# Southern African Adaptation Colloquium

# ABSTRACTS

## KEYNOTE SPEAKERS:

**Karen O'Brien** (University of Oslo, and member of the Future Earth Science Committee)

*"The Adaptive Challenge of Climate Change"*

Can we really adapt to a 4°C world? The answer depends on what we mean by adaptation. In this talk, I'll focus on what it means to address climate change as an "adaptive challenge" -- a problem that involves paying as much attention to our assumptions, beliefs, values, worldviews, identities and loyalties as we currently pay to the technical aspects of the problem. I will argue that the most effective way of meeting the adaptive challenge of climate change involves adaptation "from the inside-out", i.e., challenging our individual and collective assumptions about both climate change and social change. Drawing on research from Norway, I will explain why a country considered to have a very high adaptive capacity may, in fact, be addressing the wrong problem.

**Coleen Vogel** (Department of Geography, Geoinformatics and Meteorology University Pretoria)

*"Co-designing adaptation- corporates, counse(ci)llors, citizens and curmudgeons!"*

A number of 'wicked problems' face us as we try to navigate towards sustainability. These problems cannot usually be easily identified and are typically 'messy' in nature and 'complex' in design (Vandenbroeck, 2012). Given that our traditional approaches that

we have used to date may indeed not be sufficient to tackle such 'wicked problems' facing us, a strong call for a careful reflection of how we frame climate change science, interventions and policy actions is made. What is needed, it is suggested, is a mix and balance between flexibility and rigour in approaches; a view of the whole and not only the critical parts; finding the wicked 'opportunities' in the 'wicked problems' set and an approach of 'goal-orientated incrementalism' (Vandenbroeck, 2012).

Arguing this case, some of the science-based systems' efforts that have been tried over the past few decades in southern Africa, largely predicated on designed decision support systems, and informed by the modeling of various systems' attributes will be mapped and critiqued.

Building on the thinking of Orlove, Ison, McCown and Meinke, amongst others, some of our current adaptation thinking in South Africa will be interrogated. Channeling information into decision support systems, based only on 'hard science' and on technological inputs will be shown to be limiting, particularly in efforts designed for building resilience to climate stress.

Some alternative views to adaptation and development, using transdisciplinarity as an approach, will be suggested. What is needed, it is argued, is not only more good science that is 'directed' into and via 'brokers' of knowledge but also a shift in the paradigm of knowledge production and use, with a wider circle of communities of systems practice and where 'communicative rationality (Habermas, 1984) is not distorted by scientists claiming a disproportionate influence due to special knowledge embodied in scientific models for aiding various actors'. In the presentation, a space for systems practice, actions/strategies and 'plural significances' in climate change adaptation is argued to be critical for sustainability (McCown, 2001, 258) particularly in a world confronted by climate and other stressors.

## ORAL PRESENTATIONS:

1. **Sheona Shackleton** ( Rhodes University)

*"An exploration of the factors that affect local people's ability to respond to multiple stressors in the rural communal areas of the Eastern Cape, South Africa"*

Poor rural communities in South Africa are exposed to a suite of interacting risks and stresses, including climate variation and change, which are growing in intensity and frequency and impacting severely on their livelihoods. Adaptation measures are therefore essential if communities are to deal with an ever more uncertain future and the predicted impacts of climate change. However, many factors operating at different scales may impede, or alternatively facilitate, people's ability to respond to changes that impact negatively on their lives. This paper specifically considers some of the barriers and enablers to autonomous adaptation amongst households in two communities located in the communal areas of the Eastern Cape. It draws on findings from several sub-studies and an intensive parallel social learning process conducted over a period of three years. The overall project, funded by the IDRC, sought to explore how climate change, together with several other livelihood stressors, including HIV/AIDS, affects food security, livelihood strategies, adaptive capacity and transformational responses amongst different types of households. We use the study findings, as well as the outcomes of the social learning process, to distil out factors that may block or facilitate action, whether adaptive or transformative, in response to vulnerabilities experienced or anticipated. In particular, we try to understand how historical processes, national policies, learning and access to knowledge and information, and changing local dynamics and circumstances (such as access to assets) might affect people's motivation and capacity to change their practices. We found that many of barriers to adaptation were the very same factors that people perceived to be creating their vulnerability in the first place, and that there are more barriers to local adaptation than enablers. Policy and structural

changes and new strategies for external support will needed to overcome barriers and to create the enabling conditions for adaptation.

