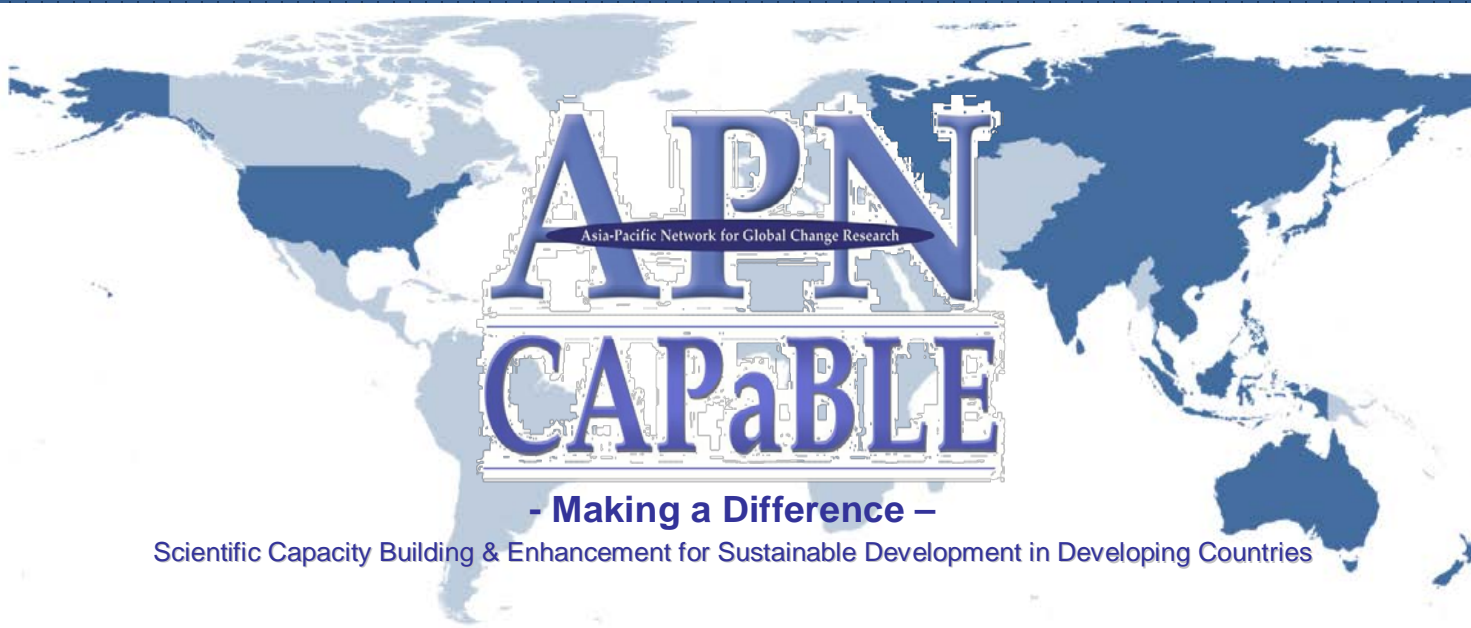


FINAL REPORT for APN PROJECT

Project Reference Number: CBA2013-12NSY-MAIRS

*Project Title*

Promoting Sustainability Science in Monsoon Asia



- Making a Difference -  
Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

The following collaborators worked on this project:

Dr. Ailikun, MAIRS IPO, Institute of Atmospheric Physics, Chinese Academy of Sciences

Email: aili@mairs-essp.org

Congbin FU, Institute of Atmospheric Physics, CAS, fcb@tea.ac.cn

Tetsuzo Yasunari, Research Institute for Humanity and Nature, Yasunari@chikyu.ac.jp

Chuluun, Mongolia National University, chuluun@nrel.colostate.edu



Inter-University Research Institute Corporation  
National Institutes for the Humanities  
**Research Institute for  
Humanity and Nature**



# Promoting Sustainability Science in Monsoon Asia

**Project Reference Number: CBA2013-12NSY-MAIRS**  
**Final Report submitted to APN**

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## OVERVIEW OF PROJECT WORK AND OUTCOMES

### Non-technical summary

MAIRS Open Science conference (OSC) was held in 7-10 April 2014 in Beijing. The purpose of MAIRS conference is to present the latest research of integrated studies and sustainability science dealing with Asian environmental change, to promote success projects/cases of multi-disciplinary studies, to recognize the crucial gaps of science contribution to sustainable development of Asian countries, and capacity buildings to young scientist who are interested in global change and sustainability science.

MAIRS OSC 2014 was very successful to promote the integrated studies and sustainability science in Asian region. Among 260 participants from 24 countries, there are 110 scientists from overseas. Among the 150 students and early career researchers who attended this conference, 23 of them were financial supported by this APN Project. 17 young scientists gave oral talks in related sessions and 6 presented posters, and they joined the session discussion actively. MAIRS conference provided a good opportunity and platform for young scientists to meet the people from different disciplines, build the network for them with global change and sustainability research groups. They will keep in touch with active international programs such as APN, WCRP, LOICZ, iLEAPS, IGAC, Future Earth and MAIRS, to be more involved in national and international global change researches in future.

### Keywords

Global change, integrated study, sustainability science, Future Earth

### Objectives

This APN funding is to support the Asian young scientists to attend the MAIRS conference in 7-10 April 2014 in Beijing. About 23 Asian young and early career scientists (No Chinese from local) were invited to attend the conference. The main objectives of this project are:

- ✓ To deliver the latest information on global change research and promote the crosscutting (integrated) studies in monsoon Asia region
- ✓ To promote collaboration and networking on sustainability science in the monsoon Asia region;
- ✓ To show the visibility of researches done by Asian young scientists

### Amount received and number years supported

The Grant awarded to this project was:

US\$ 38,000 for Year 1:

### Activity undertaken

There are about 260 participants to MAIRS Open Science Conference, 7-10 April 2014 in Beijing. We have invited 19 keynote speakers who are taking the lead in global change research and sustainability science in Asian region. We have set up 25 parallel sessions with about 120 oral talks covering the fields from physical processes of monsoon climate and societal changes under the impact of regional economic development and climate change.

Related to this APN project, we have organized following activities:

- 1) By calling for young scientists support from MAIRS conference website, we have received more than 60 applicants. We have organized a team with 7 senior scientists (Prof. M. Manton (Australia), Prof. R. Krishnan (India), Prof. Chuluun (Mongolia), Prof. Lance HEATH (Australia), Prof. Ailikun (China), Prof. Heqing HUANG (China) and Dr. Shuyu WANG (China) ) to review the application forms and finally decided 23 participants. By this APN project, we have supported 23 young and early career scientists to come to attend the MAIRS conference. (list in Appendix III)
- 2) We encouraged the APN supported young scientists to apply for oral talks actively, to show more visibility of their researches. As a result, there are 17 oral speakers out of 23 APN supported young scientists. (Oral and poster list in Appendix IV)
- 3) Besides the oral presentations, We have organized several discussion sessions to encourage young scientists talk with senior scientists helping the information exchange and networking, such as CORDEX Asia session (R1-03), Himalayan climate change adaptation session (R5-02), NEESPI session (R5-03) and climate change and social research session (R5-01) et al.
- 4) MAIRS has long history of collaboration with APN. From the very beginning of MAIRS, MAIRS Science Steering Committee (SSC) and IPO pushed and organized a series of APN proposals, such as Regional Climate Modelling Inter-comparison (RMIP Phase III), Asian Dryland Land surface Modelling Inter-comparison (ADMIP) and Integrated climate change impact assessment tool for Urban policy makers (UrbanCLIM) etc. To promote the APN contribution to regional global change research, we have set up APN poster corner in the poster session, there are 19 APN related project posts presented in the conference (APN poster corner list in Appendix V)

## **Results**

By supporting of this APN project, we have invited 23 young and early career scientists from India, Pakistan, Nepal, Russia, Mongolia, Malaysia, Iran, Bangladesh, Thailand et al, 17 of them gave oral talks in related sessions and 6 presented posters, and they joined the session discussion actively.

