
CURRICULUM VITAE

Prof. Dr. Andreas Mulch

Senckenberg Gesellschaft für Naturforschung
and
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PROFESSIONAL POSITIONS

Senckenberg – Leibniz Institution for Biodiversity and Earth System Research, Germany

2013 – present Director of Science

2013 – 2021 Vice-Director General

2015 – present Director, Senckenberg Research Institute and Natural History Museum Frankfurt

Stanford University, Stanford, USA

2014 - 2015 Cox Visiting Professor, School of Earth Sciences

Goethe University Frankfurt, Germany

2010 - present Professor (W3), Institute of Geosciences

Leibniz University Hannover, Germany

2007 - 2010 Director, Institute of Geology

2006 - 2010 Associate Professor (W2, tenured), Institute of Geology

Stanford University, USA

2005 - 2006 Research Fellow, Department of Geological & Environmental Sciences

University of Minnesota and Stanford University, USA

2004 - 2005 US-NSF Research Fellow, Geology and Geophysics and Stanford University

EDUCATION

UNIVERSITÉ DE LAUSANNE, SWITZERLAND

2004 Dr. ès sci. in Mineralogy/Geochemistry

Thesis: “Integrated high-spatial resolution $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology, stable isotope geochemistry, and structural analysis of extensional detachment systems”

JUSTUS LIEBIG UNIVERSITÄT GIEßEN, GERMANY

1999 Dipl. Geol. in Geology (Tectonics, Geochronology)

Thesis: “Age of synkinematic mafic dikes in the middle and lower crust of the Ivrea Verbano and Strona-Ceneri Zones (Switzerland and Italy)”

HONORS AND AWARDS

2016 Elected Fellow of the Geological Society of America

2013 A. Cox Award, School of Earth Sciences, Stanford University, USA

2010 W3 Professorship, Georg-August Universität Göttingen (declined)

2010 Elected GAFOS member A. v. Humboldt Found. (D) & Nat. Acad. Sci. / Kavli foundation (USA)

2004 Prix de la Faculté - School of Earth and Environmental Sciences, Université de Lausanne,

1999 Diploma thesis with distinction, Justus Liebig University Giessen, Germany

RESEARCH INTERESTS

- Observational and isotope geochemical studies of tectonics and continental hydrology
- Stable isotope paleoaltimetry and the tectonic and topographic evolution of orogens
- Understanding the evolution of landscapes and life
- Meteoric fluid in flow in faults and detachment zones
- Stable isotope-based long-term climate reconstructions

SERVICE

PROFESSIONAL SERVICE

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| 2023 | Strategic Advisor, Institute for Earth Sciences, University Graz, Austria |
| 2020 - 2023 | Member of the DFG Senate Commission on Earth System Research (<i>DFG Senatskommission Erdsystemforschung</i>) |
| 2020 – 2023 | Supervisory Board Member (<i>'Aufsichtsrat'</i>) ZMT Bremen |
| 2018 - Present | Member of Scientific Advisory Board "UNESCO Messel Fossil Pit" |
| 2016 – 2020 | German Geological Society (DGGV) – Geol. Soc. America liaison officer |
| 2015 - Present | German Science Foundation (DFG) panel member, ICDP program |
| 2014 - 2018 | Executive Council German Geological Society (DGGV) |
| 2014 - 2015 | Vice Chairman German Geological Society (GV) |
| 2012 | Organizing committee „German-American Frontiers of Science“. Humboldt Foundation and National Academy of Sciences (USA) |
| 2010 - 2013 | German Science Foundation (DFG) panel member, ICDP program |
| 2009 - 2014 | Executive Council German Geological Society (GV) |
| 2008 | US-National Science Foundation <i>EAR Tectonics</i> panel member |
| 2004 | Member US-National Science Foundation white paper group „Paleoaltimetry“ |

EDITORIAL SERVICE

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| 2015 - 2017 | Basin Research, Editor |
| 2009 - Present | American Journal of Science, Associate Editor |

