

Newsletter



DFG Research Unit 816:

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

1/2008

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Speaker's Corner

Achievements

The first year of work in Research Unit 816 (RU) lies behind us. We are very pleased to see that the installation of new instruments as well as the establishment of new plots especially for the joint ecological experiments is almost accomplished. The transport of our equipment to Ecuador with a shared container was a good choice for getting the scientific instruments into the country at reduced costs and almost on time. Our thanks go to the German Embassy whose support significantly facilitated and accelerated import formalities.

The completion of the new lecture building was a real step forward. Coping with the steadily increasing number of German and Ecuadorian PhD students and student assistants working in the RBSF (Reserva Biológica San Francisco) area has thus become a lot easier. The new building offers ample room for courses and conventions and also additional working places, extra laboratories and storage capacity. We are deeply indebted to Ivan Gayler (NCI, Nature and Culture International, San Diego) who once more supported the extension of the ECSF (Estación Científica San Francisco) station building with a generous donation, and to NCI senior staff in Loja for initiating and supervising the construction work.

Our first symposium in Loja within the scope of the new RU was well-received by local scientists, students and officials due to presentations being held both in English and Spanish. However, the feedback partly suggests that a well-balanced mixture of scientific and more general plenary

talks might be desirable for future meetings. The first experience with the novel web-based and database-powered accounting and station booking system is encouraging, especially as it simplifies administrative processes. After agreeing basic individual commitments at the database workshop in Marburg, the development of the new central data warehouse now rapidly approaches the operational phase, after an intensive time of design and programming.

Projects and Co-operations

Our concerted efforts to strengthen international co-operations especially in order to extend our taxonomic knowledge in the RBSF area will shortly bear their first of fruits: A Memorandum of Cooperation with the EDIT (**E**uropean **D**istributed **I**nstitute of **T**axonomy) Work Package 7 (All Taxa Biodiversity Inventory + Monitoring) will be signed by both parties in the nearest future. At the same time, negotiations with the bi-national initiative (NSF-DFG) on "Acceleration of Biodiversity Assessment", co-ordinated on the German side by Prof. Wägele, appeared unsuccessful. As a result, new plans are now being pursued to establish a complementing national DFG bundle project with the same objective in the RBSF area. On the abiotic side, the Global Precipitation Mission (GPM), a flagship Mission for NASA's Global Water and Energy Cycle (GWEC) programme, has expressed its interest to include the ECSF in the global GPM Ground Validation Site (GVS) network.

Public Relations

The first quarter of 2008 will be filled with public relation obligations: Our research unit was chosen by the president of the DFG as one of ten flagship projects taking active part in the pilot phase of a new DFG PR programme, the web-based DFG Science TV. Until April 2008, we are asked to produce raw movie material of the scientific work at the ECSF on a weekly basis. The material will be professionally reprocessed by Peter Prestel, a well-known German producer e.g. of the "Humboldts Erben" TV series. At the same time, a German film company producing the TV series "Willi will's wissen" (children science TV series) has inquired to produce 15 minutes of a cine film about our mountain forest.

Another issue is the preparation of the Conference of the Parties (COP9) in Bonn this year. We are invited to contribute to a brochure and a poster exhibition on DFG funded biodiversity projects. Joyfully, two milestone publications of the RU 402 are close to release: The issue 198 of Ecological studies is scheduled for February 13th 2008 (see

section "New Data and Publications") and the Checklist of organisms in Ecotropica Monographs will follow soon.



The new lecture building of the Research Station is complete and provides room for courses and conventions. It also offers places for work, labs and storage thanks to Ivan Gayler and NCI (Nature and Culture International). Foto: Matt.

An important step forward in our collaboration with our Ecuadorian counterparts was the approval of the biosphere reserve "Podocarpus - Cordillera de Condor" in South Ecuador by UNESCO. Maybe this will be a first step on the way to fulfilling our vision of transferring basic science to application for the establishment of sustainable land use systems in the Rio San Francisco valley.

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

News from the Research Station and from NCI

Communication Improvements

Telecommunication at ECSF was considerably improved: For official calls and emergencies there's now one phone line available. A small telephone system with some extensions helps to distribute the calls within the ECSF and to administer the costs for the external calls. The connection to the conventional telephone network is realized with a wireless phone link. The ECSF phone number is: +593-(0)7-2562301.

These days the antenna as the last component of our 2-way-radio system will be installed at the peak of "Las Antenas". After installation a much wider area will be covered by our radio system. This will offer a better communication in the field and a backup for communication with Loja.

Since the hardware of our old ECSF-server was outdated to handle actual software, a new server was installed in January. Nevertheless due to some problems with the velocity of our internet connection a change of our internet provider may be considered during the next months.

Monthly RU Meetings at Loja

In September 2007 we started our monthly colloquium at Loja, which takes place every second Tuesday of every month at 8 p.m. at the Casa de la Cultura Ecuatoriana.

