

# Arnald Puy

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## Present position

|                |  |
|----------------|--|
| 2019–<br>today | <b>Marie Skłodowska-Curie Fellow (GF)</b><br>Dept. of Ecology and Evolutionary Biology, Princeton University, USA<br>Centre for the Study of the Sciences and the Humanities, University of Bergen, Norway |
|----------------|--|

## Previous positions

|           |  |
|-----------|--|
| 2018–2019 | <b>Researcher</b><br>Centre de Recherches en Archéologie et Patrimoine, Université Libre de Bruxelles, Belgium   |
| 2015–2017 | <b>Marie Curie Fellow (IEF)</b><br>Maritime Civilizations Department, University of Haifa, Israel  |
| 2014–2015 | <b>Humboldt Research Fellow</b><br>Institute of Geography, University of Cologne, Germany  |
| 2012–2014 | <b>Postdoctoral Researcher</b><br>Complexity and Social-Ecological Dynamics (CaSEs), Institució Milà i Fontanals, CSIC Barcelona. Spain                          |
| 2008–2012 | <b>Predoctoral Fellow (FPI)</b><br>Dept. de Ciències de l'Antiguitat i l'Edat Mitjana, Facultat de Filosofia i Lletres, Universitat Autònoma de Barcelona, Spain |

## Education

|      |   |
|------|---|
| 2012 | <b>PhD in Antiquity and Middle Ages</b><br>Universitat Autònoma de Barcelona, Spain<br>DISSERTATION TITLE: Construction criteria of Andalusí irrigated fields. The case of Ricote (Murcia, Spain)<br><a href="https://www.tdx.cat/handle/10803/96879?locale-attribute=en">https://www.tdx.cat/handle/10803/96879?locale-attribute=en</a><br>GRADE: <i>Summa cum laude</i> |
| 2009 | <b>DEA in Medieval and Classical History and Archaeology</b><br>Universitat Autònoma de Barcelona, Spain  |
| 2006 | <b>BA in History</b><br>Universitat Autònoma de Barcelona, Spain  |

# Publications

## Peer reviewed papers

1. **Arnald Puy**, Samuele Lo Piano, and Andrea Saltelli. “Is VARS more intuitive and efficient than Sobol’ indices?” *Environmental Modelling & Software* (Sept. 2021). arXiv: [2009.12558](https://arxiv.org/abs/2009.12558)
2. Saman Razavi, Anthony Jakeman, Andrea Saltelli, Clémentine Prieur, Bertrand Iooss, Emanuele Borgonovo, Elmar Plischke, Samuele Lo Piano, Takuya Iwanaga, William Becker, Stefano Tarantola, Joseph H.A. Guillaume, John Jakeman, Hoshin Gupta, Nicola Melillo, Giovanni Rabitti, Vincent Chabridon, Qingyun Duan, Xifu Sun, Stefán Smith, Razi Sheikholeslami, Nasim Hosseini, Masoud Asadzadeh, **Arnald Puy**, Sergei Kucherenko, and Holger R. Maier. “The future of sensitivity analysis: an essential discipline for systems modeling and policy support”. *Environmental Modelling & Software* (Dec. 2020), p. 104954. DOI: [10.1016/j.envsoft.2020.104954](https://doi.org/10.1016/j.envsoft.2020.104954)
3. Samuele Lo Piano, Federico Ferretti, **Arnald Puy**, Daniel Albrecht, and Andrea Saltelli. “Variance-based sensitivity analysis: The quest for better estimators between explorativity and efficiency”. *Reliability Engineering & System Safety* (2020), p. 107300. DOI: [10.1016/j.res.2020.107300](https://doi.org/10.1016/j.res.2020.107300)
4. Andrea Saltelli, Gabriele Bammer, Isabelle Bruno, Erica Charters, Monica Di Fiore, Emmanuel Didier, Wendy Nelson Espeland, John Kay, Samuele Lo Piano, Deborah Mayo, Roger Pielke Jr, Tommaso Portaluri, Theodore M Porter, **Arnald Puy**, Ismael Rafols, Jerome R Ravetz, Erik Reinert, Daniel Sarewitz, Philip B Stark, Andrew Stirling, Jeroen van der Sluijs, and Paolo Vineis. “Five ways to ensure that models serve society: a manifesto”. *Nature* 582.7813 (June 2020), pp. 482–484. DOI: [10.1038/d41586-020-01812-9](https://doi.org/10.1038/d41586-020-01812-9).
5. **Arnald Puy**, Samuele Lo Piano, and Andrea Saltelli. “Current models underestimate future irrigated areas”. *Geophysical Research Letters* 47.8 (Apr. 2020). DOI: [10.1029/2020GL087360](https://doi.org/10.1029/2020GL087360).
6. **Arnald Puy**, Samuele Lo Piano, and Andrea Saltelli. “A sensitivity analysis of the PAWN sensitivity index”. *Environmental Modelling and Software* 127 (2020), p. 104679. DOI: [10.1016/j.envsoft.2020.104679](https://doi.org/10.1016/j.envsoft.2020.104679). arXiv: [1904.04488](https://arxiv.org/abs/1904.04488).
7. **Arnald Puy**, Manuel Herzog, Pedro Escriche, Amou Marouche, Yousef Oubana, and Olaf Bubbenzer. “Detection of sand encroachment patterns in desert oases. The case of Erg Chebbi (Morocco)”. *Science of The Total Environment* 642 (Nov. 2018), pp. 241–249. DOI: [10.1016/j.scitotenv.2018.05.343](https://doi.org/10.1016/j.scitotenv.2018.05.343).
8. **Arnald Puy**. “Irrigated areas grow faster than the population”. *Ecological Applications* 28.6 (Sept. 2018), pp. 1413–1419. DOI: [10.1002/eap.1743](https://doi.org/10.1002/eap.1743).
9. Andrea Luca Balbo, **Arnald Puy**, Jaime Frigola, Fèlix Retamero, Isabel Cacho, and Helena Kirchner. “Amplified environmental change: Evidence from land-use and climate change in medieval Minorca”. *Land Degradation & Development* 29.4 (Apr. 2018), pp. 1262–1269. DOI: [10.1002/ldr.2869](https://doi.org/10.1002/ldr.2869).
10. **Arnald Puy**, Rachata Muneeppeerakul, and Andrea Luca Balbo. “Size and stochasticity in irrigated social-ecological systems”. *Scientific Reports* 7 (Mar. 2017), p. 43943. DOI: [10.1038/srep43943](https://doi.org/10.1038/srep43943).
11. **Arnald Puy**, José María García Avilés, Andrea Luca Balbo, Michèle Keller, Svenja Riedesel, Daniel Blum, and Olaf Bubbenzer. “Drip irrigation uptake in traditional irrigated fields: The edaphological impact”. *Journal of Environmental Management* 202 (Nov. 2017), pp. 550–561. DOI: [10.1016/j.jenvman.2016.07.017](https://doi.org/10.1016/j.jenvman.2016.07.017).

