

# ESA Asian Ecology Section (ASE) Newsletter

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## Asian Ecology Section of Ecological Society of America (AES-ESA)

The AES continues to play a vital role in promoting communications and collaborations among ecologists within the ESA and throughout the world who are interested in the advancement of ecology in Asia. In the past, AES has made an important impact on both ecological research and education in Asian countries since its beginning in 1994. The traditional role of the AES now becomes more important than ever, with the increasing concerns on ecological and environmental problems associated with the unprecedented combination of economic and population growth in Asia, as well as the rise of Asian countries as major scientific contributors.

*AES-ESA website: <http://esa.org/asian2/>*



Many countries, huge populations, different languages, and unbalanced development

For every 10 people in the world, 11 are from Asia

Highly variable and heterogeneous

A complex, interconnected network

### 1. ESA Asian Ecology Section 2015-2017 Officers

	<p>Chair: Changhui Peng Professor Department of Biology Sciences University of Quebec at Montreal (UQAM), Canada E-mail: peng changhui@uqam.ca</p>		<p>Secretary: Songlin Fei Associate Professor Forestry and Natural Resources Purdue University, USA E-mail: sfei@purdue.edu</p>
	<p>Newsletter Editor: Han Wang Postdoctoral Research Fellow Northwest A &amp; F University Yanling, China E-mail: wanghan_sci@yahoo.com</p>		<p>Webmaster: Zelin Liu Ph.D. Candidate Department of Biology Sciences University of Quebec at Montreal (UQAM), Canada E-mail: zelinliu2015@gmail.com</p>



Liaison Officer: Shuli Niu  
Professor  
Institute of Geographic Sciences  
and Natural Resources Research  
Chinese Academy of Sciences  
Beijing, China  
E-Mail: sniu@igsrr.ac.cn



Join us to understand the wonder of Asian ecosystems and their dynamics in a rapidly changing world

## 1. AES-ESA was co-organizing a Training Course on Monitoring Greenhouse Gas Fluxes from Natural and Agroecosystem in Asian (Chengdu, China, December 15-31, 2015)

The AES-ESA, in collaboration with Chengdu Institute of Biology, the Chinese Academy of Sciences, International Centre for Integrated Mountain Development (ICIMOD) and China FLUX provided a training course on monitoring GHG fluxes from natural and agroecosystems to build the capacities of the neighboring countries in related fields. Twenty participants from Afghanistan, Bangladesh, Bhutan, India, Myanmar, Nepal, Pakistan, and Tajikistan, including ICIMOD staff, took part in the training. Course content was delivered through class-based lectures from renowned scientists and researchers and field trips to nearby provinces to better understand the use of small-scale and high-tech equipment to monitor GHGs in forests and agroecosystems. The training focused on information exchange on the current state of research internationally and in China and the role of GHGs in climate change. It highlighted the need for better research in neighboring countries to fill the data gap. Prof. Changhui Peng (Chair of AES) and Prof. Shuli Niu (Liaison Officer of AES) gave

two lectures entitled “Progress in GHG fluxes research” and “Global and regional GHG fluxes monitoring”, respectively.



## **2. ESA Asian Ecology Section held the business meeting and mixer at the 2016 ESA meeting.**

The AES-ESA has successfully organized the business meeting and mixer on Tuesday, August 9, 2016 (6:30 PM-8:00 PM), at Lauderdale Convention Center, Florida. The activities have attracted more than 60 old and new members of AES-EAS and colleagues and offered super opportunity to our members to update their research, discuss the recent progresses, current challenges and future directions of Asian ecology as well as share their ideas, data and professional achievements.