CONVENER OF CONFERENCES AND SESSIONS

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| 2024 | AGU Fall Meeting, convener |
| 2016 | AGU Fall Meeting, convener |
| 2014 | German Geological Society (GV) Annual Meeting, convener |
| 2013 | AGU Fall Meeting "Linking Earth Surface Dynamics and Deep Tectonic Processes", convener |
| 2011 | "Terrestr. Stable Isot. Paleohydrol." GSA-GV Annual Meeting, Munich, convener |
| 2008 | AGU Fall Meeting "Interactions Among Climate, Exhumation & Tectonics Through the Changing Climate of the Neogene and Quaternary", convener |
| 2007 | Goldschmidt Conference "Geochemical constraints on the topographic evolution of Cenozoic orogens", convener |
| 2006 | Geologische Vereinigung, Annual Meeting Potsdam, convener |
| 2005 | AGU Fall Meeting "Topographic and Climatic Evolution of Cenozoic Mountain Belts", convener |

SELECTED PUBLIC LECTURES

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| 2023 | Leadership forum, Frankfurt University Clinic, Frankfurt Science Garden LOEWE VeWa-Reihe „KlimaWissenSchaffen“, Frankfurt |
| 2022 | Die ZEIT& House of Pharma Hauptstadt Summit: One Health. Representation of the State of Hessen Berlin; Panelist |
| 2021 | Klimatalk Förderverein Senckenberg mit Prof. Curtius |
| 2019 | STEP Award Ceremony, Königsstein; Keynote European Central Bank, Frankfurt; Keynote March for Science, Frankfurt; with Min. f. Science and Culture A. Dorn; Opening Speaker Acatis, Value Conference, Frankfurt Public forum on "Klimawandel Ökonomische Triebfeder. Politische Herausforderung" with MdB Wiesmann and MdB Weisgerber, Frankfurt; Panelist |
| 2018 | Public forum on "Species erosion", Wiesbaden, Germany; Keynote & Panelist Symposium on "How much nature do we need?", Representation of the State of Hessen at the EU, Brussels, Belgium; Keynote |

INVITED SCIENTIFIC LECTURES

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| 2024 | Universität Tübingen, Department Seminar, invited |
| 2023 | 10 th Third Pole Environment Symposium, Chongqing, China, invited TU Dresden, Faculty of Environmental Sciences, Department Seminar MioMeet, Utrecht, NL, invited |
| 2022 | University of Texas, Arlington; Earth Sciences Department Seminar |
| 2021 | German Sustainability Science Summit 2021: Sustainability from an Integrated Earth System Research View, Keynote iESF Workshop of Leibniz Association |
| 2020 | Helmholtz-Zentrum Potsdam – Geo-X Talk |
| 2019 | MioMeet, Stockholm, SWE University of Michigan, USA; Smith Lecturer |
| 2018 | Technical University Darmstadt, Erdsystemdynamik 8 th Third Pole Environment Meeting, Gothenburg, Sweden; Panelist Geol. Soc. America Annual Meeting, Indianapolis, USA; Keynote |
| 2017 | US-NSF workshop on Landscapes and Mammal Evolution, Seattle, USA |
| 2016 | Kyoto University, Japan Goldschmidt Conference, Osaka, Japan; Keynote 6 th Third Pole Environment Meeting, Columbus, Ohio, USA |
| 2015 | DFG-NSFC Sino-German Meeting, Kunming, China European Geophysical Union Annual Meeting, Vienna, Austria; Keynote United States Geologic Survey, Denver Stanford University, Environmental Earth System Science, Winter Seminar University of Freiberg, Department Seminar |
| 2014 | University of California, Santa Cruz, Department Seminar University of Nevada, Las Vegas, Department Seminar |
| 2013 | Joint 28 th HKT and 6 th ISTEP meeting Tübingen; Keynote European Geophys. Union Annual Meeting, Vienna (Austria); Keynote |
| 2012 | ETH Zurich, Switzerland BMBF-CAME Annual Meeting, Frankfurt; Keynote Leibniz Center for Marine Tropical Systems (ZMT), Bremen Max Planck Institute for Biogeochemistry, Jena; Department Seminar Stanford University, Environmental Earth System Science, Winter Seminar Syracuse University, Dep. Earth Sciences, K. Douglas Nelson Lecture Series |
| 2011 | European Geophys. Union Annual Meeting, Vienna (Austria) Keynote |
| 2010 | ESF TopoEurope Annual meeting Oslo (Norway) Keynote GSA Tectonic Crossroads Meeting Ankara (Turkey) Keynote University of Jena; Department Seminar University of Tübingen; Department Seminar |
| 2009 | University of Göttingen American Geophysical Union, San Francisco (2 Keynotes) Goethe University Frankfurt Geol. Soc. Of America Annual Meeting, Oregon |
| 2008 | University Braunschweig; Department Seminar Leibniz School Surface and Climate Processes, Potsdam University of California, Santa Cruz (USA) EGU Annual Meeting, Vienna (Austria) |
| 2007 | Min. Soc. America workshop “Paleoaltimetry” (Denver, USA) University Bochum; Department Seminar University Münster; Department Seminar |
| 2006 | University Göttingen; Department Seminar Goldschmidt Conference (Melbourne, AUS) |
| 2005 | Leibniz University Hannover University of Chicago (USA) |

