

Newsletter



DFG Research Unit 816:

Biodiversity and Sustainable Management of a Megadiverse
Mountain Ecosystem in Southern Ecuador

3/2008

Contents

Contents.....	1
Speaker's Corner	1
Science TV Project.....	1
International Appearance	2
Status Symposium.....	2
Database Workshop.....	3
News from the ECSF.....	3
News from NCI.....	3
Collaborations with the Ministry.....	3
Conserving Water and Biodiversity.....	4
Science News	4
Past Environments	4
Climate Dynamics: Past and Present	5
Fire Experiment Participants	6
Event Calendar	7
People and Staff.....	7
Honours.....	7
New Staff Members	7
New Data and Publications	8
News from the Data Warehouse	8
Recent Publications.....	8
Media Coverage.....	9
Research Highlight	9
Scientists out in the World	9
Miscellaneous	10
Courses and Teaching	10
First Call: ATBC-gtö Conference	10
Mycorrhiza Workshop.....	11
Successful Grant Application.....	11
Deadline	11
Imprint	11

Speaker's Corner

Science TV Project

The project DFG Science TV comes to an end and the last movie about our Research Unit (RU) was released on the net in June 2008. Recently, DFG (the German Research Foundation) has agreed to produce an English version of the internet movies. All efforts for translation and production will be covered and the whole process will be organized by DFG, except checking the translations for correctness. We can expect to have the translated version at our disposal by the end of 2008. NCI (Nature & Culture International) has indicated interest to produce a longer movie with our raw footage. We have agreed to leave the material to NCI under the regulations of a memorandum of cooperation.

The final meeting of all participants of the Science TV project, the executive DFG staff and the production team took place June 26th 2008 at the DFG headquarters in Bonn. The president of the DFG, Prof. Matthias Kleiner, stressed the importance of DFG Science TV to motivate young people for a scientific career and appreciated the positive press response. The future plans of DFG are to continue the project in a second phase where projects can apply for participation: Bearing in mind the high expenditure of the production for the project, we definitely won't participate in a second phase.

Rating our Science TV Project

One major outcome of the meeting was that most other projects had similar doubts regarding the

quality of the texts. Even the projects working in Germany emphasized problems with the packed time schedule and the missing participation in scene and text selection. During the meeting, the contracted external evaluation agency introduced their review concept. The results shall be available this year and will be distributed among the participating projects. It should be pointed out that the additional costs incurred for the RU and the speaker's university (mainly for personnel) is balanced to approximately 35.000 EUR.

For our internal evaluation, we developed and distributed a partly standardized questionnaire among the members of the RU to rate the movies. We got back 30 reviews from 25 subprojects: 9 PIs, 4 PostDocs, 11 PhD, 6 diploma students. The internal review revealed a mixed rating of the movies' quality. We used school marks from 1 (very good) to 6 (fail):

- The Science TV web portal was rated 2.5 (graphical design), 1.9 (operability) and 2.9 (textual design).
- The overall quality of the movie series was rated satisfactory where the central theme was evaluated 3.1, the communication of the main objective of the RU 2.9 and the popularity 2.7. The two most frequent comments were that the relatedness in between the chapters and to the main objective of the RU were not always clear and that the target audience was not discernable.
- The evaluation of the single chapters presented in the table below also shows satisfactory marks. The main deficit recognized concerns the maladjusted balance of scientific and popular content of the chapters.

Average rating of the chapter section¹⁾

Is the theme well defined?	2.4
Are the texts adequate?	2.8
Are the texts scientifically correct?	3.1
Are the simplifications due to popularity acceptable?	3.0
Is the scene selection adequate?	2.9
Are scientific issues adequately considered?	3.0
Is the scientific objective comprehensible?	2.6
Is sufficient scientific matter presented?	3.3
Are the chapters interesting for scholars?	2.6
Is the relation between science and popularity appropriate?	3.0

¹⁾ Using school marks from 1 (very good) to 6 (fail)

From chapters 1-10, chapter 3 was selected as the worst in 90% of all voting, and chapter 6 as the best with 30% of all votes. The most frequent additional comment stressed the general good idea of the project but claimed the need for an improved realisation: The RU members generally felt that the target group of the production is more a broad TV audience than scholars interested in environmental sciences.

We would like to thank all members who took the effort to complete the questionnaire. This was very important because the results were presented during the DFG-meeting and experienced major attention. In the aftermath, our questionnaire was distributed in other projects and our results were requested and anonymously submitted to the contracted evaluation agency.



