



Treibhausdebatte – die Bringschuld der Wissenschaft

Editorial, traduction française au verso



Em. Prof. Christian Pfister war 1997–2009 Ordinarius für Wirtschafts-, Sozial- und Umweltgeschichte an der Universität Bern. Er untersucht Wechselwirkungen von Wirtschaftsentwicklung und Umwelt, namentlich Veränderungen des Klimas, im letzten Jahrtausend (Publikationsliste und Artikel zum Download: www.wsu.hist.unibe.ch)

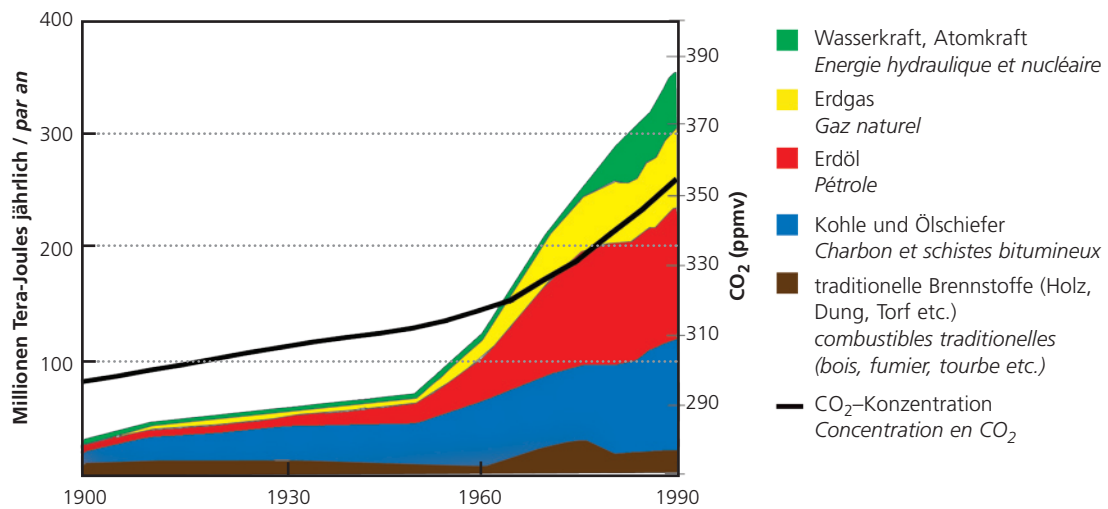
Seit einigen Monaten schlägt der «Climategate» genannte «heisse Krieg ums Klima» hohe Wellen. Die im Vorfeld des Kopenhagener Klimagipfels gehackten über tausend E-Mails des renommierten Klimaforschers Phil Jones füllen ausgedruckt nicht weniger als fünf dicke Aktenordner. Diese hat Axel Bojanowski für den «Spiegel» jüngst durchgekämmt. Sein Fazit: Von einer Verschwörung kann keine Rede sein. Führende Forscher haben sich in den letzten 25 Jahren unter den Angriffen der so genannten Skeptiker allerdings in einen erbitterten Grabenkrieg verwickelt, in den Medien, Umweltverbände, Politiker und «missliebige» Wissenschaftler hineingezogen wurden. Gekämpft wurde um die innerwissenschaftliche Kontrolle führender Journale und die mediale Deutungshoheit in der Öffentlichkeit. Datenklau und persönliche

Fehden sind wissenschaftsgeschichtlich kein Novum, wie man in Tobias Krügers «Entdeckung der Eiszeiten» nachlesen kann. Nur finden heute die Auseinandersetzungen nicht mehr allein in wissenschaftlichen Journalen, sondern vorwiegend in den Laienforen des Internets statt. In Frankreich erscheinen bei den einschlägigen Stichwörtern mittlerweile die Beiträge von Skeptikern an erster Stelle.

Es genügt nicht, auf die Unterstützung der Erdöl- und Kohlelobbies und die Attraktivität abweichender Meinungen (Nachrichtenwert-Theorie) zu verweisen. Zu ergründen ist ebenfalls, warum gewisse Argumente der Skeptiker in der Bevölkerung offensichtlich einen Nährboden finden. Konkret: Sind Wissenslücken offen geblieben, in denen

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Von 1900 bis 1950 ist die Vernutzung von fossilen Energieträgern, meist in Form von teurer Kohle, nur langsam angestiegen. Entscheidend beschleunigt wurde sie erst durch die reichliche Verfügbarkeit billigen Öls seit den 1950er Jahren. Entsprechend ist die CO₂-Konzentration bis um 1950 nur um 0.3 ppm pro Jahr, seitdem aber um 1.35 ppm pro Jahr angestiegen. (vgl. C. Pfister, The «1950s Syndrome» and the transition from a slow-going to a rapid loss of global sustainability, in: F. Uekötter (ed.), Turning Points in Environmental History, U. of Pittsburgh Press, im Druck)

De 1900 à 1950, la consommation d'agents énergétiques fossiles, le plus souvent du charbon, combustible cher, n'a augmenté que lentement. Elle ne s'est accélérée substantiellement qu'à partir des années 1950, le pétrole bon marché devenant alors disponible en abondance. C'est ainsi que la concentration en CO₂ n'a crû que de 0.3 ppm par an jusque vers 1950, mais de 1.35 ppm par an depuis lors (cf. C. Pfister, The «1950s Syndrome» and the transition from a slow-going to a rapid loss of global sustainability, in: F. Uekötter (ed.), Turning Points in Environmental History, U. of Pittsburgh Press, sous presse)

sich Verunsicherung breit machen konnte? Zu verweisen wäre hier auf die Frage nach den Ursachen der natürlichen Wärmeperioden vor 5000 Jahren, zur Römerzeit und im Mittelalter. Heinz Wanner hat in den letzten drei Jahren auf die Bedeutung der Erdbahnparameter, der Eigenschaften der Umlaufbahn der Erde um die Sonne, für den Klimawandel aufmerksam gemacht. Mit Erfolg: Unter dem Titel «Als die Alpen noch grün waren», hat jüngst sogar die «Weltwoche» auf seine Erklärung verwiesen. Die schwer verständliche Überlagerung der verschiedenen Effekte müsste zudem in einem geeigneten Sendegerät visualisiert werden. In ähnlicher Weise wäre dem Publikum nahe zu bringen, wie Klimamodelle entstehen und mit welchen Unsicherheiten diese verbunden sind.

In der Pflicht stehen nicht zuletzt die Sozial- und Kulturwissenschaften. Die Klimaerwärmung konfrontiert Gesellschaften mit neuartigen und in ihrer Tragweite noch kaum begriffenen Herausforderungen. Wie diese zu bewältigen wären, ist erst in Ansätzen untersucht worden. Nach Harald Welzer (2010) ist offen, ob demokratische Gesellschaften überhaupt in der Lage sind, die zur Bewältigung erforderlichen Umsteuerungen

rechtzeitig in Gang zu setzen. Mögliche Folgen von Klimawandel, Ressourcenverknappung und Migrationsströme liessen sich anhand von historischen Beispielen untersuchen. Über die Ursachen, die zum Klimaproblem in seiner heutigen Dringlichkeit geführt haben, sind nebulöse Vorstellungen verbreitet. Fakt ist, dass die CO₂-Konzentration bis in die 1950er Jahre nur langsam angestiegen ist, weil mit dem teuren Brennstoff Kohle haushälterisch umgegangen werden musste. Erst die mit dem Siegeszug des billigen Öls einsetzende Energieverschwendung hat den Treibhauseffekt entscheidend beschleunigt (siehe Grafik oben).

Wie können die Wissenschaften ihre Bringschuld einlösen? Einmal gilt es, berechnete Anliegen des Publikums ernster zu nehmen und in der Forschung mit zu berücksichtigen. Ferner ist dem Kommunikationsstil des Internet-Zeitalters Rechnung zu tragen, etwa durch den Aufbau von vertrauenswürdigen Portalen in Zusammenarbeit von Forschenden und Medienleuten. Schliesslich ist das wissenschaftliche Anreizsystem dahingehend zu überdenken, dass auch Öffentlichkeitsarbeit darin einen Platz findet.

Le débat sur les gaz à effet de serre – le dû des scientifiques

Le professeur émérite Christian Pfister a été professeur ordinaire à l'Université de Berne de 1997 à 2009, pour l'histoire économique, sociale et environnementale

Depuis quelques mois, la controverse sur le climat fait rage sous le nom de «Climategate». Les plus de mille courriels de Phil Jones, climatologue renommé, parmi lesquels des hackers ont fouiné à l'approche du sommet de Copenhague sur le climat, remplissent une fois imprimés pas moins de cinq gros classeurs. Axel Bojanowski les a récemment passés au peigne fin pour le «Spiegel». Sa conclusion: il ne peut être en aucun cas question d'une conspiration. Sous les attaques de climat-sceptiques, des leaders de la recherche se sont toutefois engagés, ces vingt-cinq dernières années, dans une guerre de tranchées acharnée, dans laquelle médias, associations de protection de l'environnement, politiciens et scientifiques «mal-aimés» ont été entraînés. On s'est battu pour le contrôle scientifique interne de revues de pointe et pour la primauté en matière d'interprétation dans les médias grand public. Comme on peut le lire dans «Entdeckung der Eiszeiten» («Découverte des périodes glaciaires»), de Tobias Krüger, le vol de données et les querelles de personnes ne sont pas une nouveauté dans l'histoire des sciences. Aujourd'hui cependant, les controverses n'ont pas lieu seulement dans les revues scientifiques, mais avant tout sur la Toile dans les forums de non-spécialistes. En France, les contributions des climat-sceptiques apparaissent maintenant en tête de liste en réponse aux mots-clés déterminants.

