

# Matteo Convertino, DrEng PhD

Associate Professor

*fuTuRE EcoSystems Lab (TREES)*, PI

Institute of Environment and Ecology, Tsinghua Berkeley Shenzhen Institute (Data Science program), & SZ Key Lab on Ecological Remediation and Carbon Sequestration

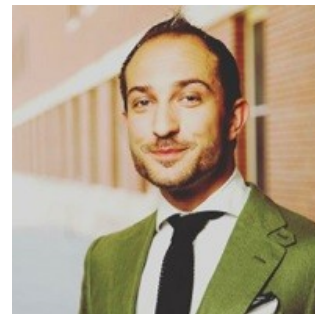
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Google Scholar: <https://scholar.google.com/citations?user=xzaRWN0AAAAJ&hl=en>



**Expertise:** *Multiscale Ecosystem Dynamics (EcoConnectome), Ecosystem Data Science and Predictive Modeling (Pattern-oriented), Eco-stress and Eco-health, Ecosystem Risk and Management, Socio-ecological Shifts and Indicators, Optimal Nature-based Solutions (Ecofolio), Eco-inspired Planning & Design, Quantitative Ecosystem Policy, Risk Communication, Digital Biodiversity Models*

**Areas:** Biodiversity and Biocomplexity, Ecosystem Change, AquaBiome, Ecosystem Pathology, Envirome/Exposome, Data Fusion, Pattern Inference and Analysis, Stochastic Processes (Extremes and Non-linear Dynamics), Collective Behavior and Spreading Phenomena, Systemic Risk and Resilience, Impact Assessment of Ecological Collapse (Climate Teleconnections and local Anthropogenic Impacts, e.g. invasion, infectious diseases, algal blooms, carbon sequestration, landslide, emerging compounds, LC/LU change), Multicriteria Indicators, Model and Data Evaluation (Global Sensitivity and Uncertainty Analysis, Metamodeling), Value and Reliability of Information, Monitoring Networks, Data Visualization, Portfolio Decision Analysis and Optimization, Ecohydrology, Biogeomorphology, Basin Ecosystems, Marine/Coastal Ecosystems, Ecological Engineering

## Personal

Born on July 20th, 1982 (Venice); Italian and USA Citizenship (after EB1 residency for extraordinary scientific abilities and service to the Nation), JP permanent residency (for science merits); Married, 2 children

## Education

### *Degrees*

**Ph.D.** Civil and Environmental Engineering Sciences (Theoretical and Computational Biocomplexity), *summa cum laude*, **University of Padova** (Unipd, granting institution within the **Galileian School of Higher Education** <http://www.unipd-scuolagalileiana.it/en/content/galileian-school>) & **Princeton University** (certificate 2yrs research and education), April 2010; Dissertation title: *Patterns in Ecology and Geomorphology of River Basin Ecosystems*, advisers: A. Rinaldo (Unipd & EPFL) and I. Rodriguez-Iturbe (Princeton University).

**M.Sc.** Civil and Environmental Engineering (Environmental Fluid Dynamics and EcoHydrology), *magna cum laude*, **University of Padova**, September 2006; Thesis title: *Ontogeny of Optimal Channel Networks with Climate-driven Heterogeneous Rainfall*, advisers: A. Rinaldo (Unipd & EPFL), R. Rigon (University of Trento), and A. Maritan (Unipd)

**B.Sc.** Civil and Environmental Engineering (Environmental and Structural Engineering, Major and Minor), *cum laude*, **University of Padova**, July 2004 ; Thesis title: *FEM Modeling and Data Characterization of Innovative and Environmentally Sustainable Materials for Road Infrastructure*, adviser: M. Pasetto (Unipd)

**Diploma** (High School science major), G.B. Belzoni High School, Padova, Italy, 2001; Project titles: *Structural and Functional Road Design and associated Hydrological Management in a Mountain Area in Northern Italy*, comprehensive mark 100/100 with honors

**High School Graduate** Espero Course, *Italian Naval Military College Francesco Morosini* ([https://www.marina.difesa.it/il-tuo-futuro-e-il-mare/formazione-in-marina/morosini/Pagine/morosini\\_home.aspx](https://www.marina.difesa.it/il-tuo-futuro-e-il-mare/formazione-in-marina/morosini/Pagine/morosini_home.aspx); [https://en.wikipedia.org/wiki/Francesco\\_Morosini\\_Naval\\_Military\\_School](https://en.wikipedia.org/wiki/Francesco_Morosini_Naval_Military_School)), Venezia, 1998-2001

### *Other Certified Education*

**Certificate in Science, Technology, and Environmental Policy**, Humphrey School of Public Affairs, **University of Minnesota Twin-Cities**, USA (within the NSF Sustainable Research Network funded program), July 2017

**MPH in Environmental Health Sciences** (courses completed), **University of Minnesota Twin-Cities**, USA, 2015-2017

Big Data to Knowledge Initiative, Human Microbiome **NIH/NSF Data Science** Summer Camp in Boston, MA June 2017

Big Data to Knowledge Initiative, Personalized Medicine and Mobile Technology **NIH/NSF Data Science** Summer Camp at the UCLA Lake Arrowood Conference Center, June 2016

(RC4000) RCR Core 1-Biomedical Sciences and (OE0282) Certification, **University of Minnesota Twin-Cities**, November 2013

"Climate Forcings and Global Patterns", **Venetian Institute of Science, Literature, and Arts (IVSLA)** Advanced Summer School Certificate, 13-20 June 2008, Venice, IT

"Environmental Dynamics Pathways to Environmental Sustainability", **Venetian Institute of Science, Literature, and Arts (IVSLA)** Advanced Summer School Certificate, 08-15 July 2007, Venice, IT

## **Academic and Professional Appointments**

*-- Tsinghua University, Shenzhen International Graduate School, Shenzhen, China*

**Professor (Aug. 2022-present, pending confirmation)**; Associate Professor, Institute of Environment and Ecology, Sept. 2021-present

**Associate Director, Shenzhen Key Lab for Restoration and Carbon Neutralization**, Sept. 2022-present

### *Other Current Affiliations*

*Research Institute for Humanity and Nature, Kyoto*, Affiliated Project-specific Scientist, Sept. 2020-present

*International Institute for Applied Systems Analysis, Laxenburg, Austria*, Foreign Resident Fellow, Nov. 2014-present

*WARREDOC Lab (Water Resources Research and Documentation Center), University of Perugia, Italy*, Faculty Affiliate, August 2012-present

*SMART Solutions LLC (start-up from the University of Minnesota)*, Chief Science and Technology Officer; November 2015-present

*-- Hokkaido University, Sapporo, JP*

**Associate Professor**, Faculty and Graduate School of Information Science and Technology & Information Engineering, PI Nexus Group, Aug. 2017 – Aug 2021

**Faculty Member**, Gi-CoRE Station for Big Data & Cybersecurity, System and Data Science Lead, Aug. 2017 – March 2021

***-- University of Technology Sydney, Australia***

Key Technology Partnership Faculty Member (Engineering and IT), Jan. 2019-Dec. 2019 (joint with Hokkaido University)

***-- University of Minnesota, Twin-Cities, USA***

**Adjunct Associate Professor**, School of Public Health, Division of Environmental Health Sciences, Institute on the Environment, Institute for Engineering in Medicine, and Bioinformatics and Computational Biology Program, Sept 2017-Sept 2021

**Assistant Professor (Tenure-track)**, School of Public Health, Division of Environmental Health Sciences, Sept 2013- Sept 2017

PI HumNat Lab (Analysis, Modeling and Management of Complex Biological and Socio-technical Systems)

Graduate Faculty: Center for Risk Analysis, Ecosystem Health Division, University Honors Program, Public Health Informatics Program

***-- University of Florida, Gainesville, FL***

Research Assistant Professor, Complex Human-Natural Systems (HumNatSys), Department of Agricultural and Biological Engineering, June 2012-July 2013

Postdoctoral Research Associate, Department of Agricultural and Biological Engineering (R. Muñoz-Carpena and G.A. Kiker groups (Biocomplexity Group)), November 2009-June 2012

Affiliated Faculty, Water Institute, Emerging Pathogens Institute, 2010-2013; Florida Climate Institute and SouthEast Climate Consortium (SECC), 2010-2012; SustainableUF, Office of Sustainability, 2011-2012; Bob Graham Center for Public Service, 2012-2013; Digital Humanities Working Group (Center for Humanities and the Public Sphere)

***-- Engineering Research and Development Center (ERDC), US Army Corps of Engineers (USACE)***

Contractor Research Scientist, Risk and Decision Science Team (I. Linkov Team), August 2010-December 2012

***-- Princeton University, Princeton, NJ***

Visiting Assistant Professional Specialist, Civil and Environmental Engineering, and Princeton Environmental Institute, (I. Rodriguez-Iturbe Ecohydrology and Simon Levin Biocomplexity groups), April - October 2009

Graduate Research Assistant, Civil and Environmental Engineering, Environmental Engineering and Water Resources, (I. Rodriguez-Iturbe Ecohydrology group), January 2008 - December 2008

***-- University of Padova, Italy***

Graduate Research Assistant, IMAGE Department (Hydraulics, Maritime, Environmental, and Geotechnical Engineering; currently "DICEA"), and International Center for Hydrology "Dino Tonini", 2006- 2009

Undergraduate Research Assistant, University of Padova, Italy, Finite Element Modeling Lab for Structural and Environmental Engineering Research (M. Pasetto group), March 2004 - July 2004

***Previous Affiliations***

*Interagency Modeling and Analysis Group, USA (NIH)*, Uncertainty and Information Working group and Multiscale Modeling, 2017-2019

*THOR Companies (former “THOR Construction and Sustainability”)*, Science and Technology Consultant; September 2015-September 2017

*IDRAN Engineering and Technology*, Adjunct Scientist and Partner; IDRAN Rome (IT) and Miami (FL), CEO Prof. F. Nardi; July 2011- September 2016

*Institute of Forest Ecology, Environment and Protection, Chinese Academy of Forestry, Beijing, China*, Adjunct Professor of Forest Ecology, Biodiversity Conservation, and Ecosystem Health; supporting host: Runguo Zhang Jan 2014-2016

*South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, China*, International Young Scientist Fellow (non-resident), supporting host: Wanhui Ye, 2010-2012

*Lamont-Doherty Earth Observatory (LDEO) - Columbia University, Palisades, NY*, Research Intern, LDEO Surface Processes Group, (PI: Dr. C. Stark), July 2009 - August 2009

*University of California Berkeley*, Biometeorology Lab, EAP Visiting Master Student, July 2006

## **Honors, Awards, and Fellowships**

Pengchen Peacock High Talent B Class, 2022-2024, Shenzhen Government (at Tsinghua University), Jan. 2022

National Italian Scientific Abilitation to the Full Professor Level in Italy based on titles, publications and funding, Ministry of Education, Universities and Research, October 2020

SOUSEI Award for Young Researchers awarded to the Top 20% scientists in terms of productivity and citations at Hokkaido University, Executive Office for Research Strategy, 2020

Hult Prize Hokudai Campus challenge (second place and invitation to the Tokyo regional competition); Team SEA2SEE with students Galbraith E. (IST), Li J. (IST), Garcon EJ (Agric.), & Chebbi N (Chem Eng), December 2020, <https://sea2seejapan.wixsite.com/main>

FEIT KTP Faculty Fellowship (Engineering and IT), Visiting Professorship Award, University of Technology Sydney, 2018 (Jan. 2019), AUD\$ 7000

ASCE (American Society of Civil Engineers) Outstanding Service Award, for the Journal of Infrastructure Systems, 2017, 2020

GI-CoRE Outstanding data scientist fellowship, Hokkaido University, 2017, 2018 (USD 20,000)

National Italian Scientific Abilitation to the Associate Professor Level in Italy based on titles, publications and funding, Ministry of Education, Universities and Research, January 2017

Outstanding Reviewer, Journal of Infrastructure Systems, 2016

Outstanding Reviewer, Environmental Modeling & Software, 2016

Sigma Xi Scientific Society Fellow, 2015-present

Top 10 Team Dengue and Influenza Forecasting Challenge, Office of Science and Technology Policy – US White House – and CDC, 2016

Faculty in Industry Award (~25,000 USD), University of Minnesota Informatics Institute, 2016

Official Recognition of AAAS Early Career Award for Public Engagement, December 2014

ISSNAF 3rd prize, Young Scientist Award in Environmental Sciences (Italian President Medal of Honor, Italy), Nov. 2014

Delta Omega Honors Society of Public Health, 2014-present

MnDRIVE Food Systems Faculty Fellow, University of Minnesota, Jan. 2014-2017

Alfred P. Sloan Foundation Research Travel Prize, World Congress on Risk 2012, Society for Risk Analysis, Sydney AU (USD 3000, conferred by Society for Risk Analysis, Prof. A. Cullen, University of Washington), 18-20 July 2012

University of Florida Water Institute Prize for "Wetlands in a Complex World", INTECOL Conference, Orlando, FL, (\$500, conferred by Prof. W. Graham), 3-8 June 2012

Young International Research Scientist Fellowship, Chinese Academy of Sciences, Smithsonian-South China Botanical Garden, Guangzhou, China, (\$25,000), 2010

"Ing. Aldo Gini" career fellowship for research abroad at Princeton University, Foundation Ing. Aldo Gini, University of Padova, Italy (Euro 5,000), 2008

I.N.P.D.A.P. career fellowship - Department of Higher Education, Research and Development, Italian Government, fellowship for PhD studies, III year of the PhD program (Euro 6.000), 2009

I.N.P.D.A.P. career fellowship - Department of Higher Education, Research and Development, Italian Government, fellowship for PhD studies, I year of the PhD program (Euro 6.000), 2007

3rd distinction for the M.Sc. Honor Degree Prize "Claudio Bertuzzi", Venetian Institute of Sciences, Letters and Arts (IVSLA), Venice, Italy, July 2007

Regional career fellowships by the University of Padova (Euro 5000/year), academic years 2006/2007, 2007/2008, 2008/2009 (I, II and III year of the PhD program)

EAP University of California-University of Padova exchange program fellowship, UC Berkeley (CEE and ESPM Depts.), UC Davis (CEE Dept.) positive admission (supporting faculties: Prof. D.D. Baldocchi and Prof. T.R. Ginn, academic year 2006/2007)

Regional career Fellowship, University of Padova (Euro 2000 each year), academic years 2003/2004, 2004/2005, 2005/2006 (III year BSc, I and II year of the M.Sc. programs respectively)

European Union Socrates-Erasmus Fellowship at the University of Wales - Swansea - Civil & Computational Engineering Centre, supervisor Prof. L. Simoni/B. A. Schrefler, academic year 2005/2006

B.Sc. degree award (Euro 1500), Regional Fellowship 2003/2004, University of Padova, Italy, December 2004

**Publications** (please check Google Scholar for the most updated info  
<https://scholar.google.com/citations?user=xzaRWN0AAAAJ&hl=en>; selected preprints:  
[https://www.dropbox.com/sh/bhubsat9mi4t9cv/AAB\\_LQZd89rPyOOXjcbMVGFRa?dl=0](https://www.dropbox.com/sh/bhubsat9mi4t9cv/AAB_LQZd89rPyOOXjcbMVGFRa?dl=0)

h-index=28, i-10 index=48, Citations=3475

### ***Top Publications and Area of Influence (excerpta)***

#### **Theoretical and Computational Ecosystem Science**

- Convertino, M., R. Muneeppeerakul, S. Azaele, E. Bertuzzo, A. Rinaldo, and I. Rodriguez-Iturbe (2009). On neutral metacommunity patterns of river basins at different scales of aggregation, 45, W08424, 10.1029/2009WR007799, *Water Resources Research*

*A clear linkage between hydrogeomorphological and ecological patterns was found for both riverine and 2D ecosystems considering macroecological metrics in space and time with relevance for hydrocorry and spreading of infectious pathogens. This is quite important for studying the hydrogeomorphological driver of biodiversity and it is currently applied to subtropical and tropical coastal and marine systems (yet, beyond river basins) to evaluate impact of biodiversity of climate change.*

- Convertino M., R. Muñoz-Carpena, G.A. Kiker, S.G. Perz Design of optimal ecosystem monitoring networks: Hotspot detection and biodiversity patterns, *Stochastic Environmental Research and Risk Assessment*, 29 (2015), pp. 1085-1101

*Biodiversity hotspots were detected as the ones with the highest value of information out of all potential monitoring networks; anthropogenic and climatic fingerprints were detected in biodiversity patterns and potential ecological networks. One of my key interests is to infer ecological networks and their changes considering climate and other anthropogenic stressors as well as intrinsic biological dynamics. My group and I are currently using the same framework to infer microbial and other multitrophic species networks in the ocean and related to ocean health. These networks are also used to guide the design of marine protected areas.*

- Li J, Convertino M, (2021), Inferring Ecosystem Networks as Information Flows, *Scientific Reports*, <https://www.nature.com/articles/s41598-021-86476-9>

*A novel information-theoretic model was developed to evaluate the causal eco-environmental feedback underpinning ecosystem dynamics and predictive of shifts. The model has been tested against multiple ecosystem data with increasing complexity and a mathematical model.*

### **Environmental Change, Eco-hydro-geomorphic Extremes and Portfolio Risk Control.**

- Convertino, M., F. Troccoli, Catani, F. (2013). Detecting fingerprints of landslide drivers: a maxent model, <http://onlinelibrary.wiley.com/doi/10.1002/jgrf.20099/abstract>, *Journal of Geophysical Research - Earth Surface*

*Maximum entropy models were developed and used for the first time to predict landslide distribution and magnitude considering manageable ecohydrological drivers. A double-Pareto distribution for the landslide size was associated to different “causal niches” triggering landslides. The ecology-inspired model is computationally simple and widely applicable to a variety of problems where spatio-temporal patterns of natural hazards (or species considered) are predicted considering necessary and sufficient environmental variables. The MaxEnt model, developed further with other machine learning and information network algorithms, is currently used for predicted the threat of sea-level and temperature rise in coastal and marine systems where “landslides” are large spatial phenomena (such as algal blooms) impacting biodiversity.*

- Convertino M., Annis A., Nardi F., (2019) Information-theoretic portfolio decision model for optimal flood management, *Env. Mod. & Software Environmental Modelling & Software*, Volume 119, Pages 258-274, <https://doi.org/10.1016/j.envsoft.2019.06.013>

*Extreme floods were modeled considering novel ecology-inspired machine-learning models and a portfolio management model was coupled to the former model in order to define Pareto optimal management plans via flood control structures and ecological engineering solutions. The model considers land cover/use changes and climate-driven runoff trajectories and all probabilistic combination of management solutions over space and time via Global Sensitivity and Uncertainty Analyses (GSUA) developed by our group in an information theoretic context. GSUA is currently used by our group to identify the most critical species in ecosystems whose sensitivity is the highest considering species interdependencies.*