In this movie scene Florian Werner explains the challenges he faces in describing the diversity of the epiphytic flora: He will have to wait until this orchid is flowering to be able to identify the species name, since so many closely related forms exist in the rain forest. This movie out of the ten first episodes presented in the DFG Science TV series (<http://dfg-science-tv.de>) was rated best by the members of the RU. Screenshot from DFG.

International Appearance

The research unit has successfully appeared at the ATBC-gtö conference in Paramaribo, Surinam (June 9-13th 2008): Six presentations (Behling, Bendix, Günter, Homeier, Makeschin, Setaro) revealed the broad interdisciplinary range of our research and attracted major attention of the participants. The upcoming ATBC-gtö conference will take place in Marburg next year (see miscellaneous section).

Status Symposium

The planning for our status symposium (September 11-12th 2008) is almost completed. We have compiled an interesting programme, following our new concept for the first time:

starting with a more popular section of Spanish presentations for a wide audience; followed by a section of scientific reports from the subprojects in English. Further news from the speaker's desk will be presented at the next member assembly.

Database Workshop

We would like to stress that the new data warehouse approaches its operational phase. For that reason, we have organized the second database workshop subsequent to our symposium on Saturday morning (Sept. 13th 2008) at the UTPL. That helps to save costs of the central project because we can avoid organizing a workshop in Marburg where additional travel expenses would accrue. We expect that at least one person in charge of data management per subproject will attend the meeting.

*Jörg Bendix & Erwin Beck
Speaker & Deputy Speaker of the Research Unit*

News from the ECSF

Estación Científica San Francisco

Differential GPS System

The new DGPS-System has been installed and can be used soon after some fine tunings and initial tests. The system consists of a fixed reference station installed in Loja and a mobile unit for the field. The data from the reference station are available via FTP and allow post processing of field data, to improve accuracy and reliability of the measurements. Some field data collected with other GPS receivers can be corrected through the post processing option. To check compatibility of your receiver to the new system, please contact the station managers well in advance.

After the initial tests one of the first tasks will be an inventory of the most important installations, plots and sampling sites of the RU which already exist. Since the system is delicate and its use challenging, the measurements will be mainly conducted by our technician. More technical details about the DGPS-System will be provided in the upcoming version of our tips (the "Stations-Tipps").

FAX of the Station

From now on you can contact the ECSF via fax: Please dial the regular phone number +593-(0)7-2562301 and after the welcome message dial the extension number -104 to start sending the fax.

Road Construction

The road works between Loja and Zamora still continue. Due to partly blocked lanes traffic is always delayed.

New visa and airfreight procedures

To apply for the long-term visa 12-III or to send airfreight to Ecuador with the support of the German Embassy in Quito please contact the station managers. Please do not longer contact the Embassy first.

*Felix Matt & Jörg Zeilinger,
Local Advisory Board*

News from NCI

Collaborations with the Ministry

During the last few months Nature & Culture International (NCI) had several meetings with the Ministry of the Environment (MAE). As a result the ministry and our non-profit organization are planning to collaborate in two ways:

- Currently, we are preparing a specific agreement between MAE, NCI and the RU. This agreement will define the activities in which the RU and MAE will cooperate.
- MAE will organize a round table discussion in which it will define its own research priorities and coordinate regional stakeholders such as Universidad Técnica Particular de Loja (UTPL), Universidad Nacional Loja (UNL) and the RU.

Helmut Sonnert



Water for Loja: the "El Carmen" watershed area covers about 900 ha and provides about 50% of the drinking water for Loja. In 2007/2008 NCI purchased more than 366 ha in this watershed which is now managed by the city of Loja. Photo: Helmut Sonnert.

Conserving Water & Biodiversity

Some people in southern Ecuador face short-cuts in water supply and a growing number is supplied with water only for an hour a day. Since this shortage is due to the damage of natural ecosystems resulting from the growing population the provinces of Loja and Zamora Chinchipe are working to protect their main watersheds through the establishment of taxes for water consumption.

The municipalities of Loja, Celica, Puyango, Pindal, Macará, and Centinela del Cóndor will use this income to invest in land purchases, management, control, and payments for environmental services, where landowners receive a periodic payment to abide by restrictions in land use. NCI supports watershed management by buying critical parts of these areas and providing the necessary technical and legal support to local administrations.

Currently more than 60% of Loja's watersheds (2,000 ha) and 20% of Celica's watersheds (100 ha) have been conserved and are in the process of recovering their native vegetation. In Puyango some priority properties will be purchased, while in Celica and Pindal 60 ha are under payment for environmental services agreements.

