

# Dr. Roger Cremades

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## EDUCATION

- 2018 *MIT Media Lab and Data-Pop Alliance, USA.*  
**Leveraging Big Data for Sustainable Development.**
- 2018 *Lake Como School of Advanced Studies, Italy.*  
**Complex Networks: Theory, Methods, and Applications.**
- 2013 - 2016 *Max Planck Institute for Meteorology and Hamburg University, Germany.*  
**Ph.D. Assessment of policy and climate variability impacts on food, water and energy in the Asian monsoon region under diverse adaptation scenarios.**
- 2010 - 2012 *Cranfield University, United Kingdom.*  
**M.Sc. Economics for Natural Resource and Environmental Management.**
- 2011 *Beijing University of Technology (北京工业大学), China.*  
**Engineering Program for International Students.**
- 2007 - 2011 *Polytechnic University of Valencia, Spain.*  
**B.Sc. Environmental Science.**
- 2003 - 2006 *Polytechnic Universities of Catalonia and of Valencia, Spain.*  
**Certificate of Pedagogic Aptitude, and Technology Teaching Certificate.**
- 1995 - 2001 *Polytechnic University of Valencia, Spain*  
**B.Sc. Forestry Engineering.**
- 2000 *University of Padova, Italy.*  
**Erasmus Scholar. Remote sensing data for vegetation indices.**

## PROFESSIONAL EXPERIENCE

- 2022 to date *Fondazione Eni Enrico Mattei (FEEM), Italy.*  
**Research collaborator at ADAPT@VE programme (Venice).**
- 2020 to date *Wageningen University & Research, the Netherlands.*  
**Assistant Professor.**
- 2014 to 2020 *GERICS, Climate Service Center Germany (Helmholtz-Zentrum Hereon).*  
**Research associate, Leading PI CLISWELN project, guest until 2022.**
- 2018 to date *Cranfield University, United Kingdom.*  
**Guest lecturer.**
- 2018 to 2021 *University of Freiburg, Germany.*  
**Guest lecturer.**
- Several years *Intergovernmental Panel on Climate Change (IPCC).*  
**Expert reviewer in multiple IPCC reports.**
- 2013 - 2016 *Hamburg University, Germany.*  
**Research associate.**
- 2012 *University of East Anglia, United Kingdom.*  
**Research agreements as consultant in ADMIT project.**
- 2011 *Centre for Chinese Agricultural Policy, Chinese Academy of Sciences, China.*  
**Visiting researcher on water economics (hosted by Prof. Jinxia Wang).**
- 2008 - 2012 *Independent professional activity, Valencia, Spain.*  
**Urban sustainability consultant on the local Agenda 21.**
- 2004 - 2010 *Governments of Valencia and Catalonia, Spain.*  
**High school teacher in education departments.**
- 2003 - 2004 *Municipality of Gandia, València, Spain.*  
**Sustainability trainee on the local Agenda 21.**
- 2002 *CADMAX, Madrid, Spain.*  
**Geographic information systems (GIS) engineer.**

## ARTICLES IN SCIENTIFIC JOURNALS

(Impact factor >4 marked with \*, and >8 with \*\*; Roger's **h-indexes**: Scopus, 12; Web of Science, 12).

