



## AAG Annual Meeting

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### Paper Session:

#### 5539 Cross-Scale Hydrologic Modeling: Challenges & Progress

is scheduled on Saturday, 4/13/2013, from 4:00 PM - 5:40 PM in Laguna Parlor 3068, Westin, 30th Floor

#### Sponsorship(s):

Spatial Analysis and Modeling Specialty Group

#### Organizer(s):

[Liem Tran](#) - University of Tennessee at Knoxville

#### Chair(s):

[Liem Tran](#) - University of Tennessee at Knoxville

#### Abstract(s):

**4:00 PM Author(s):** \*Liem Tran - University of Tennessee at Knoxville  
Robert O'Neill - OTIE

Abstract Title: *Hierarchy Theory and Cross-Scale Hydrologic Modeling*

**4:20 PM Author(s):** \*Latha Baskaran - Oak Ridge National Laboratory  
Liem Tran - University of Tennessee  
Virginia Dale - Oak Ridge National Laboratory

Abstract Title: *Cross-Scale Analysis of Factors Affecting Aquatic Macroinvertebrate Distribution in Tennessee*

**4:40 PM Author(s):** \*Nasrin Alamdari - University of Tennessee  
Liem Tran - Associate Professor, Geography Department, University of Tennessee at Knoxville

Abstract Title: *Cross-Scale Hydrologic Modeling for Annual Sediment Load*

**5:00 PM Author(s):** \*Vi Tran - University of Tennessee at Knoxville  
Liem T. Tran - Associate Professor, Geography Department, University of Tennessee at Knoxville

Abstract Title: *Geospatial Regression Models for Regional and Sub-Regional Mean Annual Streamflow*

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**Session Description:** Scale has been one of major challenges to hydrology, in general, and cross-scale hydrologic modeling, in particular. Hydrologic models are often developed at and applied to a particular scale. Complexity at small scales and relative simplicity at large scales are hardly connected in a sound theoretical or modeling framework. The common aggregation approach towards cross-scale hydrological modeling, in which it is assumed that a model applicable at small scales can be applied at larger scales using effective parameter values, is an inadequate approach to the scale problem. Arguably the scale issue in hydrology inherently links to the problems of nonlinearity, heterogeneity, and nonequilibrium. While there have been several efforts to address the cross-scale issue in hydrology, there is no major breakthrough from a theoretical viewpoint. Nevertheless, the consensus among hydrological scientists is the need to identify the "dominant process controls" at different scales. In that context, this session is an attempt to explore issues and efforts in cross-scale

hydrologic modeling. We particularly encourage review and research articles to address theoretical, methodological, and empirical aspects related to (but not limited to) the following topics/questions:

1. Is it (im)possible to have scaling theories adequately addressing the cross-scale issue in hydrology?
2. Is it necessary/how to recognize the scale dependence of model structures?
3. What are the "dominant process controls" on hydrologic dynamics at different scales?
4. How far can the common aggregation approach towards cross-scale hydrological modeling go?
5. Is disaggregation approach to developing scale-dependent models a suitable and feasible way for cross-scale hydrologic modeling?

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New Query