In Macará the "opportunity cost" for the land use will be estimated and other technical information will be obtained to support the ordinances for the implementation of taxes. These ordinances are legal tools that not only conserve water sources, but also promote the declaration of reserves in priority areas of natural ecosystems in order to protect biodiversity and environmental services within the county jurisdiction. Overall, more than 4,000 ha of dry forest in Celica county and 3,500 ha of mountain forest in Loja are now protected areas as a result of the willingness of their owners and users.

These individual efforts are the basis for the Regional Water Fund (FORAGUA, Spanish acronym), a financial and administrative mechanism to support and strengthen this process in these and other municipalities in southern Ecuador. FORAGUA will establish an endowment with the funds collected from water taxes to complement funds received through international cooperation, hydroelectric plants, banks, enterprises, NGO's and the central government. This innovative mechanism will support the long term implementation of conservation of watersheds and reserves within Ecuador.

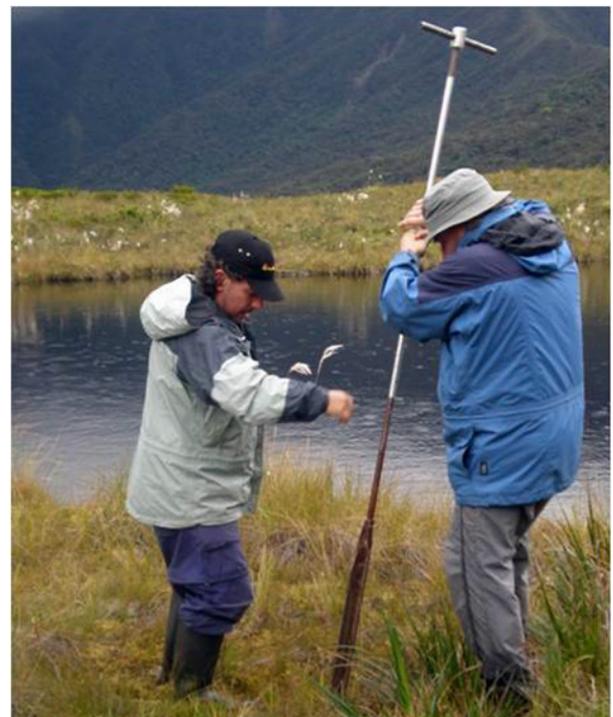
In this section NCI (www.natureandculture.org) describes its activities. This time Fabian Rodas describes NCI's experiences with the conservation of watersheds.

Science News

Past Environments

During the last three years we analyzed 14 records of peat, lake and soil deposits using palynological methods. The staff of the subproject A1.2 analyzes environmental changes including vegetation, biodiversity, fire, climate and human impact of the mountain rainforest and páramo ecosystems since the late Pleistocene in the Podocarpus National Park (PNP) region.

Hitherto it can be concluded, that in the whole PNP region páramo vegetation was widespread during the Last Glacial Maximum period (LGM, approx. 20,000 years BP) and the tree-line was located at markedly lower elevations than nowadays. Since late glacial times and principally during the Holocene mountain rainforest developed in the area. After a still relatively cool early Holocene highest temperatures were probably reached during the mid Holocene suggesting a shift of the tree-line into higher elevations.



Fernando Rodriguez und Hermann Behling (right) sample a peat deposit using a Russian-corer. This tool is used for all palynological and paleoecological investigations of peat deposits. The group around Behling also takes samples of páramo regions outside the PNP (Podocarpus National Park) such as in the Lagunas Natasas near the Peruvian border. The additional samples will provide sound data material for later interpolations. Photo: Corinna Brunshön.

Past fires changed the floral composition of the mountain rainforest; e. g. the lower ECSF research area has been markedly disturbed during the late Holocene, but not during the last centuries. However, considerable small scale differences of past human impact and environmental settings are factors for minor differences in local vegetation and climate conditions and there also exist areas which seem to be mainly undisturbed e.g. the Cerro Toledo site. Further studies of different palaeoecological records will allow to reconstruct and model a further detailed vegetation and climate history as well as the shift of tree-lines.

Corinna Brunschön

Climate Dynamics: Past and Present

One major aim of Bendix' project B3.1 is to unveil the atmospheric mechanisms leading to the extensive rainfall in the Rio San Francisco Valley. Of special interest are the frequent early-morning events around sunrise. An analysis of GOES-IR satellite data revealed that one mechanism contributing to the early-morning rainfall generation in the valley is due to mesoscale lowland-highland interactions.

