

# Irene Tunno

Curriculum Vitae

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## RESEARCH INTERESTS

Forest ecology, climate change, paleoecology, human impact, palynology, phycology

## EDUCATION

- 2014      **PhD** in Science and technologies of forest and environmental management University of Tuscia, Viterbo, Italy
- 2008      **Master's Degree** in Forestry and Environmental Science  
University of Tuscia, Viterbo, Italy
- 2005      **Bachelor's Degree** *magna cum laude* in Forests Techniques and Wood Technology  
University of Tuscia, Viterbo, Italy

## ACCADEMIC APPOINTMENTS

- 2017 – 2020      **Postdoctoral scholar** Center for Accelerator Mass Spectrometry (CAMS), Lawrence Livermore National Laboratory, Livermore CA
- 2015 – 2016      **Postdoctoral scholar** Department of Geography, University of Nevada, Reno NV

## PROFESSIONAL EXPERIENCE

- 2023 – present      **Technologist** Institute of Research on Terrestrial Ecosystems (IRET), National Research Council (CNR), Montelibretti, RM, Italy
- 2020 – 2021      **Staff Scientist** Center for Accelerator Mass Spectrometry (CAMS), Lawrence Livermore National Laboratory, Livermore CA
- 2015      **Staff research associate** Department of Geological Science and Engineering, University of Nevada, Reno NV
- 2013 – 2014      **Research scholar** Department of Geography, University of Nevada, Reno NV

2009 – 2010

**Research assistant** Department of Agriculture, Forests, Nature, and Energy (DAFNE), University of Tuscia, Viterbo Italy

## PROJECTS AND GRANTS

- 2023 **ACROSS. Prehistoric & colonial landscapes across the Mediterranean.** CNRS, ISEM UMR 5554, France; Supervisor: A. Ejarque. Funded by the European Commission, Marie Skłodowska-Curie Postdoctoral Fellowship-101110412. (195 k€).
- 2021 **Fighting fire with fire: can we increase soil carbon storage and prevent catastrophic wildfire?** Lawrence Livermore National Laboratory, LNL Lab Directed Research & Development, Laboratory-Wide Competition. PI S. Zimmerman, Co-Pi K. Moreland. Co-Investigator (\$550,000).

## FELLOWSHIPS AND AWARDS

- 2023 **Marie-Skłodowska-Curie Postdoctoral Fellowship.** Call: HORIZON-MSCA-2022-PF-01 awarded by the European Commission to work at the CNRS Institut des Sciences de l'Évolution-Montpellier, France.
- 2019 **LLNL PLS Directorate AEED Award for Postdoctoral Symposium Poster,** Livermore, CA, USA.
- 2016 **Silico-Paly conference** Italian Association for Quaternary Research (AIQUA) award for the best oral presentation in Palynology research, Florence, Italy.
- 2015 **Charles W. Reimer Scholarship** for attending the Course of Ecology and systematic of Diatoms, Iowa, USA.
- 2010 **Natural conservation and eco-services protection, and suitable use of renewable resources.** Fondazione Annamaria Catalano, Rome. Award for outstanding master thesis.

## TRAINING

- 2022 **Google Data Analytics Professional Certificate** in progress
- 2022 **Google Project Management: Professional Certificate** in progress
- 2016 **Summer school CNRS POLQUANT:** Pollen data and quantification of past vegetation cover: theory of pollen analysis and its applications for vegetation reconstruction, Moulis, France.
- 2015 **Course of Ecology and Systematic of Diatoms.** Iowa Lakeside Laboratory, University of Iowa.

