

Linda Anne Stevenson, PhD.

Asia-Pacific Network for Global Change Research (APN), 4F, East Building, 1-5-2, Wakinhama Kaigan Dori, Chuo-ku, Kobe 651-0073, JAPAN.
Email: l Stevenson@apn-gcr.org • Tel: +81 (0) 78-230-8017

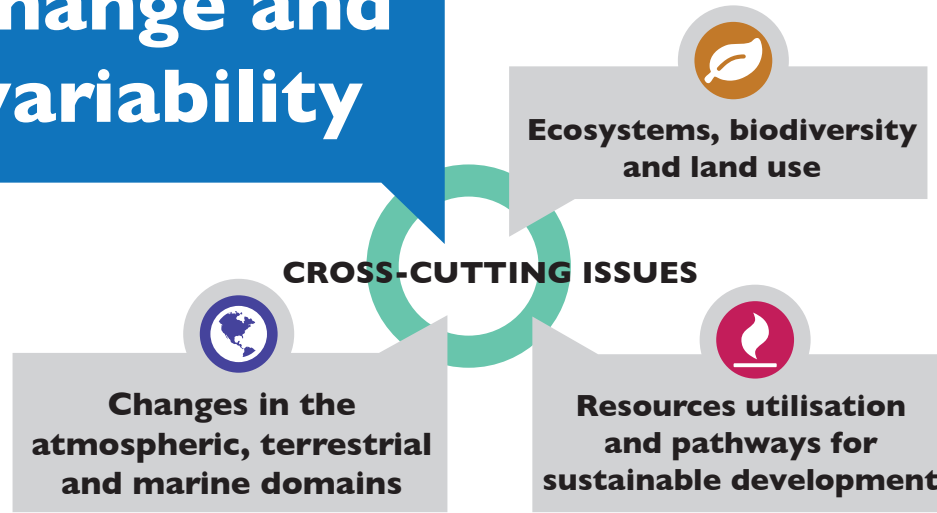
Asia-Pacific Network for Global Change Research

As an Intergovernmental network of 22 countries, the Asia-Pacific Network for Global Change Research (APN) recognises and stresses the importance of adverse climate impacts in the Asia-Pacific region. APN aims to promote, undertake and strengthen regional, collaborative research, scientific capacity development and partnership opportunities with the international climate community.

Climate Focus

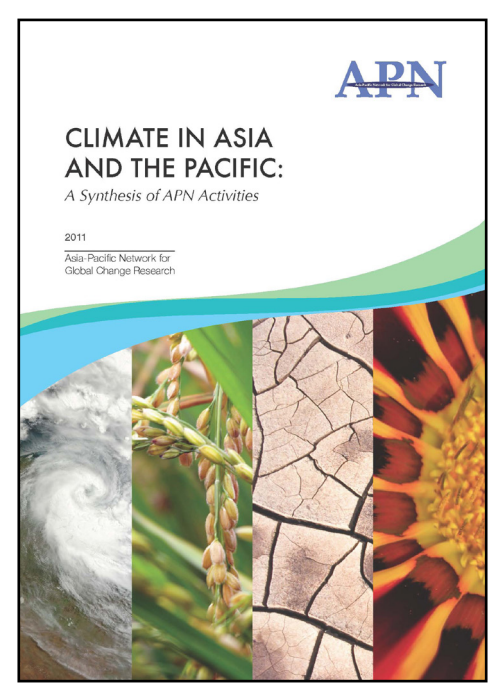
Climate Change and Climate Variability is one of APN's 4 scientific research themes. Following a synthesis of over 50 climate-related APN activities¹, APN also launched its **Climate Adaptation Framework** (www.apn-gcr.org/caf) and published in October 2013, a book on **Climate in Asia and the Pacific: Security, Society & Sustainability**². Both stress the importance of Regional Climate Modelling and downscaling, including CORDEX domains in the region.