Il ne suffit pas d'invoquer comme explication le soutien des lobbies du pétrole et du charbon et l'attrait d'opinions divergentes (théorie de la valeur de l'information). Il faut également chercher pourquoi certains arguments des sceptiques trouvent manifestement un terrain fertile dans la population. Concrètement: des lacunes du savoir ont-elles servi à propager l'incertitude? On pourrait mentionner à ce chapitre la question des causes des périodes chaudes qui sont apparues naturellement il y a 5000 ans, à l'époque romaine et au Moyen-âge. Pendant ces trois dernières années, Heinz Wanner a rendu attentif au rôle des paramètres de l'orbite terrestre dans les changements climatiques. Avec succès: sous le titre «Als die Alpen noch grün waren» («Quand les Alpes étaient encore vertes»), même la «Weltwoche» a récemment fait référence aux explications de ce chercheur. Il faudrait que la superposition dif-

ficile à comprendre des différents effets soit de surcroît visualisée dans une émission appropriée. De façon similaire, il conviendrait de rendre plus tangible pour le grand public comment les modèles climatiques se constituent et quelles incertitudes leur sont associées.

Les sciences humaines et sociales notamment ont un rôle à jouer. Du fait du réchauffement climatique, la société est confrontée à des défis d'un nouveau genre et dont elle n'a encore guère saisi la portée. Seules des ébauches de solution ont été examinées quant à la manière de faire face à ces défis. Selon Harald Welzer (2010), la question reste ouverte de savoir si des sociétés démocratiques sont même en mesure de procéder à temps aux changements de cap nécessaires. Les conséquences possibles des changements climatiques, de la pénurie de ressources et des courants migratoires pourraient être examinées sur la base d'exemples historiques. Des idées nébuleuses courent sur les causes qui ont conduit au problème du climat dans son degré d'urgence actuel. Le fait est que la concentration en CO₂ n'a augmenté que lentement jusque dans les années 1950, car le charbon, qui servait de combustible, était cher et donc utilisé avec économie. L'effet de serre ne s'est accéléré de façon vraiment marquante qu'avec le gaspillage d'énergie déclenché par la marche triomphale du pétrole bon marché (voir graphique en face).

Comment les scientifiques peuvent-ils s'acquitter en la matière de leur dû à l'égard de la collectivité? Il s'agit pour eux d'une part de prendre davantage au sérieux des préoccupations légitimes du grand public et de les prendre en considération dans la recherche. Il leur faut ensuite tenir compte du style de communication de l'ère de l'Internet, par exemple en élaborant des portails dignes de confiance en collaboration avec des chercheurs et des spécialistes des médias. Enfin, le système scientifique d'incitations doit être repensé de manière à ce que les relations publiques y trouvent aussi leur place.

Graphique avec la traduction française se trouve en face.

News

New window «Swiss Climate Research at a glance»

Present your highlights in the ProClim- Flash

ProClim- would like to invite the science community to present its work in the ProClim- Flash Newsletter. Competence centers like the NCCR Climate or the CCES already profit from the opportunity to publish information about events, education like summer schools, outreach activities and research highlights. We would like to offer this possibility also to smaller research groups in Switzerland. Your contribution will appear in a new window called «Swiss Climate Research at a glance» under the name of your group. The thematic focus should be on climate and global change, its impact, mitigation and adaptation. For further information about terms and conditions please contact: gabriele.mueller@scnat.ch

Climate sceptic arguments and their scientific background

Climate Change Facts by Swiss Re compiled by ProClim-

Swiss Re argues that the climate is warming at a rate which cannot be explained with natural factors alone. We have for sometime been vocal that global warming is happening and is mainly caused by man-made activity. So how should we consider the arguments of the climate sceptics? You can find a list of arguments and their scientific background compiled by Urs Neu of ProClim- at: www.proclim.ch/News?1183

Mountain Biodiversity Portal online

The GMBA/GBIF Mountain Biodiversity Portal is now online. You can now explore and download GBIFs biodiversity data for the mountains of the world, and search mountain areas from region to globe, or select by mountain life zones (such as the treeless alpine zone) on an interactive map. The Portal is a contribution to the Mountain Programme of the Convention on Biological Diversity and is GMBA/DIVERSITAS contribution to the International Year of Biodiversity 2010. You are welcome to visit the Mountain Biodiversity Portal at: www.mountainbiodiversity.org

Natural catastrophes in 2009

Annual Reports by Swiss Re and Munich RE

According to Swiss Re's latest sigma study, natural catastrophes and man-made disasters claimed approximately 15'000 lives and cost insurers USD 26 billion in 2009. The overall cost to society was USD 62 billion. Insured losses were below average due to a calm US hurricane season.



Natural catastrophes caused less costs in 2009 compared to previous years. Photo: NOAA

Compared to previous years, 2009 was a low loss year. According to Swiss Re's latest sigma study, «Natural catastrophes and man-made disasters in 2009», 133 natural catastrophes and 155 man-made disasters occurred in 2009. Six events each triggered insured losses in excess of USD 1 billion. The costliest event was the European winter storm Klaus, which struck France and Spain in January, and led to insured losses of EUR 2.35 billion (nearly USD 3.4 billion).

Historically, catastrophe losses have been highly volatile, with a strong upward trend. In US dollars, the historic upward trend for global insured losses is around 10%, and is driven by higher income, increasing wealth, a higher value concentration of wealth in loss prone regions and a trend towards more insurance coverage. Global warming and the related higher risk of extreme weather conditions also contribute to the trend.

You can find the corresponding links for further information about:

- Sigma study No 1/2010 «Natural catastrophes and man-made disasters in 2009»
- Munich RE: TOPICS GEO – Natural catastrophes 2009: Analyses, assessments, positions at: www.proclim.ch/News?1162

Source: Media information by Swiss Re

Kalter Winter und Tanktourismus

Treibhausgasausstoss in der Schweiz 2008 angestiegen

Hiver froid et le tourisme à la pompe

Hausse des gaz à effet de serre en Suisse en 2008

(deutsch) Die Schweiz hat 2008 1,6 Millionen Tonnen mehr Treibhausgase ausgestossen als im Vorjahr. Der Ausstoss ist unter anderem wegen des kalten Winters und dem Tanktourismus auf insgesamt 53,2 Millionen Tonnen angestiegen und liegt damit 0,5 Prozent über dem Wert von 1990. Dies zeigt das neuste Treibhausgasinventar der Schweiz, welches am 15. April 2010 an die UNO übermittelt wurde.



Die tiefen Temperaturen im Winter liessen den Treibhausgasausstoss in der Schweiz ansteigen. | Hausse des gaz à effet de serre en Suisse due à l'hiver froid.

Diese Entwicklung hatte sich bereits letztes Jahr abgezeichnet. Deshalb wurde die CO₂-Abgabe auf Brennstoffen gemäss Vorgabe des Parlaments auf 1. Januar 2010 von 12 Franken auf 36 Franken pro Tonne CO₂ erhöht. Zudem hatte das Parlament im Sommer 2009 entschieden, einen Teil dieser CO₂-Abgabe in ein Programm für klimafreundliche Gebäude zu investieren.

Die im Dezember 2009 publizierte Schätzung des BAFU, wonach das Kyoto-Ziel knapp erreicht werden kann, ist nach wie vor aktuell. Die Zunahme der CO₂-Emissionen wegen der kühlen Temperaturen im 2008 wurde bereits in der damaligen Schätzung berücksichtigt. Die Beurteilung der Kyoto-Zielerreichung wird im Spätsommer 2010 aufdatiert, wenn die energetischen CO₂-Emissionen des Jahres 2009 vorliegen und der Effekt der Wirtschaftskrise auf die Emissionen besser abgeschätzt werden kann.

Download des Treibhausgasinventars 2008

(Englisch) PDF (5626 kB) unter:

www.proclim.ch/News?1218

Quelle: Medienmitteilung BAFU

(français) En 2008, la Suisse a émis 1,6 million de tonnes de gaz à effet de serre de plus qu'en 2007. Selon le dernier inventaire national, remis à l'ONU le 15 avril 2010, les rejets ont atteint 53,2 millions de tonnes, soit 0,5 % de plus qu'en 1990. Cette augmentation est due notamment à l'hiver rigoureux et au tourisme à la pompe.

Ce résultat se dessinait déjà l'année dernière. C'est pourquoi le Parlement a fait passer la taxe sur le CO₂ prélevée sur les combustibles de 12 à 36 francs la tonne de CO₂, à partir du 1er janvier 2010. Il a en outre décidé en été 2009 d'investir une partie de la taxe sur le CO₂ dans un programme d'assainissement énergétique des bâtiments.

Les estimations de l'OFEV publiées en décembre 2009, selon lesquelles la Suisse atteint tout juste l'objectif fixé dans le Protocole de Kyoto, sont toujours actuelles. Elles tenaient déjà compte de l'augmentation des émissions de CO₂ due aux températures froides de 2008. Un nouveau bilan sera calculé vers la fin de l'été 2010, lorsque les données des émissions liées à la combustion d'agents énergétiques fossiles seront disponibles et que les effets de la crise économique sur les émissions pourront être mieux évalués.

Télécharger l' inventaire 2008 en anglais PDF

(5626 kB): www.proclim.ch/News?1219

Source: Communiqués aux médias OFEV

Webseiten mit skeptischen Fragen, Argumenten und Fakten zur Klimaänderung

Argumente der Klimaskeptiker hinterfragt

Der kritische Umgang mit Resultaten aus der Wissenschaft auf der Suche nach offenen Fragen ist die Basis der zukünftigen Forschung. Überraschende neue Resultate erfordern die unabhängige Überprüfung durch andere Forschungsgruppen. Werden Resultate aber mehrfach bestätigt und halten diese allen kritischen Fragen aus der Wissenschaft stand, dann braucht es stichhaltige Argumente, um sie zu falsifizieren.