12. Andrea Luca Balbo and **Arnald Puy**. “Terrace landscapes. Editorial to the special issue”. *Journal of Environmental Management* 202.3 (Nov. 2017), pp. 495–499. DOI: [10.1016/j.jenvman.2017.02.001](https://doi.org/10.1016/j.jenvman.2017.02.001).
13. Andrea Luca Balbo, Erik Gómez-Baggethun, Matthieu Salpeteur, **Arnald Puy**, Stefano Biagetti, and Jürgen Scheffran. “Resilience of small-scale societies: a view from drylands”. *Ecology and Society* 21.2 (2016), art53. DOI: [10.5751/ES-08327-210253](https://doi.org/10.5751/ES-08327-210253).
14. **Arnald Puy**, Andrea Luca Balbo, and Olaf Bubbenzer. “Radiocarbon dating of agrarian terraces by means of buried soils”. *Radiocarbon* 58.02 (June 2016), pp. 345–363. DOI: [10.1017/RDC.2015.21](https://doi.org/10.1017/RDC.2015.21).
15. **Arnald Puy**, Andrea Luca Balbo, Camila Zinsli, and Morten Ramstad. “High-resolution stratigraphy of Scandinavian coastal archaeological settlements: the case of Håkonshella, W Norway”. *Boreas* 45.3 (2016), pp. 508–520. DOI: [10.1111/bor.12166](https://doi.org/10.1111/bor.12166).
16. **Arnald Puy**. “Land selection for irrigation in al-Andalus (Spain, 8th century AD)”. *Journal of Field Archaeology* 39.1 (2014), pp. 84–100. DOI: [10.1179/0093469013Z.00000000072](https://doi.org/10.1179/0093469013Z.00000000072).
17. **Arnald Puy**, Andrea Luca Balbo, Antoni Virgili, and Helena Kirchner. “The evolution of Mediterranean wetlands in the first millennium AD: The case of Les Arenes floodplain (Tortosa, NE Spain)”. *Geoderma* 232-234 (2014), pp. 219–235. DOI: [10.1016/j.geoderma.2014.05.001](https://doi.org/10.1016/j.geoderma.2014.05.001).
18. **Arnald Puy** and Andrea Luca Balbo. “The genesis of irrigated terraces in al-Andalus. A geoarchaeological perspective on intensive agriculture in semi-arid environments (Ricote, Murcia, Spain)”. *Journal of Arid Environments* 89 (2013), pp. 45–56. DOI: [10.1016/j.jaridenv.2012.10.008](https://doi.org/10.1016/j.jaridenv.2012.10.008).
19. **Arnald Puy**. “Tracking down the gliter of gold in the Diplomatarium de Santes Creus”. *Imago Temporis - Medium Aevum* 7 (2013), pp. 175–224. DOI: [10.17605/OSF.IO/P6KMG](https://doi.org/10.17605/OSF.IO/P6KMG).