Climate change and climate variability

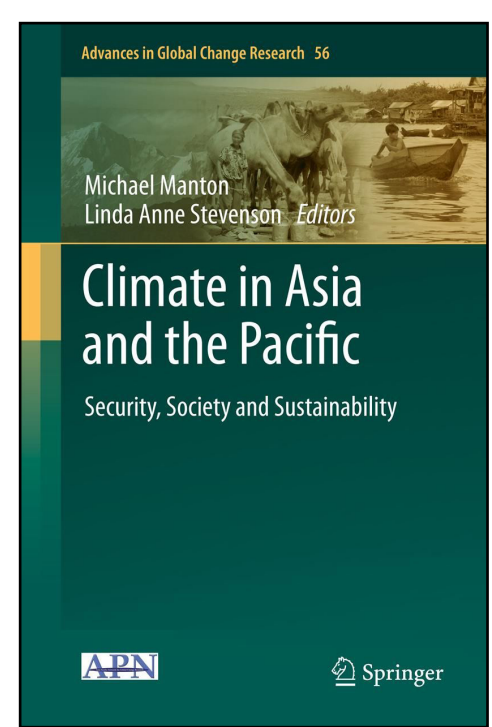


▲ Climate Change and Climate Variability is one of APN's four research themes.

Publications: Climate Change & Climate Variability



The synthesis report¹ is part of the APN's larger aim to contribute, from the science perspective, to the development of policy options for appropriate responses to climate vulnerability and impacts, including adaptation and mitigation, which in turn will contribute to sustainable development.



Commissioned by the Intergovernmental Meeting (IGM) of the Asia-Pacific Network for Global Change Research (APN), this book² offers a detailed survey of the current status of climate change and climate variability in the Asia-Pacific region, a thorough and thoughtful assessment of climate and security and clear recommendations on the best paths of climate research in the future.

Both publications underscore the importance of downscaling particularly for effective vulnerability and impact assessments for decision-making processes. The Springer publication outlines CORDEX as a key activity for downscaling, highlighting various sub-regional domains within the Asia-Pacific region.

Climate Adaptation Framework, National and Regional Activities under Climate Change & Variability

STUDIES AT LOCAL LEVEL



A case study in Albay Province, Philippines used a computer-based modelling system and participatory approaches. The model for Albay Province (AlbayClim) was developed as an innovative tool for assessing and creating climate change scenarios. The AlbayClim system was complemented with participatory techniques to solicit knowledge and experiences of the local people. This put into context the source of vulnerability, as well as facilitated mainstreaming adaptive responses. It is evident through this project the importance of **integrating science and local knowledge** towards a more robust assessment of climate change impacts, vulnerability and adaptation. The project found out that it is difficult for communities to imagine future impacts of climate change and sea level rise. Their proposed responses are driven by variability and extremes rather than long-term gradual changes. The use of computer models captured the "forward looking" aspect of climate change.

▲ A variety of methods, including participatory rural appraisal shown above, were used in vulnerability assessments to allow for cross-validation. Project Leader: Dr. Juan M. Pulhin (CIA2009-02NSY-Pulhin)

The success of this project was made possible through a strong collaboration and partnership between the implementing scientists and government officials concerned. Related adaptation activities are outlined in a recent policy brief for Rio+20³.

CLIMATE ADAPTATION FRAMEWORK

With partners including WCRP, the Climate Adaptation Framework (www.apn-gcr.org/caf) was developed based on needs, gaps & lessons for climate adaptation in the Asia-Pacific region and areas of high priority are:

- » Developing high-resolution observational, model & downscaled datasets;
- » Sharing of needs-oriented data;
- » Calibrating/validating RCMs & uncertainty analysis/assessment;
- » Developing/utilising impact, vulnerability, risk & economic assessments;
- » Improving communication skills of scientists & practitioners with all stakeholders for encouraging decision makers to formulate/implement adaptation plans based on the latest scientific knowledge;
- » Utilising available information including climate data in adaptation practices.

Linking the scientific aspects of Climate Adaptation, Disaster Risk Reduction and Loss + Damage is a new focussed activity under the framework. Having received over 80 proposals, new research and capacity development activities will begin early 2014.

