

# C.V. - PROF. STEFANO MAZZOLENI

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## Current position

Full professor Applied Ecology and System Dynamics Modelling – Dept. Agricultural Sciences - University of Napoli "Federico II", Italy  
Director Museum Centre "Musei delle Scienze Agrarie – MUSA" - Università di Napoli "Federico II"

## Previous positions

Director Dept. Horticulture, Botany and Plant Pathology – University of Napoli "Federico II"  
President of degree in "Forestry and Environmental Sciences" – University of Napoli "Federico II"

## Education

1983 Laurea degree in Agricultural Sciences. University of Napoli "Federico II".  
1985 M.Sc. in Forestry. Michigan State University (M.S.U.), East Lansing, USA.  
1992 PhD in Plant Ecology. Institute of Terrestrial Ecology and University of Aberdeen, UK.

## Main research interests

Ecology and System Dynamics Modelling

## Main appointments and consultancies:

- 2017 Componente Commissione nazionale per la previsione e la prevenzione dei grandi rischi – settore rischio ambientale e degli incendi boschivi – Dipartimento della Protezione Civile, Presidenza del Consiglio dei Ministri.
- 2016 Referente scientifico per l'implementazione del sistema di simulazione in realtà virtuale di incendi boschivi FFAS (Forest Fire Area Simulator) del Corpo Forestale dello Stato presso il Centro di Formazione di Castel Volturno.
- 2015-2017 Responsabile scientifico della convenzione con la SMA-Regione Campania per corsi di formazione sul fuoco prescritto ai fini della prevenzione incendi
- 2005-2009 Membro del Regional Project Centre PHOENIX - Fire ecology and post-fire management, istituito dal European Forest Institute (EFI)
- 2002-2005 Componente della Concerted Action "AVEC - Integrated Assessment of Vulnerable Ecosystems under Global Change". European Commission - 5th FP Energy, Environment and Sustainable Development
- 1999 Consulente del European Concerted Action "Delfi - Definition and creation of a common knowledge base for forest fires". Environment and Climate Programme ENV4-CT98-0735
- 1996-1999 Membro dello Steering Committee of the Concerted Action "Degradation and desertification in Europe of DG XII of the European Union
- 1992-99 Coordinatore del "Gruppo per l'Ecologia" della Società Botanica Italiana
- 1993-1994 Responsabile scientifico per la Regione Molise e Ministero dell'Ambiente per il progetto BIOITALY-HABITAT, UE D.G. XI

## International research projects

### Project Coordinator:

- ModMED I and II – "Modelling Vegetation Dynamics and Degradation in Mediterranean Ecosystems", istituzioni partecipanti: Università di Napoli, Edimburgo, Atene, Lisbona, Valencia, Trier, Pisa e Campobasso - EU DG XII EV5V CT94-0489/0139.
- ModMED III- "Modelling Mediterranean Ecosystems Dynamics", istituzioni partecipanti: Università di Napoli, Edimburgo, Atene, Lisbona, Valencia, Trier, Pisa, Campobasso, Budapest – EU DG XII ENV4CT97-0680.

### Coordinator of research unit:

- LUCIFER – "Land Use Interaction with Fire in Mediterranean Landscapes", coordinamento Toledo University, Spain - EU DG XII ENV4 CT96 0320.

- ERMES II – “Soil Erosion in Mediterranean Ecosystems”, coordinamento Cranfield University, GB - EU DG XII ENV4CT95 0181.
- MODULUS – “Integrated modelling environment”, coordinamento RIKS Maastricht, Netherland – EU DG XII ENV4CT97-0685.
- FIRE PARADOX – “An innovative approach of Integrated Wildland Fire Management regulating the wildfire problem by the wise use of fire: solving the FIRE PARADOX”, coordinamento University of Lisbon, Portugal – EU DG XII FP6 018505.

### **Main national projects**

#### Project Coordinator:

- “Effects of species diversity on litter production and decomposition in Mediterranean maquis: modelling analysis” – Progetti Ricerca Interesse Nazionale (PRIN) MIUR 2005.
- “Modelling of C and N fluxes in mediterranean vegetation: effects of the spatial variability of vegetation cover” – Progetti Ricerca Interesse Nazionale (PRIN) MIUR 2003.
- Decision support system for Servizio Foreste della Regione Campania.
- Wildfire prevention plans of Parco Nazionale del Cilento e Vallo di Diano 2003-2009.