## PEER-REVIEWED PUBLICATIONS

- 2023 **Tunno I.**, Perrotti A., Burge D.R.L., McGlue M.M., Csank A. Editorial: Methods in paleoecology: 2021. *Frontiers in Ecology and evolution*, July 18<sup>th</sup> 2023, doi:10.3389/fevo.2023.1250973
- 2022 Izdebski, A., Guzowski, P., Poniat, R., Masci, L., Palli, J., Vignola, C., Bauch, M., Coccozza, C., Fernandes, R., zLjungqvist, F., Newfield, T., Seim, A., Abel-Schaad, D., Alba-Sánchez, F., Björkman, L., Brauer, A., Brown, A., Czerwiński, S., Ejarque, A., Fiłoc, M., Florenzano, A., Fredh, E., Fyfe, R., Jasiunas, N., Kołaczek, P., Kouli, K., Kozáková, R., Kupryjanowicz, M., Lagerås, P., Lamentowicz, M., Lindbladh, M., López-Sáez, J. A., Luelmo-Lautenschlaeger, R., Marcisz, K., Mazier, F., Mensing, S., Mercuri, A. M., Milecka, K., Miras, Y., Noryśkiewicz, A., Novenko, E., Obremaska, M., Pędziszewska, A., Pérez-Díaz, S., Piovesan, G., Pluskowski, A., Pokorný, P., Poska, A., Reitalu, T., Rösch, M., Sadori, L., Sá Ferreira, C., Sebag, D., Słowiński, M., Stančikaitė, M., Stivrins, N., **Tunno, I.**, Veski, S., Wacnik, A., Masi, A. Palaeoecological data indicates land-use changes across Europe linked to spatial heterogeneity in mortality during the Black Death pandemic. *Nature Ecology and Evolution*, vol. 6, March 2022, pp.297-306. <https://doi.org/10.1038/s41559-021-01652-4>
- 2021 **Tunno, I.**, Zimmerman, S., Brown, T., Hassel, C. A. An improved method for extracting, sorting and AMS dating of pollen concentrates from lake sediment. *Frontiers in Ecology and evolution*, May 25<sup>th</sup> 2021, doi.org/10.3389/fevo.2021.668676
- 2019 Hodelka, B., McGlue, M., Zimmerman, S., Ali, G., **Tunno, I.** Paleoproduction an environmental change at Mono Lake (eastern Sierra Nevada) during the Pleistocene-Holocene transition. *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 543, doi: 10.1016/j.palaeo.2019.109565
- 2018 Mensing, S.A., Schoolman, E.M., **Tunno, I.**, Noble, J.P., Sagnotti, L., Florindo, F., Piovesan, G. *Historical ecology reveals landscape transformation coincident with cultural development in central Italy since Roman Period*. *Scientific reports*. 8, 2138. DOI:10.1038/s41598-018-20286-4
- 2018 Burge D., **Tunno I.**, Edlund M. (2016). *Ulnaria acus*. In *Diatoms of North America*. Retrieved November 13, 2018, from [https://diatoms.org/species/ulnaria\\_acus](https://diatoms.org/species/ulnaria_acus)
- 2017 **Tunno I.** and Mensing, S. *The value of Non-Pollen Palynomorphs in interpreting palaeoecologic change in the Great Basin (Nevada, USA)*. *Quaternary Research* <https://doi.org/10.1017/qua.2017.8>
- 2016 Mensing S., **Tunno I.**, Cifani G., Passigli S., Noble P., and Piovesan G. *Human and climatically induced environmental change in the Mediterranean during the Medieval Climate Anomaly and Little Ice Age: A case from central Italy*. *Anthropocene* doi:10.1016/j.ancene.2016.01.003
- 2015 Mensing S., **Tunno I.**, Sagnotti L., Florindo F., Noble P., Archer C., Zimmerman S., Pavon- Carrasco F.J., Cifani G., Passigli S. and Piovesan G. *2700 years of Mediterranean*

*environmental change in central Italy: A synthesis of sedimentary and cultural records to interpret past impacts of climate on society.* Quaternary Science Review, 116, 72-94. doi:10.1016/j.quascirev.2015.03.022