MAIRS conference was a good opportunity for young scientists to meet the people from different disciplines, build the network for them with global change and sustainability research groups. They will keep in touch with active international programs such as APN, WCRP, LOICZ, iLEAPS, IGAC, Future Earth and MAIRS, to be more involved in national and international global change researches in future.

## **Relevance to the APN Goals, Science Agenda and to Policy Processes**

### *Promoting the Sustainability Science in Monsoon Asia:*

MAIRS itself is a regional integration program on global change and sustainability science in Asian region, and establishment of communication and collaboration between scientists and policy makers is the main task of MAIRS. MAIRS has been working hard to promote transdisciplinary studies in the region to contribute to the sustainable development of Asian countries. By links with various international/national GEC programs and projects, MAIRS can contribute a lot to climate change adaptation projects and sustainable development

activities.

Capacity building for developing countries in Asia:

By supporting the young and early career scientists to attend this conference, this CAPaBLE APN project helps building capacity of communication between natural and social scientists, senior and early career scientists, and it will strengthen the links and networks of global change research community with local and national policy makers. In particular, MAIRS conference aims at enhancing the capacity for the further development of the sustainability science in monsoon Asia region, which will contribute to the new Future Earth program in Asia.

Young and early career scientists are often interested in new direction of research, actively involved in discussion about policy-relevant issues locally and nationally. Participating MAIRS conference 2014 will help young and early career scientists from Asia expanding the network of global change science, effecting for public awareness and indirectly on local policy making. Young and early career scientists will also help to build national and regional capacity to conduct sustainability science.

Policy Processes:

MAIRS conference 2014 is relevant to policy making by addressing establishment of science-policy interface in Asian region, to enhance the science contribution to sustainable development in different countries. It will also recognize the crucial gaps between current global change research local/national development strategies.

**Self evaluation**

MAIRS Open Science Conference 2014 was very successful to promote the integrated studies and sustainability science in Asian region. Among 260 participants from 24 countries, there are 110 scientists from overseas. There are about 150 students and early career researchers attended this conference, 23 of them were supported by APN funding. There are 19 keynote talks, 25 parallel sessions, 120 oral talks and 60 posters presented in MAIRS conference.

The scientists involving in this APN project are very active. Among 23 APN supported young scientists, we encouraged 17 of them give oral talks which were very exciting to them. And we also prepared APN poster corner for APN projects which attracted many scientists to aware the APN contribution to regional global change research.

**Potential for further work**

MAIRS conference provided a good opportunity for young scientists to touch the frontier research on regional and global sustainability. APN have been supported global change research and capacity building for about 20 years in Asia and Pacific region. By the networks built by APN and MAIRS, we can establish more joint activities on transdisciplinary studies by attacking more young people in the region.

### **Publications (please write the complete citation)**

- 1) Program of MAIRS Open Science Conference, April 7-10 2014, Beijing, China, 64pages
- 2) Abstracts of MAIRS Open Science Conference, April 7-10 2014, Beijing, China, 263pages

### **References**

1. MAIRS Working Paper Series #1, Initial Science Plan of the Monsoon Asia Integrated Regional Study, Congbin Fu and Frits Penning De Vries, 2006
2. MAIRS Working Paper Series #3, Report of Planning Workshop on MAIRS Mountain Zone Implementation, Beijing, China, Michaela Manton and Ailikun, 2007
3. MAIRS Working Paper Series #4, Climate Change and the Science and Practice of Managing Floods in Urbanizing Regions of Monsoon Asia, Louis Lebel, Elena Nikitina and Bach Tan Sinh, 2008, a synthesis report from a workshop of the MAIRS Urban Zone Working Group, Chiang Mai, Thailand, 4-5, April 2007
4. Monsoon Asia Integrated Regional Study on Global Change Vol. 1: CHANGES IN THE HUMAN-MONSOON SYSTEM OF EAST ASIA IN THE CONTEXT OF GLOBAL CHANGE, 2008, edited by Congbin Fu (Chinese Academy of Sciences, China), J R Freney (CSIRO, Plant Industry, Australia) & J W B Stewart (Salt Spring Island, British Columbia, Canada), World Scientific, ISBN-13 978-981-283-241-2, ISBN -10 981-283-241-6.
5. Initial Strategic Research Plan for Future Earth in Asia, Draft 1 released in MAIRS conference 2014

### **Acknowledgments**

We really appreciate the strong financial supports from Chinese Academy of Sciences (CAS), China Association for Science and Technology (CAST), National Science Foundation of China (NSFC) and Research Institute for Humanity and Nature (RIHN). Without these great supports, we were not able to host the conference smoothly.

We thank to ICSU Regional Office for Asia and the Pacific (ICSU-ROAP), World Climate Research Program (WCRP), Land-Ocean Interactions in the Coastal Zone (LOICZ) technically supported MAIRS conference by recommending invited speakers and giving many suggestions on program arrangement.

We also thank to CAS Key Laboratory for Regional Climate-Environment for East Asia (RCE-TEA), Key Laboratory for Semi-Arid Climate Change of the Ministry of Education, College of Atmospheric Sciences, Lanzhou University (SACOL) to provide supporting staffs and students to achieve a successful conference.

## TECHNICAL REPORT

Minimum 15-20 pages (excluding appendix)

### Preface

MAIRS Open Science conference (OSC) was held in 7-10 April 2014 in Beijing. MAIRS conference provided a good opportunity and platform for young scientists to meet the people from different disciplines, build the network for them with global change and sustainability research groups, and capacity buildings to young scientist who are interested in global change and sustainability science. This APN CAPaBLE project financial 23 young and early career scientists from India, Pakistan, Nepal, Russia, Mongolia, Malaysia, Iran, Bangladesh, Thailand et al, 17 of them gave oral talks in related sessions and 6 presented posters, and they joined the session discussion actively.

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##### 2.3 Invited Keynote speakers

##### 2.4 Sessions of MAIRS OSC 2014

##### 2.5 Program of MAIRS OSC 2014

#### 3.0 Results and Discussion

##### 3.1 List of APN supported young scientists

##### 3.2 Contribution of APN supported young Scientists to MAIRS OSC 2014

##### 3.3 List of posters in APN poster corner in MAIRS OSC 2014

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#### 6.0 Future Direction

#### References

#### Appendix



## 1.0 Introduction

In recent decades, Asia is experiencing rapid economic development and environmental changes induced both by global warming and human activity. Monsoon Asia Integrated Regional Study (MAIRS) was formally started in 2006, the objectives of MAIRS are to establish multi-disciplinary studies in monsoon Asia region, especially understand the interaction between monsoon climate and human activity to contribute to the sustainable development of Asian countries. MAIRS is functioned to promote frontier researches in global change sciences, initiate new research projects nationally and internationally, capacity building to young and early career scientists on crosscutting studies.