The idea was to strengthen the relationship with your Ecuadorian co-workers, to spark interest in science in general and our investigations in particular in the students. We wish to become better known not only to universities but also to local governmental institutions and non-governmental organizations and to create an opportunity for discussions about investigation of ecosystems, their protection and sustainable management.

The expositions are about 30 to 45 min and include some basics of the research topic as they are directed to a wider public. So far we had presentations about our RU in general, about climate, ethnobotany, the FERPAST experiment (also see next section), hydrological models and mycorrhiza fungi. Also NCI presented a project about the conservation of water protection areas.

The acceptance of our colloquium was very good with around 40 to 100 participants so far and we had fruitful discussions. The members of our RU also took advantage of the opportunity to recruit new staff members for their projects. The colloquiums are announced via Email and in the News section of our homepage.

DAAD

On December 6th 2007 we invited Dr. Jochen Plötz who is the DAAD (German Academic Exchange Service) representative for Ecuador. He gave students and lecturers from UTPL and UNL and the RU members an overview of the programs for scholarships for Ecuadorian students. There are some interesting possibilities, above all for PhD-students. The DAAD also offers a very attractive alumni program, funding literature and equipment for their alumni. Of course the DAAD also offers programs for German students to realize their studies in Ecuador but this topic wasn't covered by the presentation. Further information is available at: www.daad.de.

Accessibility of ECSF

Due to the repair of the Loja – Zamora road transport to and from the ECSF is sometimes interrupted and a lot more irregular than normally. The maintenance hopefully will be completed in 2009.

Also flights by Tame between Guayaquil and Loja and by Icaro between Quito and Loja are in flux and it's impossible to make any predictions for the future. At least Tame took their old Fokker airplanes out of service and serves the route Quito – Loja now with brand-new Embraer aircrafts.

*Felix Matt & Jörg Zeiliger,
Local Advisory Board*

Science News

The Pasture Fertilization Experiment (FERPAST)

The objective of the pasture fertilization experiment FERPAST is to investigate the production potential and quality of extensively managed pastures and effects of N and P fertilization on pasture productivity, soil fertility and matter fluxes.

Productivity of unfertilized pastures will be quantified using representative sites of different time after clear cut of the natural forest. It is expected that increasing productivity of running pastures will reduce pressure for deforestation of natural forest areas.



Climate station of subproject B1.4 (Richter) is installed at the FERPAST experimental site. Foto: Makeschin

The Experiment's Foci

- Determine effects of factorial N and P fertilization on pasture yield and pasture quality as compared to unfertilized control plots of *Setaria* sp.
- Quantify standing crop, utilized metabolisable energy, proper stocking rate and carrying capacity at unfertilized and fertilized pastures
- Screening experiments at the Finca Experimental de la UTPL for introducing productive pastures species
- Determine and model effects of pasture fertilization on soil properties and bioelement fluxes fertilizer - pasture – cattle (milk, meat) – environment

The Experiment is Based on the Following Hypothesis

- Pasture productivity as a function of time decreases exponentially after clear cut
- Main limiting nutrients are N and P; fertilization may compensate bioelement losses after fire and via milk and meat products
- Site-adapted fertilization increases pasture yield, utilized metabolisable energy and standing crop and improve sustainability of pasture land use
- Site-adapted N and P fertilization reduces bioelement losses and thus environmental risks both by diminishing land use pressure and deforestation

Design of the FERPAST Experiment

Pasture species:	<i>Setaria sphacelata</i>
Size of plots:	5 m x 5 m
Fertilizer:	Urea and Rock phosphate
Nutrient application rates:	N: 50 kg ha ⁻¹ * a ⁻¹ P: 10 kg ha ⁻¹ * a ⁻¹ N+P: 50 kg ha ⁻¹ * a ⁻¹ + 10 kg ha ⁻¹ * a ⁻¹
Plots per treatment:	6
Application frequency:	3 times per year

