



Une taxe CO₂ pour s'assurer contre les dommages climatiques: un moyen pour sauver le principe du pollueur-payeur dans les politiques climatiques?

Editorial, deutsche Übersetzung anschliessend



Prof. Peter Knoepfel, IDHEAP Lausanne

En ce début d'année 2013, peu nombreux sont les observateurs qui croient sérieusement à la réalisation de l'objectif d'une réduction massive des émissions de gaz à effet de serre (GES) dans le but de ne pas dépasser un réchauffement climatique de deux degrés. La stratégie de la «mitigation» semble avoir échoué car elle rencontre une opposition ferme de la part des gouvernements des pays qui émettent les quantités les plus importantes de ces gaz. Et même en Suisse où, selon le récent rapport de l'organe consultatif sur les changements climatiques (OCC), il serait techniquement et économiquement possible d'arriver

à un objectif d'émission zéro jusqu'à la fin de ce siècle (et une réduction de 80 % jusqu'en 2050), ce but semble avoir largement échoué politiquement. Il n'est donc nullement étonnant que, dans les milieux politiques et économiques, le mot d'ordre soit devenu celui de l'adaptation, peut-être aussi le mot de l'année politiques climatiques de 2013. Le changement climatique «hors norme» étant considéré comme inévitable, l'humanité doit investir, selon cette nouvelle formule, dans de nouvelles politiques de protection renforcée

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contre les effets néfastes (ouragans, inondations, crues, sécheresses, etc.) du changement climatique dont les précurseurs se sont déjà faits sentir au début de ce siècle et même en Suisse (recul des glaciers, manque de neige).

Avec l'arrivée, dans les années huitante du siècle dernier, des politiques de l'environnement classiques, on croyait avoir abandonné ce principe de l'adaptation car, de droite à gauche, on acceptait le principe du pollueur-payeur moyennant l'imposition réglementaire et obligatoire de réduction des émissions (gazeuses, liquides et solides) de la part des émetteurs (industrie, artisanat, foyers domestiques, agriculture et, avec un certain retard, véhicules motorisés). Fini le temps où on envoyait dans des sanatoriums les personnes exposées à la pollution, où on leur proposait des mesures de protection personnelles et passives (fermeture des fenêtres, consommation de vitamines ou de pilules, etc.). Finie aussi l'époque de la dilution des polluants par la construction de hautes cheminées, de l'ajout d'eau pure aux eaux polluées ou de la recherche de grands récipients aquatiques pour diluer les effets de produits toxiques par la réduction de leur concentration. On s'en souvient: les politiques de l'environnement de l'après-guerre furent clairement conçues selon le modèle de l'adaptation qui revient à la mode. Le mot d'ordre était d'accepter les inévitables émissions et les immissions en résultant, car elles étaient des signes du progrès économique tant souhaité. Aujourd'hui, le monde politique et économique s'accorde sans contradiction sur le ridicule de ces politiques de lutte contre les symptômes qui évitent de s'attaquer véritablement aux causes.

Ce qui est frappant, c'est que la principale stratégie du protocole de Kyoto basée sur la mitigation et conçue selon le principe du pollueur-payeur conformément aux politiques de l'environnement classiques, stratégie qui a été entre-temps reconnue jusque dans les législations les plus

arriérées du monde, perd du terrain. Certes, personne n'ose ouvertement proclamer l'abandon de la mitigation mais, de fait, dans les discours officiels, l'adaptation récemment rebaptisée résilience prend clairement le dessus, tandis que l'appel à la réduction des émissions de GES risque d'être considéré comme un vœu pieu.

Sauvons donc ce principe du pollueur-payeur, au moins partiellement, en affectant les recettes de la taxe CO₂ qui ne sont pas dédiées à l'assainissement des bâtiments à la couverture des dommages causés, aujourd'hui déjà et dans un avenir probablement plus proche que certain politiciens le pensent, par le changement climatique dans notre pays, au lieu de les investir à l'étranger ou de les distribuer à la population. Ceci n'exclut pas d'en réserver une part au même but d'assurance à l'étranger.

L'affectation de la taxe CO₂ au financement de nouveaux projets « moins polluants » à l'étranger ne nous semble pas une stratégie prometteuse. Elle est même fort douteuse, car la notion de l'« additionality », utilisée pour juger si ces projets contribuent véritablement à une réduction des émissions planétaires est problématique et pourrait contribuer à la construction d'ouvrages qui auraient de toute façon été réalisés ou qui, pire encore, produisent aussi du CO₂, juste « un peu moins » que le projet initial.

La solution du fonds que l'on propose correspond à un système d'assurance contre les dommages climatiques dont les cotisations seraient en partie payées par les pollueurs; les assurés seraient les bénéficiaires de la politique climatique, c'est à dire les groupes de personnes souffrant de ce problème qui ne se manifeste pas seulement dans le Sud, mais aussi chez nous. La proposition aurait l'avantage d'être compréhensible pour les citoyens et citoyennes et contribuerait grandement à l'acceptation de la politique climatique qui en a certainement besoin.

Die CO₂-Abgabe als Versicherung gegen Klimaschäden Ein Mittel zur Rettung des Verursacherprinzips in der Klimapolitik?

Prof. Peter Knoepfel, IDHEAP Lausanne

Heute, zu Beginn des Jahres 2013, glauben wohl nur noch wenige Beobachter ernsthaft daran, dass das Ziel, die Treibhausgasemissionen massiv zu reduzieren und die globale Erwärmung auf zwei Grad Celsius zu begrenzen, umgesetzt wird. Die Mitigationsstrategie scheint gescheitert, denn sie trifft auf starken Widerstand der Regierungen derjenigen Länder, die am meisten Treibhausgase ausstossen. Sogar in der Schweiz scheint dieses Vorhaben politisch weitgehend gescheitert, obwohl es hier nach dem jüngsten Bericht des Beratenden Organs für Fragen der Klimaänderung (OcCC) technisch und wirtschaftlich möglich wäre, die CO₂-Emissionen bis 2050 um 80 % und bis zum Ende des 21. Jahrhunderts gegen Null zu reduzieren. Es überrascht deshalb nicht, dass das neue Motto in Politik und Wirtschaft heute «Adaptation» heisst, vielleicht das klimapolitische Wort des Jahres 2013. Nach diesem Ansatz muss die Menschheit, da die «aussergewöhnliche» Klimaveränderung unvermeidlich scheint, mehr in den Schutz vor deren Folgen (Orkane, Hochwasser, Flut- und Dürrekatastrophen usw.) investieren. Folgen, deren Vorboten sich bereits Anfang des Jahrhunderts abzeichneten, auch in der Schweiz (Gletscherschwund, Schneemangel).

Mit dem Aufkommen der klassischen Umweltpolitik in den 1980er-Jahren glaubte man, dieses Anpassungsprinzip hinter sich gelassen zu haben. Das Verursacherprinzip fand von links bis rechts breite politische Akzeptanz. Dadurch wurde es möglich, die Verursacher (Industrie, Gewerbe, Haushalte, Landwirtschaft und mit einiger Verzögerung auch der motorisierte Verkehr) gesetzlich zur Reduktion von (gasförmigen, flüssigen oder festen) Emissionen zu verpflichten. Vorbei die Zeiten, als man sich darauf beschränkte, Menschen, die unter der Umweltverschmutzung litten, in Sanatorien zu schicken oder ihnen persönliche und passive Schutzmassnahmen (Fenster schliessen, Vitamine oder Medikamente einnehmen usw.) zu empfehlen. Vorbei auch die Zeiten, als man Schadstoffe verdünnte, indem man hohe Kamine baute, verunreinigtem Wasser sauberes zugab oder grosse Gewässer als Vorfluter verwendete, um die Konzentration von Giftstoffen zu senken und so ihre Wirkung zu reduzieren. Das Adaptationsmodell, das heute eine Renaissance erlebt, spiegelt die Umweltpolitik der Nachkriegszeit wider. Damals galt das Prinzip, dass die unvermeidbaren Emissionen und die daraus resultierenden Immissionen ein Zeichen des ersehnten wirtschaft-

lichen Fortschritts und deshalb zu akzeptieren seien. Heute sind sich Politik und Wirtschaft einig, dass diese Art der Symptombekämpfung lächerlich ist und uns nur daran hindert, die Ursachen anzugehen.

Doch erstaunlicherweise verliert die Hauptstrategie des Kyoto-Protokolls, die im Sinne der klassischen Umweltpolitik auf der Emissionsminderung und dem Verursacherprinzip basiert, an Boden, obwohl sie sich inzwischen selbst in den Gesetzen der weniger fortschrittlichen Regionen der Welt niedergeschlagen hat. Zwar wagt es niemand, die Abwendung vom Mitigationsprinzip offen auszusprechen; im offiziellen Diskurs gewinnt die Adaptation oder, wie sie seit Neuestem genannt wird, die Resilienz aber klar die Oberhand, während der Ruf nach der Reduktion von Treibhausgasemissionen zunehmend als frommer Wunsch angesehen wird.

Das Verursacherprinzip kann zumindest teilweise gerettet werden, wenn wir die Einnahmen aus der CO₂-Abgabe, welche nicht der Gebäudesanierung zukommen, zur Deckung der Klimaschäden einsetzen, die heute und in Zukunft – vermutlich früher als von gewissen Politikern erwartet – in der Schweiz entstehen. Das wäre zielführender, als die Gelder an die Bevölkerung zu verteilen oder im Ausland zu investieren. Es wäre immer noch denkbar, einen Teil davon für die Schadensdeckung im Ausland zu reservieren.

Die Verwendung der CO₂-Abgabe für die Finanzierung von neuen «saubereren» Projekten im Ausland scheint uns hingegen keine vielversprechende Strategie. Sie ist oft sogar fragwürdig, denn das Kriterium der «Additionality», das gewährleistet soll, dass die unterstützten Projekte wirklich eine zusätzliche globale Emissionsminderungen bringen, ist problematisch. Es könnten dadurch Anlagen unterstützt werden, die sowieso gebaut würden oder die – im schlechteren Fall – immer noch CO₂ produzieren, nur «ein bisschen weniger» als das ursprüngliche Projekt.