Publications

Publication metrics

Total number of citations: 7350 (Web of Science), 9090 (google Scholar)

Hirsch (H) index = 47 (WoS), 52 (google Scholar)

Average H-index growth since year of PhD = 2.2 / yr (WoS), 2.7 / yr (google Scholar)

*advised/**co-advised student; underlined = advised postdoctoral scholar/scientist in Mulch lab

<https://scholar.google.de/citations?user=RghSagoAAAAJ&hl=de>

Most cited paper (760 citations)

Garzzone, C.N., Hoke, G.D., Libarkin, J.C., Withers, S., MacFadden B., Eiler, J., **Mulch, A.** (2008) The Rise of the Andes. *Science*, 320, 1304-1307.

2024

136. *Schmitt, C., Vasiliev, I., Meijer, N., Kaboth-Bahr, S., Bahr, A., **Mulch, A.** (2024) Eocene maar sediments record warming of up to 3.5°C during a hyperthermal event 47.2 million years ago. *nature communications earth & environment*, 5:471.
135. Agiadi, K., Vasiliev, I., *Butiseacă, G., Kontakiotis, G., Thivaïou, D., Besiou, E., Zarkogiannis, S., Koskeridou, E., Antonarakou, A., **Mulch, A.** (2024) Coupled otolith and foraminifera oxygen and carbon stable isotopes evidence paleoceanographic changes and fish metabolic responses. *Biogeosciences*, 21, 3869-3881.
134. *Ardenghi, N., **Mulch, A.**, McFarlin, J.M., Sachse, D., Kahmen, A., Niedermeyer, E.M. (in press) Leaf wax *n*-alkane distribution and hydrogen isotopic fractionation in fen plant communities of two Mediterranean wetlands (Tenaghi Philippon, Nisi fen–Northern Greece). *Frontiers in Earth Sciences, Biogeosciences*, 12-2024 [10.3389/feart.2024.1359157](https://doi.org/10.3389/feart.2024.1359157)
133. Meijer, N., Licht, A., Woutersen, A., Hoorn, C., Robin-Champigneul, F., Rohrmann, A., Tagliavento, M., Brugger, J., Kelemen, F.D., Schauer, A., Hren, M., Sun, A., Fiebig, J., **Mulch, A.**, Dupont-Nivet, G. (2024) Proto-monsoon rainfall and greening in Central Asia due to extreme early Eocene warmth. *Nature Geoscience* <https://doi.org/10.1038/s41561-023-01371-4>
132. Kaboth-Bahr, S., *Schmitt, C., Bauersachs, T., Zeeden, C., Wonik, T., Schandl, J., Lenz, O., Wedmann, S., Vasiliev, I., **Mulch, A.**, Lourens, L., Pross, J., Bahr, A. (2024) Improved chronostratigraphy for the Messel Formation (Hesse, Germany) provides insight into early to middle Eocene climate variability. *Newsletter on Stratigraphy* DOI: 10.1127/nos/2024/0799