Status of the Experiment

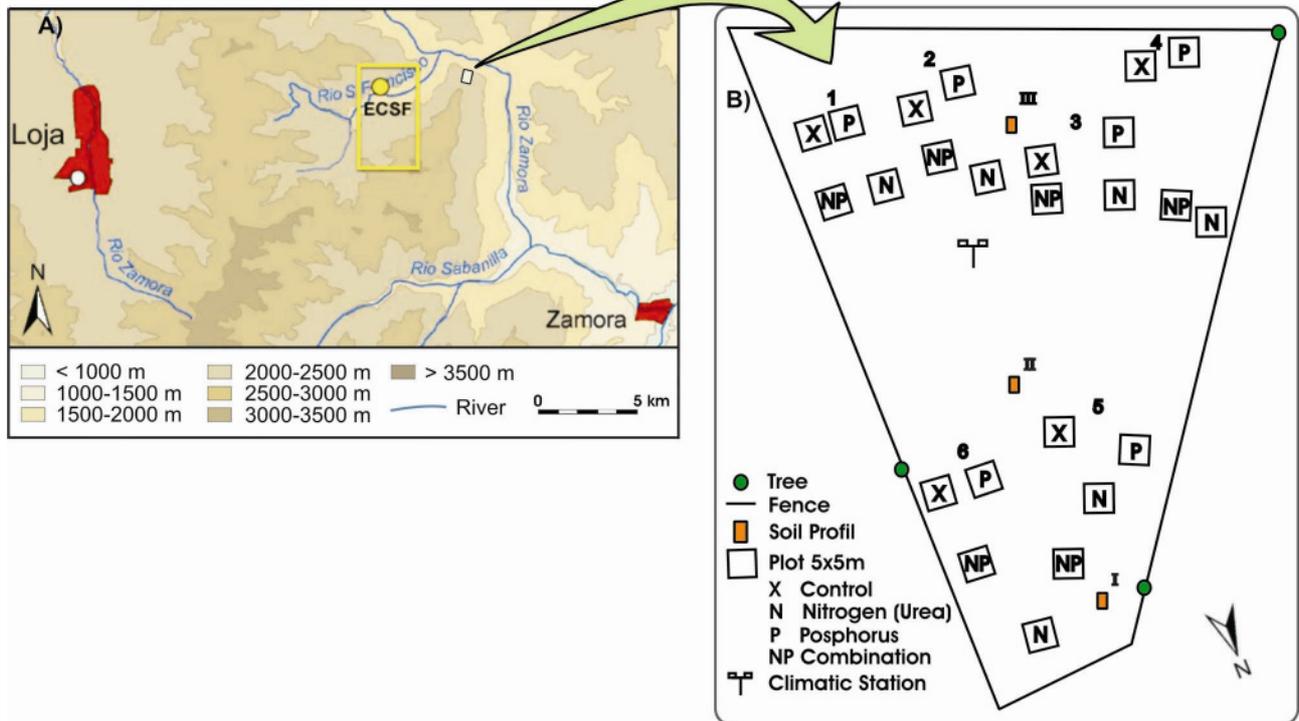
After a detailed site mapping and analytical characterization of the experimental plots the first fertilization started in February 2008.

Franz Makeschin

Staff and Working Groups Involved in FERPAST

F. Makeschin & F. Haubrich	Group C3.4	coordination
F. Makeschin, F. Haubrich & H. Lucero	Group C3.4	growth potential – sustainable production - soil ecology
E. Beck & J. Bendix	Group C3.1	vegetation ecology
J. Barkman, R. Olschewski & R. Marggraf	Group C3.2	assessment of costs and benefits
U. Hamer & K. Potthast	Group B2.1	soil microbiology
E. Veldkamp & G. Martinson	Group A2.4	trace gas fluxes
M. Richter & T. Peters	Group B1.4	ambient data

Investigation Sites of the FERPAST Experiment



A) Position of the FERPAST study site area. B) Experimental design of the FERPAST plots with different fertilizer treatments within the 2000m² rented pasture site.

The Nutrient Manipulation Experiment (NUMEX)

NUMEX combines experimental and descriptive studies along an elevational transect (1000 to 3000 m a.s.l.) of Andean mountain forests to investigate the type of nutrient limitation and the responses of the ecosystem to nitrogen (N: 50 kg ha⁻¹ yr⁻¹) and/or phosphorus (P: 10 kg ha⁻¹ yr⁻¹) addition at different elevations. Since tropical mountain forests seem to be limited primarily by N we want to answer the question how tropical forests will respond to the expected N addition deriving from increased use of fertilizer, industrialisation and biomass burning. We will compare our findings with the addition of P, since phosphorus is a major growth-limiting element in tropical lowland forests.

Study Sites

The selected study sites at 1000, 2000 and 3000 m a.s.l. are situated within Podocarpus National Park and RBSF, respectively, and represent

mature primary forests without visible human or natural disturbance (see figures next pages).

Plots

In total, 52 plots of 400 m² were established (3 sites x 16 plots, plus 4 additional Ca-plots at RBSF). Most of the planned studies will take place within the six investigation areas of 4 m², which are randomly placed along two perpendicular transects (selected at random, too) inside the plots (see figures next page).

Access to the NUMEX plots (and especially to the investigation areas) is limited to the members of participating projects to keep disturbance as little as possible.

Status of the Experiment

The selection and installation of the permanent study plots started in April 2007 and was finished at the end of 2007, thanks to the help of many field assistants. Several parameters (e.g. LAI, fine-root biomass, litter production, stem

diameters, soil nutrient status) were measured right before the start of the fertilisation and will be monitored throughout the experiment.

In January 2008 the first fertilisation was realised at the 2000m-site (coordinated by Hans Wullaert, Guntars Martinson & Nixon Cumbicus), the two

other sites followed / will follow after two and four weeks, respectively. Fertilisation from now on will be done two times a year at every site, the next nutrient application is planned in July/August 2008.

