

## Curriculum Vitae Lorenzo GENESIO

Name: **Lorenzo Genesio**

Date of birth: [REDACTED]

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### Short CV and research interests:

Agronomist, Director of Research at the Institute of BioEconomy (IBE) - National Research Council (CNR). His research interests are mainly placed in the domain of land-atmosphere interactions and range from the application of remote sensing techniques and micro-meteorological monitoring to precision agriculture, to the study of global biogeochemical cycles with focus on climate mitigation and to early warning systems for food security. Since 1995 he has been working in project for technology transfer and environmental assessment for Italian Cooperation in sub-saharan Africa. Starting from 1998 to 2002 he has been consultant for World Meteorological Organization (WMO) within the framework of Early Warning System and Crop Forecasting Project in West Africa. He participated in several research projects with national and international funding with roles of coordination and he carried on research activities related to agro-ecology, phenotyping, carbon cycle and climate change adaptation and mitigation in agriculture. In recent years he acquired specific competences in the assessment of Radiative Forcing (RF) of different land radiation management schemes from the local to the global scale, also developing a large set of experiments for the quantification of the impact on the radiation balance that derives from changes in surface reflectance of plants from the leaf to the canopy and to the crop scale.

### PI Academic career and position held to date:

Since 2020	Director of Research, Institute of Bioeconomy (IBE), National Research Council of Italy, Firenze, Italy
2019	Visiting Scientist at IMÉRA – Université Aix-Marseille
Since 2013	Affiliated to FoXLab a Joint Research Unit CNR-FEM (Fondazione Edmund Mach)
2009-2020	Permanent Senior Researcher, Institute of Bioeconomy (IBE, formerly IBIMET), National Research Council of Italy, Firenze, Italy.
2007-2009	Temporary Senior Researcher, Institute of Biometeorology (IBIMET9, National Research Council of Italy.
2005 – 2007	Temporary Researcher, Istitute of Biometeorology, National Research Council of Italy.
2000-2005	Consultant for Applied Meteorological Foundation, Firenze, Italy
1998-2000	Consultant World Meteorological organization, Florence-Italy, Niamey-Niger
1995-1998	Consultant for Ce.S.I.A. Accademia dei Gorgofili, Florence, Italy
1989-1995	Università degli Studi di Firenze. Facoltà di Scienze agrarie. Laurea in Scienze agrarie ed Ambientali (18/09/1995 – 110/110 <i>cum laude</i> )

### Most relevant research projects

#### 2009-present *Director of research at IBE CNR*

- REMTEC: assessment of agronomic/energy performance of agrovoltaic plants.
- PRISMA + S5P demonstration for COVID-19 studies. European Space Agency. Research Unit Coordinator. Budget 32.000euro. (2020-ongoing)
- 2019-2021: FLEXSense: Technical Assistance for Airborne Measurements during the FLEX Sentinel Tandem Experiment (ESA Contract No. 4000125402/18/NL/NA). The FLEXSense project,

coordinated by Forschungszentrum Julich (FZJ) is one of the preparatory activities for the launch of the FLuorescence EXplorer (FLEX) satellite expected in 2025, which will be the first satellite specifically built for monitoring the photosynthetic activity of terrestrial vegetation through the Sun Induced Fluorescence (SIF). The FLEXsense measurement campaign focuses on the collection of data on representative sites through aerial remote sensing and simultaneous ground measurements (which include vegetation, soil and atmospheric parameters) for the determination of the SIF signal and the collection of functional data for determining the atmospheric signal correction. IBE CNR leads the ground experiment on the Italian site.