Die vorgeschlagene Fondslösung ist eine Art Versicherung gegen Klimaschäden, deren Beiträge zum Teil von den Verursachern bezahlt werden. Die «Versicherten» sind die Begünstigten der Klimapolitik, das heisst die Personengruppen, die unter den Folgen des Klimawandels leiden – nicht nur im globalen Süden, sondern auch bei uns. Diese Lösung wäre für die Bevölkerung nachvollziehbar und würde zur dringend benötigten Akzeptanz der Klimapolitik beitragen.

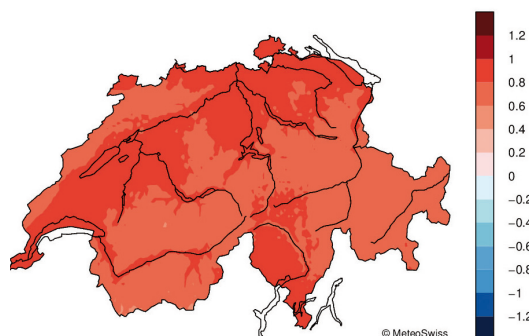
News

Einführung Klimanormwerte 1981–2010 an der MeteoSchweiz

MeteoSchweiz verwendet seit Anfang Januar 2013 die neue Klimanormwertperiode 1981–2010 für ihre Auswertungen, Berichte und Produkte. Die Klimanormwerte, bzw. die langjährigen Mittelwerte werden dazu gebraucht, die Wettersituation einer Region mit dem aktuellen Klima zu vergleichen. Abweichungen bzw. Verhältnisse zur Normperiode beziehen sich daher seit Januar 2013 auf die Periode 1981–2010 anstatt wie bisher auf die Periode 1961–1990.

Der Impuls zur Anpassung der Normperiode kommt von der Weltmeteorologischen Organisation (WMO). Die internationale Koordination ist wichtig, um die klimatologischen Aussagen der verschiedenen Wetterdienste über die Landesgrenzen hinweg miteinander vergleichen zu können.

Die Verwendung der Normperiode 1981–2010 hat auch Konsequenzen für die Kommunikation der



Die Periode 1981–2010 war in der Schweiz im Jahresmittel um 0.5 bis 1 Grad wärmer als die Periode 1961–1990. Ursache dieses generellen Unterschieds ist die globale Klimaerwärmung. Die Niederungen haben sich beidseits der Alpen etwas mehr erwärmt als die höher gelegenen Regionen. Die Frühlings- und Sommermonate haben stärker zur mittleren Erwärmung beigetragen als die Herbst- und Wintermonate. ©MeteoSwiss

Klimaänderung. Durch den Einsatz der neuen Temperatur-Normwerte wird ab sofort wieder vermehrt von Jahren die Rede sein, die bezüglich Temperatur als «normal» oder «kühler als normal» eingestuft werden. Dies einfach deshalb, weil die neue Vergleichsbasis wärmer ist und den Temperaturverhältnissen entspricht, die heute erwartet werden müssen. An der Tatsache, dass sich das globale und lokale Klima in den letzten Jahrzehnten signifikant erwärmt hat, ändert diese neue Einstufung allerdings nichts. Ein eher durchschnittliches Jahr bezüglich der Periode 1981–2010 kann sehr wohl eines der wärmsten im Vergleich mit der gesamten, bald 150jährigen Messreihe seit 1864 sein.

Quelle: MeteoSchweiz

Introduction des nouvelles normes 1981–2010 chez MétéoSuisse

MétéoSuisse utilise depuis janvier 2013 les nouvelles normes climatiques 1981–2010 pour ses déclarations et ses produits. Ces normes ou valeurs moyennes sur plusieurs années sont comparées à la situation météorologique actuelle d'une région. Les déviations ou les proportions par rapport à la norme se rapportent en conséquence depuis janvier 2013 à la période 1981–2010 au lieu de la période 1961–1990 comme c'était le cas précédemment.

La volonté d'adapter la période de référence pour les normes provient de l'Organisation météorologique mondiale (OMM). La coordination internationale est importante pour permettre de comparer les déclarations climatologiques des divers services météorologiques au-delà des frontières nationales. L'utilisation des normes 1981–2010 a également des conséquences pour la communication concernant le changement climatique. En raison de la mise en place des nouvelles normes de température, il y a aura dès à présent davantage d'années avec des températures conformes aux normales ou plus froides que la normale qu'avec les anciennes normes. C'est tout simplement parce que la nouvelle base de comparaison est plus chaude et correspond à des conditions de température qui doivent actuellement être attendues. Cela ne change pas le fait que le climat mondial et local s'est significativement réchauffé au cours des dernières décennies. Une année assez moyenne par rapport à la période 1981–2010 (mais chaude par rapport à la période standard 1961–1990) pourrait bien être l'une des plus chaudes des 150 dernières années en comparaison avec la série complète de mesures depuis 1864.

Source: MétéoSuisse

Die Schweizer Klimaänderung sichtbarer machen – Klimaindikatoren neu online verfügbar

Der Temperaturanstieg der vergangenen Jahrzehnte ist eines der bekanntesten und spürbarsten Signale der Klimaänderung in der Schweiz. Es gibt aber ein breites Spektrum an Messgrössen, die helfen die Klimaänderung noch anschaulicher einzuordnen. Neu bietet MeteoSchweiz für viele nationale Wetterstationen eine Reihe von Klimaindikatoren an, die von Klimainteressierten und Fachleuten über ein Auswahlmene selber gewählt, grafisch dargestellt und bei Bedarf als

PDF-Datei heruntergeladen werden können. Den Link zu den Klimaindikatoren finden Sie unter:

www.proclim.ch/News?2697

Quelle: MeteoSchweiz

Rendre le changement climatique en Suisse plus visible – Nouveau : indicateurs climatiques en ligne

L'élévation des températures constatées ces dernières décennies est l'un des signes les plus connus et les plus palpables du changement climatique en Suisse. Mais il existe une large palette de paramètres mesurables permettant de classer les changements de manière encore plus claire. Désormais, pour de nombreuses stations météorologiques suisses, MétéoSuisse propose une liste d'indicateurs que les personnes intéressées et les professionnels peuvent sélectionner, représenter graphiquement et au besoin télécharger en format PDF au moyen d'un menu de sélection. Vous trouvez le lien «Indicateurs du climat» sur:

www.proclim.ch/News?2698

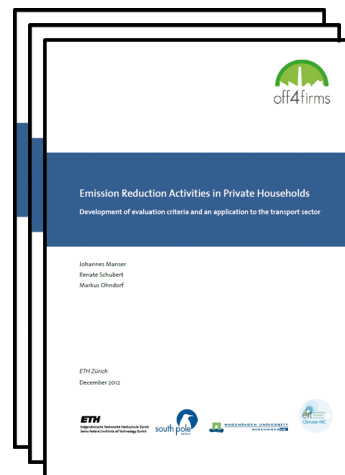
Source: MétéoSuisse

Off4Firms – Employer-led CO₂ and Energy Reductions by Employees

First project results available

Households are among the world's largest energy users and CO₂ emitters. An effective way of triggering change in households' energy related behaviour is through household members' employers – a great, yet unexploited lever. Off4Firms uses this lever to create a «win-win» situation for both households and firms: both will profit from employees saving energy and reducing CO₂ in their households. A Tool Kit for the implementation of successful measures aimed at reductions in energy use and CO₂ emission in employees' private lives will be established. Off4Firms will tailor programmes to company-specific contexts and needs.

During the first year of operation, the Off4Firms project has yielded its first preliminary results: The political context in which Off4Firms is situated and its competitor landscape have been analyzed and evaluated. In addition, the project team has developed a methodology to evaluate household's CO₂ and energy reduction activities and finished the first case study evaluating several emission reduction activities in the transport sector. A further report reviews the literature



from psychology and behavioural economics with regard to changing behavior in the environmental domain. All above mentioned studies are publicly available and can be downloaded from the project website www.off4firms.com. In addition, a PhD colloquium covering a Climate Change related topic and addressed at PhD students in the fields of natural science, economics, and politics is envisioned to take place in the beginning of 2014.

The Off4Firms project team comprises both academic and business partners. In addition to ETH Zurich, Wageningen University (The Netherlands) and South Pole Carbon are core project partners. Swiss Re and ewz are business project partners. Off4Firms officially started in April 2012 and runs until March 2014. It is supported financially by Climate-KIC.

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Einblick in die Forschungsprojekte des NFP 61

Videoclips zur nachhaltigen Wassernutzung

Die 16 Projektvideoclips geben der interessierten Öffentlichkeit einen kurzweiligen Einblick in alle Forschungsprojekte des NFP 61. Die Projektleitenden erzählen anhand von konkreten Beispielen, weshalb diese Forschung wichtig ist, wie das Forschungsteam vorgeht sowie welche Thesen und Visionen sie bezüglich einer nachhaltigen Wassernutzung haben. Die Videoclips geben Einblick in die Probleme und Lösungsansätze des NFP 61 und können beim SNF bestellt werden. Den Link zu den Videoclips finden Sie unter:

www.proclim.ch/News?2704

Aperçu des projets de recherche du PNR 61

Vidéoclips en matière de gestion durable de l'eau

Les 16 clips vidéo suivants présentent au public un aperçu intéressant des projets de recherche du PNR 61. Les responsables de projets expliquent à l'aide d'exemples concrets les raisons de l'importance de leur recherche, le travail de leur équipe et font part de leur vision et de leurs thèses en matière de gestion durable de l'eau. Ces clips donnent un aperçu des problèmes et des solutions que propose le PNR 61 ; ils peuvent être commandés auprès du Fonds national suisse (FNS). Télécharger les vidéoclips des projets sur :

www.proclim.ch/News?2705



Der Bundesrat beschliesst Massnahmen für die zukünftige Bewirtschaftung der Wasserressourcen.

Le Conseil fédéral adopte des dispositions générales sur la gestion de l'eau.

Lokale Wasserknappheit

Die Schweiz wird auch weiterhin über genügend Wasser verfügen. Allerdings ist in Zukunft vermehrt damit zu rechnen, dass wie im Sommer 2003 das Wasser lokal oder regional knapp wird. Der Bundesrat hat deshalb allgemeine Massnahmen für die Bewirtschaftung der Wasserressourcen beschlossen, die es erlauben sollen, Knappheitssituationen kurz- wie langfristig zu bewältigen.