The analysis showed that cold air drainage flow from the Andean valleys and slopes causes the formation of deep convective systems (mesoscale convective systems MCS) in the Amazon foothill area south east of the RBSF after midnight. They are extending to the Rio San Francisco Valley between 0400 and 0600 LST (Local Standard Time), particularly in austral summer. MCS formation seems to be fostered by the concave shape of the Andean terrain line south east of the RBSF which causes convergence of the katabatic flows. The westward extension of MCS leads to an unstable mountain atmosphere where the clouds release the observed early-morning rainfall around sunrise.

To verify the phenomenological findings, the PhD-student *Katja Trachte* pursues disentangling the mechanisms behind using the 3D non-hydrostatic mesoscale model APRS (Advanced Regional Prediction System). The first step of modelling is to ascertain that katabatic flows can occur in sufficient intensity. Thus, idealized model runs are conducted in 250 m spatial resolution ($dz_{avg} = 200$ m, $dz_{min} = 10$ m at lower boundary) with an idealized terrain (slope angle = 20°), initialized by a typical homogenous atmosphere. Figure 1 depicts a cross-section of the slope for two time steps of the model output.

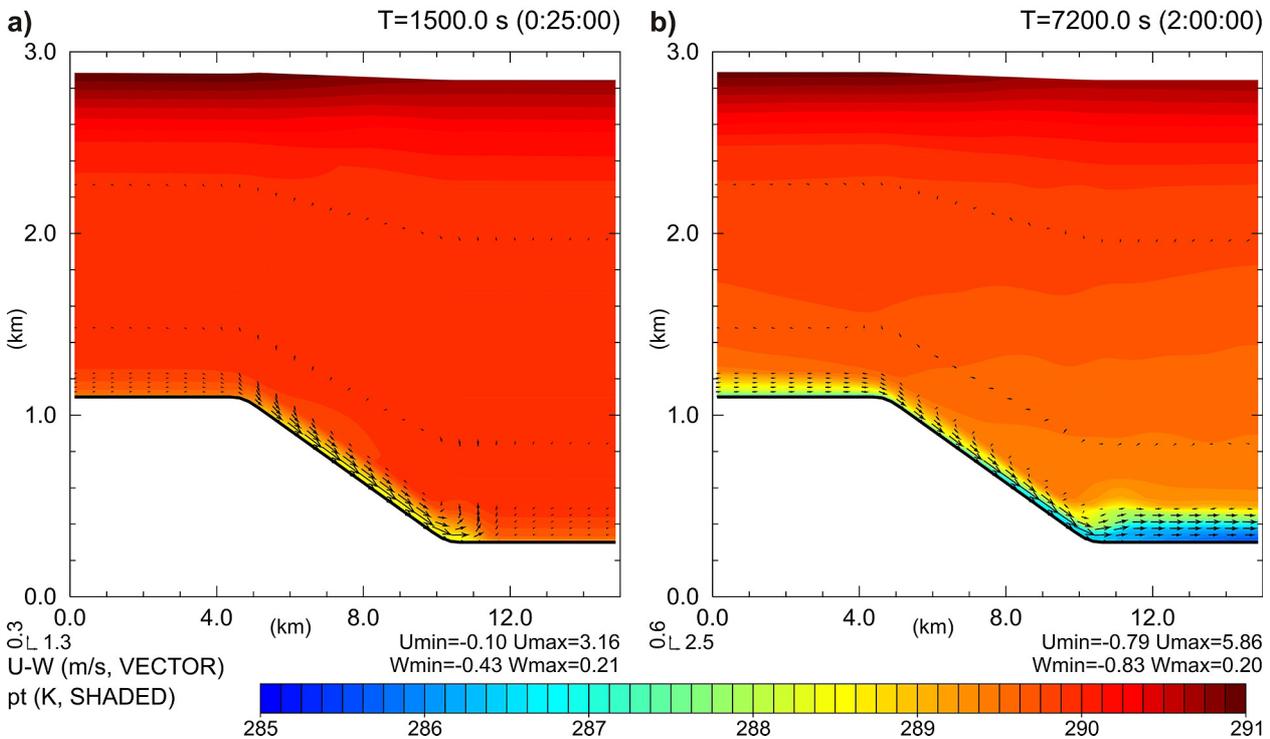


Figure 1: xz-plot of an idealized katabatic flow along a simple slope (vectors m/s) and potential temperature profile (shaded K) at y = centre at: (a) 1500 s (0025 LST, Local Standard Time) and (b) 7200 s (0200 LST).