Relevant Publications

- (1) Manton, M., Heath, L., Salinger, J., & Stevenson, L.A. (2011). *Climate in Asia and the Pacific: A Synthesis of APN Activities*. Kobe: Asia-Pacific Network for Global Change Research. Retrieved from <http://www.apn-gcr.org/resources/items/show/1745>
- (2) Manton, M., & Stevenson, L.A. (Eds.). (2014). *Climate in Asia and the Pacific - Security, Society and Sustainability* (Vol. 56). Springer. Retrieved from <http://www.springer.com/environment/global+change+-+climate+change/book/978-94-007-7337-0>
- (3) Stevenson, L.A., & Garcia, K. (2012). *Networking Beyond Rio+20: Climate Adaptation Partnerships for Sustainable Development — A Policy Brief*. Kobe: Asia-Pacific Network for Global Change Research. Retrieved from <http://www.apn-gcr.org/resources/items/show/1835>
- (4) APN. (2013). *Building Asian Climate Change Scenarios by Multi-Regional Climate Models Ensemble*. Retrieved from <http://www.apn-gcr.org/resources/items/show/1567>
- (5) APN. (2013). *Coordinated Regional Climate Downscaling Experiment (CORDEX) in Monsoon Asia*. Retrieved from <http://www.apn-gcr.org/resources/items/show/1883>
- (6) APN. (2013). *Development of an Integrated Climate Change Impact Assessment Tool for Urban Policy Makers (UrbanCLIM)*. Retrieved from <http://www.apn-gcr.org/resources/items/show/1749>
- (7) Macan-Markar, M., Stevenson, L.A., & Deng, X. (2013). *Science-Policy Dialogue on Challenges of Global Environmental Change in Southeast Asia — A Policy Brief*. Kobe: Asia-Pacific Network for Global Change Research. Retrieved from <http://www.apn-gcr.org/resources/items/show/1880>

MODELLING IN MONSOON ASIA

Building Asian Climate Change Scenarios by Multi-Regional Climate Models Ensemble⁴

Led by Shuyu Wang, this project incorporated the WCRP CORDEX East Asia domain in all participating climate models with a study focus on the East Asia monsoon region, and extended attention on climate change over Southeast Asia and South Asia. One of the outputs shows better RCM ensemble performance than driving GCM over certain sub-regions. In future climate scenario projections, for example, temperature is shown to increase by up to 3°C by 2070, with warming in DJF and at higher latitudes⁴. Project activities in the future will also expand the regional climate modelling network by becoming actively involving with WCRP's CORDEX activities.



▲ Simulation domain and classification of sub-regions (ARCP2011-01CMY-Wang)