Die ProClim-Geschäftsstelle hat die Argumente auf den folgenden Webseiten kritisch betrachtet und erachtet diese zum Zeitpunkt dieses News als nützliche Quelle von Hintergrundinformationen. Zu empfehlen ist der Vergleich der Argumentationslinien der verschiedenen Webseiten, da sie aus der Fülle von Resultaten verschiedene Sachverhalte herausgreifen.

Die Webseite 'Skeptical Science' geht kritischen Stimmen zum Thema 'Klimaänderung' nach. Sie stellt die Argumente dar und verweist auf aktuelle

Forschungsergebnisse in diesem Zusammenhang. Einige Faktenblätter zu skeptischen Argumenten sind auch auf Französisch und Deutsch publiziert. Die Webseite 'Sceptical Science' ist auch als iPhone App verfügbar. www.skepticalscience.com

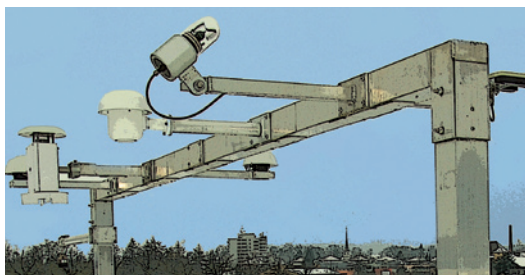
Das **deutsche Umweltbundesamt** publiziert häufig gestellte Fragen zum Thema Klimaänderung unter: www.umweltbundesamt.de/klimaschutz

Ein weiterer guter Link wurde unter dem Titel «**How to Talk to Climate Sceptics**» zusammengestellt unter: scienceblogs.com

Eine meist sehr gehaltvolle Diskussion zwischen Fachexperten und interessierten Laien oder Skeptikern findet sich unter 'Real Climate' siehe www.realclimate.org cr

SwissMetNet – ein Messnetz für die Zukunft

Präzise Klimabeobachtungen, lokale Wetterprognosen und zuverlässige Unwetter- und Hochwasserwarnungen fordern zunehmend feinere Messnetze. Mit dem neuen SwissMetNet bringt MeteoSchweiz daher ihr Bodenmessnetz technologisch auf den neusten Stand. SwissMetNet-Stationen liefern in Echtzeit alle 10 Minuten eine Vielzahl an aktuellen Daten zu Wetter und Klima in der Schweiz.



Bildquelle: MeteoSchweiz

Beim weiteren Ausbau des Bodenmessnetzes plant MeteoSchweiz in Zusammenarbeit mit Partnern, die bestehende Messinfrastruktur an die Bedürfnisse der Partner anzupassen. Erste Pilotprojekte mit dem Kanton Wallis und dem Kanton Bern sind in Arbeit. Im Wallis wird ein feinmaschiges Niederschlagsmessnetz entwickelt, um die Hochwasservorhersage zu verbessern. Im Kanton Bern wurden Stationen des bestehenden

Niederschlagsmessnetzes für den Betrieb des Hochwasserentlastungstollens automatisiert.

Ferner optimiert MeteoSchweiz den Instrumentenpark in Abstimmung mit ihren Kunden. So wird zum Beispiel für die Landwirtschaft die Bodentemperatur und Bodenfeuchte in verschiedenen Tiefen erhoben, für die Strassenwetterdienste messen spezielle Instrumente die Temperatur direkt am und 5 Zentimeter über dem Boden. Es werden zusätzliche Windsensoren für die Sturmwarnungen auf den Seen installiert und für die Monte Rosa Hütte wurde erstmalig eine «Null-Energie-Messstation» entwickelt, die ohne externe Stromversorgung arbeitet.

Quelle: MeteoSchweiz

Evaluation of the procedures to conduct IPCC assessment reports

Independent review by the InterAcademy Council (IAC)

The InterAcademy Council (IAC) will conduct an independent review of the IPCC's processes and the procedures for preparing IPCC reports to further strengthen the quality of the Panel's reports on behalf of the UN and IPCC. The IAC is the umbrella organization for various national academies of science from countries around the world.

In recent months, a very small number of errors have been brought to light in the Fourth Assessment Report (AR4) of the IPCC, a document containing thousands of peer-reviewed and independent scientific studies. However, the bedrock scientific consensus on climate change as described in the Fourth Assessment Report remains unchanged.

Given the gravity of the global threat posed by climate change, it is vitally important to ensure full confidence in the scientific process underpinning the assessments of the IPCC. Governments and the public at large look to the IPCC as the world's most authoritative scientific body for assessing climate risk and informing climate policy.

On 10 March 2010 the United Nations Secretary General, Mr Ban Ki-moon and the Chairman of the Intergovernmental Panel on Climate Change (IPCC) asked the InterAcademy Council (IAC) to conduct an independent review of the IPCC's processes and the procedures for preparing IPCC reports to further strengthen the quality of the Panel's reports. The IAC is the umbrella organization for various national academies of science



United Nations Secretary General, Mr Ban Ki-moon and the Chairman of the IPCC asked the InterAcademy Council (IAC) to conduct an independent review of the IPCC's processes and the procedures for preparing IPCC reports to further strengthen the quality of the Panel's reports. Photo: D.Barry

from countries around the world. The decision to engage the IAC was supported by the executive heads of the IPCC parent organizations, the Executive Director of UNEP and the Secretary General of WMO.

The review will examine every aspect of how the IPCC's reports are prepared, including the use of non-peer reviewed literature and the reflection of diverse viewpoints. The review will also examine institutional aspects, including management functions, as well as the Panel's procedures for communicating its findings with the public.

The review will be led by the IAC Co-Chairs Robbert Dijkgraaf, Ph.D., President of the Royal Netherlands Academy of Arts and Science, and Professor Lu Yongxiang, President of the Chinese Academy of Sciences. The IAC will conduct its work independently according to its procedures for carrying out expert studies. The international experts who serve on IAC studies are not paid for their participation and are pro bono volunteers.

The outcome of the review should be available by the end of August 2010 and will be submitted for consideration by the Panel at its 32nd Session, which will be held in Busan, Republic of Korea on 11–14 October 2010. It is hoped that at the 32nd Session decisions about revisions of the IPCC Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports (Appendix A to the Principles Governing IPCC Work) can be taken, since they are essential for the commencement of the Fifth Assessment Report (AR5) work.

Further information can be found at:

www.interacademycouncil.net/?id=12852

Climate and Development Knowledge Network

A climate and development initiative linking over 60 of the world's poorest countries, to be managed by an alliance led by Pricewaterhouse Coopers LLP, was announced at the Agenda 2010 (DFID, Department for International Development) annual conference on 11 March 2010. The £50 million Climate and Development Knowledge Network, funded over five years by DFID, will link 60 developing countries with leading climate and development experts, allowing them to commission and share knowledge on how best to tackle the effects of climate change.

It will support decision-makers in developing countries in three main ways:

- Generating and providing access to the latest research related to climate change impacts and mitigation strategies across the network, providing applicable evidence for their policy development
- Providing direct support and building capacity in developing countries to develop plans to meet climate change adaptation or mitigation needs
- Helping to develop a global community of practice working on this topic

Source: DFID

Meeting Reports

11th Swiss Global Change Day

Meeting Report

On 20 April 2010 the Swiss global change research community met for the 11th time on the Swiss Global Change Day in Bern. About 330 participants attended the event – a record so far! More than 90 posters were presented giving an overview of the research activities in Switzerland.

In his introduction, [Heinz Gutscher](#) referred to the recent criticism on the IPCC and climate change research in general. Gutscher emphasized the role of science as an honest broker. Science should provide data and scientific facts and 'what-if-scenarios' regarding climate change. However, the setting of targets and measures to reach them should be the task of politicians and the public.



Heinz Gutscher communicated successfully with Tim Carter by video conference. Due to the eruption of the volcano in Iceland three key note speakers were not able to attend the Swiss Global Change Day in person.

Following the introduction, the six key note speakers presented highlights and challenges in the broad field of global environmental change research:

Tim Carter from the Finnish Environment Institute talked about the process of adaptation to climate change in Europe and related research. Although vulnerability assessments have shown that Europe is less vulnerable to climate change than poorer countries, a closer look at the regional scale may reveal vulnerable spots. He emphasized the importance of improving the knowledge base on climate change vulnerability and on advancing the process of adaptation on the policy level.

Harald Bugmann from ETH Zurich dealt with the question whether or not the development of forests in a greenhouse atmosphere was predictable. According to him the nature of the problem lies in the fact that forests do not fit into greenhouses and therefore, laboratory experiments are difficult. The results of small scale studies, on the other hand, cannot necessarily be applied to the larger scale since neglecting large-scale effects may falsify the picture. Very important are long-term observations (>50 years) which can provide the necessary information about long-term influences.

Linda Steg from the University of Groningen in the Netherlands focused on the psychology of energy conservation: How can people be convinced to reduce energy consumption? By means of various study results she showed that fairness appeared to be very relevant to the acceptance of policies aiming at the reduction of energy consumption. She also pointed at the importance of test periods of limited duration which may increase the acceptance of measures by the people concerned.

Brian Moss from the School of Biological Sciences from the UK talked about the close links between climate change and biological processes. By means of various examples he showed the impacts of climate change on the biosphere. An important point is that the different adaptation times of different ecosystem components might lead to a prolongation of ecosystem adaptation. Furthermore, rising concentrations of greenhouse gases as the drivers of climate change indicate that the global biosphere is no longer able to regulate atmospheric composition. He therefore called for a switch towards a sustainable development.

Gabriele Hegerl from the University of Edinburgh elaborated on using the past for predicting future climate change. In particular, she focused on climate sensitivity. By studying the response of temperature to external forcings in the past she concluded that doubling CO₂-concentration is likely to increase global temperature between 2 and 4.5 °C.

Christof Appenzeller from MeteoSwiss talked about the improvements in climate information. He showed the difficulties associated with the use of larger scale models for predicting regional climate change and emphasized the importance of a sound data basis on the regional scale for decision makers. Appenzeller showed first results of new regional climate change scenarios for Switzerland and promised more detailed results in the near future.