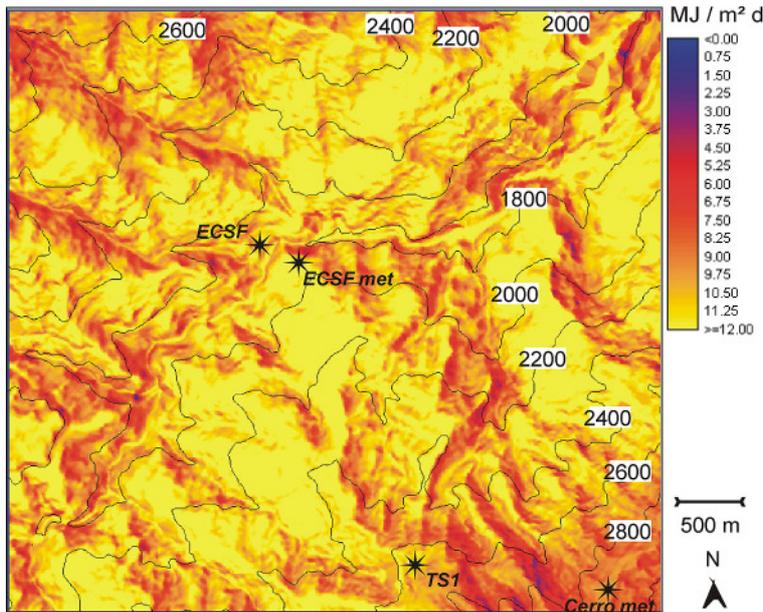


Figure 2: Annual mean radiation per day derived using the model toporad as well as radiation and cloud data.

The results confirm our satellite observations. Around midnight (Figure 1a), cooling of the slope is beginning (-2 K), leading to a temperature gradient between free and slope air on the same height level. The result is a gravity flow directed downhill and the development of an inversion in the atmospheric boundary layer. At 0200 LST continuous cooling has increased and the cold air pool in the foothills has reached a thickness of already 200 m. The next steps in the modelling work are

- idealized model runs with a concave-shaped terrain line to test the effect of katabatic confluence on MCS development,
- real case runs with the Andean topography and intercomparisons with satellite data as well as
- investigations regarding the potential influence of low level jet activities on rainfall formation.

The regionalization of climatic data is also progressing: A first data set on long-term monthly means of irradiance, air temperature and rainfall for the core area of the RU is generated in 10 m spatial resolution. The GIS layers are derived based on direct and indirect meteorological observations as well as the radiation model Toporad. Figure 2 shows the mean annual radiation per day (1998-2005) which clearly points to the reduction of radiation in the ravines mainly due to drop shadow effects. The data layers shall be made available together with a simple-to-use extraction tool which provides monthly mean values for

every 10x10 m² grid point. The PhD student *Andy Fries* is currently working on a temporally high resolved regionalization engine to extract daily and hourly data for each grid point.

Jörg Bendix

Fire Experiment Participants

In the week after the annual symposium (September 15-20th 2008), the project "The threat of the southern bracken" (C3.1) has scheduled to conduct the first ecological fire experiment on the bracken site, presupposed appropriate weather conditions. If dry weather and soil conditions will prevail sufficiently, we will burn the established bracken plot for the first time while observing the propagation of the fire front with the micro-meteorological station and special infrared sensors. Some groups already have confirmed their participation: Among others, the group of Hamer/Makeschin (B2.1) will gather soil samples after the fire to examine the state of C, N, P, microbial biomass (PLFA-analyses), CO₂-efflux and nitrogen mineralization. The working group of Arthur Schüssler (B1.1) plans to investigate the effects of burning on arbuscular mycorrhiza fungi. Everybody willing to participate in the fire experiment is asked to contact the signers or Kristin Roos, Rütger Rollenbeck or Brenner Silva.

Erwin Beck, Jörg Bendix

Event Calendar

September 11 th -12 th 2008	Annual Status Symposium of the RU at Loja Universidad Técnica Particular de Loja (UTPL)
September 13 th 2008	Second Database workshop : following the Status Symposium
September 22 th – 25 th 2008	Workshop: Mycorrhizas in tropical forests . Organized by Dr. Ingrid Kottke; Universidad Técnica Particular de Loja (UTPL). Website: http://www.mycorrhiza-research.de/Workshop/01Welcome.html
October 14 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Speaker: t.b.a.; Loja: Casa de la Cultura Ecuatoriana
November 11 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Speaker: t.b.a.; Loja: Casa de la Cultura Ecuatoriana
November 24 th – 28 th 2008	Conference: The Andes - Challenge for Geosciences 4 th EGU Alexander von Humboldt International Conference, Santiago de Chile. Website: http://meetings.copernicus.org/avh4/
December 9 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Speaker: t.b.a.; Loja: Casa de la Cultura Ecuatoriana

People and Staff

Honours



Dr. Susanne Lost will be awarded with the German Forest Science Award 2008. The prize is endowed with 15.000 Euro and dedicated for innovative research activities for the conservation, the use and the functions of forest ecosystems.