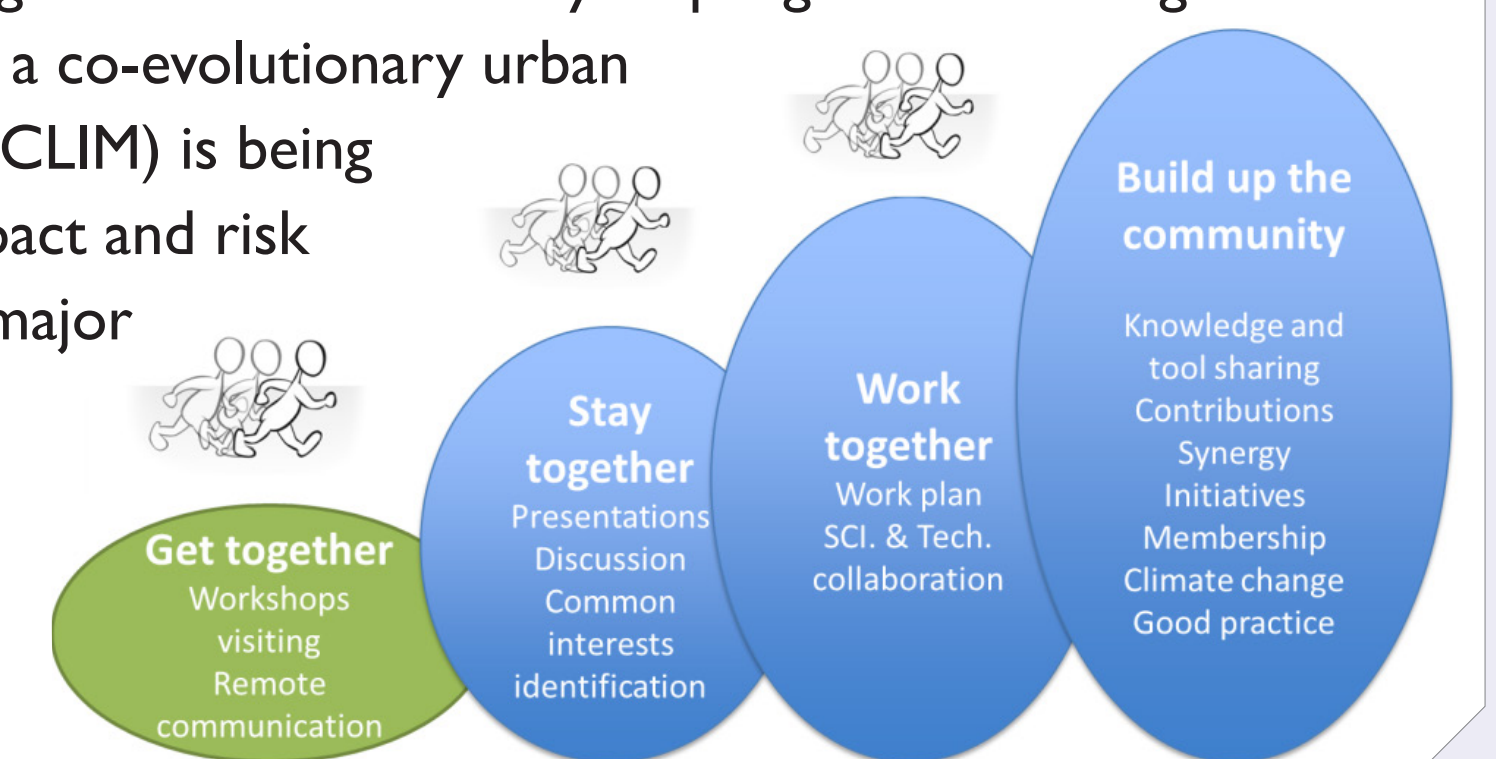
DOWNSCALING SUPPORT FOR CORDEX

Led by Michael Manton⁵, a series of three workshops will be held in 2013, 2014 and 2015 in South Asia, East Asia and Southeast Asia. The workshops will foster synergies and coherence between the various **climate downscaling and vulnerability, impact and adaptation (VIA) user communities** in the Asia Pacific region through direct user engagement. The workshops are scientific in nature and will cover state-of-the-art climate downscaling research, training and capacity building. A bottom-up approach is being applied with participants involved in the formulation of key science and VIA questions to be considered. Some of the key outputs from the first workshop in South Asia are expected to be showcased at the present CORDEX conference.

MODELLING IN URBANISED AREAS

There is an urgent need to develop robust and integrated climate change adaptation strategies for urban areas. The absence of an urban policy-making support system that integrates with climate change risk and adaptation assessment is becoming a critical barrier for implementing sustainable climate change policy in Asia's rapidly growing urban centres. Led by Yinpeng Li and moving into its second year of a 3-year APN-funded project, a co-evolutionary urban climate change decision support tool (UrbanCLIM) is being developed that includes a climate change impact and risk assessment functionality that can extend to major sectors: climate-related hazards resilience, water, transport and health⁶.

▲ "Community of Practice" approaches undertaken in UrbanCLIM (ARCP2013-05CMY-Li)



SCIENCE AND POLICY

While scientists are still grappling with the challenge of modelling for extreme event conditions, the world is moving into climate regimes that have no comparisons with the past. Hence, the past may not be the guide for countries as they tackle climate **uncertainties and changing risks**. This will require new strategies and discussions to deal with uncertainty⁷.

Local community needs have to be factored in by both the science and policy communities, so research can offer answers to what concerns these local communities have in this time of global change. There is a need for more research and development to understand **extreme weather patterns**. **Knowledge production** needs to be broadened, going beyond scientists and policy makers to **include other actors who matter**.

This multi-stakeholder production of knowledge and dialogue should include the private sector, local communities, non-governmental organisations, and civil society organisations.

