

ICARN

INDIAN CLIMATE RESEARCH NETWORK

An initiative of CSE, IIT Delhi
& IIT Madras

NEWSLETTER 01

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Dear friends and colleagues,

Welcome to the first newsletter of Indian Climate Research Network. Following on the feedback we received after the Second National Research Conference on Climate Change in Delhi in November 2011, we are proud to announce the launch of www.icrn.in, a network website dedicated to the climate change research community in India.

The idea of the network website is to create a common platform where you can network, share, help and communicate with each other and us. Make new connections, write blogs, begin discussions related to any aspect of research, seek guidance from senior scientists and make the best use of the resource. You can also use the network website to publicize your research. Essentially, you need to take necessary permissions and send us the paper and we will upload it. You can also subscribe to several services on offer. These include a daily climate news bulletin, weekly research funding and meeting announcements bulletin and a fortnightly jobs bulletin. All you need to do is go to www.icrn.in, request membership by filling up a simple form and explore.

We will also bring out a newsletter every quarter updating you on activities of the network and the developments in the climate change research sector. Besides announcements on research funding opportunities, the newsletter will come up with policy briefs to link research and action.

In our first newsletter, we give you an overview of the latest developments in research on mangroves and CDM (Clean Development Mechanism).

Mangroves have, in the past, been noted for their capacity to protect against storm surges and coastal cyclones, which were recognized as an important adaptation tool with respect to climate change. Recent research is pointing us to the high carbon sequestration capacity of mangroves rendering them an important role in climate change mitigation as well, making it all the more important to conserve and restore depleted and degraded mangrove ecosystems.

Then CDM, which has been heavily criticized for funding projects that are not truly sustainable and additional, recently enabled coal thermal plants with more efficient boiler technology to earn carbon credits. Two papers released in 2011 find systemic flaws in the methodology, which is leading to significant over-crediting, thus undermining the CDM process and its effectiveness in addressing climate change.

This newsletter also contains announcements on funding and research opportunities and upcoming meetings as well as an excerpt from the executive summary of the Second National Research Conference on Climate Change held in Delhi on November 5-6, 2011.

We hope you enjoy reading the newsletter and provide us with feedback.

With best wishes,

The Indian Climate Research Network Team

Second National Research Conference on Climate Change, a summary



The Second National Research Conference on Climate Change was held at IIT Delhi on November 5-6, 2011. Over 100 people participated at the conference organized by IIT Delhi, IIT Madras and Centre for Science and Environment. The talks were broadly divided into: climate science/impacts, mitigation and adaptation. The conference saw a range of different kinds of presentations under each category. Papers related to climate science included study of climate parameters, precipitation trends, statistical methods, aerosol-cloud interaction and data assimilation using different methods; papers related to impact included rainfall and storm surges, extreme weather events and economy, health, agriculture, livelihood, livestock and electricity demand.

Those under mitigation covered green energy deployment, low carbon initiatives, production, technology and patents, geoengineering research, REDD (Reduced Emissions from Deforestation and Degradation), transport sector, power sector and burden sharing. Researchers talked about adaptation from a

community's perspective and their vulnerabilities. Presentations were given on how resilient a city can be in the event of a natural disaster and what could be the policy implications for the changing hydroclimates of India. Mangroves as well as Himalayan eco-system were discussed in the light of sustainable development.

There were discussions with government officials as well. K J Ramesh of the Ministry of Earth Sciences talked about the Centre for Climate Change Research in Pune in Maharashtra and that the centre was focused on studying gaps in research areas such as aerosol-cloud interaction, impact of climate change on monsoon and biogeochemistry of special ecosystems. S Satpathy of the Ministry of Environment and Forests talked about the ministry's programme of studying impact of black carbon in different regions of India, besides making greenhouse gas inventory an annual publication. Akhilesh Gupta of the Department of Science and Technology described the Climate Change Programme, which aimed at building human and institutional capacities in crucial areas of climate change research.

The conference, second in the series of such conferences on climate change, achieved its goals. The idea was to broaden engagement on the climate issue and develop an arena to promote interaction among researchers and climate-related practitioners in the country. The idea also was to gain an understanding of the gaps in research on climate change in the country.