After several years of development, MAIRS had established 4 research themes, which are rapid urbanization in Asian coastal region; vulnerable ecosystem in Asian dryland; water resource and hazards in high mountain; regional environmental change simulation and projection. We have developed groups of scientists and projects based on the research themes, setting up “WATER, LAND and AIR” as the main crosscutting issues in MAIRS scientific agenda. The new ICSU-ICSS (International Council for Science-International Council of Social Science) initiative which is called Future Earth (FE) will be formally launched in 2013, the science agenda of FE initiative emphasizes the contribution from scientists to the sustainability of societies by promoting integrated studies cross the natural and social sciences, various research fields and different regions. MAIRS objectives matches FE initiative well by focusing on the climate change issues and problems in monsoon Asian region which could contribute FE activities a lot, MAIRS conference can be an important event of Future Earth Initiative in Asian region.

MAIRS has long history of collaboration with APN. From the very beginning of MAIRS, MAIRS Science Steering Committee (SSC) and IPO pushed and organized a series of APN proposals, such as Regional Climate Modelling Inter-comparison (RMIP Phase III), Downstream impact of glacier melting in Himalayan Region, Asian Dryland Land surface Modelling Inter-comparison (ADMIP) and Integrated climate change impact assessment tool for Urban policy makers (UrbanCLIM) etc. These APN funded projects became the supporting projects of MAIRS.

MAIRS Open Science conference were held in 7-10 April 2014 in Beijing. The purpose of MAIRS conference was to show the latest research of integrated studies and sustainability science dealing with Asian environmental change, to promote success projects/cases of multi-disciplinary studies, to recognize the crucial gaps of science contribution to sustainable development of Asian countries, and capacity buildings to young and early career scientist who are interested in global change and sustainability science.

The main objective of this APN project was to support the Asian young and early career scientists to attend the MAIRS Open Science Conference in 7-10 April 2014. About 23 young and early career scientists were invited to attend MAIRS OSC supported by this project. The project is to deliver the latest information on global change research and results to young

and early career scientists; to promote collaboration between scientists and policy makers in the monsoon Asia region; to promote the crosscutting (integrated) studies among young and early career scientists; to transfer the knowledge and methodology of climate change adaptation science; to show the visibility of researches done by Asian young and early career scientists; To improve the networking among young and early career scientists and help communication on sustainability science between senior and young and early career scientists.

## **2.0 The arrangement of MAIRS open Science Conference 2014**

### **2.1 Organizing Committee and sponsors**

#### Organizers:

- ✓ Monsoon Asia Integrated Regional Study (MAIRS)
- ✓ Institute of Sociology, Chinese Academy of Social Sciences (CASS)
- ✓ Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS)

#### Scientific Committee:

- ✓ Michael Manton, Monash University, Australia
- ✓ Congbin FU, Nanjing University, China
- ✓ Tetsuzo Yasunari, Research Institute for Human and Nature, Japan
- ✓ Achuthan Jayaraman, National Atmospheric Research Laboratory, India
- ✓ Rik Leemans, Wageningen University, Netherlands
- ✓ Chuluun Togtokh: Ministry of Environmental & Green Development, Mongolia
- ✓ B.N. Goswami: The Indian Institute of Tropical Meteorology, India
- ✓ Nordin Hasan, ICSU Regional Office for Asia and the Pacific, Malaysia
- ✓ M. Mohsin IQBAL, Global Change Impact Studies Centre, Pakistan
- ✓ Jiaguo QI, Michigan State University, USA
- ✓ Ailikun, MAIRS IPO

#### Sponsors:

- ✓ Chinese Academy Of Sciences (CAS)
- ✓ Asia-Pacific Network for Global Change Research (APN)
- ✓ China Association for Science And Technology (CAST)
- ✓ National Science Foundation of China (NSFC)
- ✓ CAS Key Laboratory for Regional Climate-Environment for East Asia (RCE-TEA)
- ✓ Research Institute for Humanity and Nature (RIHN)
- ✓ ICSU Regional Office for Asia and the Pacific (ICSU-ROAP)
- ✓ World Climate Research Program (WCRP)
- ✓ Land-Ocean Interactions in the Coastal Zone (LOICZ)
- ✓ Key Laboratory for Semi-Arid Climate Change of the Ministry of Education, College of Atmospheric Sciences, Lanzhou University (SACOL)

## 2.2 Themes of MAIRS OSC 2014

### Theme I: Asian Monsoon, Changes and Feedbacks under Global Change

1. MAIRS achievements in last 10 years
2. Asian monsoon, natural variability and anthropogenic changes

### Theme II: Dynamic Asia

1. Observations and modelling
2. Natural variability and Trend
3. Future projection in monsoon Asia
4. Extreme events and thresholds
5. Drivers of Asian social economic change

### Theme III: Asian Development

1. Ecosystem services and food security
2. Water supply and water security
3. Urbanization and energy supply
4. Human health and wellbeing

### Theme IV: Transformation to Sustainable Development

1. Risk management and adaptation strategy
2. Public involvement in sustainability research
3. Discussion with stakeholders
4. Co-design, co-production and co-delivery

## 2.3 Invited Keynote speakers:

1. Michael Manton, Monash University, Australia
2. Congbin FU, Institute of Atmospheric Physics, CAS, China
3. Guoxiong WU, Institute of Atmospheric Physics, CAS, China
4. Valery Detemmerman, World Climate Research Programme
5. Bin WANG, Hawaii University, USA
6. Shaw LIU, Academia Sinica, Taipei
7. Toshio Koike, University of Tokyo, Japan
8. Bojie FU, Research Center for Eco-Environmental Sciences, CAS, China
9. Soroosh Sorooshian, University of California, USA
10. Zhongyuan CHEN, East China Normal University, China
11. Ho-ching LEE, National Central University, Taipei
12. James Reynolds, Duke University, USA
13. Xizhe PENG, Fudan University, China

14. Rodel Lasco, World Agroforestry Centre (ICRAF), Philippines
15. Tong ZHU, Peking University, China
16. Xiangwan DU, Beijing Institute of Applied Physics and Computational Mathematics, China
17. Shiqiu ZHANG, Peking University, China
18. Tetsuzo Yasunari, Research Institute for Human and Nature, Japan
19. Akio Takemoto, Asia-Pacific Network for Global Change Research (APN)