Owing to the closure of a large part of the European airspace due to the eruption of the Eyjafjallajökull volcano in Iceland, three of the six key note speakers were not able to attend the meeting in Bern in person. Thanks to the possibility of video conferencing they were all able to give their talk. The experiment forced by nature succeeded and, as a surplus, improved the carbon footprint of the Swiss Global Change Day by 1.74 t CO₂, this means that total emissions were reduced by one third.

In the poster session the best posters in each of the fields WCRP, IGBP, IHDP and DIVERSITAS were selected by a jury and honored with a travel award of SFr. 1000.- each. The following posters were awarded:

WCRP (awards were sponsored by the ACP, the Commission for Atmospheric Chemistry and Physics, SCNAT):

- Jan Cermak: Beijing Olympics: The impact of regional pollution control on AOT
- Nina Köplin: Climate change and hydrological systems in Switzerland – Which catchments are particularly sensitive?

IGBP (awards were sponsored by the Swiss IGBP Committee, SCNAT):

- Niklaus Lehmann: Regional Crop Modeling: How Future Climate may Impact Crop Yields in Switzerland
- Sibylle Stoeckli: Agricultural pest and disease forecasting under future climate conditions

IHDP (awards were sponsored by the SAGW):

- Stefanie Heinzle: Disimproving the European Label's value for consumers? Results of a consumer survey
- Jennifer Inauen: Environmental Hazard: When Drinking Water is Poisonous

DIVERSITAS (award was sponsored by the Swiss Biodiversity Forum, SCNAT):

- Lidewij Keser: Determinants of invasiveness in clonal plant species

ACP Award

The Commission for Atmospheric Chemistry and Physics (ACP) awarded an outstanding contribution to the atmospheric sciences. The award was given to:

- Valentin Lanz, Laboratory of Atmospheric Chemistry, PSI, Villigen

You can download all presentations of invited speakers as well as the awarded posters at:

www.proclim.ch/News?1185

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Vor lauter Bäumen die Berge nicht mehr sehen

Strukturwandel in der Landwirtschaft-Forschung sucht Auswege

Der landwirtschaftliche Strukturwandel macht der Landschaft im Berggebiet zu schaffen. Bäume und Büsche überwachsen nicht mehr genutzte Wiesen und Weiden, während auf zu intensiv bewirtschafteten Flächen die biologische Vielfalt leidet. Nun sucht die Forschung nach Auswegen.



Wo die Beweidung fehlt, erobern Bäume die Alpwiesen zurück. (Foto: ART)

An einer Tagung an der landwirtschaftlichen Forschungsanstalt Agroscope Reckenholz-Tänikon ART in Zürich Reckenholz präsentierten ein Dutzend Forschende aus der Schweiz und Italien mögliche Ansätze, um im Berggebiet eine vielfältige und attraktive Landschaft zu erhalten.

Doch wie sollen die Alpen in Zukunft überhaupt aussehen? Studien von ART und der Universität Zürich zeigen, dass zumindest Touristen ein Mosaik aus Wald und Offenland bevorzugen. Demnach gehört extensiv genutztes, artenreiches Grasland zu einer attraktiven Landschaft im Berggebiet.

Adresse für Rückfragen:

Christian Flury, Koordinator Forschungsprogramme, Forschungsanstalt Agroscope Reckenholz-Tänikon ART,

E-Mail: christian.flury@art.admin.ch

Sie finden die Zusammenfassung aller Vorträge (3726 kB) unter: www.proclim.ch/News?1174

Quelle: AGROSCOPE

Klimakonferenz Kopenhagen aus erster Hand

49. Parlamentariertreffen der Gruppe

«Klimaänderung»

Drei Fragen standen bei diesem Treffen im Vordergrund: Welche Eindrücke bringen die Delegationsschefs von der Klimakonferenz zurück? Welche Folgerungen ziehen sie für die Schweiz? Welche Herausforderungen stellen sich dem Parlament und den weiteren Akteuren?

Der Umweltminister und Delegationschef in Kopenhagen, Bundesrat Moritz Leuenberger, berichtete aus erster Hand über seine Eindrücke vom Klimagipfel in Kopenhagen. Mit jedem Monat vor der Konferenz und an der Klimakonferenz wurden immer grössere Worte gesprochen, denen aber keine verbindlichen Schritte folgten. Die Staatengemeinschaft ist gefangen in einer Warteschlange, wo jeder Staat auf das mutige Voranschreiten des andern wartet. Als grosse Hoffnung warteten alle auf Obama, der diese Erwartungen nicht erfüllen konnte. Auch China zeigte sich wenig kooperativ mit der Erwartung, dass seine Reduktionsanstrengungen eine Anschubfinanzierung erhalten sollten. Die Konferenz war generell zu stark eurozentriert. Die Schweiz wird sich an der nächsten Klimakonferenz in Mexiko zusammen mit Mexiko und Süd-Korea engagieren und eine doppelte Strategie fahren: die der Weltpolitik und die einer wirkungsvollen Inlandpolitik. Die Rolle der Wissenschaft wird von BR Leuenberger als sehr wichtig angesehen. Besonders in den USA, aber zum Teil auch in Europa wurde in den letzten Wochen über die

Kältewelle diskutiert und einige skeptische Stimmen sahen darin bereits den Beweis, dass der Mensch nicht Schuld an der Klimaerwärmung ist und stellten die Resultate des IPCC in Frage.

Der BAFU Direktor Bruno Oberle illustrierte mit einer Grafik (siehe Illustration), dass im Januar zwar in weiten Teilen der USA eine überdurchschnittliche Kälte herrschte, dass diese aber mehr als kompensiert wurde durch ausserordentliche Wärme in den Polarregionen (namentlich auch in Kanada, wo die Wärme bei der Austragung der olympischen Winterspiele einige Schwierigkeiten mit sich brachte) und in äquatorialen Breiten. Dasselbe Bild setzte sich übrigens auch im Februar fort.

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Sind Biotreibstoffe der zweiten Generation eine Zukunftsperspektive für die Schweiz?

50. Parlamentariertreffen der Gruppe

«Klimaänderung»

Garantieren Bio- oder Agrotreibstoffe eine nachhaltige Mobilität? Immer deutlicher zeigt sich: Die positiven Effekte der «ersten Generation» Biotreibstoffe sind geringer als erhofft. Doch wie sieht es aus, wenn nicht nur die Früchte, sondern die ganze Pflanze, zum Beispiel Holz, Stroh oder Pflanzenabfälle, verwertet werden? Erfüllt die «zweite Generation» von Biotreibstoffen die Hoffnungen? Eine neue Studie des Zentrums für Technologiefolgen-Abschätzung TA-SWISS untersucht das Potenzial von Biotreibstoffen der zweiten Generation für die Schweiz. Am Parlamentariertreffen wurden die Erkenntnisse kurz zusammengefasst.

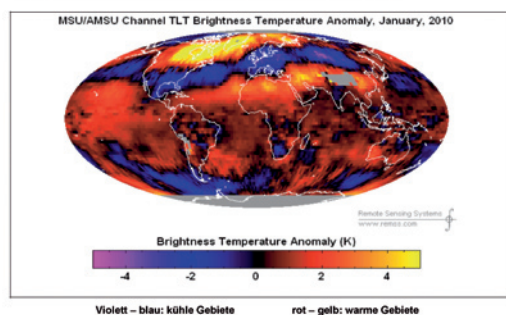
Jürgen Reinhard, Ökobilanz-Experte an der EMPA zeigte auf, dass die Nachhaltigkeit von Biotreibstoffen der 2. Generation hauptsächlich von der Wahl der Biomasse abhängt. Werden Abfallmaterialien wie Gülle, Bioabfall oder Restholz verwendet, wirkt sich dies günstig auf Nachhaltigkeit und Treibhausgasbilanz der ganzen Produktionskette aus. Werden Energiepflanzen wie schnellwachsende Gehölze oder Chinaschilf angebaut, dann werden oft sowohl Ökosysteme und die Biodiversität gefährdet, als auch die Nahrungsmittelproduktion konkurrenziert.

Rainer Zah, Leiter Ökobilanzierung an der EMPA, fasste den Einfluss der Biotreibstoffe für die Schweizer Mobilität zusammen. Er kam zum Schluss, dass Biotreibstoffe der 2. Generation eine nachhaltigere Mobilität als Biotreibstoffe der 1. Generation darstellen.

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Schweiz: **kältester** Januar seit 23 Jahren

Global: **wärmster** Januar seit 32 Jahren



BAFU, ANK, Klima

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BAFU Direktor Bruno Oberle illustrierte, dass im Januar zwar in weiten Teilen der USA eine überdurchschnittliche Kälte herrschte, dass diese aber mehr als kompensiert wurde durch ausserordentliche Wärme in den Polarregionen.

Publications

The Human Perturbation of the Carbon Cycle

Policy Brief No 10 from UNESCO, SCOPE, and UNEP

The carbon cycle is closely linked to the climate system and is influenced by the growing human population and associated demands for resources, especially for fossil-fuel energy and land. The rate of change in atmospheric CO₂ reflects the balance between carbon emissions from human activities and the dynamics of a number of terrestrial and ocean processes that remove or emit CO₂. The long-term evolution of this balance will largely determine the speed and magnitude of human induced climate change and the mitigation requirements to stabilize atmospheric CO₂ concentrations at any given level.