2. **Martine Visser** (University of Cape Town)

*"Determinants of Adaptation and Insurance Interest in a Flood Prone Urban Informal Settlement: Experimental Evidence from South Africa"*

Using subjects' choices over a series of lottery tasks for real monetary prizes, we estimate the risk preferences of a sample of individuals living in a flood-prone urban informal settlement in Cape Town, South Africa. The lottery tasks are represented as gain, mixed and loss frames. By including information on participants' adaptation choices in facing floods in the model, we are able to examine the role that risk attitudes play in participants' choices. We find risk aversion to be negatively correlated with the adoption of relatively low-cost yet less-effective strategies. As the sample consists of individuals from a low-income and marginalized community where the risk of annual flooding is extremely high, the results suggest that risk-averse individuals will not risk spending money or valuable resources on inefficient methods of adaptation.

3. **Christina Culwick** (Gauteng City-Region Observatory (GCRO))

*"A multi-disciplinary approach to understanding disaster risk: The case of flood disasters in Ekurhuleni"*

The role of local level governance and participation in managing climate disasters is gaining precedence in global and local (South African) discourse. In recent years, floods have caused major disasters in urban centres around the world, and the pressures from climate change and urbanisation are likely to exacerbate these risks. Heavy rainfall events are projected to become more intense and frequent due to climate change, and many recently affected areas may consequently face increased risk of flooding in future. A complex set of factors influence the risk of disasters, and

understanding how the different components interact is an important component of adapting to disaster risk at the local level. This research investigates the extent to which a range of factors interacts to either enhance or limit resilience to flood disasters at the local scale. This is explored through triangulating the results of three investigations into physical and social factors of understanding and managing flood disasters. The case study of flooding in Ekurhuleni Metropolitan Municipality (EMM) in South Africa, with specific focus on the Atlasville suburb, provides the basis of the research. A multidisciplinary approach is used to examine disaster management, and to investigate how a multiple-perspective understanding of rainfall and flood events can help communities and municipalities better adapt to disaster events. This research argues that in order to understand the nuances of flood disasters, a combination of different sets of knowledge is necessary, as each set of knowledge plays an important part to inform how flood risks can be managed.

4. **Claire Davis** (Council for Scientific and Industrial Research)

*"Communicating climate information for decision-making: The case of "Climate Risk and Vulnerability: A Handbook for Southern Africa"*

Within the Southern African Development Community (SADC), a number of calls have been made for improved planning under climate change, and for access to climate change information, not least by the SADC Secretariat themselves. This paper outlines the experiences of a USAID-funded project designed to build capacity among the SADC member states in understanding information on climate impact and risk in the context of early-warning strategies and planning. The central product of this project was a "Climate Risk and Vulnerability: A Handbook for Southern Africa". The aim of this handbook was to provide decision-makers with up to date information, appropriate for national and sub-national planning, on the risks of climate change and variability, as well as equipping them with understanding of potential responses to manage those risks. The production of the handbook has been innovative in a number of

respects. Firstly, it has been produced by a team that comprises climate scientists, social scientists with experience in impacts, vulnerability and adaptation, and communications experts. Secondly, and reflecting this diverse team, the content covers the likely physical manifestations of climate change in southern Africa, together with an understanding of how social vulnerability and adaptive capacity affect how such changes translate into impacts. The information, made available through the handbook has begun to serve the increasing requests by stakeholders in southern Africa for information about climate change and its impacts on key sectors in the region. Firstly, this work has helped support SADC level engagement partly through providing source material for the SADC Climate Change Think Tank in early 2012; as well as the SADC Climate Change Science, Technology and Innovation (STI) Response Framework (drafted 2011; currently in finalization). Secondly, a three day training course specially developed for Namibia, Mozambique and Zimbabwe were conducted based on the core chapters in the handbook. The experiences to date and lessons learned are reviewed in this paper.

