

# Sixth Biennial Emergy Research Conference Schedule

## Wednesday, January 13, 2010

18:00-21:00 **Pre-Registration and Open House**  
Center for Environmental Policy, Phelps Lab

## Thursday, January 14, 2010

7:30 **Check-In and Registration**  
8:20 Opening Welcome: Cammy Abernathy, Dean, College of Engineering  
8:25 Opening Remarks: Emergy Synthesis 6 – Mark Brown

### **Morning (Mark Brown presiding)**

Session I “Theory & Conceptual Frameworks”  
8:30 **Agent based emergy analysis: A Lagrangian model of energy memory**  
*Caner Kazanci, John R. Schramski, Simone Bastianoni, and Bill Tollner*  
8:55 **Emergy analysis and ecological footprint: drawing a parallel between the methodologies for a sub-national case study**  
*Lucas Pereira and Enrique Ortega*  
9:20 **Critical review of the usage of transformity values in recent studies**  
*Nana Yaw Amponsah and Olivier Le Corre*  
9:45 **Towards a database of unit emergy values**  
*Sergio Ulgiati, Pedro Lomas, Silvio Viglia, Pan Zhang, and Amalia Zucaro*  
10:10 **Human labor and services in emergy evaluation at different scales**  
*Simone Bastianoni and Federico M. Pulselli*  
  
10:30 **BREAK**

Session II “Agricultural and Rural Systems”  
11:00 **Emergy-based environmental impact assessment for urban metabolic process: a case study of Beijing, 1999-2006**  
*Gengyuan Liu, Zhifeng Yang, and Bin Chen*  
11:25 **Small scale community based management of marine resources vs. large scale industrial aquaculture in Chile – consequences and methodological implications**  
*Charlotte Lagerberg Fogelberg and Daniel A. Bergquist*  
11:50 **Emergy Synthesis of Urban Agriculture**  
*Daniel A. Bergquist*  
12:15 **Emergy evaluation of an extensive cattle ranching system in Pantanal watershed, Brazil**  
*Fabio Takahashi, S. Santos, U. Abreu, and Enrique Ortega*  
  
12:40 **LUNCH**

### **Afternoon (Torbjörn Rydberg presiding)**

Session III “Economic & Social Systems”  
13:40 **Epistemological comparative analysis of neoclassical and biophysical**

**economics: A valuation study of wetlands utilization of wastewater treatment using money, embodied energy, and emergy analyses**

*Jae-Young Ko and Charles A.S. Hall*

14:05 **Emergy evaluation of circular economy system**

*Lungmei Wang, Yanchun Jia, and Enlong Meng*

14:30 **Culture in information cycles: An emergy evaluation of conversation**

*Thomas Abel*

14:55 **Human service emergy delivery rates for native cultures**

*Stewart A.W. Diemont*

15:20 **BREAK**

Session IV “Biofuels”

15:45 **Critical analysis of the Swedish biofuels policy using emergy synthesis**

*Otávio Cavalett and Torbjörn Rydberg*

16:10 **Emergy evaluation of an integrated bioenergy production system: The case study of Enköping (Sweden)**

*Elvira Buonocore, Pier Paolo Franzese, Torbjörn Rydberg, and Sergio Ulgiati*

16:35 **The prediction of ecological potential for developing salt-tolerant oil plants on coastal saline land in Sheyang Saltern, China**

*Zhouran Li, Gang Li, and Pei Qin*

17:00 **Energy systems diagramming as the link to merge systems theory with discourse analysis – the case of large scale biofuel production**

*Torbjörn Rydberg and Otávio Cavalett*

18:00-19:00 **Smathers Library, Grand Reading Room, 2<sup>nd</sup> Floor**

18:00-18:20 Music by Dale Crider

Sneak Peek at the H.T. Odum Collection

Refreshments

18:20-18:30 John Nemmers – Greetings and talk about H.T. Odum Collection

18:30-19:00 Tours and socializing

19:00 **DINNER on your own**

## **Friday, January 15, 2010**

### **Morning (Sergio Ulgiati presiding)**

#### Session V “Theory & Conceptual Frameworks”

- 8:30 **The maximum ordinality principle: A harmonious dissonance**  
*Corrado Giannantoni*
- 8:55 **Emergy quantification of educational attainment in the U.S. and the emergy signature of the nation from 1940 to 2007**  
*Daniel E. Campbell, Hongfang Lu, and Kacy Kolb*
- 9:20 **Dynamic emergy accounting: a review, mathematical revisions, and implications for modeling emergy recycling**  
*David R. Tilley*
- 9:45 **Some continuous empower2 models**  
*Dennis G. Collins*
- 10:10 **New emergy indices for a prosperous way down**  
*Enrique Ortega*