- \*Tudose, N. C., Cheval, S., Ungurean, C., Broekman, A., Sanchez-Plaza, A., **Cremades, R.**, ... & Pereira, P. (2022). Climate services for sustainable resource management: The water-energy-land nexus in the Târlung river basin (Romania). *Land Use Policy*, **119**, 106221.
- \***Cremades, R.**, Sanchez-Plaza, A., Hewitt, R. J., Mitter, H., Baggio, J. A., Olazabal, M., ... & Tudose, N. C. (2021). Guiding cities under increased droughts: The limits to sustainable urban futures. *Ecological Economics*, **189**, 107140. <https://doi.org/10.1016/j.ecolecon.2021.107140>.
- \*Thomas, A., Theokritoff, E., Lesnikowski, A., Reckien, D., Jagannathan, K., **Cremades, R.**, ... & Bowen, K. (2021). Global evidence of constraints and limits to human adaptation. *Regional Environmental Change*, **21**(3), 1-15. <https://doi.org/10.1007/s10113-021-01808-9>.
- \*Tudose, N. C., **Cremades, R.**, Broekman, A., Sanchez-Plaza, A., Mitter, H., & Marin, M. (2021). Mainstreaming the nexus approach in climate services will enable coherent local and regional climate policies. *Advances in Climate Change Research*, **12**(5), 752-755. <https://doi.org/10.1016/j.accr.2021.08.005>
- \*\* Rosenfelder, M., Wussow, M., Gust, G., **Cremades, R.**, & Neumann, D. (2021). Predicting residential electricity consumption using aerial and street view images. *Applied Energy*, **301**, 117407. <https://doi.org/10.1016/j.apenergy.2021.117407>.
- \*Hewitt, R.J., **Cremades, R.**, Hasselmann, K. & Kovalevsky, D. (2021). Beyond SSPs and RCPs: Climate Policy Implementation Scenarios for Europe, the US and China. *Climate policy*, **21**(1). <https://doi.org/10.1080/14693062.2020.1852068>.
- \*\*Otto, I., Donges, J., **Cremades, R.**, et al. (2020). Social tipping dynamics for stabilizing Earth's climate by 2050. *PNAS*, **117**(5), 2354-2365. <https://doi.org/10.1073/pnas.1900577117>.
- \*Otto, I., Wiedermann, M., **Cremades, R.**, et al. (2020). Human agency in the Anthropocene. *Ecological Economics*, **167**, 106463. <https://doi.org/10.1016/j.ecolecon.2019.106463>.
- \***Cremades, R.**, Mitter, H., Tudose, N. C., Sanchez-Plaza, A., Graves, A., ... & Cheval, S. (2019). Ten principles to integrate the water-energy-land nexus with climate services. *Science of The Total Environment*, 133662. <https://doi.org/10.1016/j.scitotenv.2019.133662>.
- \***Cremades, R.** & Sommer, P. (2019). Computing Climate-Smart Urban Land Use with the Integrated Urban Complexity Model (IUCm 1.0). *Geosci. Model Dev.*, **12**, 525-539. <https://doi.org/10.5194/gmd-2018-89>.
- Hewitt, R. J., Bradley, N., Baggio Compagnucci, A., Barlagne, C., Ceglarz, A., **Cremades, R.**, ... & Slee, B. (2019). Social innovation in community energy in Europe: A review of the evidence. *Frontiers in Energy Research*, **7**, 31. <https://doi.org/10.3389/fenrg.2019.00031>.
- \*\***Cremades, R.**, Surminski, S., Mánuez Costa, M., Hudson, P., Shrivastava, P. & Gascoigne, J. (2018). Using the adaptive cycle in climate-risk insurance to design resilient futures. *Nature Climate Change* **8**, 4–7. <https://doi.org/10.1038/s41558-017-0044-2>.
- \*Carmona, M., Mánuez Costa, M., Andreu, J., Pulido-Velazquez, M., Haro-Monteagudo, D., Lopez-Nicolas, A., & **Cremades, R.** (2017). Assessing the effectiveness of Multi-Sector Partnerships to manage droughts: The case of the Jucar river basin. *Earth's Future*, **5**(7), 750-770. <https://doi.org/10.1002/2017EF000545>.

- \***Cremades, R.**, Rothausen, S., Conway, D., Zou, X., Wang, J. & Li, Y. (2016). Co-Benefits and Trade-Offs in the Water-Energy Nexus of Irrigation in China. *Environmental Research Letters* **11**(5). <https://doi.org/10.1088/1748-9326/11/5/054007>.
- \*Li, X., Philp, J., **Cremades, R.**, Roberts, A., He, L., Li, L., & Yu, Q. (2016). Agricultural vulnerability over the Chinese Loess Plateau in response to climate change: Exposure, sensitivity, and adaptive capacity. *Ambio*, **45**(3), 350-360. <https://doi.org/10.1007/s13280-015-0727-8>.
- \*Zou, X., Li, K., **Cremades, R.**, Gao, Q., Wan, Y., & Qin, X. (2015). Greenhouse gas emissions from agricultural irrigation in China. *Mitigation and Adaptation Strategies for Global Change*, **20**(2), 295-315. <https://doi.org/10.1007/s11027-013-9492-9>.
- \*\*Hasselmann, K., **Cremades, R.**, Filatova, T., Hewitt, R., Jaeger, C., Kovalevsky, D., Voinov & A., Winder, N. (2015). Free-riders to forerunners. *Nature Geoscience* **8**, 895–898. <https://doi.org/10.1038/ngeo2593>.
- \***Cremades, R.**, Wang, J. & Morris, J. (2015). Policies, Economic incentives and the adoption of modern irrigation technology in China. *Earth System Dynamics* **6**(2), 399-410. <https://doi.org/10.5194/esd-6-399-2015>.
- \*Zou, X., **Cremades, R.**, Gao, Q., Wan, Y., & Qin, X. (2013). Cost-effectiveness analysis of water-saving irrigation technologies based on climate change response: A case study of China. *Agricultural water management*, **129**, 9-20. <https://doi.org/10.1016/j.agwat.2013.07.004>.

#### SELECTED EDITED BOOKS AND BOOK CHAPTERS

- Yamagata, Y., ... , **Cremades, R.** & Neumann, D. (2020). Case studies toward smart communities. In *Urban Systems Design* (pp. 257-288). Elsevier.
- Froelich, C., Gioli, G., **Cremades, R.** & Myrntinen, H. (Eds.). (2017). *Water security across the gender divide*. New York: Springer.