### Peer-reviewed book chapters

1. Andrea Luca Balbo, José María García-Avilés, Johannes Hunink, Francisco Alcón, J.E. Palenzuela-Cruz, J. Martínez, **Arnald Puy**, Joaquín Rodríguez López, and Jürgen Scheffran. “Challenges and opportunities for historical irrigated agricultural systems in Mediterranean regions: Technical, cultural, and environmental assets for sustainable rural development in Ricote (Murcia, Spain)”. *Climate Change, Security Risks, and Violence Conflicts. Essays from Integrated Climate Research in Hamburg*. Ed. by Michael Brzoska and Jürgen Scheffran. Hamburg: Hamburg University Press, 2020, pp. 143–162
2. Helena Kirchner, **Arnald Puy**, and Antoni Virgili. “Drainage and irrigation systems in madina Turtusa (Tortosa, Spain). In press”. *Agrarian Archaeology: Irrigation, Drainage, Dry Agriculture and Pastures in al-Andalus*. Ed. by F. Sabaté. Brepols Publisher
3. **Arnald Puy**. “La huerta de Ricote (Murcia, España) entre los siglos XV y XVIII”. *Estudiar el pasado: aspectos metodológicos de la investigación en Ciencias de la Antigüedad y de la Edad Media. Proceedings of the First Postgraduate Conference on Studies of Antiquity and Middle Ages Universitat Autònoma de Barcelona 26-28th October 2010*. Ed. by Ainoa Castro Correa, Daniel Gómez Castro, Gerard González Germain, Joan Oller Guzmán, **Arnald Puy**, Roger Riera Vargas, Kasia Krystyna Starczewska, and Nereida Villagra Hidalgo. Oxford: BAR International Series 2412, 2012, pp. 199–209. DOI: [10.13140/2.1.1883.4887](https://doi.org/10.13140/2.1.1883.4887)

## Edited books

1. Ainoa Castro Correa, Daniel Gómez Castro, Gerard González Germain, Joan Oller Guzmán, **Arnald Puy**, Roger Riera Vargas, Kasia Krystyna Starczewska, and Nereida Villagra Hidalgo, eds. *Estudiar el pasado: aspectos metodológicos de la investigación en Ciencias de la Antigüedad y de la Edad Media. Proceedings of the First Postgraduate Conference on Studies of Antiquity and Middle Ages Universitat Autònoma de Barcelona 26-28th October 2010*. BAR International Series 2412, 2012

## Non peer-reviewed papers

1. **Arnald Puy**. “The construction of fertility in al-Andalus. Geoarchaeology in Ricote (Murcia, Spain, 8th century AD)”. *Geophysical Research Abstracts* 15 (2013), p. 2335.
2. **Arnald Puy**. “Moneda, peces de moneda d’or i magnats a Santes Creus”. *Revista de l’Arxiu Bibliogràfic de Santes Creus* 23 (2010), pp. 39–49
3. **Arnald Puy**. “La moneda d’or al diplomatarí de Santa Maria de Santes Creus (975-1225)”. *Gaceta Numismática* 169 (2008), pp. 39–60

## Under review

1. **Arnald Puy**, Samuele Lo Piano, Simon Levin, and Andrea Saltelli. “sensobol: an R package to compute high-order sensitivity indices” (2020)
2. **Arnald Puy**, Samuele Lo Piano, Emanuele Borgonovo, Simon A. Levin, and Andrea Saltelli. “Irrigated areas drive irrigation water withdrawals” (2020)
3. **Arnald Puy**, William Becker, Samuele Lo Piano, and Andrea Saltelli. “The battle of total-order sensitivity estimators” (Sept. 2020). arXiv: [2009.01147](https://arxiv.org/abs/2009.01147)
4. Samuele Lo Piano, Emanuele Borgonovo, **Arnald Puy**, Andrea Saltelli, Daniele Vidoni, and John Walsh. “Improving the reliability of cohesion policy databases” (2020)

## Technical reports

1. **Arnald Puy**. *Intermediate micromorphological report of Tour Anneessens*. Tech. rep. Brussels: Université Libre de Bruxelles, 2019
2. **Arnald Puy**. *Micromorphological report of La Rue du Chien Marin*. Tech. rep. Brussels: Université Libre de Bruxelles, 2019
3. **Arnald Puy**. *Micromorphological report of Watermael Boitsfort*. Tech. rep. Brussels: Université Libre de Bruxelles, 2019
4. **Arnald Puy**. *Micromorphological report of La Porte de Hal*. Tech. rep. Brussels: Université Libre de Bruxelles, 2018
5. **Arnald Puy**. *Micromorphological report of La Ferme Rose*. Tech. rep. Brussels: Université Libre de Bruxelles, 2018
6. **Arnald Puy**. *Micromorphological report of Hof ter Coign*. Tech. rep. Brussels: Université Libre de Bruxelles, 2018. DOI: [10.17605/OSF.IO/YTPJH](https://doi.org/10.17605/OSF.IO/YTPJH)
7. **Arnald Puy**. *Micromorphological report of Tour Anneessens*. Tech. rep. Brussels: Université Libre de Bruxelles, 2018. DOI: [10.17605/OSF.IO/2AMWJ](https://doi.org/10.17605/OSF.IO/2AMWJ)

