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## CURRICULUM VITAE

### Prof. Dr. Andreas Mulch

Senckenberg Biodiversity and Climate Research Centre  
Senckenberg Gesellschaft für Naturforschung  
&  
Goethe University Frankfurt

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## PROFESSIONAL POSITIONS

### Senckenberg Gesellschaft für Naturforschung, Germany

2013 – Present Vice-Director General, Senckenberg Gesellschaft für Naturforschung  
2013 – Present Director of Science, Senckenberg Gesellschaft für Naturforschung  
2015 – Present Director, Senckenberg Research Institute and Natural History Museum Frankfurt  
2010 – 2017 Vice-Director, Senckenberg Biodiversity and Climate Research Centre

### Stanford University, Stanford, USA

2014 - 2015 Cox Visiting Professor, School of Earth Sciences

### Goethe University Frankfurt, Germany

2010 - Present Professor (W3) of Paleoclimate and Paleoenvironmental Dynamics,  
Institute of Geosciences

### Leibniz University Hannover, Germany

2007 - 2010 Director, Institute of Geology  
2006 - 2010 Professor (W2, tenured), Institute of Geology

### Stanford University, USA

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

### University of Minnesota and Stanford University, USA

2004 - 2005 US-NSF Research Associate, Department of Geology and Geophysics

## 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 Foundation and National Academy of  
Sciences (USA)  
2004 Prix de la Faculté - Award for best doctoral thesis in the School of Earth and  
Environmental Sciences, Université de Lausanne, Switzerland  
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 temperature and precipitation reconstructions

## SERVICE

### PROFESSIONAL SERVICE

2020 - Present	Member of the DFG Senate Commission on Earth System Research ( <i>DFG Senatskommission Erdsystemforschung</i> )
2020 - Present	Supervisory Board Member ( <i>'Aufsichtsrat'</i> ) ZMT Bremen
2016 - Present	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

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

### CONVENER OF CONFERENCES AND SESSIONS

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

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 Acatris, 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 LECTURES

- 2020 Helmholtz-Zentrum Potsdam – Deutsches GeoForschungsZentrum, Department Seminar
- 2019 MioMeet, Stockholm, SWE  
University of Michigan, USA; Smith Lecturer
- 2018 Technical University Darmstadt, Erdsystemdynamik  
8<sup>th</sup> 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<sup>th</sup> Third Pole Environment Meeting, Byrd Polar and Climate Research Center, 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<sup>th</sup> HKT and 6<sup>th</sup> 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)  
Stanford University (USA)
- 2004 Norwegian Geological Survey (Trondheim, NO) *Goldschmidt lecture*  
British Antarctic Survey (Cambridge, GB)

## Publications

### Publication metrics

Total number of citations: 3940 (WoS), 5150 (google Scholar)

Hirsch (H) index = 36 (WoS), 41 (google Scholar)

Average H index growth since year of PhD = 2.2 / yr (WoS), 2.5 / yr (google Scholar)

\*advised/\*\*co-advised student; underlined = advised postdoctoral scholar

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

### Most cited paper (590 citations)

Garziona, 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.

### 2021

108. Dussaux, C., Gébelin, A., Ruffet, G., **Mulch, A.** (in press) Late Carboniferous paleoelevation of the Variscan Belt of Western Europe. *Earth and Planetary Science Letters*.

### 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  $\Delta_{47}$  and  $\Delta_{48}$  analysis of carbonates. *Chemical Geology*, 522, 186-191.
97. Huang, S.<sup>1</sup>, Meijers, M.J.M.<sup>1</sup>, 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*. <sup>1</sup>= joint 1<sup>st</sup> 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.
86. Boles, A. **Mulch, A.**, v.d. Pluijm, B. (2018) Near-surface clay authigenesis in exhumed fault rock of the Alpine Fault Zone (New Zealand); O-H-Ar isotopic, XRD and chemical analysis of illite and chlorite. *Journal of Structural Geology*, 111, 27-41.

