rates and mechanics of fold uplift and lateral bedrock planation in convergent foreland basins*: **University of California, Santa Barbara**. PhD Thesis
- Bufo, A.**, Paola, C. & Burbank, D.W. (2016). *Fold Erosion by an Antecedent River*. **SEAD**. Dataset

CONFERENCE PROCEEDINGS

2025

- Zhong, Y., Turowski, J.M., **Bufo, A.**, Schildgen, T. (2025). *Impact of rock uplift on bedrock-valley width and channel sinuosity*. EGU General Assembly. Vienna, Austria
- Cabré, A., Mather, A., **Bufo, A.**, Lang, A. (2025). *Interactions between aeolian dune fields and debris flows in alluvial fans*. EGU General Assembly. Vienna, Austria
- Turowski, J.M., McNab, F., **Bufo, A.**, Tofelde, S., Zhong, Y. (2025). *A random walk perspective on channel belts and fluvial valleys: model and evidence*. EGU General Assembly. Vienna, Austria
- Bufo, A.**, Zhang, L., Dean, J.F., Rocher-Ros, G., Stanley, E.H., Sponseller, R.A., Butman, D.E., Karlsson, J., Liu, R., Battin T.J. (2025). *Impacts of warming and permafrost thaw on chemical weathering and riverine carbon fluxes on the Qinghai-Tibet Plateau*. EGU General Assembly. Vienna, Austria
- Bufo, A.**, Zhang, L., Dean, J.F., Rocher-Ros, G., Stanley, E.H., Sponseller, R.A., Butman, D.E., Karlsson, J., Liu, R., Battin T.J. (2025). *Impacts of warming and permafrost thaw on chemical weathering and riverine carbon fluxes on the Qinghai-Tibet Plateau*. GSA Special Conference. London, United Kingdom

2024

- Schultz, K., **Bufo, A.** (2024). *Weathering fluxes under moderate erosion rates – the case of the Black Forest, Germany*. Pangeo. Salzburg, Austria
- Bufo, A.**, Rugenstein, J.K.C., Hovius, N. (2024). *Non-linear sensitivity of mineral weathering to erosion implies an optimum of CO₂ drawdown at moderate erosion rates*. EGU General Assembly. Vienna, Austria
- Turowski, J.M., McNab, F., **Bufo, A.**, Tofelde, S. (2024). *Evolution of channel belts, flood plains and fluvial valleys*. EGU General Assembly. Vienna, Austria
- Roda-Boluda, D.C., Schildgen, T.F., Lupker, M., **Bufo, A.**, Sondergaard, A.S., Haghypour, N., Prancevic, J., Tofelde, S., Wittmann, H., Hovius, N. (2024). *Quantifying landslide erosion rates over millennial timescales in the Southern Alps and Fiordland, New Zealand*. EGU General Assembly. Vienna, Austria
- Chang, J.-M., Wu, I.-F., Lin, L.-H., **Bufo, A.**, Wang, P.-L., Chou, H.-L., Hsieh, T.-C. (2024). *Microbial Pyrite Oxidation and Chemical Weathering to a Typhoon Precipitation and Discharge Event in Taiwan*. EGU General Assembly. Vienna, Austria

2023

- Bufo, A.**, Rugenstein, J.K.C., Hovius, N. (2023). *Non-linear sensitivity of mineral weathering to erosion implies an optimum of CO₂ drawdown at moderate erosion rates*. DGGV Annual Meeting. Berlin, Germany
- Turowski, J.M., **Bufo, A.**, Tofelde, S. (2023). *A process-based model for fluvial valley width*. DGGV Annual Meeting. Berlin, Germany
- Bufo, A.**, Rugenstein, J.K.C., Hovius, N. (2023). *Non-linear sensitivity of mineral weathering to erosion implies an optimum of CO₂ drawdown at moderate erosion rates*. Goldschmidt. Lyon, France
- Erlanger, E., **Bufo, A.**, Paris, G., D'Angeli, I., Pisani, L., Kemeny, P., Stammeier, J., Haghypour, N., Hovius N. (2023). *Beyond uplift-weathering: metamorphic decarbonation dominates the carbon budget of the central Apennines*. Goldschmidt. Lyon, France
- Hemingway, J.D., **Bufo, A.**, Hovius, N., Johnston, D.T. (2023). *Pyrite oxidation and sulfur (re)cycling in erosive landscapes as revealed by sulfate triple-oxygen isotopes*. Goldschmidt. Lyon, France
- Turowski, J., **Bufo, A.**, Tofelde, S. (2023). *A process-based model for fluvial valley width*. EGU General Assembly. Vienna, Austria
- Erlanger, E., **Bufo, A.**, Paris, G., D'Angeli, I., Pisani, L., Kemeny, P., Stammeier, J., Haghypour, N., Hovius N. (2023). *Building the inorganic carbon budget of a young, actively extending carbonate-rich*