### **3. AES-ESA was co-organizing “Nutrient limitation on land: how accurate are our global land models? (15-17th June 2016, Yangling, Shaanxi, China)**

A number of studies have demonstrated that current Earth system models likely overestimate the future land carbon uptake and thus underestimate the future global warming. However, only two ESMs used in the fifth assessment report (AR5) by the International Panel on Climate Change (IPCC) included a representation of the terrestrial nitrogen (N) cycle, and none included the terrestrial phosphorus (P) cycle, which both likely limit the carbon sequestration on land. It is expected that a few more earth system models with nitrogen or both nitrogen and phosphorous cycle will be used for the next IPCC assessment report within the next 2 to 3 years. Several studies found that the most advanced global land models simulated soil carbon pool sizes very poorly, as compared with the estimates from the harmonized world soil data, therefore predictions by those models are highly uncertain. Adding nutrient cycles into those models will likely increase the variation of the predictions of different global land models.

To reduce the uncertainties of those global land models including nutrient cycle and thus limitation, we need to constraint the model simulation or predictions using independent estimates, either direct observations from long-term field observations or estimates based on field observations. The existing model benchmarking platforms, such as iLAMB (the International Land Model Benchmarking) and model inter-comparisons do not include the assessment of the simulated nutrient cycles by global land models. For the first time, this workshop will bring global land modelers

from major international institutions together with ecosystem ecologists to discuss: (1) what are the key processes affected by nutrient limitation in terrestrial ecosystems? (2) what observations are needed to constrain the representation of those key processes? (3) How many of those observations are available, or can be made available by the empiricists in the near future?

Meeting objectives of this meeting were to: 1) provide a set of nutrient data for benchmarking the nutrient simulations by global land models and make those data available to the international science community through the iLAMB (the International Land Model Benchmarking) platform; 2) discuss future inter-comparisons of nutrient cycle simulations by global land models; 3) initiate new manuscripts of model-data comparisons, targeted for example at specific processes that are central in the C cycle and/or nutrient cycles.



The meeting has attracting and invited about 25 top scientists (world leader) in this field from 20 countries and was unexpectedly successful. The meeting also offered an excellent opportunity to train young scientist and grade students from China and other country as well.

#### **4. AES-ESA co-organizing “The 3rd International Forum on Global Change and Ecological Prediction:**

The AES-ESA, in collaboration with the Northwest Agriculture & Forestry University, the Central South University of Forestry and Technology and the Institute of Subtropical Agriculture, Chinese Academy of Sciences, was co-organized “The 3rd

International Forum on Global Change and Ecological Prediction” in Changsha, China, July 7-11, 2016. The Forum invited several experts from China, USA, Canada, and Australia to give keynote talks, and included over 20 informative oral presentations and has attracted over 60 graduate students and young faculties (mainly from China). The meeting has updated and discussed the recent progresses, current challenges and future directions on ecological model prediction, model-data fusion and ecological forecasting under a changing global climate.



**5. AES-ESA co-organizing “Asia GHG – Greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) observation, experiment, and modeling in Asia during 2017 EGU ” (Vienna, Austria, 23–28 April 2017)**

Asia is extremely vulnerable to ongoing land use change and climatic variability and both of these processes have a significant influence on greenhouse gas (GHG) dynamics. Observed data with adequate spatial and temporal resolution on carbon and GHG exchange between the atmosphere and biosphere or soil are lacking, making our understanding and predicting of GHG and its responses to rapid land use and climate change very limited. Significant uncertainties also exist surrounding the contribution of Asia ecosystems to global GHG emissions, as estimates are often based on values derived from other regions with little in-situ validation. This session welcomes contributions which provide information on GHG dynamics across multiple spatial and temporal scales and their response to land use or climate change, that use ground based and remotely sensed observations, manipulative experiments, and biogeochemical models to enhance our understanding of the key drivers of



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biogeochemical cycles from plots to regions, and that link the exchange between the atmosphere and terrestrial ecosystems. The meeting (via PICO presentations) has updated and discussed the recent progresses, current challenges and future directions on observations, manipulative experiments, and biogeochemical models for quantifying the GHG dynamics in Asia under a changing global climate. The session has attracted more 120 audiences and was very impressive by innovative platform (PICO presentations) and was unexpected successful.