85. **Mulch, A.**, Chamberlain, C.P. (2018) Stable isotope paleoaltimetry: Paleotopography as a key element in the evolution of landscapes and life. *in: Mountains, Climate and Biodiversity*, Hoorn, C., Perrigo, A. & Antonelli, A. (eds.) *Wiley*, 81-94.
84. Mosbrugger, V., Favre, A., Muellner-Riehl, A., Päckert, M., **Mulch, A.** (2018) Cenozoic evolution of Geo-Biodiversity in the Tibeto-Himalayan region. *in: Mountains, Climate and Biodiversity*, Hoorn, C., Perrigo, A. & Antonelli, A. (eds.) *Wiley*, 429-448.
83. \*\*Hellwig, A., Voigt, S., **Mulch, A.**, Bartenstein, A., Pross, J., Gerdes, A., Voigt, T. (2018) Late Oligocene-early Miocene increase in seasonality of precipitation in Central Asia recorded in terrestrial sequences from the Ili Basin (SE Kazakhstan), *Sedimentology*, 65, 2, 517-539.
82. Linnemann, U., Su T., Kunzmann, L., Spicer, R.A., Spicer, T.E.V., Zieger, J., Hofmann, M., Moraweck, K., Gärtner, A., Ding, W., Zhang, S.-T., Gerdes, A., Marko, L., **Mulch, A.**, Mosbrugger, V., Zhou, Z.-K. (2018) New U/Pb dates show a Paleogene Origin for the modern Asian biodiversity hotspots, *Geology*, 46, 1, 3-6.

## 2017

81. \*Ardenghi, N., **Mulch, A.**, Pross, J., Niedermeyer, E.M. (2017) Leaf wax *n*-alkane extraction: An optimised procedure. *Organic Geochemistry*. 113, 283-292.
80. \*Schemmel, F., Niedermeyer, E.M., Koutsodendris, A., Pross, J., Fiebig, J., **Mulch, A.**, (2017) Paleohydrological changes in the Eastern Mediterranean region during the early Holocene recorded in plant wax *n*-alkane distributions and  $\delta^{13}\text{C}_{\text{TOC}}$  - new data from Tenaghi Philippon, NE Greece. *Organic Geochemistry*, 110, 100-109.
79. Licht, A., Coster, P., Ocakoglu, F., Campbell, C., Metais, G., **Mulch, A.**, Taylor, M., Kappelman, J., Beard, K.C. (2017) Tectono-stratigraphy of the Orhaniye Basin, Turkey: Implications for collision chronology and Paleogene biogeography of central Anatolia, *Journal of Asian Earth Sciences*, 143, 45-58.
78. Gébelin, A., Jessup, M., Teyssier, C., Cosca, M.A., Law, R.D., Brunel, M., **Mulch, A.** (2017) Infiltration of meteoric water in the South Tibetan Detachment (Mt. Everest, Himalaya): When and Why? *Tectonics*, 36, doi:10.1002/2016TC004399.
77. Barnosky, A.D., Hadly, E.A., Gonzalez, P., Head, J., Polly, P.D., Lawing, A.M., Eronen, J.T., ... **Mulch, A.**, ... Zhang, Z. (2017) Merging paleobiology with conservation biology to guide the future of terrestrial ecosystems. *Science*, 355, eaah4787.
76. Badgley, C., Smiley, T.M., Davis, E.B., DeSantis, L.R.G., Fox, D.L., Hopkins, S.B., Jezkova, T., Matocq, M.D., Matzke, N., McGuire, J.L., **Mulch, A.**, Riddle, B.R., Roth, L., Samuels, J.X., Strömberg, C.A.E., Terry, R., Yanites, B.J. (2017) Biodiversity and topographic complexity: Modern and geohistorical perspectives, *Trends in Ecology and Evolution*, 32, 211-226.
75. Panait, A., Diaconu, A., Galka, M., Hutchinson, S.M., Hickler, T., Lamentowicz, M., **Mulch, A.**, Tantau, I., Werner, C., Feurdean, A. (2017.) Hydrological conditions and carbon accumulation rates reconstructed from a raised mountain bog in the Carpathians: a multi-proxy approach. *Catena* 152, 57-68.