Jürgen Homeier

Study Sites of the NUMEX Experiment

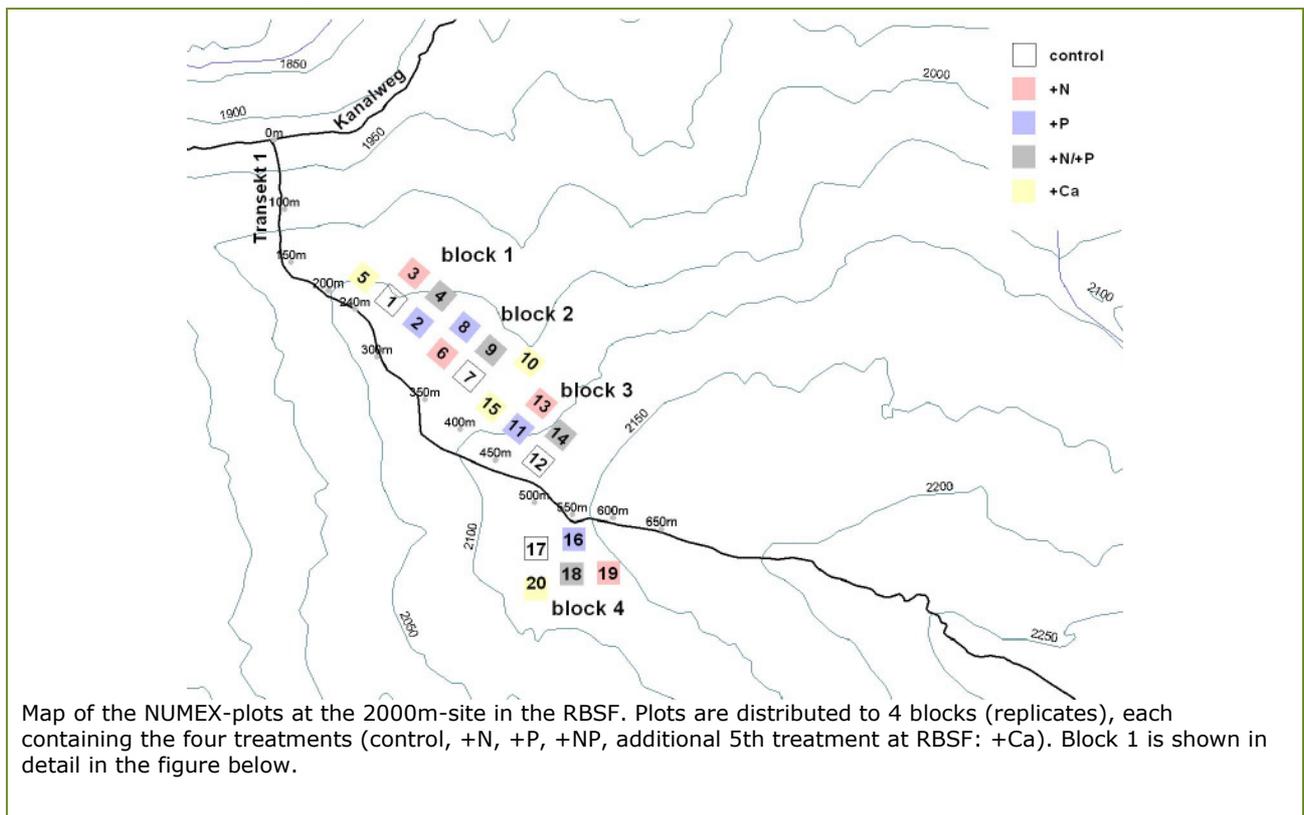


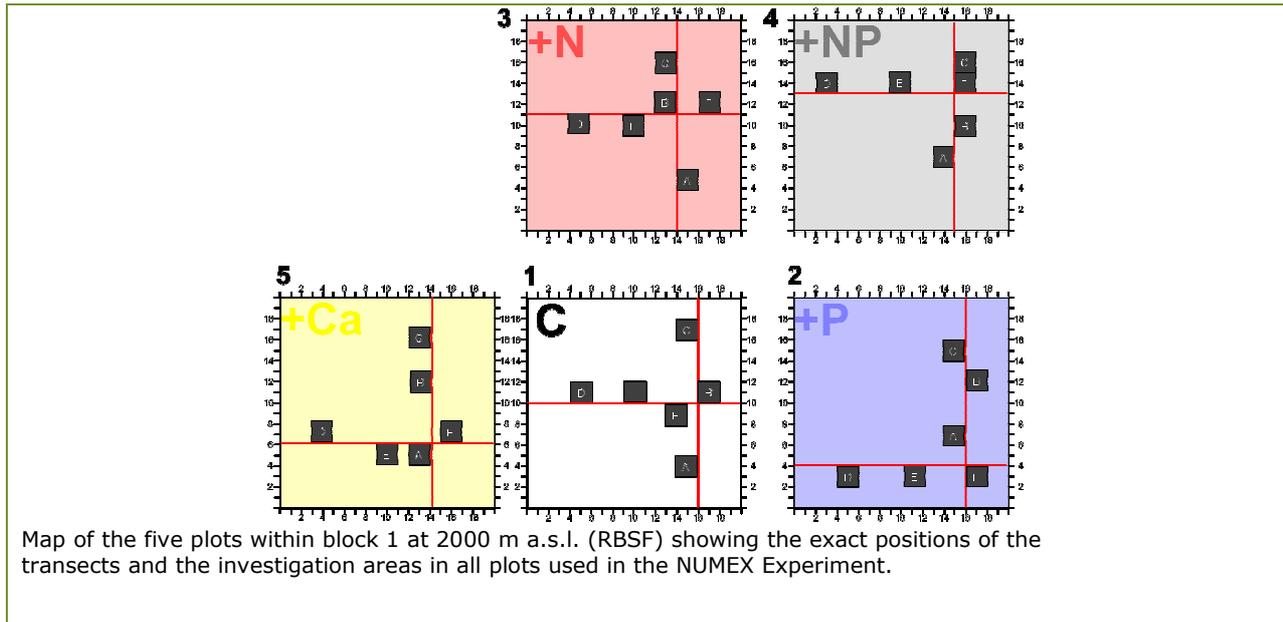
Upper montane forest at the uppermost study site Cajanuma, Podocarpus NP, at ~ 2950 m a.s.l. Foto: Homeier.



Premontane forest at the lowermost study site Bombuscaro, Podocarpus National Park, at ~ 1050 m a.s.l. Foto: Homeier.

Plots for the NUMEX Experiment





Staff and Working Groups Involved in NUMEX		
C. Leuschner, D. Hertel, V. Horna, J. Homeier, B. Witich & N. Cubicis	Group A 2.2	effect of nutrient addition on tree above- and below-ground productivity, and carbon and nutrient partitioning
S. Scheu, M. Maraun, M. Bonkowski, V. Krashevskaja & D. Sandmann	Group A 2.3	effect of nutrient addition on the composition and diversity of the soil fauna and litter decomposition
E. Veldkamp, H. Flessa, G. Martinson & K. Wolf	Group A 2.4	soil nutrient status and the effect of nutrient addition on the fluxes of N ₂ O and CH ₄