- 2019-ongoing: **Scientific activity of CAL/VAL for PRISMA mission – PRISCAV**. Funded by Italian Space Agency (ASI) and CNR the project has the objective of the comprehensive characterization of the performances PRISMA mission, in different applicative scenarios and the verification of the durability in time of the performances. To this end the project created a network of instrumented sites dedicated to the scientific CAL/VAL of PRISMA mission. The CAL/VAL strategy is implemented by means of ground truth spectral measurements, airborne measurements and atmospheric characterization on a set of sites 12 sites with different surface properties (snow; sea; internal water; forest and agriculture). The project is coordinated by IBE CNR. Project budget 1.788.000€ (2019-ongoing)
- ATMOFLEX - Technical Assistance for the Deployment of Ground-based Instruments for Long term measurements of Red and Far-red Sun Induced chlorophyll Fluorescence. Funded by ESA. Budget 82.000euro RU coordinator (2018-2019)
- AGROPYROGAS - Towards a Bio-Energy Sector to pyrogasification. POR CREO FSE 2007-2013 322, asse IV CNR-4. Budget 60.000euro. 2014-2014: RU coordinator
- Photosynthesis 2.0 Project, Ministry of University and Research of Italy. Responsabile of Task 1.4 “Photochemical damage and mechanism of repair of photosynthesis” (nov 2016-ongoing)
- Flex Programme (Fluorescence Explorer – European Space Agency). Participates to the Calibration and Validation (CAL/VAL) campaigns in Italy in 2015 and 2016.;
- MATER-BIO project (development of novel technologies for energy from biomasses) CNR;
- Perennials project. A programme of experiments on perennial grains with CREA-QCE. Responsible of WP on plant-water relations;
- DuCO “Durum wheat adaptation to global change: effect of elevated CO<sub>2</sub> on yield and quality traits” coordinated by CREA within the AGER programme. (2012-2015)
- Eurochar FP7, Biochar for Carbon sequestration and large-scale removal of greenhouse gases (GHG) from the atmosphere. Responsible of WP7.2 (2010 – 2015);
- Twinning Serbia EU, A new viticultural zoning for Serbia (2011 – 2014) consultant for climatic zoning;
- GHG-EUROPE FP7, Greenhouse gas management in European land use systems
- Consorzio Tuscania, Responsible of IBIMET activities, coordinator of WP A2 (2006-2010)

#### 2005-2009      Researcher at IBIMET CNR

- AMMA EU FP6, WP 5.2 leader, member of governing board (2005-2009);
- Kyoto Observatory for Tuscany region (2004-2011), project co-ordinator; Principal Investigator of Lecceto flux measurement facility IT-Lec
- Desertnet Interreg EU MEDOCC, Coordinator of activities for Tuscany Region;
- Mediterranean Training Programme for the harmonization of Early Warning Systems and operational instruments for Monitoring Climate Change and Desertification (MTP) /IBIMET CNR and UNCCD Secretariat);

#### 1995-2006      Consultant

Since 1995 he has been working as Consultant in project for technology transfer and environmental assessment for Italian Cooperation/World Bank/FAO/WMO,FCS/Academia dei GEorgofili in sub-saharan Africa:

- DISMED UNCCD (2001-2003), Desertification information System for the Mediterranean, project manager;

- PAFAGE (2001-2004) “Projet d’Appui à la Formation et d’Assistance en Gestion de l’Environnement” (Italian Cooperation – Ministry of Environment of Niger): Consultant
- Early Warning and Crop Yields Forecasting Project” (Ap3A) (WMO — SHL/FIT/ITA/Ph2). 1998-2002. Consultant for World Meteorological Organization (WMO).
- PATAM Project: Technical Assistance to the National Meteorological Service of Morocco (European Union). Consultant for the training in GIS;
- Natural Resources Management Project (PGRN) World Bank (1999), consultant for the management of geographic data bases and the implementation of production chains for thematic mapping and base cartography;
- “Program of Rural Development in the Ader-Doutchi-Maggia” PDRADM/FAO, Keita, Niger, 1998-2000: Consultant for the conceptual design and implementation of an Environmental Information System.
- P.E.I.C.R.E. Project (Projet d’Evaluation de Interventions de Conservation et Récupération de l’Environnement), Italian Ministry of Foreign Affairs 1995-1998: GIS Consultant

#### Publication statistics (07.2022):

Web of Science:	Publications: 62	Citations: 2326	H-Index: 27
Google Scholar:	Publications: 121	Citations: 4884	H-Index: 32