## 2016

74. \*\*Rohrmann, A., Sachse, D., **Mulch, A.**, \*\*Pingel, H., Tofelde, S., Alonso, R.N., Strecker, M.R. (2016) Miocene orographic uplift forces rapid hydrological change in the southern central Andes. *nature Scientific Reports* 6, 35678.
73. Mancktelow, N., Zwingmann, H., **Mulch, A.** (2016) K-Ar dating of fault gouge from the Naxos detachment (Cyclades, Greece). *Tectonics*, 35, 2334-2344.
72. Haines, S., Lynch, E., **Mulch, A.**, Valley, J.W., van der Pluijm, B. (2016) Meteoric fluid infiltration in crustal-scale normal fault systems as indicated by  $\delta^{18}\text{O}$  and  $\delta^2\text{H}$  geochemistry, and Ar dating of

neofomed clays in brittle fault rocks. *Lithosphere*, 8, 587-600.

71. Fritz, S.A., Eronen, J.T., Schnitzler, J., Hof, C. Janis, C.M., **Mulch, A.**, Böhning-Gaese, K., Graham, C.H. (2016) Humans dissolve a 20-million-year link between productivity and mammalian diversity. *Proceedings of the National Academy of Sciences*, doi/10.1073/pnas.1602145113
70. Nieto-Moreno, V., **\*\*Rohrmann, A.**, van der Meer, M.T.J., Sinninghe Damsté, J.S., Sachse, D., Tofelde, S., Niedermeier, E.N., Strecker, M.R., **Mulch, A.** (2016) Elevation-dependent changes in n-alkane  $\delta D$  and soil GDGTs across the South Central Andes. *Earth and Planetary Science Letters* 453, 234-242.
69. \*Lüdecke, T., **Mulch, A.**, Kullmer, O., Sandrock, O., Thiemeyer, H., Fiebig, J., Schrenk, F. (2016) Stable isotope dietary reconstructions of herbivore enamel reveal heterogeneous wooded savanna ecosystems in the Plio-Pleistocene Malawi Rift. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 459, 170-181.
68. \*Methner, K., **Mulch, A.**, Fiebig, J., Wacker, U., Gerdes, A., Graham, S.A., Chamberlain, C.P., (2016) Rapid Middle Eocene temperature change in western North America. *Earth and Planetary Science Letters*, 450, 132-139.
67. Niedermeier, E.N., Forrest, M., Beckmann, B., Sessions, A.L., **Mulch, A.**, Schefuß, E. (2016) The stable hydrogen isotopic composition of sedimentary plant waxes as quantitative proxy for rainfall in the West African Sahel. *Geochimica Cosmochimica Acta*, 184, 55-70.
66. Lagomarsino, L.P., Condamine, F.L., Antonelli, A., **Mulch, A.**, Davis, C.C. (2016) The abiotic and biotic drivers of rapid diversification in Andean bellflowers (Campanulaceae). *New Phytologist* 210, 1430-1442.
65. Meijers, M.J.M., Strauss, B., Özkaptan, M., Feinberg, J.M., **Mulch, A.**, Whitney, D.L., Kaymakci, N. (2016) Age and paleoenvironmental reconstruction of partially remagnetized lacustrine sedimentary rocks (Oligocene Aktoprak basin, central Anatolia, Turkey). *Geochem. Geophys. Geosyst.* 17, doi:10.1002/2015GC006209.
64. \*Methner, K., Fiebig, J., Wacker, U., Umhoefer, P., Chamberlain, C.P., **Mulch, A.** (2016) Eo-Oligocene proto-Cascades topography revealed by clumped ( $\Delta_{47}$ ) and oxygen isotope ( $\delta^{18}O$ ) geochemistry (Chumstick Basin, WA, USA). *Tectonics*, 35, doi: 10.1002/2015TC003984.
63. **\*\*Pingel, H.**, **Mulch, A.**, Alonso, R.A., Cottle, J., Hynek, S.A., Poletti, J., **\*\*Rohrmann, A.**, Schmitt, A.K., Stockli, D.F., Strecker, M.R. (2016) Surface uplift and convective rainfall along the southern Central Andes (Angastaco Basin, NW Argentina). *Earth and Planetary Science Letters*, 440, 33-42.
62. \*Schemmel, F., Niedermeier, E.M., Schwab, V.F., Gleixner, G., Pross, J., **Mulch, A.** (2016) Plant wax  $\delta D$  values record changing Eastern Mediterranean atmospheric circulation patterns during the 8.2 kyr B.P. climatic event. *Quaternary Science Reviews*, 133, 96-107.
61. **Mulch, A.** (2016) Stable isotope paleoaltimetry and the evolution of landscapes and life. *Earth and Planetary Science Letters*, **Invited Frontiers Article** 433, 180-191.
60. \*Lüdecke, T., Schrenk, F., Thiemeyer, H., Kullmer, O., Bromage, T.G., Sandrock, O., Fiebig, J., **Mulch, A.** (2016) Persistent C3 vegetation accompanied Plio-Pleistocene hominin evolution in the Malawi Rift (Chiwondo Beds, Malawi). *Journal of Human Evolution*, 90, 163-175.
59. Olaka, L., Wilke, F.D.H., Olago, D., Odada, E., **Mulch, A.**, Musolff, A. (2016) Groundwater fluoride enrichment in an active rift setting: Central Kenya Rift case study. *Science of the Total Environment*, 545-546, 641-653.
58. Mix, H., Ibarra, D.E., **Mulch, A.**, Graham, S.A., Chamberlain, C.P. (2016) A hot and high Eocene Sierra Nevada. *Geol. Soc. America Bulletin*, doi:10.1130/B31294.1