## Working papers

1. **Arnald Puy** and Fernando Santos. “Dynamics of collaboration in irrigation systems” ()

## R packages

1. **Arnald Puy**. *sensobol: Computation of High-Order Sobol’ Sensitivity Indices*. 2019. DOI: [10.5281/zenodo.2579855](https://doi.org/10.5281/zenodo.2579855). <https://cran.r-project.org/web/packages/sensobol/index.html>

## Fellowships, grants and awards

|          |  |
|----------|--|
| 2018 Jan | <b>Marie Skłodowska-Curie Individual Fellowship–Global Fellowship (IF–GF) (EU)</b><br>FUNDS: 276,330.60€<br>SCORE: 99.2/100, ENV panel |
| 2015 May | <b>Outstanding PhD Award</b><br>Award granted by UAB to PhD theses of exceptional scientific relevance                                 |
| 2014 Oct | <b>Humboldt Research Stay Abroad Grant, Alexander von Humboldt Foundation (Germany)</b><br>FUNDS: 2.000€                               |
| 2013 Nov | <b>Marie Curie Intra-European Fellowship (IEF) (EU)</b><br>FUNDS: 185.558,80€<br>SCORE: 99.4/100, SOC panel                            |
| 2013 Nov | <b>Humboldt Research Fellowship, Alexander von Humboldt Foundation (Germany)</b><br>FUNDS: 82.800€                                     |
| 2013 Apr | <b>The Wenner-Gren Foundation Post-PhD Research Grant (NY, USA)</b><br>FUNDS: 17.580€  |
| 2011 Jan | <b>Ministry of Science and Innovation, Research Stays Abroad Grant (Spain)</b><br>FUNDS: 3.100€  |
| 2010 Feb | <b>Ministry of Science and Innovation, Research Stays Abroad Grant (Spain)</b><br>FUNDS: 7.350€  |
| 2009 Nov | <b>Ministry of Science and Innovation, Research Stays Abroad Grant (Spain)</b><br>FUNDS: 3.640€  |
| 2009 Feb | <b>Research Grant. Centro de Experimentación y Obras Públicas (CEDEX), Spain</b><br>FUNDS: 6.760€                                      |
| 2009 Nov | <b>Joaquím Sarret i Arboç award (Spain)</b><br>600€–award granted to the best MA dissertation  |
| 2008 Sep | <b>Formación de Personal Investigador Fellowship (FPI)</b><br>FUNDS: 60.000€   |

## Projects directed as PI

|           |   |
|-----------|---|
| 2019-2022 | <b>The role of size in the sustainability of irrigation systems (SIZE, #792178)</b><br>European Commission H2020, EU. 276.330,80€<br><a href="https://cordis.europa.eu/project/rcn/214099_en.html">https://cordis.europa.eu/project/rcn/214099_en.html</a>  |
| 2015-2017 | <b>Bloom the dry II. The creation of traditional Mediterranean irrigated fields (DryIR, #623098)</b><br>European Commission FP7, EU. 184.558,80€<br><a href="https://cordis.europa.eu/project/rcn/187738_en.html">https://cordis.europa.eu/project/rcn/187738_en.html</a>   |
| 2014-2017 | <b>Bloom the dry I. The creation of traditional Mediterranean irrigated fields</b><br>Alexander von Humboldt Foundation, Germany. 82.800€   |
| 2013-2015 | <b>Building up intensive labour areas: terraces, irrigation and agrarian change in the Ricote Valley (Murcia, Spain) after 711 AD (#8716)</b><br>The Wenner-Gren Foundation for Anthropological Research, USA \$17.580<br><a href="http://www.wennergren.org/grantees/puy-maeso-arnald">http://www.wennergren.org/grantees/puy-maeso-arnald</a> |

## Stays in internationally recognized research centers ( $\geq 6$ months)

|      |  |
|------|--|
| 2011 | <b>Charles McBurney Laboratory</b><br>University of Cambridge, UK  |
| 2010 | <b>Departamento de Prehistoria, Arqueología, Historia Antigua, Historia Medieval y Ciencias y Técnicas Historiográficas</b><br>Universidad de Murcia, Spain. |

## Congresses, conferences and workshops

### International

|          |  |
|----------|--|
| 2020 Feb | <b>The scale of irrigated agriculture matters. Should we believe official projections to 2050?</b><br>MAIN AUTHOR: Arnald Puy<br>Center for the Sciences and the Humanities. University of Bergen, Norway            |
| 2020 Jan | <b>Is the model robust against uncertainties? a brief introduction to sensitivity analysis</b><br>MAIN AUTHOR: Arnald Puy<br>Brown Bag Lunch Seminar. Stockholm Resilience Center, Stockholm, Sweden.                |
| 2019 Dec | <b>Why uncertainty and sensitivity analysis? Some very simple examples</b><br>MAIN AUTHOR: Arnald Puy<br>Conversation Hour of the Levin Lab. Ecology and Evolutionary Biology Department, Princeton University, USA. |
| 2019 Oct | <b>Is it possible to improve existing sample-based algorithm to compute the total sensitivity index?</b>   |

