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AsiaFlux Newsletter

Contents

Thinking Community, Learning Frontier

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It has been 15 years since AsiaFlux has become a part of my life. All those years have been so exciting and grateful to have witnessed the growth of AsiaFlux both in quantity and quality along with deepened friendship among members. As one of the starting members of AsiaFlux, I have learned and embraced the vision cast and carried by my predecessors - Drs. Yoshihiro Fukushima and Susumu Yamamoto. Then, as the vice-chair, I have served with and learned from Dr. Yoshikazu Ohtani about the genuine leadership based on excellence in science and humility in character. As the chair since 2008, I had the privilege of serving with wonderful chair board and the dedicated members of science steering committee, who all have embraced the AsiaFlux vision as their personal vision. My heart goes out with sincere thanks and respect to all of them for their tenacious determination not only to see it through but also to live it through together with unreserved supports.

Our vision is the magnet for commitment, the key to unity, and the determinant for destiny. Since 1999, the AsiaFlux vision has been refined with an expanded scope from carbon science to regional stewardship. Yet, a much more integrated and participatory collaborations will be still needed to fulfill our vision – a community where science and technology work more directly for sustainable ecological-societal systems in Asia. The shared vision stands as the gateway to our community’s promising future. Under the leadership of new chair board led by Dr. Akira Miyata, who has already established an exciting flagship program – CarboAsia, we will continue to be a landmark platform in presenting, discussing, and providing better understanding and learning of our complex ecological-societal systems in Asia.

Finally, I want to thank Dr. Yoshinobu Harazono who had guided me into this inspiring community after our first encounter in 1995. It is so encouraging to be served by such a great mentor who not only knows where he is going but also invites us to journey with him. So, please come and join us in AsiaFlux, and meet your friends, mentors, and protégé!

At the Beginning of the Term

Akira Miyata (Chair, 2014-)

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I express my sincere gratitude to Prof. Joon Kim, the former chair, who has led us for six years with strong leadership and conceptual and inspiring talks. The change of the chair does not mean his retirement. Prof. Kim will continue to work with us as an advisory committee member. I will succeed him and serve for the next three years with vice chairs, Drs. Sheng-Gong Li and Nobuko Saigusa.

AsiaFlux has been progressing steadily since its establishment in 1999. In the past 15 years, we had 11 meetings called AsiaFlux Workshop, which was held almost annually after 2005. A considerable number of scientists, mostly from Asian countries, have joined AsiaFlux, and now we have the network of more than 90 monitoring sites with climatological and ecological diversities. It ranges from tropical forests near the equator to Siberian forests near the Arctic Circle and from wetlands near sea level to alpine grasslands in Tibetan Plateau. We feel proud that our community and the network were established and maintained without steady sponsors or patrons, although we acknowledge tangible and moral support of our best partner, FLUXNET.

I respect all of our seniors and colleagues who have devoted themselves to laying the foundation of AsiaFlux and to consolidating it. Without their voluntary efforts, AsiaFlux does not exist in its present form. The present AsiaFlux mainly comprises the science steering committee (SSC), work groups, national networks and the secretariat, and provides excellent facilities such as workshops, training courses, database, mailing list, web site, newsletters, etc. We should make the best use of these facilities for scientific purposes. At the same time, I am thinking about AsiaFlux in future. Ten years later, for instance, what will you be studying, and what do you expect AsiaFlux to be by then? Shall we continue to have a regular workshop in the same way as we have now? What about training courses and the AsiaFlux Database? I would like to discuss these issues with SSC members and other colleagues, and will not to hesitate to change anything if needed. AsiaFlux does not need to survive as it is, but should be a “resilient” system as the former chair inspired us.

We are going to have the 12th workshop in the Philippines this month and the 13th workshop in India in 2015. We also had a small meeting in Bangladesh in February and will have another meeting in Vietnam in December this year. We selected these host countries with strong motivation to intensify our studies in Southeastern and Southern Asian countries. However, it does not mean studies in other areas become less important. Our target is the whole of Asia, and we must advance toward our short-term vision to publish the report on Asian carbon budget and implication for the global carbon cycles.