Recommendations from the conference:

- Research guidance
- Network development
- Connect senior and junior participants
- Information on research funding opportunities
- Expand annual conference
- More such platforms to present papers
- Government officials (MoEF, MoES, DST) keen on network development

The full report and presentations can be downloaded from <http://www.cseindia.org/content/second-nationalresearch-conference-climate-change-report>

On the Second National Research Conference on Climate Change, Delhi



"I learned and shared my ideas as a result of attending the conference. The conference should be made more attractive by including a session for young researchers and awarding the best papers."

— Mrutyunjay Swain, Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Gujarat



"The conference exposed us to research activities that are being carried out. This is helpful for understanding the science and framing policies. It is important that the network hosts workshops on specific themes."

— Pankaj Sadavarte, IIT Mumbai



"We learned about the state of research on climate change in universities and institutions in India and identified the gaps therein. We must keep researchers connected to each other's work. We must build the network for this."

— P K Gautam, Institute for Defence Studies and Analyses, New Delhi



"I got some valuable feedback on my research. If seminars can be arranged we can catch up often with each other."

— Ridhima Gupta, Indian Statistical Institute, New Delhi



"What I gained from the conference is in depth understanding of the issues related to climate change research in the country. A pre-conference methodology class for PhD scholars as well as for mid-career professionals would be extremely helpful for us."

— Sujit Kumar Mishra, Council for Social Development, Rajendranagar, Andhra Pradesh

- The CDM Executive Board suspended the methodology for coal power plants (ACM-0013) in November 2011 since the rules being followed were leading to significant over crediting
- Just suspending the methodology could be inadequate as systemic flaws have been identified in the methodology which cannot be addressed with a mere revision in rules. To prevent further misuse of the mechanism and its funds, a ban is the only effective solution
- The large number of CDM credits that will result from such projects could serve to further lower the price of carbon in an already oversupplied carbon market
- Climate funding is scarce and resources need to be used judiciously; to use such funds to fuel an already profitable fossil fuel industry, diverting it from already available renewable technology is a misguided effort to address climate change

Coal in CDM INCOMPATIBILITY REIGNS

In 2007, the CDM Executive Board added a new methodology that would allow coal-based thermal power plants with more efficient boiler technology to earn carbon credits. It followed the simple logic, higher efficiency leads to lower emissions. On the other hand, the sharp criticism that followed the introduction of the methodology also followed simple logic: how can coal, a principal determinant and cause of climate change, be included as a part of the solution.

Two studies released in 2011 reveal that besides fundamental concerns such as funding an unclean source of fuel by the Clean Development Mechanism, systemic flaws present in the methodology design, and how it was being used, were leading to significant over-estimation of emission reductions and subsequent over crediting. Estimates suggest up to 250 per cent of the emissions reduced were found to be unreal and non-additional. Furthermore, other factors that can influence plant efficiency on a scale similar to that of boiler technology were omitted while calculating the baseline estimates bringing the credibility of the methodology into question.

Following a widespread campaign against coal in CDM, the CDM executive board suspended the ACM-0013 methodology. But whether a mere suspension of the current methodology would address the larger, more fundamental concerns have come

under question. A ban will be needed to ensure that the larger issues are being addressed.

Coal undermines CDM's goals

CDM was designed to promote sustainable development in developing countries while enabling the developed countries to comply with their carbon mitigation targets in a cost-effective manner. Despite evolving into the world's largest carbon offset market, CDM has been ridden in controversies and its contribution in enabling a transition to a low-carbon future and generating real emissions reduction has been severely questioned.

The introduction of supercritical and ultra supercritical coal power plants into the milieu of those projects that qualify for CDM credits will further bring its credibility into question as such projects do not comply with many of CDM's founding principles.

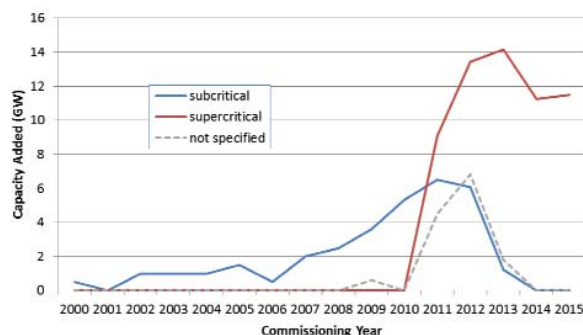
- (a) Coal-fired thermal plants are both capital-intensive and carbon-intensive that can lock in investments into an emission-intensive pathway instead of a low-carbon one.
- (b) Coal is known to have many adverse health impacts, affecting those that are employed in and living within the proximity of coal-powered plants bringing into question its contribution to sustainable development.
- (c) Supercritical and ultra supercritical coal plants are already becoming the norm in India and China, thus bringing into question the 'additionality' of such projects.