Die Klimaszenarien des Projekts CH2011 und die Resultate des Projekts «Klimaänderung und Hydrologie in der Schweiz» machen deutlich, dass die Schweiz auch in ferner Zukunft über genügend Wasser verfügen wird. Wasserknappheit ist ein Phänomen, das regional sehr differenziert auftritt. Aus Sicht des Bundesrates ist es weder möglich noch sinnvoll, gesamtschweizerische Regelungen über den Zugang zu Wasser zu erlassen. Die Kantone und Gemeinden sind am besten mit den örtlichen Verhältnissen vertraut und daher am ehesten in der Lage, Prioritäten zu setzen. Entsprechend dem Subsidiaritätsprinzip verfügen sie auch über die dafür erforderlichen Kompetenzen.

Quelle: Medienmitteilung UVEK

Pénuries locales d'eau

La Suisse bénéficiera toujours de suffisamment d'eau. Cependant des pénuries d'eau locales ou régionales, comme il en est survenu en été 2003, pourraient devenir plus fréquentes. Le Conseil fédéral a adopté le 14 novembre 2012 des dispositions générales sur la gestion de l'eau qui permettent de faire face à ces pénuries dans le court et le long terme.

Les scénarios climatiques du projet CH2011 et les résultats du projet «Changement climatique et hydrologie en Suisse» montrent que la Suisse disposera de suffisamment d'eau, même à long terme. Les pénuries d'eau sont un phénomène qui touche les régions de manière très différenciée. Pour le Conseil fédéral, il ne serait ni possible ni utile d'établir une réglementation sur l'accès à l'eau pour l'ensemble de la Suisse. Les cantons et les communes qui connaissent très bien les conditions locales sont les mieux placées pour établir les priorités. Ils en ont d'ailleurs les compétences, selon le principe de subsidiarité.

Source: Communiqué de presse DETEC

Best practices in community-based environmental conservation and sustainable livelihoods

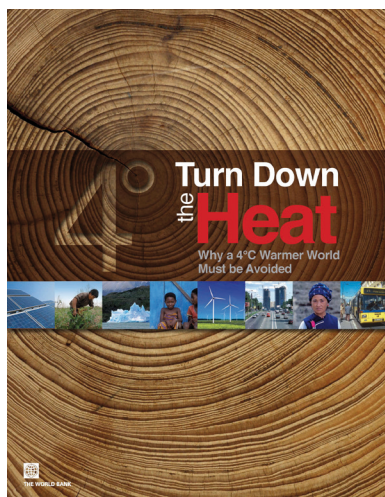
Case Study Database of the Equator Initiative

To mark its 10-year anniversary, the Equator Initiative has launched its Case Study Database, a growing repository of case material that details the work of Equator Prize winners – vetted and peer-reviewed best practices in community-based environmental conservation and sustainable livelihoods. These cases are intended to inspire the policy dialogue needed to take local success to scale, to improve the global knowledge base on local environment and development solutions, and to serve as models for replication. Visit the database to access 127 case studies from 49 countries, searchable by 8 thematic areas and 27 fields of work. You can find the corresponding link at: www.proclim.ch/News?2702

Publications

Why a four degree Celsius warmer world must be avoided

Report conducted on behalf of the World Bank



The report is based on new analyses of likely impacts and risks that would be associated with a 4 °C warming within this century. It outlines a range of risks, focusing on developing countries and especially the poor. A 4 °C world would be one of unprecedented heat waves, severe drought, and major floods in many regions, with serious impacts on ecosystems and associated services. But with action, a 4 °C world can be avoided and it may still be possible to hold warming below 2 °C.

No nation will be immune to the impacts of climate change. However, the distribution of impacts is likely to be inherently unequal and tilted against many of the world's poorest regions, which have the least economic, institutional, scientific, and technical capacity to cope and adapt. For example:

- Eventhough absolute warming will be largest in high latitudes, the warming that will occur in the tropics is larger when compared to the historical range of temperature and extremes to which human and natural ecosystems have adapted and coped. The projected emergence of unprecedented high-temperature extremes in the tropics will consequently lead to significantly larger impacts on agriculture and ecosystems.
- Sea-level rise is likely to be 15 to 20 % larger in the tropics than the global mean.
- Increases in tropical cyclone intensity are likely to be felt disproportionately in low-latitude regions.

- Increasing aridity and drought are likely to increase substantially in many developing country regions located in tropical and sub-tropical areas.

You can download the full report at:

www.proclim.ch/News?2662

World Energy Outlook 2012

The global energy map is changing in dramatic fashion and will recast expectations about the role of different countries, regions and fuels in the global energy system over the coming decades. The United States becomes a net exporter of natural gas by 2020 and is almost self-sufficient in energy, in net terms, by 2035. North America emerges as a net oil exporter.

Fossil fuels will remain dominant in the global energy mix, supported by subsidies that, in 2011, jumped by almost 30 % to \$523 billion. Renewables become the world's second-largest source of power generation by 2015 and close in on coal as the primary source by 2035. Water is essential to the production of energy, and the energy sector already accounts for 15 % of the world's total water use. The analysis shows that in the absence of a concerted policy push, two-thirds of the economically viable potential to improve energy efficiency will remain unrealised through to 2035. An Efficient World Scenario shows that energy efficiency improvements can be achieved simply by adopting measures that are justified in economic terms. Greater efforts on energy efficiency would cut the growth in global energy demand by half. Global oil demand would peak before 2020 and be almost 13 millions of barrels per day lower by 2035, a reduction equal to the current production of Russia and Norway combined.

Further details can be found on the International Energy Agency Website at:

www.worldenergyoutlook.org

Launch of the Global Energy Assessment

Pathways to a sustainable Energy system

GEA is the first ever fully integrated energy assessment that analyzes energy challenges, opportunities and strategies, for developing, industrialized and emerging economies. The report was coordinated by the International Institute for Applied Systems Analysis IIASA and led by more than 500 of the world's leading energy experts from

research, business, industry and politics from 70 countries.

A major finding of the GEA is that some energy options provide multiple benefits. This is particularly true of energy efficiency, renewables, and the co-production of synthetic transportation fuels, cooking fuels, and electricity with CCS, which offer advantages in terms of supporting all of the goals related to economic growth, jobs, energy security, local and regional environmental benefits, health, and climate change mitigation. The GEA explores sixty alternative energy transformation pathways and finds that forty-one of these pathways simultaneously satisfy the following goals:

- Universal access to affordable modern energy carriers and end-use conversion (especially electricity and clean cooking) by 2030;
- Enhanced energy security at regional and national levels;
- Climate change mitigation (contain global mean temperature increase to less than 2 °C above pre-industrial levels, with a probability of at least 50 %); and
- Improved human and environmental health by controlling household and ambient air pollution, ocean acidification, and deforestation.

The GEA considers all aspects of energy, inclusive of sectors that intersect with the energy system (such as health, water, transport, building, land-use, and forestry) and offers direction for all sectors and regions on how to achieve necessary reforms. Further information can be found at:

www.proclim.ch/News?2695

Source: International Institute for Applied Systems Analysis (IIASA)

Late lessons from early warnings: science, precaution, innovation

EEA Report No 1/2013

The 2013 Late lessons from early warnings report is the second of its type produced by the European Environment Agency (EEA) in collaboration with a broad range of external authors and peer reviewers. The case studies across both volumes of Late lessons from early warnings cover a diverse range of chemical and technological innovations, and highlight a number of systemic problems. The «Late Lessons Project» illustrates how damaging and costly the misuse or neglect of the precautionary principle can be, using case studies and a

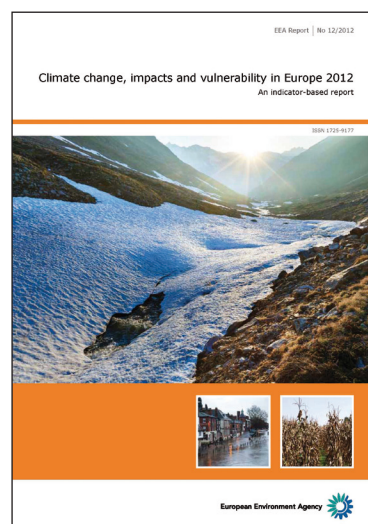
synthesis of the lessons to be learned and applied to maximising innovations whilst minimising harms.

The summary, the full report and ebooks can be downloaded at: www.eea.europa.eu/publications/late-lessons-2

Source: European Environment Agency

Climate change, impacts and vulnerability in Europe 2012

EEA Report No 12/2012



This European Environment Agency (EEA) report presents information on past and projected climate change and related impacts in Europe, based on a range of indicators. The report also assesses the vulnerability of society, human health and ecosystems in Europe and identifies those regions in Europe most at risk from climate change. Furthermore, the report discusses the principle sources of uncertainty for the indicators and notes how monitoring and scenario development can improve our understanding of climate change, its impacts and related vulnerabilities.

The report concludes that climate change is affecting all regions in Europe, causing a wide range of impacts on society and the environment. If European societies do not adapt, damage costs are expected to continue to rise. Some regions will be less able to adapt to climate change than others, in part due to economic disparities across Europe, the report says. The effects of climate change could deepen these inequalities. Download of the report at: www.proclim.ch/News?2669

Source: European Environment Agency (EEA)

Water resources in Europe in the context of vulnerability

EEA Report No 11/2012

This report describes how the natural cycle of water availability is continuously coming under threat from a variety of different pressures like droughts and water scarcity, pollution, and flood risks which all increase the vulnerability of the freshwater ecosystems and societies. Land use, water abstraction and climate change are human-induced changes that alter the natural flow regimes that exist in water bodies.

Water plays a central role in the functioning of the biosphere and in supporting all life. Freshwater ecosystems are particularly important, providing a unique and diverse array of services upon which human society depends. These services include «provisioning» services, such as the provision of water for agriculture and hydropower. They also include «regulating» services, where water helps regulate our environment, such as by flood control or the breaking down of pollutants. If our freshwater ecosystems are to continue to provide these services it is essential that there is water in sufficient quantity and of sufficient quality. This report primarily focuses on the problem of water quantity in Europe.