5. **Mathieu Rouault** (University of Cape Town)

*"Impact of El Nino Souther Oscillation on Southern African Climate: Observation versus CMIP5."*

During the last decades much has been gained on how the oceans can influence the climate of Southern Africa at the interannual and also decadal scale scales. This offers predictability. This also indicates that the future climate of Southern Africa will be influenced by the future state of the oceans under natural and anthropogenic forcing. The most severe droughts are happening in Southern Africa during the mature phase of El Niño, when the central and eastern Pacific and the Indian Ocean are warmer than normal. El Nino and La Nina have also an impact on streamflows, vegetation and fire. In the upwelling system of the West Coast of South Africa, the South Benguela, El Nino often triggers lower than normal wind, warmer SST and a weaker upwelling. During La Nina

the opposite occurs (Figure 3). However, there is no linear relationship between the strength of ENSO and the strength of the perturbation in Southern Africa climate. Analyses of 27 CMIP5 coupled models show partial success in reproducing the teleconnection between the Pacific and Southern Africa.

6. **Bruce Hewitson** (University of Cape Town)

*"The Ethics and Uncertainty of Climate Projections"*

Many climate scientists think they comprehend the "average user's" world … whereas "users" are represented by a community about as diverse as one can get. The reality is that users sit within a "marketplace" of climate information perceives a diversity of quality where information is obscure, sometime contradictory, and difficult to understand. Some solutions appear as perfect as the Holy Grail, while others present a challenge as irritating to solve as the endless levels of an irritating computer game. The online "portal proliferation" that is currently occurring only serves to further compound the challenges. Coupled with differing vulnerabilities according to location and sector, and a range of world view values about determining the appropriate adaptation response to climate pressures, this raises significant potential for decision maker's responses to climate forcings to be contested, possibly of negative consequence, and in many cases of indeterminate long term value. The starting point to addressing this state of affairs is through dialogue and a clear articulation of value information in the context of vulnerability.

7. **Penny Price** (Western Cape Government)

*"We're in this together"*

Effective climate adaptation poses significant challenges as drivers of climate vulnerability include a myriad of complex interlinked factors. Partnerships are therefore key to addressing these. A range of partnerships, or a range within one partnership, present opportunities such as access to extended information and financial

resources which provide decision and implementation support beyond the scope of what a a single or small range of actors could provide. The Western Cape Government, through its Climate Change Municipal Support Programme, has been seeking ways to effectively create, facilitate, and support such partnerships. This paper presents a case study of Bergrivier Municipality, which has forged numerous partnerships around a climate adaptation planning process. The initial catalysts and rationale behind the various partnerships is explored, along with the transition to working reality within the process of implementation of these mostly informal agreements, as well as the outcome and sustainability of each.

8. **Amanda Bourne** (Conservation South Africa)

*"Climate Change response in the Namakwa District: working with local governments"*

Conservation South Africa (CSA) has been working with local role players in the Namakwa District Municipality (NDM) for the last four years, developing a long-term process of integrating climate change response and ecosystem-based adaptation into local government discourse, policy documents, and planning activities. To date, this process has included developing a Climate Change Vulnerability Assessment for the District that was launched in 2012, including a description of climate change and its impacts, as well as number of goals, into the 2012-2016 Integrated Development Plan (IDP), and integrating climate change and climate response into the Districts' Disaster Management processes. The NDM has co-hosted 2 high-level Partners' Conferences on climate change, vulnerability, and ecosystem-based adaptation in Springbok in 2013, and worked on the development of a Renewable Energy Spatial Planning Tool which was launched on 19 April 2013 and will guide the location of wind and solar facilities in the District. The Northern Cape Province has also developed a draft Northern Cape Climate Change Response Policy as a guiding document. This presentation will provide an update on this process.