Why coal projects do not need the CDM subsidy?

In the current scenario, the average efficiency of recently built thermal power plants range from 33-43 per cent. Subcritical units are somewhere between 25-33 per cent, supercritical range from 29-38 per cent whereas ultra supercritical range from 34-43 per cent (MIT, 2007). Under the new methodology, an upgrade in boiler efficiency—either from subcritical to supercritical or from super to ultrasupercritical—qualifies for CDM credits. To claim for this CDM subsidy, projects also need to prove 'additionality'—which means that companies are required to show the need for CDM funds for the technological upgrade, without which the change in emissions would not have been possible.

In India, such a transition from subcritical to super critical is already under way (see: Fig 1). Owing to the sharp rise in price of coal in recent years and the need for 'power for all', the Indian government has responded with a push for higher coal plant efficiency and has mandated the use of supercritical technology in all the upcoming so-called 'ultra mega power plants'. Given the existing pressure to build super or ultra-supercritical coal plants,

Figure 1:



it is highly unlikely that any of the coal projects in the pipeline are actually additional.

Flawed Methodology

The ACM-0013 is the methodology that is used to calculate the emissions baseline for coal projects in CDM. An emissions baseline is used as a reference baseline to which the reduction in emissions would be compared against. In the case of CDM coal projects, the emissions that result from a supercritical technology will be subtracted from those of a subcritical technology. The methodology allows the use of the lesser one of two options to calculate this baseline. One option is to use the 'most likely' baseline technology and the other option uses a weighted average of emissions from the 15 per cent lowest emitting plants.

For Option 1, subcritical is being considered as the 'most likely baseline technology' while there is evidence that Indian and Chinese plants are already moving away from this technology. The other problem with this option is that the 'baseline emission rate' considered is far higher than even the most state-of-the-art subcritical plant. Most of these rates suggest an efficiency and emission improvement of as high as 10 per cent while currently available technologies promise way lower improvements. This would imply an expected improvement of three per cent in contrast to the claimed 11.2 per cent. This points to the fact that all the Indian projects have over-stated their emissions reduction by a factor of four.

The other option brings forth important concerns in the way the top 15 per cent benchmark is calculated. The concern mainly is with the data vintage. "The decision on technology employed by the top 15 per cent performers was taken at least five years before the decision on technology employed in the CDM project," says the paper by Stockholm Environment Institute (SEI).

Studies indicate that coal technology has improved over the years and by introducing a time lag in data vintage, baseline is being over-estimated as is

the emission reduction. As the Methodology Panel reports suggests that even if a 0.2 per cent annual efficiency improvement is considered, it may still imply over-estimating the emission reduction by about 25 per cent.

The SEI report suggests the over-estimation is higher, of the order of about 250 per cent. To illustrate, in India over 15 per cent of the new coal-based TPPs propose to use supercritical technology (in 2011). Thus the top performers should be based on supercritical technology for the years 2011 and 2012. However, supercritical plants are applying for CDM registration by using subcritical as the baseline technology. Taking these concerns into account, the SEI estimates that there is a reduction of about 71 per cent in the certified emissions reductions (CERs) that have been projected in the project documents.

Misplaced incentives

One major drawback of the methodology as identified by the SEI is its inability to account for some factors that affect the efficiency of the plant such as cooling technology, use of pollution abatement equipment, fuel quality, moisture, etc. These factors can together affect the efficiency by about seven per cent. These factors may not be taken into account properly. For instance, use of pollution abatement equipment may reduce efficiency of the plant. This would mean the methodology, in its current state, actually penalizes projects that are putting pollution checks in place and vice versa.

Why India should not support coal projects in CDM?

