DMDU 2018 Annual Meeting
Preliminary Agenda: Training Day

Tuesday, 13 November 2018

08:00  Check-in for Registrants [Attendees must pre-register by November 9]

09:00-17:00
- Introduction to DMDU and of the plan for the day
- Overview of DMDU concepts
- Interactive exercise on deep uncertainty in practice
- Generalized framework for understanding DMDU methods
- DMDU Ideas Fair: demos of tools, methods and applications
- Plenary panel and Q&A: What is in the DMDU analyst’s toolkit
- Plenary panel and Q&A: DMDU in practice
DMDU 2018 Annual Meeting
Preliminary Agenda: Day 1
[Note: Agenda and schedule subject to change]

Wednesday, 14 November 2018

08:00 Registration and Breakfast

09:00 Welcome and Introduction
Survey of the DMDU field and this meeting
Rob Lempert and Jan Kwakkel, DMDU Society; Steven Popper, Chair, Annual Meeting Organizing Committee

I. DMDU Methods in Application

09:15 Keynote Speaker: Dr. Alejandro Pioré
Dean, National School of Social Sciences and Government, Monterrey Institute of Technology (“Tec”); former Minister of the Interior, Government of Mexico

09:30 Plenary: Cities as complex systems faced with deep uncertainty
Chair: Gerdo Aquino
MEGA-ADAPT: Simulating socio-hydrological and climatic risks in Mexico City through a self-organizing systems approach
Luis A Bojorquez-Tapia, Marco A Janssen, Hallie Eakin, Andrés Baeza, Fidel Serrano-Candela, Paola Gómez-Priego and Yosune Miquelajauregui

DMDU in spatial adaptation: embracing vagueness to enable emergence of linkage opportunities
Berry Gersonius, Sadie McEvoy, Ellen Kelder and Richard Ashley

Climate resilient management of urban stormwater systems: a pilot study in Pittsburgh
Jordan R. Fischbach, Kyle Siler-Evans, Devin Tierney, Michael T. Wilson, Lauren M. Cook and Linnea Warren May
10:30  Breakout 1A: DMDU approaches to the issues of megacities  
Chair: Berry Gersonius  
Mitigating the increasing risks of urban flooding in central Shanghai: options and analysis  
Tian Zhan, Laixiang Sun, Hengzhi Hu  
Chinese policy-making process to promote low carbon technologies: A potential case for applying Dynamic Adaptive Policy Pathways  
Huan Zou  
Nature-based solutions for flooding risk management under climate change and an urban circular economy in creation: The case of Shenzhen New Marine City  
Laixiang Sun, Zhan Tian, Junguo Liu, and Dean Ye

Breakout 1B: DMDU-informed urban planning and development  
Chair: Warren Walker  
Using DMDU to prepare for energy transition in the Philadelphia region  
Oscar Serpell, Mark Alan Hughes and Cornelia Colijn  
Land use and transportation planning under deep uncertainty  
Kacey Lizon, Robert Lempert, Garett Ballard-Rosa, George Mazur, Debra Knopman, James Symes and Ifeanyi Edochie  
Adapting land use and water management plans to a changing climate in Miami-Dade and Broward counties, Florida  
David Groves, Debra Knopman, Neil Berg, James Syme, Craig Bond and Robert Lempert

Breakout 1C: DMDU and infrastructure planning  
Chair: Julie Rozenberg  
Conflicts in coalitions: A stability analysis of robust multi-city regional water supply portfolios  
David Gold, Bernardo Trindade, Patrick Reed and Greg Characklis  
Delivering on the Sustainable Development goals through long-term infrastructure planning  
Daniel Adshead, Scott Thacker, Lena Fuldauer and Jim Hall  
Emerging applications of adaptive pathways for managing and reducing climate change vulnerability in Californian energy utilities  
Robert Kay, Judsen Bruzgul and Tommy Hendrickson
Resilience of complex infrastructure systems under deep uncertainty: an analysis of Mexico’s fuel transportation and storage infrastructure
Edmundo Molina-Perez, Giovanni Hernandez, Fabian Carranza, Steven Popper and Luis Serra.