10:35 ***BREAK***

#### Session VI “Agricultural and Rural Systems”

- 11:00 **Emergy synthesis of ecosystem service in agricultural land: a case study of Taoyuan area, Taiwan**  
*Ying-Chieh Lee and Shu-Li Huang*
- 11:25 **Emergy assessment of Cinta Senese breeding and comparison with conventional pig production**  
*Benedetto Rugani, Federico M. Pulselli, and Valentina Niccolucci*
- 11:50 **Emergy self-sufficiency from an emergy perspective exemplified by a model system of a Danish farm**  
*Ostergård, H. and Markussen, M. V.*
- 12:15 **Eco-efficiency evaluation for automobile and bicycle as personal transportation**  
*Hija Kim, Munbo Choi, Daeseok Kang, and Sukmo Lee*

12:40 ***LUNCH***

### **Afternoon (David Tilley presiding)**

#### Session VII “Agricultural and Rural Systems”

- 13:40 **Emergy accounting of an integrated grazing-milking system in Argentina’s Pampas**  
*Gloria C. Rótolo, Verónica Charlon, and Pier Paolo Franzese*
- 14:05 **The use of emergy for measuring the environmental costs and benefits of agricultural practices in Scotland**  
*Robin W. Burgess, C.F.E. Topp, and G.R. Squire*
- 14:30 **Emergy evaluation and modeling of ecological and economic benefit of different grassland mode in north China**  
*Xiaobin Dong, Mark T. Brown, David Pfahler, Maochao Yan, and Xinshi Zhang*

14:55 **Future directions for emergy: Lessons from developments in other fields of environmental accounting**  
*Wesley Ingwersen*

15:20 **BREAK**

Session VIII "Regional Systems"

15:45 **Emergy synthesis of Albania for 2007**

*Pëllumb Harizaj*

16:10 **Environmental valuation at Fernando de Noronha Island**

*Antônio L. Philomena and Karla Leal Cozza*

16:35 **Investigating thermodynamic and kinetic aspects of a territorial system through empower**

*Riccardo M. Pulselli, P. Romano, and E. Tiezzi*

17:00 **Estimating payments for environmental services of a Brazilian sub-basin**

*Maria Silvia Romitelli and Marlei Roling Scariot*

18:00 - 21:30 **Poster Session & Conference Banquet**

Keene Faculty Center in Dauer Hall

*(hosted by the Center for Environmental Policy)*

**POSTERS PRESENTED:**

**Assessment of emergy indices dynamics on agricultural production of Mogi-Guacu and Pardo watershed, Brazil**

*Feni Agostinho, Luis Alberto Ambrósio, and Enrique Ortega*

**Forest recovering model: An application**

*Teldes C. Albuquerque, Thiago J. Roncon, and Enrique Ortega*

**Use of emergy analysis in comparing hydrogen production via steam methane reforming and electrolysis**

*Nana Yaw Amponsah and Olivier Le Corre*

**Emergy in labor – approaches for evaluating embodied knowledge**

*Daniel A. Bergquist, Wes Ingwersen, and Danielle King Liebenow*

**Water hyacinth growth dynamics in eutrophic water**

*Luz S. Buller, Thiago J. Roncon, Ivan Bergier, and Enrique Ortega*

**The emergy baseline for the earth: Is it arbitrary?**

*Daniel E. Campbell, S. Bastianoni, and Hong-Fang Lu*

**A rapid method for quantifying the empower density of states: Application of the LDI to Minnesota and Maryland**

*Daniel E. Campbell, Sherry Brandt-Williams, Denis White, and Elliott T. Campbell*