mountain range: the interplay between chemical weathering and tectonics. EGU General Assembly. Vienna, Austria

Roda-Boluda, D.C., Schildgen, T.F., Prancevic, J., Tofelde, S., **Bufo, A.**, Lupker, M., Wittmann, H., Hovius, N. (2023). *Comparing erosion rates across timescales and processes: insights from the Western Southern Alps of New Zealand*. EGU General Assembly. Vienna, Austria

2022

Bufo, A., Rugenstein, J.K.C., Hovius, N. (2022). *Non-linear dependence of silicate, carbonate and sulfide weathering on erosion and climate*. Mid-European Geomorphology Meeting. Kaprun, Austria

Erlanger, E., **Bufo, A.**, Paris, G., D'Angeli, I., Pisani, L., Stammeier, J., Haghypour, N., Hovius N. (2022). *Metamorphic CO₂ emissions outpace CO₂ drawdown from silicate weathering in a young carbonate mountain belt*. GSA Connects. Denver, Colorado, USA

Dosch, S., Hovius, N., Repasch, M.N., Vieth-Hillebrand, A., **Bufo, A.**, Sachse, D. (2021). *Carbon storage, transfer and outgassing driven by floodplain morphology and seasonality at the Rio Bermejo, Argentina*. Goldschmidt. Hawaii, USA

Bufo, A., Hovius, N., Caves Rugenstein, J.K. (2021). *Erosion and chemical weathering of siliceous rocks at the supply and kinetic limits*. Goldschmidt. Hawaii, USA

Roda-Boluda, D.C., Schildgen, T.F., Wittmann, H., Tofelde, S., **Bufo, A.**, Prancevic, J., Hovius, N. (2021). *Temperature-controlled erosion dominates in the Western Southern Alps of New Zealand*. EGU General Assembly. Virtual

Bufo, A., Hovius, N., Caves Rugenstein, J.K. (2021). *Erosion and chemical weathering of siliceous rocks at the supply and kinetic limits*. EGU General Assembly. Vienna, Austria

2021

Bufo, A., Hovius, N., Caves Rugenstein, J.K. (2021). *Erosion and chemical weathering at the supply and kinetic limits*. Mid-European Geomorphology Meeting 2021. Munich, Germany

Tofelde, S., **Bufo, A.**, Turowski, J.M. (2021). *Hillslope sediment supply limits alluvial valley width*. Mid-European Geomorphology Meeting 2021. Munich, Germany

Bufo, A., Hovius, N., Emberson, R., Caves Rugenstein, J.K., Galy, A., Hassenruck-Gudipati, H., Chang, J-M. (2021). *Co-variation of silicate, carbonate, and sulfide weathering drives CO₂ release with erosion: Constraints from southern Taiwan*. GeoKarlsruhe 2021, DGGV Annual Meeting. Virtual

Erlanger, E.D., Caves Rugenstein, J.K., **Bufo, A.**, Picotti, V., Willett, S.D. (2021). *Controls on Chemical Weathering and Physical Erosion in a Mixed Carbonate-Siliciclastic Orogen*. Goldschmidt. Virtual

Bufo, A., Hovius, N., Emberson, R., Caves Rugenstein, J.K., Galy, A., Hassenruck-Gudipati, H., Chang, J-M. (2021). *Coupled limits to silicate, carbonate, and sulfide weathering in metasediments drives release of CO₂ with erosion: Constraints from southern Taiwan*. EGU General Assembly. Virtual