Download of the Policy Brief No 10 at:

www.proclim.ch/News?1187

Source: SCOPE

Based on the latest evidence from 100 world-leading scientists from eight countries, the review focuses on the impact and consequences of rapid warming of the Antarctic Peninsula and the Southern Ocean:

- rapid ice loss in parts of Antarctica
- 10% increase in sea ice around the continent
- impact of climate change on Antarctica's plants and animals
- unprecedented increase in carbon dioxide levels
- ecosystem will change due to human-induced global warming
- ozone hole has shielded most of Antarctica from global warming

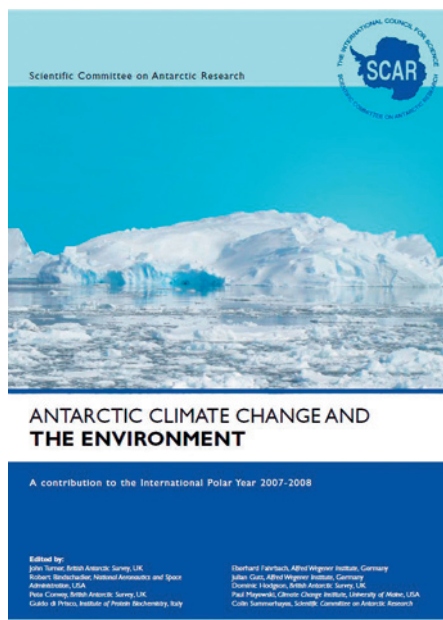
You can download the full report (20990 kB), the 10 key findings and additional information at:

www.proclim.ch/News?1172

Source: SCAR

Antarctic Climate Change and the Environment

Review of the state



The first comprehensive review of the state of Antarctica's climate and its relationship to the global climate system is published by the Scientific Committee on Antarctic Research (SCAR). It presents the latest research, identifies areas for future scientific research and addresses the urgent questions that policy makers have about Antarctic melting, sea-level rise and biodiversity.

Global Sea-Level Change Update

WCRP and WMO jointly issued an update on Global sea level variability and change. The short document presents some recent observations and analyses suggesting that the IPCC AR4 conclusions concerning the rate of future change in the global mean sea level may be on the conservative side.

Download of the document PDF (786 kB) at:

www.proclim.ch/News?1171

100% renewable electricity

A roadmap to 2050 for Europe and North Africa

A new study demonstrates how the opportunity exists to power Europe and North Africa exclusively by renewable electricity by 2050, if this is supported by a single European power market united with a similar market in North Africa. The study has formulated the first policy roadmap towards a 2050 goal of achieving a 100% renewable power sector in Europe and North Africa. Such a transformation of the power sector would address energy security and supply concerns while decarbonising electricity generation and at the same time contribute to a substantial reduction in energy poverty.

The study is published by international energy and climate experts from PricewaterhouseCoopers LLP in collaboration with researchers of the Potsdam

Institute for Climate Impact Research (PIK), the International Institute for Applied Systems Analysis (IIASA) and the European Climate Forum (ECF). The report's Policy road map focuses on:

- The development of Europe wide business cases by 2015 for renewables and grid infrastructure projects at a European level, that include long term renewable (REN) and climate targets
- The build-up of significant renewable energy generation capacity by 2015 to harvest wind and solar potentials
- Phasing out of fossil fuel subsidies by 2020 and the development of a strategic timeline for phasing out financial support for renewable technologies
- Setting up of REN targets for North Africa by 2020
- The creation of a single European power market by 2020
- Strategic decommissioning of fossil fuel plants in the EU and North Africa beginning in 2030, leading to their wholesale replacement by large scale renewable power generation by 2040

Download of the full report PDF (3022 kB):

www.proclim.ch/News?1181

Source: News release PricewaterhouseCoopers

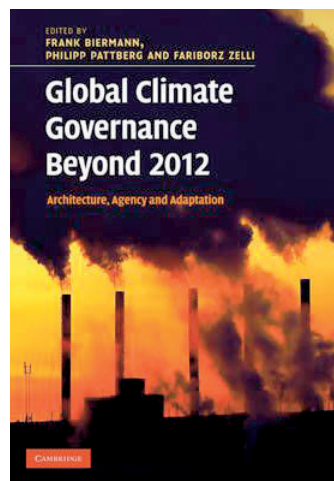
Swiss climate policy at a glance

The Federal Office for the Environment FOEN summarizes Swiss climate policy in this brochure of 20 pages. «Swiss climate policy at a glance» is a condensed version of Switzerland's Fifth National Communication submitted to the United Nations Climate Change Secretariat in 2009. It illustrates the framework of current Swiss climate policy, the effects of measures already taken and provides prospects of planned future instruments. Furthermore, the publication shows where adaptation to climate change is planned and to what extent Switzerland engages in climate protection in developing countries. It is available in four languages (German, French, Italian and English) and addresses schools, politics and the interested public. You can download the document at:

www.proclim.ch/News?1244

Global Climate Governance Beyond 2012

Architecture, Agency and Adaptation



Global Climate Governance Beyond 2012 provides a comprehensive assessment of policy options for future global climate governance, written by a team of 30 leading experts from the European Union and developing countries.

The authors address three questions that will be central to any new climate agreement:

1. Architecture – What is the most effective overall legal and institutional architecture for successful and equitable climate policies?
2. Agency – What role should non-state actors play, public-private partnerships and market mechanisms?
3. Adaptation – How can we deal with the growing challenge of adapting our institutions to a warmer world?

The book is one outcome of the research programme «Adaptation and Mitigation Strategies: Supporting European Climate Policy» (ADAM Project). The ADAM Project brought together more than 100 experts from 27 institutions in disciplines as diverse as economics, engineering, political science and climate modelling.

The book is also one of the first publications that respond to the science plan of the Earth System Governance Project, a new long-term research effort under the auspices of the International Human Dimensions Programme on Global Environmental Change (www.earthsystemgovernance.org). You can find the link to order the book at: www.proclim.ch/News?1229

Source: IHDP

Holz als Rohstoff und Energieträger

Dynamisches Holzmarktmodell und Zukunftsszenarien

Le bois, matière première et source d'énergie

Modèle dynamique pour le marché de bois et scénarios pour le futur

(deutsch) Die Studie «Holz als Rohstoff und Energieträger» skizziert fünf Zukunftsszenarien, welche mögliche Entwicklungen des Schweizer Holzmarkts beschreiben. Gemäss dem so genannten Trendszenario, welches den wahrscheinlichsten Verlauf zeigt, nimmt die vermarktete Waldholzmenge bis 2025 um etwa 30 Prozent zu (Basis: 2005). Dabei weist das Laubenergieholz die grösste Mengensteigerung auf, während beim Nadelenergieholz keine nennenswerte Steigerung zu erwarten ist.

Die von den Bundesämtern für Energie (BFE) und Umwelt (BAFU) finanzierte Studie zeigt, dass das Potenzial des nachwachsenden Holzes in Zukunft

Energien würde der Holzanteil von 21 Prozent auf 35 bis 50 Prozent zunehmen.

Bewegung soll es auch bei den Preisen geben: Beim gesamten Waldholz werden Preissteigerungen von rund 30 Prozent angenommen. Während das Industrieholz nur gering zulegt, zeigen sich beim Energieholz markante Preissteigerungen.

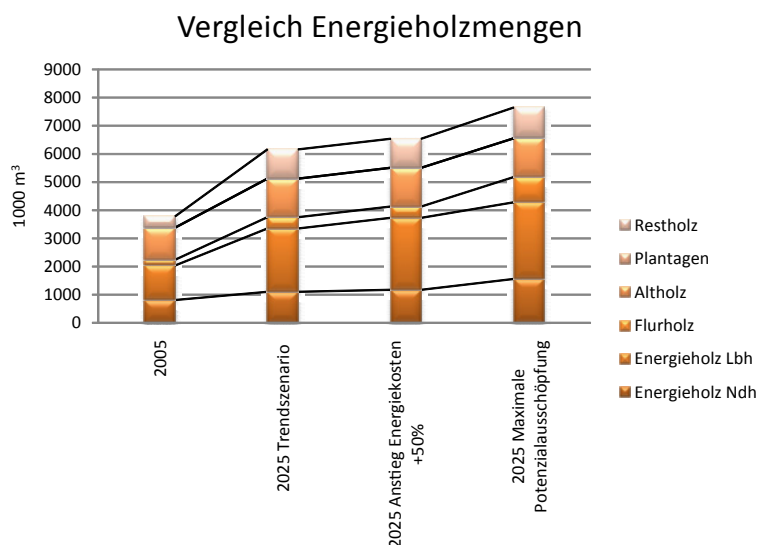
Download der Studie in Deutsch:

www.proclim.ch/News?1217

Quelle: Medienmitteilung BFE

(français) L'étude «Le bois, matière première et source d'énergie» esquisse cinq scénarios d'avenir décrivant l'évolution possible du marché suisse du bois. D'après le scénario «tendance» qui montre l'évolution la plus probable, le volume de bois commercialisé devrait augmenter d'environ 30% jusqu'en 2025 (base: 2005). La hausse la plus forte concerne le bois de feuillus à usage énergétique. L'étude financée conjointement par l'Office fédéral de l'énergie (OFEN) et l'Office fédéral de l'environnement (OFEV) montre

que le potentiel du bois en tant que matière première renouvelable devrait être encore mieux exploité à l'avenir. Cela vaut pour tous les types de bois (bois de forêt, bois des prairies, résidus de bois, bois de récupération). Le scénario «tendance» estime que le volume de bois à usage énergétique en 2025 devrait être de 60% à 70% plus élevé qu'en 2005. La part du bois au niveau de l'énergie dans son ensemble devrait ainsi passer d'environ 3,5% à 7%. La part du bois au niveau des énergies renouvelables devrait augmenter de 21% à 35% voire 50%.