- MAIN AUTHOR: Samuele Lo Piano  
 CO-AUTHORS: Federico Ferretti, Arnald Puy, Daniel Albrecht, Stefano Tarantola, Andrea Saltelli  
 Ninth International Conference on Sensitivity Analysis of Model Output. Universitat Oberta de Catalunya, Barcelona, Spain.
- 2019 Oct **How sensible is the PAWN index to its tuning parameters?**  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHORS: Samuele Lo Piano, Andrea Saltelli  
 Ninth International Conference on Sensitivity Analysis of Model Output. Universitat Oberta de Catalunya, Barcelona, Spain.
- 2019 May **Why FAOs projection of Mediterranean (and global) irrigated areas to 2050 should not be trusted**  
 MAIN AUTHOR: Arnald Puy  
 Challenges and opportunities for the sustainable development of Mediterranean rural regions: integrating agricultural, environmental and cultural heritage. Ricote, Spain. Invited speaker
- 2019 Apr **Current projections of global irrigated areas are fragile against uncertainty**  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHORS: Samuele Lo Piano, Andrea Saltelli  
 Humboldt Colloquium “Research without Borders. Alexander von Humboldt’s Legacy Today”. Madrid, Spain. Invited poster
- 2019 Mar **Can we predict future irrigated areas?**  
<https://doi.org/10.6084/m9.figshare.7902623>  
 MAIN AUTHOR: Arnald Puy  
 Young-researchers workshop: The challenge of sustainability across scales and dimensions. Universitat Oberta de Catalunya, Barcelona, Spain. Invited speaker
- 2019 Mar **Uncertainty and global sensitivity analysis of the projection of continental and global irrigated areas to 2050**  
<https://doi.org/10.6084/m9.figshare.7856963>  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHORS: Samuele Lo Piano, Andrea Saltelli  
 Society for Risk Analysis (SRA) - Benelux 2019 Annual Conference: “Reasoning with Uncertainty”. University of Luxembourg, Luxembourg.
- 2018 Nov **Les études géoarchéologiques dans le centre historique de Bruxelles**  
 MAIN AUTHOR: Yannick Devos  
 CO-AUTHORS: Cristiano Nicosia, Arnald Puy  
 CReA Patrimoine, Université Libre de Bruxelles. Brussels, Belgium.
- 2018 Aug **A stable floor in Tour Anneessens, Brussels**  
<https://doi.org/10.6084/m9.figshare.6828668.v2>  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHORS: Yannick Devos  
 International Workshop on Archaeological Soil Micromorphology. Brussels, Belgium. Organizing Committee
- 2018 Jun **How to better protect oases from sand encroachment? Insights from Erg Chebbi (Morocco)**  
 MAIN AUTHOR: Arnald Puy

- Navigating Complexity: human-environmental solutions for a challenging future. XXIII International Conference of the Society for Human Ecology. Lisbon, Portugal
- 2017 Oct **Dynamics between sand inputs and irrigation in the oases of Merzouga and Hassilabiad (Morocco). Preliminary results**  
 MAIN AUTHOR: Arnald Puy  
 From refugia to oases: living in arid environments from prehistoric times to the present day. 38ème Rencontres Internationales d'Archéologie et d'Histoire d'Antibes, CEPAM, Nice, France. Invited speaker
- 2016 Aug **Increasing the resolution of Scandinavian anthropic deposits: the potential of XRF core scanning and geoarchaeology**  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHORS: A.L. Balbo, Camilla Zinsli, Morten Ramstad  
 4th International Landscape Archaeology Conference, University of Uppsala, Uppsala, Sweden
- 2015 May **Land use and climate change in Minorca between al Andalus and the feudal conquest**  
 MAIN AUTHOR: A.L. Balbo  
 CO-AUTHORS: Jaime Frigola, Fèlix Retamero, Helena Kirchner, Isabel Cacho  
 Shaping the Mediterranean basin: islands, coastlines and cultures. International Geoarchaeology Workshop, Cagliari, Sardinia
- 2015 May **An integrative approach to assess the reliability of AMS dates for terrace construction: bulk analyses, terrace clustering and statistics**  
 MAIN AUTHOR: Arnald Puy  
 Shaping the Mediterranean basin: islands, coastlines and cultures. International Geoarchaeology Workshop, Cagliari, Sardinia. Invited speaker
- 2015 Apr **A long-term perspective on Western Mediterranean irrigation: past and future prospects**  
 MAIN AUTHOR: Arnald Puy  
 Conference at Maritime Civilizations Deptment, Haifa University, Israel  
Invited speaker
- 2014 Dec **Socio-ecological resilience of small-scale societies in drought-prone regions**  
 MAIN AUTHOR: Andrea L. Balbo  
 CO-AUTHORS: Stefano Biagetti, Erik Gómez-Baggethun, Matthieu Salpeur, Jürgen Scheffran  
 Conference Small-scale societies and environmental transformations: co-evolutionary dynamics, Barcelona. Invited speaker
- 2014 Nov **The creation and management of traditional Mediterranean irrigated fields**  
 MAIN AUTHOR: Arnald Puy  
 Humboldt Network Meeting, Julius- Maximilians-Universität Würzburg, Würzburg, Germany. Invited speaker
- 2014 Oct **The creation and management of traditional Mediterranean irrigated fields**  
 MAIN AUTHOR: Arnald Puy  
 Geographisches Institut, Universität zu Köln, Köln, Germany. Invited speaker