#### List of recent publications (ISI with referees)

- Brilli, L., Carotenuto, F., Chiesi, M., Fiorillo, E., Genesio, L., Magno, R., ... & Gioli, B. (2022). An integrated approach to estimate how much urban afforestation can contribute to move towards carbon neutrality. *Science of The Total Environment*, 156843.
- Genangeli, A., Allasia, G., Bindi, M., Cantini, C., Cavaliere, A., Genesio, L., ... & Gioli, B. (2022). A Novel Hyperspectral Method to Detect Moldy Core in Apple Fruits. *Sensors*, 22(12), 4479.
- Damm, A., Cogliati, S., Colombo, R., Fritsche, L., Genangeli, A., Genesio, L., ... & Miglietta, F. (2022). Response times of remote sensing measured sun-induced chlorophyll fluorescence, surface temperature and vegetation indices to evolving soil water limitation in a crop canopy. *Remote Sensing of Environment*, 273, 112957.
- Baronti, S., Galassi, E., Ugolini, F., Miglietta, F., Genesio, L., Vaccari, F. P., ... & Gazza, L. (2022). Agronomic and ecophysiological evaluation of an early establishment of perennial wheat lines in Central Italy. *Genetic Resources and Crop Evolution*, 69(2), 619-633.
- Cogliati, S., Sarti, F., Chiarantini, L., Cosi, M., Lorusso, R., Lopinto, E., ... & Colombo, R. (2021). The PRISMA imaging spectroscopy mission: Overview and first performance analysis. *Remote Sensing of Environment*, 262, 112499.
- Genesio, L., Bassi, R. and Miglietta, F., 2020. Plants with less chlorophyll: A global change perspective. *Global Change Biology*.
- Genesio, L., Bright, R. M., Alberti, G., Peressotti, A., Delle Vedove, G., Incerti, G., ... & Miglietta, F. (2020). A chlorophyll-deficient, highly reflective soybean mutant: radiative forcing and yield gaps. *Environmental Research Letters*, 15(7), 074014.
- Ambrosone, M., Matese, A., Di Gennaro, S. F., Gioli, B., Tudoroiu, M., Genesio, L., ... & Toscano, P. (2020). Retrieving soil moisture in rainfed and irrigated fields using Sentinel-2 observations and a modified OPTRAM approach. *International Journal of Applied Earth Observation and Geoinformation*, 89, 102113.
- Bartsch, S., Stegehuis, A. I., Boissard, C., Lathiere, J., Peterschmitt, J. Y., Reiter, I. M., ... & Fernandez, C. (2020). Impact of precipitation, air temperature and abiotic emissions on gross primary production in Mediterranean ecosystems in Europe. *European Journal of Forest Research*, 139(1), 111-126.
- Giagnoni, L., Maienza, A., Baronti, S., Vaccari, F. P., Genesio, L., Taiti, C., ... & Mancuso, S. (2019). Long-term soil biological fertility, volatile organic compounds and chemical properties in a vineyard soil after biochar amendment. *Geoderma*, 344, 127-136.
- Rombolà, A. G., Fabbri, D., Baronti, S., Vaccari, F. P., Genesio, L., & Miglietta, F. (2019). Changes in the pattern of polycyclic aromatic hydrocarbons in soil treated with biochar from a multiyear field experiment. *Chemosphere*, 219, 662-670.