P. Fabian & R. Rollenbeck	Group A 3.1	atmospheric nutrient deposition
W. Wilcke & H. Wullaert	Group B 2.3	soil nutrient status and the effect of nutrient addition on DON and DIN fluxes

Amazonian Biomass Burning-derived Acid and Nutrient Deposition

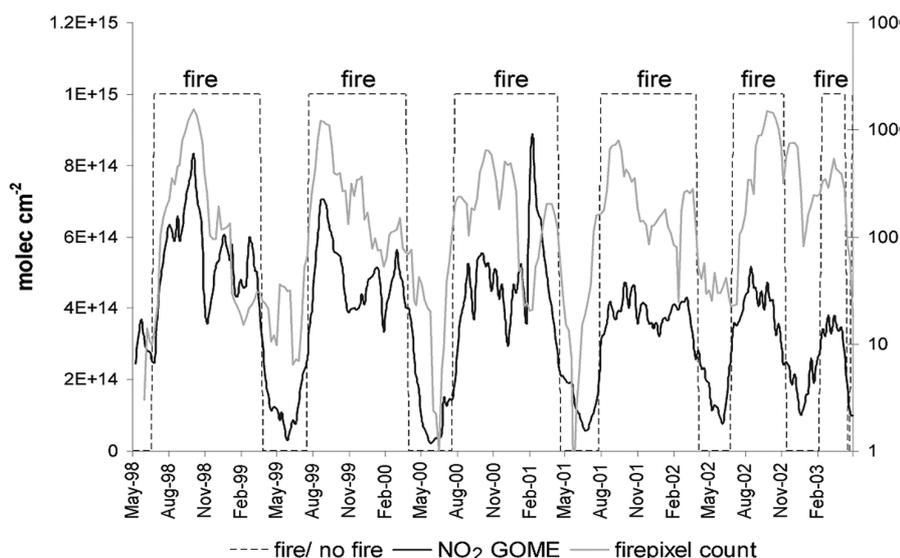
In a cooperation of subprojects B2.3 (Wilcke) and A3.1 (Fabian) we explored the influence of biomass burning in Amazonia and north eastern Latin America on element cycles of N, C, P, S, K, Ca, Mg, Al, Mn, and Zn of a montane forest in south Ecuador exposed to the Amazon basin. We assessed the response of the element budget of the three microcatchments (Q1-Q3) to the variations in atmospheric deposition between the intensive burning season and outside the burning season in Amazonia between May 1998 and April 2003 (see figure next page).