### **Ecosystem Health, Disease Forecasts and Social Systems.**

- Convertino M, TR Church, GW Olsen, Y Liu, E Doyle, CR Elcombe, et al., Stochastic Pharmacokinetic-Pharmacodynamic Modeling for Assessing the Systemic Health Risk of Perfluorooctanoate (PFOA), (2018) *Toxicological Sciences*

*Biophysical models were developed to characterize the probabilistic systemic response of human networked biomarkers to extreme environmental exposures; in this context defeating epidemiological knowledge based on statistical associations.*

- McGowan et al. (CDC Forecasting Challenge Team) ... Convertino M, Collaborative efforts to forecast seasonal influenza in the United States (2015–2016), 2019, *Scientific Reports*

*Multimodel ensemble forecasts are shown to increase the accuracy in predictions of infectious diseases such as influenza considering multiple criteria such as peak magnitude, peak timing and total cases. Statistical models are shown to perform better than hypothesis driven mechanistic models. Additionally information theoretic models are proposed to extract the most relevant information from large predictor data.*

- Johansson M et al. (CDC Forecasting Challenge Team) ... Convertino M, (2019) An open challenge to advance probabilistic forecasting for Dengue epidemics, *PNAS*, <https://www.pnas.org/content/116/48/24268>

*Multimodel ensemble forecasts were developed with other team to advance the understanding of Dengue dynamics and its forecasts. Our team developed one of the most accurate models with the specific inclusion of hydroclimatological and functional network dynamics among communities.*

- Galbraith E, Convertino M, 2022, Metabolic Shifts of Oceans: Summoning Bacterial Interactions, Ecological Indicators  
*An ecosystem mandala was developed to characterize ecosystem health in a tridimensional space considering phylogeny, interaction and proportion of species. Microbial interactions were found as the major determinants of ecosystem metabolism whose fluctuations lead to ecosystem health variability*

#### **Ecosystem Risk and Nature-based Adaptive Management.**

- Convertino, M., C.M. Foran, J.M. Keisler, L. Scarlett, A. LoSchiavo, G.A. Kiker, I. Linkov (2013). Enhanced Adaptive Management: Integrating Decision Analysis, Scenario Analysis and Environmental Modeling for the Everglades, *Scientific Reports* (Nature Publishing Group), 3, 2922, doi:10.1038/srep02922

*Sequential decision analytical models were developed and linked to metapopulation and environmental dynamic models (hydroecological models) for detecting optimal restoration patterns that consider the trade-offs between social and ecological multicriteria endpoints with economic valuation. We show that resilient design and adaptive management are incredibly important for creating sustainable ecosystems and optimal solutions are always trading-off "extreme" (locally optimal) social and ecological states. The model is currently used in our portfolio design of wetland and coastal areas facing sea-level rise and other contrasting trade-offs with the specific inclusion of spatio-temporal environmental dynamics.*

- Convertino M and Valverde JL, 2019, Toward a Pluralistic Conception of Resilience, Ecological Indicators  
*Theoretical development of pluralistic resilience as ecosystem multifunctionality including stakeholders' values*

- E Galbraith, J Li, VDR Vilas, M Convertino, (2021), In. To. COVID-19: Socio-epidemiological Co-causality, Scientific Reports  
*An Infodemic Tomography model was developed to extract Twitter information for high resolution prediction of COVID healthcare pressure and detection of misinformation*

#### **Model/System Design and Evaluation, Network Inference, and Data Visualization.**

- Servadio J, M Convertino, (2018) Optimal information networks: Application for data-driven integrated health in populations, *Science Advances*, 4 (2), e1701088

*A novel information theoretic model was developed to infer probabilistic interdependence between ecosystem's diseases and to establish their magnitude and criticality for ecosystem-based systemic health controls. We applied the model to cities in USA but the same model can be applied to any ecosystem and for any variable of interest. The idea here was to develop Optimal Information Networks for maximizing predictability with the least amount of information available and finding the salient connections determining tipping points in systems' patterns. We are currently using the model for the fishery and to explore prokaryote-eukaryote-megavirus dynamics in the ocean especially considering algal blooms.*

- Li J, Convertino M, Optimal Microbiome Networks: Macroecology and Criticality, 2019, Entropy  
*A transfer entropy model (modified Optimal Information Network model) is proposed for inferring core species interaction networks. Different network topologies are identified for different health groups and critical transitions are observed between these groups. A quantitative connection is defined between collective complexity organization (network topology), macroecological indicators, and microbiome function. The outgoing information flow is proposed as a metric to characterize microbiome function and new network-based visualizations are proposed. The model is currently used to analyze the biocomplexity, biodiversity and environmental stressors of the ocean microbiome. One project is looking into the environment-human microbial nexus considering seafood consumption; another project is looking into the hydrogeomorphological and hydrochemical dynamics on the coral-fish-macroalgae nexus considering the microbiome of reef ecosystems.*

### ***Journal Articles - peer-reviewed and accepted***

[87] **Convertino** M, (2023), Habitat Fragmentation Outweighs Precipitation Anomaly for Rainforest Organized Diversity and Age, *Scientific Reports* in press

[86] **Convertino** M, (2023) Sensing Linked Cues for Ecosystem Risk and Decisions, *Environments*, in press

[85] H Wang, M **Convertino**, (2023) Algal bloom ties: Systemic biogeochemical stress and Chlorophyll-a shift forecasting

- [84] H Wang, E Galbraith, M **Convertino**, (2023) Algal Bloom Ties: Spreading Network Inference and Extreme Eco-Environmental Feedback, *Entropy* 25 (4), 636
- [83] JR Deere, S Streets, MD Jankowski, M Ferrey, Y Chenaux-Ibrahim, **Convertino** M (2022) Supporting data for " A chemical prioritization process: Applications to contaminants of emerging concern in freshwater ecosystems (Phase 1)"
- [82] JL Servadio, JR Deere, MD Jankowski, M Ferrey, EJ Isaac, **Convertino** M .. (2023) Supporting data for “Anthropogenic factors associated with contaminants of emerging concern detected in inland Minnesota lakes (Phase II)”
- [81] Servadio J, Munoz-Zanzi C, Fiecas M, **Convertino** M (2023) Weekly forecasting of Yellow Fever occurrence and incidence via eco-meteorological dynamics, *GeoHealth*, in press
- [80] H Wang, H Tsutsui, M Convertino, (2022) Classification of Rich-Classes but Scarce-Samples Images via Multi-modeling: the Humpback Whale Epitome, IEEE research paper, 4th Global Conference on Life Sciences and Technologies, <https://ieeexplore.ieee.org/abstract/document/9754935/>
- [79] JL Servadio, JR Deere, MD Jankowski, M Ferrey, EJ Isaac, M Convertino et al. (2022), Supporting data for “Anthropogenic factors associated with contaminants of emerging concern detected in inland Minnesota lakes (Phase II)”, <https://conservancy.umn.edu/handle/11299/229866>
- [78] Galbraith E, Convertino M, 2022, Metabolic Shifts of Oceans: Summoning Bacterial Interactions, *Ecological Indicators*
- [77] Yu Gong, Mengjie Wu, Riqing Yu, Luís M. Nunes, Wenbo Bu, Matteo **Convertino**, Bin Wang, Maodian Liu, Qianqi Yang, Yuanyuan Li, Qian Zhang, Lei Huang, Huan Zhong, Methylmercury in Human Skin Predicts Long-term Exposure: Insight from the Exploration on Nevus-Removing Population, *Environmental Health Perspectives*
- [76] E Galbraith, J Li, VDR Vilas, M **Convertino**, (2021), In. To. COVID-19: Socio-epidemiological Co-causality, *Scientific Reports*
- [75] M **Convertino**, A Reddy, Y Liu, C Munoz-Zanzi, (2021), Eco-epidemiological scaling of Leptospirosis: Vulnerability mapping and early warning forecasts, *Science of The Total Environment* 799, 149102
- [74] M **Convertino**, SF Pileggi, (2021), COVID Ecology and Evolution: Systemic Biosocial Dynamics, *Front. Ecol. Evol.*, 03 September 2021 | <https://doi.org/10.3389/fevo.2021.740213>
- [73] Servadio JL, Muñoz-Zanzi C, Fiecas M, **Convertino** M, 2020, Multi-temporal forecasting of Yellow Fever, *PLoS Computational Biology*, in press
- [72] Servadio J, Munoz-Zanzi C, **Convertino** M (2022), Environmental Determinants Predicting Population Vulnerability to High Yellow Fever Incidence, *Royal Society Open Science*, <https://doi.org/10.1098/rsos.220086>
- [71] Galbraith E, **Convertino** M, (2021), The Eco-Evo Mandala: Simplifying Bacterioplankton Complexity into Ecohealth Signatures, *Entropy* 2021, 23(11), 1471; <https://doi.org/10.3390/e23111471>
- [70] JL Servadio, C Muñoz-Zanzi, M **Convertino**, (2021), Estimating case fatality risk of severe Yellow Fever cases: systematic literature review and meta-analysis, *BMC infectious diseases* 21 (1), 1-12
- [69] Jessica R. Deere, Summer Streets, Mark D. Jankowski, Mark Ferrey, Yvette Chenaux-Ibrahim, Matteo **Convertino**, EJ Isaac, Nicholas B. D. Phelps, Alexander Primus, Joseph L. Servadio, Randall S. Singer, Dominic A. Travis, Seth Moore, Tiffany M. Wolf, (2021), A chemical prioritization process: Applications to contaminants of emerging concern in freshwater ecosystems (Phase I), *Science of the Total Environment*, <https://www.sciencedirect.com/science/article/pii/S0048969721010974>
- [68] Servadio J, Deere J, Mark D. Jankowski, Mark Ferrey, EJ Isaac, Yvette Chenaux-Ibrahim, Alexander Primus, **Convertino** M, Nicholas B. D. Phelps, Summer Streets, Dominic A. Travis, Seth Moore, Tiffany M. Wolf, (2021), Anthropogenic factors



associated with contaminants of emerging concern detected in inland Minnesota lakes (Phase II), *Science of the Total Environment*, in press

[67] Li J, **Convertino** M, (2021), Inferring Ecosystem Networks as Information Flows, *Scientific Reports*, <https://www.nature.com/articles/s41598-021-86476-9>

[66] Li J, **Convertino** M, (2021), Temperature-driven Organization of Fish Ecosystems and Fishery Implications, *PLoS ONE*, doi: <https://doi.org/10.1101/2021.01.18.427097>, *PLoS ONE*

[65] Louis Yat Hin Chan, Baoyin Yuan, Matteo **Convertino**, (2021), COVID-19 Communication and Systemic Portfolio Risk, *Scientific Reports*, 11 (1), 1-17

[64] **Convertino** M, Honore Peggy, Victor J. Del Rio-Vilas, 2020, Portfolio Evaluation and Design of Surveillance Systems, *Ecological Indicators*, in press

[63] **Convertino** M, 2020, Japan's pandemic response: there is no one-size-fits-all approach to COVID-19, *Policy Forum, Asia and the Pacific Policy Society*, [https://www.policyforum.net/japans-pandemic-response/?fbclid=IwAR0ALcdMHa8ZkewJsVLZwysV2TEFdEAOiNNBONO8iog1ea\\_O724bcprb-BM](https://www.policyforum.net/japans-pandemic-response/?fbclid=IwAR0ALcdMHa8ZkewJsVLZwysV2TEFdEAOiNNBONO8iog1ea_O724bcprb-BM)

[62] Servadio JL, Gustavo Machado, Julio Alvarez, Francisco Edilson de Ferreira Lima Júnior, Renato Vieira Alves, Matteo **Convertino**, 2020, Information differences across spatial resolutions and scales for disease surveillance and analysis: The case of Visceral Leishmaniasis in Brazil, *PLOS ONE*

[61] Liu Y, Saha S, Hoppe B, **Convertino** M, 2020, One Size Does Not Fit All: Tailoring Impacts of Ambient Temperature on Children's Health by Age, *Lancet Child & Adolescent Health*

[60] Cullen CM, Kawalpreet K Aneja, Sinem Beyhan, Clara E. Cho, Stephen Woloszynek, Matteo **Convertino**, Sophie J. McCoy, Yanyan Zhang, Matthew Z. Anderson, David Alvarez-Ponce, Ekaterina Smirnova, Lisa Karstens, Pieter C. Dorrestein, Hongzhe Li, Ananya Sen Gupta, Kevin Cheung, Jennifer Gloeckner Powers, Zhengqiao Zhao, and Gail Rosen, 2020, Emerging Priorities for Microbiome Research, *Frontiers in Microbiology*

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- [5] **Convertino**, M., Suedel, B.C., Linkov, I, Vogel, JT, Baker, K, Valverde, JL, Fischenich, JC (2011). An Illustrative Case Study of the Application of Uncertainty Concepts and Methods for Ecosystem Restoration, *USACE ERDC Technical Note*
- [4] Suedel, B., Vogel, JT, Linkov, I, McKay, K, Valverde, JL, **Convertino**, M. (2011). Uncertainty evaluation of restoration projects, *USACE ERDC Technical Note*
- [3] **Convertino**, M., Vogel, J.T., McKay, K, Suedel, B, Foran, CM, Lu, C., Baker, K, Valverde, JL, Linkov, I, (2011). Metric Selection for Restoration Evaluation of Aquatic Ecosystems through MCDA methods, *USACE ERDC Technical Note*
- [2] **Convertino**, M. and Rigon, R. (2007). FluidTurtle routines for the study of Optimal Channel Networks, theory and applications, *University of Trento, DICA-CUDAM Technical Book*. (user manual) (Optimization and Further Development of Computational Tools for Hydrological and Geomorphological Applications (JGRASS-uDig-GEOTOP), Civil and Environmental Engineering - University Center for the Hydrogeologic Protection of the Mountain Environment (DICA-CUDAM), University of Trento, and HydroloGIS
- [1] **Convertino** M., Romano L., Geo-hydrologic characterization of the Apulia karst watersheds draining in the Adriatic sea, Apulia Water Management District, Italy, 2006

*Technical Notes, and Reports (non peer-reviewed)*

**Convertino** M (2015), "Philosophical Implications and Artistic Representation of Modeling: The realization of a computational infrastructure for Decision Evaluation in ComplEx Risk Network Systems (DECERNS)", Institute for Advanced Studies, University of Minnesota Twin-Cities

**Convertino** M (2016), "Retrograding" in Sciences and Arts", Institute for Advanced Studies, University of Minnesota

**Convertino** M, Munoz-Zanzi C (2015), Elicitation of Stakeholder Mental Model about Leptospirosis Dynamics and Management in the Americas (Elicitation and Report occurred at the Instituto Oswaldo Cruz (IOC/Fiocruz) OPAS/OMS/WHO/GLEN Leptospirosis meeting)

Murcia C., Losos E., Muñoz-Carpena, R., Albertin, A.R., Graham, W.D., Huffaker, R., Kiker, G.A., and Waylen, P.R. (2012), "Collaborative Research Catalyzing New International Collaborations: Interdisciplinary workgroup on water sustainability in the Tempisque Basin, NW Costa Rica", NSF annual activity report (International Science and Engineering (OISE)); **Convertino**, M. as contributing author for the section "Inference of Stakeholder Mental Models and Preferences"

Linkov, I., **Convertino**, M., Chu-Agor, M.L., G.A. Kiker, Fischer, R.A., Muñoz-Carpena, R., Martinez, C., Akcakaya, H.R., Aiello-Lammens-M., (2011). Integrated Climate Change and Threatened Bird Population Modeling to Mitigate Operation Risks on Florida Military Installations, *Vulnerability Report SERDP-1699*

Alessi-Celegen E., M. **Convertino**, L. Kelpsaite, D. Kurennoy, M. Puliga, K. Schroder, C. Venier, S. Zanardo, F. Zanello, Troccoli A. (2008). Analysis of Climatological and Hydrological Conditions on High Waters in Venice, *Working Group report, IVSLA Advanced Summer School "Climate Forcings and Global Patterns"*, 13-20 June 2008, Venice

Botter, G., Bertuzzo, E., **Convertino**, M., Borgogno, F., Tamea, S., Rodriguez-Iturbe I. (2007). Vegetation Landscape and River Network Interactions: Biomass Dynamics and Biodiversity Patterns, *Working Group report, IVSLA Advanced Summer School "Environmental Dynamics Pathways to Environmental Sustainability"*, 08-15 July 2007, Venice

Da Deppo L., **Convertino**, M., Viero, D., Stefanon, L., Computational - Experimental project of an Hydraulic Infrastructure: Fluvial small dam project on river Sesia at Borgo Sesia (Vercelli), Lombardia, Italy, 2006

**Convertino, M., Marani, M.,** Characterization and Prediction of the Hydrologic Response of the Taloro River Basin (Sardegna, Italy) through High Quality Remote Sensing Data and the GIUH theory, University of Padova, Italy, 2006

*Proceedings and Published Abstracts (excerpta)*

Jie Li and Matteo **Convertino**, Taming Network Inference: Optimal Transfer Entropy Model, ICCS 2020 (International Conference on Computational Science), Amsterdam

Elroy Galbraith and Matteo **Convertino**, On Structure, Function and Services of Ocean Bacterioplankton, ICCS 2020 (International Conference on Computational Science), Amsterdam

Louis Chan and Matteo **Convertino**, Macroecological Characterization of Syndemic Risk, ICCS 2020 (International Conference on Computational Science), Amsterdam

Jie Li and Matteo **Convertino**, Taming Network Inference: Optimal Transfer Entropy Model, GSB Summer Symposium, 2019, Hokkaido University

Elroy Galbraith and Matteo **Convertino**, On Structure, Function and Services of Ocean Bacterioplankton, GSB Winter Symposium, 2019, Hokkaido University

Louis Chan and Matteo **Convertino**, Macroecological Characterization of Syndemic Risk, GSB Winter Symposium, 2019, Hokkaido University

Jie Li and Matteo **Convertino**, Inference of Complex Microbiome Networks: Macroecology and Entropy Balance, GSB Summer Symposium, 2018, Hokkaido University

**Convertino M**, 2017, Information Fractal Dimension as Communication Network Stability (スマートインフォメディアシステム), 電子情報通信学会技術研究報告= IEICE technical report: 信学技報 117 (349), 15-20

McGowan CJ, Biggerstaff M, Johansson M, and Reed C, and the Influenza Forecasting Contest Working Group (**Convertino M** and the whole HumNat Lab where participating and listed as coauthors), "Results of the 2015-2016 CDC Influenza Forecasting Challenge", Society for Epidemiologic Research 2016

Dai H., **Convertino M.**, Linkov I., Ye M., A Bayesian network approach for ecogeomorphological modeling facing uncertainty: a cross-comparison of pristine and impacted wetlands, Geological Society of America, 4-7 November, Charlotte, NC, USA

M. **Convertino**, I. Linkov, Species-Inspired Resilient Networks for Global Sustainability, ERDC Conference, New Orleans, Louisiana, November 2011

M. **Convertino**, G. Kiker, I. Linkov, Integrated Modeling Tool to Assess the Impact of Sea-Level Rise on TER-S at Military Installation, ERDC Conference, New Orleans, Louisiana, November 2011