12:00 Lunch and networking activity; Poster session

13:15 Breakout 2A: Water resource applications colloquium* [see note on format]
Chair: Jordan Fischbach

Water resource planning under future climate and socioeconomic uncertainty in the Cauvery River basin in Karnataka, India
Ajay Bhave, Declan Conway, Suraje Dessai and David Stainforth

Multi-objective analysis of funding allocations for non-structural flood risk mitigation in coastal Louisiana
David Johnson, Zach Richardson, Simon Gomez Sierra and Matthew Shisler

Modelling dynamics and adaptation at operational and structural scales for the ex-ante economic evaluation of large dams in Africa
Luciano Raso, Jean-Claude Bader and Bruno Barbier

Malawi’s vulnerability to threshold behavior of lake Malawi: informing adaptation decision making under uncertainty
Ajay Bhave, Lauren Bulcock, Suraje Dessai, Graham Jewitt and Declan Conway

Optimized dam portfolios reduce impacts of sediment trapping on the Mekong Delta under deeply uncertain future sediment yields
Rafael Schmitt, Matteo Giuliani, Simone Bizzi, G. Mathias Kondolf and Andrea F. Castelletti

San Francisco Water: piloting adaptation pathways for long-term water supply planning
Dana Stuparu, Marjolijn Haasnoot, Willem van Deursen and Alexis Dufour

Uncertainty and evidence-based water policy management in South Africa: the challenge for evaluation
Sandile Ngcamphalala, Olivier Crespo and Johann Louw

Developing a robust water strategy for Monterey, Mexico: diversification and adaptation for coping with climate, economic and technological uncertainties
Edmundo Molina Perez, David Groves, Steven Popper, Rodrigo Crespo and Aldo Ramirez

* Colloquium will follow a three-part format: 1) One, brief overview plenary presentation, 10-15 minutes; 2) 30-45-minute breakout poster session during which
Attendees may discuss work with individual presenters; 3) plenary general discussion based upon the work presented in the posters.

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### Breakout 2B: DMDU approaches to technology assessment and planning

**Chair:** Edmundo Molina Perez

**Strategic decision making in the 3D printing industry – a Robust Decision Making (RDM) analysis**

Pedro Nascimento de Lima, Maria Isabel Wolf Motta Morandi and Daniel Pacheco Lacerda

**Understanding the need for policy action on greenhouse gas removal to address climate change: initial case for Robust Decision Making**

Mark Workman, James Maltby and Geoff Darch

**Lithium-based transportation system-of-systems: Complexity and uncertainty of socio-environmental impacts**

Datu Buyung Agusdinata

**DMDU in a modern risk society: Roles of resilience-based public policy and emerging technologies/AI**

Mika Shimizu

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### Breakout 2C: DMDU Ecosystems planning

**Chair:** Ashley Hefner

**Dealing with deep uncertainty through exploratory modeling: regulating loggerhead sea turtle fishing by catch in Gulf of Ulloa, Mexico**

Daniela Pedroza, Luis Bojorquez-Tapia, Germán Ponce-Díaz, Francisco Arreguín and Antonio Diaz-De-Leon

**Avoiding fisheries collapse: Can robustness frameworks capture and navigate uncertain harvest trade-offs?**

Antonia Hadjimichael, Patrick Reed and Julianne Quinn

**Socio-ecological resilience modeling: Policy implications of drought effects in the wildlife management system in Baja California Sur, Mexico**

Hilda Zamora-Maldonado, Sophie Avila-Foucat, Víctor Sánchez-Sotomayor and Raymond Lee

**Considering uncertainty in multi-objective spatial prioritization for California’s agriculture, biodiversity and water resources**

Benjamin Bryant

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14:45 Break
II. DMDU Methodologies and Tools

15:15 Keynote Speaker: Dr. John Seely Brown
Former chief scientist of Xerox Corporation and director of Xerox’s Palo Alto Research Center (PARC); Current independent co-chairman of the Deloitte Center for the Edge

15:30 The role of monitoring, signposts and triggers in DMDU colloquium
Chairs: Judy Lawrence and Robert Lempert
This session will include four ten-minute talks on research papers, followed by a panel discussion lead by practitioners.

Climate-induced tipping points: a typology and application of DMDU toolkit
Kees C.H. van Ginkel and Marjolijn Haasnoot

Designing a monitoring system to get signals for adaptation
Marjolijn Haasnoot, Susan van 'T Klooster, Dirk Elander, Ferdinand Diermanse and Pieter Bloemen

Identifying Triggers for Metropolitan Water District Adaptive Management Plan
Dave Groves and Brandon Goshi

Monitoring of dynamic adaptive policies: Design of a monitoring system by scenario discovery
Luciano Raso, Jan Kwakkel and Jos Timmermans

Panel Chair: Robert Lempert
- Judy Lawrence - Co-author of Guidance for Ministry for the Environment, New Zealand
- Laura Kaatz – Denver Water, Denver, CO
- Brandon Goshi– Metropolitan Water District of Southern California, Los Angeles, CA