9. **Lisa Constable** (Environmental Resources Management)

*"Understanding and managing the risks associated with extreme weather and climate change in a business context"*

Climate change poses complex challenges for business not only because of uncertainty associated with the timing and magnitude of projected changes, but also because of the interconnectedness between risks and impacts in the modern globalised economy. Drawing on practical experience with forward thinking companies in the extractives, chemicals, power, transport and agriculture sectors, this paper introduces the concept of systems thinking for managing climate risk and developing adaptation strategies and presents four key steps that businesses can take to 1) understand climate context 2) assess climate risks and opportunities, 3) develop a business case for managing climate risk and build resilience throughout their value chain and 4) create a strategy to provide direction and ensure integration within the business. It also presents practical examples of how businesses are addressing these challenges through case studies in a number of business sectors. By providing a means for companies to 'see the wood for the trees', the practical actions required to manage climate risk are demystified and business leaders are provided with tools to help ensure that their companies are proactive in understanding and managing climate risk and adaptation.

10. **Timothy Fasheun** (KZN Dept Agriculture & Environmental Affairs)

*"Climate Change Response as a stimulus for economic development"*

South Africa is one of the few countries in Africa that has positioned herself well in managing the impacts of climate change. By drawing on its infrastructure, Institutional framework and natural resources, the country has the potential to evolve a green economy in the continent, This can be achieved through trans-sectoral partnership. A case is being presented how this can be done.

11. **Kgaugelo Chiloane**, **Maria Couto** and **Lwandle Mqadi** (Eskom)

*"Weather and climate change impacts on the power generation utility: Eskom Adaptation case studies"*

The African continent has a warm climate and many parts of South Africa experience average annual temperatures of above 17°C. On the other hand observed climatic conditions for South Africa indicate that since 1906 temperatures have increased by 0.74 degrees celcius (CSIR, 2010). These scientifically predicted climatic trends emphasise the need for the power generation industry to understand, plan and adapt to the inevitable climate change driven impacts in order to ensure continuity and sustainability of electricity supply. As an initial step, Eskom initiated climate change adaptation research case studies to assess its vulnerability as business to historical and current weather, climate variabilities and extreme weather conditions as well as outlining existing adaptation measures. In addition, climate modelling studies to predict future changes in climatic trends are also undertaken. Preliminary findings from these case studies indicate that rainfall, temperatures, floods, droughts, lightning, storms, strong winds, snow, sea swells, and fires are amongst the key weather and climate impacts that affect Eskom's infrastructure, performance and efficiencies of some of its operational processes negatively.For electricity companies, climate variabilities and change are increasingly becoming relevant factors to be incorporated in planning processes since they affect all areas of this sector from generation via transmission and distribution to consumption.

12. **Brenda Martin** (Project 90 by 2030)

*"Participatory Community engagement, introducing energy, water and food security technologies and arrangements. Reflections from our practice"*

Project 90 by 2030 has been working in partnership with two communities in South Africa over the past 4 years on strategies to enhance their energy, water and food security.

In a first phase of projects in 2010/2011 our focus was on demonstrating the effective application of renewable energy technologies only. In the current follow-up phase of our work, we are focusing on energy, water and food security.

Programmes where energy solutions are introduced into communities in Africa have developed a reputation of being largely unsuccessful with repeated experience recorded by many practitioners that within a very short period of time after installations have been completed, the equipment is either idle, or stolen or used in unintended ways.

The need for water security is already a challenge in South Africa and will become more so as predicted climate impacts are felt. Food security intersects with both energy and water security and so our work has evolved to include methodologies and technologies for addressing all three of these important areas of need.

When we started to research methodology options for the second phase of our community based work late in 2011, we did not initially find material on participatory community engagement methodology specifically oriented toward the successful introduction of technology. We based our early thinking on the participatory research approach where we found helpful insights into how communities have taken up technologies in the past.