**Convertino, M.**, Zachary A. Collier, James L. Valverde Jr., Yousra Tourki, Michelle Barber, Jeffrey M. Keisler, Igor Linkov, Decision-driven Risk Assessment of the Pharmaceutical Supply Chain, Society for Risk Analysis Annual Meeting, Charleston, SC, December 2011; [Chairman of the session W4-B "Risk Assessment of Pharmaceuticals in the Environment"]

Valverde, J.L., **Convertino, M.**, Bockelie, A., Keisler, J., Dokukin, D., I. Linkov, Portfolio MCDA-based Optimization for Asset Management: a USACE example, Society for Risk Analysis Annual Meeting, Charleston, SC, December 2011

Kiker, G., **Convertino, M.**, Chu-Agor, M.L., Aiello-Lammens, M., Kiker, G.A., Muñoz-Carpena, R., Akcakaya, H.R., Fischer, R.A., and Linkov, I., Integrated Modeling for Risk Assessment of Shoreline- dependent Species Threatened by Sea-level Rise, Society for Risk Analysis Annual Meeting, Charleston, SC, December 2011, and SERDP-ESTC meeting, Arlington, VA,

November 2011

**Convertino**, M., Bates, M, Vogel, JT, Foran, CM, Keisler, J, LoSchiavo, A, Linkov, I, Enhanced Adaptive Management: Using Decision Analytical Methods to Transparently Integrate Science, Expert Knowledge, Decisions, and Monitoring, SETAC (Society of Environmental Toxicology and Chemistry) 32nd North America Annual Meeting, Boston, November 2011

**Convertino**, M., Kiker, G, Linkov, I, Warning Signals of Species Shifts for Risk Assessment and Management, SETAC (Society of Environmental Toxicology and Chemistry) 32nd North America Annual Meeting, Boston, November 2011

**Convertino**, M., J.F. Donoghue, M.L. Chu-Agor, G.A. Kiker, R. Muñoz-Carpena, R.A. Fischer, I. Linkov, Anthropogenic Renourishment Feedback on Shorebirds: a Multispecies Bayesian Perspective for Beach Restoration in the Face of Climate Change, National Conference on Ecosystem Restoration (NCER), Baltimore, August 2011

I. Linkov, J.T. Vogel, B. Suedel, W. Hubbard, D. Tazik, C.M. Foran, **Convertino**, M., Decision Analysis and Ecosystem Restoration: Framework and Applications, National Conference on Ecosystem Restoration (NCER), Baltimore, August 2011

**Convertino** M., J.B Elsner, G.A. Kiker, R. Muñoz-Carpena, J.F. Donoghue, R.A. Fischer, I. Linkov, Bayesian Modeling for Assessing Feedbacks among Species, Anthropogenic, and Climate Forcings: shorebirds in Florida, Ecological Society of America General Meeting, Austin, TX, August 2011

**Convertino**, M., J.B Elsner, R. Muñoz-Carpena, G.A. Kiker, C.J. Martinez, R.A. Fischer, I. Linkov, Do Tropical Cyclones Shape Shorebird Patterns? Biogeoclimatology of Ecosystems Facing Climate Change, 3rd International Summit on Hurricanes and Climate Change, Rhodes, [INVITED], July 2011

**Convertino**, M., F. Catani, A. Troccoli, Maximum Entropy Macroscale Prediction of the Occurrence and Size of Landslides Driven by Climate Change Rainfall Variation, European Geophysical Union, Wien, April 2011

Zajac, Z., Muñoz-Carpena, R., **Convertino**, M., Global Uncertainty, Sensitivity Analysis and Fractal Characterization of Spatially Distributed Hydrologic Models: case-study for a Constructed Subtropical Wetland in Everglades, Florida, Total Maximum Daily Loads (TMDL) conference "Watershed Management to Improve Water Quality", ASABE, Baltimore, 14-17 November 2010

**Convertino**, M., Space-time evaluation of land-cover for ecohydrological applications and wildlife conservation, Florida section of the American Society of Agricultural and Biological Engineers Conference, Jupiter, FL, 10-11 June 2010

M. Aiello-Lammens, H.R. Akcakaya, **Convertino**, M., Fischer, R., Kiker, G., Martinez, C., and Linkov, I., Integrated Climate Change and Threatened Bird Population Modeling to Assess Risks from Changes in Sea-level and Weather Patterns, 24th International Congress for Conservation Biology (ICCB 2010), Edmonton, Alberta, Canada, 3-7 July 2010

#### *Acknowledged Contribution in Journal Articles (for data or computation; excerpts)*

Klarenberg et al., 2019, A spatiotemporal natural-human database to evaluate road development impacts in an Amazon trinational frontier, Scientific Data, volume 6, 93 <https://www.nature.com/articles/s41597-019-0093-7>

Linkov I., Lambert JH, Collier ZA (2013), Editorial: Introduction to the inaugural issue of environment systems and decisions, Environ Syst Decis, 33:1-2, DOI 10.1007/s10669-013-9434-9

Campo-Bescos Miguel, Muñoz-Carpena Rafael, Kaplan David, Southworth Jane, Zhu Likai, Waylen Peter (2013). Environmental controls on the spatial and temporal variation of vegetation in southern Africa savanna, *PLoS ONE*, (for editorial assistance (text and figures))

Konar, M. , M.J. Todd, R. Muneeppeerakul, A. Rinaldo and I. Rodriguez-Irube (2013), Hydrology as a driver of biodiversity: Controls on carrying capacity, niche formation, and dispersal, 35th Anniversary Issue of *Advances in Water Resources Research*, doi: 10.1016/j.advwatres.2012.02.009, (for the paper about the neutral metacommunity clustering)

Zharikov, Y., and Slater, G., 2012 Limitations to spatio-temporal transferability of distribution models for Dunlin *Calidris alpina* in the Pacific Northwest, Ecostudies Institute, Mount Vernon, WA, [http://ecoinst.org/files/Zharikov\\_Slater\\_Dunlin\\_Habitat\\_Model\\_FinalReport\\_PCJV\\_WA-122.pdf](http://ecoinst.org/files/Zharikov_Slater_Dunlin_Habitat_Model_FinalReport_PCJV_WA-122.pdf) (for helping with the MaxEnt algorithm transferability and data)

Seri, E., Markuva, Y.E., Shnerb, N.M. (2012). Neutral Dynamics and Clusters Statistics in a Tropical Forest, 180-6, *The American Naturalist*, (using parts of my Neutral Metacommunity Model)

Chu-Agor, M.L., J.A. Guzman, R. Muñoz-Carpena, G.A. Kiker, I. Linkov (2012). Changes in beach habitat due to the combined effects of long-term sea-level rise, storm erosion, and nourishment, *Environmental Modelling and Software*, (using my Habitat Suitability calculations)

Chu-Agor, M.L., R. Muñoz-Carpena, G.A.Kiker, A. Emanuelsson, I. Linkov (2011). Exploring vulnerability of coastal habitats to sea level rise through global sensitivity and uncertainty analyses, Volume: 26, Issue: 5, Pages: 593-604, 10.1016/j.envsoft.2010.12.003, *Environmental Modelling and Software*, (using my Habitat Suitability calculations)

Gauchere, C., Salomon, L., Labonne, J. (2011). Variable self-similar sinuosity properties within simulated river networks, 36, 1313-1320, 10.1002/esp.2153, *Earth Surface Processes And Landforms*, (using my Optimal Channel Network model generations)

Rodriguez-Iturbe, I., R. Muneerakul, E. Bertuzzo, S. A. Levin, and A. Rinaldo (2009), River networks as ecological corridors: A complex systems perspective for integrating hydrologic, geomorphologic, and ecologic dynamics, *Water Resour. Res.*, 45, W01413, doi:10.1029/2008WR007124.

## Journal Editorship

### *Associate and Guest Editor*

MDPI journals (Symmetry, Climate, Sustainability), 2019-present

Entropy, 2019-present; Editor in Chief Entropy in Biology, 2021-present

Ecological Modelling, 2019-present

Environmental Modeling and Software, 2019-present

Ecological Processes, Associate Editor, 2017-present

Ecological Indicators, Associate Editor, 2017-present

Data in Brief, Associate Editor, 2018-2021

PLoS ONE, Associate Editor, 2011-2015

"*Environment, Systems, and Decisions*", Springer (formerly "The Environmentalist"), Expertise: Ecological Modeling/Biocomplexity (Editors: J.H. Lambert (UVA), and I. Linkov (ERDC USACE)), 2012-2013

"*Transactions of Complex Systems*", European Alliance for Innovation Publication - Institute for Computer Sciences, Social Informatics and Telecommunications Engineering (ICST), Area Editor: Ecological and Social Complexity, 2012-2014

### ***Guest Editor for Special Issues:***

“COVID Ecology and Evolution: Systemic Biosocial Dynamics”, *Frontiers in Ecology and Evolution/Public Health and Medicine*, 2020

"Ecosystem Health: Biocomplexity, Modeling, and Solutions", in *Sustainability*, 2019-2020, [https://www.mdpi.com/journal/sustainability/special\\_issues/ecosystem\\_health\\_biocomplexity\\_modeling\\_solutions](https://www.mdpi.com/journal/sustainability/special_issues/ecosystem_health_biocomplexity_modeling_solutions)

"Climate Ecosystems Nexus", in *Climate*, 2019-2020, [https://www.mdpi.com/journal/climate/special\\_issues/Ecosystems\\_Nexus](https://www.mdpi.com/journal/climate/special_issues/Ecosystems_Nexus)

"Complexity and Symmetry in Biosystems", in *Symmetry*, 2019-2020, [https://www.mdpi.com/journal/symmetry/special\\_issues/Complexity\\_Symmetry\\_Biosystems](https://www.mdpi.com/journal/symmetry/special_issues/Complexity_Symmetry_Biosystems)

“Bioinspired Engineering: Collectivity and Design”, in *Symmetry*, 2019-2020

“Wetlands in a Complex World”, *Ecological Processes*, Springer (featured topic of the Society of Wetland Scientists and the Greater Everglades Ecosystem Restoration Conference “INTECOL”, Orlando, FL, June 3-8, 2012, <http://www.conference.ifas.ufl.edu/intecol/topics.html>)

### *Journal Reviewing (excerpta and rarely updated)*

Science, Science Advances, PNAS, Ecological Indicators, Env. Mod and Software, Nature Climate Change, Environmental Research Letters, Emerging Infectious Diseases, Environment Systems and Decisions, Environmental Research Letters, Ecological Economics, Ecography, Ecological Processes, Ecological Engineering, Transactions of Complex Systems, Risk Analysis, Ecological Modelling, PLoS ONE, Water Resources Research, PLoS Computational Biology, Journal of Geophysical Research - Biogeoscience, Environmental Science and Technology, Transaction of the ASABE, International Journal of Geographical Information Science, Hydrology and Earth System Sciences (HESS), Ecological Indicators, Integrated Environmental Assessment and Management, Ecotoxicology and Environmental Safety, Science of the Total Environment, Earth and Planetary Sciences Letters, Biological Conservation, Journal of Infrastructure Systems, Diversity and Distribution, Journal of Theoretical Biology, Journal of Environmental Management, Biology, Decision Analysis, Plants and Soils, Tropical Conservation Science Journal, Spatial and Spatio-temporal Epidemiology

### *Proposal and Report Reviewing (excerpta)*

NSFC, JSPS, The Netherlands Scientific Society, EPA, NSF Smart and Connected Health (review panel in 2017), NSF Decision, Risk and Management Sciences, NSF Coupled Natural-Human Systems, NSF Geography, RAND corporation study (1 report), Ministry of Health of Italy

### *Other Journal Activity*

Society for Risk Analysis newsletter, Ecological Risk Assessment Specialty Group section, October 2011-2013

International Network of Research on Coupled Human and Natural Systems newsletter (CHANS-Net), May 2012-2013

Florida Climate Institute newsletter, Contributor, October 2011-2013

## **Grantsmanship** (funded and pending research projects)

### ***Funding at Tsinghua SIGS, Tsinghua University***

InTo COVID-19 Optimal Portfolio Management, SZ Government and Tsinghua SIGS funding, March 2022-March 2023 (RMB 50,000)

ECOgeomorphic and Hydroclimatic ImpactS on Biodiversity and Ecosystem FuNction: Mapping Critical Shifts and ConnEctions (ECOSENSE), PI: Matteo Convertino, Jan 2022-Dec2024, funders: Start-up funding Shenzhen Municipal Government, B Talent (RMB 5,000,000)

Climate and Anthropogenic Impacts on Coastal Ecosystems: Key Species-Habitat and Blue Carbon Feedbacks, PI: Matteo Convertino, July 2021-Dec 2022, funders: Ministry of Science and Technology of China (RMB 300,000)

Institute on Environment and Ecology Start-up funding (RMB 100,000)

### ***Funding at Hokkaido University***

COVID-19 Infodemic Tomography (InTo): Coupled Socio-Epidemiological Forecasting Cyber-infrastructure for Healthcare Management and Social Media Surveillance; 2020; PI: Matteo **Convertino** (Hokkaido University), funders: WHO/SEARO, 55,000 USD

Information-theoretic Portfolio Models for Disease Surveillance System Design and Evaluation: an application to cystic echinococcosis, 2020-2022, PI: Victor Javier Del Rio Vilas and Prada Joaquin (University of Surrey, UK); co-PI: Matteo **Convertino** (Hokkaido University), Royal Society International Collaboration grants, 12,000 GBP

Leonardo di Caprio AI for Earth Innovation Grant, “Great Barrier Reef Holo-Ecosystem: Multiscale Dynamics, Fate and Controls”, USD 100k in Computational Resources (PI: Convertino M) and field experiment/monitoring (coPI: Frade P and Bourne D), 2020-2021, <https://www.leonardodicaprio.org/ai-for-earth/>

AI4Earth, Microsoft, Bio-Hydro-Geo Dynamics: Mapping Systemic Earth Risk and Earth Microbiome, 2019, USD150,000, PI: **Convertino M.**

Biomimetic Entropic Patterning (BEP) of Nanobiosensors; Eric McLamore (Principal Investigator), Carmen Gomes (Co-Principal Investigator), Matteo Convertino (Co-Principal Investigator); Funding: 197,556 USD; NSF Award #1805512, COLLABORATIVE RESEARCH, CBET, Div Of Chem, Bioeng, Env, & Transp Sys, National Science Foundation, USA ([https://nsf.gov/awardsearch/showAward?AWD\\_ID=1805512&HistoricalAwards=false](https://nsf.gov/awardsearch/showAward?AWD_ID=1805512&HistoricalAwards=false))

Innovative Information Theoretic Models for Untangling Complex Socio-biological Systems; PI: **Convertino M.**; Funding: 5M JPY; Source of support: GI-CoRE Station for Big-Data and Cybersecurity Project Location: Hokkaido University; Support status: Accepted (2017-2022)

Project/proposal title: Entropic Prediction of Biodiversity for Critical Ecosystem Design; PI: **Convertino M**; Source of support: Sakigake JST PRESTO [Social Design] Fundamental Information Technologies toward Innovative Social System Design; Project Location: Hokkaido University; Support status: declined and resubmitted (2020)

Project/proposal title: Drone Biomimicry: Implementable Collective Swarm Dynamics; PI: **Convertino M**, co-PI: Lipman J (University of Technology Sydney); Source of support: JST Kakenhi International Collaborations; Project Location: Hokkaido University and University of Technology Sydney; Support status: declined and resubmitted (2020)

Project/proposal title: Unveiling Clotting Dynamics via Information Networks Analytics on Bear Hibernation Big-Data; PI: **Convertino M**; Source of support: JST Kakenhi B Generative Research Fields; Project Location: Hokkaido University; Support status: declined and resubmitted (2018)

Project/proposal title: Theory and Design of Optimal Biomimetic Patterned Sensors; PI: **Convertino M**; Source of support: JST Kakenhi B; Project Location: Hokkaido University; Support status: declined and resubmitted (2020)

Donation for Unrestricted Research on Complex Systems to **Convertino M**; Funding support: 20,000 USD; Donor: 3M (via G. Olsen), 2018

### ***Funding at University of Minnesota, Twin-Cities***

Decision-making tool for optimal management of AIS; Phelps Nich (PI), **Convertino** M (co-PI) Robert Haight (co-PI); Funding: 250,000 USD; Funding source: State of Minnesota (LCCMR program) via the Minnesota Aquatic Invasive Species Research Center, Project start date: 2017, Estimated project end date: 2019; <https://www.maisrc.umn.edu/decision-tool>

PI: Manson, S; Co-PI: **Convertino** M, et al.; Project/proposal title: Big data for human-environment systems; Source of support: NSF Data Infrastructure Building Blocks/ Division of Advanced Cyberinfrastructure; Project Location: University of Minnesota; Total award amount: \$250,000 , 2016-2018 , Support type: Funded

PI: Munoz-Zanzi, C; Co-PI: **Convertino** M, Velasco-Hernandez, Lenhart S, Gompper M; Project/proposal title: PIRE: An integrated approach to understanding and modeling the environment as a driver of zoonotic pathogen transmission; Source of support: NSF; Project Location: University of Minnesota; Total award amount: \$1.5M; Starting date: 07/01/2017; Ending date: 31/06/2019; Support type: Accepted; Person-months per year committed to the project: 1 month; Person-month type: Calendar

PI: **Convertino**, M; Co-PI: Benjaafar S, Erciyas A; Project/proposal title: SMARTmove: a value-based intelligent App for smart mobility at the University of Minnesota; Source of support: Center for Transportation Studies ; Project Location: University of Minnesota; Total award amount: \$150k; Starting date: 01/01/2017; Ending date: 08/30/2017; Support type: Accepted; Person-months per year committed to the project: 0.1 month; Person-month type: Calendar

PI: Alvarez J , Co-PIs: **Convertino** M, Hedberg C, Perez A., Project/proposal title: How complex are complex infectious diseases? Using data analytics to understand human-animal-environment interactions in the era of big (and small) data, Source of support: Academic Health Center, Project Location: University of Minnesota, Total award amount: 194,856 , Starting date: 10/01/2016 , Ending date: 09/30/2018 , Support type: Funded , Person-months per year committed to the project: 0.2 month, Person-month type: Calendar

PI: Moore S. Co-PIs: **Convertino** M, Wolf T, Travis D., Phelps N., Jankowski M., Ferrey M., ‘Emerging Chemical Detection in Animals and the Environment’ Source of support: State of Minnesota, LCCMR program (Legislative-Citizen Commission on Minnesota Resources), Project Location: University of Minnesota, Total award amount: 1,178,932, Starting date: 12/01/2016 , Ending date: 05/01/2019, Support type: Funded , Person-months per year committed to the project: 0.2 month; (<http://www.lccmr.leg.mn/proposals/2016/original/086-b.pdf>); Synthesis: This project aims to determine levels of emerging and unregulated pollutants, termed micropollutants, in subsistence species and the environment in and around the Grand Portage Indian Reservation, Cook County, Minnesota

