



In this symposium international speakers will review how organisms not only respond to the Earth's surface, but also directly modify and control it to promote their own persistence. Plants and animals can directly control the fluxes of energy and matter that underlie biogeochemical cycles, gas fluxes, sediment transport and form new habitats. Recent recognition of biotic interactions with Earth surface processes has led to a new Geoscience paradigm:

The Earth's surface is not only the product of tectonic forces (mountain building) and climate (destroying relief by weathering and erosion), but also through biotic processes that are active over micro- to macroscopic scales. Biota moderates tectonic and climate controls on surface processes and is an equally important player in shaping the Earth. The symposium will combine geoscience, soil, ecology, hydrology, and geobiology research to discuss how new developments in each of these fields should be employed to quantify the entire chain of Earth surface processes influenced by biotic activities, and how these developments can be used to form predictions of global change.

Registration & additional information:

<https://esdynamics.geo.uni-tuebingen.de/leopoldina>

Symposium Organizers:

Friedhelm von Blanckenburg, GFZ Potsdam
(Contact & Chair)

Todd Ehlers, Univ. Tübingen

Katja Tielbörger, Univ. Tübingen

Jörg Bendix, Univ. Marburg



Program

(all presentations are 35 minutes + 20 minutes discussion)

WEDNESDAY 21.02.18

11:30-13:00 **Registration** at desk at Leopoldina entrance

13:00-13:30 **Welcome**

Vegetation controls over erosion and landscape evolution 1

13:30-14:30 **William E. Dietrich** University of California, Berkeley, USA: Geomorphic transport laws, biotic processes, and landscape evolution

14:30-15:00 *Coffee Break*

15:00-16:00 **Alexia Stokes** INRA, France: Slippery when wet: surprising strategies of vegetation growing on unstable slopes

16:00-17:00 **Veerle Vanacker** Catholic University of Louvain, Belgium: Vegetation control over erosion

17:00-18:00 *Reception*

Public evening lecture

18:00-19:00 **Detlef Schulze** ML Max Planck Institute for Biogeochemistry, Jena, Germany: Management der globalen Biosphäre zur Begrenzung des Klimawandels / Managing the global biosphere carbon for climate mitigation (*in German, with English slides*)

THURSDAY 22.02.18

Vegetation controls over erosion and landscape evolution 2

09:00-10:00 **Todd Ehlers** University of Tübingen, Germany:

Vegetation, Climate, and Denudation Interactions, Western South America

10:00-11:00 **Thomas Hickler** Senckenberg, Frankfurt, Germany: Modelling vegetation dynamics and ecosystem functioning across scales and from deep time into the future

11:00-11:30 *Coffee Break*

11:30-12:30 *Short presentations of German field observatories*

12:30-14:00 *Lunch Break & Observatory Posters*

Ecohydrology

14:00-15:00 **Erkan Istanbuluoglu** University of Washington, USA: Ecohydrological processes and landscape evolution

15:00-15:30 *Coffee Break*

15:30-16:30 **Ying Fan** Rutgers University, USA: Deep roots, hydrologic plumbing, and habitat expansion by and for land plants

16:30-17:30 **Susan L. Brantley** Pennsylvania State University, USA: Biotic influences on rock weathering

17:30-18:30 **General Discussion**

19:00-21:00 **Symposium Dinner** (registration required, space limited)

21:00 **Symposium Party** (open to all participants, free drinks)

FRIDAY 23.02.18

Weathering and nutrient cycles in the Critical Zone

09:00-10:00 **Steve Holbrook** Virginia Tech, USA: Fracturing, chemical weathering and strain in the critical zone: insights from drilling, sampling and geophysics

10:00-11:00 **Steeve Bonneville** Université Libre de Bruxelles, Belgium: Bioweathering in soils: mechanism and quantification at the nanometer-scale

11:00-11:30 *Coffee Break*

11:30-12:30 **Friedhelm von Blanckenburg** ML GFZ German Centre for Geosciences, Potsdam, Germany: Uplifted, recycled, eroded. Metal isotope budgeting the plant mineral nutrient balance

12:30-14:00 *Lunch Break & Observatory Posters*

14:00-15:00 **Kate Maher** Stanford University, USA: Does ecosystem nutrient demand control rock weathering? A modelling analysis

15:00-15:30 *Coffee Break*

Soil ecosystems and predation

15:30-16:30 **Marcel van der Heijden** Agroscope & University of Zürich, Switzerland: Peeking into the underground: soil functional diversity drives ecosystem multifunctionality

16:30-17:30 **Dror Hawlena** Hebrew University, Jerusalem, Israel: Predation and ecosystem nutrient dynamics

17:30-18:30 **General Discussion**

SATURDAY 24.02.18

Biodiversity effects on soils and landscapes

9:00-10:00 **Jörg Bendix** ML University of Marburg, Germany:

Remote sensing of ecosystem properties and biodiversity

10:00-11:00 **Bernhard Schmid** University of Zürich, Switzerland: Biodiversity effects across scales

11:00-11:30 *Coffee Break*

11:30-12:30 **Katja Tielbörger** University of Tübingen, Germany: Bridging scales in geo-ecological research: can space substitute for time?

12:30-13:00 **Final Discussion**

13:00-14:00 *Lunch & Farewell*