Owing to the flaws in the methodology, the CDM Executive Board called for a suspension of the coal methodology (ACM-0013) i.e. no new projects will be considered for registration and will be put on hold until a revised methodology for correcting the identified flaws is approved. The authors of the SEI study, following an analysis of potential revisions, are skeptical of this approach to the problem of coal in CDM owing to the unique nature of issues that the problem throws forth. Three fundamental concerns identified by them are as follows:

- a) Low signal-to-noise ratio: the efficiency achieved through a change in boiler technology is smaller compared to other factors such as quality of coal

and cooling technology which impact plant efficiency to a greater extent. Doing more site-specific feasibility studies and stricter verification of data used will still only partially address this problem.

- b) **Additionality:** Given the continuing increase in price of coal and Government policies in both China and India are already in place providing incentives for such a switch in technology, the CDM requirement of additionality will be hard to meet.
- c) **2-degree climate change goal:** The improvements inefficiency of these power plants will be at most small improvements compared to the 400 million tCO₂ that such plants will emit annually for the next few decades.

A combination of the above three factors makes it highly improbable that a new system of rules under the methodology will be able to effectively address the problem rendering CERs real, additional and climate-friendly. Furthermore, the large number of CERs that would result from such projects could further serve to bring down the price of carbon in an already volatile and oversupplied market. The price of carbon in Europe has remained low after hitting an all-time low of 3.28 euros in January due to oversupply and weak demand in the market. An uncertain market with a low-priced carbon sends the wrong signals for those considering investments in clean renewable energy technology. A strong, clear signal is needed from Governments to boost the carbon market and to prevent unreal and unsustainable emissions such as those from coal plants from being financed. Just suspending the methodology at best is a mixed signal; the strong signal needed will only come from placing a ban on the methodology.

Coal in CDM - Statistics

Of the 45 projects in the CDM pipeline that were considered for the study in October 2011, six were already registered out of which five are from India and 1 from China. The remaining 39 were in the validation stage with a larger share of projects from India. The study estimates that should all 45 projects get registered (only 1 project has been rejected thus far), they will generate a total of 451 million CERs over the entire lifetime of the project. Of this, 90 per cent would be from Indian projects.

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—by CSE Team

- The unique services provided by mangroves such as protection from coastal cyclones and tidal surges and from climate change impacts such as sea level rise and salinity ingress are to a greater extent being recognized for their role in adapting to climate change. Hence their regeneration and conservation are imperative
- Effective environmental policies to conserve mangroves need of the hour
- Mangroves have been found to play a role in climate change mitigation; the carbon sequestration potential of mangroves is much higher than the carbon found even in tropical wetland forests making them one of the most carbon-rich forests in the tropics. This further reiterates the importance of conserving mangroves
- Both the carbon-storing potential and the added socio-economic benefits render mangroves suitable for compensation under programmes like REDD and CDM A/R (afforestation/reforestation)
- Local communities should be involved in restoration and conservation of mangroves and get their fair share of economic benefits realized through programmes such as REDD

MANGROVES A unique ecosystem

Mangroves are a unique coastal and estuarine ecosystem made up of halophytic plant species, which are salt resistant and provide several ecosystem services such as nutrient cycling and fisheries production, and also support other coastal and marine ecosystems. They have been noted for their capacity to protect against storm surges and coastal cyclones, which were recognized as an important adaptation tool with respect to climate change. Recent research is also pointing us to the high carbon sequestration capacity of mangroves rendering them an important role in climate change mitigation as well.

In the last few decades, however, mangrove populations have severely depleted due to population growth and unsustainable economic development in coastal areas, including deliberated land reclamation for urban and industrial development. In fact, development of industries and ports and the expan-



sion of coastal aquaculture (shrimp farming) are considered critical factors that resulted in depletion and degeneration of mangrove resources.

The shrimp farming frenzy, a response to the exploding demand for brackish water shrimp in the 1990s that resulted in large-scale conversion of mangroves, exemplifies the misguided investment that results primarily due to the lack of a more robust understanding of the total economic value of such ecosystems. In addition to this, when mangroves are seen as both adaptation and mitigation tool, it becomes even more important to conserve and restore depleting and degraded mangrove ecosystems.

Centre for Science and Environment (CSE) takes up three studies on whether mangroves can really mitigate the impact of a disaster or an extreme weather event, mangrove restoration programme and estimation of mangroves' carbon sequestration potential. The study on mangrove restoration programme in Gujarat was also presented in the Second National Research Conference on Climate Change in Delhi.