#### Coordinator of research unit:

- MESCOSAGR – “Metodi Sostenibili per il sequestro del carbonio organico nei suoli agrari. Valutazione degli effetti sulla qualità chimica, fisica, biologica ed agronomica dei suoli”. FISR – MIUR, modelling research unit.
- “Natura 2000”, Ministero dell’Ambiente project units for Campania and Molise Regions.
- Fire in Mediterranean environment: effects on vegetation and soil – Progetti Ricerca Interesse Nazionale (PRIN) MIUR 1999.
- “Vegetazione e incendi” unit of PON PETIT OSA Information technology for environment – Ministero dell’Università e Ricerca.

### **Publications**

Prof. Mazzoleni is author of over 100 publications, including internationally-respected peer-reviewed journals, books and monographs.

#### **Selected list of papers:**

Vincenot, C.E., Carteni, F., Bonanomi, G., Mazzoleni, S., Giannino, F.  
Plant–soil negative feedback explains vegetation dynamics and patterns at multiple scales  
(2017) *Oikos*, 126 (9), pp. 1319-1328.

Incerti, G., Bonanomi, G., Giannino, F., Carteni, F., Spaccini, R., Mazzei, P., Piccolo, A., Mazzoleni, S.  
OMDY: a new model of organic matter decomposition based on biomolecular content as assessed by <sup>13</sup>C-CPMAS-NMR  
(2017) *Plant and Soil*, 411 (1-2), pp. 377-394.

Esposito, S., Cafiero, A., Giannino, F., Mazzoleni, S., Diano, M.M.  
A Monitoring, Modeling and Decision Support System (DSS) for a Microalgae Production Plant based on Internet of Things Structure  
(2017) *Procedia Computer Science*, 113, pp. 519-524.

Bonanomi, G., Cesarano, G., Lombardi, N., Motti, R., Scala, F., Mazzoleni, S., Incerti, G.  
Litter chemistry explains contrasting feeding preferences of bacteria, fungi, and higher plants  
(2017) *Scientific Reports*, 7 (1), art. no. 9208.

Incerti, G., Bonanomi, G., Giannino, F., Carteni, F., Spaccini, R., Mazzei, P., Piccolo, A., Mazzoleni, S.  
OMDY: a new model of organic matter decomposition based on biomolecular content as assessed  
by <sup>13</sup>C-CPMAS-NMR  
(2017) *Plant and Soil*, 411 (1-2), pp. 377-394.

Carteni, F., Bonanomi, G., Giannino, F., Incerti, G., Vincenot, C.E., Chiusano, M.L., Mazzoleni, S.  
Self-dna inhibitory effects: Underlying mechanisms and ecological implications  
(2016) *Plant Signaling and Behavior*, 11 (4), art. no. e1158381.

Vincenot, C.E., Carteni, F., Mazzoleni, S., Rietkerk, M., Giannino, F.  
Spatial self-organization of vegetation subject to climatic stress—insights from a system  
dynamics—individual-based hybrid model  
(2016) *Frontiers in Plant Science*, 7 (MAY2016), art. no. 636, .

Mazzoleni, Stefano; Carteni, Fabrizio; Bonanomi, Giuliano; et al.  
New perspectives on the use of nucleic acids in pharmacological applications: inhibitory action of  
extracellular self-DNA in biological systems  
(2015) *PHYTOCHEMISTRY REVIEWS* Volume: 13 Issue: 4 Special Issue: SI Pages: 937-946

Bonanomi, G., Capodilupo, M., Incerti, G., Mazzoleni, S., Scala, F.  
Litter quality and temperature modulate microbial diversity effects on decomposition in model  
experiments  
(2015) *Community Ecology*, 16 (2), pp. 167-177.

Mazzoleni, S., Landi, C., Carteni, F., de Alteriis, E., Giannino, F., Paciello, L., Parascandola, P.  
A novel process-based model of microbial growth: Self-inhibition in *Saccharomyces cerevisiae*  
aerobic fed-batch cultures  
(2015) *Microbial Cell Factories*, 14 (1), art. no. 109.