- 2013 Jul **Terrasses et archéologie d'al-Andalus: possibilités d'étude**  
 MAIN AUTHOR: Arnald Puy  
 Conference at Université Sidi Mohamed ben Abdellah, Fes, Morocco.  
Invited speaker
- 2013 May **From dry to wet, from wet to dry. Micromorphological and physico-chemical features of strategies of soil reclamation in al-Andalus**  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHOR: Andrea L. Balbo  
 25th International soil micromorphology workshop, Charles McBurney Geoarchaeological Laboratory, Department of Archaeology, University of Cambridge, UK
- 2013 Apr **The creation of fertility in al-Andalus. Geoarchaeology in Ricote**  
 MAIN AUTHOR: Arnald Puy  
 European Geosciences Union (EGU) General Assembly, Vienna, Austria
- 2013 Mar **Drylands in bloom**  
 MAIN AUTHOR: Arnald Puy  
 Conference at the Kimmel Centre for Archaeological Science, Weizmann Institute of Science, Israel
- 2012 Nov **Pre-andalusi soils and irrigated terraces in Ricote (Murcia, Spain).**  
 MAIN AUTHOR: Arnald Puy  
 Society for Medieval Archaeology student colloquium, Cardiff University, UK
- 2012 Jun **Buried soils under terrace fills. Reconstructing the formative stages of the hydraulic system of Ricote (Murcia, Spain)**  
 MAIN AUTHOR: Arnald Puy  
 2nd International Medieval Meeting, Universitat de Lleida, Spain
- 2011 Jun **Possibilities for topographical analysis of andalusi hydraulic systems**  
 MAIN AUTHOR: Arnald Puy  
 1st International Medieval Meeting, Universitat de Lleida, Spain
- 2011 Jun **Irrigation and drainage around the Islamic city of Turtusa (Spain)**  
 MAIN AUTHOR: Helena Kirchner  
 CO-AUTHORS: Antoni Virgili  
 1st International Medieval Meeting, Universitat de Lleida, Spain

## National

- 2015 Sep **La huerta de Ricote entre pasado y futuro. Historia, arqueología, tecnología**  
 MAIN AUTHOR: Arnald Puy  
 CO-AUTHORS: Andrea L. Balbo  
 Conference at the Ayuntamiento de Ricote, Ricote, Murcia. Invited speaker
- 2014 Jun **¿Cómo se transforma un terreno seco en una zona agraria fértil y productiva?. Ejemplos de al-Andalus (siglos VIII-XV dC)**  
 MAIN AUTHOR: Arnald Puy

- Converses del Raval, IMF-CSIC, Barcelona, Spain. Invited speaker
- 2013 Nov **Geoarqueología de los espacios irrigados tradicionales del Mediterráneo**  
 MAIN AUTHOR: Arnald Puy  
 Archéogéographie et anthropologie de l'espace. L'agriculture irriguée et la morphologie agraire des milieux humides. Casa de Velázquez, Madrid, Spain. Invited speaker
- 2012 Dec **Cómo y cuándo se fundó la huerta de Ricote (Murcia, España)**  
 MAIN AUTHOR: Arnald Puy  
 Centro de conferencias de Ricote, Murcia, Spain. Invited speaker
- 2011 Jun **Possibilitats del registre topogràfic en l'estudi de les hortes del sud-est peninsular. El cas de Ricote (Murcia, Spain)**  
 MAIN AUTHOR: Arnald Puy  
 Facultat de Geografia i Història, Universitat de València, València, Spain. Invited speaker
- 2010 Oct **Cuestiones metodológicas sobre la arqueología hidráulica**  
 MAIN AUTHOR: Arnald Puy  
 First postgraduate conference on studies of Antiquity and Middle Ages. Universitat Autònoma de Barcelona, Barcelona, Spain
- 2010 Oct **Cuestiones metodológicas sobre la arqueología hidráulica**  
 MAIN AUTHOR: Arnald Puy  
 First postgraduate conference on studies of Antiquity and Middle Ages. Universitat Autònoma de Barcelona, Barcelona, Spain
- 2010 Apr **Arqueología hidráulica en Ricote**  
 MAIN AUTHOR: Arnald Puy  
 Conference at the Universidad de Murcia, Spain