The studies should be seen from the perspective of declining population of mangroves and the existing ones being threatened as a result of different kinds of human and development interactions, and climate change. With the impacts of climate change becoming more pronounced, the question is how mangroves need to be approached in light of their mitigation and adaptation potential.

Do mangroves really protect?

Study: The study assessed whether the claim that mangroves actually protect against coastal storms was justified. The authors performed a regressions model to estimate the impact of mangroves on the death toll in Odisha following a super cyclone that struck the Odisha coast in 1999. It also calculated the actual opportunity cost of saving a life by retaining mangroves. It did this by equating the cost of a life to the benefits foregone from agricultural land (agriculture being the main reason for conversion in this case).

Findings:

- Presence of mangroves significantly contributes to the reduction in the number of deaths in the dis-

trict surveyed. In the absence of mangroves, every village of the 403 villages that formed the sample set would have had an additional 1.72 deaths.

- With respect to the opportunity cost, the authors arrived at Rs 1.1 crore, which is lesser than the value of life as suggested by wage differentials in India.

- Protecting mangroves is economically justified. This estimate does not account for all the other services provided by mangroves such as nutrient recycling and fisheries production.

Mangrove restoration programme

Study: The Restoration of Mangroves in Gujarat programme, carried out by the Gujarat Ecology Commission (GEC), involved communities in the restoration and sustainable management of mangroves. The study was carried out in four districts of Gujarat to assess the different benefits provided by the mangroves to the local communities resulting particularly from the restoration activity.

Findings:

- Multiple benefits accrued to most of the communities that took part in the restoration programme. Apart from adding to agricultural income resulting from activities such as seed planting and preparing the bed, further benefits included the reduced incidence of labour migration, savings on fodder for livestock and reduced salinity ingressions.

- Although a majority of the communities feel that growing mangroves is important for protecting the coastal systems and livelihoods from the adverse effects of cyclones and soil erosion, they still lack the motivation and incentives to conserve the resources on a sustainable basis.

- Community-based mangrove restoration (CBMR) as a strategy can be adopted in other regions as well.

Mangroves and Carbon Sequestration

Study: The study attempted to estimate the carbon sequestration potential of mangroves. Carbon sequestration of mangroves, a sum of both above and below ground carbon storage potential, is a function of various factors, primarily of biomass storage and hence can vary from one location to the other. Owing in part to a lack of broad scale data and on the amount of carbon stored in these ecosystems,

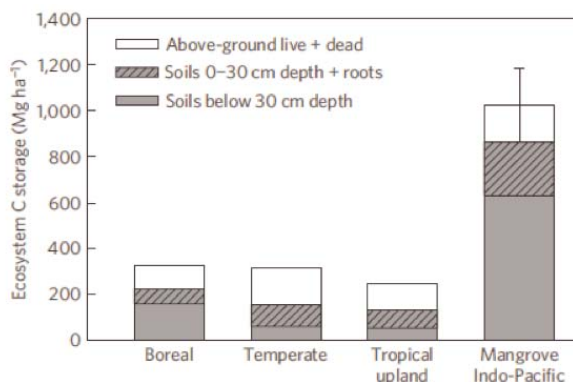
particularly below ground, there has been a lot of uncertainty over the real carbon sequestration capacity of mangroves. The study covered 25 different sites in the Indo-pacific region, including the Sundarbans.

Findings:

- Mangroves store on average 1023 megagrams per hectare. Further accounting for carbon fluxes that result from land-use changes and extending their results globally, it is estimated that mangrove deforestation alone could generate emissions of .02-.12 petagrams of carbon per year, 10 per cent of the total emissions resulting from deforestation worldwide.

- Mangroves are among the most carbon-rich ecosystem in the world (see graph and box on blue carbon). The below ground carbon storage contributes up to 98 per cent (49-98 per cent) of the overall carbon sequestration potential in mangroves. (see Fig 1).

Figure 1: Comparison of mangrove carbon storage potential with other major global forest domains



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Blue Carbon

Mangrove forests, seagrass beds and salt marshes together cover only around 0.5 per cent of the seabed but account for some 70 per cent of the ocean's carbon storage capacity. Together with the carbon held in the rest of the ocean, this is known as 'blue carbon'.

Blue carbon is also the name of a new strategic approach to make use of the large carbon capture and storage potential of coastal ecosystems. If this carbon could be quantified and sold on international carbon trading markets, this could help fund preservation and restoration projects, which would also help capture more carbon and ease the effects of climate change.