**Convertino** M (PI), MDH (Hoppe B as co-PI), (2016) An Assessment of Climate Change Impacts on the Health Well-Being of Minnesotans, CDC funding, \$250k, status: accepted

**Convertino** M (PI), MDH (Hoppe B as co-PI), (2016) MN Building Resilience Against Climate Effects (MN-BRACE) CDC funding, agreement contract, status: accepted

**Convertino** M (PI), Perez A (co-PI) et al., (2016), Promoting STEM methods in Population Health: case studies of a reverse engineering model for detection/attribution and system design (fish kill, antimicrobial resistance, and avian influenza case study), \$20k, status: accepted

PI: Munoz-Zanzi, C., Schotthoefer, A.; Co-PIs: Fritsche, T., Keifer, M., **Convertino**, M., Neitzel, D.; Project/proposal title: Tick-borne disease risk for agricultural workers and their families in the Midwest; Source of Support: UMASH Pilot Project (NIOSH Prime); Project Location: University of Minnesota, Marshfield Clinic Research Foundation; Total award amount: \$20,000; Starting date: 05/19/2016; Ending date: 05/18/2017; Support type: Funded; Person-months per year committed to the project: 0.12 months; Person-month type: Calendar

Ramaswami A (PI), **Convertino** M (co-PI) et al., (2015) Integrated Urban Infrastructure Solutions for Environmentally Sustainable, Healthy, and Livable Cities, <http://www.sustainablehealthycities.org>, NSF Sustainability Research Network program; Synthesis: the research network seeks to identify the best mix of local and large infrastructure systems to achieve urban sustainability, health and livability goals, by examining possibilities in diverse cities across the U.S. and in India. We are exploring physical changes in infrastructure design, the role of new technologies, as well as the changes in public attitudes and policies that can help achieve the infrastructure transitions needed to build desirable cities, today and into the future; \$12M total (\$250k to Convertino), status: accepted

**Convertino M** (PI), McLamore Em (UF), Claussen J (Iowa State U.), (2015), Bio-Inspired Patterned Sensor (BIPS) Networks, NSF, \$150k; Synthesis: There is a critical need for rapid, cost-effective, accurate and easy-to-use biosensors that can operate at the point-of-care (POC) and subsequently replace tedious, costly, and time-consuming laboratory-based detection techniques. This project will create a new generation of POC biosensors by 3D patterning protein-nanomaterial networks based on biology-inspired patterns. The overarching hypothesis is that using nanoscale and microscale fractal networks will significantly improve electrical connectivity, leading to enhanced sensor performance; status: Accepted

Munoz-Zanzi C, **Convertino M.** (co-PI) et al., NSF NIMBioS (National Institute for Mathematical and Biological Synthesis) Funding Program for continuation of the work on "Leptospirosis Modeling", (2015); status: accepted

One Health Technology for Controlling Contaminant Impacts on Subsistence Food in Minnesota Populations (2015), UMN VP for Research MN Futures; \$150k, status: accepted

**Convertino M** (PI), Puri S (co-PI), (2015) Diabetes Epigenetics: Detection of Environmental Drivers and Optimal Controls, funders: IonE, \$3000, status: accepted

**Convertino M** (PI), Flink Carl, Odde David, "Dangerous Populations: Dance for Education and Exploration of Environmentally Driven Infectious Diseases", Institute on the Environment Minigrant, UofM, \$3,000, December 2014

Ponder Julia, **Convertino M** (co-PI), Dominic Travis, Mark Jankowski, Julie Langenberg, "Creating a vision for transdisciplinary research at The Raptor Center", Institute on the Environment Minigrant, UofM, \$3,000, December 2014

**Convertino M**, Timothy M. Smith, Rylie Pelton, Mo Li, Luyi Chen, "Attributing Cardiovascular and Respiratory Disease Mortality on PM2.5 Exposure: Is It to Blame? A Complex Systems Approach", Institute on the Environment Minigrant, UofM, \$3,000, December 2014

**Convertino M**, "Disease Landscapes: Environment as Syndemic Network", Institute on the Environment, UofM, 2014

Church T, **Convertino M**, "Complex Systems Modeling of Pharmacokinetics and Pharmacodynamics of a Phase I Chemotherapeutic Agent", sponsor 3M (co-PI; \$30,000), 01/2014-06/2015, accepted

**Convertino M**, Bellemare M, King R, Diez-Gonzalez F, Sanpedro F. "Impact of Local and Organic Foods on Food Safety: Assessment of Supply Chain Controls and Value Outcomes for Quantitative-based Food Policies", Healthy Food Healthy Lives Institute Planning Grant, UofM, 2014

**Convertino M**, Park JK, Wierzb TF, Kwon SY, Marks F, "Analysis and Modeling of Cholera Outbreak in Kolkata and Portfolio-optimal Vaccine Deployment, India", sponsor International Vaccine Institute - Pilot Study Program, 2014, accepted

Ramachandran G. et al (all EnHS faculty), University Grants Commission, Bahadur Shah Zafar Marg, New Delhi, "Obama-Singh Indo-US 21st Century Knowledge Initiative" (US Department of State - India Government), (**Convertino M** as co-PI for the course "Complex System Modeling for Population Health"), 2014, Accepted

**Convertino M**, Nzietchueng S, Ali M, Park JK, Nardi F, "On the cholera-food-security nexus: the Kolkata epitome for controlling global health outbreaks", Global Spotlight Program, UofM, 2013, accepted

Ramachandran G, Ramaswami A, **Convertino M**, Panneer, S, Reddy S, Assessing and Prioritizing Needs for the Occupational Health Infrastructure in India, Global Spotlight Program, UofM, 2013, accepted

**Convertino M**, "HumNat-Health: from People to People. Theory, Computers, Art", Institute for Advanced Studies, October 2013, UofM, accepted

**Convertino M**, Bio-hydroepidemiology of cholera: a complex adaptive systems approach, Grant In Aid, Office of the Vice President for Research, 50,000 USD, October 2013, September, UofM, Accepted

USACE ERDC "Climate Change and Extreme Weather: An Exploration of Disaster Mitigation and Insurance Dimensions",



through the Center Directed Research program (CDR) PI: **Convertino**, M., Valverde, J.L. Jr. (USACE HQ) 2013 (3 months), \$ 2,500

USACE ERDC "Asset Management Portfolio Analytics for Ecosystem Services Threatened by Climate and Land Use Change", PI: **Convertino**, M., Valverde, J.L. Jr. (USACE HQ) 2013 (3 months), \$ 2,500

### ***Funding at the University of Florida and US Army Corps of Engineers***

**Convertino** M., Portfolio Decision Analytical Model for a Quantitative-based and Sustainable Development of Smallholder Farms in Developing Countries, 2013 NSF Bread Idea Challenge (Basic Research To Enable Agricultural Development), \$5000

**Convertino** M., R. Muñoz-Carpena, G. Kiker, S. Perz, On the Spatiotemporal Telecoupling of Deforestation and Market Population, CHANS Fellowship 2013, ESA Meeting, \$3000

NSF CyberSEES (Type 1), When cyber meets natural ecosystem networks: Design for ecosystem sustainability and security, **Convertino**, M. (UF), Fok M. (UGA), 2013, \$ 300,000

BIOSALINE project (<http://www.biosaline.org/>), "Salinity monitoring and mapping in the coastal areas of Senegal considering sea water intrusion", 2012, PIs: A. Alshankiti, M. **Convertino**, et al., 2013, accepted; ~\$25,000

"Integrated Critical Mangroves Conservation and Sustainable Use", with Dr. Paul Ouedraogo, 2012, Lead Agency: Ramsar Convention, Other Executing Partners: Mava Foundation, UNEP, IUCN, Wetlands International-Africa, and WWF WAMER, \$ 535,00

"Integrated Modeling for Assessing Response of Species to Climate Change" "center-directed research" (CDR); subproject: "Eco-hydro-climatological Risk model of Amphibians at Fort Stewart, GA" (USACE ERDC, Linkov, I., Lee, A., Westervelt, B., Bridges, TS, Valverde, J.L., **Convertino**, M., Weatherly, J.W.), 2011-2012, \$ 100,000

"Decision and Risk Analysis Applications Environmental Assessment and Supply Chain Risks" (first project: Drug Importation Policy Options through Optimization of the Global Supply Chain - sponsor: FDA), ERDC-USACE and University of Florida Cooperative Agreement W912HZ-11-2-0012 (PI: I. Linkov, co-PI: G.A. Kiker, and M. **Convertino**), \$ 271,959, 2010-2011

"Exploring tradeoffs for an Uncertain Future: Comparing Traditional Criteria Weights Elicitation with Results from Game-based Decision Simulations", extension of the ERDC-USACE and University of Florida Cooperative Agreement W912HZ-11-2-0012 (PI: I. Linkov, co-PI: G.A. Kiker, and M. **Convertino**), \$ 20,397, 2012

"Modification of the Sea Level Affecting Marshes Model (SLAMM) to Incorporate the Effects of Coastal Sediment Processes and Dredges Material Placement", extension of the ERDC-USACE and University of Florida Cooperative Agreement W912HZ-11-2-0012 (PI: I. Linkov, co-PI: G.A. Kiker, and M. **Convertino**), \$ 20,000, 2012

"Probabilistic decision model for Enhanced Adaptive Management of the Everglades Water Conservation Areas", (PI: G. Kiker; I. Linkov, C.M. Foran, A. LoSchiavo, J.M. Keisler, L. Scarlett, M. **Convertino**), US Army Corps of Engineers Civil Works Internal Grant, Jacksonville District - ERDC, RECOVER program, \$55,000, 2011

"Evaluation of Costal Resilience at Camp Lejeune", SERDP Special Solicitation "Defense Coastal/Estuarine Research Program", with Russo E. and other ERDC - USACE scientists, M. **Convertino**, accepted without funding

University of Florida Gainesville Health Science Center Institutional Review Board (IRB-01), "Novel early-warning signals of epileptic-seizure based on EEG, MRI and fMRI", M. **Convertino**, H. Skinner, accepted

University of Florida Behavioral/NonMedical Institutional Review Board (IRB-02), "A Multidisciplinary and Collaborative Approach: When Engineering and Foreign Language Education meet", M. **Convertino**, A. Colarossi, Academic Year 2011, accepted

Various internal "Basic Research" program ("6.1") of the Engineering Research and Development Center, US Army Corps of Engineering, 2010, 2011, 2012 Fiscal Years:

(i) "Agent-Based Modeling and Network Science for Fabricating Bacteria Integrated Micro/Nano- Robotic Systems", with M. Cowan, M. Sitti (CMU), and Igor Linkov (ERDC);

(ii) "A Neutral Metacommunity Model For The Assessment Of The Dams' Effect and Water Management Strategies in River Basin Socio-Ecological Systems", with CM Foran, and I. Linkov;

(iii) "Integration of LIDAR, imagery, and texture analysis for understanding the coupled dynamics of key vegetation species and species community of coastal/marine ecosystems ", with M. Reif (ERDC Joint Airborne Lidar Bathymetry Technical), J. Zinnert (VCU & ERDC), R. Mangoubi (Draper - MIT), and I. Linkov (ERDC);

(iv) "Influence of Spatial Heuristics on Soldier Route Planning - Coupling Decision Field Theory and Gaming", with T.T. Brunye (U.S. Army Research, Development, and Engineering Command (RDECOM), and Tufts University), and I. Linkov (ERDC);

(v) "Game-based Preference Elicitation", with J. Keisler (UMB), G.A. Kiker (UF), R. Cooke (RFF), and I. Linkov (ERDC);

(vi) "Development of a Universal Information Processing Dynamic Model for Environmental Stress and Health Assessment", with J. Palma-Oliveira (University of Lisbon), D. Smith (UPenn), C.M. Foran and I. Linkov (ERDC);

(vii) "Bird species recognition and estimation of metapopulation abundance using texture analysis of aerial images", with R.A. Fischer, R. Mangoubi (Draper - MIT), and I. Linkov (ERDC);

"Selection and Assessment of Metrics of Evaluation of Ecosystem Restorations using Multi-criteria Decision Models", Environmental Benefits Analysis Program, US Army Corps of Engineers (Linkov, I., B. Suedel, M. **Convertino**) 2011-2012

"Portfolio Decision Analysis for the Assets Management of Hydropower Infrastructures", (PI: Valverde J.L. Jr.; Linkov I., Hale D., **Convertino** M.), 2011-2012

"Integrated Climate Change and Threatened Bird Population Modeling to Mitigate Operations Risks on Florida Military Installations", US SERDP (DOD-EPA-DOE), PI: I Linkov, co-PI: R. Akakaya, G Kiker, R Munoz-Carpena; **Convertino** M (Research Scientist co-I), budget: 15% of 1,5M USD

"Detection of the drivers for the community assembly in tropical forests using neutral and niche models for the Dinghushan and Changbaishan plots, South China Botanical Garden, Guangzhou" (managed by Center for Tropical Forest Science- Smithsonian Tropical Research Institute), Chinese Academy of Science International Young Scientist Research, (PI: **Convertino**, M.; co-PI: W. Ye and J. Lian) (\$ 24,000), 2010-2012

NSF 0642517, "Co-Organization of River Basin Geomorphology and Vegetation", and J. S. McDonnell fund "Grant for Studying Complex Systems", Princeton University (PI: I. Rodriguez-Iturbe), Research Fellow (\$ 1400/month), 2008

NFS 0823953, "Geomorphic transport laws, landscape evolution, and fractional calculus, subproject: Topographically Consistent Networks (TCN) vs Optimal Channel Networks (OCN): a new formulation for optimal river networks" (PI: Colin Stark, Lamont-Doherty Earth Observatory, Columbia University), Graduate Research Assistant, June 2009- August 2009

NFS 0617557, "An Exploration of the Role of Mountain River Sinuosity in Landscape Dynamics, subproject: 3d simulation of landslide failure and incipient runout using SNAC-CIG (Computational Infrastructure for Geodynamic)", (computation on Teragrid supercomputer, grant EAR090034) (PI: Colin Stark, Lamont-Doherty Earth Observatory, Columbia University), Graduate Research Assistant, Jan. 2009-May 2009

AquaTerra GOCE CT-2003-505428, "Analysis of the fundamental geomorphological properties of river basins for transport phenomena at large scales", EU project Global Change and Ecosystems, (PI: Prof. Andrea Rinaldo, University of Padova, Italy), Research Fellow (€1000/month), May 2007-May 2008

AquaTerra GOCE CT-2003-505428, "Theoretical and Modeling Study of the Spatial Distribution of freshwater fishes and their Diversity in Fluvial Networks", EU project Global Change and Ecosystems, (PI: Prof. Andrea Rinaldo, co-PI: Prof. Marco Marani, University of Padova, Italy), Research Fellow (€1000/month), March 2009-June 2009

### *Research with Federal Agencies and Private Sector*

Mangrove Conservation Foundation, DIVE4Love Shenzhen, iConserve Shenzhen, SEE China, Italian Embassy in Tokyo, Vitale Barberis Canonico, Suitsupply, THOR Companies, Medtronic, CitizenLeague Twin-Cities, Allina Health, Health Partners, MSR Design (Minneapolis), Cargill LTD, Charles Stark Draper Laboratory, Mead Johnson, 3M, National Center for Food Protection and Defense (DHS), CDC, US Army Corps of Engineers (Engineering Research and Development Center), Federal Emergency Management Agency (FEMA), US National Science Foundation (NSF), US Department of Defense (DoD), Strategic Environmental Research and Development Program (SERDP), Department of Energy (DOE), Office of Science and Technology Policy of the White House

## **Patents**

InTo: Coupled Socio-Epidemiological Forecasting Cyber-infrastructure, **Convertino M**, Galbraith E, Li J (45, 45, 10% share, respectively), submitted by Hokkaido University, Nov 2020

Bio-Inspired Patterned Sensors (BIPS), E. McLamore and M. **Convertino**, submitted by the University of Florida, 2020

"SMARTmove: a multiservice mobile App for sharing economy mobility", Erciyas A., **Convertino**, M., Benjaafar S (2016), submitted by the University of Minnesota (OIT)

Detecting species diversity by image texture analysis (2018); M **Convertino** and R Mangoubi (submitted by Charles Stark Draper Laboratory Inc), <https://patents.google.com/patent/US9858661B2/en>

## **Developed Models (excerpta)**

### *Developed Theories and Models*

Maximum Entropy Information Network Inference Model (Optimal Information Network), Spatio-temporal Portfolio Decision Model, Morphological Effective Systemic Epigraph, Information Theoretic Global Sensitivity and Uncertainty Analyses (GSUA), Multiplex Link Saliency and Node Centrality, Mandala System Evaluation, Information Fractal Dimension, Information Theoretic Traceback Models, Integrated Value of Information and Misinformation, Information Theoretic Metacommunity and Metapopulation Models, Infodemic Tomography (InTo)

Some models and model outputs are posted on the repository of my group:

<https://github.com/HokudaiNexusLab/>

<https://github.com/matteoconvertino>

<https://github.com/yangclaraliu>

Society, Environment and Economy to SEA (SEE2SEA) App for local fish digital marketplace coupled to water quality information (spinoff idea of the Nexus Group at Hokkaido University developed for the Hult prize competition, 2019), <https://sea2seejapan.wixsite.com/main>

Epidemic Prediction Initiative Webportal (2016) (data and simulation sharing), <http://predict.phiresearchlab.org>

InTo (Infodemic Tomography) cyberinfrastructure for social media sensing and forecast of epidemic spread (manual <https://rpubs.com/elroyg1/Into-walkthrough>) and application to COVID-19 to the following cities in collaboration with WHO/SEARO

[https://nexuslab.shinyapps.io/InTo\\_Delhi/](https://nexuslab.shinyapps.io/InTo_Delhi/)  
[https://nexuslab.shinyapps.io/InTo\\_Mumbai/](https://nexuslab.shinyapps.io/InTo_Mumbai/)  
[https://nexuslab.shinyapps.io/InTo\\_Jakarta/](https://nexuslab.shinyapps.io/InTo_Jakarta/)  
[https://nexuslab.shinyapps.io/InTo\\_Bangkok/](https://nexuslab.shinyapps.io/InTo_Bangkok/)

Analysis of microbiome macroecology and network organization <https://github.com/HokudaiNexusLab/Microbiome>

Modified Transfer Entropy inference of complex functional networks from species abundance data (general application to any multivariate time series data)  
<https://github.com/HokudaiNexusLab/net-valid>

M<sup>3</sup> (Multiplex Multiscale Metacommunity) model integrating MaxEnt and dispersal function on multiple coupled networks (available under request)

HumNat-Health: A multiscale, multiobjective and modular model for aesthetic computing (within the Spatio-Temporal Epidemiological Modeler (STEM) project <https://www.eclipse.org/stem/>)

Spatiotemporal Hydro-Socio-Epidemiological Model of Malaria (with A. Bombliès) Optimal Monitoring Network Design via Value of Information (VoI) Optimization