Roda-Boluda, D.C., Schildgen, T.F., Wittmann, H., Tofelde, S., Prancevic, J., **Bufo, A.**, Hovius, N. (2021). *Erosion rates of the southern New Zealand Alps reflect long-term tectonics and transient climate*. EGU General Assembly. Virtual

Tofelde, S., **Bufo, A.**, Turowski, J.M. (2021). *Steady-state valley width revealed by alluvial terrace sequences*. EGU General Assembly. Virtual

2020

Bufo, A., Hovius, N., Emberson, R., Caves Rugenstein, J.K., Galy, A., Hassenruck-Gudipati, H., Chang, J-M. (2020). *Coupled limits to silicate, carbonate, and sulfide weathering in metasediments drives release of CO₂ with erosion: Constrains from southern Taiwan*. AGU Fall Meeting Abstracts. Virtual

- Cook, K.L., **Bufo, A.**, Galy, A., Wittmann, H., Hovius, N. (2020). *The effect of lithology on the relationship between erosion rate and chemical weathering pathways*. AGU Fall Meeting Abstracts. Virtual
- Roda-Boluda, D.C., Schildgen, T.F., Wittmann, H., Tofelde, S., Prancevic, J., **Bufo, A.**, Hovius, N. (2020). *Rates and Controls of Erosion on the Western Southern Alps of New Zealand over 10² yr timescales*. AGU Fall Meeting Abstracts. Virtual
- Roda-Boluda, D.C., Schildgen, T.F., Lupker, M., Wittmann, H., Prancevic, J., Tofelde, S., **Bufo, A.**, Hovius, N. (2020). *Quantifying landslide recurrence intervals and tracing landslide-derived sediment with in-situ ¹⁰Be and ¹⁴C*. AGU Fall Meeting Abstracts. Virtual
- Bufo, A.**, Hovius, N., Emberson, R., Caves Rugenstein, J.K., Galy, A., Hassenruck-Gudipati, H., Chang, J-M. (2020). *Coupled limits to silicate, carbonate, and sulfide weathering in metasediments drives release of CO₂ with erosion: Constraints from southern Taiwan*. AK Geomorphologie Annual Meeting. Virtual
- Tofelde, S., **Bufo, A.**, Turowski, J.M. (2020). *Self-organization of valley width preserved in fluvial terrace sequences*. AK Geomorphologie Annual Meeting. Virtual
- Scheingross, J.S., **Bufo, A.**, Hemingway, J., Hovius, N., Goldberg, T., Schleicher, A.M. (2020). *Enhancement of Carbonate, Silicate, and Sulfide Weathering via Fluvial Sediment Abrasion*. Goldschmidt. Virtual
- Bufo, A.**, Turowski, J.M., Burbank, D.W., Paola, C., Wickert, A.D., Tofelde, S. (2020). *Controls on the lateral channel migration rate of braided alluvial channel systems*. EGU General Assembly. Virtual
- Roda-Boluda, D., Schildgen, T., Wittmann-Oelze, H., Prancevic, J., Tofelde, S., **Bufo, A.** (2020). *Quantifying long-term landslide frequency and sediment fluxes in New Zealand with in-situ ¹⁰Be and ¹⁴C*. EGU General Assembly. Virtual
- Erlanger, E.D., Caves Rugenstein, J.K., **Bufo, A.**, Picotti, V., Willett, S.D. (2020). *Partitioning the denudation flux between silicate and carbonate physical erosion and chemical weathering in the Northern Apennines*. EGU General Assembly. Virtual
- 2019
- Scheingross, J.S., **Bufo, A.**, Hemingway, J., Hovius, N., Goldberg, T., Schleicher, A.M. (2019). *Influence of fluvial sediment abrasion on carbonate, silicate, and sulfide weathering*. AGU Fall Meeting Abstracts. San Francisco, CA, USA
- Prancevic, J.P., Roda-Boluda, D., Tofelde, S., **Bufo, A.** (2019). *Comparing hillslope sediment supply with river sediment in a threshold landscape*. AGU Fall Meeting Abstracts. San Francisco, CA, USA
- Roda-Boluda, D., Schildgen, T., Wittmann-Oelze, H., Prancevic, J., Tofelde, S., **Bufo, A.** (2019). *Quantifying long-term landslide frequency and sediment fluxes in New Zealand with in-situ ¹⁰Be and ¹⁴C*. AGU Fall Meeting Abstracts. San Francisco, CA, USA
- Bufo, A.**, Turowski, J.M., Burbank, D.W., Paola, C., Wickert, A.D., Tofelde, S. (2019). *Controls on the lateral channel migration rate of braided alluvial channel systems*. AK Geomorphologie Annual Meeting. Kiel, Germany
- Tofelde, S., Savi, S., Wickert, A.D., **Bufo, A.**, Schildgen, T. (2019). *Fill-terrace formation and sediment signal disruption in response to environmental perturbations*. GSA Penrose Conference: Clast 2019. Juneau, AK, USA
- Chang, J-M., Lin, L-H., Hovius, N., **Bufo, A.**, Chou, H-L., Wang, P-L., Chen, H., Andermann, C. (2019). *The Impact of Typhoon Precipitation on Flow Routing, River Chemistry and Carbon Cycling*. Goldschmidt. Barcelona, Spain