Thus, from the studies above, we find that coastal areas can be protected by using mangroves as the first point of defense against extreme weather events. Studies also highlight the need for preparedness and taking suitable and effective adaptation measures together with the local community in response to the expected influence of climate change, in particular sea level rise, and to find ways to ensure coastal sustainability and human security. Consultation with the local community is essential in implementing projects related to mangrove ecosystems and local communities must be involved in mangrove conservation and restoration projects. Also, studies have found mangroves to be among the most carbon-rich ecosystem in the world. This opens up a new role for mangroves in mitigation and this must be thoroughly explored from the perspective of payment for ecosystem services, rightly assessed and prioritized under programs such as REDD and CDM. Moving forward, governments need to design and implement policies that will appropriately reflect the new developments and messages put forth by above discussed literature.

—by CSE Team

RESEARCH FUNDING OPPORTUNITIES:

1. Climate Change and Health: This Funding opportunity announcement encourages research applications to examine the differential risk factors of populations that lead to or are associated with increased vulnerability to exposures, diseases and other adverse health outcomes related to climate change. Applications may involve either applied research studies that address specific hypotheses about risk factors or population characteristics associated with increased vulnerability, or research projects to develop general models or methods for identifying and characterizing population vulnerability to climate change. More information on: <http://tinyurl.com/c92uylr>
Deadline: May 24, 2012

2. MSc Forestry—Commonwealth Scholarship Commission Distance Learning Scholarships: Up to 15 fully-funded scholarships (each worth over £12,000 to cover tuition fees) are available for applicants from Commonwealth to study MSc Forestry by distance learning. More information on: <http://tinyurl.com/d455udw>
Deadline: May 28, 2012

3. Norwegian-Indian cooperation on environmental research: Support is available for the following areas: Water Resource Management, Water related effects of changes in mass balance of glaciers/ rivers, Studies of Aquatic and Terrestrial Ecosystems and Freshwater Biodiversity. More information on: <http://tinyurl.com/d478fqt>
Deadline: May 30, 2012

4. Climate Change and Health: Assessing and Modeling Population Vulnerability to Climate Change (National Institutes of Health): This funding opportunity an-

nouncement encourages research applications to examine the differential risk factors of populations that lead to or are associated with increased vulnerability to exposures, diseases and other adverse health outcomes related to climate change. More information on: <http://tinyurl.com/bv3k5nt>
Deadline: May 24, 2012

5. Fulbright NEXUS Regional Scholar Program in the Western Hemisphere: The 2012-13 Fulbright NEXUS Program is seeking applications from early or mid-career academics, applied researchers and/or professionals with research experience in the public, non-profit, or private sector in the topics of Science, Technology and Innovation, Entrepreneurship and Sustainable Energy. More information on: <http://www.cies.org/NEXUS/>
Deadline: August 01, 2012

6. The Frankfurt School-UNEP Collaborating Centre for Climate and Sustainable Energy: The collaboration offers a Sustainable Energy Finance Summer Academy this year in Nairobi, Kenya. More information on: <http://tinyurl.com/7383jvj>
Deadline: August 30, 2012

FUTURE MEETS:

1. Practical Responses to Climate Change - Water and Climate: The conference will provide a forum for presenting strategies for managing a variable and changing climate through the lens of the water sector. Workshops will be included to allow a forum for debate of key issues and also presentation and discussion of the most recent thinking. Papers on a range of themes are invited for oral or poster presentation. **Canberra, Australia; May 1-3, 2012** More information on: <http://tinyurl.com/6ou77gx>

2. Bonn Climate Change Conference, May 2012: The meeting includes the 36th sessions of the Subsidiary Body for Implementation (SBI) and of the Subsidiary Body for Scientific and Technological Advice (SBSTA), the fifteenth session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), the seventeenth session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and the first session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) .

Bonn, Germany; May 14-25, 2012

More Information on:
<http://tinyurl.com/6rrujev>

3. Second International Symposium on Effects of climate change on the world's oceans: The symposium aims to bring together experts from different disciplines to exchange observations, results, models and ideas at a global scale and to discuss the opportunities to mitigate and protect the marine environment and its living resources.