#### **2.4 Parallel Sessions of MAIRS OSC 2014**

1. R1-01: Integrated study of Asian water cycle under GEOSS/AWCI, Conveners: Toshio KOIKE, Lei WANG
2. R1-05 Linking terrestrial processes to coastal ecosystem services in East and Southeast Asia: Understanding the socioeconomic drivers and consequences, Conveners: Jianguo Qi, Ho Long PHI, Charlie NAVANUGRAHA
3. R2-01: Observation of the aridity effect of Asia dust, Conveners: Jianping HUANG
4. R4-03: Sediment dynamics and anthropogenic impacts of river mouth and coastal systems of marginal seas, Conveners: Jan HARFF, Cheng TANG
5. R1-02: Progress in Landsurface modeling in Eastern Eurasia, and their future perspective, Conveners: Jun ASANUMA, Kun YANG
6. R2-02: Integrated study on eco-hydrological processes in inland river basins, Conveners: Xin LI, Dawen YANG, Soroosh SOROOSHIAN
7. R2-03: Land cover and land use change in the High Asia under climate change and regional development, Conveners: Yili ZHANG
8. R3-04: Mountain land user/cover change under economic development and climate changes, Conveners: Juanle WANG
9. R2-04: Assessing Variability of Grassland Degradations and Carbon Sinks in response to Climate Change and human activities in long term, Conveners: Jianlong LI
10. R5-01: Adapting to climate change: social research and local actions, Conveners: Ho-ching LEE & Xiaoyi WANG
11. R1-03: Regional climate modeling in Asia, Conveners: Shuyu WANG, R. KRISHNAN
12. R4-05 & R6-05: Water security and future dryland in Asia, Conveners: Jianguo Qi, Termirbek BOBUCHOV, Chuluun TOGTOKH, Dennis OJIMA , Alim PULATOV
13. R5-02: Climate change adaptation and social resilience in Himalayan region, Conveners: Lance HEATH, Jianzhong YAN
14. R4-04: Climate change and social-economic transformation, Conveners: Jianzhong YAN, Giovanna GIOLI
15. R3-05 Water, energy and food security in Asia, Conveners: Makoto TANIGUCHI
16. R1-04: Soil moisture observation & modeling and its climatology, Conveners: Jun WEN, Xiwu ZHAN
17. R4-01: Ecosystems and human health, Conveners: Hein MALLEE
18. R5-04: Urban spatial planning, climate change adaptation and disaster risk reduction, Conveners: Yinpeng LI
19. R5-03: Future northern Asia: Conveners: Pavel GROISMAN, Shamil MAKSYUTOV, Evgeny GORDOV

20. R3-01: Climate change and disaster management in Asia, Conveners: Qiang FENG, Kerry-Ann MORRIS
21. R3-02: Air quality and human health in megacities of Asia, Conveners: Tong ZHU
22. R6-04: Co-design, co-production and co-delivery in Future Earth, Conveners: Ailikun, Hein MALLEE
23. R4-02: Adaptive land use and water management in the Pearl River delta under climate change and sea level rise, Conveners: Heqing HUANG, Saskia WERNERS
24. R1-03: Regional climate modeling in Asia, Conveners: Shuyu WANG, R. KRISHNAN (Discussion)
25. R5-02: Climate change adaptation and social resilience in Himalayan region, Conveners: Lance Heath, Jianzhong YAN (Discussion)

## 2.5 Program of MAIRS Open Science Conference 2014



### Monsoon Asia Integrated Regional Study (MAIRS) Open Science Conference – Future Earth in Asia



April 7-10, 2014

Beijing Friendship Hotel, Beijing, China

#### Introduction

The Asian monsoon region is uniquely affected by global climate change, drawing international attention to the magnitude and scale of climate variations and their impacts on the nations of the region. The MAIRS (Monsoon Asia Integrated Regional Studies) programme was established in 2006 to specifically address the interactions between climate and human systems in the monsoon Asia region, using interdisciplinary approaches to integrate research on human communities, climate and ecosystems. By focusing on the integrated studies in three vulnerable zones (Coastal Urban, Mountain, and Dryland), the MAIRS programme has achieved a significant understanding how the climate-human system interacts but at the same time identified knowledge gaps. The 2014 MAIRS Open Science Conference, to be held in Beijing China, provides a platform for scientists, stakeholders, policy makers, and public in general to present the state-of-the-art findings and challenges in addressing climate change issues in the Monsoon Asia.

#### Conference Objectives

This Open Science Conference is intended to bring the regional experts to better understand the complexity of the interactive nature between climate, ecosystem and human systems, to enhance integration of different disciplines, sectors, programs, and national efforts across spatial-temporal scales in the Monsoon Asia.

#### Organizers

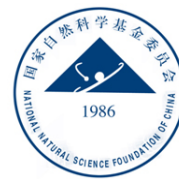
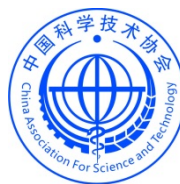
Monsoon Asia Integrated Regions Studies (MAIRS)

Institute of Sociology, Chinese Academy of Social Sciences (CASS)

Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS)

#### Conference Website:

<http://www.mairs2014.org/dct/page/1>



**7<sup>th</sup> April: Asian Monsoon, changes and feedbacks under global/regional environmental change**

**08:00-09:00 Registration**

**09:00-09:30 Welcome Speeches (Chair: Ailikun)**

- CAST: Mr. Jiansheng ZHANG
- CAS: Mr. Jinhuan CAO
- IAP: Prof. Jiang ZHU
- MAIRS: Prof. Michael Manton

**09:30-10:15 MAIRS Program: History, Future and scientific achievements:** Michael Manton (Monash University)

**10:15-10:45 Coffee Break and Group Photo**

**10:45-12:10 Keynote Talks (Chair: Michael Manton)**

- Keynote speeches (45 minutes including discussion)
  - 10:40-11:25 Congbin FU (Nanjing University & Institute of Atmospheric Physics/CAS), **From climate change research to sustainability science**
  - 11:25-12:10 Guoxiong WU (Institute of Atmospheric Physics/CAS), **Future Earth in China**

**12:10-14:00 Lunch**

**14:00-17:20 Keynote Talks (Chair: Mandira Shrestha)**

- Keynote speeches: (45 minutes including discussion)
  - 14:00-14:45 Valery Detemmerman (World Climate Research Programme): **WCRP and Future Earth**
  - 14:45-15:15 Bin WANG (Hawaii University), **Asian monsoon rainfall: Decadal Variability and future changes**

**15:15-15:45 Coffee Break**

- Keynote speeches:
  - 15:45-16:35 Shaw LIU (Academia Sinica/Taipei), **Is extreme typhoon precipitation increasing with global warming?**
  - 16:35-17:20 T. Koike (University of Tokyo), **Water Cycle Integrator (WCI) towards Supporting to Integrated Human Security**

**18:00-20:30 Reception**, shuttle Bus will departure from Friendship hotel at 18:00

## **8<sup>th</sup> April: Dynamic Asia**

### **Main Topics:**

1. Observations and modeling
2. Natural variability and Trend
3. Future projection in monsoon Asia
4. Extreme events and thresholds
5. Drivers of Asian social economic change

### **09:00-12:00 Keynote Talks (Chair: Congbin FU)**

- Keynote speeches: (40 minutes including discussion)
  - 09:00-09:40 Bojie FU (Research Center for Eco-Environmental Sciences/CAS), **Ecosystem services for ecological security**
  - 09:40-10:20 Soroosh Sorooshian (University of California), **Challenges and limitations of hydroclimatological forecasting for water resources management and future prospects**

### **10:20 -10:40 Coffee Break**

- 10:40-11:20 Zhongyuan CHEN (East China Normal University), **Sediment delivery and ecohealth of mega-estuaries: comparing the Yangtze and the Nile**
- 11:20-12:00 Ho-ching LEE(National Central University/Taipei): **Informing climate change adaptation decision making: the case of TaiCCAT**