17:00 End of Day 1

18:00 Reception and Dinner [hosted by Sony Pictures Studios, location TBD]
Keynote Speaker: Hon. Thomas A. Small, Mayor of Culver City
08:00  Registration and Breakfast

08:30  Breakout 3A: Explorations of system resiliency

Chair: Costa Samaras

Accelerated sea-level rise: a game changer for decision making under uncertainty?
Marjolijn Haasnoot, Jaap Kwadijk and Jos van Alphen

NZ coastal adaptation guidance: Interweaving uncertainty through sea level rise scenarios and hazard/risk assessments
Rob Bell, Scott Stephens and Judy Lawrence

How dynamic adaptive policies shape climate change mitigation trade-offs under uncertainty
Giacomo Marangoni, Jonathan Lamontagne, Julianne Quinn, Patrick Reed, Massimo Tavoni and Klaus Keller

Operationalizing resilience under deep uncertainty: Water supply for Mexico City and the Valley of Mexico
Sarah Freeman, Casey Brown and Diego Rodriguez

Breakout 3B: Using DMDU methods to illuminate economic issues

Chair: Steven Popper

Assessing the prospects for public revenues from oil in Latin American and Caribbean countries under emerging climate policy
Baltzar Solano-Rodriguez, Steve Pye and Adrien Vogt-Schilb

DMDU to harmonize discretionary policy with fiscal rule making: Mexico after fiscal and energy sector reforms
Eduardo Marquez Peña

How much is needed? Infrastructure investments for sustainable development
Julie Rozenberg, Marianne Fay and Claire Nicolas
Breakout 3C: Innovation in DMDU methods
Chair: Julianne Quinn
Participatory, simulation-driven scenario analysis for long-term decision-making
Laura Schmitt Olabisi, Jing Du and Arika Ligmann-Zielinska

Synergistic combination of Robust Decision Making and a portfolio analysis method under uncertainty
Richard Silberglitt, David Groves, Brian G. Chow, Jeremy Eckhause, Steven W. Popper

A generalized many-objective optimization approach for scenario discovery
Jan Kwakkel

SPIRE – A decision support system for addressing complex/chaotic environments
Harold Klein

10:00 Break

10:15 Breakout 4A: New tools for DMDU analysis colloquium* [see note on format]
Chair: Jan Kwakkel

Policy trees and threshold-based adaptation of water resources systems under climate change
Jonathan Herman

WaterPaths: A platform for discovering robust urban water portfolio investment pathways
Bernardo Trindade, Patrick Reed, Harrison Zeff and Gregory Characklis

An interdependent infrastructure systems planning tool to support strategic long-term, national-scale DMDU
Lena Isabel Fuldauer, Scott Thacker, Daniel Adshead and Jim Hall

Travel Model Improvement Program: exploratory modeling and analysis tool
Martin Milkovits and Sarah Sun

A new free web-based tool to support decision making under uncertainty
Niels Riegels, Oluf Jessen, Silvia Leirao and Henrik Madsen

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Breakout 4B: Panel -- The good, the bad, and the wicked: DMDU techniques in practice
Chair: Laurna Kaatz

- Alexis Dufour – San Francisco Public Utility Commission
- Brandon Goshi – Metropolitan Water District of Southern California, Los Angeles, CA
- Laurna Kaatz – Denver Water, Denver, CO

Breakout 4C: Accounting for perspectives and behavior in DMDU
Chair: James Dewar

Experts' decision-making model under deep uncertainty
Matylda Gerber

Building narratives to characterise uncertainty in regional climate change through expert elicitation
Suraje Dessai, Ajay Bhave, Cathryn Birch, Declan Conway, Luis Garcia-Carreras, John Paul Gosling, Neha Mittal and David Stainforth

Strategic Foresight, Deep Uncertainty, and Leadership: A Workshop Report
Darryl Farber, Mathew Burrows and Martin Pietrucha

11:45 Lunch and posters

III. ‘Mainstreaming’ DMDU Methods & Analyses in Policy Settings

13:00 DMDU analyses and their relevance to policy decision makers
Chair: Angela O’Mahony
Panel discussion among DMDU analysts in the realms of national security, defense, and geopolitics

14:00 Breakout 5A: New approaches to DMDU decision support
Chair: Marjolijn Haasnoot

Hidden-model processes for adaptive management under climate change uncertainty
Kelly Klima, Milad Memarzadeh and Matteo Pozzi