- Bufo, A.**, Burbank, D.W., Bookhagen, B., Thompson Jobe, J.A., Bekaert, D.P.S., Hussain, E., Chen, J., Li, T. (2019). *Temporal changes in rock uplift rates of folds in the foreland of the Tian Shan and the Pamir from geodetic and geologic data*. EGU General Assembly. Vienna, Austria
- Tofelde, S., Savi, S., Wickert, A.D., **Bufo, A.**, Schildgen, T.F. (2019). *Fill-terrace formation and sediment-signal disruption in response to environmental perturbations*. EGU General Assembly. Vienna, Austria
- Roda-Boluda, D., Schildgen, T., Wittmann-Oelze, H., Prancevic, J., Tofelde, S., **Bufo, A.** (2019). *Examining landslide recurrence intervals and landslide-derived sediment fluxes with ¹⁰Be concentrations and grain size distributions: preliminary results from the Fiordland and the Southern Alps, New Zealand*. EGU General Assembly. Vienna, Austria
- Hoffmann Mendes, J., **Bufo, A.**, Caers, J. (2019). *Morphodynamic Analysis and Statistical Synthesis of Geomorphic Data*. EGU General Assembly. Vienna, Austria
- 2018
- Bufo, A.**, Emberson, R., Hovius, N., Caves-Rugenstein, J.K., Hassenruck-Gudipati, H. (2018). *The impact of soil and landslide erosion processes on carbonate and silicate weathering in southern Taiwan*. Central European Conference on Geomorphology and Quaternary Sciences. Gießen, Germany
- Bufo, A.**, Emberson, R., Hovius, N., Caves-Rugenstein, J.K., Hassenruck-Gudipati, H. (2018). *Impact of soil and landslide erosion processes on coupled sulfide oxidation and carbonate weathering*. Goldschmidt. Boston, USA
- Prancevic, J.P., Roda-Boluda, D., Tofelde, S., **Bufo, A.**, Hemingway, J.D. (2018). *Sediment sizes produced by landslides in a threshold landscape*. EGU General Assembly. Vienna, Austria
- Bufo, A.**, Emberson, R., Hovius, N., Caves-Rugenstein, J.K., Hassenruck-Gudipati, H. (2018). *Impact of soil and landslide erosion processes on chemical weathering*. EGU General Assembly. Vienna, Austria
- Bufo, A.**, Turowski, J.M., Burbank, D.W., Paola, C., Wickert, A.D., Tofelde, S. (2018). *Controls on lateral channel mobility and the reworked area of active alluvial surfaces*. EGU General Assembly. Vienna, Austria
- 2017
- Bufo, A.**, Burbank, D.W., Paola, C., Turowski, J.M., Tofelde, S., Wickert, A.D. (2017). *Experimental evidence for a control by channel-wall height on alluvial channel migration*. AGU Fall Meeting Abstracts. New Orleans, LA, USA
- Beaulieu, O., Wickert, A.D., Witte, E., Tofelde, S., Savi, S., **Bufo A.**, Clubb, F.J. (2017). *River Terrace Formation and Destruction Demonstrated by Base-Level Fall Experiments*. AGU Fall Meeting Abstracts. New Orleans, LA, USA
- Bufo, A.**, Burbank, D.W., Liu, L., Chen, J., Paola, C., Bookhagen, B., Thompson Jobe, J. (2017). *Variations in lateral erosion rates control fluvial planation and strath terrace formation on uplifting folds: Evidence from both the field and sandbox models*. EGU General Assembly. Vienna, Austria
- Bufo A.**, Pederson J., Tuzlack D. (2017). *Geomorphic evidence for Quaternary tectonics on the southern flank of the Yellowstone hotspots from terraces and stream profiles along the Hoback and Snake River*. EGU General Assembly. Vienna, Austria
- 2016
- Bufo A.**, Pederson J., Tuzlack D. (2016). *Insights into the Quaternary tectonics of the Yellowstone hotspot from a terrace record along the Hoback and Snake rivers*. AGU Fall Meeting Abstracts. San Francisco, CA, USA
- Bufo, A.**, Bookhagen, B., Bekaert, D., Hussain, E., Burbank, D. W. (2016). *Rapid deformation in the foreland of the Pamir and Tian Shan, western China, revealed by Envisat-ASAR radar interferometry*. TerraSAR-X / TanDEM-X Science Team Meeting. Oberpfaffenhofen, Germany