Multiresolution Statistical Analysis of Image Texture and Segmentation for Analysis of Biosystems Images (with R. Mangoubi)

Metrics Selection for Sustainable Ecosystem Restorations with DECERNS - SDSS (Decision Evaluation in Complex Risk Network Systems - Spatial Decision Support System) <http://doi.pangaea.de/10.1594/PANGAEA.7767> in the CV (with D. Dokukin)

1D and 2D Probabilistic Decision Models for Enhanced Adaptive Management (with J.M. Keisler, and I. Linkov)

Spatio-temporal Portfolio Decision Model (application for Infrastructure Asset Management, Species Asset Management, Health Decision Making, and Prioritization of R&D technologies) (with D. Dokukin, J.M. Keisler, J.L. Valverde Jr., and I. Linkov)

Game-based Stakeholders' Preferences Elicitation Model using Probabilistic Inversion (with D. Dokukin)

Statistical Assessment of Local Species Richness from Occurrence Data at different Resolutions (with D. Dokukin)

Supply Chain-based Risk Model (sponsored by FDA and developed with I. Linkov and J.M. Keisler)

Maximum Entropy Principle-based model for Landslide Prediction (with F. Catani)

Stochastic Neutral Metacommunity Model (with R. Muneeppeerakul and E. Bertuzzo)

Stochastic Agent Transport Model (e.g. for Species, Compounds, water-borne pathogens, etc.) (with A. Rinaldo, I. Rodriguez-Iturbe, E. Bertuzzo, R. Muneeppeerakul, and M. Konar)

Optimal Channel Network with heterogeneous precipitation (set of tools in Mathematica and Java within the "FluidTurtle-HydroloGIS/JGrass environment" for river network generation and analysis) (with A. Rinaldo and R. Rigon)

### *Featured Research in Public Science Media (excerpta)*

SZ News Group on SZ Biodiversity (<https://www.dutenews.com/shen/p/6788598.html>)

SZ Daily on river ecological monitoring ([https://www.thepaper.cn/newsDetail\\_forward\\_16327285](https://www.thepaper.cn/newsDetail_forward_16327285) and <https://english.news.cn/20221110/1a6425da923a44e7ba19554b63ccfa76/c.html>)

CGTN South China Tiger Rewilding <https://freewechat.com/a/MzIyNjIyMTQwOQ==/2247496077/1>, [http://www.eyeshenzhen.com/node\\_312089.htm](http://www.eyeshenzhen.com/node_312089.htm), [http://www.eyeshenzhen.com/content/2022-08/04/content\\_25290254.htm](http://www.eyeshenzhen.com/content/2022-08/04/content_25290254.htm)

Biodiversity, Talents' Talk, Shenzhen Talents Institute, Dec 2022 [https://www.sznews.com/news/content/2021-12/15/content\\_24821019.htm](https://www.sznews.com/news/content/2021-12/15/content_24821019.htm) and <https://www.163.com/dy/article/H4UK8H6E05169CDN.html>

SZ Daily and SZ government, "Italian aims to build species observation database", [http://www.szns.gov.cn/english/living/expats/content/post\\_9576159.html](http://www.szns.gov.cn/english/living/expats/content/post_9576159.html)

Forecasting dengue: Challenges and a way forward, Hokkaido University, Sapporo, JP, <https://www.global.hokudai.ac.jp/blog/forecasting-dengue-challenges-and-a-way-forward/>, 2019

Spotlight On Research, "Complex systems for solving critical problems and engineering flocking drones", Hokkaido University, Sapporo, JP, <https://www.global.hokudai.ac.jp/blog/spotlight-on-research-complex-systems-for-solving-critical-problems-and-engineering-flocking-drones/>, 2018

"An unbiased approach for sifting through big data", Hokkaido University, Sapporo, JP, <https://www.global.hokudai.ac.jp/blog/an-unbiased-approach-for-sifting-through-big-data/>, & Eurekalert! [https://www.eurekalert.org/pub\\_releases/2018-02/hu-aua020118.php](https://www.eurekalert.org/pub_releases/2018-02/hu-aua020118.php), 2018

Minnesota: New Method Uses Big Data for Calculating Health Statistics, 2018, <https://www.aspph.org/minnesota-new-method-uses-big-data-for-calculating-health-statistics/>

"Measuring the risks of extreme temperatures on public health", Hokkaido University, Sapporo, JP, <https://www.global.hokudai.ac.jp/blog/measuring-the-risks-of-extreme-temperatures-on-public-health/>, & Eurekalert! [https://www.eurekalert.org/pub\\_releases/2018-04/hu-mtr041318.php](https://www.eurekalert.org/pub_releases/2018-04/hu-mtr041318.php), 2018

Minnesota Influenza Model among Best Performers at CDC Flu Forecasting Competition, 2017, <https://www.aspph.org/minnesota-influenza-model-among-best-performers-at-cdc-flu-forecasting-competition/>

"Convertino named Outstanding Reviewer by Environmental Modeling & Software", News about my nomination as Outstanding Reviewer by the journal Environmental Modeling and Software, UMN SPH News, June 2016, <http://www.sph.umn.edu/news/convertino-named-outstanding-reviewer-environmental-modeling-software/> <https://www.aspph.org/minnesota-faculty-named-outstanding-reviewer-by-environmental-modeling-software/>

"Sick Time: Convertino Shares New Model for Predicting Seasonal Flu With CDC", News about my participation to CDC Influenza Forecasting Initiative, UMN SPH News, Sept 2016, <http://www.sph.umn.edu/news/sick-time/>

"Convertino participating in ecosystem health study in Grand Portage, MN", News about funding from State of Minnesota LCCMR, UMN SPH News, May 2016, <http://www.sph.umn.edu/news/convertino-participating-ecosystem-health-study-grand-portage-mn/>

NSF SRN website featuring the Epidemic Prediction Initiative work in collaboration with CDC and the Health Analytics Group at the White House, (2015) "SRN FACULTY PRESENTS TO THE WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY POLICY" <http://www.sustainablehealthycities.org/srn-faculty-presents-to-the-white-house-ostp/>

UMN SPH website featuring the work related to the Prediction Challenge released by CDC and the OSTP at the White House (2015), "Matteo Convertino Participates in White House Office of Science and Technology Policy Initiative", <http://www.sph.umn.edu/matteo-convertino-ostp/>

IonE featuring my work in the field of computational epidemiology (2015), "Disease forecasting in a One Health world",

<http://environment.umn.edu/news/disease-forecasting-made-easy/>

News of the Instituto Oswaldo Cruz (IOC/Fiocruz) in Rio de Janeiro for the OPAS/OMS/WHO/GLEN Leptospirosis meeting (2015), <http://www.fiocruz.br/ioc/cgi/cgilua.exe/sys/start.htm?infoid=2450sid=32>

Driven to Discover Gaming study at the MN State Fair (<http://sph.umn.edu/crowd-sourced-research-fair/>)

Institute on the Environment Frontiers Lecture (<http://environment.umn.edu/event/five-things-we-just-learned-about-food-safety/>)

"Evergreen for the Everglades", University of Minnesota School of Public Health featured news, <http://sph.umn.edu/evergreen-everglades/>

"Minnesota Researcher and Florida Colleagues Develop New Decision-Making Model", ASPPH Friday Letter, Public Health Research And Reports, <https://www.aspph.org/minnesota-researcher-and-florida-colleagues-develop-new-decision-making-model/>

"Conservation Gets New Perspective" (2012), T. Nordlie, University of Florida Office of Research <http://www.research.ufl.edu/publications/explore/>; featured also in Science Daily, PhysOrg, and others

"UF pioneer in eco-imaging" (2012) Highlands Today (The Tampa Tribune) <http://www2.highlandstoday.com/business/agri-leader/2012/dec/05/lrnewso1-uf-pioneer-in-eco-imaging-ar-579271/>, featured also by Ruth Borger, assistant vice president at IFAS Information and Communication Services

Florida Specifier news about the Multiresolution Texture Analysis (paper Convertino et al., 2012, PLoS ONE), upcoming, by Roy Laughlin ([mhw1@earthlink.net](mailto:mhw1@earthlink.net))

"Satellite images tell tales of changing biodiversity" (2012), by EurekAlert!, [http://www.eurekalert.org/pub\\_releases/2012-10/plos-sit102212.php](http://www.eurekalert.org/pub_releases/2012-10/plos-sit102212.php), by PhysOrg.com <http://www.podcast.de/episode/186407527/Satellite2Bimages2Btell2Btales2Bof2Bchanging2Bbiodiversity>, by International Network of Research on Coupled Human and Natural Systems [http://chans-net.org/news/satellite\\_diversityoct2012](http://chans-net.org/news/satellite_diversityoct2012)

"UF/IFAS researcher helps test new way to probe remote ecosystems with satellite imagery", (2012), by T. Nordlie, University of Florida Office of Research and IFAS news, <http://news.ifas.ufl.edu/2012/10/ufifas-researcher-helps-test-new-way-to-probe-remote-ecosystems-with-satellite-imagery/>, featured also in Space Daily, Science Daily, Scoop, PhysOrg, Bioportfolio, and EurekAlert, and others

"Tiny Shorebirds Benefit From Big Storms, Explore Magazine" (2012), M. Anderson, University of Florida Office of Research <http://www.research.ufl.edu/publications/explore/past/spring2011/extracts/extracts08.html>; featured also in Science Daily, PhysOrg, and others

"Hurricanes Can Be Beneficial to Certain Species of Shorebirds" (2011), Featured IFAS Research, University of Florida, <http://research.ifas.ufl.edu/featured-discoveries/hurricanes-can-be-beneficial-certain-species-shorebirds>

"Bird population modeling protects Plovers, sustains military mission" (2011), Patrice Creel, ERDC - USACE Newsletter

## **Conferences, Symposiums, and Workshops (excerpta)**

### *Organized*

"Engineering health via applied complexity science", at Ecosummit, September 2016, Le Corum, Montpellier, France

Ramachandran Gurumurthy, **Convertino** M, et al., International Conference on "PUBLIC HEALTH INFRASTRUCTURE IN TRANSITION: CHALLENGES AND A WAY FORWARD" February 18th to 20th, 2015. Organized broadly by The Department of Social Work (UGC Centre of Advanced Study), Faculty of Social Sciences, Jamia Millia Islamia, New Delhi, India and School of Public Health, University of Minnesota Twin-Cities, Minneapolis, USA

Ramachandran Gurumurthy, **Convertino** M, et al., International Summer School on "RESEARCH METHODOLOGY IN PUBLIC HEALTH", February 16th to 17th, 2015. Organized broadly by The Department of Social Work (UGC Centre of Advanced Study), Faculty of Social Sciences, Jamia Millia Islamia, New Delhi, India and School of Public Health, University of Minnesota Twin-Cities, Minneapolis, USA

**Convertino** M, (2014), Optimal Multiscale Prediction, Detection, and Response: Complexity Science as Cyber-infrastructure for Population Health, at the Workshop: "Is it Possible to Predict the Next Outbreak Threat? (main organizer: S. Sreevatsan), International Conference on One Medicine One Science (ICOMOS), at the University of Minnesota Twin-Cities, [INVITED]

Munoz-Zanzi C, Zurbey L, J Lloyd Smith, Diggle P., Childs J, Hartskeerl R, Mari L, Alexander K, **Convertino** M., Pascual M, Begon M, Benschop J, Haake D, Julian TR, Ko A, Herbreteau V, Allen LJ, Bertherate E, Lelu M, Schneidc M, NIMBioS (National Institute for Mathematical and Biological Synthesis Leadership Team) Workshop on Leptospirosis Modeling, 5-9 June 2014

**Convertino**, M. "Simplicity in Biocomplexity: Influence Diagrams for Modeling Human-Environment Interactions", 4-hours teaching workshop, Society for Risk Analysis Annual Meeting (sponsored by Ecological Risk Assessment and Decision Analysis and Risk Specialty Groups), San Francisco, CA, 9-12 December 2012

**Convertino**, M., Linkov, I., "What Lawyers and Birds have in Common: Risk and Decisions in Coupled Human-Natural Systems", symposium, Society for Risk Analysis Annual Meeting (sponsored by Ecological Risk Assessment and Decision Analysis and Risk Specialty Groups); presenters: N. Quinn (LBL), C. Gonzalez (CMU), I. Azevedo (CMU), M. Wood (CMU), N. Sawe (Stanford), F. Micheli (Stanford), B. Trump (U. of Michigan) T. Bridges (ERDC), and M. **Convertino** (U. of Florida and ERDC); San Francisco, CA, 9-12 December 2012

B. Suedel, Linkov, I., Vogel, J.T., Baker, K., **Convertino**, M., Risk-Informed Adaptive Decision Making for Ecosystem Restoration Planning: Methodology and Case Studies, Symposium at SRA Annual Meeting, San Francisco, CA, 9-12, 2012

I. Linkov, Keisler, J., Foran, C.M., **Convertino**, M., Collier, Z., Bates, M., Risk and Decision Analysis Summer Workshop for Undergraduate and Graduate Research Interns at the Risk and Decision Science Team - ERDC, Newcastle, NH, 29 May 2012.

### *Most Relevant Attended For Faculty and Professional Training*

Responsible Conduct of Research, University of Minnesota, October 2013 UF Workshop on Dense, Intense, and Complex Data, 19 June 2013, University of Florida, Gainesville, FL

Stylish Academic Writing: Faculty Workshop (with H. Sword), 8 April 2013, University of Florida, Gainesville, FL

NSF-NIH-USDA Grantsmanship Writing Workshop, 4 February, 2013, University of Florida, Gainesville, FL

NSF Responsible Conduct of Research (RCR) Training, July 2012, University of Florida, Gainesville, FL "Decision Analysis in a Day", Society for Risk Analysis, 29 May 2012, New Castle, NH

"Something in the Air: Climate Change, Science and Policy" Advanced Symposium Certificate, Radcliffe Institute for Advanced Studies - Harvard University, 15 April 2011, Cambridge, MA

## ***Oral Presentations (excerpta)***

Li J, **Convertino** M, 2020, Taming Network Inference: Optimal Information Flow Model, Conference on Complex Systems 2020

Galbraith E, **Convertino** M, 2020, The Ocean Environment-Bacterioplankton Nexus, Conference on Complex Systems 2020

**Convertino** M, InTo COVID, Infodemic Tomography: Coupling Covid Social And Epidemiological Media For Systemic Risk Management, Central University of Tamil Nadu (India), Sept. 2020 [INVITED]

**Convertino** M, Water Networks as Ecological Corridors: Species, Pathogens, and Populations, Water Science Forum, Beijing Normal University, [ONLINE due to COVID-19], Sept. 2020 [INVITED]

**Convertino** M, Critical Interactions: Ecosystem Synthesis and Design (from Pathogens to Populations, Hong Kong Baptist University, Smart Data Society Lab [ONLINE], Sept. 2020 [INVITED]

**Convertino** M, InTo COVID, Infodemic Tomography: Coupling Covid Social And Epidemiological Media For Systemic Risk Management, WHO/SEARO, [ONLINE], August 2020 [INVITED]

**Convertino** M, Ecosystem Data Science and Design, VinUNI, Vietnam [ONLINE due to COVID-19], June 2020 [INVITED]

**Convertino** M, “Biocomplexity and Data Science: Critical Interactions from Microbes to Populations in Ecosystems”, Environmental Data Science seminar, University of California, Davis, April 2020 (online) [INVITED]

**Convertino** M, Ecosystem connectome: from discovery to Ecosystem Design, Center for Ecological Research, Kyoto University, April 2020 [INVITED]

**Convertino** M, “Critical Interactions: Ecosystem Pathology and Design from Microbes to Populations”, Environmental System Science seminar, Montana State University, Bozeman, USA, February 2020 [INVITED]

**Convertino** M, Disaster Information Systems: a Biocomplexity Perspective and Ecosystem Design, Disaster Prevention Research Institute, Kyoto University, January 2020 [INVITED]

**Convertino** M, Water-Population Nexus for Sustainable Ecosystem Design, School of Civil and Environmental Engineering, Nanyang Technological University, Singapore, May 2019 [INVITED]

**Convertino** M, Mapping the Global Earth Microbiome, Hakubi Center, Kyoto June 2019 [INVITED]

**Convertino** M, “Multispecies Emergence of Collective Behavior: Microbiome Connectome, Diversity and Services, 2019 *Keynote Lecture* The 5th Electronic Conference of Entropy, Session “Biological Systems” chaired by Dr. Bill Sherwin [INVITED], <https://sciforum.net/paper/view/conference/6671>

**Convertino** M, “Pattern-oriented Metacommunity Modeling: Networks, Uncertainty and Optimal Controls” and “Reverse Modeling: Information, Possibilities, Systemic Risk and Network Inference”, Lectures at the University of Surrey (UK), One Health EJP Summer School (<https://onehealthjp.eu/summer-school-2019/>), August 2019, [INVITED]

**Convertino** M, Bio-Hydro-Geo Dynamics: Mapping Systemic Earth Risk, AI for Summit, Seattle, USA, May 2019 [INVITED by Microsoft AI for Earth Program]

**Convertino** M, A, Environmental Dynamics, Syndemics Prediction and Public Health Control, Chatham House (The Royal Institute of International Affairs), London, UK, <https://www.chathamhouse.org/>, London, UK, September 2018 [INVITED by Victor del Rio Vilas]

**Convertino** M, A, Complex Environmental Dynamics and Population Patterns Prediction, University College London, Civil and Environmental Engineering Department, London, UK, September 2018 [INVITED]



**Convertino M**, Eco-hydroepidemiology: a complex systems perspective, Universidad de Los Andes, Department of Civil and Environmental Engineering, October 2017 [INVITED]

**Convertino M**, Information Fractal Dimension as Communication Network Stability, IEICE, Tottori, December 2017

**Convertino M**, An Information-theoretic Portfolio Model for Disease Surveillance Evaluation, GEOMED 2017. International Conference on Spatial Statistics, Spatial Epidemiology & Spatial Aspects of Public Health Deeper insight from big data and small, September 2017 [INVITED]

**Convertino M**, Bio-Technology Nexus: Nature-inspired Implementable Drone Collective Dynamics, University of Technology Sydney, Data & Information Engineering School, March 2018

**Convertino M**, Optimal Information Networks: from Data Analysis to Design of Complex Systems, ISMAC2018 (International Symposium on Multimedia and Communication Technology) August 29-31, 2018, Tottori, Japan [INVITED, KEYNOTE SPEAKER]

**Convertino M**, Servadio J, Optimal information networks: Application for data-driven integrated health in populations, Conference on Complex Systems 2018, Thessaloniki, Greece

**Convertino M**, Liu Y, Servadio J, Pattern-oriented Model for Exploring Systemic Toxicity and Biomaker Network Dynamics, Conference on Complex Systems 2018, Thessaloniki, Greece

