

Fundación Centro de Estudios Ambientales del Mediterráneo - CEAM, Valencia, Spain

Expertise and Experience

The Mediterranean Centre for Environmental Studies was founded as a scientific research centre in 1991 by the local government of Valencia and Fundación Bancaja. The centre hosts the EUPHORE Laboratories, one of the major outdoor simulation chambers in Europe to study tropospheric oxidation processes under realistic conditions.

The EUPHORE (EUropean PHOtoREactor) chamber is a technically advanced photochemical reactor constructed in collaboration with 7 research institutes from Europe. It was financed in the frame of a RTD project by the European Commission (EC, EV5V-CT92-0059) in order to tackle the complex and challenging environmental problems associated with photochemical smog formation.

The responsible scientists for the use and exploitation of this research facility, Dr. M^a Jose Sanz.

More than 140 scientists have made use of the installation since 1995. The scientific research is focused on secondary aerosol formation, mechanism development of aromatic hydrocarbons, degradation of alternative solvents, pesticides and studies on radical formation and cycling processes. The infrastructure to detect free radicals during photosmog runs in an outdoor simulation chamber was firstly developed in this installation and successfully implemented, with its high potential to get direct insight into radical propagation mechanisms.

Professional Experience

- Dr. Amalia Muñoz obtained his Ph.D. in the Organic department at the University of Valencia, Spain.. His main field of interest is the study of gas-phase reactions relevant to photooxidant formation and pesticides.

RECENT/CURRENT PROJECTS

EUROCHAMP Integration Of European Simulation Chambers For Investigating Atmospheric Processes. (R113-CT2004-505968)

INTERREG-AFIP. Atmospheric Fate and Impact of Pesticides. (Perspective 2007/2013)

DEPESVAL. Degradation in the atmosphere of pesticides most used in the Valencia Region. (Ref.: GV/2007/257). P. I.

RECENT PUBLICATIONS

V Feigenbrugel, A. Le Person, S. Le Calvé, A. Mellouki, A. Muñoz, and K. Wirtz. Atmospheric fate of dichlorvos: photolysis and OH-initiated oxidation studies. *Environmental Science and Technology* 40:850-857, 2006.

G. Solignac, I Magneron, A. Mellouki, A. Muñoz, M. Martin-Reviejo, and K. Wirtz. A study of the reaction of OH radicals with N-methyl-2-pyrrolidinone, N-methylsuccinimide and N-formyl-2-pyrrolidinone. *Journal of Atmospheric Chemistry* 54:89-102, 2006.

M. P. O'Connor, J. Wenger, A. Mellouki, K. Wirtz, and A. Muñoz. The atmospheric photolysis of E-2-hexenal, Z-3-hexenal and E,E-2,4-hexadienal. *Phys.Chem.Chem.Phys* 8:5236-5246, 2006.

A. Le Person, A. Mellouki, A. Muñoz, E. Borrás, M. Martín-Revejo, and K. Wirtz. Trifluralin: Photolysis under sunlight conditions and reaction with HO radicals. *Chemosphere* 67 :376-383, 2007.

E. Gómez Álvarez, J. Viidanoja, A. Muñoz, K. Wirtz, J. Hjorth, Experimental Confirmation of the Dicarbonyl Route in the Photo-oxidation of Toluene and Benzene. Submitted to *Environmental Science and Technology*

- Dr. Maria J Sanz is Director of the Air Pollution Effects Program in Fundación Centro de Estudios Ambientales del Mediterráneo. Her expertise concerns characterisation of the meteorological processes affecting the dynamics of photo-oxidants in the Mediterranean area, as well as experience in measurements of energy and carbon dioxide canopy fluxes in Mediterranean ecosystems (Carbon balance and Nitrogen deposition). She has been involved in several EU projects, publishing more than 100 scientific publications. Member of the Spanish Delegation since 2000, as a LULUCF expert in the UNFCCC and Kyoto Protocol negotiations. Chairman of the WG on Air Quality of the IPC-Forest (CLTRAP) since 2005. Member of the UNFCCC Roaster of experts since 2004, participating in centralized and in-country and reviews of GHG inventories from Netherlands, Croatia, Portugal, Ireland, Romania, Japan and New Zealand. She has co-authored, as Lead Author, several IPCC documents; Chapter 5 in the Good Practice Guidance for Land Use, Land-Use Change and Forestry (IPCC 2003), Guidelines for GHG's Inventories of the IPCC (IPCC 2006, Vol I & IV), Fourth Assessment Report (4AR) of the IPCC (WG3, Ch9). Member of the Editorial Board of Emission Factor Database since 2006 (coordinated by National Programme of GHG Inventories, IPCC) & of the Executive Board of the CDM (UNFCCC). She has been nominated by COP12/COP-MOP2 member of the Executive Board of the CDM (UNFCCC). Reviewer of several scientific journals: Science of the Total Environment, Water and Air Soil Pollution, Journal of Air and Waste Management Association, Environmental Pollution, Environmental Monitoring and Assessment, Ecological Indicators, Environmental Science & Technology, Deep-Sea Research, Atmospheric Environment, The ScientificWorld Journal, New Phytologist, Global Change Biology, Climate Change Policy.