We have been developing a methodology of participatory community engagement that seeks to ensure effective take up of technologies. As practitioners we would like to share our experiences thus far, choices we have made and the challenges we continue to grapple with. We hope to gain from the collective knowledge of other colloquium participants as we prepare to embark on our next phase of work.

13. Joseph Daron (Climate System Analysis Group, University of Cape Town)

*"Visualising climate information in Africa"*

Effectively communicating climate model information to a diverse

group of users requires an appreciation of how such information is understood and interpreted in different contexts. In Africa, through initiatives such as CORDEX, an increasing volume of climate information is being made available to researchers and climate change adaptation practitioners. However without a thorough understanding of how different users interpret climate model output, there is a risk that the information will be miscommunicated and therefore misused potentially leading to maladaptive decisions.

Mindful of different novel modes of online dissemination and visual approaches to communicating uncertainty and risk, research is being conducted to understand the needs of different societal sectors. Furthermore, the research explores perspectives of users from a number of African countries to contrast and compare the ways in which climate information is perceived and understood in different contexts. Preliminary findings of research investigating the use of different graphical visualisations and different modes of dissemination to communicate the uncertainties associated with climate model output will be presented."

14. **Antoaneta Letsoalo** (Department of Economic Development, Environment and Tourism, Limpopo)

*"South Africans' Attitudes to Climate Change"*

The study represents the results of a survey on South Africans' attitudes towards climate change, conducted during Pre COP 17 provincial summits in 7 provinces of South Africa in 2011. The purpose of the provincial summits was to create awareness to climate change and the 17th conference of the parties (COP17) of the United Nations Framework Climate Change Convention (UNFCCC), hosted by South Africa in Durban in 2011; to showcase the efforts of government in addressing climate change and to provide participants with the opportunity to express their views on the issue. The summits generally offered broad information on climate change and sustainability together with focused discussions on the particular aspects of adaptation, mitigation, technology, finance, green economy. The focus of the survey was on South

Africans' perceptions of the seriousness of climate change; the extent to which South Africans' feel informed about climate change; attitudes around actions aimed at fighting climate change. We believe that the results from 1200 respondents will provoke an interesting discussion under the theme "Enablers of (and barriers to) adaptation"."

15. **Nick Hamer** (Rhodes University)

*"From knowledge sharing to community understanding: the use of Theatre for Development to share scientific knowledge in rural communities"*

Academic research programs often find it extremely challenging to share scientific findings in a way that is meaningful and relevant in rural communities, which can lead to a one-way flow of information from scientists to communities, positioning communities as passive recipients of 'expert' knowledge. It is essential to find innovative ways to communicate findings from scientific research, in a way that knowledge is shared in a dialogical manner leading to mutual learning. This Theatre for Development process took place towards the end of a four year research project investigating 'Vulnerability, Coping and Adaptation in the context of HIV/AIDS and Climate Change' in two rural Eastern Cape sites. Key findings of the research project were shared with Theatre experts from the Rhodes University Drama department and the Ubom! Eastern Cape Theatre Company. A drama production was then workshopped over a two week period with both experienced and local community performers. A professionally crafted theatre piece was developed by this process which explored the implications of adapting to Climate Change in the context of existing shocks and stresses facing the communities. The drama piece was then performed at a Community Imbizo, in front of an audience of over 100 local community members. Observation of audience reactions, a post show discussion, as well as follow up interviews with performers and audience members indicated that the show was well received and appeared to be an effective tool for sharing research findings and in

engaging community representatives in a discussion about serious challenges. It is argued that Theatre for Development can be an effective means of sharing research findings in an accessible, inclusive and relevant manner. As such it is an approach that is worthy of replicating in the context of other scientific research projects.