### **12:00-13:30 Lunch**

### **13:30-16:50 Parallel Sessions:**

- Parallel Sessions (13:30-15:00)
  - R1-01 (Room 1) Koike, Wang
  - R1-05 (Room 2) Qi, Ho Long
  - R2-01 (Room 3) Jianping HUANG
  - R4-03 (Room 4) Harff, Tang
  - R1-02 (Room 5) Asanuma, Yang
  - R2-03 (Room 6) Yili ZHANG
  - R2-04 (Room 7) Jianlong LI

### **15:00-15:20 Coffee Break**

- Parallel sessions R2 (15:20-16:50)
  - R1-01 (Room 1) Koike, Wang
  - R1-05 (Room 2) Qi, Ho Long
  - R2-01 (Room 3) Jianping HUANG
  - R4-03 (Room 4) Harff, Tang
  - R2-02 (Room 5) Xin LI, Dawen YANG
  - R3-04 (Room 6) Juanle WANG
  - R2-04 (Room 7) Jianlong LI

### **17:00-18:30 Poster Session P2**

all posters will be presented from 09:00 to 18:30



## **9<sup>th</sup> April: Asian Development**

Main topics:

1. Ecosystem services and food security
2. Water supply and water security
3. Urbanization and energy supply
4. Human health and wellbeing

### **09:00-12:00 Keynote Talks (Chair: Jiaguo Qi)**

- Keynote speeches: (40 minutes including discussion)
  - 9:00- 9:40 James Reynolds (Duke University), **Crime and Punishment: Can integrated, trans-disciplinary studies provide “magical roadmaps” for sustainable development?**
  - 9:40-10:20 Xizhe PENG (Fudan University), **Population change, urbanization and low carbon society in China**

### **10:20-10:40 Coffee Break**

- 10:40-11:20 Rodel Lasco (World Agroforestry Centre (ICRAF) Philippines), **Climate Change in Asia: Implications of The IPCC AR5 Report**
- 11:20-12:00 Tong ZHU (Peking University ), **Air pollution in China: scientific and public policy challenges**

### **Lunch: 12:00-13:30**

### **13:30-16:50 Parallel Sessions:**

- Parallel Sessions R3 (13:30-15:00)
  - R5-01 (Room 1) Lee, Wang
  - R1-03 (Room 2) Wang, Krishnan
  - R4-05 (Room 3) Qi, Bobuchov
  - R5-02 (Room 4) Heath, Yan
  - R3-05 (Room 5) Taniguchi
  - R4-01 (Room 6) Mallee

### **15:00-15:20 Coffee Break**

- Parallel sessions R4 (15:20-16:50)
  - R5-01 (Room 1) Lee, Wang
  - R1-03 (Room 2) Wang, Krishnan
  - R4-05 (Room 3) Qi, Bobuchov
  - R4-04 (Room 4) Yan, Gioli
  - R1-04 (Room 5) Wen, Zhan
  - R4-02 (Room 6) Yinpeng LI

### **17:00-18:30 Poster Session P3**

all posters will be presented from 09:00 to 18:30

## **10<sup>th</sup> April: Transformation to sustainability of Asia**

Main topics:

1. Risk management and adaptation strategy
2. Public involvement in sustainability research
3. Discussion with stakeholders
4. Co-design, co-production and co-delivery

### **09:00-12:00 Keynote Talks (Chair: Rodel D. Lasco)**

- Keynote speeches: (40 minutes including discussion)
  - 09:00-09:40 Xiangwan DU (Beijing Institute of Applied Physics and Computational Mathematics), **Energy Revolution for sustainable Future**
  - 09:40-10:20 Shiqiu ZHANG (Peking University), **Moving to a Sustainable China: Integrating Environment, Economic and Social Development**

### **10:20-10:40 Coffee Break**

- 10:40-11:20 T. Yasunari (Research Institute for Human and Nature), **Future Earth in Japan**
- 11:20-12:00 Akio Takemoto (APN), **Contribution of APN to Future Earth in Asia and Pacific**

**Lunch: 12:00-13:30**

### **13:30-16:30 Parallel Sessions**

- Parallel Sessions R5 (13:30-15:00)
  - R5-03 (Room 1) Groisman, Gordov
  - R3-01 (Room 2) Feng, Morris
  - R4-03 (Room 3) Tong ZHU
  - R6-04 (Room 4) Ailikun Mallee
  - R1-03 (Room 5) Wang, Krishnan

### **15:00-15:20 Coffee Break**

- Parallel Sessions R6 (15:20-16:50)
  - R5-03 (Room 1) Groisman, Gordov
  - R3-01 (Room 2) Feng, Morris
  - R4-03 (Room 3) Tong ZHU
  - R5-04 (Room 4) Huang, Saskia
  - R5-02 (Room 5) Heath, Yan

### **17:10-18:10 Plenary Session**

- ✓ Best posters award
- ✓ Summary and conclusions
- ✓ Closing

### 3.0 Results and Discussion

There are about 260 participants to MAIRS Open Science Conference, 7-10 April 2014 in Beijing. We have invited 19 keynote speakers who are taking the lead in global change research and sustainability science in Asian region. We have set up 25 parallel sessions with about 120 oral talks covering the fields from physical processes of monsoon climate and societal changes under the impact of regional economic development and climate change. Related to this APN project, we have organized following activities:

1. By calling for young scientists support from MAIRS conference website, we have received more than 60 applicants. We have organized a team with 7 senior scientists (Prof. M. Manton (Australia), Prof. R. Krishnan (India), Prof. Chuluun (Mongolia), Prof. Lance HEATH (Australia), Prof. Ailikun (China), Prof. Heqing HUANG (China) and Dr. Shuyu WANG (China) ) to review the application forms and finally decided 23 participants. By this APN project, we have supported 23 young and early career scientists to come to attend the MAIRS conference.
2. We encouraged the APN supported young scientists to apply for oral talks actively, to show more visibility of their researches. As a result, there are 17 oral speakers out of 23 APN supported young scientists.
3. Besides the oral presentations, We have organized several discussion sessions to encourage young scientists talk with senior scientists helping the information exchange and networking . such as CORDEX Asia session (R1-03), Himalayan climate change adaptation session (R5-02), NEESPI session (R5-03) and climate change and social research session (R5-01) et al.
4. MAIRS has long history of collaboration with APN. From the very beginning of MAIRS, MAIRS Science Steering Committee (SSC) and IPO pushed and organized a series of APN proposals, such as Regional Climate Modelling Inter-comparison (RMIP Phase III), Asian Dryland Land surface Modelling Inter-comparison (ADMIP) and Integrated climate change impact assessment tool for Urban policy makers (UrbanCLIM) etc. To promote the APN contribution to regional global change research, we have set up APN poster corner in the poster session, there are 19 APN related project posts presented in the conference

By supporting of this APN project, we have invited 23 young and early career scientists from India, Pakistan, Nepal, Russia, Mongolia, Malaysia, Iran, Bangladesh, Thailand et al, 17 of them gave oral talks in related sessions and 6 presented posters, and they joined the session discussion actively.