**Convertino M**, Valverde J, Assessment of Biodiversity Metacommunity Resilience via Neutral Models, Conference on Complex Systems 2018, Thessaloniki, Greece

**Convertino M**, Nardi F, Information Theoretic Portfolio Decision Model for Designing Optimal Flood Control Strategies, Conference on Complex Systems 2018, Thessaloniki, Greece

**Convertino M**, Reddy A, Complex Network Analysis of U.S. Bike Sharing Programs, Conference on Complex Systems 2018, Thessaloniki, Greece

**Convertino M**, "On Model Design and Systemic Uncertainty Evaluation", IMAG Annual Event and Working Group, March 2017, [INVITED] <https://www.imagwiki.nibib.nih.gov/>

**Convertino M**, The Population Connectome: Information Theoretical Models for Predicting and Controlling Population Patterns, Institute for Mathematics and its Applications, Data Science Seminar, University of Minnesota, <https://www.ima.umn.edu/2016-2017/DSS9.6.16-5.30.17/25469>, September 2016, [INVITED]

"A Transfer Entropy Model for the Inference of Influenza Dispersion Networks", Yang Liu, Maria Sundaram, Matteo **Convertino**; "The Application of Information Theory in Constructing Dengue Fever Prediction Model", Yang Liu, Matteo **Convertino**; International Society of Environmental Epidemiology, Sept 2016, Rome, Italy, <http://www.isee2016roma.org/wp-content/uploads/2016/08/program-bookISEE2016.pdf>

"Portfolio Decision Design of Optimal Management Strategies for Leptospirosis", Liu, Reddy, Munoz-Zanzi, **Convertino**; "The role of human mobility in dengue fever transmission in Mexico", Liu, **Convertino**; Ecosummit 2016, September 2016, Le Corum, Montpellier, France

**Convertino M**, Riviere-Cinnamond A, 2 presentations: "Are Surveillance Systems Telling Us The Truth? An Information Theoretic Model For Evaluating Public Health Data Quality. An Application For 2010 Haiti Cholera Outbreak", "A Decision-Focused Information-Centric Model For Infectious disease Forecast: An Example of Cholera in Haiti", EcoHealth One health Conference, December 2016, <http://oeh2016.org/>, Melbourne, Australia, [INVITED by PAHO/WHO Dr. Riviere-Cinnamond]

Riviere-Cinnamond A, **Convertino M**, "A Decision-focused and Environmental-based Information-theoretic Forecasting Model of Cholera Incidence in Haiti", Cholera Outbreak Emergency Response Meeting, PAHO organizer, NIH Fogarty Center, 13-14 October 2016

**Convertino M**, Liu Y, 3 presentations: “An Information Theoretical Global Epidemic Prediction Model”, “Enhanced Adaptive Management for Population Health: Integrating Ecosystem and Stakeholder Dynamics using Information Theoretic Models”, “A Transfer Entropy Model for the Inference of Influenza Information Networks”, Complex Systems Society Annual Meeting, Amsterdam, The Netherlands, <http://www.ccs2016.org/>

**Convertino M**, Liu Y, Portfolio Decision Technology for Designing Optimal Syndemic Management Strategies, Complex Systems Design and Management Asia (CSD&M Asia), Singapore CSDM, February 24-26 2016, <http://www.2016.csdm-asia.net/-Program-.html>

**Convertino M**, “Enhanced Adaptive Management for Population Health: Integrating Ecosystem Dynamics and Stakeholder Mental Models”, Modeling Science, Technology & Innovation Conference (ModSTI) Conference, Washington DC, <https://modsti.cns.iu.edu/>

**Convertino M**, From City- to Health-scapes: Multiscale Design for Population Health, CSDM Paris, November 2015, <http://www.csdm2015.csdm.fr/>

**Convertino M**, InfoNet Model for Forecasting Dengue and Dynamical Characterization of Infectious Diseases, Instituto de Matemáticas, UNAM, Mexico, October. 2015, [INVITED by Jorge X. Velasco-Hernandez]

**Convertino M**, “Early Forecasting and Optimal Control of Leptospirosis: A Portfolio Decision Model”, OPAS/OMS/WHO/GLEN Leptospirosis meeting, September 2015, Rio de Janeiro, Brazil, <http://www.fiocruz.br/ioc/cgi/cgilua.exe/sys/start.htm?infoid=2450&sid=32>

Munoz-Zanzi C., Reddy A, Liu Y, and **Convertino M**, (2015) “Stochastic Dynamics of Leptospirosis: Early Warning Portfolio Management Model”, 9th ILS meeting, Indonesia (presented by Munoz-Zanzi C.)

**Convertino M** (2014), Real-time Surveillance for Cholera Outbreaks Predictions, Italian Scientists and Scholars of North America Foundation (ISSNAF) Environmental Science Young Investigator Award and Italian Republic Presidential Lecture, Washington, DC Italian Embassy, event: <https://www.issnaf.org/focus-on/2014-issnaf-annual-event.html> [INVITED]

**Convertino M** (2014), Population System Pathology and Design: Engineering One Health, Raiffa lecture, International Institute for Applied System Analysis [INVITED]

**Convertino M** (2014), Design of optimal surveillance network for biosafety: A value of information model, International Meeting on Emerging Diseases and Surveillance 2014, Vienna (Austria)

**Convertino M** (2014), Turbulence, Networks, and Systemic Epidemiology: from Theory to Pragmatism for Engineering One Health, Department of Civil, Environmental, and Geo-Engineering University of Minnesota [INVITED]

**Convertino M** (2014), Turbulence, Networks, and Systemic Epidemiology: from Theory to Pragmatism for Engineering One Health, University of Florida, Department of Biological and Agricultural Engineering, online lecture [INVITED]

**Convertino M**, (2014) Complex Systems Modeling: Meta-modeling, Reverse Engineering Techniques, Optimization, NIMBIOS (National Institute for Mathematical and Biological Synthesis Leadership Team) lecture in the NSF funded workshop on Leptospirosis Modeling (<http://www.nimbios.org/workshops> video: <https://www.youtube.com/playlist?list=PLRyq4VPZ9g-hYjpowTrG2HuG0J-oqKE>)

**Convertino M**, Hedberg C, (2014), Can We Build a More Resilient Food Distribution System? Institute on the Environment Frontiers Lecture, University of Minnesota, Summary: <http://environment.umn.edu/event/things-we-just-learned-about-food-safety/> Recording: <https://umconnect.umn.edu/p/73546351/> [INVITED]

**Convertino**, (2014), Optimal Multiscale Prediction, Detection, and Response: Complexity Science as Cyber-infrastructure for Population Health, at the Workshop: “Is it Possible to Predict the Next Outbreak Threat?”, International Conference on One Medicine One Science (ICOMOS), at the University of Minnesota Twin-Cities, [INVITED]

**Convertino**, (2014), Optimal Surveillance System Design for Outbreak Source Detection Maximization: a VoI Model, 7th International Congress on Environmental Modelling and Software (iEMSs) - Bold Visions for Environmental Modelling, June 15-19, 2014, San Diego, California, USA, [INVITED]

**Convertino**, (2014), Multimodeling for Solving the Complexity-Sensitivity-Uncertainty Trilemma: the case of Socio-environmental Teleconnections in Cholera Outbreaks, 7th International Congress on Environmental Modelling and Software (iEMSs) - Bold Visions for Environmental Modelling, June 15-19, 2014, San Diego, California, USA, [INVITED]

**Convertino**, (2014), Intelli-Food: Cyberinfrastructure for Real-Time Outbreak Source Detection and Rapid Response, International Conference for Smart Health (INFORMS satellite) at Tsinghua University, Beijing China, July 10-11, 2014 [INVITED]

**Convertino**, (2014), Can we Design for Population Health? From Personalized Medicine To Popularized Health, Meyer Scherer Rockcastle Ltd (MSR), Minneapolis, 20 March 2014 [INVITED]

**Convertino**, (2014), System Design for Population Health: Controlling the Macrointeractome, Division of Health Policy and Management, Seminar, University of Minnesota Twin-Cities, 12 March 2014 [INVITED]

**Convertino**, (2014), Do you know what is causing what and where it is coming from? Intelligent Cyberinfrastructure for Epidemics, Bioproducts and Biosystems Engineering Department, at Cargill Building, University of Minnesota Twin-Cities [INVITED]

**Convertino**, (2014), Network Topology from Cells to Cities: Metabolism, Scaling, Optimization and Health as Systems' Design Indicators, Humphrey School, Center for Science and Technology, University of Minnesota Twin-Cities [INVITED]

**Convertino M**, Sexton K, Adgate J (2014), "Urban Riskcape Network: Child Health and Learning Outcomes, Complex Systems, Health Disparities Population Health: Building Bridges, February 24-25, 2014, Natcher Conference Center, NATIONAL INSTITUTES OF HEALTH CAMPUS, Bethesda, Maryland

**Convertino**, (2013), "HumNat: Computational Complexity for Global Health", Virginia Commonwealth University, Department of Biology, 17 March 2014 [INVITED]

**Convertino**, (2013), "Complex Systems Modeling for One Health: the Expo-Bio-Diseasome", Johns Hopkins University School of Public Health, Sustainable Agriculture & Food Systems Funders, 13 December 2013 [INVITED]

**Convertino**, M., S. Liang, (2013), "Unveiling the Spatio-Temporal Cholera Outbreak in Cameroon: a Model for Public Health Engineering", Special Session: Emerging Risk Assessment Challenges Opportunities for the Developing Countries, Society For Risk Analysis Annual Meeting 2013, Baltimore, 8-11 December 2013

**Convertino**, M., S. Liang, (2013), "Probabilistic Supply Chain Risk Model for Food Safety", Global Risk Forum Summit - One Health Summit - Davos, 17-21 November 2013

**Convertino M.**, Liang S., (2013). "Unveiling the Spatio-Temporal Cholera Outbreak in Cameroon: a Model for Public Health Engineering", Water and Health Conference 2013 (Where Science Meets Policy), Water Institute, University of North Carolina - Chapel Hill, Gillings School of Global Public Health

**Convertino M.**, (2013). "Computational Complexity for Health and HydroClimatology: a Needed Collaboration", UCAR-NCAR Annual Meeting (University Corporation for Atmospheric Research - National Center for Atmospheric Research), 7-9 October 2013, Boulder, CO [INVITED]

Bridges TS, John Weatherly, Aaron Byrd, Jim Westervelt, James Valverde, Matteo **Convertino**, "Integrated Modeling and Risk Analysis for the Environmental Consequences of Climate Change", Sec. 219 Center Directed Research In-Progress Review, US Army Corps of Engineers, 8 October 2013

**Convertino M.**, Liang S., Muñoz-Carpena R. (2013). "Food Safety? A Matter of the Supply Chain: a Probabilistic Risk Model

based on the Agro-Food Trade Network”, Florida Section American Society of Agricultural and Biological Engineers, 60th Anniversary and Annual Conference, Trade Show & Continuing Education Program, June 12-15, 2013, St. Augustine, FL

**Convertino, M.** (2013), ”Models as Technology for Complex Natural-Human Systems Design: Engineering Public Health”, Division of Environmental Health - School of Public Health (Center for Infectious Disease Research and Policy, Center for Animal Health and Food Safety, National Center for Food Protection and Defense), University of Minnesota, Twin-Cities, 7 June 2013, Minneapolis, MN, [INVITED]

Muñoz-Carpena R, Kiker GA, Campo-Bescos M, **Convertino M.** (2013). ”What, When, How Much and Where: New Computational Complexity Tools for Socio-Ecological Analysis and Design”, Innovations for International Development Symposium (Emerging Pathogens Institute, Institute of Food and Agricultural Sciences, and Gates Foundation), University of Florida, Gainesville

**Convertino, M.** (2013), ”Analysis, Modeling, and Management of Complex Urban Ecosystems - Science from Biosystems”, Center for Urban Science and Progress (CUSP), New York University, 20 May 2013, New York City, NY, [INVITED]

**Convertino, M.** (2013), ”Models as Technology for Complex Natural-Human Systems’ Analysis and Design”, Department of Biosystems Engineering, Virginia Tech, 29 April 2013, Blacksburg, VA, [INVITED]

Liang, S., Morris, G., **Convertino, M.**, et. al. (2013). ”Results, Challenges, and Perspectives for Research and Management of Cholera in Cameroon”, Cholera Center of the World Bank in Maroua, Cameroon

**Convertino, M.**, et. al. (2013). ”Food Safety? A Matter of the Supply Chain: a Probabilistic Risk Model based on the Agro-Food Trade Network”, Postdoctoral Research Symposium, University of Florida, Gainesville  
<http://postdoc.ua.fl.edu/Data/Sites/32/media/documents/2013-symposium-abstracts.pdf>

**Convertino, M.**, et. al. (2013), ”Biocomplexity Engineering: Design and Technology for Complex Systems ”, New York University Abu Dhabi and Center for Science and Engineering NYU - AD, 2-3 March 2013, Abu Dhabi, [INVITED]

**Convertino, M.**, et. al. (2013), ”Supply Chain Risk Model for the USA Food Safety”, hosted by Dr. S. Liang, Emerging Pathogens Institute, University of Florida, Gainesville

**Convertino, M.**, (2013). ”Computational Sustainability for Design and Technology of Complex Systems”, Center for Urban Science and Progress and NYUAD, NYU-Poly, and NYU Center for Urban Science and Progress, New York University, NY [INVITED], 14 February 2013

**Convertino, M.**, (2013). ”Risk Analysis for Sustainability of Complex Systems”, School of Applied Science - Centre for Environmental Risks and Futures, Cranfield University, UK [INVITED], 29 February 2013

**Convertino, M.**, (2012). ”Analysis and Modeling of Complex Human and Natural Systems for Sustainability”, School of Civil, Environmental, and Architectural Engineering, Korea University, Seoul, Korea [INVITED], 30 November 2012

At Society for Risk Analysis Annual Meeting, San Francisco, CA, 9-12, 2012: - Craig A., **Convertino**, Baker K., Lu C., Vogel J.T., McKay K., Linkov, I., ”Metric Selection for Ecosystem Restoration: Dealing with Risk and Uncertainty”, oral presentation in the symposium

”Risk and Uncertainty in Ecosystem Restoration Planning: Methodology and Case Studies”; - Linkov I., **Convertino M.**, Foran C.M., Keisler J.M., Scarlett L., LoSchiavo A., Kiker G.A., ”Enhanced Adaptive Management: Application to the Everglades Ecosystem”, oral presentation in the symposium ”Risk and Uncertainty in Ecosystem Restoration Planning: Methodology and Case

Studies”; - Suedel B.C., Linkov I., **Convertino M.**, Foran C.M., Baker K.M., Vogel J.T., ”Methodology for addressing risk and uncertainty in ecosystem restoration planning and for developing adaptive management frameworks”, oral presentation in the symposium ”Risk and Uncertainty in Ecosystem Restoration Planning: Methodology and Case Studies”;

**Convertino M.**, Keisler J.M., Dokukin D., Foran C.M., Linkov I., "Spatial portfolio decision model for the management of complex human-natural systems: the case of the Florida coastal ecosystem threatened by sea-level rise", oral presentation in the symposium "What Lawyers and Birds have in Common: Risk and Decisions in Coupled Human-Natural Systems Part I";

**Convertino, M.**, Seager, T.P., Linkov, I., "Measuring Risk, Resilience and Adaptive Capacity", oral presentation in the symposium "Governing sustainability: different approaches to societal integration in risk management issues".

**Convertino, M.**, (2012). "Design and Technology for Complex Human and Natural Systems", Singapore University of Technology and Design - MIT, Singapore, [INVITED], 21-22 August 2012

**Convertino, M.**, Keisler, J.M., Baker, K., Foran, C.M., Valverde, J.L. Jr., Linkov, I., A Risk-based Portfolio Decision Model for Prioritization of Conservation Management Alternatives, World Congress on Risk 2012 - Society for Risk Analysis, Sydney Australia, (supported by the Alfred P. Sloan Foundation Fellowship), [INVITED], 18-20 July 2012

**Convertino, M.**, (2012). "Analysis and Modeling of Complex Human and Natural Systems for Sustainability", Department of Civil Engineering, University of Toronto, Toronto, CA [INVITED], 9-10 July 2012

**Convertino, M.**, (2012). "Analysis and Modeling of Complex Human and Natural Systems for Sustainability", Department of Civil and Environmental Engineering, Florida International University, Miami, FL [INVITED], 11 June 2012

**Convertino M.**, C.M. Foran, J.M. Keisler, L. Scarlett, A. LoSchiavo, G.A. Kiker, I. Linkov, Enhanced Adaptive Management for Everglades in Response to Climate Change - in Lance Gunderson session (and Tree Islands Workshop organized by RECOVER and CERP program) - INTECOL - 9th International Wetlands Conference, Wetlands in a Complex World, Orlando, FL, 3-8 June 2012

**Convertino, M.**, (2012). "Analysis and Modeling of Coupled Human and Natural Systems for Sustainability", Forest Engineering, Resources & Management - College of Forestry, Oregon State University, Corvallis, OR [INVITED], 8 May 2012

**Convertino, M.**, (2012). "Analysis and Modeling of Coupled Human and Natural Systems for Sustainability", Department of Civil and Environmental Engineering, University of Texas - San Antonio, [INVITED], 4 May 2012

Linkov, I., **Convertino, M.**, (2012). Integrated Climate Change and Threatened Bird Population Modeling to Mitigate Operations Risks on Florida Military Installations, *Final Presentation Project SERDP-1699*, 30 April 2012, Arlington, VA

**Convertino M.**, C.M. Foran, J.M. Keisler, L. Scarlett, A. LoSchiavo, G.A. Kiker, I. Linkov, Enhanced Adaptive Management: Application to the Everglades Ecosystem - "Restoring the Florida Everglades" symposia, 4<sup>th</sup> International ECOSUMMIT - Ecological Sustainability: Restoring The Planets' Ecosystems Services - "Restoring the Florida Everglades", William J. Mitsch and Ramesh K. Reddy session - Ohio State University, [INVITED], 30 September - 5 October 2012,

**Convertino M.**, Linkov, I., M., Keisler, J., Foran, C., Baker, K. Valverde, J.L. Jr., Spatially-explicit Portfolio Decision Model for the Optimal Management of Socio-Ecological Systems Facing Climate and Human Stress, "Sustainable Cities and Military Installations: Climate Change Impact on Energy and Environmental Security" NATO Workshop, Dr. Igor Linkov organizer, 3-6 June 2012

**Convertino M.**, Are Decisions Neutral? (or is it enough to think them neutral): Use of Cell Phone Data to Detect People Decision-Making and to Simulate City Dynamics - Pecha Kucha presentation, SENSEable Lab (Prof. C. Ratti) weekly meeting, Massachusetts Institute of Technology, Cambridge, MA, [INVITED], 21 March 2012

**Convertino M.**, Biocomplexity Engineering: Analysis and Modeling of Coupled Natural and Human Systems for Sustainability, Civil, Structural, and Environmental Engineering Department, University of Buffalo - SUNY, Buffalo, [INVITED], 6 February 2012

