UN-CECAR

University Network-Climate and Ecosystem Change Adaptation Research

Srikantha Herath
Institute for Sustainability and Peace
United nations University

Md. Mafizur Rahman
Department of Civil Engineering
Bangladesh Univ. of Engg. & Technology (BUET)

UNITED NATIONS UNIVERSITY
UNU-ISP

May 31, 2012
University of Arizona, Tucson

Capacity Development for Climate Change

- Requires a range of inter-connected tasks
  - Selecting climate projections, downscaling these projections to local conditions, correcting them, analyzing resulting weather, then to estimate impacts on a given sector when the weather change, design adaptation plans to reduce adverse impacts and prioritizing based on economic considerations or risk management perspectives.
  - Existing methodologies for some, others new (red).
  - Address uncertainty, need to update .
  - Need research or studies to translate to local scale (underlined)

Target groups

- Researchers / Post graduate
  - **Customizing global knowledge** to suit local conditions supported by global experiences
  - New education programs to strengthen higher education
- Professional / Practitioners
  - Introducing new methods, tools, standards
  - Training programs: for many and in short time
- Administrative / Local governments
  - Over view of technology and science
  - Deliver key messages

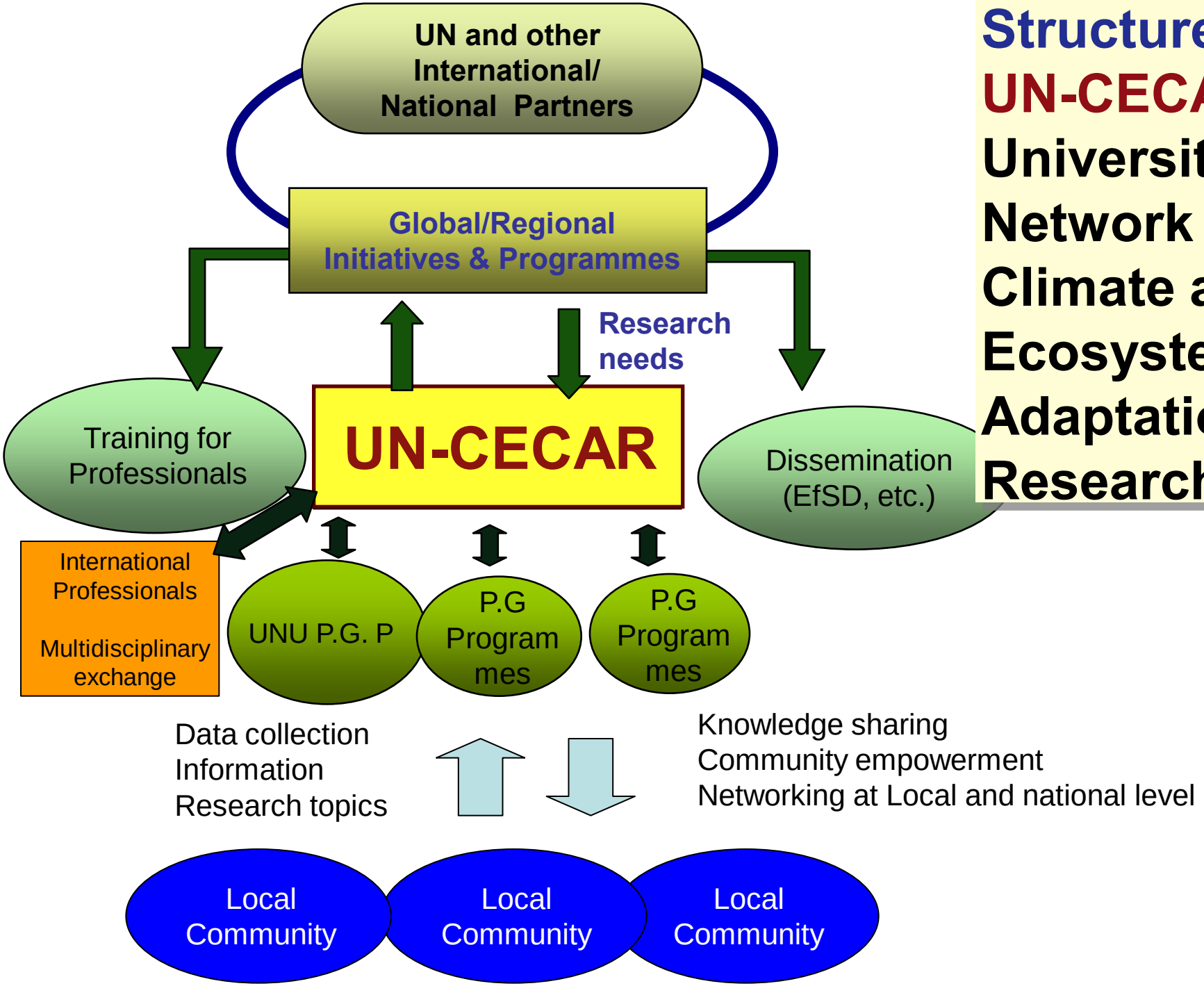
Role of Higher Education in Adapting to Climate Change 2009 June