At the end of this message, I would like to refer to independence of AsiaFlux. AsiaFlux does not belong to any nation or organization. This principle should be kept in order to bring together scientists from diversified Asian countries. Please join us and work together!

Former Chair

Prof. Joon Kim

&

Present Chair

Dr. Akira Miyata

Report on AsiaFlux Training & Seminar on Methane Flux and Carbon Cycle – 23~27 February 2014, BAU, Mymensingh, Bangladesh

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Methane is one of the main greenhouse gasses and it is considered as second global warming contributor next to CO_2. Methane used to be measured by chamber method since 1980s, but open-path methane analyzer was commercially available recently and the number of tower flux sites which start methane flux measurement is increasing in Asia. Since measurement by open-path analyzer is typically new, there were needs from people who involve methane flux measurements to further understand the instruments and share information of gathered data. Therefore, AsiaFlux, Bangladesh Agricultural University (BAU), National Institute for Agro-Environmental Sciences (NIAES), Japan; National Institute for Environmental Studies (NIES), Japan; and Graduate School of Horticulture, Chiba University, Japan co-organized this training and seminar, sponsored by Asia-Pacific Network for Global Change Research (APN), and NIES. The AsiaFlux training and seminar on methane flux and carbon cycle was held on 23-27 February, 2014 in BAU, Mymensingh, Bangladesh. About 40 researchers and students from 11 countries were participated (Fig. 1). The objective of this training and seminar was to help young researchers and graduate students understand the fundamentals of methane flux measurement using eddy covariance (EC) technique. We appreciate the financial supports from the sponsors mentioned above. We would like to specially thank the organizing committee and staffs for their devotion to manage the training and seminar successfully.

1. LI-COR training course

First three days was training course facilitated by LI-COR Biosciences, USA. The training course was focused on not only methane flux measurement, but also general flux monitoring by eddy covariance technique. First, the trainees learned fundamental theories related to eddy covariance technique and how to start flux measurement including how to select site and what kind of maintenances are necessary. Then, the trainees built up flux monitoring station by themselves in the classroom (Fig. 2). Lastly, the trainees learned how to process data using EddyPro™ (LI-COR Biosciences., USA).

2. Seminar on methane flux and carbon cycle

During the seminar, participants shared study from their own flux measurements site. We had 15 presentations and many of them are study

Fig. 1. A group photo of training course participants

Fig. 2. During the LI-COR training course

Fig. 3. During the seminar on methane flux and carbon cycle

from South and Southeast Asia (Fig. 3). At the beginning, there were welcome addresses from Prof. Md. A. Baten and Prof. Lutful Hassa (BAU) and they encouraged all the participants to maximize this opportunity. Prof. Joon Kim (Seoul National University (SNU), Korea) delivered a congratulatory address by letter.

After the welcome addresses, there was a keynote presentation from Dr. Prabir Patra (Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Japan, Title: Budgets of major greenhouse gases (CO_2, CH_4 and N_2O) from the south and southeast Asia region). Dr. Patra presented his ongoing research to estimate GHG balance both the synthesis and reconciliation of top-down (atmospheric observations and inverse models) and bottom-up estimates (ground-based flux observations and terrestrial models) approaches. He emphasized importance of methane flux measurement data in south Asia for further synthesis model simulations, where the agricultural sector is one of the main sources of methane emission. Dr. Akira Miyata (NIAES, Japan) also mentioned in his greeting via Skype the importance of South Asia in the AsiaFlux activity.