**Convertino M.**, Complex Systems Engineering: Analysis and Modeling of Coupled Natural and Human Systems for Sustainability, Civil and Environmental Engineering Department, Penn State University, State College, [INVITED], 30 January 2012

**Convertino** M., Engineering Biocomplexity: Analysis and Modeling of Natural and Human Systems, Infrastructure and Environment Research Division, School of Engineering, University of Glasgow, UK [INVITED], 16 November 2011

**Convertino** M., C.M. Foran, J.M. Keisler, L. Scarlett, A. LoSchiavo, G.A. Kiker, I. Linkov, A probabilistic decision model for enhanced adaptive management of the comprehensive Everglades Restoration Plan, Howard T. Odum Center for Wetlands - The Water Institute - Dept. of Soil & Water Science [INVITED], 26 October 2011

**Convertino** M., From River Basins to Elephants to Bacteria Colonies: a Universal Theory of Aggregate Organization for Animate and Inanimate Organisms, Italian Scientists and Scholars in North America Foundation Annual Event, Institute of Physics and Astronomy - UCLA, Los Angeles, CA [INVITED], 16 September 2011

Linkov I, Suedel B, Bridges T, Fischenich C, Valverde J, Swannack T, Tazik D, Foran C, Vogel J, **Convertino** M, Hubbard B, LoSchiavo A, Application of Risk Management Concepts and Methods for Ecosystem Restoration: Overview and State of the Science, USACE ERDC Environmental Laboratory, Vicksburg, MS, March 2011

Kiker, G.A., **Convertino**, M., Carpena, R., Chu-Agor, M, Akcakaya, R., Aiello-Lammens, M. Foran, C., Fischer, R.A., Linkov, I., Climate Change Risks to Threatened Bird Populations on Florida Coastal Military Installations: Integrated Modeling and Risk Management Decision Support, NATO Workshop "Climate Change: Global Change and Local Adaptation", Organizers: Dr. I. Linkov, and Dr. T. Bridges, 6-10 June 2010

**Convertino**, M., On Niche Habitat Suitability Modeling for Threatened and Endangered Shorebirds to 2100, "Dino Tonini" International Center for Hydrology - Department IMAGE (currently "DICEA"), University of Padova, Padova, Italy, [INVITED], 19 July 2010

**Convertino**, M., On Habitat Suitability Modeling of Endangered Species as a Function of Climate Change, Hydrology and Water Quality Research Group Meeting, ABE Dept. University of Florida, 25 May 2010;

**Convertino**, M., River network: from geomorphic Auto-organization to Biodiversity Patterns Dynamics, Frontiers in Applied and Computational Mathematics Symposia (FACM), New Jersey Institute of Technology & Rutgers University (Depts. of Mathematics and Biological Sciences), [INVITED by Daniel Bunker], 1-2 June 2009

**Convertino**, M., Auto-organization and Scaling of River Basin Ecosystems, Geology Department, Penn State University, Department of Geological Sciences, [INVITED by Rudy Slingerland], 28 May 2009

**Convertino**, M., Auto-organization and Scaling of River Basin and 2-D Landscape Ecosystems, ABE Department, University of Florida, [INVITED by Rafael Muñoz-Carpena], 10 June 2009

**Convertino**, M., Clustering in River Basin and 2-D Landscape Ecosystems: Numerical analysis and comparison for Trees and Fishes in the Mississippi-Missouri River System, Civil Engineering Dept., the City College of New York (CUNY), Cross-Road Initiative [INVITED by C. Vorosmarty], 5 June 2009

**Convertino** M., R. Muneeppeerakul, On the Biodiversity of River Basins at Different Scales of Observation in the presentation "Neutral Metacommunity Models and Biodiversity Patterns", CEE Brown Bag Seminar at Princeton University, 24 October 2008

Alessi-Celegon E., M. **Convertino**, L. Kelsaite, D. Kurennoy, M. Puliga, K. Schroder, C. Venier, S. Zanardo, F. Zanello, Analysis of Climatological and Hydrological Conditions on High Waters in Venice, presentation Working Group 3, leads by Prof. Alberto Troccoli, IVSLA Summer School "Climate Forcings and Global Patterns", Venice, Italy 13-20 June 2008

Alessi-Celegon E., E. Bertuzzo, F. Borgogno, G. Botter, M. **Convertino**, A. Frascati, F. Mandricardo, M. Monego, D. Pumo, N. Tambroni, S. Tamea, S. Zanetti, Vegetation Landscape and River Network Interactions: Biomass Dynamics and Biodiversity Patterns, presentation Working Group 4 leads by Ignacio Rodriguez-Iturbe at IVSLA Summer School "Environmental Dynamics Pathways to Environmental Sustainability", Venice, Italy, 08-16 June 2007

**Convertino**, M., The probabilistic structure of the distance between tributaries of given size in river networks, "Theoretical

Aspect and Models of Large, Complex and Open Information Networks” Workshop, Institute for Scientific Interchange Foundation, Torino, organizer, A. Vespignani, 19-21 November 2007

**Convertino, M.**, Ontogeny and Optimal Organization of Optimal River Networks for Homogeneous and Heterogeneous Rainfall, International Workshop on Complex Systems and Networks & Transylvanian Summer School, UNESCO and University of Notre Dame organizers (International Advisory Board and Scientific Committee: Prof. A.L. Barabasi, A. Vespignani, R. Albert, E.H. Stanley, and M. Vidal), 15-20 July 2007

**Convertino, M.**, Physics of Complex Networks: uniqueness in life sciences?, Belzoniano Event at ”G.B. Belzoni” High School, Padova, Italy, [INVITED] December 2006

### *Posters (excerpta)*

Hwang H, **Convertino M.**, ”On Population Structure and Epidemic Dynamics: Role of Modeling, Public Health and Art”, Institute for Engineering in Medicine, Annual Retreat 2014, University of Minnesota Twin-Cities

**Convertino M.**, Dynamic Exposome and Childrens Disease Inter-Network in Economically Disadvantaged Neighborhoods: Complex Health Systems Research for Sustainable Urban Design, Complex Systems, Health Disparities and Population Health: Building Bridges, Natcher Conference Center, National Institutes Of Health Campus, Bethesda, Maryland

**Convertino, M.**, W. Toscano, (2013), What, Who, When, Why, Where, How Much? New Computational Complexity Tools for Socio-Ecological Analysis and Design for Global Health, Institute for Engineering in Medicine, Annual Retreat 2013, University of Minnesota Twin-Cities

**Convertino, M.**, S. Liang, (2013), Probabilistic Supply Chain Risk Model for Food Safety, Society For Risk Analysis Annual Meeting 2013, Baltimore, 8-11 December 2013

**Convertino, M.**, Muñoz-Carpena R., Kiker G.A., Perz S. (2013). Metacommunity Resilience of Tropical Ecosystems Facing Human and Natural Risks, Society For Risk Analysis Annual Meeting 2013, Baltimore, 8-11 December 2013

**Convertino, M.**, Muñoz-Carpena R., Kiker G.A., Perz S. (2013). Design of Monitoring Networks by Value of Information Optimization: Experiment in the Amazon, Society For Risk Analysis Annual Meeting 2013, Baltimore, 8-11 December 2013

**Convertino M.**, Liang S. (2013). ”Spatio-Temporal Cholera Outbreak in Cameroon: a Model for Public Health Engineering”, Innovations for International Development Symposium (Emerging Pathogens Institute, Institute of Food and Agricultural Sciences, and Gates Foundation), University of Florida, Gainesville

**Convertino M.**, Liang S., R. Muñoz-Carpena, Food Safety? A Matter of the Supply Chain: a Probabilistic Risk Model based on the Agro-Food Trade Network, The 2013 Florida Section American Society of Agricultural and Biological Engineers Annual Conference and Trade Show, St, Augustine, FL, June 12-15, 2013

**Convertino M.**, Liang S., D. Cammarano, R. Muñoz-Carpena, The Water-Food Security and Safety Nexus For a Sustainable Future, IFAS Sustaining Economies and Natural Resources in a Changing World: Key Role of Land Grant Universities, April 2-3, 2013, 2013

**Convertino M.**, R. Muñoz-Carpena, G.A. Kiker, S.G. Perz, Design of Monitoring Networks by Value of Information Optimization: Experiment in the Amazon, IFAS Sustaining Economies and Natural Resources in a Changing World: Key Role of Land Grant Universities, April 2-3, 2013, 2013

Murcia, C. Rafael Muñoz-Carpena, Matteo **Convertino**, Andrea R Albertin, Mahmood Sasa, Miguel Angel Campo-Bescos, Greg A. Kiker, Jane Southworth, Wendy D. Graham, Peter Frederick, Mark T. Brown and Peter R. Waylen, Water Sustainability in NW Costa Rica: the Challenge of Balancing the Needs of Natural and Human Systems Under Climate Change, Annual Meeting of the Association for Tropical Biology, June 2013

**Convertino**, M, Morales, F., Troccoli, A., Linkov, I., Catani, F., Landslide Patterns as Fingerprints of Precipitation Change: Erosion and Hazard in River Basins, "Hydrologic Discovery Through Physical Analysis - Honoring the Scientific Legacies of Wilfried H. Brutsaert and Jean-Yves Parlange" Symposium at Cornell University (ABE and CEE Departments), Ithaca, NY, 14-15 May 2012

**Convertino**, M, Lowry, N., Linkov, I., Mangoubi, R., On the Correlation of Rainfall, Local Species- Richness, and Species-turnover in Subtropical Wetlands Derived by Texture Analysis of Satellite Imagery, "Hydrologic Discovery Through Physical Analysis - Honoring the Scientific Legacies of Wilfried H. Brutsaert and Jean-Yves Parlange" Symposium at Cornell University (ABE and CEE Departments), Ithaca, NY, 14-15 May 2012

Stark, C. P., E. Choi, and M. **Convertino**, Landslide rupture and length-depth scaling, Community Surface Dynamics Modeling Systems (CSDMS) Annual Meeting: Impact of time and process scales, Boulder, Colorado, USA, 2011

**Convertino**, M, Kiker, G, Linkov, I, Warning Signals of Species Shifts for Risk Assessment and Management, SETAC (Society of Environmental Toxicology and Chemistry) 32nd North America Annual Meeting, Boston, November 2011

**Convertino**, M., Donoghue, JF, Chu-Agor, M, Kiker, GA, Muñoz-Carpena, R, Fischer RA, Linkov, I, Anthropogenic Renourishment Feedback on Shorebirds: a Multispecies Bayesian Perspective for Beach restoration in the face of Climate Change, NCER (National Conference on Ecosystem Restoration) - UF - USACE, Baltimore, MD, August 2011

**Convertino**, M., F. Catani, A. Troccoli, Maximum Entropy Macroscale Prediction of the Occurrence and Size of Landslides Driven by Climate Change Rainfall Variation, European Geophysical Union, Wien, April 2011

**Convertino**, M., F. Borgogno, B. Morel, I. Linkov Complex Species: from Colony Communication Networks to Patterns, Resilience 2011: Resilience, Innovation and Sustainability: Navigating the Complexity of Global Change, Arizona State University, Tempe, AZ, March 2011

**Convertino**, M., P. Hendrix, Budrene E., B. Morel, I. Linkov, Biologically-inspired Systems: Complex Network and Agent-based Modeling of E. coli bacteria, Army Science Conference, Orlando, FL, October 2010

**Convertino**, M., On Habitat Suitability Modeling of Endangered Species as a function of Climate Change, 2nd Water Institute Symposium, University of Florida, Gainesville, 24-25 February 2010

**Convertino**, M., A. Maritan, A. Rinaldo, On the probabilistic structure of tributaries in river network and eco-epidemiological applications, Statphys23-IUPAP Satellite Conference Complex Networks, from Biology to Information Technology, Pula, Cagliari, Italy, July 2007

## Teaching and Advising

### *Courses*

#### *Tsinghua University (Shenzhen International Graduate School)*

Ecohydrology and Biodiversity: Processes and Modeling, every Fall from 2022

Ecosystem Risk, Management and Engineering, every Spring from 2023

#### *Hokkaido University, Sapporo, Japan*

"Complexity Ecosystem Modeling", graduate course, Lead Instructor: M. **Convertino**, from Sept 2018 (Fall Semester)

"Complex Systems in Ecology and Evolutionary Biology" (within the course: Evolutionary Medical Genomics), short graduate



lecture at the Hokkaido Summer Institute, Lead Instructor: M. **Convertino** (full course lead: Prof. H. Watanabe), June 2018

“Principles of Complex Networks and Dynamical Systems”, guest lectures in the undergraduate course “Media and Network Technology, Lead Instructor: M. **Convertino** (full course lead: Prof. Y. Miyanaga), January 2018

***University of Minnesota, Twin-Cities, USA***

“Complexity Science: How Systems Work”, Lead Instructor: M. **Convertino**, SPH, Spring 2017

“Health Engineering: Systems Epidemiology and Design”, Lead Instructor: M. **Convertino**, SPH, Spring 2016

“Complexity Science: How Systems Work”, Lead Instructor: M. **Convertino**, University Honors Program, Spring 2016

“Complex Systems Modeling for Population Health”, Lead Instructor: M. **Convertino**, SPH, Fall 2014

“Land: A Socio-ecological System Perspective” module in the courses “Environmental Health” 6101 and 6102 (online) of the School of Public Health; a 5 minutes video has been made for introducing the module; Fall 2014

“Socio-ecological Systems Resilience” lecture in the course “Global Health”, SPH, Fall 2014

MSST 8331 “Dynamic Systems Modeling & Simulation Tools”, Lead Instructor: Shaun Kennedy (Vet Pop Med), (6 hours teaching), Technological Leadership Institute, Master of Science in Security Technologies, Fall 2014

***Risk and Decision Science Team, ERDC - USACE, Concord, MA, USA***

“Risk and Decision Analysis Summer Workshop” (2-days), Instructor of Adaptive Management and Bayesian Networks, for Undergraduate and Graduate Research Interns at the Risk and Decision Science Team - ERDC, Newcastle, NH, 29 May 2012

***Massachusetts Institute of Technology, Cambridge, MA, USA***

1.016: Design for Complex Environmental Issues: Building Solutions and Communicating Ideas, and Terrascope projects exposition (freshman level, Department of Earth, Atmospheric and Planetary Sciences, Spring 2012). Co-instructor for the project “Analysis and Modeling of the Effects of Dam Distribution and Water Regulation on New England River Biodiversity”, 28 hours, (Instructors: A.W. Epstein, and M. Polz); Terrascope website <https://terrascope.mit.edu/>

***Department of Civil Engineering, University of Toronto, Canada***

“Decision Networks for Environmental Management” (2-hours), Guest Lecturer, 9 July 2012

***University of Florida, Gainesville, USA***

Faculty participating in the program “Student Artist In Residence Program: An Interdisciplinary Exchange Of Creativity Promoting Resource Sustainability”, <http://media.wix.com/ugd//6a93189f279996e9f0006b29dbf3453e385a00.pdf>, Fall 2012

Research Faculty Organizer of Research Meetings “Biological Engineering Group” (graded) (cohort of research group of Prof. R. Muñoz-Carpena (Hydrology and Water Quality), C. Martinez (Climatology), G. Kiker (Ecological Modeling and Risk Analysis), B. Gao (Nanotechnology), J. Ullman (Water Quality and Management), E. McLamore (Experimental Biosystems and Biosensors), 1 hour a week, Fall 2012 - present; topics: - Science Communication - Decision Science in the Environment - Systems Engineering (from micro- to macro-scale) - Climate Change Effects on Ecosystems - Nanomaterials in the Environment - Peer Reviewing and New Alternatives - Causality and Correlation in Complex Systems

Guest Lecturer of “Analysis and Modeling of Coupled Human-Ecological Systems” in “Sustainable Urbanism in the Americas” PhD course (Prof. J. Macedo), Department of Urban and Regional Planning, Fall 2012

BCN1582, Guest Lecturer about Coupled Human-Natural Systems, "International Sustainable Development", special course (Prof. R. Srinivasan), Rinker School of Building Construction, Fall 2012

ABE6933, Lecturer of "Probabilistic Decision Networks for Modeling Human-Environment Interactions", special course, Spring 2013

"Analysis and Modeling of Coupled Human-Ecological Systems" (Environmental/Climate Guest Lectures, Sustainable UF); website Sustainable UF

ITA2203, Guest Lecturer "Mathematical Models in Ecology and Biology" for UF IRB-02 project "A Multidisciplinary and Collaborative Approach: When Engineering and Foreign Language Education meet"

### ***University of Padova, Italy***

Modeling Natural Patterns (undergraduate level, 2007), seminar on fractals in river basins, Galileian School of Advanced Studies, Science Curriculum, 4 hours

Hydrology and Remote Sensing (undergraduate level, 2008), graduate student teaching assistant, 12 hours

Environmental Modeling and GIS (graduate level, 2010), graduate student teaching assistant, 10 hours

### ***Organized Educational Workshops***

### ***Society for Risk Analysis***

"Integrating Probabilistic Decision-, Risk-, and Process-based Models for Policy Development of Complex Systems Problems" (4-hours), Instructor (theory and modeling in Matlab of influence diagrams, global sensitivity and uncertainty analysis, Bayesian inference, etc.) at the Society for Risk Analysis Annual Meeting, San Francisco, CA, 9-12 December 2012

### ***Educational Materials (excerpta)***

Complex Ecosystem Modeling course material (slide, models, videos and notes "Modeling Natural Forms" available)

Bat of Minerva talk on Complex Biological Socio-technical Systems, <http://ias.umn.edu/2015/09/04/convertino/>, at the Institute for Advanced Study, University of Minnesota, Sept 2015

Talk on Complexity Science for Population Health and how Communication is important, <https://www.youtube.co> Environmental Communication Class (COMM 4250/5250; main instructor: Pedelty M.) at the University of Minnesota, Sept 2015

Podcast on Inference of Biodiversity Patterns from Satellite Images, <http://www.podcast.de/episode/186407527/Satellite2Bimages2Btell2Btales2Bof2Bchanging2Bbiodiversity>

NSF Interdisciplinary work "Water sustainability in the Tempisque Basin, NW Costa Rica", Framework and preliminary results on "Inference of Stakeholder Mental Models and Preferences", (course material available)

MIT Terrascope website course 1.016: Design for Complex Environmental Issues: Building Solutions and Communicating Ideas - project "Analysis and Modeling of the Effects of Dam Distribution and Water Regulation on New England River Biodiversity" (course material available)

Facebook Educational Page Summer Research Internship at the Risk and Decision Science Team, ERDC USACE

Optimal Channel Networks website and FluidTurtle Routines for hydrogeomorphological analysis and network generation (code and educational material available)

## ***Mentored Students***

### ***Tsinghua University (Shenzhen International Graduate School)***

Xuan Cao, MSc in Resources and Environmental (Engineering), Sept 2022-July 2025, projects: (1) Blue Carbon modeling and ecohydrological solutions for mangroves facing climate and development; and (2) Video-based monitoring of fish collective dynamics for eco-based evaluation of river health