16. **Ancois C. de Villiers** (Conservation SA) and **David Black** (Anchor Environmental)

*"Ecosystem-Based Adaptation to climate change in Namaqualand, South Africa: the cost-effectiveness of rangeland and wetland rehabilitation strategies"*

The Namaqualand region of South Africa is inherently sensitive to external shocks, both natural and anthropogenic. This, combined with the projected pressures of climate change, places the region in a position of particular ecological and socioeconomic vulnerability. The tenet of ecosystem-based adaptation (EbA) is that a community's resilience to future climate change stress can be increased through the rehabilitation, conservation and maintenance of supporting ecosystems.

Of the two studies that will be presented, Ancois de Villiers' study assessed the cost-effectiveness of rangeland rehabilitation against the implementation of traditional engineering approaches (including the maintenance and upgrading of road infrastructure) for two local municipalities within the Namakwa District Municipality (NDM). This was done in the context of reducing the current and potential impact of soil erosion on road infrastructure. Ancois' analysis was based on available literature and personal interviews with relevant experts and local officials. It was found that neither the engineering nor the EbA approaches were cost-effective. However, taking no action was not recommended, with regards to the NDM's high vulnerability to future shocks. A 50:50 approach was suggested to combine both rangeland rehabilitation and infrastructure upgrade focused on a specifically vulnerable area.

David Black assessed the cost-effectiveness of wetland rehabilitation

in the present against the implementation of 'engineering alternatives' (the installation of boreholes and the importation of dry feed) in the future. The study focused on the wetlands of the Kamiesberg Uplands that fall within the Leliefontein communal area, and was framed by the objective of sustaining livestock stocking rates of communal farmers into the future. David's analysis was based on available literature, Working for Wetlands financial data and personal interviews with relevant experts and local officials. The cost per hectare (as an average of a combination of rehabilitation options) of rehabilitating wetlands in the Kamiesberg uplands was found to be significant. When framed by the objective of sustaining livestock stocking rates into the future, the cost-effectiveness of EbA strategies was found to be very low.

The poor cost-effectiveness of both rangeland and wetland rehabilitation highlight that the severe degradation of these ecosystems is very costly to recover from, and possibly irreversible, giving rise to the conclusion that prevention is likely better than cure. The intention of both of these studies was to provide feedback and recommendations for policy-makers to aid in the process and advancing adaptive capacity and in the development of a framework for appropriate action in the context of climate change projections.

17. **Carlos Ruiz Sebastián** (Marine Research Institute, UCT; Wildlife Conservation Society ).

*"Preparing for Climate Change in East African Coral Reefs Communities"*

Coral reefs are complex and vulnerable ecosystems supporting both a rich biological diversity and an abundant and productive marine wildlife, providing the backbone of sustenance and income to many coastal communities in East Africa. From Somalia to South Africa, coral reefs have already experienced the severity of the impacts of climate change, such as the mass coral die-off in 1998 that eliminated 80% of corals in Kenyan reefs. The frequency and intensity of climate change impacts on these ecosystems is expected to increase over the next decades and will challenge the potential

for adaptation of coastal human populations.

Over the past 6 years, we have been carrying out several broad-ranging studies in order to advance preparations (monitoring, mitigation and adaptation) for climate change. These studies range from improvements to satellite predictions of bleaching events, to assessing the potential for genetic adaptation of corals to increased temperature; and from evaluating the effectiveness of alternative fishing regulations to investigating the interactions between fishing techniques and climate change.

At the core of several of these studies lies the ability to replicate ecosystem dynamics. We have developed the coral reef ecosystem model CAFFEE (Coral-Algae-Fish-Fisheries Ecosystem Energetics), a system-dynamic deterministic simulation model integrating 27 functional groups with coupled two-way trophic and spatial interactions. CAFFEE is a holistic model that simultaneously calculates changes in algae and fish biomass, benthic space occupied by corals and algae, transport of detritus in and out of the reef, organic production, calcification and bioerosion rates. The model includes five types of artisanal fisheries with specific guild-catch ratios and can be used to estimate fish catches under different management options as well as the ecological effects of fishing on the reef. This can also be combined with projected climate change scenarios to assess the synergystic effects of fisheries gears and climatic disturbances."