The curator ship of the Eva-Mayr-Stihl-Foundation appreciates Susanne Lost from the Institute of Soil Science and Site Ecology at the Technical University of Dresden, Germany, for her outstanding dissertation about soil carbon dynamics of tropical mountain rain forests and her attainment in teachings. Her innovative research significantly contributes to the knowledge about sequestration and turnover of soil carbon and nitrogen in South American tropical rain forests as dependent from site conditions and enriches the understanding of

sink-source functions of tropical forest ecosystems. She summarized her thesis entitled "Soil respiration, microbial respiration and mineralization in soils of montane rainforests of Southern Ecuador: influence of altitude" in the book article of the preceding RU 402: <http://www.springer.com/life+sci/ecology/book/978-3-540-73525-0>.

The prize will be awarded during a ceremony on the occasion of the forest sciences congress at Freiburg, Germany, on September 24th (<http://www.fowitagung2008.uni-freiburg.de/>).

Franz Makeschin

New Staff Members



Andrea Villota, undergraduated student of the Pontificia Universidad Católica del Ecuador (PUCE) in Quito, is working as student assistant for the subproject A1.2 (Behling et al.). She enhances the pollen reference collection existing so far. At the end of 2008 she will

start her diploma thesis: analyzing a peat deposit sample from the Lagunas Natasas area, closed to the Peruvian border (see picture in the Science News section), to derive more palaeoecological data of the region and to amplify the palynological database of the subproject.

Corinna Brunschön



Esthela Margarita González Sarango and **José Luís Peña Caivinagua** are undergraduate students at the Universidad Nacional Loja (UNL). In August 2007, they started field work for their thesis in Wilcke's group (project 2.3). Since April 2008 they are analyzing soil solution, percolate of the organic layer, litterfall and rainfall on nutrients at the University of Mainz. Since they arrived in Germany they liked most grilling on the banks of the Rhine.



Hans Wullaert



Alberto Bravo, an engineer in electronics and telecommunication, will start his work as technician of the ECSF in September. He will be responsible for the equipment and will also help groups if they face technical problems which they are not able to solve by themselves. Please request his help by contacting the station managers.



Ángel Sauca started his work as guard in August. His support significantly improves the working conditions for all the guards.

Jörg Zeilinger



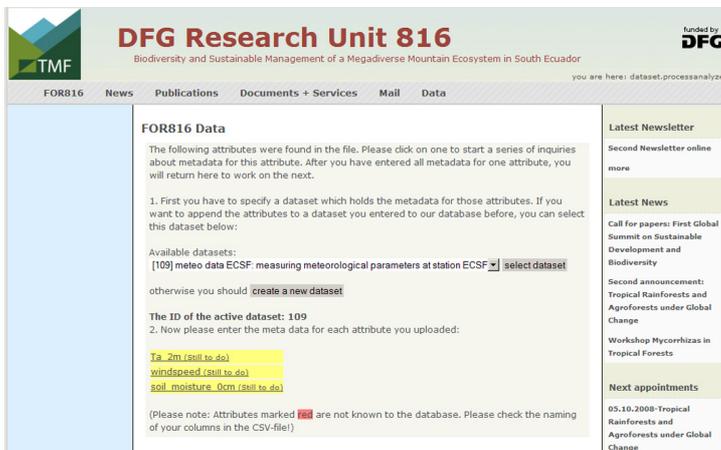
Roberth Feijoó completes the existing team as the third driver of the Estación Científica San Francisco (ECSF). He started his new job in June 2008.

Jörg Zeilinger

New Data and Publications

News from the Data Warehouse

Starting with the upcoming status symposium in September, the data warehouse of the RU - available at www.tropicalmountainforest.org - will encompass the first version of the data base interface including data upload, search and download functions.



Screenshot of the new interface that allows creating of and searching for data sets. Data sets are linked with meta information like geographic or temporal parameters. A corresponding author is also provided. Photo: Nauss.