You can download the report at:

www.proclim.ch/News?2681

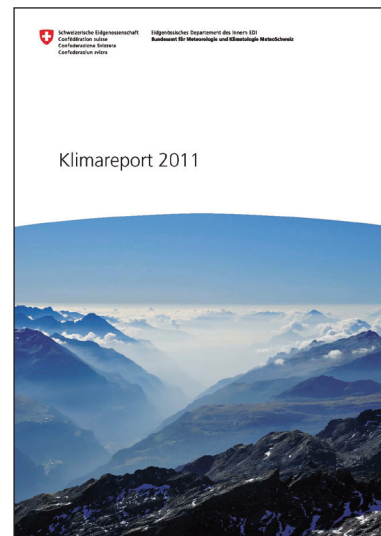
Source: European Environment Agency (EEA)

Klimareport 2011

Der Klimareport ist ein neues Produkt der MeteoSchweiz, erscheint jährlich und behandelt als Fokusthema den aktuellen Stand der Klimaänderung in der Schweiz. Der Klimareport liefert damit einen wichtigen Beitrag zur Klimadiskussion in der Schweiz. Neben der langjährigen Klimaentwicklung diskutiert der Klimabericht auch den meteorologischen/klimatologischen Verlauf im Berichtsjahr.

In der langfristigen Klimaentwicklung erbrachte das extrem warme Jahr 2011 einen weiteren Beitrag zur Temperaturzunahme in der Schweiz, sowohl was das Jahr als auch was die vier Jahreszeiten betrifft.

Die langjährige Niederschlagsentwicklung zeigt auf der Alpennordseite für das Jahr und den Winter einen Trend zu höheren Niederschlagssummen. Die übrigen Jahreszeiten verzeichnen keine langfristige Änderung in den



Niederschlagssummen. Auf der Alpensüdseite ist sowohl bei den Jahressummen als auch bei jahreszeitlichen Summen keine langfristige Niederschlagsänderung festzustellen.

Den Link zum Klimareport 2011 finden Sie unter:

www.proclim.ch/News?2686

Rapport climatologique 2011

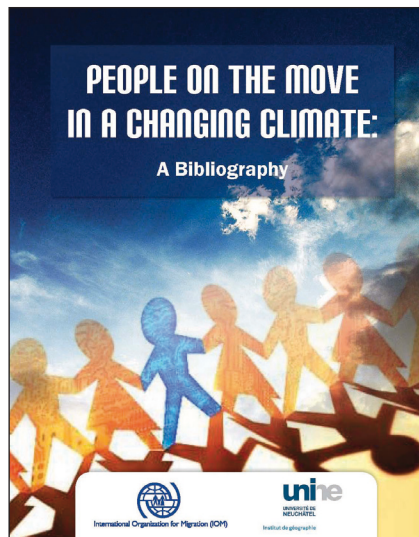
Le rapport climatologique, un nouveau produit de MétéoSuisse, paraît chaque année. Son thème central est le stade actuel du changement climatique en Suisse. Le rapport climatologique de MétéoSuisse fournit donc une contribution importante au débat sur le changement climatique. Outre l'évolution du climat à long terme, l'évolution météorologique et climatologique de l'année de parution est également discutée.

En termes d'évolution à long terme du climat, l'année 2011, extrêmement chaude, a contribué une nouvelle fois à l'élévation des températures en Suisse, tant en ce qui concerne l'ensemble de l'année que les quatre saisons.

Pour l'année complète et l'hiver, l'évolution à long terme des précipitations montre une tendance à la hausse des sommes de précipitations. Les autres saisons ne présentent aucune modification à long terme des sommes de précipitations. Sur le versant sud des Alpes, aucune modification à long terme des précipitations n'est observée tant au niveau des sommes annuelles que des sommes saisonnières.

Vous trouvez le lien pour le rapport climatologique 2011 sur: www.proclim.ch/News?2687

People on the Move in a Changing Climate *A Bibliography*



This bibliography is the first comprehensive collection of resources which specifically concentrates on migration, the environment and climate change. Books, journals, scientific papers, case studies and reports are all included, which are useful for those who want an introduction to this topic and also for those requiring more detailed resources in specific areas of the migration-environment nexus.

The CLIMIG database was compiled at the Institute of Geography of the University of Neuchâtel (Switzerland). This publication is a first step, which will soon be followed by a book entitled «People on the Move in a Changing Climate» (Springer and International Organization for Migration IOM). Further information can be found on the new website of the University of Neuchâtel which contains publications, projects, bibliographic database, maps and news:
www2.unine.ch/geographie/migration_climate_change_1

Building a sustainable energy future: risks and opportunities

Swiss Re report investigates the impact of sustainable energy sources on climate change

The report examines six climate change influenced scenarios for the global energy mix along with the risks, focusing on renewable energy and the role insurance can play in enabling innovation in the sector.

In the best-case scenario, a successful mix of political, social and technological factors would mean that low-carbon technologies could supply 92 % of the global power supply by 2050. This would cap the global temperature increase at 3 °C. However, reaching this goal would involve global policy consensus, relatively stable economic conditions and strong public support for the replacement of fossil fuel technologies with low-carbon energy sources.

The report emphasises the need for a realistic approach to the energy issue. In doing so, it tackles some of the difficulties that need to be overcome in diversifying the energy system. For example, as renewable energies become more prevalent in the energy mix, demand for fossil fuel technologies will sink. This suggests that increased renewable energy demand would make fossil fuels more attractive from a relative price perspective.

The changing energy landscape will provide new growth opportunities for insurers. According to the scenarios presented in the report, the Asia-Pacific region will drive growth in the energy sector and is expected to account for 50 % of the total annual global energy financing by 2030.

As investment and infrastructure develop, the need for insurance protection will also increase. Under one scenario, the total annual losses across the energy sector could reach up to USD 42 billion by 2030. Insurers can provide financial protection against these losses as well as risk management expertise to help avoid losses in the first place.

You can download the Swiss Re report at:

http://media.swissre.com/documents/Scenarios_for_Climate_Change.pdf

Swiss Climate Research at a Glance

Decline in land use and water yield in the Swiss Alps

Owing to its position in the Alps, Switzerland receives twice the amount of precipitation than the European average, providing large amounts of water to the forelands. This water yield is commonly attributed to hydrological and climatic influences only. In the VALUrsen project*, we investigated how changes in land cover as a result of altered land use affect the water balance in a high elevation region, the Reuss catchment (Ursern valley, 191 km²). The land cover changes in the Ursern valley are representative for the changes across the Alpine arc. Without continued use, centuries-old pastures and hayfields become encroached by trees and shrubs and short, alpine heath is converted to tall grass. In Ursern, the expansion of green alder (*Alnus viridis*) is the most striking change in the landscape (56% increase between 1965 and 2004). Naturally confined to wet gullies and avalanche tracks, the shrub now dominates slopes that were previously covered by species-rich grassland. Through its symbiosis with N₂-fixing bacteria, the shrub enriches the soil and runoff with nitrogen (nitrate leaching). Green alder shrubs and tall, ungrazed grass transpire between 10–20% more than grazed or mown grassland.

Due to topographically complex conditions and interactions with snowmelt dynamics, the additional amount of water evaporated could not be delineated from the gauging station of the river Reuss in Andermatt. However, the decreasing summer discharge during the past 40 years corresponds to the expected increase in evapotranspiration (Figure). An extrapolation of the volume of evaporated water for the entire Ursern valley suggests that hydropower plants will lose between 6–11 gigawatt hours of energy, corresponding to 0.6 to 1 million Swiss francs per year, as a result of this land cover transformation.

*VALUrsen – The ecological and socio-economic consequences of land transformation in alpine regions: an interdisciplinary assessment and valuation of current changes in the Ursern Valley, key region in the Swiss central Alps.

Researchers sorted by discipline:

Christian Körner (PI of the project), Erika Hiltbrunner, Thijs van den Bergh (Plant Biology, Univ. Basel), Christine Alewell, Matthias Müller (Soil Science, Univ. Basel), Abdallah Alaoui, Rolf Weingartner, (Hydrology, Univ. Bern), Frank Krysiak, Markus Ludwig (Environmental Economics, Univ. Basel); associated: Martin Schaffner, Rahel Wunderli (History, Univ. Basel).

VALUrsen Final Report (2012), available as a PDF document from the SNF or erika.hiltbrunner@unibas.ch

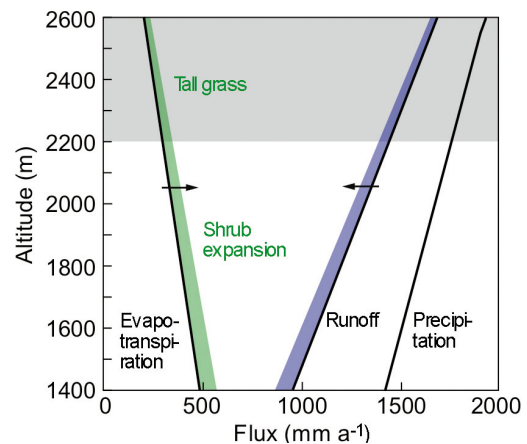


Figure: The altitudinal variation in precipitation, evapotranspiration and the sum of drainage processes (runoff). Evapotranspiration increases when pastures and meadows become encroached by green alder shrubs and short, alpine grassland is converted to tall grass, reducing runoff.

New research: A 2 °C warmer world is not safe for ecosystem services in the European Alps

A 2 °C increase in average global temperature is often presented as an «acceptable» amount of warming, and remains a stated target for reductions of greenhouse gas emissions. However, new research suggests that in the European Alps such a scenario would result in detrimental impacts on some essential ecosystem services. Researchers from the Forest Ecology group at ETH Zürich, using new regional climate projections of a 2 °C warmer world from C2SM, examined the impacts on mountain forests and a range of ecosystem services (ES) that those forests provide. The sensitivity of mountain forest ES to a 2 °C increase will vary in space and depending on the specific ES. Forests projected to be most sensitive are those at low and intermediate elevations in regions that are currently warm-dry, e.g. in the Valais. In these areas small climatic shifts can induce drought-related negative impacts on ES such as rockfall protection. In contrast, ES at higher elevations, and in regions that are currently cool-wet, are projected to be comparatively resistant to a 2 °C warmer world, with small but beneficial impacts on most ES, particularly carbon storage. Thus, even a moderate 2 °C increase of global average temperature cannot be seen as a universally «safe» boundary for maintaining mountain forest ES.