Vergleich der heutigen und der vermuteten künftigen Energieholz mengen in der Schweiz.
Quelle: Bericht BFE

noch besser ausgeschöpft werden wird als heute. Damit sind alle Sortimente gemeint, d.h. Wald-, Flur-, Rest- und Altholz. Im Trendszenario wird geschätzt, dass die Energieholzmenge im Jahr 2025 um 60 bis 70 Prozent höher liegen dürfte als im Vergleichsjahr 2005. Der Anteil des Holzes an der Gesamtenergie würde somit von ca. 3,5 auf 7 Prozent steigen. Unter den erneuerbaren

Les prix devraient aussi évoluer: on escompte des hausses de prix de l'ordre de 30% pour l'ensemble du bois de forêt. Alors que le bois industriel ne progresse que faiblement, le bois à usage énergétique affiche des hausses de prix considérables.

Téléchargement de l'étude en français:

www.proclim.ch/News?1220

Source: Communiqués de presse OFEN

NCCR Climate Update 27

The NCCR Climate is strongly dedicated to promoting the next generation of scientists. The focus in fostering young talents is on the training of PhD students. By taking part in the annual NCCR Climate Summer School, young researchers from outside the program as well engage in exchanges with renowned climate scientists from around the world.

Highlights of NCCR activities

Outstanding Exhibition on Climate Change in Basel



The NCCR Climate is the scientific partner of the biggest ever exhibition on weather and climate in Switzerland. It is called 2 Grad – *Das Wetter, der Mensch und sein Klima* and will take place at the Kunstfreilager Dreispitz in Basel from 21 August 2010 to 20 February 2011. This major show was conceived by the renowned Deutsche Hygienemuseum in Dresden and specially adapted for Switzerland including video interviews with several NCCR researchers on their work.

For details see:
www.2grad.ch

Young Researchers Meeting discusses the role of the media

More than 40 PhDs and PostDocs met at the annual Young Researchers Meeting of the NCCR Climate in June. This year's event evolved around the theme of *Science and Communication*. In his introductory presentation Thomas Stocker gave a personal view on the not always undisturbed relationship between climate science and the media. On the second day participants got to know the way the media work. This media training was conducted by experienced journalists such as Imogene Foulkes, the BBC correspondent for Switzerland.

Summer Schools put the NCCR on the international map

Not least by promoting scientific talent, the NCCR Climate has established itself on an international level. The upcoming 9th International NCCR Climate Summer School which takes place from 29 August–3 September 2010, Grindelwald is on «Adaptation and Mitigation: Responses to Climate Change». The title of the Summer School 2011 is «Climate Change, Extremes, and Ecosystem Services». Registration for the 10th edition of this highly popular educational event will be open in September 2010.

For details see:

www.nccr-climate.unibe.ch/summer_school

Research Highlights (a selection)

High-impact European Heatwaves

Erich Fischer and Christoph Schär (NCCR project *Intensification of the Water Cycle: Scenarios, Processes and Extremes*) show that people living in southern European river basins and along the Mediterranean coasts will probably be hit hardest by future European heatwaves. The frequency of health-endangering heatwaves is projected to increase fastest and strongest in these locations, which include many densely populated urban centres. In their study the authors analysed a set of regional climate projections for Europe to assess the likely occurrence of heatwaves with a high impact on human health, based on known factors such as heatwave duration, minimum night-time temperatures and humidity. The analysis reveals remarkably consistent geographical patterns of predicted heatwave impacts up to the year 2100, suggesting crucial influence from local topography and proximity to the Mediterranean Sea.

(*Nature Geoscience*, 2010)



Management and climate impacts on net CO₂ fluxes of grasslands

Matthias J. Zeeman, Rebecca Hiller, Anna K. Gilgen, Nina Buchmann and Werner Eugster (NCCR project *Drought Effects on Plant Water Uptake and Water Use as well as Soil Carbon Dynamics in Swiss Grassland Systems under Changing Climate*) measured CO₂ fluxes at three grassland sites (400, 1000, and 2000 m elevation) and estimated carbon sequestration for two different but exceptionally warm years (2006 and 2007). Their study shows that grasslands at higher elevations (>1000 m), managed at lower intensities, exhibited a larger net CO₂ uptake compared to intensively managed grasslands at lower elevations (400 m). The seasonal course of carbon stock changes was strongly driven by management intensity, in particular by timing and amount of manure applications. Despite differences in environmental and management conditions with elevation, the two grassland at higher elevations sites were carbon sinks during 2006 and 2007. (*Agricultural and Forest Meteorology*, 2010)

Total aerosol effect: radiative forcing or radiative flux perturbation?

Ulrike Lohmann et al. (NCCR project *Global Climate Processes: Role of Cirrus Clouds for Present and Future Climate*) state that interaction of aerosols with clouds and radiation introduces feedbacks which can affect the rate of precipitation formation. They argue that fast feedbacks should be included in the assessments of aerosol radiative forcings because they act quickly compared with the time scale of global warming. The authors show that for different forcing agents (aerosols and greenhouse gases) the radiative forcings as traditionally defined agree rather well with estimates from a method, referred to as radiative flux perturbations (RFP), that takes these fast feedbacks and interactions into account. Based on their results, the authors recommend RFP as a valid option to compare different forcing agents, and to compare the effects of particular forcing agents in different models. (*Atmospheric Chemistry and Physics*, 2010)

Modelling European winter wind storm losses in current and future climate

Cornelia Schwierz, Martin Wild, Christoph Schär et al. (NCCR project *Intensification of the Water Cycle: Scenarios, Processes and Extremes*) assess the impact

of climate change on future storm losses. Their study employs, for the first time, an approach, using output from high-resolution regional climate model scenarios for the European sector to drive an operational insurance loss model (Swiss Re). The climate models considered agree regarding an increase in the intensity of extreme storms in a band across central Europe. The resulting changes on European-wide losses over the 110-year period are positive for all layers and all model runs considered and amount to 44% (annual expected loss), 23% (10 years loss), 50% (30 years loss), and 104% (100 years loss). The changes result from increases in both severity and frequency of wind gusts. Considerable geographical variability of the expected losses exists, with Denmark and Germany experiencing the largest loss increases. All countries considered except for Ireland experience some loss increases. (*Climatic Change*, 2010)

Climate Change in Poland in the Past Centuries

Jürg Luterbacher, Elena Xoplaki, Heinz Wanner et al. (NCCR project *Paleoclimate Variability and Extreme Events*) in a book chapter, investigate the winter temperature and precipitation evolution over Poland over the last half millennium in comparison with the European average in reconstructions/instrumental data and in the ECHO-G and HadCM3 models. Results indicate very good agreement between European land and Polish winter temperatures in reconstructions and in the models. The strong agreement between Polish winter temperature and European mean conditions is of major interest since some of the longest European proxy information stem from Poland and therefore can improve European temperature reconstructions significantly. The results of the study suggest that the models are able to reproduce the links in instrumental and proxy data and also that the large- to regional-scale relationships are robust during the last centuries. The stability of the large- to regional-scale links is relevant for downscaling approaches and also for palaeoclimate reconstructions. (*Springer*, 2010)

For a complete overview on the recent NCCR Climate publications please consult:

www.nccr-climate.unibe.ch/research_articles

Contact:

Kaspar Meuli, meuli@oeschger.unibe.ch

Proposals on Carbon-related Border Adjustments: Prospects for WTO Compliance

Background information on NCCR publications



Container ships have become a symbol of globalized trade

The NCCR Climate has fostered a large field of climate related research from its very beginning. In its third phase it has included the field of international law by teaming up with the NCCR Trade Regulations in a project called *Climate Change and International Trade from an Economic and Legal Perspective*. The paper presented here explores the issue of WTO compatibility of proposals on border carbon adjustments, recently tabled in the EU and the US, with the focus on two most popular ideas – an inclusion of imports into national emissions trading schemes and allowance rebates for carbon-intensive and trade-exposed industries. Delay in reaching an agreement on a post-Kyoto international climate regime increases the likelihood that industrialized countries will start acting on climate change unilaterally, curbing not only domestic industrial emissions but also introducing restrictions on emissions associated with the production of imported products abroad. Import restrictions on carbon can be imposed as part of border carbon adjustment schemes aimed at levelling national carbon tax and regulatory systems among countries and eliminating distortions caused by different emissions costs across the globe. Apart from creating a level playing field for domestic producers and preventing leakage of emissions to countries with no emissions reduction commitments, it is expected that import restrictions on carbon will stimulate exporting countries to join the global emission reduction actions.

Yet, the idea of carbon-related border adjustments is not impeccable from a perspective of WTO rules

due, in the first place, to the indefinite status of measures imposed on processes and production methods (PPMs). Using the WTO legal framework on border adjustments, the paper first reveals possible legal flaws of the proposals which in the future might lead to WTO disputes. Then, the concept of border adjustment, as perceived by the WTO, is introduced. The study gives some examples from existing practice and outlines the WTO legal framework for border adjustment.

Further on, the paper addresses the issue of carbon-related border adjustments highlighting their peculiarities and discussing their pros and cons on the basis of existing legislative proposals. And finally, a test on WTO compliance of the proposed carbon-related border adjustment measures is presented, which leads to the following conclusions: The main weaknesses of an emission allowance requirement for importers lie in the peculiarities of an emission allowance requirement as a quasi-tax linked to non-incorporated PPMs, in the criteria chosen for import coverage or exclusions and in the implementation details. Proposals on allowance rebates contradict environmental objectives and risk getting in conflict with WTO rules on subsidies. Therefore, if developed countries decide to use border measures in support of their unilateral emissions reduction actions in the absence of a global climate deal, the foregoing flaws of the current proposals on carbon-related border adjustments should be corrected to prevent climate-related WTO disputes in the future. For those legal flaws which cannot be corrected a sound justification under the GATT exceptions clauses should be considered.

By Kateryna Holzer, NCCR Climate, World Trade Institute, kateryna.holzer@wti.org

The study referred to in this article:

Kateryna Holzer, «Proposals on Carbon-related Border Adjustments: Prospects for WTO Compliance», *Carbon and Climate Law Review*, 2010, issue 1, pp. 51-64, www.lexxion.de/cclr-12010

CCES News 1

Climate and environmental change are important topics dealt with in the Competence Center Environment and Sustainability of the ETH Domain (CCES, www.cces.ethz.ch). 'CCES News' is a new publication channel informing on scientific events, education and outreach activities, and on research highlights of CCES projects and partners.

