ACES 2018 Pre-Conference Workshop Proposal

Title*: A tool for rapid and customizable ecosystem service assessment: the ARIES Explorer*

Description:
The time and expense required to conduct rigorous ecosystem service assessments has been a long-standing bottleneck in the field of ecosystem services, with assessments often delivered too late to inform decision making. The Artificial Intelligence for Ecosystem Services (ARIES) project, under development since 2007, has sought to overcome this challenge by serving ecosystem service data and models in the cloud, improving their reusability. ARIES also uses decision rules that make data and models context aware, allowing the most appropriate data and models to be selected for the user's context of interest, with transparent reporting of which choices were made. By using a collaborative architecture that allows users to customize and contribute data and models to a growing system, ARIES offers a path to better integrate ecosystem services knowledge for science and decision making.
Until this year, ARIES has required an intensive training and high level of modeling skill to apply, which has limited its use by the wider ecosystem service community. With the 2018 release of the ARIES Explorer, these barriers have been lowered, offering the ability to conduct rapid ecosystem service assessments with minimal technical training. For skilled modelers, options remain to customize and contribute data and models to ARIES' growing knowledge base, improving the state of the science for future ecosystem service assessments.
The purpose of this one-day workshop is to introduce participants to the ARIES modeling philosophy and software. The morning session will include an overview of the ARIES approach and use of the user-friendly ARIES Explorer, an overview of advanced modeling features in ARIES, strategies for managing and accessing ecosystem service data and models on the cloud, and a discussion of the implications of a cloud-based, collaborative approach to modeling for the ecosystem service community. The optional afternoon session will allow more technical users to install and experiment with the ARIES software to address basic ecosystem service modeling problems, with guidance from the workshop facilitators. Users who complete the full-day training will receive the skills to run basic ecosystem service assessments using data and models already contained within the ARIES system, and have a basic understanding of the steps needed to customize and contribute data and models to the larger ARIES knowledge base.

Software installation & running ARIES on your computer

In addition to running the ARIES web explorer, workshop attendees may wish to install the ARIES GUI and modeling engine on their own computers. We will send instructions for doing so to all workshop registrants in advance of the ACES conference. If you are interested in installing ARIES on your computer, be sure that it meets the following requirements: 1) A 64-bit Windows, Macintosh, or Linux operating system with minimum 4GB RAM and an ethernet connector (in case conference hotel wifi bandwidth is limited). ARIES is not compatible with a 32-bit operating system. 2) A Java Development Kit installed on your machine (available for free here: http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html). 3) Permission to adjust system settings and install software on your computer. We have found that users that do not have permission to adjust system settings may struggle with installation; additionally organizations with highly restrictive firewalls may have problems running the ARIES GUI and modeling engine from within their networks (i.e., to connect to external, cloud-based data and models; this limitation does not apply to the ARIES Explorer).

Workshop Agenda

SPEAKER	TIME	TOPIC
Simon Willcock	10 min	Welcome and Introductions
Simon Willcock	50 min (With Q&A)	Overview of ARIES and the ARIES Explorer: Basic approach, philosophy, and key features
Simon Willcock	40 min (with Q&A)	Software tour & demo
	15 min	Break
Simon Willcock	35 min	Overview of advanced features of ARIES: Machine learning, spatial multicriteria analysis, multiparadigm modeling, constructing ecosystem service flow networks
Mehdi Heris	30 min	Data and model management on the cloud
Simon Willcock (moderating)	30 min	Shifting the ecosystem service modeling paradigm: What do open data, semantics, and cloud-based approaches mean for our community? (discussion with all attendees)
LUNCH		
Simon Wilcock	30 min	Discussion of attendee modeling problems & solution strategies
Simon Willcock/Mehdi Heris	150 min	EXERCISE: Individuals install and experiment with the software to address basic ecosystem service modeling problems. Session facilitators will be on hand to work with individuals to familiarize them with the software and cloud-based modeling approach.
Simon Willcock	30 min	Lessons learned and next steps (discussion with all attendees)

Audience:
The target audience includes 1) scientists across the full range of technical proficiency levels who are engaged in ecosystem services mapping and modeling and are interested in learning new techniques to share, use, and improve scientific data and models on the cloud and 2) individuals in government agencies, NGOs, foundations, academics, and others interested in understanding how to conduct more rapid and credible ecosystem service assessments that build on existing data and models, and use those assessments to inform decision making. The workshop is designed to progress from less to more technical content as the day progresses; individuals interested in attending only the morning session may do so.

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Qualifications:

Simon Willcock, PhD is a Lecturer in Environmental Geography at Bangor University, United Kingdom. His research interests focus on the interaction between people and nature; including monitoring, modelling and mapping natural resources and their use to help achieve sustainable use, with a particular focus on African tropical forests, food security and migration. Examples of his past work include two Ecosystem Services for Poverty Alleviation (ESPA) projects (namely Attaining Sustainable Services from Ecosystems through Trade-off Scenarios (ASSETS) and Which Ecosystem Service Models Best Capture the Needs of the Rural Poor (WISER)), and the Valuing the Arc project (which aimed to improve knowledge of the ecosystem services provided by the Eastern Arc Mountains of Tanzania, of their contribution to human welfare, and to find solutions to managing these services in a sustainable way). Simon has been a lead modeler for the ARIES project since 2013.

Mehdi Heris, Ph.D. is a Postdoctoral Fellow at the University of Colorado-Denver. His postdoctoral research, funded by NASA, supports the development of ecosystem accounts within a broader national-scale natural capital accounting project. Mehdi's research interests span geospatial technologies and methods for urban system analysis. His PhD research investigated environmental variables and ecosystem services to see how built environments influence the climate. This included the use of sensors arrays to capture climatic variables for microclimate modeling, data-aided analysis (Parametric Design) in design and planning. His work has explored how policies such as zoning and design guidelines can influence microclimate (including urban heat island effect) of cities through shaping urban form elements, simulating microclimate using Envi-met validated by primary data collected by sensors and comparing these outcomes with urban form elements to find temperature variations as a result of urban policies.

List of invited and confirmed speakers

SPEAKER	Email	Confirmation
Simon Willcock	s.willcock@bangor.ac.uk	Confirmed
Mehdi Heris	mehdi.heris@ucdenver.edu	Confirmed