**The emprint: A snapshot of system condition on the road to sustainability**

*Daniel E. Campbell, Denis White, Sharlynn Sweeney, A. Pizzagallo, Simone Bastianoni, Hong-Fang Lu, Mark T. Brown, Federico M. Pulselli, Wesley Ingwersen, and Elliott T. Campbell*

**Emergy synthesis for valuing the hydrologically driven ecosystem services of forest lands**

*Elliott Campbell and David R. Tilley*

**Emergy indices for assessing vulnerability**

*Li-Fang Chang and Shu-Li Huang*

**Changing the paradigms to change the climate**

*Ari N.R. Costa and Enrique Ortega*

**Emergy accounting of a coffee farm in the Brazilian savannah**

*B.F. Giannetti, Y. Ogura, S.H. Bonilla, and Cecilia M.V.B. Almeida*

**Emergy synthesis of food consumption pattern change in Taiwan**

*Ying-Chen Lin and Shu-Li Huang*

**Comparison of emergy indices for horticultural production through conventional and organic methods in the county of Ibiúna, Sao Paulo, Brazil**

*Elisa Sayoko Nakajima, Antonio Nobre, and Enrique Ortega*

**Emergy evaluation of landfills for methane generation, recoverability, and sustainability**

*Smiti Nepal and Elliott T. Campbell*

**Emergy evaluation of a green façade**

*Jeffrey W. Price and David R. Tilley*

**Emergy study of worldwide biogeochemical formation of fossil fuels**

*Gaetano Protano and Sergio Ulgiati*

**Modeling the Pantanal ecosystem**

*Maria Silvia Romitelli and Marlei Roling Scariot*

**Integrated systems for food, ethanol and environmental services production in land reform settlements**

*Alexandre Souza and Enrique Ortega*

**Ecological evaluation of preserved forest's biodiversity, ecosystems functions and environmental services**

*Thiago J. Roncon and Enrique Ortega*

**Exploring resource use and biophysical constraints of Scottish agriculture at regional and national scales**

*Silvio Viglia, Amalia Zucaro, Pier Paolo Franzese, Kirsty L. Blackstock, Keith B. Matthews, and Sergio Ulgiati*

**A comparison of the total emergy requirements and human risks of treating municipal wastewater to background conditions using conventional systems and wetlands**

*Brandon K. Winfrey and David R. Tilley*

**Two different nursery propagation methods for submerged aquatic vegetation restoration: Evaluation using emergy analysis**

*Elizabeth K. Zinecker*

**Emergy evaluation of Italian agriculture across space and time scales**

*Amalia Zucaro, Silvio Viglia, and Sergio Ulgiati*

## **Saturday, January 16, 2010**

### **Morning (Dan Campbell presiding)**

#### Session IX “Theory and Conceptual Frameworks”

8:30 **Fundamental challenges of using emergy to quantify resource consumption**

*Kyrke Gaudreau, Roydon A. Fraser, and Stephen Murphy*

8:55 **An uncertainty model for emergy**

*Wesley Ingwersen*

9:20 **“Quantus” emergy**

*Mark T. Brown*

9:45 **The environmental value of the earth’s biomes**

*Sherry Brandt-Williams and Mark T. Brown*

10:10 **The ‘locations’ of people and households within a culture-nature emergy transformation hierarchy in Hualien County, Taiwan**

*Thomas Abel*

10:35 ***BREAK***

#### Session X “Forest Systems”

11:00 **Emergy and exergy evaluation of four forest restoration modes in low subtropical China**

*Hong-Fang Lu, Zhuo-Han Wang, Daniel E. Campbell, and Bin Chen*

11:25 **Ecological-economic evaluation of environmental services of mangrove wetlands in Sidoarjo Regency, East Java, Indonesia**

*John McLachlan-Karr*

11:50 **Conference Discussion**

13:00 ***LUNCH* and Meeting of the International Society for the Advancement of Emergy Research (ISAER)**

*(lunch provided by ISAER)*

19:00 **END OF CONFERENCE PARTY**

*(hosted by Mark Brown and Carol Binello)*