57. Macaulay, E.A., Sobel, E.R., Mikolaichuk, A., Wack, M., Gilder, S., **Mulch, A.**, Fortuna, A.B., Hynek, S. (2016) The sedimentary record of the Issyk Kul basin, Kyrgyzstan: climatic and tectonic inferences. *Basin Research*, 28, 57-80.

## 2015

56. Fanara, S., Botcharnikov, R.E., Palladino, D.M., Adams, F., Buddensiek, J., **Mulch, A.**, Behrens, H. (2015) Volatiles in magmas related to Campanian ignimbrite eruption: Experiments vs. natural findings. *American Mineralogist*, 100, 10, 2284-2297.
55. Caves, J.K., Winnick, M.J., Graham, S.A., Sjostrom, D.J., **Mulch, A.** and Chamberlain, C.P. (2015) Role of Westerlies in Central Asia climate over the Cenozoic. *Earth and Planetary Science Letters*, 428, 33-43.
54. Boles, A., van der Pluijm, B., **Mulch, A.**, Mutlu, H., Uysal, I. T., Warr, L. (2015) Hydrogen and <sup>40</sup>Ar/<sup>39</sup>Ar isotope evidence for multiple and protracted paleofluid flow events within the long-lived North Anatolian Keirogen (Turkey). *Geochem. Geophys. Geosyst.* DOI 10.1002/2015GC005810
53. Eronen, J.T., Janis, C.M., Chamberlain, C.P., **Mulch, A.** (2015) Mountain uplift explains differences in Palaeogene patterns of mammalian evolution and extinction between North America and Europe. *Trans. Royal. Soc London B.* 282: 20150136
52. Feurdean, A., Galka, M., Kuske, E., Tantau, I., Lamentowicz, M., Florescu, G., Hutchinson, S.M., Liakka, J., **Mulch, A.**, Hickler, T. (2015) Last Millennium hydro-climate variability in Central Eastern Europe (Northern Carpathians, Romania). *The Holocene*, 25, 1179-1192. doi: 10.1177/0959683615580197
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