The full article is published in *Global Change Biology* (DOI forthcoming)
Che Elkin, Forest Ecology ETH Zürich,
Contact: che.elkin@env.ethz.ch

Meeting reports

10. Nationaler GCOS Rundtisch

Am 31. Januar 2013 fand der 10. Nationale Rundtisch zum Global Climate Observing System (GCOS) statt. Dieser wird alljährlich vom Swiss GCOS Office, angesiedelt bei MeteoSchweiz, organisiert. Anlässlich des zehnten Jubiläums versammelten sich rund 60 Vertreter verschiedener Partnerinstitutionen aus Wissenschaft und Verwaltung. In einer Reihe von Keynote Vorträgen wurden vergangene und zukünftige Aktivitäten des Nationalen Klima-Beobachtungsprogramms (GCOS Schweiz) diskutiert und Neuigkeiten ausgetauscht.

In seiner Begrüssung betonte Christian Plüss, Direktor MeteoSchweiz, die Wichtigkeit von langfristigen Messungen für die Diskussionen rund um die Klimaänderung und wies auf die Bedeutung einer nationalen Koordination der Klimabeobachtung hin. In der Folge ging Kathy Riklin, Nationalrätin und Präsidentin von OcCC, auf die Relevanz systematischer Klimabeobachtung für eine verantwortungsvolle Klimapolitik und für die internationalen Klimaverhandlungen ein. Von Christoph Ritz, Geschäftsleiter ProClim, wurde des Weiteren die Bedeutung langfristiger Beobachtungen für die aktuellen Klimaszenarien hervorgehoben. Carolin Richter, Direktorin des GCOS Sekretariats bei der

WMO, blickte auf die Errungenschaften der letzten 20 Jahre von GCOS zurück und zeigte auf, dass GCOS Schweiz einen wichtigen Teil des globalen Programms darstellt. In Zukunft sei insbesondere die Rolle von GCOS als Pfeiler des Global Framework for Climate Services (GFCS) von grosser Wichtigkeit. Zudem soll die Klimabeobachtung im Rahmen von GCOS weiter ausgebaut werden. Die darauf folgenden Präsentationen gingen auf Entwicklungen und wichtige Messreihen der verschiedenen GCOS-Bereiche ein. Thematisiert wurden dabei, analog zum Bericht «Nationales Klima-Beobachtungssystem» (Seiz und Foppa, 2007), die Zusammensetzung der Atmosphäre, die Hydrosphäre, die Kryosphäre, die freie Atmosphäre und die Biosphäre. Ausserdem wurde die Bedeutung der Klimabeobachtung für die Entwicklungszusammenarbeit beschrieben. Paul Becker, Vize-Präsident des Deutschen Wetterdienstes, gab schliesslich einen Übersichtsvortrag zur Einbettung von GCOS in die Klima Aktivitäten in Deutschland. Aktualitäten und Ausblick aus Sicht des Swiss GCOS Office sowie die Schlussdiskussion rundeten den Tag ab.

Anlässlich des diesjährigen Jubiläumsanlasses stellte das Swiss GCOS Office den Kurzfilm «Lokal messen – global verstehen» vor. Der Film gibt einen Überblick zu GCOS Schweiz und ist unter www.gcos.ch online verfügbar.



Teilnehmer 10. GCOS Rundtisch

Das Swiss GCOS Office dankt allen Beteiligten für die langjährige Zusammenarbeit. Der 11. Nationale GCOS Rundtisch wird am 23. Januar 2014 in Zürich stattfinden. Bei Fragen gibt das Swiss GCOS Office gerne Auskunft: Gabriela Seiz, Fabio Fontana, Sebastian König, Michelle Stalder, Andrea van der Elst; Swiss GCOS Office, Bundesamt für Meteorologie und Klimatologie MeteoSchweiz, Krähbühlstr. 58, 8044 Zürich, Tel. 044 256 95 39; gcos@meteoswiss.ch. Weiterführende Informationen sowie Publikationen und News finden Sie unter www.gcos.ch

Future Earth – Global Environmental Change Community Workshop

The workshop sought feedback on Future Earth's revised research framework, its organizational design and arrangements for transition to a fully operational Future Earth programme, including the transition and active involvement of the existing core projects. The results of the consultative workshop will be used by the Future Earth

Transition Team to finalise the overall Future Earth framework and design, and guide its implementation.

ProClim- as national contact for the IGBP and IHDP and scientific contact for the WCRP was asked to provide a feed back on the Future Earth program. The Key Messages given were:

- The Future Earth program should strongly endorse the Global Environmental Change Programs. Otherwise it may loose the science base.
- The GEC Projects should be represented in the scientific steering committee on the same footing as the other members.
- Stakeholder and policy dialog require regional structures. Regional and national nodes (such as the national committees) should become an integral part of the program – more than in the research programs up to now.

You can find the Swiss Position compiled by ProClim- at: www.proclim.ch/News?2683

Seminar Series at Swiss Research Institutes

Mondays up to 27 May 2013, 16:15

Kolloquium Atmosphäre und Klima

Location: ETH Zentrum, CAB G11, Zurich

Info: www.iac.ethz.ch/events

Mondays up to 27 May 2013, 16:15

Seminar Klima- und Umweltphysik

Location: Hörsaal B5, Sidlerstr. 5, Bern

Info: www.climate.unibe.ch/?L1=courses&L2=seminar

Tuesdays up to 28 May 2013, 16:15

Environmental Engineering Seminar Series

Location: GR A3 31 Campus EPFL, Lausanne-Ecublens

Info: enac.epfl.ch/page-17227-en.html

Wednesdays up to 29 May 2013, 14:15–15:15

Colloquium in Climatology, Climate Impact and Remote Sensing

Location: Raum 310, Hallerstrasse 10, 3012 Bern

Info: www.geography.unibe.ch/content/forschungsgruppen/klimatologie/aktuell/events/index_eng.html

Thursdays up to 30 May 2013, 17:15–18:45

Enjeux de quelques nouvelles filières énergétiques

Cycle de formation énergie-environnement
Location: Uni-Battelle, Bâtiment D, route de Drize 7, 1227 Carouge, Genève

Info: www.unige.ch/environnement/home/actualites2013/EnergieEnvironnement/seminaires-2013.pdf

Thursdays up to 30 May 2013, 12:15–13:45

Kolloquium Allgemeine Ökologie

Location: Raum A027 der UniS, Schanzeneckstr. 1, Bern

Info: www.ikaoe.unibe.ch/veranstaltungen/pdfs/Kolloquium_FS13.pdf

Fridays up to 31 May 2013, 10:15

Seminare über Microwavephysics and Atmospheric Physics

Location: Hörsaal: A97, ExWi, Uni Bern, Sidlerstr. 5, Bern

Info: www.iap.unibe.ch/content.php/teaching/seminars

Urbanization and Global Environmental Change

The IHDP Urbanization and Global Environmental Change (UGEC) core project seeks to provide a better understanding of the interactions and feedbacks between global environmental change and urbanization at the local, regional, and global scales. The UGEC International Project Office has been hosted since its establishment in 2006 by the Global Institute of Sustainability at Arizona State University, USA.

Overview

To capture the benefits of urbanization and mitigate as well as adapt to negative environmental and socioeconomic impacts, a stronger collaboration between academics, political decision-makers and practitioners is needed. This includes a broad range of local, national, and regional actors working on urban and environmental issues. The UGEC core project assists in the development of conceptual frameworks and methodologies capable of supporting research and practice of sustainability in an urbanizing world; steers research in order to facilitate parallel and comparative cross-study analyses; facilitates the exchange of knowledge produced through science and practice between scientists, decision-makers, practitioners, and other end-users at the international, national and local levels in urban areas around the world; builds capacity where capacity does not exist; and provides a platform for a coordinated network of urban sustainability scientists and practitioners.

Thematic research areas

More than half of the world's population lives in cities. With the pace and scale of urbanization expected to increase, it represents a topic of special policy relevance in today's world. The UGEC project represents an unrivalled opportunity for addressing critical issues of worldwide importance that have not received adequate attention so far.

Changes in urbanization patterns and their implications for global environmental change: build a better understanding of the opportunities, challenges, and actions needed to build sustainability and resilience according to the diverse paths of urbanization in regions.

Triple win solutions – adaptation, mitigation and development: opportunities and constraints of triple win solutions to climate change; merge



More than half of the world's population lives in cities today. Although urbanization presents many challenges, contemporary urbanization has the potential to help the transition to sustainability solutions because of gains from scale in innovation, productivity, and efficiency (Seto et al., 2010).

Photo: Heinz Gutscher

urbanization via urban design, land use with adaptation and mitigation potential.

Critical urban environmental transitions: review and refine the methods to identify and evaluate conditions under which transitions take place.

Linking urban ecology and environmental justice in an era of rapid urbanization and global environmental change: connect important themes on urban sustainability that remain largely separate but have great potential for intellectual synergies.

The urban ecosystem services/well-being link: review and refine the methods to identify, classify and value urban ecosystem services.

Getting involved

The project is continuously developing a network of endorsed projects and project affiliates (including young and early-career scientists) who will provide a broader diversity of scientific (thematic and regional) expertise in various disciplines and sub-disciplines as well as practical expertise (practitioners and decisionmakers). For more information on how to become involved please contact Corrie Griffith (UGEC project Executive Officer): corrie.griffith@asu.edu.