Mazzoleni, S., Carteni, F., Bonanomi, G., Senatore, M., Termolino, P., Giannino, F., Incerti, G.,  
Rietkerk, M., Lanzotti, V., Chiusano, M.L.  
Inhibitory effects of extracellular self-DNA: A general biological process?  
(2015) *New Phytologist*, 206 (1), pp. 127-132.

Mazzoleni, S., Bonanomi, G., Incerti, G., Chiusano, M.L., Termolino, P., Mingo, A., Senatore, M.,  
Giannino, F., Carteni, F., Rietkerk, M., Lanzotti, V.  
Inhibitory and toxic effects of extracellular self-DNA in litter: A mechanism for negative plant-soil  
feedbacks?  
(2015) *New Phytologist*, 205 (3), pp. 1195-1210.

Incerti, G., Capodilupo, M., Senatore, M., Termolino, P., Scala, F., Mazzoleni, S., Bonanomi, G.  
Biochemical changes assessed by <sup>13</sup>C-CPMAS NMR spectroscopy control fungal growth on water  
extracts of decaying plant litter  
(2013) *Mycoscience*, 54 (6), pp. 449-457.

Carteni, F., Giannino, F., Schweingruber, F.H., Mazzoleni, S.  
Modelling the development and arrangement of the primary vascular structure in plants  
(2014) *Annals of Botany*, 114 (4), pp. 619-627.

Mazzoleni, S., Bonanomi, G., Giannino, F., Incerti, G., Piermatteo, D., Spaccini, R., Piccolo, A.  
New modeling approach to describe and predict carbon sequestration dynamics in agricultural soils

(2013) Carbon Sequestration in Agricultural Soils: A Multidisciplinary Approach to Innovative Methods, 9783642223563, pp. 291-307.

Mazzoleni, S., Rego, F., Giannino, F., Vincenot, C.E., Pezzatti, G.B., Legg, C.  
Vegetation and Disturbance

(2013) Environmental Modelling: Finding Simplicity in Complexity: Second Edition, pp. 235-251.

Carteni, F., Marasco, A., Bonanomi, G., Mazzoleni, S., Rietkerk, M., Giannino, F.

Negative plant soil feedback explaining ring formation in clonal plants

(2012) Journal of Theoretical Biology, 313, pp. 153-161.

Vincenot, C.E., Giannino, F., Rietkerk, M., Moriya, K., Mazzoleni, S.

Theoretical considerations on the combined use of System Dynamics and individual-based modeling in ecology

(2011) Ecological Modelling, 222 (1), pp. 210-218.

Bonanomi, G., Incerti, G., Barile, E., Capodilupo, M., Antignani, V., Mingo, A., Lanzotti, V., Scala, F., Mazzoleni, S.

Phytotoxicity, not nitrogen immobilization, explains plant litter inhibitory effects: Evidence from solid-state <sup>13</sup>C NMR spectroscopy

(2011) New Phytologist, 191 (4), pp. 1018-1030.

Mazzoleni, S., Bonanomi, G., Giannino, F., Incerti, G., Dekker, S.C., Rietkerk, M.

Modelling the effects of litter decomposition on tree diversity patterns

(2010) Ecological Modelling, 221 (23), pp. 2784-2792.

Esposito, S., Incerti, G., Giannino, F., Russo, D., Mazzoleni, S.

Integrated modelling of foraging behaviour, energy budget and memory properties

(2010) Ecological Modelling, 221 (9), pp. 1283-1291.

Mazzoleni, S., Bonanomi, G., Giannino, F., Rietkerk, M., Dekker, S.C., Zucconi, F.

Is plant biodiversity driven by decomposition processes? An emerging new theory on plant diversity

(2007) Community Ecology, 8 (1), pp. 103-109.

Bonanomi, G., Del Sorbo, G., Mazzoleni, S., Scala, F.

Autotoxicity of decaying tomato residues affects susceptibility of tomato to fusarium wilt

(2007) Journal of Plant Pathology, 89 (2), pp. 219-226.

Mazzoleni, S., Bonanomi, G., Giannino, F., Rietkerk, M., Dekker, S., Zucconi, F.

Is plant biodiversity driven by decomposition processes? An emerging new theory on plant diversity

(2007) Community Ecology, 8 (1), pp. 103-109.