Scientific Events

Environmental Decisions: Risks and Uncertainties

International Conference on Monte Verità, Ascona, April 25 to 29, 2010

This conference aimed at stimulating an in-depth cooperation of scholars from the fields of risk perception, risk assessment, risk management and risk governance. The overall aim was to improve decisions and the decision making processes related to environmental risks such as climate change, resource depletion, water problems etc. Among the key results of this conference was the insight that according to the type of environmental problem, the type of actors involved, the type of risk communication and the relevant time frame changing values, economic incentives or regulatory approaches would lead to convincing solutions for environmental problems under risk and uncertainty. The more collaboration between different disciplines and between different risk fields we have, the better the chances are to develop technically, economically and ethically sound solutions for solving environmental problems.

Renate Schubert and Bettina Kahlert, Institute for Environmental Decisions, ETH Zurich
Contact: kahlert@econ.gess.ethz.ch

The conference was organized as part of the CLIMPOL project by the Institute for Environmental Decisions (ETH Zurich) and Social Psychology Group (University of Zurich):
www.ied.ethz.ch/CEDRU

Triggering of Rapid Mass Movements in Steep Terrains: Mechanisms and Risks

International Conference on Monte Verità, Ascona, April 11 to 15, 2010

The goal of the conference was to assemble experts working on different types of mass movements and hillslope processes to identify unifying concepts and underlying processes for these natural hazards in mountainous regions. The workshop benefited from uniform high quality presentations including many presented by young



Joint excursion of conference participants and practitioners to rockfall – debris flow area Preonzo. Photo: M. Stähli, WSL.

scientists, and we were particularly impressed by the dialogue to identify analogies among different types of mass release events. An additional value of the conference was the organization of a 'practitioner's day' with experts on natural hazards in Switzerland joining the workshop to discuss findings of ongoing research.

Dani Or, Peter Lehmann, Soil and Terrestrial Environmental Physics, ETH Zurich; Manfred Stähli, Mountain Hydrology and Torrents, Swiss Federal Research Institute, WSL
Contact: manfred.staehli@wsl.ch

The conference was organized by the TRAMM project:
www.cces.ethz.ch/projects/hazri/tramm/conference

Outreach

Climate policy after the Copenhagen Conference: American and European Views

A Panel discussion with Congressman Jim Sensenbrenner and ETH climate experts

Decision-makers around the globe struggle with reaching a consensus on global climate policy, so as well in Copenhagen at the Climate Conference. At a panel discussion on March 30, 2010, U.S. Congressman Jim Sensenbrenner and ETH climate experts discussed about climate policy and

exchanged American and European views on this topic. The Republican Sensenbrenner believes in anthropogenic climate change but doubts that a multinational agreement is possible, least of all within the U.N. framework. Lucas Bretschger, Professor for Resource Economics, Andreas Fischlin, Professor for Terrestrial Systems Ecology and Ulrike Lohmann, Professor for Atmospheric Physics, challenged Congressmen Sensenbrenner's position especially with regard to the responsibility of the industrialized countries towards developing countries and the following generations.

Renate Schubert and Catharina Bening, Institute of Environmental Decisions, ETH Zurich
Contact: bening@econ.gess.ethz.ch
The event was organized as part of the CLIMPOL project:
www.cces.ethz.ch/projects/clench/CLIMPOL

Education

PhD Colloquium on Climate Change

Everyone knows that the problem of climate change is a problem which has to be tackled by the natural sciences as well as the social sciences. To foster the dialogue between the two and therefore plenty of different disciplines, the ClimPol PhD Colloquium on Climate Change which takes place every two weeks is open to everyone interested in the topic of climate change. So far, we listened to and discussed more than eighteen presentations in the last three semesters, ranging from the issue of the equilibrium climate sensitivity to the design of the building envelope of a zero-emission building or effects of climate-relevant policy on innovation in the power sector.

Catharina Bening, Institute of Environmental Decisions, ETH Zurich
Contact: bening@econ.gess.ethz.ch
This activity is organized as part of the CLIMPOL project.
Semester program available at:
www.cces.ethz.ch/projects/clench/CLIMPOL/PhD_Colloquium

Research

Evidence of genetic adaptation to different environments in trout

In view of the environmental changes predicted for the next decades, it is important to understand how organisms are genetically adapted to their current habitat to assess how they may respond to novel conditions.

To address this question, we carried out detailed molecular analyses on trouts sampled in diverse

environments from the Swiss midlands to alpine streams in three major European drainage systems (Rhine, Rhone, Po). We found that trout populations in the different drainages have retained some genetic distinctness although there was also clear evidence of gene exchange across drainage boundaries as a result of human management. Some genetic variants were found to be more common in alpine streams than in warmer rivers at lower elevations and vice versa, suggesting that trout may be genetically adapted to particular environments. Our findings show that some adaptive genetic diversity has persisted in Swiss trout populations and should be conserved as an important component of biodiversity.

Irene Keller, Jolanda Schuler, Andreas Taverna and Ole Seehausen
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The study makes part of the BioChange project: www.cces.ethz.ch/projects/clench/BioChange/schedule/taskforce3

Avoided Deforestation: Prospects for Mitigating Climate Change

Annual CO₂ emissions from deforestation in tropical and sub-tropical countries account for



What contribution could tropical forests make to climate change mitigation? Photo: D. Rustagi, ETH Zurich

about 20 percent of global greenhouse gas emissions. Reducing Emissions from Deforestation and Degradation (REDD) has thus been identified by the international community as an important component of post-2012 climate mitigation policy. Yet many open questions remain on how reducing deforestation could be credibly incorporated into a climate regime. As part of the CLIMPOL project, the volume Avoided Deforestation:

Prospects for Mitigating Climate Change, edited by C. Palmer and S. Engel (www.routledge-economics.com/books/Avoided-Deforestation-isbn9780415447126), investigates possible gains from including REDD in a post-Kyoto agreement, reviews the main challenges, and discusses how these challenges could be tackled. While there is a strong case for including REDD in a global mitigation strategy and progress has been made in addressing previous concerns, current pilot activities have a crucial role in demonstrating feasibility on the ground.

Stefanie Engel, Institute of Environmental Decisions,
ETH Zurich

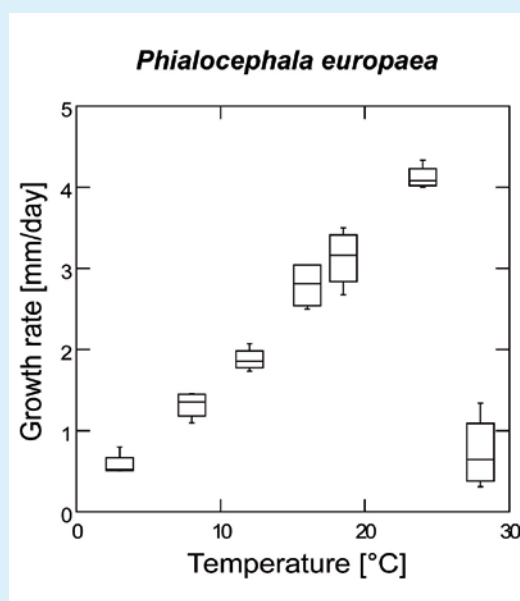
Contact: engel@env.ethz.ch

The book is the outcome of research which is part of the CLIMPOL project: www.cces.ethz.ch/projects/clench/CLIMPOL

Does climate change increase competition among fungal root symbionts?

Temperature is one of the key factors influencing plants and fungi. Sustained change of temperature, as it is expected to occur under a climate change scenario, will alter species distributions, increase the frequency of species replacements and will destabilize antagonistic and mutualistic interactions among species (Pautasso et al 2010). Symbioses between plants and fungal endophytes or mycorrhizal fungi will also be affected. The roots of many coniferous and deciduous tree species, shrubs and herbaceous plants form symbioses with fungal endophytes in addition to classical mycorrhizae. Fungi of the *Phialocephala fortinii* s.l.-*Acephala applanata* species complex (PAC) are ubiquitous fungal endophytes in plant roots in temperate and boreal ecosystems of the Northern hemisphere and are supposed to be key components of these ecosystems (Grünig et al 2008b; Sieber 2002). PAC are morphologically uniform but genetically highly diverse and are composed of several reproductively isolated cryptic species (Grünig et al 2008a; Grünig & Sieber 2005). PAC species occur sympatrically, often adjacent to each other or intermingled in the same root segment. In forest ecosystems, communities of PAC form persistent complex networks. PAC can behave as commensals, mutualists or opportunistic pathogens depending on genetic traits and environment.

Temperature requirements of PAC are not well known. Therefore, growth rates of some of the most abundant PAC species were studied along a temperature gradient ranging from 4 to 36 °C. Growth increased almost linearly from 4 to 18 °C



Box plots showing the variability of growth rates [mmd^{-1}] of *Phialocephala europaea* in the temperature range from 4 °C to 28 °C

and optimum temperature for growth laid between 18 and 24 °C for all species (Figure). No growth occurred at ≥ 32 °C but all strains except two strains of *A. applanata* survived at this temperature, whereas 36 °C was lethal for all strains. PAC species differed most significantly in growth rates at 24 and 28 °C. Growth rates were lowest for *A. applanata* over the whole range of temperatures, but growth reduction compared to the other species was most pronounced between 16 and 28 °C. Thus, other PAC species could outcompete *A. applanata* under global warming. The consequences of species replacements and species extinctions are largely unknown, but both could destabilize the networks among PAC and between PAC and hosts. For example, if PAC species which provide biological control against root pathogens (C. Tellenbach, personal communication) are replaced or become extinct frequency of disease epidemics is expected to increase. Competition among PAC species and PAC-host interactions are currently being studied under a global warming scenario in vitro to keep interferences of uncontrolled factors as low as possible and to examine temperature per se.