- **Multidisciplinary approach**
- **Share resources: Joint education and research development**
- **Sustainability and Adaptation: Climate and Eco Systems Change Adaptation Research (UN-CECAR)**

Indian Institute of Technology, INDIA
BUET, BANGLADESH
Institute of Engineering, NEPAL
University of Peradeniya, SRI LANKA
Chinese Academy of Forestry, CHINA
IR3S, JAPAN
Keio University, JAPAN
Kyoto University, JAPAN

Tsinghua University, CHINA
University of Tokyo, JAPAN
UNU-Institute for Sustainability and Peace (secretariat), JAPAN
Waseda University, JAPAN
Yeungnam University, KOREA
Asian Institute of Technology, THAILAND
Chula Longkorn University, THAILAND
Gadjah Mada University, INDONESIA
National University of Malaysia, MALAYSIA
University of Philippines, PHILIPPINES
Viet Nam National University, VIET NAM
Australian National University, AUSTRALIA
Ritsumeikan Asia Pacific University, JAPAN

Structure of UN-CECAR University Network for Climate and Ecosystems Adaptation Research



Actions

- Joint actions by UN-CECAR
  - **Curriculum Development**
    - Three Themes (18 curriculum- modular):
      - **Science of Climate and Ecosystems Change**
      - **Adaptation and Mitigation**
      - **Impacts and Vulnerabilities**
    - **BUILDING RESILIENCE TO CLIMATE CHANGE**
  - **Joint Research Project Development (2 themes)**
    - Rapid Onset Changes; Floods, Cyclones
    - Slow Onset Changes; Land degradation, Bio-diversity loss
  - **Needs Assessment (4 countries)**
  - **Training Programs :**
    Downscaling: Approaches and Applications

UN-CECAR Postgraduate Courses: Building Resilience to Climate Change (1 & II)

- Science, Impacts and Vulnerability - I (nat. science)
- Approaches to adaptation - II (social science)

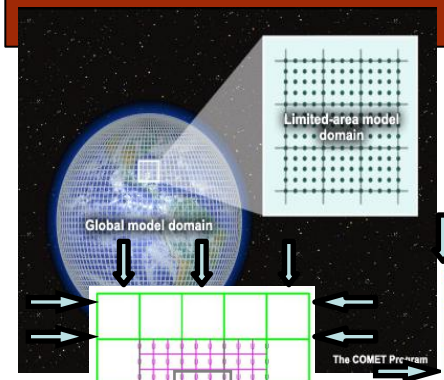
- Held in 2010, 2011 and 2012
- Average class size 33