- Cogliati, S., Celesti, M., Cesana, I., Miglietta, F., Genesio, L., Julitta, T., ... & Colombo, R. (2019). A spectral fitting algorithm to retrieve the fluorescence spectrum from canopy radiance. *Remote Sensing*, 11(16), 1840.
- Tudoroiu, M., Genesio, L., Gioli, B., Schume, H., Knohl, A., Brümmer, C., & Miglietta, F. (2018). Solar dimming above temperate forests and its impact on local climate. *Environmental Research Letters*, 13(6), 064014.
- Sakowska, K., Alberti, G., Genesio, L., Peressotti, A., Delle Vedove, G., Gianelle, D., ... & Celesti, M. (2018). Leaf and canopy photosynthesis of a chlorophyll deficient soybean mutant. *Plant, cell & environment*, 41(6), 1427-1437.
- Baronti, S., Alberti, G., Camin, F., Criscuoli, I., Genesio, L., Mass, R., ... & Miglietta, F. (2017). Hydrochar enhances growth of poplar for bioenergy while marginally contributing to direct soil carbon sequestration. *Gcb Bioenergy*, 9(11), 1618-1626.
- Maienza, A., Baronti, S., Cincinelli, A., Martellini, T., Grisolia, A., Miglietta, F., ... & Genesio, L. (2017). Biochar improves the fertility of a Mediterranean vineyard without toxic impact on the microbial community. *Agronomy for Sustainable Development*, 37(5), 47.
- Romboli, Y., Di Gennaro, S.F., Mangani, S., Buscioni, G., Matese, A., Genesio, L. and Vincenzini, M. (2017), Vine vigour modulates bunch microclimate and affects the composition of grape and wine flavonoids: an unmanned aerial vehicle approach in a Sangiovese vineyard in Tuscany. *Australian Journal of Grape and Wine Research*, 23: 368–377.
- Maienza, A., Genesio, L., Acciai, M., Miglietta, F., Pusceddu, E., & Vaccari, F. P. (2017). Impact of Biochar Formulation on the Release of Particulate Matter and on Short-Term Agronomic Performance. *Sustainability*, 9(7), 1131.
- Di Gennaro, S. F., Matese, A., Gioli, B., Toscano, P., Zaldei, A., Palliotti, A., & Genesio, L. (2017). Multisensor approach to assess vineyard thermal dynamics combining high-resolution unmanned aerial vehicle (UAV) remote sensing and wireless sensor network (WSN) proximal sensing. *Scientia Horticulturae*, 221, 83-87.
- Primicerio, J., Caruso, G., Comba, L., Crisci, A., Gay, P., Guidoni, S., ... & Vaccari, F. P. (2017). Individual plant definition and missing plant characterization in vineyards from high-resolution UAV imagery. *European Journal of Remote Sensing*, 50(1), 179-186.
- Meyer, S., Genesio, L., Vogel, I., Schmidt, H. P., Soja, G., Someus, E., Shackley, S., Verheijen, Frank G.A. & Glaser, B. (2017) Biochar standardization and legislation harmonization. *Journal of Environmental Engineering and Landscape Management*, 1-17.
- Tudoroiu, M., Eccel, E., Gioli, B., Gianelle, D., Schume, H., Genesio, L., & Miglietta, F. (2016). Negative elevation-dependent warming trend in the Eastern Alps. *Environmental Research Letters*, 11(4), 044021.
- Genesio, L., Vaccari, F. P., & Miglietta, F. (2016). Black carbon aerosol from biochar threatens its negative emission potential. *Global change biology*, 22(7), 2313-2314.
- Andrenelli, M. C., Maienza, A., Genesio, L., Miglietta, F., Pellegrini, S., Vaccari, F. P., & Vignozzi, N. (2016). Field application of pelletized biochar: Short term effect on the hydrological properties of a silty clay loam soil. *Agricultural Water Management*, 163, 190-196.
- Bozzi, E., Genesio, L., Toscano, P., Pieri, M., & Miglietta, F. (2015). Mimicking biochar-albedo feedback in complex Mediterranean agricultural landscapes. *Environmental Research Letters*, 10(8), 084014.
- Genesio, L., Miglietta, F., Baronti, S., Vaccari, F. P., 2015 Biochar increases vineyard productivity without affecting grape quality: Results from a four years field experiment in Tuscany. *Agriculture, Ecosystems & Environment*, 201, 20-25
- Rombolà, A. G., Meredith, W., Snape, C. E., Baronti, S., Genesio, L., Vaccari, F. P., ... & Fabbri, D. (2015). Fate of soil organic carbon and polycyclic aromatic hydrocarbons in a vineyard soil treated with biochar. *Environmental science & technology*.
- Castracani, C., Maienza, A., Grasso, D. A., Genesio, L., Malcevschi, A., Miglietta, F., ... & Mori, A. (2015). Biochar–macrofauna interplay: Searching for new bioindicators. *Science of The Total Environment*, 536, 449-456.
- Vaccari, F. P., Maienza, A., Miglietta, F., Baronti, S., Di Lonardo, S., Giagnoni, L., ... & Genesio, L. (2015). Biochar stimulates plant growth but not fruit yield of processing tomato in a fertile soil. *Agriculture, Ecosystems & Environment*, 207, 163-170.