- 2014 Di Matteo G., **Tunno I.**, Nardi P., De Angelis P., Bertini G., Fabio G. C and N concentrations in different compartments of outgrown oak coppice forests under different site conditions in Central Italy. *Annals of Forest Science*, 71(5). doi: 10.1007/s13595-014-0390-4
- 2013 Mensing S. A., Sharpe S. E., **Tunno I.**, Sada D.W., Thomas J. M., Starratt S., Smith J. *The Late Holocene Dry Period: multiproxy evidence for an extended drought between 2800 and 1850 cal yr BP across the central Great Basin, USA.* Quaternary Science Reviews 78, 266-282. doi:10.1016/j.quascirev.2013.08.010
- 2013 Mensing S., **Tunno I.**, Cifani G., Florindo F., Noble P., Sagnotti L., Piovesan G. *Effects of Human impacts and climate variations on forest: the Rieti basin since medieval time.* *Annali di botanica Ann. Bot. Coenology and plant ecology*, 3:121-126. doi:http://dx.doi.org/10.4462/annbotrm-10243

## PRESENTATIONS

- 2022 **Tunno I.**, Rhode D. Environmental reconstruction changes in Soldier Meadows (Great Basin, USA) during the last 500 years through a multi-proxy approach. IAL IPA meeting November 27 – December 1, Bariloche, Argentina.
- 2019 **Tunno I.**, Zimmerman S., Brown T., Hassel C. Results of AMS dating of flow cytometry-sorted pollen from modern and lake-core sediments from two lakes in California's Sierra Nevada. XX congress of International Union for Quaternary Research – INQUA, Dublin, July 25-31.
- 2019 **Tunno I.**, Rhode D. Reconstructing environmental changes in Soldier Meadows (Great Basin, USA) in the last 400 years: the contributions of non-pollen palynomorphs. International workshop on phytoliths and non-pollen palynomorphs. Barcelona, Spain, July 16-19.
- 2019 **Tunno I.**, Zimmerman S., Brown T., Hassel C. Improved preparation method and AMS dating results for pollen from modern and fossil samples from contrasting lakes in the Sierra Nevada, California. 29<sup>th</sup> Pacific Climate Workshop – PACCLIM, Pacific Grove, California, February 17-20.
- 2018 **Tunno I.**, Zimmerman S., Brown T., Hassel C. *Building a chronology based on pollen concentrates: AMS measurements and flow cytometry sorting.* Geological Society of America – 130<sup>th</sup> annual meeting, Indianapolis IN, November 4-7.
- 2018 Mensing S., **Tunno I.**, Mercuri, A.M., Russo Ermolli E., Sadori L., Schoolman E., Piovesan G. Historical ecology and sustainable forest management: revealing key periods in the landscape transformation of the Italian peninsula. 14<sup>th</sup> Conference of Environmental Archeology, Modena, Italy, February 26-28.