There were significantly elevated H, N, and Mn depositions during biomass burning. Elevated H

deposition during biomass burning caused elevated base metal loss from the canopy and the organic horizon and deteriorated already low base metal supply of the vegetation. N was only retained during biomass burning but not during non-fire conditions when deposition was much smaller.

We conclude that biomass burning-related aerosol emissions in Amazonia are large enough to substantially increase element deposition at the western rim of Amazonia. Particularly the related increase of acid deposition impoverishes already base-metal scarce ecosystems. As biomass burning is most intense during El Niño situations, a shortened ENSO cycle due to global warming is likely to enhance the acid deposition at our study forest.

Wolfgang Wilcke



Classification of biomass-burning periods using NO₂-index satellite data of GOME (Global Ozone Monitoring Experiment, unit = molecules cm⁻²) in the air column above the study site (4°S 79°W ± 2°) and fire pixel count of NOAA 12 (National Oceanic and Atmospheric Administration) in Amazonia and northern South America along the daily Hysplit trajectories (radius 25 km around the actual parcel location). – The concentrations of NO₂ in the air above our study forest are increased during the burning season in Amazonia resulting in enhanced inputs of nitric acid and thus acid rain.

Meteorological Instruments

The installation of new meteorological instruments was accomplished by subproject B3.1 (Bendix). A Doppler rain radar profiler (MRR) at the ECSF building, capable to measure vertical rain profiles over the valley, will be used to improve our understanding of rainfall formation processes. The new Infra-Red cloud imager (Nubiscan) at the ECSF allows the spatio-temporal observation of cloud fields day and night. Nubiscan is a key instrument for the development of the high-resolution weather generator for the RBSF area. A NOAA.-AVHRR HRPT satellite receiving station is set up at the UTPL in co-operation with the GIS department: The station will warrant full access to all NOAA orbits covering the RBSF and adjacent areas. It replaces the old system installed at INAMHI headquarters in Quito which is out of operation since one year.

In the framework of the subproject C3.1 (Beck & Bendix), the new micrometeorological station was established for the bracken experiment on the Finca of Don Herminio. This station complements the station network in the RBSF area operated by subproject B1.4 (Richter). It should be emphasized that the station outline comprises additional sensors like IR-temperature probes, complete radiation-balance measurement, ultrasonic anemometers and heat-tolerant soil temperature probes especially designed for the planned fire experiment.

Jörg Bendix

Repastorization Experiment

The plots where various methods of bracken control have been examined for two to three years have been mechanically cleared from all weeds and *Setaria* grass has been planted. This is the start of the repastorization experiment of subproject C3.1 (Beck & Bendix).

Erwin Beck

Reforestation Experiment

More than 6000 seedlings from *Cedrela montana*, *Tabebuia chrysantha*, and *Heliocarpus americanus* were raised cooperatively by the working groups of Schübler (subproject B1.1) and Weber, Stimm & Mosandl (subproject C2.1). In the next months these plants will be used for testing the effect of inoculation with defined mycorrhizas to improve the survival and growth of the tree seedlings. After the nursery phase under semi-controlled conditions the plants will be transplanted to the pasture site of the reforestation experiment and monitored during one year.

Sven Günter

The "Zig Zag Landslide"

In April 2007, Sabrina Setaro (subproject A1.7) installed ropes at the upper part of the anthropogenic landslide, which is located at the channel path westward the orchid slope.

The ropes shall help to access the plot and sample therein. The landslide is now called 'Zig Zag landslide' (German: Zick-Zack-Rutsch; Español: derrumbe ZigZag), since it is located where the Zig Zag path reaches the channel path.

Sabrina Setaro



The four ropes in the upper part of the 'Zig Zag landslide'. Foto: Setaro.

Event Calendar

March 11 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Sven Günter: "Potentials of forest resources for a sustainable management of the tropical mountain forest and restoration of degraded ecosystems." Casa de la Cultura Ecuatoriana, Loja
April 8 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Speaker: t.b.a. Casa de la Cultura Ecuatoriana, Loja
May 13 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Speaker: t.b.a. Casa de la Cultura Ecuatoriana, Loja
June 10 th 2008 8:00 p.m.	Monthly colloquium of the RU 816 Speaker: t.b.a. Casa de la Cultura Ecuatoriana, Loja
July 26 th -30 th 2008	Congress: Botany 2008 – Botany without Borders University of British Columbia, Vancouver BC, Canada

People and Staff

Co-operating Experts

Dipl.-Fowi. Helmut Sonnert, an expert for sustainable forest management, will start his work at NCI (Nature and Culture International) in March. His work is co-financed by NCI and CIM (Centrum für Internationale Migration und Entwicklung), a consortium of GTZ (Gesellschaft für technische Zusammenarbeit) and ZAV (Zentrale Auslands- und Fachvermittlung). He will support the Research Unit in the transfer of our scientific results towards application. His focal topics will be sustainable land use systems and other ecosystem services as e.g. water resource management. He also will keep close contact to GTZ Ecuador who considers the RBSF and the concepts of the Research Unit as a model for sustainable development in other mountain ecosystems of Ecuador.