Yeosu, Korea; May 15-19, 2012

More Information on:
<http://tinyurl.com/c8jppdk>

4. 3rd Climate Change Technology Conference: The 3rd Climate Change Technology Conference (CCTC 2013) is a Canadian and international forum for the exchange of ideas for dealing with climate change. It is also an opportunity to keep abreast of emerging techniques and technologies for the mitigation of, and adaptation to, the impacts of climate change.

University of Concordia, Montreal; May 27-29, 2012

More Information on:
<http://tinyurl.com/c5mdbha>

5) BALWOIS 2012 — Fifth International Scientific Conference on Water, Climate and Environment: The purpose of the conference is to provide a solutions-based forum and to exchange information regarding research activities and plans for studying the relationship between climate and environment changes and human activities with specific

focus on water related matters.

Ohrid, Macedonia; May 28-02 June 2012

More information on:
<http://www.balwois.com/2012/>

6. Climate Adaptation Futures: Second International Climate Change Adaptation Conference 2012: The conference will focus on adaptation to climate variability and change. It will bring together many stakeholders to share insight into the challenges and opportunities that adaptation presents.

Tucson, Arizona; May 29 – 31, 2012

More Information on:
<http://tinyurl.com/d8uyhky>

7. World Climate 2012, World Conference on Climate Change and Humanity: The World Conference on Climate Change and Humanity aims to bring together academic scientists, leading engineers, industry researchers, politicians, activists and scholar students to exchange their research results about all aspects of Climate Change and Global Warming.

Vienna, Austria; June 14-15

More information on:
<http://tinyurl.com/clmlfvw>

8. RIO+20: United Nations Conference on Sustainable Development: At the Rio+20 Conference, world leaders, along with thousands of participants from governments, the private sector, NGOs and other groups, will come together to shape how we can reduce poverty, advance social equity and ensure environmental protection on an ever more crowded planet to get to the future we want.

Rio de Janeiro, Brazil; June 20-22, 2012

More information on:
<http://www.uncsd2012.org/rio20/index.html>

9. Global Conference on Global Warming-2012, Istanbul Technical University (ITU): GCGW-2012 will include plenary sessions, keynote lectures, and several specialized sessions on different topics related to global warming and potential solutions.

Maslak, Istanbul, Turkey; July 8-12, 2012

More Information on:
<http://tinyurl.com/7o2oeor>

10. Second Nordic International Conference on Climate Change Adaptation: The conference seeks to identify common ground between adaptation research and adaptation decision-making by comparing experiences, reporting new insights and revealing key gaps in knowledge.

Helsinki, Finland; August 29-31, 2012

More Information on
<http://tinyurl.com/6s25gyx>

11. 2nd Global Conference on Agriculture, Food Security, and Climate Change: The conference will involve global leaders, practitioners, scientists, civil society and the private sector who will share experiences and demonstrate how early action on Climate-Smart Agriculture can act as a driver of green growth.

Hanoi, Viet Nam; 3-7 September 2012

More Information on:
<http://www.afcconference.com/>

13. CLIMATE 2012 / KLIMA 2012: It's the fifth time that the research conference on climate issues will be held on the Internet and will focus on Climate change and the sustainable management of water resources.

Online conference; November 5-9, 2012

More Information on:
<http://www.climate2012.de/>

14. Workshop on Uncertainty and Climate Change Adaptation: Calling for the submission of abstracts that respond to the question: How do decision-making processes on climate change adaptation, at the multi-decadal timescale, envision the future and deal with related uncertainties?

Lisbon, Portugal; November 8-9, 2012

More information on:
http://www.circle-era.eu/np4/WS_UNCERT.html

About us:

Indian Climate Research Network is a collaboration of Centre for Science and Environment, Indian Institute of Technology Delhi, Indian Institute of Technology Madras and Indian Institute of Science in Bengaluru.

The main goal of the network is to enhance capacity for climate research and action in India. It also aims to achieve the following:

- Develop an arena for promoting interaction among researchers, analysts, and practitioners from across the country
- Enhance understanding of the current state of activities and research capabilities in the country and thereby identifying key lacunae
- Deepen and broaden engagement on the climate issue with a particular focus on smaller academic institutions, NGOs and younger scholars
- Strengthen a sense of 'community' among researchers
- Explore ways to more effectively link climate research and action programmes

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INDIAN CLIMATE RESEARCH NETWORK

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