Further information about this IHDP core project can be found at: www.ugec.org

Source: *Urbanization and Global Environmental Change project*



Energiestrategie 2050 – Eine Chance für die Schweiz

Die Akademien der Wissenschaften Schweiz unterstützen viele in der Energiestrategie des Bundesrates vorgeschlagene Massnahmen, wie etwa die Verschärfung der CO₂-Emissionswerte im Verkehr, die Förderung von Energieeffizienzmassnahmen, eine national koordinierte Raumplanung oder die verstärkte Förderung der Photovoltaik. Die Akademien empfehlen, ein breites Spektrum an möglichen Instrumenten bereitzustellen, um flexibel auf politische, ökonomische und gesellschaftliche Entwicklungen reagieren zu können. Die Energiewende erfordert Innovationen in nahezu allen Bereichen der Gesellschaft. Die Akademien der Wissenschaften sehen darin eine grosse Chance für den Wirtschaftsstandort Schweiz und für die Schweizer Forschung.

Die Akademien der Wissenschaften betonen in ihrer Stellungnahme insbesondere folgende Punkte:

- Die Realisierung der Energiestrategie darf nicht auf Kosten der Klimaziele gehen. Die Stromerzeugung aus fossilen Brennstoffen ist möglichst zu vermeiden. Wo jedoch mangels geeigneter Alternativen noch fossile Brennstoffe zu Heizzwecken benutzt werden, sollte mit Wärme-Kraft-Kopplungsanlagen gleichzeitig auch Strom produziert werden.
- Die Energiestrategie fokussiert sehr stark auf das Elektrizitätsversorgungssystem. Neben den Ausbauzielen für Strom aus erneuerbaren Quellen müssen auch Ziele für die Steigerung der Energieeffizienz und den Einsatz von erneuerbaren Energien in Gebäuden, in Wirtschaft und Verkehr formuliert werden, weil hier meist viel Elektrizität und fossile Energieträger gebraucht werden.
- Die Energiewende verlangt eine Gesamtsicht auf Energieversorgung und Elektrizitätssystem. Die Sicht auf das Zusammenspiel verschiedener Energieträger sowie von Verfügbarkeit und Verbrauch der Energie und deren Auswirkungen auf Verteilnetze und Energiespeicherung ist weiter zu entwickeln.
- Für die Realisierung der Energiestrategie reichen die bisher vorgesehenen Massnahmen nicht aus. Es sind zusätzliche und weitergehende Massnahmen nötig, etwa bezüglich Stromspeicherung oder Aus- und Umbau der Stromnetze. Massnahmen mit langer Vorlaufzeit müssen schon heute in Angriff genommen werden, wie etwa der Ausbau von Stromspeichern, die Steigerung der Energieeffizienz in Gebäuden, langlebige Industrie- und Infrastrukturanlagen für Energieversorgung und Verkehr oder neue Raumnutzungskonzepte.
- Die Raumplanung sollte neben einem klaren Energienutzungskonzept auch ein Schutzkonzept enthalten, das schützenswerte Objekte und Räume sichert und ein Gegengewicht zur prioritären Behandlung von Energieanlagen bildet.
- Der Umbau des Energiesystems ist nur mit dem gemeinsamen Willen von Gesellschaft, Politik, Industrie und Wirtschaft realisierbar. Eine Gesamtstrategie muss die Förderung der Akzeptanz von Massnahmen und Energieerzeugungsanlagen sowie das Konsumverhalten und die Investitionsbereitschaft von Wirtschaft und Privatpersonen einbeziehen. – Die geplanten Reduktionen des Gesamt-Energieverbrauchs auf 50 % des heutigen Wertes und des Verbrauchs fossiler Energien auf einen Drittel sind sehr ambitioniert. Diese Reduktionen können nur realisiert werden, wenn das Erreichen des Ziels gemeinsam von Gesellschaft, Wirtschaft und Politik getragen wird.

Die Vernehmlassungsantwort ist von der a⁺ Energiekommission erarbeitet worden und ist erhältlich unter www.proclim.ch/News?22717

Kontakt Arbeitsgruppe Energie:
Dr. Christoph Ritz, Geschäftsleiter ProClim-,
christoph.ritz@scnat.ch, www.proclim.ch/energy.html

CCES News 9

Interaction and collaboration between CCES scientists and stakeholders outside academia are among the priorities of the ongoing second phase of CCES. This is a rewarding but at the same time challenging endeavor because all parties involved have to leave traditional ways of thinking, believing, communicating, and acting. This requires motivation, patience, and tolerance but it also opens new perspectives on problems and solutions of great importance. The current status of such an initiative with cantonal administrations is presented below.

Outreach

Collaboration projects with cantonal administrations started

Representatives of cantonal environmental administrations were invited to formulate requests on pressing environmental and sustainability issues emerging from their daily business that need to be analyzed and solved. Four cantons suggested concrete projects that will be investigated in the form of master theses. Hence, in addition to the knowledge exchange aspect, this initiative also has an educational component: students are given the opportunity to apply their knowledge in a non-university environment. Three master theses dealing with the impact of climate change on the water regime in the canton of Nidwalden and methodologies for the assessment of rivers in the canton of Thurgovia have been launched. Another five master theses to be carried out with the canton of Appenzell Inner Rhodes are currently in the stage of planning. A collaboration with the canton of Lucerne is being discussed. The topic for each master thesis is jointly identified by scientists and members from the cantonal administrations. Topics include e.g. the impact of climate change and its consequences for the ground water in the canton of Nidwalden or the development of a web-based information and decision support tool to identify the optimal time for slurry application in an environment-friendly way.

Beyond their immediate purpose to promote a dialogue between scientists and stakeholders outside academia, all projects also aim at establishing the basis for further research. As a starting point, collaboration with small-scale projects on selected issues is considered a promising initiative by both the cantonal authorities as well as the scientists involved. These pilot projects will reveal whether the high expectations

of the participating partners can be fulfilled: the cantonal authorities looking for new approaches to practically solve sustainability issues, the scientists looking for new challenging scientific questions, and the students expecting to complement their studies with interesting practical experience.

The projects are supervised by scientists from ETH Zurich, Eawag, EPF Lausanne, WSL, and Agroscope. In terms of organization and administration, this initiative is supported by ETH Seed Sustainability (www.seed.ethz.ch), a project platform at ETH Zurich linking industry and public administrations with researchers and students.

Further information on this initiative: www.cces.ethz.ch/integrative_elements/dialogue_networking.

Nikolaus Gotsch, CCES; Michael Bürgi, ETH Seed Sustainability, ETH Zurich

Contacts: nikolaus.gotsch@sl.ethz.ch,
michael.buergi@sl.ethz.ch

Position paper on Early Warning Systems for rapid mass movement

As a result of global warming, an increasing risk of local environmental hazards such as



Participants of the TRAMM workshop on Early Warning Systems, January 14 to 15, 2013 at Appenberg (Zäziwil). Photo: Dani Or, TRAMM

a debris flow or collapsing slopes is expected resulting, as a consequence, also in an increase in the general risk of rapid mass movements. Consequently, Early Warning Systems (EWS) for rapid mass movements are increasingly emerging in Switzerland and worldwide. They can point to the imminent risk of such hazards in a given region. The CCES TRAMM project (www.cces.ethz.ch/projects/hazri/tramm) has developed numerous models and measurement techniques in the last five years that can provide important contributions to such EWS. In a workshop attended by representatives of cantonal authorities and

engineering companies, the TRAMM project team discussed attributes and deficits of current EWS and the necessary developments to fulfill the future needs of natural hazard experts. As a concrete outcome of this workshop, the participants will draft a position paper that shall present their vision of next-generation EWS.

Manfred Stähli, Swiss Federal Research Institute WSL
Contact: manfred.staehli@wsl.ch
This activity makes part of the CCES TRAMM project:
www.cces.ethz.ch/projects/hazri/tramm

Education

Third CCES Winter School «Science Meets Practice» – a success story continues

What is the role of science in society? And why should science meet practice? These are two key questions that were addressed during the third CCES Winter School «Science Meets Practice» at the Propstei Wislikofen. A group of 23 PhD candidates and postdocs from the ETH Domain institutions and universities in Switzerland, Austria, Italy, Germany, England, China, and Japan has come together for two block weeks in January and February of 2013. The aim was to intensively work on the opportunities and potentials offered by science-practice interfaces to address challenges of sustainable development.

By discussing concepts of knowledge sharing between scientific and societal stakeholders, the participants were equipped with skills to organize and implement real stakeholder interactions. Among others, they analyzed transdisciplinary processes, the role of media and communication, and the added value of knowledge management tools to bridge diverse perspectives.

Furthermore, the participants hosted a stakeholder workshop and a focus group. In both these stakeholder interactions, the transition of the energy system was the topic for discussion and exchange. The partakers used several methods to facilitate the interactions between science and practice, thereby guaranteeing the success of the project. Concrete communication products emerged from the stakeholder meetings and in a post-processing workshop



Young scientists facilitating a stakeholder workshop.
Photo: Claudia Zingerli, CCES

the participants even had the chance to discuss their findings and conclusions with energy experts from science and administration. As in previous years, a team of experienced and cross-referencing lecturers and coaches supported the learning process.

In line with the successful first and second editions, the feedback of the participants of the third CCES Winter School revealed that there is a strong demand for and benefit from this kind of methodological and transferrable skills course. CCES therefore plans to offer the Winter School again in 2014.

Claudia Zingerli, Coordinator CCES Winter School «Science Meets Practice», ETH Zurich
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Research

Environmental impacts of Carbon Capture and Storage

In light of the 2011 political decision on nuclear phase-out, the Swiss electricity sector will be subject to substantial changes in the next decades. The CO₂-intensity of the Swiss production mix is likely to increase due to natural gas-fired power plants (NGCC) which may become necessary when the domestic production is – in spite of the intended large expansion of renewable energies and energy efficiency – incapable to meet the demand. At the same time, more stringent CO₂ emission reduction targets may need to be implemented in accordance with global efforts on climate change mitigation.

The implementation of Carbon Capture and Storage (CCS) would allow for power generation with NGCC plants without significantly increasing the domestic CO₂ emissions. This technology aims at capturing CO₂ emissions from point sources in power generation and industry, and safely storing it in geological structures. The Swiss CCES/CCEM research project CARMA explores the potential and feasibility of CCS systems in Switzerland.