- Toscano, P., Genesio, L., Crisci, A., Vaccari, F. P., Ferrari, E., La Cava, P., ... & Gioli, B. (2015). Empirical modelling of regional and national durum wheat quality. *Agricultural and Forest Meteorology*, 204, 67-78.
- Matese, A., Toscano, P., Di Gennaro, S. F., Genesio, L., Vaccari, F. P., Primicerio, J., ... & Gioli, B. (2015). Intercomparison of UAV, Aircraft and Satellite Remote Sensing Platforms for Precision Viticulture. *Remote Sensing*, 7(3), 2971-2990.
- P. Toscano, B. Gioli, F. Miglietta, F.P. Vaccari, A. Zaldei, E. Ferrari, F. Bertuzzi, P. La Cava, C. Ronchi, M. Silvestri, L. Genesio, J. R. Porter Durum wheat quality prediction in Mediterranean environments: from local to regional scale. *European Journal of Agronomy*, 61, 1-9
- W. Yuan, W. Cai, S. Liu, W. Dong, J. Chen, M A. Arain, P. D Blanken, A. Cescatti, G. Wohlfahrt, T. Georgiadis, L. Genesio, D. Gianelle, A. Grelle, G. Kiely, A. Knohl, D. Liu, M. V Marek, L. Merbold, L. Montagnani, O. Panferov, M. Peltoniemi, S. Rambal, A. Raschi, A. Varlagin, J. Xia 2014 Vegetation-specific model parameters are not required for estimating gross primary production. *Ecological Modelling*, 292, 1-10
- Alberti G, Vicca S, Inghima I, Luca B, Genesio L, Miglietta F, Marjanovic H, Martinez C, Matteucci G, D'Andrea E, Peressotti A, Petrella F, Rodeghiero M, Cotrufo M (2014) Soil C:N stoichiometry controls carbon sink partitioning between above-ground tree biomass and soil organic matter in high fertility forests. *iForest* 2014 doi: 10.3832/for1196-008
- Moreno A., Maselli F., Chiesi M., Genesio L., Vaccari F., Seufert G., Gilabert M.A., 2014, Monitoring water stress in Mediterranean semi-natural vegetation with satellite and meteorological data. *International Journal of Applied Earth Observation and Geoinformation* 26:246-255.
- Lugato E., Vaccari F.P., Genesio L., Baronti S., Pozzi A., Rack M., Woods J., Simonetti G., Montanarella L. and Miglietta F. (2013) An energy-biochar chain involving biomass gasification and rice cultivation in Northern Italy. *Global Change Biology – Bioenergy*, doi:10.1111/gcbb.12028
- W. Yuan, S. Liu, W. Cai, W. Dong, J. Chen, A. Arain, P. D. Blanken, A. Cescatti, G. Wohlfahrt, T. Georgiadis, L. Genesio, D. Gianelle, A. Grelle, G. Kiely, A. Knohl, D. Liu, M. Marek, L. Merbold, L. Montagnani, O. Panferov, M. Peltoniemi, S. Rambal, A. Raschi, A. Varlagin, and J. Xia 2013. Are vegetation-specific model parameters required for estimating gross primary production? *Geosci. Model Dev. Discuss.*, 6, 5475-5488, 2013. doi:10.5194/gmdd-6-5475-2013
- Baronti, S., Vaccari, F. P., Miglietta, F., Calzolari, C., Lugato, E., Orlandini, S., ... & Genesio, L. (2014). Impact of biochar application on plant water relations in *Vitis vinifera* (L.). *European Journal of Agronomy*, 53, 38-44.
- Genesio L., Miglietta F., Lugato E., Baronti S., Pieri M., Vaccari F.P. 2012. Surface albedo following biochar application in durum wheat. *Environmental Research Letters*. vol. 7, ISSN: 1748-9326, doi:10.1088/1748-9326/7/1/014025
- Di Gennaro SF, Matese A, Primicerio J, Genesio L, Sabatini F, Di Blasi S, Vaccari FP (2012) Wireless real-time monitoring of malolactic fermentation in wine barrels: the Wireless Sensor Bung system. *Australian Journal of Grape and Wine Research*, 19, 20-24.
- A. Matese, A. Crisci, F. S. Di Gennaro, E. Fiorillo, J. Primicerio, P. Toscano, F. P. Vaccari, S. Di Blasi and L. Genesio 2012 Influence of canopy management strategies on Vineyard microclimate: definition of new microclimatic indices. *American Journal of Enology and viticulture*, Vol. 63, Issue 3, 2012.
- I. Ross, L. Misson, S. Rambal, A. Arneth, R. L. Scott, A. Carrara, A. Cescatti, and L. Genesio 2012 How do variations in the temporal distribution of rainfall events affect ecosystem fluxes in seasonally water-limited Northern Hemisphere shrublands and forests? *Biogeosciences*, 9, 1007-1024, 2012 doi:10.5194/bg-9-1007-2012
- Vaccari F.P., Lugato E., Gioli B., D'Acqui L., Genesio L., Toscano P., Matese A., Miglietta F. 2012. Land use change and soil organic carbon dynamics in Mediterranean agro-ecosystems: the case study of Pianosa Island. *Geoderma*, Vol. 175, Pages: 29-36, doi:10.1016/j.geoderma.2012.01.021
- Primicerio J, Di Gennaro SF, Fiorillo E, Genesio L, Lugato E, Matese A, Vaccari FP (2012) A Flexible Unmanned Aerial Vehicle for Precision Agriculture. *Precision Agriculture*, DOI 10.1007/s11119-012-9257-6.
- Fiorillo E., Crisci A., De Filippis T., Di Gennaro S.F., Di Blasi S., Matese A., Primicerio J., Vaccari F.P., Genesio L. (2012) Airborne high-resolution images for grape classification: changes in correlation between technological and late maturity in a Sangiovese vineyard in Central Italy. *Australian Journal of Grape and Wine Research*. Vol. 18-1, pp. 80-90. doi: 10.1111/j.1755-0238.2011.00174.x