After the keynote speech, each presenter shared his/her recent research progress and had discussions. All the participants shared their idea related to the issues. Dr. Ma. Carmelita Robielos Alberto (International Rice Research Institute (IRRI), Philippines) reported the findings from methane flux measurements at IRRI and mentioned that seasonal variations in daily CH_4 emissions were primarily controlled by water management and the growth of the rice plants and emphasized importance of water management during the vegetative stage to control CH_4 emissions. Prof. Masayoshi Mano (Chiba University, Japan) shared the results from BAU methane flux measurements, and he found higher methane flux values compare to those at other flux sites and a peak emission was found at the transplanting stage of Amon. Since he just installed instrument in 2013, need more data to understand seasonal variations. Other studies such as chamber based methane flux measurement and CO_2 flux measurement from BAU site was also shared from other participants. Dr. Shiva Rodda (Indian Space Research Organization, India) reported the primary result of eddy-covariance methane flux measurements in mangrove site in India. They also just started in 2012, but showed the seasonal variations of methane flux from evergreen mangrove forest. In addition, the measurement technique related topics were also discussed: Dr. Kazunori Minamikawa (NIAES, Japan) shared about standardizing the measurement techniques of chamber methane flux measurement, Dr. Keisuke Ono (NIAES, Japan) provided helpful information by comparing closed and open path methods in terms of eddy-covariance CH_4 flux measurement, and Wonsik Kim (NIAES, Japan) introduced FluxPro program that provides real-time monitoring and surveilling system for eddy covariance flux measurement.

Another target of this seminar was to promote understanding carbon cycle in Asian ecosystems. Dr. Derrick Lai introduced his new project on carbon dynamics at mangrove sites in Hong Kong. Dr. Chandra Shekhar Deshmukh reported how the regional greenhouse gas balance in a mountainous area of Laos was altered in response to building a dam. Asian forest ecosystems have largely been modified by human activities for last several decades and are now related to Reducing Emissions from Deforestation and forest Degradation (REDD) activities. Dr. Hammad Gilani proposed a synthetic approach to monitor

the carbon stock in Nepal using ground measurements and satellite data.

In the overall discussion session, some key questions were raised, which could be categorized into topics of knowledge gap and scientific experience. We also discussed how to deepen our studies. Flux studies have not usually been popular in many Asian countries. Meetings that focus on specific topics, like this training and seminar, could be a promising opportunity to develop our capacities.

It was the first time we had training and seminar on flux monitoring in Bangladesh, but we had active and fruitful discussions based on interesting primary results. Flux data from Asia region is very precious for further synthesis analysis and we hope this training and seminar will help as a starter for those research.

3. Field excursion

We visited Mymensingh flux measurement site in BAU (Fig. 4). Rice paddy is a major agricultural ecosystem in Bangladesh. Arable lands cover its 65% of the total land area, which is the highest percentage in Asian countries (Rahman et al., 2001), and 79.4% of the total arable lands are used for rice paddy cultivation throughout the year either single, double or triple cropping pattern (Food and Agriculture Organization, 2008). Rice paddy fields are one of the largest anthropogenic sources of methane. With respect to methane emission from rice paddy field, Bangladesh is the third largest methane emission country in the world (Yan et al., 2009). As an agricultural based country, BAU plays a vital role for the development of Agricultural sector in Bangladesh since in 1961. In this continuation, Prof. Baten first started flux measurement for monitoring carbon and energy fluxes from rice paddy field using eddy covariance (EC) technique at this university since February, 2006 collaboration with NIAES, Japan. Recently, Chiba University of Japan installed LI-7700 open-path methane gas analyzer to the ongoing eddy covariance system for measuring methane flux in this site on August 12, 2013.

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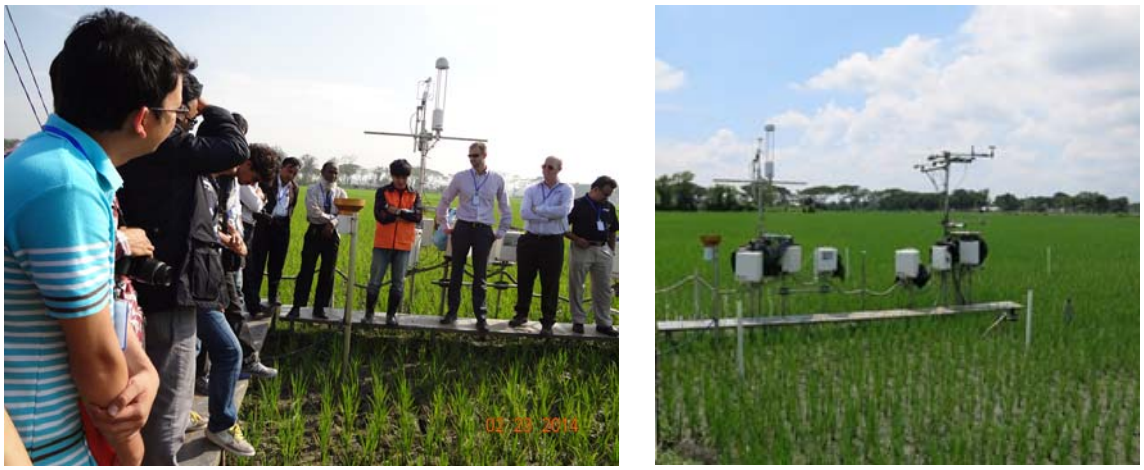