MAIRS conference was a good opportunity for young scientists to meet the people from different disciplines, build the network for them with global change and sustainability research groups. They will keep in touch with active international programs such as APN, WCRP, LOICZ, iLEAPS, IGAC, Future Earth and MAIRS, to be more involved in national and international global change researches in future.

#### 3.1 List of APN supported young scientists (totally 23)

Dr. Juneng Liew

School of Environment and Natural Resource Sciences, Faculty of Science and Technology,  
University Kebangsaan Malaysia, 43600 UKM Bangi, Selangor D.E., Malaysia

+60172125151

uneng@ukm.my

Ms. Alexandra Romanova,

Far East Geological Institute (FEGI FEB RAS)

159, Prospekt 100-letiya, Vladivostok 690022, Russia

cell phone 892424344

Mr. Amir Mohammad Yadghar

PhD student

University of Tehran, Faculty of Environment

3 Motamedi St., Saleh Hosseini St., Pasdaran Ave., Tehran 1944893357, Iran

Tel: +98-21-2258-0890

Email: yadghar@gmail.com

Ms .Anastasia Pikaleva

PhD student

Voeikov Main Geophysical Observatory

7 Karbyshev str., Saint-Petersburg, 194021, Russia

Tel: +7 812 2974390

Email: pikaleva@main.mgo.rssi.ru

Dr. Balram Ambade

Assistant Professor, Aerosol Chemistry

National Institute of Technology (NIT)

Jamshedpur-831014, Jharkhand, INDIA

Tel: +91-9122056501

Email : bambade.chem@nitjsr.ac.in

Dr. Balt SUVDANTSETSEG

“NUM-ITC-UNESCO” Remote sensing and Space Science international laboratory, school of  
Physics and Electronics, National University of Mongolia

Room 403, NUM building 1, University Street, Ulaanbaatar 46-a, Mongolia

E-mail: suvd16@num.edu.mn, suvd16@yahoo.com

TEL: 976-99761800

Mr. Gulshat Cherniyazova  
Department of Geography  
L. N. Gumilyov Eurasian National University  
16/1, Ushakov Street, Astana, Kazakhstan, 010000  
Tel: +77017591969  
Email: missgulshat@gmail.com

Dr. Davaadorj Davaasuren  
Department of Geography, National University of Mongolia  
Building No.I, NUM,  
Baga Toiruu-4, Street of University,  
Sukhbaatar Dsitric,  
Ulaanbaatar 14201, Mongolia  
Tel: 976-88879965, 976-99942934  
Email: dawaadorj54@yahoo.com, davaadorjd@gmail.com

Mr. Firdos KHAN  
Doctoral Candidate at the Institut für Statistik,  
ALPEN-ADRIA Universität, Universitätsstraße 65-67,  
9020 Klagenfurt, Austria.  
Email: fkyousafzai@gmail.com  
Cell # +43-6889073625

Mr. Gibies George  
Indian Institute of Tropical Meteorology  
Dr Homi Bhabha Road, Pashan, Pune  
Tel: +919028523910, +919420407392  
Email: gibiesgeorge@gmail.com, gibies@tropmet.res.in

Dr. IMRAN SHAHID  
Assistant Professor  
Dept. of space sciences, Institute of Space Technology, 1-Islamabad Highway, 44000,  
Islamabad, Pakistan  
Ph: +92 -323-2216835  
Email : luckysis@gmail.com

Dr. Md. Rafi Uddin  
Department of Physics

Bangladesh University of Engineering and Technology  
Dhaka-1000, Bangladesh.  
E-mail: rafiuddin@phy.buet.ac.bd; rafii015@yahoo.com  
Phone: +880 2 966 5650-80 (PABX), Ext. 7151,7491(Off),  
Mobile: +8801712 23 41 88  
FAX: +880 2 861 3026, +880 2 861 3046

Mr. Michal Mark Tomczak, PhD student  
Institute of Marine and Coastal Sciences  
University of Szczecin  
Mickiewicza 18  
PL-70-383 Szczecin, Poland  
mobile: 0048 792 940 762  
tel./fax.: 0048 91 444 2471  
E-mail: tomcz.michal@gmail.com

Dr. Mohammad Mahmudul Islam  
Sylhet Agricultural University  
Sylhet-3100 BANGLADESH  
Tel: 008801921298393  
Email: mahmud2512@googlemail.com

Dr. Prem Sagar Chapagain  
Central Department of Geography, Tribhuvan University  
Kathmandu.  
Tel: 00977 9841561737  
Email: ps.chapagain@gmail.com

Dr. Salman Tariq  
Department of Space Science  
University of the Punjab, Quaid-i-Azam Campus,  
Lahore-54590, Pakistan.  
Mobile: +92 300 8844797  
Land line: +92 42 35952996 Ext 808  
Email: salman.spsc@pu.edu.pk; salmantariq\_pu@yahoo.com

Dr. Tamara Shulgina  
Institute of Monitoring of Climatic and Ecological Systems SB RAS, Siberian Center for  
Environmental Research and Training

Akademicheskoy ave. 10/3, Tomsk, Russia, 634055

Tel: +7(3822)492187

Email: stm@scert.ru

Ms. Vandana

Research Officer

Haryana Institute of Public Administration, Sector- 18, Gurgaon- 122001, India

Tel : 91-9467033130

Email: vandana7232@gmail.com

Dr. Wei Liu

International Institute for Applied Systems Analysis (IIASA)

Laxenburg, Austria

E-mail: wliu@helppanda.org

Ms. Elena Kukavskaya,

PhD, Researcher

Laboratory of Forest fires

V.N. Sukachev Institute of Forest

Siberian Branch of the Russian Academy of Sciences

50/28 Akademgorodok, Krasnoyarsk, Russia 660036

Phone: +7(391) 2494462; Fax: +7(391) 2433686

E-mail: kukavskaya@ksc.krasn.ru

Mr. Amit Kumar

Junior Research Fellow

National Institute of Technology, Kurukshetra, India

Address: 1825/ 10, Ramgopal Colony, Rohtak- 124001, India

Tel: +91-9812741670

Email: amitkumar8530@gmail.com

Ms. Oi Walaiporn Laosuksri

Ph.D. Candidate

Rural Development and Management

College of Humanities and Development Studies

China Agricultural University

17 Qing Hua Dong Lu, Haidian District,

Beijing 100083, P.R. China

<http://cohd.cau.edu.cn/>

Dr. Yam Prasad Dhital  
Department of Environmental Science and Engineering, School of Science,  
Kathmandu University, Nepal  
Tel: 00977-11-661399  
Fax: 00977-11-661443  
E-mail: [yam@ku.edu.np](mailto:yam@ku.edu.np)