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- Vaccari F.P., Baronti S., Lugato E., Genesio L., Castaldi S., Miglietta F. (2011). Biochar as a strategy to sequester carbon and increase yield in durum wheat. *European Journal of Agronomy*, 2011 Vol. 34 -4, pp. 231-238, doi 10.1016/j.eja.2011.01.006.
- L. Genesio, M. Bacci, C. Baron, B. Diarra, A. Di Vecchia, A. Alhassane, I. Hassane, M. Ndiaye, N. Philippon, V. Tarchiani, S. Traoré (2011). Early Warning Systems for Food Security in West Africa: Evolution, Achievements and Challenges. *Atmospheric Science Letters*. Vol 12, Issue 1, pp. 129-136. ISSN 1530-261X
- J. Polcher, D. J. Parker, A. Gaye, A. Diedhiou, L. Eymard, F. Fierli, L. Genesio, H. Höller, S. Janicot, J.-P. Lafore, H. Karambiri, T. Lebel, J.-L. Redelsperger, C. E. Reeves, P. Ruti, I. Sandholt and C. Thorncroft (2011) AMMA's contribution to the evolution of prediction and decision-making systems for West Africa. *Atmospheric Science Letters*. Vol 12, Issue 1, pp.2-6. ISSN 1530-261X
- O. Mertz, C. Mbow, A. Reenberg, L. Genesio, E. F. Lambin, S. D'haen, M. Zorom, K. Rasmussen, D. Diallo, B. Barbier, I. Bouzou Moussa, A. Diouf, J. Ø. Nielsen, I. Sandholt (2011). Adaptation strategies and climate vulnerability in the Sudano-Sahelian region of West Africa. *Atmospheric Science Letters*. Vol 12, Issue 1, pp. 91-96. ISSN 1530-261X
- M. Chiesi, L. Fibbi, L. Genesio, B. Gioli, R. Magno, F. Maselli, M. Moriondo, F. Vaccari (2010). Integration of ground and satellite data to model Mediterranean forest processes. *International Journal of Applied Earth Observation and Geoinformation*, Vol 13-3, pp. 504-515, doi:10.1016/j.jag.2010.10.006
- Baronti S., Alberti G., Delle Vedove G., Di Gennaro F., Fellet G., Genesio L., Miglietta F., Peressotti A., Vaccari F.P. (2010). The Biochar Option to Improve Plant Yields: First Results From Some Field and Pot Experiments in Italy. *Ital. J. Agron. / Riv. Agron.*, 2010, 5:3-11
- Matese A., Di Gennaro S.F., Zaldei A., Genesio L., Vaccari F.P. 2009. A wireless sensor network for precision viticulture: The NAV system. *Computers and Electronics in Agriculture*, volume 69, issue 1, pages 51-58, ISSN: 0168-1699.
- Capecchi Valerio, Alfonso Crisci, Genesio Lorenzo, Fabio Maselli and Patrizio Vignaroli (2008). Analysis of NDVI trends and their climatic origin in the Sahel 1986–2000. *Geocarto International* (ISSN 1010-6049 ). 99999(1) Volume 23, Issue 4, pp 1-14.
- Vallebona C., Genesio L., Crisci A., Pasqui M., Di Vecchia A. and Maracchi G. (2008). Large Scale Climatic Patterns Forcing Desert Locust Upsurges in West Africa. *Climate Research* Vol. 37, No. 1 pp 35-41. ISSN 1616-1572.

Firenze 20/12/2023