Therefore, the meta-data structure of the Ecological Metadata Language along with the data attribute lists that have been first prepared at our database workshop in mid of July 2007 have been implemented in the relational data base system. Moreover, most of the meta-data information already available from the preceding RU 402 data base has been transferred to the new system. Based on this backbone structure, a

web-interface for data upload, search and download has been implemented.

The data upload functionality includes the ability to upload ASCII files containing the data values and corresponding attribute names as column headers and the ability to interactively link the new datasets with meta data information. For the latter, the user can revert to the transferred meta information from RU 402 or add new meta information like new instruments, measurement procedure steps, locations etc.

In this first version, the search interface will allow full text search over all meta information including date/time ranges and locations. More advanced search properties will be implemented later this year. If the search criteria match one or more data sets, the user can download the data values as a ready to use ASCII file.

Thomas Nauss & Dietrich Göttlicher

Recent Publications

New Book



Gradstein, S., R., Homeier, J. & Gansert, D. (eds) 2008: *The Tropical Mountain Forest – Patterns and Processes in a Biodiversity Hotspot.* Göttingen Centre of Biodiversity & Ecology, Biodiversity and Ecology Series, Vol. 2, Universitätsverlag Göttingen, Germany.

The book originated from a lecture series: The purpose was to present a synthesis of current ecological research in Germany on tropical mountain forests from an interdisciplinary perspective.

The topics include climate, quaternary history, species richness and endemism, impact of forest disturbance on biodiversity, mycorrhizal diversity, soil fauna, vegetation dynamics, carbon allocation and productivity, forest hydrology, soil dynamics, indigenous land use and sustainable management of tropical mountain forests. The final chapter summarizes current understanding of the incidence of tropical mountain forest hotspots from an ecosystem perspective.

10 out of the 13 chapters are written by members of the RU 402 and 816. It can be ordered by an e-mail to dganser@gwdg.de for € 15.00 (plus shipping costs).

Jürgen Homeier

Theses

Holger Niemann (2008): Late Quaternary vegetation, climate and fire dynamics in the Podocarpus National Park region, southeastern Ecuadorian Andes. Dissertation thesis, Department of Palynology and Climate Dynamics, University of Göttingen. The thesis is online: <http://webdoc.sub.gwdg.de/diss/2008/niemann/>

Corinna Brunschön

Alt, Fabian (2008): Einfluss eines Naturwaldmanagement-Experimentes auf den Nährstoffkreislauf eines tropischen Bergregenwaldes in Südecuador. (Effects of a natural forest management experiment on the nutrient cycle of a tropical mountain rain forest in southern Ecuador). Diploma thesis, University of Mainz.

Geißler, Christiane (2008): Wasserhaushalt gestörter und ungestörter Einzugsgebiete im südecuadorianischen Bergregenwald (Water budget of disturbed and undisturbed catchments in the south Ecuadorian mountain rain forest). Diploma thesis, University of Mainz.

Hensler, Ulrich (2008): Humusmineralisation in Böden unter einem ecuadorianischen Bergregenwald (Soil organic matter mineralization under an Ecuadorian mountain rain forest). Diploma thesis, University of Mainz.

Wolfgang Wilcke

Peer Reviewed Papers

Behling, H. (2008): Tropical Mountain Forest dynamics in the Mata Atlantica and northern Andean biodiversity hotspot during the late Quaternary. *Biodiversity and Ecology Series*, 2, 26-34.

Niemann, H. & Behling, H. (2008): Late Quaternary vegetation, climate and fire dynamics inferred from the El Tiro record in the southeastern Ecuadorian Andes. *Journal of Quaternary Sciences*, 3, 203-212.

Niemann, H., Haberzettl, T. and Behling, H. (accepted): Holocene vegetation, climate and fire dynamics inferred from the (11,700 cal yr BP) Laguna Rabadilla de Vaca multi-proxy record in the southeastern Ecuadorian Andes. The Holocene.

Corinna Brunschön

Media Coverage

Reputable media reported about the projects B2.3 (Wilcke et al.) and A2.5 (Gradstein et al.):

Research Highlight

Little is known how the Ecuadorian forests receive nutrients, since their soils are poor. One source of nutrient input derived from Sahara dust which is deposited and taken up by the forest plants. This nourishment was revealed by Jens Boy and Wolfgang Wilcke of the Johannes Gutenberg University of Mainz. Their results were rated as a "research highlight" in the journal *Nature Geoscience*. The press release of Wilcke was picked up by *Rheinische Post*, *Main-Echo*, *Frankfurter Neue Presse* and *Weser Kurier*, as well as from the *Süddeutsche Zeitung*, a reputable German newspaper.