18. **Sarah Birch** (ICLEI - Local Governments for Sustainability)

*"A Framework for Decision-making for Urban Ecosystem-based Adaptation"*

Ecosystem-based Adaptation in urban environments is particularly new and innovative, with few cities really having undertaken the challenge to determine how and where such responses to climate change are appropriate and effective. The ICLEI Local Action for Biodiversity (LAB) programme was one of the first to start working in a programmatic manner towards assisting a small group of cities from around the globe in planning and implementing combined

biodiversity and climate change policies (see www.cbc.iclei.org). However, this is a particularly new frontier in Africa, and as such the Climate & Development Knowledge Network (CDKN) supported an Innovation project to determine how to start building capacity for Urban EBA, particularly for decision-making in the African context. This paper presents some of the findings from ICLEI Africa from the background research paper and the Innovation workshop that led to a Framework for Decision-making that will tested in a number of Southern Africa Local governments. A Community of Practice linked to the Durban Adaptation Charter will also be presented as part of the paper.

19. **Geoff Brundrit** (University of Cape Town)

*"Transitions to a Low Risk Coast: Lessons from Cape Town"*

Coastal areas are the home to a large proportion of the world's population, provide the base for much of the global economy, and support important coastal habitats and their ecosystem services. Current trends of development are increasing the number of people and assets in the coastal zone while processes such as climate change, subsidence, sediment starvation and pollution are frequently increasing the hazards. This is an unsustainable pathway and there is a need to develop strategies that will lower risks and promote the coast as an asset to society.

Current management approaches often focus on the short-term and single issues and goals, which will result in potentially more or greater problems in the longer-term. Hence, there is a need for new ways of thinking about coastal management, leading to game-changing transitional strategies. These will comprise more radical actions drawing on a wide menu of adaptation options such as land use approaches ('move to higher ground'), innovative coastal defences ('attack and build seaward'), and engaging society at all levels to create feasible green growth portfolio options. This implies a society making new decisions and carrying out new, coordinated participatory actions.

The challenges associated with future coastal change and the

implications for management involved in transitions to a low risk coast are addressed through four key questions:

- What is the evidence that these transitions are required? [i.e. problem finding]
- What transitions are desirable? [i.e. possible solutions]
- What are the barriers to these transitions occurring? [i.e. issues that impede implementation]
- Where have coastal transitions been achieved, and what have been the benefits and trade-offs? [i.e. learning from experience]

Illustrative examples are taken from Cape Town and further afield."

20. **Mark Stafford Smith** (Science Director, CSIRO Climate Adaptation)

*"When is mainstreaming premature?"*

There is a widespread rubric that adaptation to climate change should be mainstreamed as soon as possible. Whilst mainstreaming would seem an ideal to aim for, is it wise to do so indiscriminately? The likely effectiveness of early mainstreaming is systematically affected by the operating environment of an organisation, its internal structures and business-as-usual practices, and the nature of the adaptation challenges that it faces. We should stop calling for short-term mainstreaming in all circumstances.

## DISCUSSION SESSIONS:

TITLE: *"Enablers of and barriers to adaptation in South African municipalities"*

Chair: Gina Ziervogel (University of Cape Town)

Panelists: Sheona Shackleton, Anna Taylor (Cape Town), Meggan Spires (Nelson Mandela or eThekwini), Penny Price (Bergrivier municipality), Lisa McNamara (Johannesburg)

Enablers of and barriers to climate change adaptation are increasingly being analysed and reported. The intention is to assess adaptation in practice, paying attention to specific local contexts, in order to inform future adaptation practice and theory. South African cities and municipalities are at different stages of developing policies and strategies for adaption to climate change. This panel will explore enablers of and barriers to adaptation across a set of South African cities and municipalities, including issues of governance, leadership, finance, institutional structure and knowledge. The enablers/barriers will be unpacked briefly before encouraging a broader discussion to identify commonalities and discuss future research and support needed.