Bufo A., Pederson J., Tuzlack D. (2016). *Quaternary tectonics along the flanks of Yellowstone from terraces along the Hoback and Snake River*. GSA Annual Meeting. Denver, CO, USA

Bufo, A., Paola, C., Burbank, D.W., Thompson, J.A. (2016). *Experimental evidence for climatically controlled changes between lateral erosion and incision of actively uplifting folds*. EGU General Assembly. Vienna, Austria

Lavier, L., Ball, P.J., Manatschal, G., Heumann, M., Macdonald, J.D., Matt, V.J., **Bufo, A.** (2016). *Deciphering the rheological, stratigraphic and thermal evolution of magma-poor rifted margins: coupling thermo mechanical models with observations and interpretations from seismic reflection data*. Rifts III: Catching the Wave. London, UK

2015

Thompson, J.A., Chen, J., Yang, H., Li, T., Bookhagen, B., Burbank, D.W., **Bufo, A.** (2015). *OSL and cosmogenic ^{10}Be dating of fluvial terraces on the northeast Pamir margin, northwest China*. AGU Fall Meeting Abstracts. San Francisco, CA, USA

Bufo, A., Paola, C., Burbank, D.W. (2015). *Controls on lateral erosion of an active uplift by antecedent streams: An Experimental Study*. Binghamton Symposium on Experimental Geomorphology. Buffalo NY, USA

2014

Thompson, J., Li, T., Burbank, D., Chen, J., Bookhagen, B., **Bufo, A.**, Yang, H. (2014). *Late Quaternary deformation rates in the Pamir-Tian Shan collision zone, NW China*. AGU Fall Meeting Abstracts. San Francisco, CA, USA

Bufo, A., Burbank, D.W., Chen, J., Liu, L., Li, T., Thompson, J. (2014). *Constraints on timing and rates of strath terrace formation on actively uplifting anticlines in the foreland of the Chinese Tien Shan*. AGU Fall Meeting Abstracts. San Francisco, CA, USA

Liu, L., **Bufo, A.**, Chen, J., Burbank, D.W., Li, T., Thompson, J. (2014). *Detrital zircon U-Pb provenance study in Cenozoic strata of the Pamir-Tianshan collision zone*. AGU Fall Meeting Abstracts. San Francisco, CA, USA

2013

Bufo, N., Bookhagen, B., Burbank, D.W., Bekaert, D., Hussain, D. (2013). *Active deformation in the Pamir–Tian Shan collision zone, NW China*. Himalayan Karakorum Tibet Workshop & International Symposium on Tibetan Plateau. Tübingen, Germany