The original research article was published in *Bio-geochem. Cycles* 22, GB1027, doi: 10.1029/2007GB002960.



Fog is one of the ways in which dust deriving from the Saharan desert in Africa is deposited in the Andean forests. Photo: Achim Bräuning.

Scientists out in the World

In its rubric "E-Mail vom Ende der Welt" the famous *GEO Magazin* reports about scientists who conduct research far away from Germany. In the issue of July they introduce Florian Werner from Gradstein's group sampling epiphytes from the top of a *Tabebuia* tree. In the article the journalist Tilman Botzenhardt - who interviewed Werner - also touches the RU and the scientific question how epiphytic diversity is influenced by clearings, since more than 25 % of Ecuadorian native plants exist as epiphytes: Some months after clearing every second epiphyte on remnant trees is dead.



Glenda Mendieta samples epiphytes in the crowns of trees in the Quebrada Milagro at 2250 m a.s.l. In her thesis supervised by Gradstein she analyzed the beta-diversity of epiphytes. Photo: Florian Werner.

Miscellaneous

Courses and Teaching

Mineralogy and Petrology

Dr. Frank Haubrich conducted lectures and practical exercises in soil mineralogy and soil petrology at the UTPL from March 31st to April 2nd 2008. He introduced the regional geology of Southern Ecuador, gave an overview about total and available nutrient potentials of different rocks, and explained key soil processes and reactions. The essential minerals for soil genesis and plant nutrients, their physical and chemical characteristics of weathering and importance for soil genesis and land use were also presented, as well as the genesis of igneous, sedimentary and metamorphic rocks discussed referring to resultant soil types.

Palynology and Palaeoecology

In the Mid of August 2008 Corinna Brunschön and Fernando Rodriguez (subproject A1.2) offered an introductory student course about palynological and palaeoecological research at the PUCE in Quito. 16 undergraduate biology students took part in the class. Since the course found the approval of the students and the university a second course is planned for next year in which also students from Loja will be invited.

Statistics: R-Course

Peter Vorpahl, a PhD-Student from project A3.3, offered an introductory course about the statistical software R at the ECSF on 9th of August. Around 20 students from the RU and local universities participated to learn about the powerful software suited for various scientific disciplines.

First Call: ATBC-gtö Conference



The organizing committee of the ATBC-gtö conference calls for proposals for scientific symposia, presentations and posters. The conference will take place in the medieval city of Marburg, located in the middle of Germany, from July 27-30, 2009. The truly interdisciplinary theme of the meeting will be "impacts of global change on tropical ecosystems – crosscutting the abiotic, biotic and human spheres".

For more information please visit the website at: <http://www.gtöe-atbc2009.de/>



Students and employees of the Centro de Transferencia de Tecnología e Investigación Agroindustrial at the Universidad Técnica Particular de Loja (UTPL-CETTIA in Ecuador) look at the characteristics of igneous, sedimentary and metamorphic rocks displayed by Dr. Frank Haubrich (right) from the Dresden University of Technology, Germany. Photo: F. Haubrich.



Students analyzing pollen morphology in a peat bog sample of a páramo ecosystem at the Pontificia Universidad Católica del Ecuador (PUCE) in Quito. They were instructed to apply and interpret palynological and palaeoecological techniques. Photo: C. Brunschön.



The lecture room in the new station building of the ECSF provided a well suited place for the students of the RU, the Universidad Nacional Loja (UNL) and other invited universities who took part in the R-Course. They tested and trained data handling as well as the application of the open source statistical software. Photo: J. Zeilinger.

Mycorrhiza Workshop



The workshop on "Mycorrhizas in tropical forests" which will take place in Loja in September 22-25th offers an updated schedule on its

website:

<http://www.mycorrhiza-research.de/Workshop/06Schedule.html>

Successful Grant Application

The group around Arthur Schüssler (B1.1) will receive a grant from the European Union: The researchers want to analyze sustainable management systems for potatoes and to answer the question whether biodiversity is useful for this. One of the partners will be the Universidad Técnica Particular de Loja (UTPL). Arthur Schüssler will write about the new project which derived from results of this RU in the upcoming newsletter.

Deadline

The editorial deadline for the next issue of the TMF-Newsletter is: November 13st 2008. Please send your information for the next newsletter to esther.schwarz-weig@wissensworte.de

Esther Schwarz-Weig
Editorial Office www.Wissensworte.de

Imprint

DFG Research Unit 816

More information about research, the scientific and the local advisory board, and all principal investigators is available at:

www.tropicalmountainforest.org

Speaker of the Research Unit

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