

EnvirVis 2016

Workshop on Visualisation in Environmental Sciences

Groningen, The Netherlands

June 6 – 7, 2016

Workshop Chairs

Karsten Rink, Helmholtz Centre for Environmental Research - UFZ, Germany
Ariane Middel, School of Geographical Sciences and Urban Planning, Phoenix, AZ, USA
Dirk Zeckzer, Leipzig University, Leipzig, Germany

Proceedings Production Editor

Dieter Fellner (TU Darmstadt & Fraunhofer IGD, Germany)

Sponsored by EUROGRAPHICS Association

This work is subject to copyright.

All rights reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machines or similar means, and storage in data banks.

Copyright ©2016 by the Eurographics Association
Postfach 2926, 38629 Goslar, Germany

Published by the Eurographics Association
–Postfach 2926, 38629 Goslar, Germany–
in cooperation with
Institute of Computer Graphics & Knowledge Visualization at Graz University of Technology
and
Fraunhofer IGD (Fraunhofer Institute for Computer Graphics Research), Darmstadt

ISBN 978-3-03868-018-5

The electronic version of the proceedings is available from the Eurographics Digital Library at
<http://diglib.eg.org>

Table of Contents

Table of Contents	iii
International Programme Committee	iv
Author Index	v
Keynote	vi
Session 1	
Visual Analysis of Reservoir Simulation Ensembles	1
<i>Thomas Höllt, Fabio Miguel de Matos Ravanelli, Markus Hadwiger, and Ibrahim Hoteit</i>	
Towards Visual Analytics for Multi-Sensor Analysis of Remote Sensing Archives	7
<i>Daniel Eggert, Mike Sips, and Patrick Köthur</i>	
Visual Monitoring of Photovoltaic Systems	13
<i>Jannis Harder, Patrick Riehm, Stefan Wörfel, Tobias Krause, and Bernd Froehlich</i>	
Session 2	
Are Environmental Regulations Working? A Visual Analytic Approach To Answering Their Impact on Toxic Emissions	17
<i>David Burlinson, Kara Koehn, Kalpathi Subramanian, and Aidong Lu</i>	
Strategic Initiatives for Flow Visualization in Environmental Sciences	23
<i>Roxana Bujack and Ariane Middel</i>	
Session 3	
Visualizing Malaria Spread Under Climate Variability	29
<i>Xing Liang, Rajat Aggarwal, Alhaji Cherif, Abba Gumel, Giuseppe Mascaro, and Ross Maciejewski</i>	
A Data-Driven Approach to Categorize Climatic Microenvironments	35
<i>Kathrin Häb, Ariane Middel, Benjamin L. Ruddell, and Hans Hagen</i>	
Visualization of Scanned Cave Data with Global Illumination	41
<i>Nico Schertler, Mirko Salm, Joachim Staib, and Stefan Gumhold</i>	

International Programme Committee

Emmanuelle Beauxis-Aussalet, Centrum Wiskunde & Informatica, Netherlands
Wes Bethel, Lawrence Berkeley Laboratory, USA
Georges-Pierre Bonneau, INRIA Grenoble, France
Ibrahim Demir, University of Iowa, USA
Urska Demsar, University of St. Andrews, UK
Doris Dransch, GFZ, Germany
Jocelyne Erhel, INRIA Rennes, France
Sebastian Grottel, TU Dresden, Germany
Federico Iuricich, University of Maryland, USA
Michal Koutek, KNMI, Netherlands
Niklas Röber, DKRZ, Germany
Marc Walther, TU Dresden, Germany
Alexander Wiebel, Coburg University of Applied Sciences, Germany
Thomas Wischgoll, Wright State University, USA

Author Index

Aggarwal, Rajat	29	Krause, Tobias	13
Bujack, Roxana	23	Liang, Xing	29
Burlinson, David	17	Lu, Aidong	17
Cherif, Alhaji	29	Maciejewski, Ross	29
Eggert, Daniel	7	Mascaro, Giuseppe	29
Froehlich, Bernd	13	Middel, Ariane	23, 35
Gumel, Abba	29	Ravanelli, Fabio Miguel de Matos	1
Gumhold, Stefan	41	Riehmman, Patrick	13
Hüb, Kathrin	35	Ruddell, Benjamin L.	35
Hadwiger, Markus	1	Salm, Mirko	41
Hagen, Hans	35	Schertler, Nico	41
Harder, Jannis	13	Sips, Mike	7
Höllt, Thomas	1	Staib, Joachim	41
Hoteit, Ibrahim	1	Subramanian, Kalpathi	17
Koehn, Kara	17	Wörfel, Stefan	13
Köthur, Patrick	7		

Keynote

Models, Simulations and Stakeholders: Embracing Visualization for Climate Analysis

Ross Maciejewski

Abstract

The coupled effects of global climate change and population dynamics on water systems are widely considered to be among the greatest urban sustainability challenges facing humanity in the Anthropocene - an era that recognizes the indelible signature and long-term impact of human influence on the Earth system. Semiarid and arid regions will be at particular risk. Meanwhile, the world's urban population is projected to double in the next generation, with much of this urban growth occurring in arid or semiarid environments. Indeed, the nonclimatic stressors on water resources may outweigh the climate impacts for some regions. Taken together, these interrelated pressures pose unprecedented challenges for urban sustainability and environmental governance. To develop solutions, environmental governance is increasingly focused on improving linkages between scientific knowledge and decision making through collaborative problem solving. In this process, stakeholders communicate options, make plans, monitor events, and often politically strategize. Given that such planning must engage multiple stakeholders in the problem formulation, there is a need for ways in which stakeholders can engage with data analysts, modelers, and simulations to define problem threats and solutions through multiple perspectives. One means of doing this is through computer-supported collaborative visualization environments in which decision-makers can run models and simulations to explore the impact of various policy choices. In this talk I will discuss the knowledge co-production process for soliciting critical feedback from stakeholders during the design, testing, and implementation of complex system models and visual analytics for conceptualizing and incrementally implementing an information system for user interaction for the creation and sharing of immersive digital stories.