- 2018 **Tunno I.**, Mensing S., Sagnotti L., Florindo F., Noble P., Archer C., Zimmerman S., Piovesan G. *The value of comparing multiple sites in reconstructing landscape history: climate, vegetation and history from two lakes in the Rieti Basin, central Italy*. 10<sup>th</sup> European Palaeobotany and Palynology Conference, Dublin, Ireland, August 12-17.
- 2018 **Tunno I.**, Zimmerman S., Brown T., Hassel C. *Building a chronology with pollen grains from Mono Lake (CA) through AMS and flow cytometry*. Paleochronological Building Workshop II, Campeche, Mexico, January 8-12.
- 2017 McGlue M., Zimmerman S., **Tunno I.**, Woolery E., Hodelka B., Lyon E., Lucas J. *Opportunities in developing long lake sediment records of Quaternary hydroclimate in the eastern Sierra Nevada (CA)*. Geological Society of America, annual meeting, Seattle WA, October 22-25.
- 2017 Mensing S., **Tunno I.**, Piovesan G. *Interpreting 2700 years of abrupt environmental change in central Italy by comparing pollen and climate reconstructions with historical texts*. Mediterranean Palynology – MedPalyno, APLe-GPPSBI-APLF Symposium, Barcelona, Spain, September 4-6.
- 2017 **Tunno I.**, Mensing S. *The contribution of the Non-Pollen Palynomorphs in interpreting 8000yr of vegetation history in the Great Basin (Nevada, USA)*. VII Workshop on Non-Pollen Palynomorphs, Liverpool, Great Britain, June 12-14.
- 2017 **Tunno I.**, Mensing S. *Non-Pollen palynomorphs contribution in the interpretation of the paleoecological changes in the Great Basin (Nevada, USA)*. Pacific Climate Workshop – PACLIM, Pacific Grove, CA, March 5-8.
- 2015 Noble P., **Tunno I.**, Mensing S., Piovesan G. *Two centuries of variation in diatoms and elemental geochemistry from Lago Lungo, Rieti Basin, Lazio, Italy*. 23<sup>rd</sup> North America Symposium, Beaver Island MI, September 9-13.
- 2014 **Tunno I.**, Mensing S., Cifani, G., Piovesan G. *Reconstruction of 2700 years of vegetation history in the Rieti Basin (central Italy)*. 9<sup>th</sup> European Palaeobotany and Palynology Conference – EPPC Padova, Italy, August 26-31.
- 2014 Mensing S., Sagnotti L., Florindo F., **Tunno I.**, Cifani G., Zimmerman S., Noble P., Piovesan G. *2700 years of forest history from central Italy caused by human impacts and climate change*. Culture, Climate and Environmental Interaction at Wetland Sites conference, Bern, Switzerland, June 11-14.
- 2013 Mensing S., **Tunno I.**, Cifani G., Florindo F., Noble P., Sagnotti L., Piovesan G. *Effects of human impacts and climate variations on forest: the Rieti basin since Medieval time*. Palynology: the bridge between palaeoecology and ecology for the understanding of human-induced global changes in the Mediterranean area conference, Modena, Italy May 27-29.
- 2010 Mensing S., **Tunno I.**, Piovesan G. *A millennium of Mediterranean forest history: comparing human impacts and climate change in central Italy*. Geological Society of America, annual meeting, Denver CO, October 30-November 3.

## POSTERS

- 2019 **Tunno I.**, Mensing A.S., Sagnotti L., Florindo F., Noble P., Archer C., Zimmerman S., Piovesan G. The story of two lakes: high-resolution landscape changes during the last 1300 yrs in central Italy. XX congress of International Union for Quaternary Research – INQUA, Dublin, July 25-31.
- 2019 Hodelka B. N., McGlue M. M., Zimmerman S., **Tunno I.**, Ali G. A. H. Late quaternary stratigraphy and organic geochemistry at Mono Lake, CA. 29<sup>th</sup> Pacific Climate Workshop – PACLIM, Pacific Grove, California, February 17-20.
- 2017 **Tunno I.**, Mensing S. 8000 yr of vegetation reconstruction from the Great Basin (Nevada, USA): the contribution of Non-pollen palynomorphs. American Geophysical Union (AGU), annual meeting, New Orleans, LA, December 11-15.
- 2017 **Tunno I.**, Zimmerman S., Brown T., Hassel C. Radiocarbon dating pollen grains sorted by flow cytometry from lake sediments of Mono Lake (California). Geological Society of America, 129<sup>th</sup> meeting, Seattle WA, October 22-25.
- 2017 Hodelka B., McGlue M., Zimmerman S., **Tunno I.** Preliminary insights on late Quaternary paleoproductivity in Mono Lake, (CA) from elemental and stable isotope geochemistry. Geological Society of America, 129<sup>th</sup> meeting, Seattle WA, October 22-25.
- 2016 **Tunno I.**, Noble P., Archer C. Modern diatoms communities from surface water in the Laghi Lungo and Ripassotile Nature Reserve, Rieti Basin, central Italy. 5<sup>th</sup> Silicofossil and Palynology Joint Meeting, Florence, Italy. September 15-16.
- 2016 Noble P., **Tunno I.**, Mensing S., Piovesan G. A multi-proxy lake core record from Lago Lungo, Rieti Basin, Lazio, Italy and its relation to human activities in the catchment during the last century. European Geosciences Union (EGU), Vienna, Austria, April 17-22.
- 2015 **Tunno I.**, Noble P., Archer C. Diatom survey of Lago di Ripasottile and Lago Lungo, the Rieti Basin, Lazio, Italy. 23<sup>rd</sup> North America Diatoms Symposium (NADS), Beaver Island MI, September 9-13.
- 2014 Archer C., Noble P., Mensing S., **Tunno I.**, Sagnotti L., Florindo F., Cifani G., Zimmerman S., Piovesan G. Sedimentary geochemistry depicts 2700 years of regional climate and land use change in the Rieti Basin, Central Italy. American Geophysical Union, annual meeting, San Francisco CA, December 15-19.
- 2014 Sagnotti L., Florindo F., Mensing S., Noble P., Piovesan G., **Tunno I.** Paleomagnetism and rock magnetism of the Lago Lungo sediments (Rieti Basin, Italy). European Geosciences Union – EGU annual meeting, Vienna Austria, April 27-May 2.
- 2014 Archer C., Noble P., Mensing S., Sagnotti L., Florindo F., **Tunno I.**, Cifani G., Zimmerman S., Piovesan G. Lago Lungo sediment geochemistry gives insight into