## Fieldwork campaigns

- 2017 Nov Soil sampling in Erg Chebbi and the Ziz Valley, Morocco. PI: Arnald Puy
- 2016 Oct Soil sampling and measurement of aeolian sand inputs in the oases of Hassilabiad and Merzouga, Erg Chebbi, Morocco. PI: Arnald Puy
- 2015 Oct Core drilling, soil sampling and ERT (Electrical Resistivity Tomography) measurements in Saddina, Taounate, Morocco. PI: Arnald Puy
- 2015 Oct Soil sampling and dune drilling in Erg Chebbi, Morocco. PIs: Arnald Puy and Olaf Bubenzer
- 2015 Sep Soil augering of drip-irrigated and flood-irrigated plots in Ricote, Murcia, Spain. PIs: Arnald Puy and Olaf Bubenzer
- 2015 Feb UAV (Unmanned Aerial Vehicle) survey of the Ricote Valley, Murcia, Spain. PIs: Arnald Puy and Steve Markofsky
- 2015 Jan Geoarchaeological trenching and sampling of the huerta of Valencia, Valencia, Spain. PIs: Arnald Puy and Enric Guinot
- 2014 Sep Soil sampling and geoelectrical measurements [Electrical Resistivity Tomography (ERT)] of drip-irrigated and flood-irrigated plots, Ricote, Spain. PI: Arnald Puy
- 2014 Feb Geoarchaeological excavations in the irrigated terraces of Ricote, Murcia, Spain. PI: Arnald Puy

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| 2013 Jul | Saddina and Mghila sites survey, Fès-Bouleman, Morocco. PI: Virgilio Martínez Enamorado                               |
| 2012 Jun | Sampling and analysis of the Vaksdal charcoal pit (Viking Age), Bergen, Norway. PI: Morten Råmstad                    |
| 2012 Apr | Sampling of Mesolithic and Neolithic soils in Hakönshella, Bergen, Norway. PI: Morten Råmstad                         |
| 2011 Nov | Field survey of the Cabezo del Rife hill, Murcia, Spain. PI: Arnald Puy   |
| 2011 Jul | Field survey and geoarchaeological sampling of the Lower Ebro alluvial plain, Tortosa, Spain. PI: Helena Kirchner     |
| 2010 Nov | Archaeological excavation and geoarchaeological sampling of irrigated terraces, Ricote, Murcia, Spain. PI: Arnald Puy |
| 2010 Jul | Field survey of the Lower Ebro river, Tortosa, Spain. PI: Helena Kirchner   |
| 2009 Jul | Archaeological excavation of Torrepetxina Vella site, Menorca, Spain. PI: Helena Kirchner                             |
| 2008 Jul | Survey of the hydraulic system of Casarabonela, Málaga, Spain. PI: Fèlix Retamero                                     |
| 2007 Sep | Field survey and archaeological excavation of Es Torretó site, Menorca, Spain. PI: Helena Kirchner                    |

## Thematic courses and workshops attended

|          |  |
|----------|--|
| 2018 Aug | <b>Numbers for policy: practical problems in quantification</b><br>Centre for the Study of the Sciences and the Humanities, University of Bergen (Norway), & Open Evidence Research, Universitat Oberta de Catalunya (UOC) (Spain). Universitat Oberta de Catalunya, Castelldefels, Spain. |
| 2018 Jun | <b>Tenth summer school on sensitivity analysis of model output</b><br>Joint Research Centre (JRC), European Commission. Hotel Conca Azurra, Ranco, Italy.  |
| 2018 Apr | <b>Fractals and scaling</b><br>Complexity Explorer, Santa Fe Institute, USA  |
| 2017 Feb | <b>Sensitivity analysis, sensitivity auditing and beyond</b><br>Institut de Ciència i Tecnologia Ambientals (ICTA), Universitat Autònoma de Barcelona, Spain   |
| 2013 Feb | <b>Complexity and network theory</b><br>Institució Milà i Fontanals, CSIC Barcelona, Spain   |
| 2011 Feb | <b>Soil micromorphology and geoarchaeology</b><br>Department of Archaeology, University of Cambridge, UK   |
| 2010 Feb | <b>Stable isotopes and environmental change</b><br>Department of Archaeology, University College London, UK  |
| 2008 Nov | <b>GIS specialized course</b><br>CREAF, Facultat de Ciències, Universitat Autònoma de Barcelona, Spain   |

## Teaching

|           |   |
|-----------|---|
| 2011–2012 | <b>Agrarian Archaeology (fieldwork)</b><br>Archaeology Degree, Universitat Autònoma de Barcelona, Spain |
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| 2009–2010 | <b>Techniques for Historical Research II</b><br>History Degree, Universitat Autònoma de Barcelona, Spain |
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## Languages

|         |               |
|---------|---------------|
| Spanish | Mother tongue |
| Catalan | Mother tongue |
| English | Proficient    |

## Software

|                                    |            |
|------------------------------------|------------|
| <i>R</i>                           | Proficient |
| <i>XLSTAT</i>                      | Proficient |
| <i>L<sup>A</sup>T<sub>E</sub>X</i> | Proficient |
| Microsoft Office                   | Proficient |