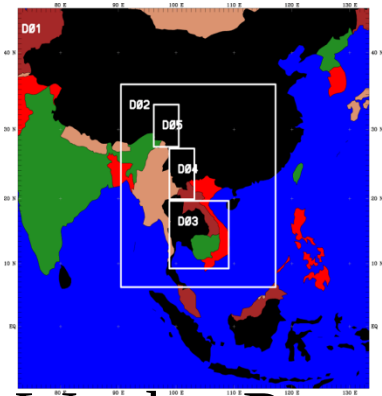
- Taught by partner university faculty and international experts.
- Students nominated by member uni, credits are transferred.
- Open to all, no tuition fee for member inst. often local support provided

Combined with Applied Training

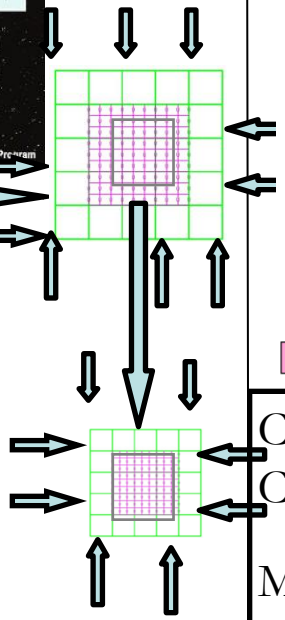
- Combined with hands on training with Remote Sensing (JAXA) GIS (AIT,Nippon Koei Co. and ESRI) applications for climate change analysis: Water and Food production.
- Special emphasis on Community Based Adaptation Planning and Implementation methods (**Gadjah Mada University, Indonesia**)

Downscaling Approaches





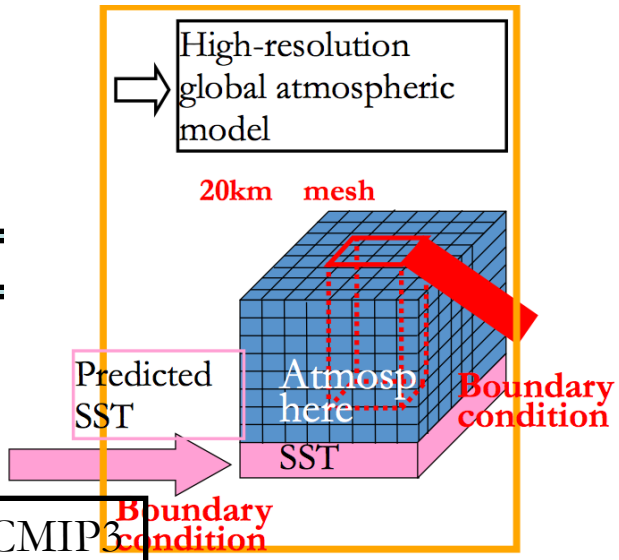
Weather Research and Forecasting (WRF) Model of NCAR, USA



CMIP3 CGCM

Multi-model

Meteorological Research Institute (MRI), JAPAN



Statistical Downscaling

$y = f(x)$

Relation between large scale predictors from global models and small scale parameters (predictands)

Prof. Toshio Koike, University of Tokyo

Training module details

- 4 days common
  - Climatology: IIT, Delhi
  - Dynamic Downscaling with WRFC, Dynamic Downscaling (WRF) by NCAR, implementation by University of Nebraska, USA
  - 20km Global model forecasts by MRI, Japan
  - Statistical downscaling by University of Tokyo
  - Risk Assessment and GIS (UNU, AIT, Nippon Koei)
- 2 day programmes (3)
  - Climate Extended, IDF and Extremes (UNU , UP, IHP)
  - Impact on rice production (UNU, IIT, TH, SL)
  - Flood Impacts (UNU, NK, TU, SL)
  - Communicating Results (ISET)

Observations

- Post graduate sector can be the engine for rapid dissemination and customization of useful global knowledge, especially in the developing countries
- There is a great demand and potential to update knowledge dissemination and research through University higher education networks.
- Financing these efforts remain the main challenge. There should be a link between development funding and capacity development. It should engage the higher education sector, support national programs going beyond narrow project based approaches.

Thank You!