Applying methods of DMDU to social-behavioral modeling for policy analysis
Paul Davis

The tail wagging the dog: Designing modelling tools to drive better decision processes
Charlotte Brown, Garry McDonald, Erica Seville, Michele Daly, Nicola Smith and Rob Buxton
Towards incorporating inclusiveness in model-based support for long-term adaptation planning under uncertainty
Bramka Arga Jafino and Jan Kwakkel

Breakout 5B: Panel -- DMDU guidance documents: Turning methods into practice
Chair: Julie Rozenberg

This session will consist of a brief introduction followed by several “speed talks” on how guidance addresses deep uncertainty and what it takes to mainstream these concepts. The audience will then form breakout groups to draft questions for panelists (20 minutes) followed by panel discussion of the questions.

Introduction to the session
Robert Lempert

Sea Level Rise Guidance, New Zealand
Judy Lawrence

Hydropower Sector Climate Resilient Guidelines
Patrick Ray

California Climate Safe Infrastructure Working Group
Juliette Hart

Collaborative Risk Informed Decision Analysis guidelines
John Kucharski

Infrastructure Resilience Committee, American Society of Civil Engineers
Costa Samaras

15:30 DMDU implementation problem solving session: bring your problems for general discussion§ [see note on format]
Chair: Judy Lawrence

The session will begin with a brief framing on DMDU implementation with sharing of lessons. It will be followed with the format outlined below.
§ Attendees are invited to place problems in DMDU implementation or stakeholder engagement on a designated board during the course of the meeting. 1) Several will be selected for speed-talks. 2) These will be followed by breakout roundtable discussions for each presented problem. 3) Following the roundtables, gather for plenary reports and discussion.
17:00 Closing Plenary and DMDU Society Business Meeting

2018 DMDU Elections, 2019 DMDU Annual Meeting
Rob Lempert and Jan Kwakkel, DMDU Society; Steven Popper, Chair, Annual Meeting
Organizing Committee
Posters

Economic evaluation of effectiveness of irrigation development as an adaptation measure to climate change under uncertainty
Daiju Narita, Ichiro Sato, Daikichi Ogawada and Akiko Matsuura

Systems Analysis with Artificial Intelligence based Planet Gamification
Steven Lisgo

Taking into account deep uncertainty in flood maps: comparing the US and France
Anna Serra-Llobet, Rémy Tourment and Antonin Montané

Navigating deep uncertainty in water resources management
C. Dionisio Pérez Blanco

Collaborative Risk Informed Decision Analysis (CRIDA) method assessment of hydropower generation in the Magdalena River basin in Colombia
Santiago Gómez Dueñas, Kristin Gilroy, Berry Gersonius and Michael McClain

Can We Calibrate and Identify Agent-Based Models?
Vivek Srikrishnan and Klaus Keller

Laying the groundwork: DMDU methodologies for urban planning in the Global South
Supriya Krishnan and Tina Comes

Triggers, signposts and extreme sea level rise
Klaus Keller et al.

Robust Personal Decision-Making
Maria Teresa Piacesi

Strategic Foresight, Deep Uncertainty, and Leadership: A Workshop Report
Darryl Farber, Mathew Burrows and Martin Pietrucha
Friday, 16 November 2018

We are currently working to create local field trips and tours for Friday, 16 November, the day after the 2-day DMDU annual meeting concludes. The field trip program is in keeping with the main theme of the conference – understanding the complex issues of major urban regions. We will continue to use Culver City, surrounded on all sides by the City of Los Angeles, as a microcosm for the study of different drivers framing developments in the greater Los Angeles basin.

**Morning**  
**Tour I: Culver City Downtown Cultural Corridor**  
The Culver City Downtown Cultural Corridor tour focuses on the issues and possibilities of an urban core re-inventing itself.

**Afternoon**  
**Tour II: Creative Space: High-Tech, Adaptive Reuse Architecture**  
The purpose of this tour is to focus on urban and community responses to the possibilities inherent in a growing creative economy.

**TBD**  
**Tour III: Bicycle Tour of Ballona Creek and Wetlands**  
This self-guided or docent-led tour examines an urban wetland eco-system that has long been the site for conflict between competing needs and interests. They are important breeding grounds for many aquatic and avian species but are considerably reduced in size owing to the pressure of development. The latest round of construction was performed according to a plan that sought to preserve the most essential features for sustaining the local eco-system. You can be the judge of how well this compromise succeeded.

More information on tour details and registration may be found on the DMDU Society web pages (http://www.deepuncertainty.org/annual-meetings/2018-annual-meeting/)