#### HONOURS, PRIZES AND FUNDING

- 2022 Seed funding Wageningen University SSG, floating societies project: **€5,000**.
- 2019 - 2022 Helmholtz-Zentrum Hereon & Steinbeis GmbH, 3D IUCm Urban project: **€147,825**.
- 2017 **Seal of Excellence** Marie Skłodowska-Curie (European Commission).
- 2017- 2021 ERA4CS & **H2020, Leading P.I.** of project “Climate Services for the Water-Energy-Land Nexus”: €550,688 of funds managed, entire project over **€1,000,000**.
- 2013 Centre for a Sustainable University (Hamburg U.), project support grant: **€5,000**.
- 2013 Max Planck Institute for Meteorology, Doctoral Stipend: ca. **€45,000**.
- 2011 Polytechnic University of Valencia, B.Sc. **thesis honoured with a special mention**.
- 2011 Polytechnic University of Valencia, PROMOE Programme: **€5,000**.
- 2010 - 2012 Polytechnic University of Valencia, Cranfield MSc fees (est. **€10,690**) plus €2,800.
- 2005 CEIC “Alfons el Vell”, Municipal Research Grant: **€1,500**.
- 2000 European Union, Erasmus Scholar: **€2,500**.

#### ECONOMIC MODELLING, MATHEMATICAL AND COMPUTING SKILLS

*New open-source software created:* The Integrated Urban Complexity Model (<https://iucm.readthedocs.io/>, <https://doi.org/10.5281/zenodo.1982565>); The Urban

Drought Nexus Tool (<https://doi.org/10.5281/zenodo.4587631>). **Models:** spatially explicit, water-energy-land nexus and circular systems, agent-based, multiplex networks, cellular automata, system dynamics, statistical and econometric, optimization, cost-efficiency, partial equilibrium, local to global integrated assessment. **Languages:** Proficient in Python, NetLogo, R, and GAMS; user knowledge of SQL, Stata ado, Julia, Java and Fortran.

## LEADERSHIP

**Co-chair at Future Earth's Finance & Economics KAN (2020-22):** Setting goals and organizing activities. **Project coordinator** (ERA4CS & H2020): setting deadlines and goals for excellence compliant with institutional vision, organizing and overseeing workflow, providing constructive feedback, coaching for excellence and team building. **External expert:** for funding agencies (*European Commission — incl. ERC; the German DFG, the Belgian BELSPO*), international bodies (*IPCC*).

## ACADEMIC AND COMMUNITY SERVICES

**Member of Editorial Board** at *Journal of Computational Science* (Elsevier, impact factor 3.97) and at *Complexity* (Wiley and Hindawi, impact factor 2.46). **Reviewer** in over 25 journals — including *Nature Sustainability* and *Scientific Reports* — and 4 conferences. **Co-founder** of Scientific Writing Group at the Hamburger “*Klimacampus*” (2014). **Capacity building** across world regions: China, India, Nicaragua. **Student representative** at the International Max Planck Research School on Earth System Modelling (2013-2014). **Dissemination** in newspapers and advice to social-ecological NGOs (2005-2009).

## SELECTED NETWORKS AND MEMBERSHIPS OF SCIENTIFIC SOCIETIES

*Since 2020* Member, *International Association for the Study of the Commons*.  
*Since 2018* **Elected Council Member** 2019-2022, and member, *Complex Systems Society*  
*Since 2017* *Future Earth*. Finance & Economics KAN, **Co-Chair** of Development Team 2020-22, Member of the Interim Steering Committee 2022-2024.  
*Since 2015* *The Earth League*. **Earth-Doc** programme until 2019 and Alumni afterwards.  
*Since 2013* Member, *European Association of Environmental and Resource Economists*.

## LANGUAGES OTHER THAN ENGLISH (FLUENT)

*Catalan and Spanish:* mother tongues. *Italian and German:* advanced. *Chinese:* HSK 2.

## SELECTED SOCIETAL IMPACTS

*Presence in newspapers includes:*

In 2021, a group of Dutch civil society organisations requested the **formation of a new coalition government based on an a PNAS paper on social tipping points co-authored by Dr. Cremades:** <https://socialtippingpointcoalitie.nl/social-tipping-point-coalition/>. This led to multiple media appearances in the Netherlands (e.g. <https://www.trouw.nl/duurzaamheid-natuur/simpele-maatregelen-kunnen-klimaatdoelen-eeen-flinke-slinger-geven~b1c0e2f7/>). In 2020, the **New York Times** (22nd January), commented the PNAS paper on social tipping points co-authored by Dr. Cremades: <https://www.nytimes.com/2020/01/22/climate/nytimes-newsletter-climate-change.html>

*Multiple policy impacts in the European Commission:*

(i) Workshop “Methods, tools and data for policy support on the Nexus” (2019), talk “Advancing the provision of Climate Services for drought-related decision making, by using the water-energy-land nexus to integrate the cross-sectoral links of drought-risk management.” Organised by the Nexus Cluster and the European Commission – EASME. (Brussels, 2020).

(ii) Workshop “Climate services for a climate-resilient Europe. Success stories, lessons learnt and remaining challenges” (2020). Panel “Regional and urban adaptation”, talk “Climate services for integrated urban management: synergies, co-benefits, and trade-off management in adaptation and mitigation policies”. Organised by the European Commission – EASME. (Brussels, 2020).

(iii) European Climate Pact Ambassador (2021-2022).