### **3.2 Contribution of APN supported young scientists to MAIRS OSC 2014**

#### Oral:

1. Juneng Liew (University Kebangsaan, Malaysia): Sensitivity of Surface Climate over the CORDEX-SEA Regions to Different Physical Parameterizations in RegCM4 (Session R1-03: Regional climate modeling in Asia)
2. Alexandra Romanova (Far East Geological Institute Russian Academy of Science Russian): Sedimentation in the Sea of Okhotsk at present and past time (based on planktonic foraminifera) (Session R4-03: Sediment dynamics and anthropogenic impacts of river mouth and coastal systems of marginal seas)
3. Amir M. Yadghar (University of Tehran, Iran): Climate change model: CEQUEAU hydrological and water temperature model (Session R1-03: Regional climate modeling in Asia)
4. Anastasia Pikaleva (Main Geophysical Observatory, Russia): Future climate changes in the northern Asia as inferred from CMIP5 simulations (Session R5-03 & R6-03: Future Northern Asia)
5. Balram Ambade (NIT, India): Chemical composition of sub micron aerosol in Industrial site and remote site of India (Session R1-03: Regional climate modeling in Asia)
6. George Gibies (IITM, India): Relative importance of Indian Ocean and Pacific Ocean dynamics on Indian Summer Monsoon Simulation in NCEP CFSv2 model (Session R1-03: Regional climate modeling in Asia)
7. Davaadorj Davaasuren (Department of Geography, National University of Mongolia, Mongolia): Impact of Climate Change and Human Activity In Soil Moisture Dynamics on Alluvial Soils on Tuul River Valley (Session R3-04: Mountain land user/cover change under economic development and climate changes)
8. FIRDOS KHAN (Institute of Statistics, Austria): The Role of the Indus River for the Economy of Pakistan under IPCC Climate Change Scenario, the Present and Future (Session R4-04: Climate change and social-economic transformation)
9. Michal Tomczak (Szczecin University, Poland): Depositional environment at the northern continental margin of the South China Sea during the last glacial cycle and Holocene (Session R4-03: Sediment dynamics and anthropogenic impacts of river mouth and coastal systems of marginal seas)
10. Mohammad Mahmudul Islam (Sylhet Agricultural University, Bangladesh): Impacts of monsoon anomalies in the Haor region of Bangladesh: Threats and responses (Session R1-03: Regional climate modeling in Asia)
11. Prem Sagar Chapagain (Tribhuvan University): Climate Change, Water Scarcity and Local Adaptation Strategies: A Case Study from Panchkhal Valley, Nepal (Session R5-02:



Climate change adaptation and social resilience in Himalayan region)

12. Salman Tariq (University of the Punjab, Pakistan): Variability of Aerosol Properties and HYSPLIT Model Estimates for Aerosol Transport Pathways over Lahore (Session R3-02: Air quality and human health in megacities of Asia)
13. Vandana Tomar (Haryana Institute of Public Administration): Assessment of Global Phenomenon and Urban Change Dynamics using Geospatial Strategy (Session R5-04: Urban spatial planning, climate change adaptation and disaster risk)
14. Wei Liu (IIASA, Austria): Natural Disasters and Socio-ecological Transitions – The Case of Wolong Nature Reserve, China and Its Implications for Climate Change Adaptation of Mountain (Session R4-04: Climate change and social-economic transformation)
15. Elena Kukavskaya (RAS Institute of Forest, Russia): Effects of repeated fires in the forest ecosystems of Siberia (Session R5-03 & R6-03: Future Northern Asia)
16. Walaiporn Laosuksri (China Agricultural University, China): Climate Change Adaptation by Local Forestry Community in Central Thailand (Session R5-01/R6-01: Adapting to Climate Change: social research and local actions)
17. Yam Prasad Dhital (Kathmandu University, Nepal): Hydroclimatological changes in the Bagmati River Basin, Nepal (Session R2-02: Integrated study on eco-hydrological processes in inland river basins)

Poster:

1. MAIRS-127-Gulshat, Estimation of snow water equivalent based on remote sensing data, Gulshat Cherniyazova
2. MAIRS-79-Rafiuddin, Impact of climate change on rainy days in Bangladesh during 1950-2009, M. Rafiuddin
3. MAIRS-13-Shulgina, Observed climate extreme indices in Siberia, Tamara Shulgina
4. MAIRS-21-Amit, Geospatial Strategy for Adverse Impact of Urban Heat Island on Urban Environment and Natural Resources using LANDSAT ETM+ Sensors, Amit kumar
5. MAIRS-104-Balt, Dryland pasture degradation and climate change adaptation development for pastoral systems of Mongolia, Balt SUVDANTSETSEG
6. MAIRS-126-Shahid, Utilizing CALIPSO observations towards studying aerosol effects on precipitation events in Pakistan, Imran Shahid

**3.3 List of posters in APN poster corner in MAIRS OSC 2014 (19)**

1. MAIRS-AWCI01, GEOSS/Asian Water Cycle Initiative (GEOSS/AWCI)
2. MAIRS-AWCI02, Climate Change Assessment and Runoff Simulation in Huong River Basin, Vietnam, Patricia Ann Jaranilla-Sanchez
3. MAIRS-AWCI03, Climate Change Assessment and Runoff Simulation in Philippine Basins for the Water Security Master Plan of Metro Manila and its Adjoining Areas, Patricia Ann Jaranilla-Sanchez
4. MAIRS-AWCI04, Statistical Bias Correction Method for Basin scale Climate Impact study, Cho ThandaNyunt

5. MAIRS-AWCI05, Snow depth spatial distribution using microwave remote sensing at the punatsang river basin in Bhutan, Sixto Duran-Ballen
6. MAIRS-AWCI06, Activity Report of AWCI Drought Working Group Supported by APN CAPaBLE Project (CBA2011-02CMY-Kaihitsu\*), Ichirow Kaihitsu
7. MAIRS-105-LiJL02, Advances of grassland carbon sink research in China in recent 30 years, Jianlong LI
8. MAIRS-105-LiJL03, Quantitative assessment of the contribution of climate change and human activities to grassland degradation, Jianlong LI
9. MAIRS-234-Tsogtsaikhan, Mobile message delivery and internet based decision support systems for Zud early adaptation in Mongolian pastoralists, Oyun-erdene Tsogtsaikhan
10. MAIRS-RMIP-WangSY, Building Asian Climate Change Scenarios by Multi-Regional Climate Models Ensemble, Shuyu WANG
11. MAIRS-266-RMIP-Niu, Future summer precipitation changes over East Asia as projected by multi-RCMs under the A1B emission scenario, Xiaorui NIU
12. MAIRS-LiQ01-RMIP, Regional Climate Model Inter-comparison Program in Asia: Ensemble Simulation and Analysis of extreme temperature indices, Qian LI
13. MAIRS-LiQ02-RMIP, Surface climate projection for Monsoon Asia by five ensemble method in a multi-model ensemble framework, Qian LI
14. MAIRS-200-LiuFang, Estimate of grassland net primary productivity and its response to environmental variability in northern China for 1980–1999: a synthesis of field data, Fang LIU
15. MAIRS-172-Sun, Evaluating the Net Primary Productivity in the Grasslands of Southern China from 2001 to 2010 Using a New Land Portfolio Assessment Model, Zhengguo Sun
16. MAIRS-Madan, Runoff Scenario and Water Based Adaptation Strategies in South Asia, Madan Lall Shrestha
17. MAIRS-85-Asanuma-ADMIP, Asian Dryland Model Inter-comparison Project-ADMIP, Jun Asanuma
18. MAIRS-160-LiYP-UrbanClim, Development of an integrated climate change impact assessment tool for urban policy makers-UrbanCLIM, Yinpeng LI
19. MAIRS-4-CORDEX, Coordinated Regional Climate Downscaling Experiment (CORDEX) in Monsoon Asia, Ailikun

#### 4.0 Conclusions

MAIRS Open Science conference (OSC) was held in 7-10 April 2014 in Beijing. The purpose of MAIRS conference is to present the latest research of integrated studies and sustainability science dealing with Asian environmental change, to promote success projects/cases of multi-disciplinary studies, to recognize the crucial gaps of science contribution to sustainable development of Asian countries, and capacity buildings to young scientist who are interested in global change and sustainability science.