2023

131. Boateng, D., Mutz, S.G., *Ballian, A., Meijers, M.J.M., Methner, K., Botsyun, S., **Mulch, A.**, Ehlers, T.A. (2023) The effects of diachronous surface uplift of the European Alps on regional climate and the oxygen isotopic composition of precipitation, *Earth Syst. Dynam. Discuss* 14, 1183–1210.
130. Peverelli, V., Berger, A., Wille, M., **Mulch, A.**, Lanari, P., Pettke, T., Putlitz, B., Herwegh, M. (in press) Unravelling the hydration history of an inverted passive continental margin using epidote U–Pb geochronology and Pb–Sr–O–H isotope geochemistry. *Lithos*.
129. Cheng, F., Zusa, A. V., Jolivet, M., **Mulch, A.**, Meijer, N., Guo, Z. (2023) Linking source and sink: The timing of deposition of Paleogene syntectonic strata in Central Asia. *Geology*, 51, 1083-1088.
128. Pingel, H. Alonso, R.N., Bookhagen, B., Cottle, J.M., **Mulch, A.**, Strecker, M.R. (2023) Miocene surface uplift and orogenic evolution of the southern Andean Plateau (central Puna), northwestern Argentina. *Proceedings of the National Academy of Sciences* 120 (42) e2303964120
127. Kudriavtseva, A., Sobel, E.R., Codilean, A.T., Meijers, M.J.M., **Mulch, A.**, Hoke, G.D., Roud, S.C., Wack, M.R., Gilder, S.A., Fink, D., Mikolaichuk, A.V., Fülöp, R-H., Wilcken, K.M., Enge, G. (2023) Neogene aridification and lake development in the Issyk Kul basin, Kyrgyzstan. *Basin Research* 35,3, 1193-1227.