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The study makes part of the GEDIHAP project:

www.cces.ethz.ch/projects/feh/gedihap/Layer2/WP1b

References available from the authors

Conferences in Switzerland

24 June 2010

Rewarding Sustainable Soil and Land Management in the Face of Climate Change

Potentials for Engagement and Challenges for the Swiss Agency for Development and Cooperation and its Partner Organisations
Location: AKI, Alpeneggstrasse 5, Bern
Info: http://events.scnat.ch/proclim/index_en.php?id=15514

25 June 2010

Nationale Tagung Gebirgsforschung

Schweizer Beteiligungen an internationaler Berggebiets-Forschung: Benefits für Politik und Verwaltung
Location: Hauptgebäude Universität Bern, Raum 120, 1. OG West
Info: tagung-benefits-berggebietsforschung.akademien-schweiz.ch/d/index.php

11–15 July 2010

20th IUHPE World Conference on Health Promotion

Location: International Conference Center Geneva
Info: www.iuhpeconference.net/pages/overview/index.php

27–30 July 2010

Functional significance of mountain biodiversity

International GMBa-DIVERSITAS conference
Location: Village Hall, Chandolin, VS
Info: www.gmba.unibas.ch/2010conference/2010conference.htm

25–26 August 2010

Kongress «Graubünden forscht – Young Scientists in Contest»

Location: GKB Auditorium, Engadinstrasse 25, Chur
Info: www.academiaractica.ch/symposien/seiten/2010/Call_for_Papers_Graubunden_forscht_Aug_2010.pdf
Registration: 15 August 2010

2–3 September 2010

Forschen und Bauen im Kontext von Energie und Umwelt

16. Status-Seminar
Location: ETH Zürich
Info: www.brenet.ch/statusseminar.php

2 September 2010

4. Nationales Klimaforum

VERSCHOBEN AUF 20.10.2010
Location: Thun
Info: www.climateforum.ch

9 September 2010

4. Energie-Gipfel

Location: Trafo, Brown Boveri Platz 1, Baden
Info: www.energie-gipfel.ch/cms/

13–17 September 2010

10th EMS Annual Meeting & 8th European Conference on Applied Climatology (ECAC)

Focus: High resolution climatology – towards climate change services
Location: main building of ETH Zurich
Info: meetings.copernicus.org/ems2010

7 October 2010

Annual Conference of the KFPE

Making Research Results Relevant for Urban Development; in collaboration with the Centre for African Studies Basel
Location: Basel
Info: www.kfpe.ch/pre-announcement.php

17–20 October 2010

Eco-Hydrology and Environmental Sustainability

EPFL-Latsis Symposium 2010
Location: Salle Polydome, Lausanne-Ecublens
Info: latsis2010.epfl.ch/page37467.html
Registration: 15 September 2010

20 October 2010

4. Nationales Klimaforum

«Create Impact»

Kongresshotel Seepark, Thun
Info: www.climateforum.ch

30 October 2010

5. Schweizerischer energyday10

Schweizweit
Info: www.energyday.ch

8–9 November 2010

«Zukunft Biodiversität Schweiz – Forschungs- und Umsetzungsbedarf nach 2010»

«La biodiversité en Suisse après 2010 : quels défis attendent la recherche et sa mise en pratique?»

SWIFCOB 10 und Jahreskongress SCNAT // SWIFCOB 10 et congrès annuel de la SCNAT

Location: Villars-sur-Glâne, FR

Info: www.biodiversity.ch/d/events/swifcob/index.php

19 November 2010

Integrating biodiversity in LCA

Swiss Discussion Forum on Life Cycle Assessment (LCA) 2010

Location: Lausanne, Hotel Alpha-Palmiers

Info: www.biodiversity.ch/e/education/events_database/index.php?id=15411

19–20 November 2010

Hot and Cold: Extreme Climates in Space and Time

8th Swiss Geoscience Meeting, Fribourg 2010

Location: Fribourg

Info: www.geoscience-meeting.scnatweb.ch/sgm2010/query_main.html?pages/symposia_session

Registration: 15 October 2010

20 November 2010

Symposium: Phenology and Seasonality

Findet im Rahmen des 8th Swiss Geoscience Meetings statt

Location: Fribourg

Info: www.geoscience-meeting.scnatweb.ch/sgm2010/query_main.html?pages/symposia_session

Registration: 15 October 2010

20 November 2010

Symposium: Decision oriented modelling of the geosphere

Findet im Rahmen des 8th Swiss Geoscience Meetings statt

Location: Fribourg

Info: www.geoscience-meeting.scnatweb.ch/sgm2010/query_main.html?pages/symposia_session

Registration: 15 October 2010

24 November 2010

Ökobilanzen in der Landwirtschaft, ein Wegweiser zur Nachhaltigkeit

Abschlusstagung Projekt ZA-ÖB

Location: Reckenholz

Info: www.agroscope.admin.ch/veranstaltungen/00143/index.html?lang=de&direction=asc&orderby=

IGBP, IHDP, WCRP, DIVERSITAS related Conferences

11–16 July 2010

Atmospheric chemistry challenging the future

12th Symposium of the International Commission on Atmospheric Chemistry and Global Pollution (CACGP) / 11th Science Conference of the International Global Atmosphere Chemistry (IGAC) Project

Location: Dalhousie University, Halifax, USA

Info: www.icacgp-igac-2010.ca/index.html

13–15 September 2010

The 2nd PAGES Global Monsoon Symposium

Location: Shanghai

Info: <http://events.scnat.ch/proclim/index.php?id=15512>

Registration: 31 July 2010

13–17 September 2010

Storm Surges Congress: Risk and Management of current and future Storm Surges

Location: Hamburg

Info: meetings.copernicus.org/ssc2010

8–9 October 2010

Berlin Conference on the Human Dimensions of Global Environmental Change

Social dimensions of environmental change and governance

Location: Berlin

Info: www.berlinconference.org/2010

15–17 October 2010

1st International Conference on Urbanization and Global Environmental Change

Opportunities and Challenges for Sustainability in an Urbanizing World

Location: Arizona, USA

Info: www.ugec2010.org

24–28 October 2011

WCRP Open Science Conference

Climate Research in Service to Society

Location: Denver, Colorado, USA

Info: www.wcrp-climate.org/conference2011/vision.html

27–30 October 2010

II International Symposium «Reconstructing Climate Variations in South America and the Antarctic Peninsula over the last 2000 years»

Location: Centro de Estudios Científicos (CECS),

Location: Valdivia, Chile

Info: www.cecs.cl/pages2010

Registration: 13 September 2010

Continuing Education

Formation continue en développement durable CAS

Certificat d'études avancées et modules de formation continue

Haute Ecole d'Ingénierie et de Gestion du Canton de Vaud

Info: www.management-durable.ch

Management durable

Gestion de l'environnement et entreprise

Location: HEG Genève

Info: sustainablemanagement.ch

Nachhaltige Entwicklung

Besuch von Einzelmodulen oder als ganzer Studiengang (Certificate of Advanced Studies CAS)

Info: www.ikaoe.unibe.ch/weiterbildung

Weiterbildung Wasser und Gewässer

PEAK Programm 2010

Info: www.eawag.ch/lehre/peak/kurse/programm_2010.pdf

CAS Integrated Water Resource Management

Location: Biel

Info: www.ahb.bfh.ch/ahb/en/Weiterbildung/cas/CAS_IWRM_Detail.htm

10–11 September 2010

Média training

Location: Maison de la communication, Lausanne

Info: www.snf.ch/D/service/forschende-kommunikation/Seiten/Medientraining.aspx

11 November 2010

Nachhaltigkeitsbeurteilung in der Raumplanung

Location: Bern

Info: www.sanu.ch/html/angebot/ge-de.cfm

8–9 October 2010

Medientraining für Forschende

Location: MAZ – Die Schweizer

Journalistenschule, Murbacherstrasse 3, Luzern

Info: www.snf.ch/D/service/forschende-kommunikation/Seiten/Medientraining.aspx

14 October 2010

Holzbau um den CO₂-Ausstoss zu senken

Location: Fribourg

Info: www.fowala.ch/kursliste.asp?jahr=2010

4 November 2010

Förderung der Biodiversität im Wald

Formation continue 2010 Forêt et paysage

Location: Fribourg

Info: www.fowala.ch/kursliste.asp?jahr=2010

Exhibitions

2 Grad – Das Wetter, der Mensch und sein Klima

Die grosse Ausstellung zu Azorenhoch, Regenmachern und Gletscherschmelze



Sonnenschein wärmt unser Herz, Regen sorgt für schlechte Laune, Föhn verursacht Kopfschmerzen. Das Wetter beschäftigt uns alle. Wir reden darüber und passen unsere Kleidung den Wetterprognosen an: Schirm, Schal oder Shorts? Doch rund um die Diskussionen zum Klimawandel verunsichern Wetterkapriolen die Menschen: Ist der für morgen angekündigte Sturm bereits ein Zeichen für den fortschreitenden Klimawandel?

Die Ausstellung «2 Grad» zeigt, wie eng wir mit Wetter und Klima verbunden sind. Sie wirft einen vielschichtigen und überraschenden Blick auf die beiden faszinierenden Themen. Wie kommt das Wetter zustande? Wie funktioniert das Klima? Zu sehen sind auf insgesamt 1500 Quadratmetern über 250 Exponate aus aller Welt, darunter Filme und interaktive Elemente wie eine Laserprojektion, mit der die Besucher zu «Wettermachern» werden.

www.2grad.ch

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Stiftung Mercator Schweiz
Gartenstrasse 33, Postfach 2148
8022 Zürich, Telefon: 044 206 55 80

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