Fig. 4. Mymensingh flux study site, BAU

Report on “the 6th EAFES Congress”

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The EAFES is an abbreviation for the East Asian Federation of Ecological Societies, which was established in 2004 and is presently composed of the Ecological Society of China (ESC), the Ecological Society of Japan (ESJ), and the Ecological Society of Korea (ESK). The mission of the EAFES is to bring ecologists from the East Asia together to promote the progress of ecological sciences and make communication between the science and society from the perspective of ecology. The EAFES holds a congress biannually. To date, there are six congresses have been hold. The 6th EAFES Congress was held in April 9-11 in Haikou, Hainan province, P. R. China, and co-sponsored by the ESC, ESJ, ESK, and Hainan University. The theme of the Congress is “Ecosystem dynamics in changing environment”. The Congress had one Plenary session, six Symposium sessions, and one Poster session. There were eight lectures in Plenary session, and one or two keynote speeches in each symposium.

The Symposia includes 1) Long term ecological research under global change(Organizers: Shirong LIU, Chinese Academy of Forestry; Xiubo YU, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Masa NAKAOKA, Hokkaido University, and Eun-Shik KIM, Kookmin University); 2) Key processes and coupling of carbon, nitrogen and water cycles in terrestrial ecosystems(Organizers: Profs. Guirui YU and Shenggong LI from Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Nobu OHTE from University of Tokyo, and Hyun-Seok KIM, Seoul National University); 3) Microbial ecology in relation to soil-plant interactions(Organizers: Yongguan ZHU, Institute of Urban Environment, Chinese Academy of Sciences, Huaiying YAO, Zhejiang University, Hiroyuki OHTA, Ibaraki University, and Hojeong KANG, Yonsei University); 4) Nature conservation and sustainable management for island and islanders (Organizers: Sun Kee HONG, Mokpo National University, Hiroyuki MATSUDA, Yokohama National University, Ping DING, Zhejiang University); 5) Biodiversity informatics and conservation(Organizers: Keping MA, Institute of Botany, Chinese Academy of Sciences, Eun-Shik KIM, Kookmin University,

Fig. 1. During the congress 1

Shin-ichi NAKANO, Kyoto University); and 6) Tropical biodiversity and ecology (Organizers: Shong HUANG, National Taiwan Normal University, Teng-Chiu LIN, National Taiwan Normal University, Sheng-Shan LU, Taiwan Forestry Research Institute, Xiaobo YANG, Hainan University). The 6th EAFES Congress proved to be a great success, attracting over 300 participants from East Asia. Many scientists and graduate students from the AsiaFlux community contributed to this event, especially to the second Symposium session. Post-Congress excursion had two routes, one was the eco-tour and the other was to visit a field station. The 7th EAFES Congress will be held in Korea in 2016.

Fig. 2. During the congress 2

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I want to thank the former chair, Prof. Joon Kim, for everything he has done for AsiaFlux. I have great expectations for the next AsiaFlux which will be led by the new AsiaFlux chair, Dr. Akira Miyata. I sincerely appreciate those who submitted their articles even though they have been busy for their own research and work. I specially thank the AsiaFlux secretary, Ms. Sawako Tanaka, who supported and encouraged me when the planned articles were cancelled or delayed. It was a valuable experience to serve as an editor of AsiaFlux Newsletter. I would like to contribute an article to the next AsiaFlux Newsletter (or after next ^_^;).