2022

126. Lüdecke, T., Leichter, J.N., Aldeias, V., Bamford, M.K., Biro, D., Braun, D.R., Capelli, C., Cybulski, J.D., Duprey, N.N., Ferreira da Silva, M.J., Foreman, A.D., Habermann, J.M., Haug, G.H., Martínez, F.I., Mathe, J., **Mulch, A.**, Sigman, D.M., Vonhof, H., Bobe, R., Carvalho, S., Martínez-García, A. (2022) Carbon, nitrogen, and oxygen stable isotopes in modern tooth enamel: A case study from Gorongosa National Park, central Mozambique. *Frontiers in Ecology and Evolution*, 10: 958032.
125. Botsyun, S., Ehlers, T.A., Koptev, A., Böhme, M., Methner, K., Risi, C., Stepanek, C., Mutz, S.G., Werner, M., Boateng, D., **Mulch, A.** (2022) Middle Miocene climate and stable oxygen isotopes in Europe based on numerical modeling. *Paleoceanography* 37, e2022PA004442.
124. Ehlers, T.A., Chen, D., Appel, E., Bolch, T., Chen, F., Diekmann, B., Dippold, M.A., Giese, M., Guggenberger, G., Lai, H-W., Li, X., Liu, J., Liu, Y., Ma, Y., Miehe, G., Mosbrugger, V., **Mulch, A.**, Piao, S., Schwab, A., Thompson, L.G., Su, Z., Sun, H., Yao, T., Yang, X., Yang, K., Zhu, L. (2022) Past, present, and future geo-biosphere interactions on the Tibetan Plateau and implications for permafrost. *Earth Science Reviews*, 234, 104197.
123. *Butiseacă, G.A., van der Meer, M., Kontakiotis, G., Agiadi, K., Thivaiou, D., Besiou, E., Antonarakou, A., **Mulch, A.**, Vasiliev, I. (2022) Multiple crises preceded the Mediterranean Salinity Crisis: Aridification and vegetation changes revealed by biomarkers and stable isotopes. *Global Planetary Change*, 217, 103951.
122. Lenz, O. Montag, M., Wilde, V., Methner, K., Riegel, W., **Mulch, A.** (2022) Eocene carbon isotope excursions in a lignite bearing succession at the southern edge of the proto-North Sea (Schöningen, Germany). *Climate of the Past*, 18, 2231–2254. <https://doi.org/10.5194/cp-18-2231-2022>
121. Olaka, L., Kasemann, S., Sültenfuß, J., Wilke, F., Olago, D., **Mulch, A.**, Musloff, A. (2022) Tectonic control of groundwater recharge and flow in faulted volcanic aquifers. *Water Resources Research*, 58, 7, e2022WR032016
120. Peverelli, V., Berger, A., **Mulch, A.**, Pettke, T., Piccoli, F., Herwegh, M. (2022) U-P geochronology and H isotope geochemistry trace pre-orogenic hydration of mid-crustal granitoids. *Geology*, 50, 1073-1077.
119. Kontakiotis, G.¹, *Butiseacă, G.A.¹, Antonarakou, A., Agiadi, K., Zarkogiannis, S.D., *Krsnik, E., Besiou, E., Zachariasse, W.J., Lourens, L., Thivaiou, D., Koskeridou, E., Moissette, P., **Mulch, A.**, Karakitsios, V., Vasiliev, I. (2022) Hypersalinity accompanies tectonic restriction in the eastern Mediterranean. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 592, 110903. ¹ = joint first authors
118. Dusséaux, C., Gébelin, A., Boulvais, P., Ruffet, G., Poujol, M., Cogné, N., Branquet, Y., Mottram, C., Barou, F., **Mulch, A.** (2022) Timing and duration of meteoric water infiltration in the Quiberon detachment zone (Armorican Massif, Variscan belt, France), *Journal of Structural Geology*, 156, 104546
117. Caves Rugenstein, J.K., Methner, K., Kukla, T., **Mulch, A.**, Lüdecke, T., Wacker, U., Fiebig, J., Meltzer, A., Wegmann, K., Zeitler, P., Pazzaglia, F., Chamberlain, C.P. (2022) Clumped isotope constraints on warming and precipitation seasonality in Mongolia due to Altai uplift. *American Journal of Science*, 322, 28-54.
116. Grambling, T.A., Jessup, M.J., Newell, D.L., Methner, K., **Mulch, A.**, Hughes, C.A., Shaw, C.A., (2022) Miocene to modern hydrothermal circulation and high topography during synconvergent extension in the Cordillera Blanca, Peru. *Geology*, 50, 106-110.
115. Vasiliev, I., van der Meer, M.T.J., Stoica, M., Krijgsman, W., Reichart, G.J., *Butiseacă, G.A., Niedermeyer, E.M., Aliyeva, E., van Baak, C.G.C., **Mulch, A.** (2022) Biomarkers reveal two paramount Pliocene-Pleistocene connectivity events in the Caspian Sea Basin. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 587, 110082.

114. Meijers, M.J.M., Kaya, F., Peynircioğlu, A.A., Bibi, F., Pehlevan, C., **Mulch, A.**, Langereis, C.G. (2022) Magnetostratigraphy of the mammal-bearing late Miocene continental Sivas Basin: fluvio-lacustrine sedimentation under stable climatic conditions during the peak of the Pikermian (central Anatolia, Turkey). *Newsletter on Stratigraphy*, 55, 3, 285-310.