MAIRS OSC 2014 was very successful to promote the integrated studies and sustainability science in Asian region. Among 260 participants from 24 countries, there are 110 scientists from overseas. Among the 150 students and early career researchers who attended this conference, 23 of them were financial supported by this APN Project. 17 young scientists gave oral talks in related sessions and 6 presented posters, and they joined the session

discussion actively. MAIRS conference provided a good opportunity and platform for young scientists to meet the people from different disciplines, build the network for them with global change and sustainability research groups. They will keep in touch with active international programs such as APN, WCRP, LOICZ, iLEAPS, IGAC, Future Earth and MAIRS, to be more involved in national and international global change researches in future.

## 5.0 Future Directions

The global change research is now coming to a new stage, Future Earth program, initiated by ICSU and ISSC, is now established, and researchers around the world are working with stakeholders on the development of the trans-disciplinary research needed to resolve some of the key challenges for global sustainability. Asia and Pacific region, under unique monsoon climate and rapid economic development, is becoming the hot spot of global change and sustainability research.

MAIRS conference provided a good opportunity for young scientists to touch the frontier research on regional and global sustainability. APN have been supported global change research and capacity building for about 20 years in Asia and Pacific region. By the networks built by APN and MAIRS, we can establish more joint activities on transdisciplinary studies by attacking more young people in the region.



## References

1. MAIRS Working Paper Series #1, Initial Science Plan of the Monsoon Asia Integrated Regional Study, Congbin Fu and Frits Penning De Vries, 2006
2. MAIRS Working Paper Series #3, Report of Planning Workshop on MAIRS Mountain Zone Implementation, Beijing, China, Michaela Manton and Ailikun, 2007
3. MAIRS Working Paper Series #4, Climate Change and the Science and Practice of Managing Floods in Urbanizing Regions of Monsoon Asia, Louis Lebel, Elena Nikitina and Bach Tan Sinh, 2008, a synthesis report from a workshop of the MAIRS Urban Zone Working Group, Chiang Mai, Thailand, 4-5, April 2007
4. Monsoon Asia Integrated Regional Study on Global Change Vol. 1: CHANGES IN THE HUMAN-MONSOON SYSTEM OF EAST ASIA IN THE CONTEXT OF GLOBAL CHANGE, 2008, edited by Congbin Fu (Chinese Academy of Sciences, China), J R Freney (CSIRO, Plant Industry, Australia) & J W B Stewart (Salt Spring Island, British Columbia, Canada), World Scientific, ISBN-13 978-981-283-241-2, ISBN -10 981-283-241-6.

5. Initial Strategic Research Plan for Future Earth in Asia, Draft 1 released in MAIRS conference 2014

## **Appendix**

Appendix I: Program of MAIRS OSC 2014 with full participants list in attached file and CD

Appendix II: Funding sources outside the APN

Appendix III: Abstracts of MAIRS OSC 2014 in attached file and CD

Appendix IV: Glossary of Terms

Appendix V: Hard copy of Program of MAIRS Open Science Conference 2014 will be sent to APN by post mail, 64 pages

Appendix VI: Hard copy of Abstracts of MAIRS Open Science Conference 2014 will be sent to APN by post mail, 263pages

Appendix VII: group photo and other photos in separate CD

Appendix VIII: PPT files in MAIRS OSC 2014 in separate CD

I: Program of MAIRS OSC 2014 with full participants list in attached file and CD

II: Funding sources outside the APN

- ✓ Monsoon Asia Integrated Regional Study (MAIRS): CNY 400,000 (about USD 64,000)
- ✓ China Association of Science and Technology (CAST): CNY 168,000 (about USD 27,000)
- ✓ Chinese Academy of Sciences (CAS): CNY 100,000 (about USD 16,000)
- ✓ National Science Foundation of China (NSFC): CNY 50000 (about USD 8,000)
- ✓ Research Institute for Human and Nature (RIHN): USD 10,000

III: Abstracts of MAIRS OSC 2014 in attached file and CD

IV: Glossary of Terms

ADMIP: Asian Dryland Land surface Modelling Inter-comparison

APN: Asia-Pacific Network for Global Change Research

CAS: Chinese Academy Of Sciences

CASS: Institute of Sociology, Chinese Academy of Social Sciences (CASS)

CAST: China Association for Science and Technology

CORDEX: Coordinated Regional climate Downscaling Experiment

FE: Future Earth

ICSU: International Council for Science

ICSU-ROAP: ICSU Regional Office for Asia and the Pacific

IPCC AR5: The 5th Assessment Report by Intergovernmental Panel on Climate Change

LOICZ: Land-Ocean Interactions in the Coastal Zone

MAIRS: Monsoon Asia Integrated Regional Study

NEESPI: Northern Eurasia Earth Science Partnership Initiative

NSFC: National Science Foundation of China

OSC: Open Science Conference

RCE-TEA: CAS Key Laboratory for Regional Climate-Environment for East Asia, CAS

RIHN: Research Institute for Humanity and Nature

RMIP: Regional Climate Modelling Inter-comparison

SACOL: Key Laboratory for Semi-Arid Climate Change of the Ministry of Education, College of Atmospheric Sciences, Lanzhou University

UrbanCLIM: Integrated climate change impact assessment tool for Urban policy makers

WCRP: World Climate Research Program

V: Hard copy of Program of MAIRS Open Science Conference 2014 will be sent to APN by post mail, 64 pages

VI: Hard copy of Abstracts of MAIRS Open Science Conference 2014 will be sent to APN by post mail, 263pages

VII: group photo and other photos in separate CD

VIII: PPT files in MAIRS OSC 2014 in separate CD

In the Appendix section, the report may also include:

*Actual data or access to data used in the study*

*Abstracts, Power Point Slides of conference/symposia/workshop presentations*

*Conference/symposium/workshop reports*

***The final project report must follow the template outlined in this document. Use Calibri font size 12 for all the headings and font size 11 for the text.***

The report is to be submitted **one month before the end the Contract Period** in the following formats:

1. By airmail to the address below:
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  - b. **Hard Copy – 2 bound copies** appropriately labeled and covered using the design and information on the cover page of the Report Template

Dr. Linda Stevenson  
APN Executive Science Officer  
APN Secretariat  
4F East Building  
1-5-2 Wakinohama Kaigan Dori  
Chuo-Ku, Kobe 651-0073 JAPAN

2. By e-mail and addressed to Dr. Stevenson ([lastevenson@apn-gcr.org](mailto:lastevenson@apn-gcr.org)) and Ms. Dyota Condrorini ([dcondrorini@apn-gcr.org](mailto:dcondrorini@apn-gcr.org)).

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      - <http://www.yousendit.com/>
3. A separate **CD** containing other project outputs (i.e. publications, photos, etc)