Large Swiss CO₂ point sources include prospective NGCC and existing cement plants. Life cycle analysis (LCA) shows a clear benefit for the climate considering power generation from NGCC with CCS compared to the non-CCS case (see Figure,

left-hand side). Despite the increased natural gas input required for operating the CO₂ capture unit, the positive effects of capturing direct CO₂ emissions clearly dominate. However, other environmental impacts, e.g. from the increased natural gas production, rise with the implementation of CCS.

An LCA of the implementation of CCS in cement plants shows that the energy supply – especially the heat supply – for the CO₂ capture unit is decisive for the benefit for the climate (Figure, right-hand side). The effects of the CO₂ transport in pipelines and the subsequent CO₂ storage in geological formations are marginal for both plants. Overall, CCS is a viable option for the reduction of climate impacts of NGCC and cement plants. However, one needs to be aware of other environmental effects and external costs of the implementation of the technology which were also part of this study. In addition, other aspects must be considered such as increased costs of electricity generation, risk of induced seismicity, and the legal environment.

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This study makes part of the joint CCES/CCEM CARMA project: www.carma.ethz.ch

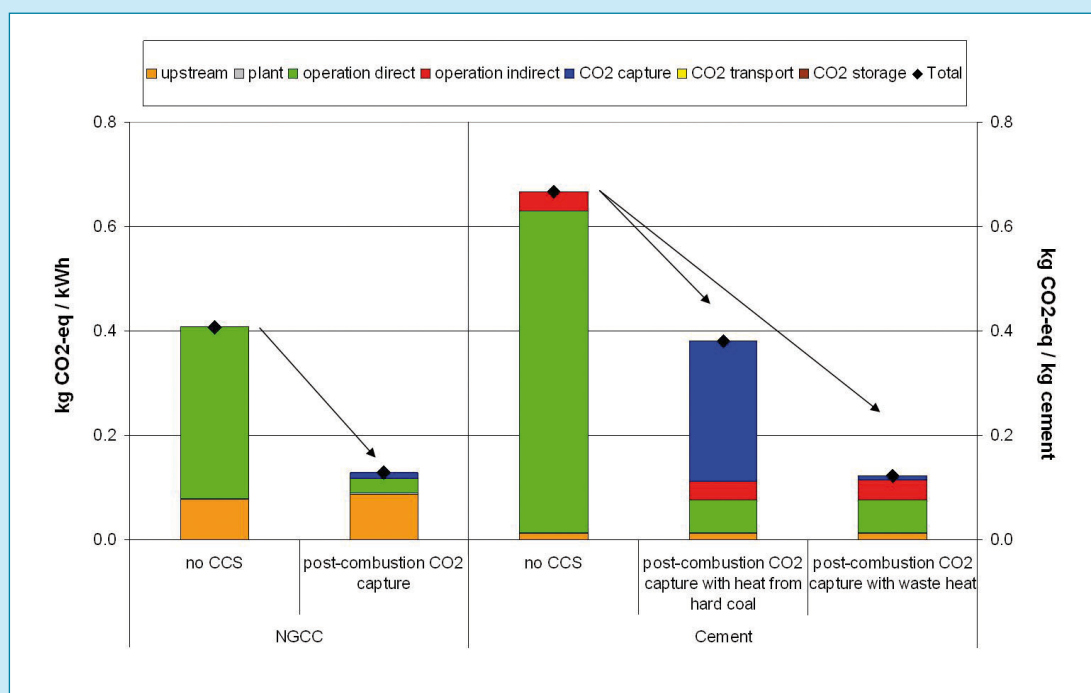


Figure: Life cycle greenhouse gas emissions of the electricity production from natural gas-fired power plants (NGCC) [kg CO₂-eq/kWh] and of the cement production [kg CO₂-eq/kg] for Switzerland in 2025. The results are shown for the plants with and without CCS. Contributions from the various life cycle stages are highlighted. Source: Based on analyses by K. Volkart, PSI

How do political interest groups influence climate policy-making?

It is broadly assumed that policy setting processes in the area of environmental policy in general and climate policy in particular are influenced by representatives of special interest groups. Hence, as part of the CCES research project ClimPol, Alexandra Quandt examined in her PhD thesis at EPFL how firms and special interest groups exert an influence on climate policy making and how responsive the latter is to the former. In order to deal with the multiple facets of the project, she combined methods of business and political sciences in a public choice framework. She applied statistical methods and network analysis with qualitative methods, such as content analysis, surveys, interviews, and case studies.

The analysis revealed that «Switzerland Inc.» is far from forming a solid block of shared interests, particularly when it comes to individual features of climate policy. Its main source of information were the statements from 75 business associations and firms in the 2009 consultation on the revision of the CO₂ Act. Alexandra Quandt analyzed them systematically and grouped their authors into clusters of common interest. She found that opposition to climate legislation rather well correlates with the possible nega-

tive impacts the various sectors have to expect and that the large business associations do not simply aggregate the views of their members but seem to follow their own agenda.

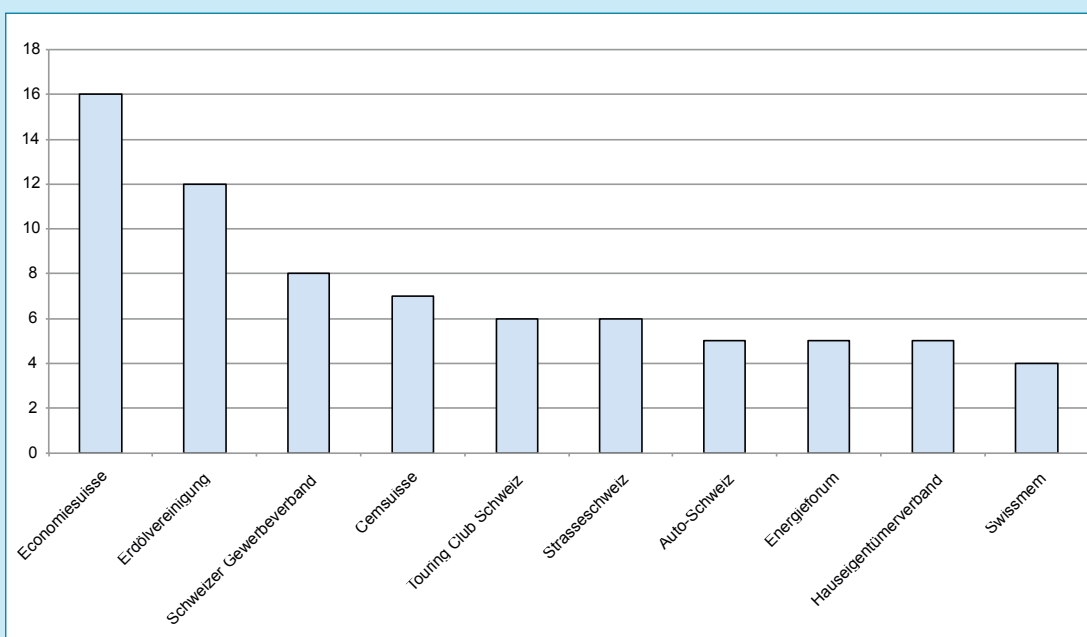
Next, she measured the influence the business community exerts on the legislative process. To that end, she identified the main arguments expressed by businesses or their organizations as well as other stakeholders in three CO₂ Act consultations since 1997 and compared them to the arguments used by policy-makers as noted in the minutes of the Parliament and the preparatory commissions. This showed that the concerns of the economy are well taken up by Members of Parliament, much better than those of environmental NGOs or the scientific community, but also that the debates in Parliament hardly lead to modifications of the basic tenets of the law. This implies that the preparatory stages are quite important indeed. Lobbyists are well aware of that fact and make sure that their concerns are heard by the Federal Administration.

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This study makes part of the ClimPol project:

www.cces.ethz.ch/projects/clench/CLIMPOL

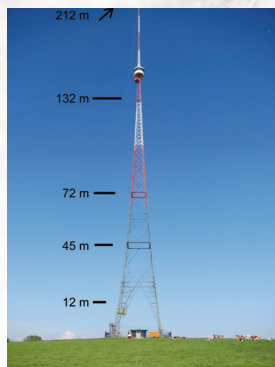


This graph presents results of a qualitative study on the preparation and implementation of the CO₂ law and the influence business and environmental associations have on them. 28 experts were asked to name the 5 most influential among 40 associations. The above graph shows their responses (in absolute numbers).

C2SM News – March 2013

The CarboCount-CH project: Developing a gas monitoring system for Switzerland

The SNF Sinergia project CarboCount CH is setting up an observation and modeling system for the monitoring of biosphere-atmosphere exchange



Tower of former Landes-sender Beromünster now used within CarboCount-CH to measure the concentrations of CO₂, CH₄, CO and H₂O as well as meteorological parameters at 5 different heights up to 212 m above ground.

fluxes and anthropogenic emissions of carbon dioxide and methane in Switzerland, the two most important greenhouse gases. The project has successfully installed the first three sites of its measurement network, which consists of the four sites Beromünster, Lägern-Hochwacht, Früebüel and Gimmiz. More information:

www.c2sm.ethz.ch/research/CarboCountCH

Science communication



C2SM is smartening up the disseminating of scientific information to lay audiences as communication of the climate science community was – and

still is – part of a critical public dispute during the last years. Climate models are one of the backbones of climate science. They generate projections of future climate that lie at the crux of science and policy, and are increasingly used by decision-makers. Yet due to their inherent complexity and abstraction, the public has a poor perception of these models. We have met that challenge of science communication: Our visualizations should contribute to a more intuitive understanding of the models science, uses and limitations. Enjoy the videos in HD quality at vimeo.com/user12523377/videos.

Scientific highlight

Effects of stratospheric sulfate aerosol geoengineering on cirrus clouds. Geoengineering, as a way to prevent global warming, has increasingly become part of public and political discussions. One of the techniques suggested by several climate scientists is to cool the Earth through the injection

of sulfate aerosols into the stratosphere. Miriam Kuebbeler and co-workers examined the potential impact of such approach on the hydrological cycle in their global aerosol-climate model. Their work revealed that indirect effects of stratospheric aerosols on cirrus clouds could be important and need to be considered in order to estimate the maximum cooling that would result from such approach. Undoubtedly, the deployment of geoengineering techniques still warrants more research (Kuebbeler et al., *Geophys. Res. Lett.*, doi:10.1029/2012GL053797, 2012).