2021

114. *Krsnik, E., Methner, K., Campani, M., Botsyun, S., Mutz, S.G., Ehlers, T.A., Kempf, O., Fiebig, J., Schlunegger, F., **Mulch, A.** (2021) Miocene high elevation and high relief in the Central Alps. *Solid Earth*, 12, 2615–2631.
113. *Butiseacă, G.A., Vasiliev, I., van der Meer, M.T.J., Krijgsman, W., Palcu, D.V., Feurdean, A., Niedermeyer, E.M., **Mulch, A.** (2021) Severe late Miocene droughts in western Eurasia. *Global Planetary Change*, 206, 103644.
112. Grambling, T.A., Jessup, M.J., Newell, D.L., Methner, K., **Mulch, A.**, Hughes, C.A., Shaw, C.A., (2021) Miocene to modern hydrothermal circulation and high topography during synconvergent extension in the Cordillera Blanca, Peru. *Geology*.
111. Methner, K., **Mulch, A.**, Fiebig, J., *Krsnik, E., *Löffler, N., Bajnaj, D., Chamberlain, C.P. (2021) Continentality exceeds influence of westerlies on middle Miocene temperatures in the Northern Rocky Mountains (MT, ID), *Paleoceanography*, 36, e2020PA003991.
110. Gébelin, A., Witt, C., Radkiewicz, M., **Mulch, A.** (2021) Impact of the Southern Ecuadorian Andes on oxygen and hydrogen isotopes in precipitation. *Frontiers in Science*, 9:664590.
109. Dusséaux, C., Gébelin, A., Ruffet, G., **Mulch, A.** (2021) Late Carboniferous paleoelevation of the Variscan Belt of Western Europe. *Earth and Planetary Science Letters*, 569, 117064.
108. Ibarra, D.E., Kukla, T., Methner, K.A., **Mulch, A.**, Chamberlain, C.P. (2021) Reconstructing past elevations from triple oxygen isotopes of lacustrine chert: Application to the Eocene Nevadaplano, Elko basin, Nevada, USA. *Frontiers in Science*, 9:628868.

2020

107. Licht, A., Dupont-Nivet, G., Meijer, N., Caves-Rugenstein, J., Schauer, A., Fiebig, J., **Mulch, A.**, Hoorn, C., Barbolini, N., Guo, Z. (2020.) Decline of soil respiration in northeastern Tibet through the transition into the Oligocene icehouse. *Paleogeography, Paleoclimatology, Paleoecology*, 560, 110016.
106. Methner, K., Campani, M., Fiebig, J., *Löffler, N., Kempf, O., **Mulch, A.** (2020) Middle Miocene long-term continental temperature change in and out of pace with marine climate records. *nature Scientific Reports* 10: 7989.
105. Vasiliev, I., Feurdean, A., Reichart, G-J., **Mulch, A.** (2020) Late Miocene intensification of continentality in eastern Eurasia (Black Sea basin). *Int J Earth Sciences* <https://doi.org/10.1007/s00531-020-01832-w>
104. Pingel, H., Strecker, M.R., **Mulch, A.**, Alonso, R.A., Cottle, J., Rohrmann, A. (2020) Late Cenozoic topographic evolution of the Eastern Cordillera and Puna Plateau margin (NW Argentina). *Earth and Planetary Science Letters* <https://doi.org/10.1016/j.epsl.2020.116112>
103. Botsyun, S., Ehlers, T.A., Mutz, S.G., Methner, K., *Krsnik, E., **Mulch, A.** (2020) Opportunities and challenges for paleoaltimetry in “small” orogens: Insights from the European Alps. *Geophys Res Letters*, 47, e2019GL086046.
102. Meijers, M.J.M., Brocard, G., Whitney, D.L., **Mulch, A.** (2020) Paleoenvironmental conditions and drainage evolution of the central Anatolian lake system (Turkey) during late Miocene to Pliocene surface uplift. *Geosphere*, 16. <https://doi.org/10.1130/GES02135.1>