Jörg Bendix, Sven Günter, & Jörg Zeilinger

New Staff Members

MSc Brenner Stefan Gomes Silva (INPE, National Institute for Space Research, São José dos Campos, Brazil) will join the working group of Jörg Bendix in Marburg on March 1st 2008. Funded by a DAAD PhD scholarship, Mr. Silva will work on his PhD thesis on the development of the bracken competition model in subproject C3.1. Brenner holds a BSc degree in Computer Science and a MSc in Remote Sensing. His last project was about structuring of vegetation maps to

support scientific modeling and conservation planning in the Amazon.

Jörg Bendix

Dipl.-Geogr. Andreas Fries, the recent technician of the RU, has successfully applied for a DAAD external PhD scholarship. He will join the group of Jörg Bendix in Marburg to work on his PhD, the development of the weather generator for the RBSF area in the framework of subproject B3.1. Fries will finish his work as the ECSF technician at the End of February.

Jörg Bendix & Jörg Zeilinger



Johana Muñoz started her work as PhD student in the work group of Weber et al. (subproject C2.1) in summer 2007. Johana Muñoz continues monitoring of the thinning experiment in the natural forest.

Sven Günter

Ximena Palomeque works on propagation and reforestation with native tree species. He started his work as PhD student in mid of 2007 in the work group of Weber et al. (subproject C2.1).

Nikolay Aguirre finished his PhD in subproject C2.1 in June 2007 and is now working as professor at the UNL. He is associated with the Research Unit as counterpart.

Sven Günter



Dr. rer. nat. Thorsten Pohlert joined the working group of Wolfgang Wilcke (subproject B2.3) in July 2007. He will coordinate the measurements and modelling efforts of biogeochemical element cycles in the small catchments. In his PhD he modelled the N budget of mesoscale river catchments.

Wolfgang Wilcke



Byron Maza Rojas, DAAD Fellow, started his PhD in October 2007. He works in the subgroup C3.2 (Breuer et. al.) about the spatially explicit and institutionally extended valuation of ecosystem services. More can be found at: www.uni-goettingen.de/de/68296.html

Byron Maza Rojas



Flor Maria Chacón is an undergraduate student at the UTPL and currently working on her thesis in subproject A1.7 (Setaro). She will localize the restriction sites on the ribosomal DNA of Sebaciniales (Basidiomycota) in order to use RFLP analyses for the identification of several distinctive sebacinalean

groups. Financed by the BMZ her investigations shall help to process more samples in less time and hence make it possible to increase sample numbers for comparative ecological studies. Her work involves molecular techniques like DNA isolation, PCR, cloning and sequencing.



Geovanny Ocampo is an undergraduate student of the UNL and currently working on his thesis financed by the BMZ. His project in subgroup A1.7 (Setaro) is about the production of sterile cuttings of Ericaceae (*Cavendishia nobilis*, *Macleania rupestris*, *Gaultheria erecta*, *Cavendishia bracteata*)

and the subsequent mycorrhizal inoculation with different soil sources: On some soil types Ericaceae occur (natural forest and Zig Zag landslide, please see section Science News) on the others Ericaceae are absent (*Pinus* afforestation and *Setaria* slope). Finally mycorrhization will be measured at the UNL's greenhouse. With this project we want to test the occurrence of mycorrhizal fungi at sites where actually no Ericaceae are growing. We hope to predict whether a recovery of Ericaceae at these sites would be possible from a mycorrhizal point of view.

Sabrina Setaro

New Data and Publications

News in and about the Data Base

Over the past few months and thanks to the great and detailed user feedback, several (major) updates for the RU 816 data warehouse (project Z1.1 available at www.tropicalmountainforest.org) have been published. This includes the administrative and financial sections, the publication interface, and the scientific data base.

With respect to the administrative functions (management of personal data and project information, news, accounting and finance aspects, and station booking), we would like to stretch certain aspects:

Personal Data Management

Every user should keep his contact information up to date since this information is not only published at the web-site but also used for the automatic generation of the RU 816 mailing lists.

Project Information Management

Recently we have started to translate the present project information into Spanish so that a complete bilingual system (English/Spanish) will be available in the near future. The content of the project information can be changed by any project administrator. Please be aware that for any further changes of the information content, each subproject is responsible for an English and Spanish version.

News

New functions have been implemented to allow project administrators to submit new information within the "News" section directly. An interference of Z1.1 is no longer necessary. This new function can be found under "Documents + Services" - "Administration". If you submit news, please select an appropriate type (general, conference, meeting, job, etc. from the drop down list which you will find in the interface) and supply at least an English version.

Accounting and Finance Aspects

Thanks to the help and feedback of many users, the accounting system has reached a stable level. However we would like to remind everyone of the agreed procedure that for any kind of reimbursement an appropriate application has to be approved by Z2 in advance.