Global energy balance re-visited: New satellite missions have allowed a more accurate quantification of the energy exchange between Sun, Earth and space. Much less is known about the energy distribution within the climate system and at the Earth' surface. Martin Wild and colleagues combined surface observations of radiative fluxes with model data from the Coupled Model Intercomparison Project (CMIP5) associated to the 5th IPCC assessment to infer best estimates of the global mean surface radiative components including uncertainties. The analysis revealed that CMIP5 models generally overestimate the downward solar and underestimate the downward thermal radiation, thereby nevertheless simulating an adequate global mean surface radiation by error compensation (Wild et al., *Clim. Dyn.*, doi:10.1007/s00382-012-1569-8, 2012).

Delayed action the largest swing factor for climate change mitigation. More than a decade ago, the target of keeping global warming below 2 °C has emerged in the international policy debate. The existence of large uncertainties has for long been an argument used to postpone climate action. Joeri Rogelj and colleagues have generated relationships between the costs of climate action and the chances of staying below a particular temperature limit, like 2 °C, taking into account uncertainties in geophysical, technological, social and political factors. They found that political choices that delay mitigation are the largest swing factor for the overall costs of climate mitigation, followed by geophysical uncertainties, social factors influencing future energy demand and, technological uncertainties surrounding the availability of greenhouse gas mitigation options. (Rogelj et al., *Nature*, doi:10.1038/nature11787).

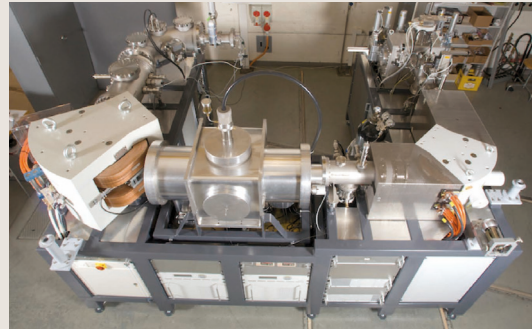
Contact: Isabelle Bey (isabelle.bey@env.ethz.ch)

OCCR Flash – News from the Oeschger Centre

The Oeschger Centre has been active co-organizing conferences – and there is more to come. After a successful Conference on Environmental History, upcoming events include the «Day of Hydrology» (4–6 April 2013), the meeting of the IGBP Science Committee (17–19 April 2013), a scientific symposium on ^{14}C measurements (3 May 2013), and a conference on isotopes (26–28 August 2013).

A High-Tech Replacement for the Oeschger Counter

More than 50 years ago, Hans Oeschger made science history with his invention of a device for ^{14}C measurements at the University of Bern. Now, a new radiocarbon dating system that was initiated by the research centre that carries Oeschger's name by will be inaugurated. The Oeschger Centre was the driving force behind a new facility that will focus on exploring ultra-small samples. It aims taking analytical possibilities to new heights. The key device of the new laboratory is the accelerator mass spectrometry (AMS) system called MICADAS. This device was built in a collaboration of the Department of Chemistry and Biochemistry of the University of Bern and the Laboratory of Ion Beam Physics of ETH Zurich. The new facility – a 1.8-million-Swiss-franc project – will perform ^{14}C analyses for OCCR groups and external customers. The ^{14}C -AMS laboratory is officially inaugurated with a scientific symposium on 3 May 2013. For a detailed programme and registration see www.oeschger.unibe.ch -> events -> conferences



The new Mini radioCARbon DATING System (MICADAS) in Bern will be used for radiocarbon dating, tracing of environmental radioactivity and analysis of fossil CO_2 emissions. (Photo: ETH Zurich)

conceptions on Climate Change are neither due to poor science nor to bad communication. The problem, she said, is an ideological one: The severe regulations that are needed to tackle Climate Change provoke a general anti-state reaction with many climate sceptics.

OCCR Young Researchers Meeting now open to all Young Climate Scientists

For more than ten years the two-day young researchers meeting has been a trademark of the NCCR Climate. Now, as the programme has come to its close, the Oeschger Centre has taken over this event and opens it to all PhD students and PostDocs working in Switzerland. The 12th Young Researchers' Meeting will take place on 6 and 7 June 2013 at Centre Loewenberg near Murten. The focus of the meeting is on career planning, marketing yourself and other soft skills. Besides workshops, there will be ample time for informal exchange of ideas between young climate researchers. For detailed information and registration see www.oeschger.unibe.ch -> education

For an overview of OCCR activities and events see www.oeschger.unibe.ch

Contact: Kaspar Meuli meuli@oeschger.unibe.ch

Climate and beyond – Knowledge Production about Planet Earth

The conference «Climate and beyond» that was co-organized by the OCCR between 23 and 25 January 2013 in Bern brought together about 60 historians of the earth sciences, environmental historians and natural scientists. Under the general theme «Knowledge Production about Planet Earth and the Global Environment as Indicators of Social Change», the social, cultural and political changes induced by earth scientists were discussed. The participants came from 15 different countries and included prominent researchers such as Naomi Oreskes (University of California, San Diego). In a public talk, the author of the widely noted book «Merchants of Doubt – How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming» argued that common mis-

Seminar Series at Swiss Research Institutes

continued from page 13

Fridays up to 25 May 2013, 12:15–13:15

Lunch Seminar in Energy, Environmental and Resource Economics

Location: Conference room ZUE G1,

Zürichbergstr. 18, Zurich

Info: www.cepe.ethz.ch/education/lunchseminar

21 March, 22 April 2013, 17:15–18:15

Social Ecology and Social Learning

IED Public Lectures

Location: ETH Zurich, Universitätsstrasse 16,

Zurich

Info: www.ied.ethz.ch/news/publect

Seminars

For lack of space we list the individual seminars on our web site only:

www.proclim.ch/Events.html

If you would like to receive an e-mail with forthcoming events and deadlines every two weeks please send your request to:
info-proclim@scnat.ch

Conferences and Events in Switzerland

4–6 April 2013

Wasserressourcen im globalen Wandel

Hydrologische Grundlagen – Von der Messung bis zur Anwendung

Tag der Hydrologie 2013

Location: Universität Bern

Info: www.kas.unibe.ch/tdh13

16 April 2013

14th Swiss Global Change Day

Location: Freies Gymnasium, Beaulieustr. 55,

Bern

Info: www.proclim.ch/4dcgi/proclim/all/Event?2268

17–19 April 2013

7th European Conference on Sustainable Cities and Towns

A green and socially responsible economy: a solution in times of crisis?

Location: International Conference Center

Geneva

Info: www.sustainablegeneva2013.org/category/conference-programme/?lang=en

3 May 2013

The new ¹⁴C AMS facility at the University of Bern: research and applications

Location: Department of Chemistry and Biochemistry, University of Bern, Freiestrasse 3, 3012 Bern, Lecture Hall U113 (basement)

Info: www.oeschger.unibe.ch/events/conferences/micadas

Registration: 15 April 2013

28–29 May 2013

2nd Workshop on climate change and migration in mountain areas

Location: Neuchâtel

Info: www.kfpe.ch/download/Call_WSMountain_2013.pdf

6–7 June 2013

12th Young Researchers' Meeting

Marketing yourself

Dr. Monika Clausen & Netzwerkpartner

Location: Centre Löwenberg, Murten

Registration: 5 April 2013

19–21 June 2013

4th International Conference on Sustainability Transitions

Location: ETH Zurich, Machine Learning Laboratory (ML building), Sonneggstrasse 3, Zurich

Info: www.ist13.ch/index_EN

Registration: 22 April 2013

June and September 2013

Media training for researchers

Location: Maison de la Communication, Lausanne (in French) | MAZ, Luzern (in German)

Info: www.snf.ch/E/services-for-researchers/researchers-communication/Pages/media-training.aspx

1–2 July 2013

The water cycle in a changing climate

Preannouncement

Location: ETH Zurich



16 April 2013

14th Swiss Global Change Day

Location: Bern
Info: www.proclim.ch

8–12 July 2013

Davos Atmosphere and Cryosphere Assembly 2013 – Air, Ice & Process Interactions

Location: Davos Congress Centre
Info: www.daca13.org/index.html

26–28 August 2013

Isotopes of Carbon, Water, and Geotracers in Paleoclimate Research

Location: University of Bern, Main Building, Hochschulstr. 4, 3012 Bern (rooms 220 and 215)
Info: www.oeschger.unibe.ch/events/conferences/isotopes/index_en.html

1–3 September 2013

ClimTree 2013: International conference on climate change and tree responses in forests of Central Europe

Location: ETH Zurich
Info: www.climtree2013.org

1–13 September 2013

GEPP Executive Summer School on Global Environmental Policy

Location: Geneva
Organisation: University of Geneva, in partnership with UNEP
Info: www.unige.ch/environnement/home/actualites2013/gepp2013.html
Closing date for application: 31 March 2013

30 September 2013, 13:00–19:00

IPCC Climate Change 2013

Preannouncement
Location: Hotel Bellevue Palace, Bern

1 October 2013

AlpFUTUR Verbundprojekt: Schlusstagung

Location: Schüpfheim (LU)
Info: www.alpfutur.ch

6–9 October 2013

World Resources Forum

Location: Congress Center Davos
Info: www.worldresourcesforum.org/WRF-2013
Registration: 31 August 2013

IGBP, IHDP, WCRP related Conferences

21–24 May 2013

Water in the Anthropocene

Challenges for Science and Governance.
Indicators, Thresholds and Uncertainties of the Global Water System
Location: MARITIM Hotel, Bonn, Germany
Info: www.gwsp.org/176.html

19–21 June 2013

Transformation in a Changing Climate

International Conference
Location: Georg Sverdrups Hus at the University of Oslo in Norway
Info: www.sv.uio.no/iss/forskning/aktuelt/arrangerer/konferanser-seminarer/2012/transformation-in-a-changing-climate.html

4–7 November 2013

International Conference on Regional Climate – CORDEX 2013

A partnership between WCRP, the European Commission and IPCC
Location: European Commission, Charlemagne Building, Brussels
Info: cordex2013.wcrp-climate.org/index.shtml
Registration: 20 August 2013

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