## Memberships

|      |                               |
|------|-------------------------------|
| 2018 | Ecological Society of America |
| 2018 | Society for Human Ecology     |

## Mentored students

|           |  |
|-----------|--|
| 2014–2015 | <b>Svenja Riedesel (Institute of Geography, University of Cologne, Germany)</b><br>I provided Svenja with training in soil sampling methods, follow-up during her BA degree in Geography, externally reviewed her BA thesis “Transport and sedimentation of modern litoral and fluvial deposits along the Black Sea coast of Georgia. A multi-proxy dataset approach”, graded 1 out of 4 (1 = highest grade, 4 = lowest grade), and provided references for her applications to conduct the MSc degree abroad.<br><b>Michèle Keller (Institute of Geography, University of Cologne, Germany)</b><br>I hired Michelle as a student to provide support in the laboratory, and trained her in soil physico-chemical analysis such as PSD, carbon tests and pH/EC. |
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## Scientific and societal impact

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|-----------|--|
| 2020 Sep  | Scientific advisor for the article “Modelos matemáticos, mirada social”, published in the Spanish Newspaper <a href="#">El Periódico</a> |
| 2020 July | Op-ed with Ismael Ràfols in the Spanish Newspaper <a href="#">El Periódico</a> , “Modelos matemáticos y decisiones políticas”            |
| 2020 July | Interview in <a href="#">Cadena SER</a> radio station (Spain) on how to make models useful to society (in Catalan)                       |
| 2020 July | Interview in the <a href="#">Nació Digital</a> newspaper on how to make models useful to society (in Catalan)                            |

## Scientific reviewing

Environmental and Natural Resources Research Journal, National Geographic Society, Israel Science Foundation, Catena, Land Degradation and Development, Revista del Centro de Estudios Históricos de Granada y su Reino, Arid Land Research and Management, Reliability Systems and Engineering Safety, Environmental Modeling & Software.

## Scientific referees

NAME, SURNAME: Andrea Saltelli  
PROFESSIONAL RELATIONSHIP WITH APPLICANT: Supervisor in Bergen  
LENGTH OF RELATIONSHIP: 2017–present  
BODY TO WHICH THEY BELONG TODAY: University of Bergen  
POST: Professor  
TELEPHONE: +47-55-58-00-00  
E-MAIL: [andrea.saltelli@uib.no](mailto:andrea.saltelli@uib.no)

NAME, SURNAME: Simon Levin  
PROFESSIONAL RELATIONSHIP WITH APPLICANT: Supervisor in Princeton  
LENGTH OF RELATIONSHIP: 2019–present  
BODY TO WHICH THEY BELONG TODAY: Princeton University  
POST: James S. McDonnell Distinguished University Professor in Ecology and Evolutionary Biology  
TELEPHONE: +1 609 258 6880  
E-MAIL: [slevin@princeton.edu](mailto:slevin@princeton.edu)

NAME, SURNAME: Ruth Shahack-Gross  
PROFESSIONAL RELATIONSHIP WITH APPLICANT: Supervisor in Haifa  
LENGTH OF RELATIONSHIP: 2015–2017  
BODY TO WHICH THEY BELONG TODAY: University of Haifa  
POST: Professor in Sedimentary Archaeology  
TELEPHONE: +972-54-760-8637  
E-MAIL: [rgross@univ.haifa.ac.il](mailto:rgross@univ.haifa.ac.il)

NAME, SURNAME: Olaf Bubenzer  
PROFESSIONAL RELATIONSHIP WITH APPLICANT: Supervisor in Cologne  
LENGTH OF RELATIONSHIP: 2014–2015  
BODY TO WHICH THEY BELONG TODAY: University of Heidelberg  
POST: Professor in Quaternary Research and Applied Geomorphology  
TELEPHONE: : +49 (0) 6221-54-4571  
E-MAIL: [olaf.bubenzer@geog.uni-heidelberg.de](mailto:olaf.bubenzer@geog.uni-heidelberg.de)

NAME, SURNAME: Charles A.I. French  
PROFESSIONAL RELATIONSHIP WITH APPLICANT: Supervisor in Cambridge  
LENGTH OF RELATIONSHIP: 2011–2013  
BODY TO WHICH THEY BELONG TODAY: University of Cambridge  
POST: Professor in Geoarchaeology  
TELEPHONE: +44 (0) 1223 333533  
E-MAIL: [caif2@cam.ac.uk](mailto:caif2@cam.ac.uk)

NAME, SURNAME: Andrea L. Balbo  
PROFESSIONAL RELATIONSHIP WITH APPLICANT: Mentor  
LENGTH OF RELATIONSHIP: 2009–2017  
BODY TO WHICH THEY BELONG TODAY: University of Genève  
POST: Researcher  
TELEPHONE: +34 (0) 93 442 34 89  
E-MAIL: [kofibab@gmail.com](mailto:kofibab@gmail.com)