Publications, Attribute Lists, and RU 402

Beside these updates, the first version of the **publication interface** has been released allowing the users to manage their publications (see figure). This encompasses different search and sorting options as well as a user interface to upload new or modify already existing publications. We hope the interface meets your requirements and we would like to ask everyone to check and update his publications.

The work on the **attributes lists** that has been started with our database workshop in mid July 2007 has almost been finished. Currently we are implementing the attributes in the relational data base system of the RU 816 data warehouse. As soon as this work has been completed, a user interface will be implemented allowing each subproject to submit their datasets.

In the meantime we have also started to transfer data from the old RU 402 database system to the actual one. In addition, a link to the complete RU 402 database system has been implemented in the "Data" section of the RU 816 webpage.

Thomas Nauss & Dietrich Göttlicher

Screenshot of the new interface that enables the researchers to update their publications at any time.

Latest Publications

New Peer Reviewed Publications

Reprints of the Special Feature in Basic and Applied Ecology 9, 2008 "Facing a hotspot of biodiversity" are now available from the authors on request. The feature encompasses:

Beck E & Kottke I (2008): Facing a hotspot of biodiversity. Basic and Applied Ecology 9: 1-3

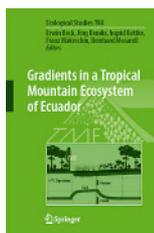
Noeske NM, Hilt N, Werner FA, Brehm G, Fiedler K, Sipman, HJ & Gradstein SR (2008): Disturbance effects on diversity of epiphytes and moths in a montane forest in Ecuador. Basic and Applied Ecology 9: 4-12

Kottke I, Haug I, Setaro S, Suárez JP, Weiß M, Preußing M, Nebel M & Oberwinkler F (2008) Guilds of mycorrhizal fungi and their relation to trees, ericads, orchids and liverworts in a neotropical mountain rain forest. Basic and Applied Ecology 9: 13-23

Wolff D, Meve U & Liede-Schumann S (2008): Pollination ecology of Ecuadorian Asclepiadoideae (Apocynaceae): How generalized are morphologically specialized flowers? Basic and Applied Ecology 9: 24-34

Ingrid Kottke

New Books



Beck, E.; Bendix, J.; Kottke, I.; Makeschin, F.; Mosandl, R. (Eds.) (2008): *Gradients in a Tropical Mountain Ecosystem of Ecuador*. Ecological Studies, Vol. 198, Springer, Berlin, Heidelberg, 526 p. 174 illustrations, ISBN: 978-3-540-73525-0: Encompasses many of

the research projects of the old Research Unit 402. More information about content and scope: www.springer.com/life+sci/ecology/book/978-3-540-73525-0

New Theses

Darwin Pucha (2008): Long-term variation in Ca deposition in the mountain rain forest of the ECSF (Variación a largo plazo de la deposición del calcio en el bosque lluvioso montano bajo de la Estación Científica San Francisco). Thesis, Universidad National Loja (UNL), subproject A2.3: Darwin studied - together with the working group of Achim Bräuning (subproject A1.1) - the Ca concentrations in dated tree rings of *Cedrela montana* Moritz ex Turcz. and observed a correlation with the ENSO cycle. Soon after cold "La Niña" situations, Ca concentration in wood increased abruptly suggesting that Ca can be used as an indicator of dry conditions associated with Sahara-derived dust input.

Jaime Garcia (2008): Heterogeneity of the nutrient cycle in the humid lower mountain forest of the ECSF. (Heterogeneidad del ciclo de nutrientes en el bosque húmedo montano bajo de la Estación Científica "San Francisco"). Thesis, Universidad National Loja (UNL), subproject A2.3: Jaime studied nutrient concentrations in live leaves, litter fall and the soil litter layer (Oi horizon) to draw conclusions on nutrient deficiencies. He found that - compared to other forests - N, P, K, Ca, and S were in low supply. This might be an indication of multiple element deficiencies.

Wolfgang Wilcke

Miscellaneous

Current Discussion - High Impact Publication

There are not too many proposals for a high impact paper from our group. In addition to the proposal presented by Erwin Beck at the General Assembly there were only two more by Ingrid Kottke and Wolfgang Wilcke. The potential titles

are in English as well as the Figures (see attachments). Most explanations are given in German and the authors apologise for that. Nevertheless, it is very urgent to start with our endeavours. Since we will discuss the issue at our General Assembly in Hohenheim, Germany, this month please be prepared for alternative proposals or arguments.

Erwin Beck

Jobs

If you know an Ecuadorian technician interested to work at the ECSF succeeding Andreas Fries, please inform the local advisory board (stationmanager@tropicalmountainforest.org).

Jörg Zeilinger

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More information about research, the scientific and the local advisory board, and all PI's is available at: www.tropicalmountainforest.org

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