2019

101. *Ardenghi, N., **Mulch, A.**, Koutsodendris, A., Pross, J., Kahmen, A., Niedermeyer, E. (2019) Temperature and moisture variability in the Eastern Mediterranean region during Marine Isotope Stages 11–10 based on biomarker analysis of the Tenaghi Philippon peat deposit. *Quaternary Science Reviews*, 225, 105977.
100. Methner, K., Lenz, O., Riegel, W., Wilde, V., **Mulch, A.** (2019) Palaeoenvironmental response of mid-latitude wetlands to PETM climate change (Schöningen lignite deposits, Germany). *Climate of the Past*, 15, 1-15.
99. Heineke, C., Hetzel, R., Nilius, N.-P., Zwingmann, H., Todd, A., **Mulch, A.**, Wölfler, A., Glotzbach, C., Akal, C., Dunkl, I., Raven, M., Hampel, A. (2019) Detachment faulting in a bivergent core complex constrained by fault gouge dating and low-temperature thermochronology. *Journal of Structural Geology*.
98. Fiebig, J., Bajnai, D., *Löffler, N., Methner, K., *Krsnik, E., **Mulch, A.**, Hofmann, S. (2019) Combined high-precision Δ_{47} and Δ_{48} analysis of carbonates. *Chemical Geology*, 522, 186-191.
97. Huang, S.¹, Meijers, M.J.M.¹, Eyres, A., **Mulch, A.**, Fritz, S.A. (2019) Unravelling the history of biodiversity in mountain ranges through integrating geology and biogeography. *Journal of Biogeography. Alexander von Humboldt Special Volume*. ¹= joint 1st authors
96. Dusseaux, C., Gébelin, A., Boulvais, P., Gardien, V., Grimes, S., **Mulch, A.** (2019) Meteoric fluid-rock interaction in Variscan shear zones. *Terra Nova* 2019;00:1–7. <https://doi.org/10.1111/ter.12392>
95. *Löffler, N., Fiebig, J., **Mulch, A.**, Tütken, T., Schmidt, B.C., Bajnai, D., Conrad, A.C., Wacker, U., Böttcher, M.E. (2019) Refining the temperature dependence of the oxygen and clumped isotopic compositions of structurally bound carbonate in apatite. *Geochimica et Cosmochimica Acta*, 253, 19-38.
94. Lynch, E.A., **Mulch, A.**, Yonkee, A., van der Pluijm, B. (2019) Hydrogen isotopes in authigenic clay minerals suggest presence of surface fluids in the evolving Sevier fold-thrust belt of ID-WY. *Earth and Planetary Science Letters*, 513, 29-39.
93. Page, M., Licht, A., Dupont-Nivet, G., Meijer, N., Barbolini, N., Hoorn, C., Schauer, A., Huntington, K., Bajnai, D., Fiebig, J., **Mulch, A.**, Guo, Z. (2019) Synchronous cooling and decline in monsoonal rainfall in NE Tibet during the fall into the Oligocene Icehouse. *Geology*
92. Schwartz, T., Methner, K., **Mulch, A.**, Graham, S.A., Chamberlain, C.P. (2019) Paleogene topographic and climatic evolution of the Northern Rocky Mountains from integrated sedimentary and isotopic data. *Geological Society of America Bulletin*. doi.org/10.1130/B32068.1
91. Vasiliev, I., Reichart, G.-J., Krijgsman, W., **Mulch, A.** (2019) Black Sea rivers capture drastic change in catchment-wide mean annual temperature and soil pH during the Miocene-to-Pliocene transition. *Global and Planetary Change*, 172, 428-439.

2018

90. Lüdecke, T., Kullmer, O., Wacker, U., Sandrock, O., Fiebig, J., Schrenk, F., **Mulch, A.** (2018) Dietary versatility of early Pleistocene hominins. *Proceedings of the National Academy of Sciences*, 115, 52, 13330-13335. Paper featured as „Hominins had flexible diets“ (2019) in *nature Human Behaviour* doi.org/10.1038/s41562-018-0524-z
89. Antonelli, A., Kissling, W.D., Flantua, S.G.A., Bermudez, M.A., **Mulch, A.**, Muellner-Riehl, A.N.M., Kreft, H., Lindner, H.P., Badgley, C., Fjeldsa, J., Fritz, S.A., Rahbek, C., Herman, F., Hooghiemstra, H., Hoorn, C. (2018) Geological and climatic determinants of mountain biodiversity. *nature geoscience*, 11, 718-725.
88. Meijers, M.J.M., Brocard, G.Y., Cosca, M.A., *Lüdecke, T., Teyssier, C., Whitney, D.L., **Mulch, A.** (2018) Rapid Late Miocene Surface Uplift of the Central Anatolian Plateau Margin. *Earth and Planetary Science Letters*, 497, 29-41.

87. Meijers, M.J.M., Peynircioglu, A., Cosca, M.A., Brocard, G.Y., Whitney, D.L., Langereis, C., **Mulch, A.** (2018) Climate stability in Central Anatolia during the Messinian Salinity Crisis. *Paleogeography, Paleoclimatology, Paleoecology*, 498, 53-67.
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