TITLE: *"Building conversations on community level adaptation: Practitioner, researcher and community perspectives on processes that build capacity to respond to uncertain futures"*

Chair: Georgina Cundill (Rhodes University)

Panelists: Taryn Pereira (Environmental Monitoring Group), Nokwanele Mamkeli (Social learning facilitator, Lesseyton Community), Ian Schasser (Small scale farmer, Goedverwachat community)

This session explicitly sets out to bring adaptation researchers, practitioners and community members into conversation about the approaches they are using to strengthen local capacity to deal with

a changing future. In so doing, we hope that all sides of the dialogue will 'update' the other on emerging lessons from practice.

Although climate change poses significant challenges for land-based livelihoods, it will not impact on peoples' lives in isolation. People face multiple, over-lapping stresses (and opportunities) that influence the choices that they make and the actions that they deem appropriate. In the face of these complex interactions, how can practitioners, researchers and communities build community level capacity to respond to these multiple factors? This panel will bring together NGO practitioners, community members and action researchers to discuss experiences in trying to support communities in this regard in very different contexts. A research team from Rhodes University will share lessons from 4 years of engagement with two rural communities, in which they have purposefully sought to co-develop a social learning process with community participants. In reflecting on their experiences, the team will consider what social learning is, why it matters in the context of climate change adaptation, and what it means for how we think about the purpose and practice of participatory approaches in this arena. An NGO team from the Environmental Monitoring Group will discuss ongoing work in both urban and rural settings, where community based organisations are already engaging with cross-cutting issues such as health, domestic violence, unemployment, insecure water access and fraught relationships with local authorities. Here, there has been an attempt to understand the local implications of climate change, in conversation with climate scientists, in order to develop integrated adaptation plans that consider climate change as one amongst many inter-related threats.

These different interventions have a few key elements in common: they have emphasized climate change as one of a suite of stressors facing marginalized communities; they have tried to enhance problem solving skills as an appropriate response to uncertain futures; and they have sought to build upon existing assets and interests within communities.

TITLE: *"Towards a Community of Practice for Climate Change Adaptation in South Africa*"

Chair: Mandy Barnett (SANBI)

Contributors: Vhalinavho Khavhagali (DEA),Sarshen Scorgie (Conservation SA),Katinka Waagsaether (Indigo Development and Change), Anna Taylor (African Centre for Cities, UCT), Intelligent Chauke (SALGA)

TITLE: *"Ecosystem based adaptation and ecological infrastructure"*

Chair: Guy Midgely (SANBI)

Contributors: Dr Francois Engelbrecht (CSIR), TBC (SANBI), Dr Mandy Barnett (SANBI)

## OPEN LECTURE:

*Framing Climate Change Adaptation for Response-Centred Policy Decisions*

Dr Mark Stafford Smith

For decades, the global research community has been talking about impacts and vulnerability in ways that have mostly tried to motivate emissions reductions. As the prospects of staying below 2°C of global warming dim, now we need to motivate adaptation action. Among other challenges, this requires a shift in framing from an environmental to an economic and social issue; a shift in language from vulnerability problems to adaptation solutions; a shift in confidence from overwhelming uncertainty to well-trodden paths of risk management; and a shift in rhetoric from all adaptation being local to emphasising the multi-level responses required. This talk will (imperfectly!) populate such a re-framing with examples from Australia.

*Dr Stafford Smith is the Science Director of CSIRO's Climate Adaptation Flagship in Canberra, Australia, where he oversees a highly interdisciplinary program of research on many aspects of adapting to climate change, as well as regularly interacting with national and international policy issues. In 2012 he was co-chair of the Planet Under Pressure: New Knowledge Towards Solutions conference on global environmental change in the lead-up to Rio+20, and he was recently appointed as Chair of the inaugural Future Earth Science Committee, which aims to help coordinate global change research worldwide.*