*regional climate and land use change*. Culture, Climate and Environmental Interaction at Wetland Sites conference, Bern, Switzerland, June 11-14.

- 2013 **Tunno I.**, Mensing S., Di Filippo A., Ziaco E., Piovesan G. *Linking palynological and dendrochronological series for the reconstruction of historical landscape*. Palynology: the bridge between palaeoecology and ecology for the understanding of human-induced global changes in the Mediterranean area conference, Modena, Italy May 27-29.
- 2013 **Tunno I.**, Mensing S., Di Filippo A., Ziaco E., Piovesan G. *Common signals in palynological and dendrochronological records: the case of the Rieti Basin*. Tree Rings in Archeology, Climatology and Ecology – TRACE, Viterbo, Italy, May 8-11.
- 2011 Mensing S., **Tunno I.**, Piovesan G. *A millennium of Mediterranean forest change: comparing human impacts and climate in central Italy since Medieval time*. XVIII congress of International Union for Quaternary Research – INQUA, Bern, Switzerland, July 21-27.
- 2010 Mensing S., **Tunno I.**, Piovesan G. *A millennium of Mediterranean climate change and forest history in central Italy*. American Geophysical Union, annual meeting, San Francisco CA, December 13-17.
- 2007 **Tunno I.**, Di Matteo G., Bertini G., Piovosi M., Fabbio G., De Angelis P. *Determinazione dei pool di carbonio e azoto nei cedui di cerro oltretorno*. VI Congresso della società Italiana di Selvicoltura ed Ecologia Forestale. Arezzo, Italy, September 25-30.

#### TEACHING EXPERIENCE

- 2018 Guest lecture, Environmental Science ENVS 1002, College of the Siskiyous, CA.
- 2018 Guest lecture, The multiple uses of palynomorphs in paleoecological studies. Paleolimnology GEOL 763, University of Nevada, Reno.
- 2012 Guest lecture, Paleoecology, Italian National Forest Police Corps, Sabaudia, Italy.

#### SERVICE ACTIVITIES

**Guest Editor** for Frontiers in Ecology and Evolution for a special issue on methods in paleoecology  
**Reviewer** of manuscripts submitted to refereed journals (Frontiers in Ecology and Evolution, Journal of Paleolimnology, Holocene, Heritage, Palynology)

#### LANGUAGES

Italian	Native proficiency
English	Full professional proficiency
Spanish	Elementary proficiency