

# Yair Mau

## *Curriculum Vitae*

### Personal Details

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### Education and Research Positions

2016 - today	Senior Lecturer at the Department of Soil and Water Sciences, Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem, Israel.
2013 - 2016	Postdoctoral associate at the Department of Civil and Environmental Engineering, Duke University, United States, under the guidance of prof. Amilcare Porporato. <b>Vaadia-BARD Postdoctoral Fellowship FI-517-14.</b>
2013	Ph.D. at the Physics Department of the Ben-Gurion University of the Negev, Israel. Research under the guidance of prof. Ehud Meron. Thesis: <i>Pattern formation in spatially forced systems: application to vegetation restoration.</i>
Summers 2008-10	Research at the Los Alamos National Laboratory, Los Alamos, NM, United States, under the guidance of Dr. Aric Hagberg.
2009	M.Sc. at the Physics Department of the Ben-Gurion University of the Negev, Israel. Research under the guidance of prof. Ehud Meron. Thesis: <i>Localized spatial structures in non-equilibrium systems.</i>
2004	B.Sc. at the Physics Institute of the University of São Paulo, Brazil.

### Publications

#### Papers in peer-reviewed journals

##### Submitted:

Xing Chen, Mukesh Kumar, Daniel deB. Richter, and **Yair Mau**. Impact of gully incision on hillslope hydrology, *Water Resources Research*.

##### Final stages of preparation:

Ehud Meron, Yuval Zelnik, **Yair Mau**, and Moshe Shachak. Towards self-organizing anthropogenic ecosystems. To be submitted to *Ecological Letters*.

**Yair Mau** and Amilcare Porporato. Irreversible soil salinization and sodification processes: feedbacks and dynamics. Journal to be decided.

2016	<b>Yair Mau</b> and Amilcare Porporato. Optimal control solutions to sodic soil reclamation. <i>Advances in Water Resources</i> , 91:37–45, 2016
2015	Amilcare Porporato, Xue Feng, Stefano Manzoni, <b>Yair Mau</b> , Anthony J. Parolari, and Giulia Vico. Ecohydrological modeling in agroecosystems: Examples and challenges. <i>Water Resources Research</i> , 51(7):5081–5099, 2015

- Yair Mau** and Amilcare Porporato. A dynamical system approach to soil salinity and sodicity. *Advances in Water Resources*, 83:68–76, 2015
- Yair Mau**, Lev Haim, and Ehud Meron. Reversing desertification as a spatial resonance problem. *Physical Review E*, 91(1):012903, 2015
- 2014 **Yair Mau**, Xue Feng, and Amilcare Porporato. Multiplicative jump processes and applications to leaching of salt and contaminants in the soil. *Physical Review E*, 90(5):052128, 2014
- Lev Haim, **Yair Mau**, and Ehud Meron. Spatial forcing of pattern-forming systems that lack inversion symmetry. *Physical Review E*, 90(2):022904, 2014
- 2013 **Yair Mau**, Lev Haim, Aric Hagberg, and Ehud Meron. Competing resonances in spatially forced pattern-forming systems. *Physical Review E*, 88(3):032917, 2013
- 2012 **Yair Mau**, Aric Hagberg, and Ehud Meron. Spatial periodic forcing can displace patterns it is intended to control. *Physical Review Letters*, 109(3):034102, 2012
- 2009 **Yair Mau**, Aric Hagberg, and Ehud Meron. Dual-mode spiral vortices. *Physical Review E*, 80(6):065203, 2009

## Presentations

### Seminars

- 2017 Institute of Soil, Water, and Environmental Sciences, Agricultural Research Organization (ARO) - The Volcani Center  
Faculty of Agriculture, Food and Environment, Hebrew University of Jerusalem, Israel.
- 2015 Department of Earth and Planetary Sciences, Weizmann Institute of Science, Israel.  
Faculty of Civil and Environmental Engineering, Technion, Israel.  
Faculty of Agriculture, Food and Environment, Hebrew University of Jerusalem, Israel.  
Institute for Desert Research, Ben-Gurion University of the Negev, Israel.
- 2014 Center for Nonlinear and Complex Systems, Duke University.
- 2013 Faculty of Mathematics and Computer Science, Weizmann Institute of Science, Israel.  
Physics Department, Bar-Ilan University, Israel.  
Center for Nonlinear Studies at the Los Alamos National Laboratory.
- 2012 Physics Department, Hebrew University of Jerusalem, Israel.  
Physics Department, Tel Aviv University, Israel.  
Institute for Desert Research, Ben-Gurion University of the Negev, Israel.  
Physics Department, Ben-Gurion University of the Negev, Israel.

## Conferences

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|------|---|
| 2017 | BIOGEOMON, 9th International Symposium on Ecosystem Behavior (contributed talk).<br>European Geosciences Union General Assembly, Vienna (poster).<br>Israel Mathematical Union Annual Meeting, Akko (invited talk). |
| 2016 | Dynamics Days US, Durham, NC, United States (poster).   |
| 2014 | American Geophysical Union fall meeting, United States (contributed talk).<br>Dynamics Days US, Atlanta, GA, United States (poster). <b>Best Poster Award.</b>  |
| 2013 | Eco-hydrology of Semiarid Environments Workshop, Beer Sheva, Israel (poster).<br>Dynamics Days US, Denver, CO, United States (poster).  |
| 2012 | Nonlinear and Soft Matter Physics session at the Israel Physical Society meeting (contributed talk).<br>Drylands, Deserts and Desertification Conference, Sde Boker, Israel (poster).                               |
| 2011 | Dynamics Days Europe, Oldenburg, Germany (poster).  |

## Teaching Experience

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|--------------|---|
| 2017 - today | Coordinator of the entire Physics curriculum in the Faculty of Agriculture, The Hebrew University of Jerusalem. Instructor of the Extended Physics course for undergraduates.                             |
| 2009 - 2013  | Teaching lab assistant for third year students at the Physics Department at Ben-Gurion University of the Negev in the field of electro-optics. Experiments: optical Fourier transform and optical fibers. |
| 2010 - 2013  | Coordinator and instructor of the selection process of the Israeli National Physics Olympiad for high school students.  |

## Computation Skills

Programming in Python, C, Mathematica, and Matlab; numerical integration of PDEs using explicit and semi-spectral methods; numerical integration of SDEs using Monte Carlo methods; numerical continuation of solutions of nonlinear equations using AUTO; writing in  $\text{\LaTeX}$ .

## Languages

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|---------------|-------------------------------------|
| Mother tongue | Portuguese                          |
| High level    | English, Hebrew, Spanish and French |