Lirong Wu, Msc in Environmental Science and New Energy Technology (Engineering), Sept 2023-July 2026, project: Top predator fate, rewilding and cascading hydroclimatic benefits in basin ecosystems

Haojun Zhang, Msc in Environmental Science and New Energy Technology (Engineering), Sept 2023-July 2026, project: coupled urban-natural hydroclimatic evolution in cities and nature-based rewilding solutions for biophilic design

Xi Liao, MSc in Resources and Environmental (Engineering), Sept 2023-July 2026, project: Interaction, Collapse Proximity and Effectiveness of Protection Areas in Worldwide Ecological Communities: from biological to redefined Ecosystem Management

Yuhan Wu, MSc in Resources and Environmental (Engineering), Sept 2023-July 2026, project: Restoring Bivalves as Nature-based solution in coastal seas: historical ecology, trait evolution fingerprinting environmental pressure, and spatial Ecopotential

Jiaqi Zhang, PhD in Environmental Science and Engineering, Sept 2023-July 2027, project: BioTerraforming solutions for coastal ecosystems: eDNA monitoring, adaptive trait-based warning signals, land-ocean hydrogeomorphic determinants, and societal controls

Boyu Xian, PhD in Environmental Science and Engineering, Sept 2023-July 2027, project: Nature-based ecosystem enhancement and teleconnected carbon benefits in Delta Ecosystems leveraging sea-level rise (from the city to the ecosystem scale)

Du Mei, PhD in Environmental Science and Engineering, Sept 2024-July 2028, project: Portfolio biophilic design and bioterraformation in cities: historical causality and

Wanqing Tai, Research Assistant, Dec 2022-Dec 2023, projects: (1) BiodiverCity: ecological corridors, fragmentation and indicators of ecosystem health; and (2) Ecological impacts of road infrastructure worldwide: indicators from macroecological patterns and Eco-policy for nature-based development

### ***Hokkaido University, Sapporo, JP***

#### **Graduate**

Haojiong Wang, 2020-present (expected completion in 2023), PhD student in Information Science and Technology, Hokkaido University; topic: Aquabiome Food-chain Health: from understanding Bacteria-Virus Dynamics to Algal Bloom Forecasts via Machine Learning Models

Gong Yu, 2019-present (co-advising with M. Yoneda), PhD in Environmental Engineering, Kyoto University; topic: Health Risk of Environmentally-mediated Mercury Exposure via Complex System Models

Elroy Galbraith, 2019-2022, PhD in Information Science and Technology; topic: Multiscale Biodiversity and Biocomplexity in Marine Ecosystems, currently Research Scientist at Hokkaido University and founder of InTo Data Science company

Jie Li (PhD candidate in Information Science and Technology); topic: Inference of Complex Functional Networks for Ecosystem Health: Community Prediction and Optimal Controls; Principal Mentoring/supervision & Principal Committee member, October

2017 – 2021, currently PostDoc in Computational Sciences at the University of Amsterdam

Louis Chan, (PhD in Computational Social Medicine); topic: Syndemic Risk: Environmental Drivers and Forecasting Models; Principal Mentoring/supervision & Principal Committee member, Sept 2018 – 2020; currently research scientist at the Norwegian Institute of Public Health

### **Undergraduate**

Fukusaki Takuto, (BSc in Electrical and Information Engineering, Hokkaido University), Project: Modeling and Implementing Collective Dynamics in 3D on Microdrones for Ecosystem Monitoring

### ***University of Minnesota, Twin-Cities, MN***

### **Postdoctoral**

Abraham Reddy, (PhD in Physics), project: Connectome of Emerging Foodborne Infectious Diseases; tasks: (i) improvement of the analytics of the mathematical model for reaction-diffusion processes using statistical field theory, and (ii) implementation of the model into an open-source platform for real-time use, education and communication (STEM and VizTrail); 2014-2016; current job: data scientist at United Health

### **Graduate**

Joe Servadio, (PhD candidate in Env. Health Sciences at UofM (Dissertation “The burden of Yellow Fever in Brazil: Quantifying disease mortality and producing short-term forecasts”); Principal Mentoring/supervision & Principal Committee member, September 2016 – 2020; currently Postdoctoral Research Fellow at Penn State University, Center for Infectious Disease Dynamics

Yang Liu, (PhD student in Env. Health Sciences at UofM (Dissertation “Environmental Health Nexus: Designing Predictive Models for Improving Public Health Interventions”), Principal Mentoring/supervision & Principal Committee member, September 2014 – May 2018; current job: Assistant Professor at the London School of Hygiene and Tropical Medicine, Center for the Mathematical Modeling of Infectious Diseases

Antonio Annis (PhD student, International Doctorate in Civ. and Env. Eng., University of Florence - TU Braunschweig; Research Associate, Water Resources Research and Documentation Center (WARREDOC), WASUP LAB); role: Foreign collaborator the research project “Portfolio Decision Modeling for Flood-risk River Basin Design”

Tinen Iles (PhD student in Bioinformatics and Computational Biology, UofM; and Visible Heart Laboratory Research Scientist), PhD Committee Member Project: “Ecological and biological characterization of the cardiovascular adaptation of the American black bear (*Ursus Americanus*)”, Sept 2016-2018; currently Assistant Professor at the Department of Medicine, University of Minnesota Twin-Cities

Ali Zhang (MSc candidate in Environmental Health Science, General Program), project: “An Exploratory Model for the Exploration of the Emission, Vegetation, and Respiratory Disease Morbidity Nexus”

Irene Bueno Padilla DVM, MPH (PhD Candidate, Veterinary Population Medicine), Committee Member and Project Co-advisor with Dr. Dominic Travis, Randall Singer, and Claudia Munoz-Zanzi; Project: Spatio-temporal dynamics of (Antimicrobial) Resistant Genes in Riverine Ecosystems; 2014-2018; currently postdoctoral associate in Veterinary Population Medicine at the University of Minnesota

Justina Cline (PhD candidate in Human factors and ergonomics at UofM), Graduate Fellowship from the National Center for Food Protection and Defense (NCFPD), topic: Analyses, Modeling and Counteraction for Bioterrorism and Economically Motivated Risk in the Food System

Haejin Hwang, (PhD candidate in Env. Health Sciences at UofM (topic: Ecology and Evolution of Salmonella in Ecosystems and

Food Safety Risks), principal advisor: R. Singer), Co-Mentoring/supervision & Committee member, June 2014 – 2018; currently postdoctoral associate in Veterinary Population Medicine at the University of Minnesota

Nitipong Homwong (PhD VetPopMed) (PhD co-advisor with Deen J (mentor), Craft M, Hause B (Newportlabs), Torremorell M), "Bayesian modeling of within-herd transmission of swine influenza virus", 2013-2017

Horn AL (PhD ESD at MIT; co-advising), "Bayesian model for foodborne outbreak traceability", 2012-2013

### **Undergraduate**

Zhiyu Lin, (BSc in Chemistry and Statistics, Macalester College), Project: On Modeling Chemical Reactions Networks using Network Theory, 2016

Huda Khatoon (BSc in Mathematics, University of Minnesota), Multicultural Summer Research Opportunity Program (MSROP), Project: Portfolio Decision Models for Optimal Management of Pain in Sickle Cell Disease Patients, Summer 2016

Han Yong Wunrow (BSc Mathematics, University of Minnesota), Antimicrobial Resistance: Spatio-temporal Dynamics and Potential Control, Sept 2015-Sept 2016

Ruoxuan Tian, (BSc in Mathematics at the UofM (topic 1: On the probabilistic characterization of foodborne outbreak in the US; topic 2: Transfer Entropy Model for inferring causality in occupational & environmental health of populations), Principal Advisor, 2014

Chelsea N Stacy (Honor BSc in Health Studies (UF) & Emerging Pathogens Institute), topic: "Universality and Scaling in Hydroclimatological and Epidemiological Patterns", co-advising, main advisor: S. Linag and Y. Yang (UF)

### ***Risk and Decision Science Team, Engineering Research and Development Center, US Army Corps of Engineers***

Hao-Yu Derek Chang (BSc 2014, CEE, MIT), Evaluating Country Resilience from Socio-economical and Environmental Footprints assessed using MCDA, June-August 2012

Heng Dai (PhD student, Department of Scientific Computing, Florida State University), 2-D model of the Decision Network for Water Conservation Area 3A in the Greater Everglades Ecosystem Restoration, June-August 2012

Aileen Craig, (BSc 2012, CEE and Engineering and Public Policy, Carnegie Mellon University) Enhanced Adaptive Management Model for Everglades, June-August 2012

Elizabeth Jones, (BSc 2012, CEE, MIT), Enhanced Adaptive Management Model for Everglades and application of the same model for a Submerged Aquatic Vegetation problem in the Illinois River, June-August 2012

Freshman students of MIT in various research projects for the "Terrascope" program (<http://web.mit.edu/terrascope/>) in collaboration with the Risk and Decision Science Team (ERDC), Spring 2012

Adam Bockelie (BSc 2011, CEE MIT, research internship at Linkov's team), "Dam effects on Fresh- water Fish Biodiversity: A neutral approach; GIUH model for prediction of runoff, freshwater fish biodiversity and dam stress; Asset Management; and trade-off model for large mammals and bacteria", June-August 2011

Fausto Morales (BSc 2011, CEE MIT, research internship at Linkov's team), "Portfolio Decision Analysis (development of theory, case-study, and software); Landslide effects on Biodiversity Pat- terns: a Neutral Metacommunity Perspective; and Intervention Prioritization of Assets after the Mississippi Flood", June-August 2011

Connie Lu (BSc 2011, CEE MIT, research internship at Linkov's team), "Environmental Bene- fit Metrics for Restoration; Adaptive Management of Everglades; and Uncertainty Evaluation of Ecological Models", June-August 2011; and "Can we assess

the potential public health risk of pharmaceutical drugs? A supply chain risk model", May-June 2012

Kelsie Baker (BSc 2011, CEE MIT, research internship at Linkov's team), "Environmental Benefit Metrics for Restoration; and Adaptive Management of Everglades", June 2011 - present

Michelle Barber (BSc 2011, Chem. Eng. MIT, research internship at Linkov's team), "Risk Modeling for the Pharmaceutical Supply Chain", June-August 2011

Paul Welle (BSc 2011, CEE MIT, research internship at Linkov's team), "Theory of Resilience; Spreading of Epidemics; and Risk vs Resilience in Engineering and Ecological Systems", June- August 2011

Dmitry Dokukin (MSc, 2008, Software Engineering, National Research Nuclear University MEPhI, Moscow, dmitry.dokukin@gmail.com), "Portfolio Decision Analysis (development of theory, case- study, and software); Decision Framework for Eco-hydrogeomorphological modeling as a function of climate change"; "Gaming for Elicitation of Stakeholders' Preferences" research scientist, Linkov's group, Summer 2011;

Yousra Tourki (MSc, ongoing, National Polytechnic Institute of Lorraine - Nancy (France), ex- change student at Linkov's team), "Optimization of the Pharmaceutical Supply Chain Network for reducing the risk of Public Health and Increasing the Economic Revenue in the USA (application of network theory and optimization)", August-January 2011

John T. Vogel (BSc, 2008, Ecology, Harvard University, jtvogel@post.harvard.edu), "Environmental Benefit Metrics for Restoration; Uncertainty and Risk of Restorations; and Adaptive Management of Everglades", research scientist, Linkov's group, Summer 2011;

Xiuyuan Chen (PhD in Applied and Computational Mathematics, Princeton University), "Influence diagram for guiding policy development of the US pharmaceutical importation network", September - December 2010

### ***University of Florida, Gainesville, FL***

Asli Karaevli (undergraduate majoring in History and Economics), "Student Artist in Residence Program" (SARP), research: cover art and video about cholera outbreak and food safety interrelationship (Summer 2013)

Alice Alonso (PhD in Agricultural and Biological Engineering, started August 2012), proposed research: "Sequential Decision Making and Gaming for the Sustainable Management of the Tempisque River Basin, Costa Rica"; Research Faculty in the Graduate Research Committee.

Geraldine Hochman-Klarenberg (PhD in Agricultural and Biological Engineering, started July 2012), proposed research: Dynamics of Forest Structure and Forest Value at the Watershed Scale in a Tropical Rainforest ("MAP") using an Ecosystem Demography Model; Research Faculty in the Graduate Research Committee.

Gareth Lagerwall (PhD in Agricultural and Biological Engineering, advisor Prof. G.A. Kiker); supporting the research of the dissertation "Modeling vegetation dynamic in a constructed water conservation area in the Everglades: neutral vs niche vs mechanistic approach", and postdoctoral research about "Species distribution modeling of Marula and Mopane in the Kruger National Park", July 2010 - July 2011

Zuzanna Zajac (PhD in Agricultural and Biological Engineering, advisor Prof. R. Muñoz-Carpena); supporting the research of the dissertation "Uncertainty and fractal dimension in hydrologic modeling of wetlands" and "Characterizing biogeochemical patterns through fractal analysis in wetland ecosystem", September 2010 - December 2010

### ***University of Padova, Padova, Italy***

Nicola Convertino (M.Sc. in Biomedical Engineering, advisor: M.P. Saccomani); co-advisor for the thesis in Biomedical Engineering: "Portfolio Decision Analysis for Risk Reduction of Epileptic Death", July 2012

Nicola Convertino (B.Sc. in Biomedical Engineering, advisor: M.P. Saccomani); co-advisor for the thesis in Biomedical Engineering: "Novel early-warning signals of coupled EEG and MRI for epileptic-seizure detection", September 2011

### ***Politecnico di Bari, Italy***

Lia Romano (M.Eng. in Civil Engineering-Hydraulics, advisor Prof. Umberto Fratino); co-advisor for the thesis in Hydrology: "Hydrographic delineation of river basins in karst environments: a new methodological approach based on the slope-area relationship" (in Italian), March 2007

## **Professional Societies**

Complex Systems Society, September 2016-present

Istituto Veneto di Scienze Lettere ed Arti (IVSLA), international fellow, 2011-present

International Environmental Modelling and Software society (iEMSs), June 2014-present

Delta Omega Honorary Society in Public Health, member, 2013-present

Interagency Modeling and Analysis Group (IMAG-MSM), NIH, 2013-2016

Health Systems Global ([www.healthsystemsglobal.org](http://www.healthsystemsglobal.org)), "System Thinking for Capacity in Health" (ST4HC) (<http://st4chealth.com/>) and "Complexity Science for Health Systems" (CS4HS) (<http://cs4hs.org>) Thematic Working Groups, member, 2012-2014

The Human Exposome Project, <http://humanexposomeproject.com>, collaborator, 2013-2015

UCAR-NCAR (University Corporation for Atmospheric Research), focus on Infectious Diseases (in the Climate Science and Application Program), Young Faculty Member for the University of Minnesota, 2013-2015

INFORMS (Institute for Operations Research and the Management Sciences), member, 2013

Society for Risk Analysis, Ecological Risk Analysis specialty group Chair-elect (2011-2014), and member of the Risk and Decision Science specialty group; service: newsletter and website of the Ecological Risk Assessment Specialty Group as well as topic coordination

International Network of Research on Coupled Human and Natural System (CHANS-Net), 2011- 2013

Ecological Society of America (ESA), 2011-2015

American Geophysical Union (AGU), 2010-2014

The Italian Scientists and Scholars in North America Foundation (ISSNAF), Member and Vice- Coordinator Miami Chapter, 2010-2013

## **Other Memberships and Service (excerpta)**

School of Public Health Young Faculty Meeting Organizer (with Enns E.), Sept 2015 - June 2016

Team Mentor in the Global Health Case Competition at the UofM; task: mentored multidisciplinary teams of 6+ undergraduate and graduate students in a national health case competition released by Emory University; organizer: Center for Global Health and Social Responsibility

School of Public Health Young Faculty Meeting Organizer (with Enns E.), Sept 2015 - June 2016

Team Mentor in the Global Health Case Competition at the UofM; task: mentored multidisciplinary teams of 6+ undergraduate and graduate students in a national health case competition released by Emory University; organizer: Center for Global Health and Social Responsibility

SPH Infectious Diseases Strategic Planning Group (with E. Enns and C. Munoz-Zanzi)

Contributor of the Strategic Plan of the Institute on the Environment for the Population Health part, UofM

Global Health Programs Mentor for Global Health Case Competition, School of Public Health, University of Minnesota

Member of the "One Health Incubator", University of Minnesota Twin-Cities (2012-2013) Myanmar One Health Expedition (February 2014), Center for Global Health and Social Responsibility University of Minnesota Twin-Cities Complex Systems Assessment of Global Risk for the Enbridge pipeline, Michigan Land Use Institute, October 2013 "collab4safety" EU Food Safety initiative, C4S

Consultant for "The New Challenges for Risk Assessment", European Commission Scientific Committees, November 2012

"Evaluation of the relationship between professional science and citizen science within the field of biodiversity research"; survey research; University of Washington Dimensions of Biodiversity Distributed Graduate Seminar (DBDGS), 2012

International Network for Social Network Analysis, member, 2011

Honors Center of Italian Universities, Centro Interuniversitario per la Formazione Internazionale, Scientific and Academic collaboration: Italy - USA, University of Rome, La Sapienza, Rome, IT, member, 2011-present

DAVINCI cooperation (Italian Scientist Abroad) - Italian Ministry of Foreign Affairs, member, 2012 - present

New England Institute of Complex Systems, member, 2011-2012

Sino-Italian Sustainable Development Community (Center for Thematic Environmental Networks (TEN), Venice International University), member, 2012-present

Understanding Risk - Innovation in Disaster Risk Assessment, member, 2011-present Climate Adaptation Knowledge Exchange (CAKE), member, 2011-2012

Union of Concerned Scientists - Citizens and Scientists for Environmental Solutions, member, 2011- present

International Center for Hydrology "Dino Tonini", Department IMAGE (currently "DICEA"), University of Padova, Italy, affiliated scientist, 2006-2010

Chinese Academy of Sciences International Young Scientist Fellow, affiliated scientist, 2010-2012

## **Professional R&D Service (excerpta)**



THOR Companies, Minneapolis, Science and Technology Consultant, June 2015-2017

Kykos LLC, Minneapolis, Chief Analytics Officer and President, Sept 2015-Sept 2017

COMPLEXSus, Minneapolis, Think Tank about Complex System Engineering (Design and Technology), September 2014-2016

INFORM srl Development Group, Environmental Software and SIT/GIS technologies, Padova, Italy (Dr. Enrico Del Sole CEO), R&D collaborator, 2007-2010

uDig-JGrass & Horton machine Developer Team - DICA-CUDAM University of Trento/Hydrologis (Prof. Riccardo Rigon, PI), R&D collaborator, 2007-2010

## **Languages**

English: excellent proficiency (speaking and writing)

Italian: mother tongue

Spanish: good (reading), basic (speaking)

Japanese: basic conversation skills