LIST PROFESSIONAL SOCIETIES AND ACTIVITIES IN CIVIC, PUBLIC OR INTERNATIONAL AFFAIRS

- Member of the Ad-Hoc Working group on Ozone Directive and Reduction Strategy Development". DGXI, EU. 1997-1998
- Member of the Steering Committee, Air Pollution Workshop, USA. Since 1997 (several times intermittently, and 2007-08).
- Panel Experts on Deposition (EU/ICP Forest). Air Quality Working Group. UN/EC CLRTAP, ICP-FOREST. Member since 1999, Vice-chair since 2001 and Chair since 2005.
- Participation in the CSTE (EU) on the risk assessment underpinning new standards and thresholds in the proposal for a EU Daughter Directive for troposphere ozone. 1999.
- External reviewer of the Ozone Criteria Document, EPA (USA), 2003.
- Member of IUFRO Task Force Working Group on Forest Ecosystems, 1997.
- Participation in the Management Committee of Cost Action 614. Climate Change and Trees. DGXII, UE. 1996-97.
- Participation in the Management Committee of Cost Action E21 – European Commission: Contribution of Forest to Mitigation of greenhouse Effects (EU data base of Biomass Expansion Factors).

- Ad-Hoc LULUCF Expert Group WP/CC EU National Expert since 2000. LULUCF Expert Group co-ordinator during the Spanish Presidency (2001). Participation as Spanish official delegate (LULUCF and Reporting and accounting linkages with LULUCF, and CDM in relation to sinks) since COP6 in all SBSTA, SBI and COP meetings from 2001 to 2007.
- Lead Author of the Good Practice Guidelines. Land Use, Land Use Change and Forestry (GPG-LULUCF)” of the Intergovernmental Panel on Climate Change (IPCC). Chapter 5, 2002-2003.
- Lead Author of the 2006 Guidelines for GHGs Inventories of the Intergovernmental Panel on Climate Change (IPCC). Volume I (Cross-cutting Issues) and III (AFOLU), 2004-2006.
- Lead Author of the Fourth Assessment Report (4AR) of the Intergovernmental Panel on Climate Change (IPCC). Volume III, Ch9 (Forestry), 2004-2007.
- Member of the Editorial Board of Emission Factor Database (coordinated by National Programme of GHG Inventories, IPCC). GHGs Inventory Task Force sine 2006.
- Reviewer of the Draft report on the Inter-linkages between Biological Diversity and Climate Change and Advice on the Integration of Biodiversity considerations into the Implementation of the UNFCCC and its Kyoto Protocol. Ad Hoc Technical Expert Group on biodiversity. Convention on Biological Diversity, 2003
- Member of the Scientific Advisory Group of the Concerted Action CarboEurope GHG, "Management of Forest ecosystems and their impact on the GHG budget" as a contribution to WP5 Integration of scientific results in policy scenarios and EU negotiation strategy. CarboEurope Integrated Project, 2005, Finland.
- Member of the International Advisory Committee of the Third International Conference on Plants & Environmental Pollution (ICPEP-3). International Society of Environmental Botanists at the National Botanical Research Institute. Environmental Pollution. November 2005, Lucknow, India.
- The Global Carbon PROJECT: A Framework for Internationally Co-ordinated Research on the Global Carbon Cycle. Canadell, P. et al (Eds.) 2003. Scientific Committee on Problems of the Environment (SCOPE-62). Contributor to the ESSP Report n° 1 /GCP Report n° 1, 2003
- Author of the “Integrated Global Carbon Observing system Implementation Plan” 2005. IGCO/IGBP-GCP.
- Participation in the Working Group ECCPI review - Topic Group Agriculture and Forestry. Second European Climate Change Programme (ECCPII). 2006. (As expert send it by International Federation of Organic Agriculture Movements /IFOAM)
- Member of the Steering Committee for the Organization of Second Informal Dialogue on the Role of Land Use, land Use Change and Forestry in the Climate Change Response. Sponsored by the Governments of Australia, France, Ireland, Japan, Netherlands, New Zealand, Spain, United Kingdom, United States of America. Madrid 19-21 April 2006.
- Technical Consultant for the Methods, Inventories and Science Programme of the UNFCCC, 2004 (3 months).
- Co-Organization of the UNFCCC Course for the Review of Annex I Party Greenhouse Gas Inventories Land Use, Land-Use Change and Forestry Sector. 16-18 de March 2005.
- GHGs Inventory reviewer for the Sector LULUCF, UNFCCC Inventories and Methods Program. Since 2003.
- Reviewer of A/R CDM methodologies for A/R projects, under the Expert Panel for A/R Projects of the Executive Board for CDM (under the Kyoto Protocol of the UNFCCC). 2005.
- Executive Board of the Clean Development Mechanisms (CDM), UNFCCC, 2007. Alternate Member sine January 2007.

- Vice-Chair of the Afforestation and Reforestation Working Group (A/R WG) . Executive Board of the CDM. UNFCCC. Since February 2007.
 - Organizer of 3 courses of the Menendez Pelayo International University, in relation to air pollution and Climate Change.
 - University Teacher at Valencia University, and in several university masters (University of Barcelona, University of Valencia).
 - Reviewer of research projects for the Spanish Ministry of Education and Science, Government of Ireland, and Government of Argentina, USDA (United States of America).
 - Adviser for the FAPESPA and Sao Paulo Botanical Garden (Brazil) in relation to research project for conservation of the tropical forest (“Pau-brasil: Ciencia e Arte” project).
 - Reviewer of several scientific journals: Science of the Total Environment, Water and Air Soil Pollution, Journal of Air and Waste Management Association, Environmental Pollution, Environmental Monitoring and Assessment, Ecological Indicators, Environmental Science & Technology, Deep-Sea Research, Atmospheric Environment, The ScientificWorld Journal, New Phytologist. Global Change Biology, Climate Change Policy.
 - Associate Editor of TheScientificWorldJOURNAL. Section: Terrestrial Environmental Toxicology.
 - Member of the Editorial Board of the scientific journal Ciencia Forestal en México.
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- Principal Researcher of more than 30 projects (more than 10 European) since 1998.

PUBLICATIONS RELATED TO WORK UNDER THE CLRTAP AND EU POLICY ON AIR POLLUTION (SELECTED SINCE 1998):

Sanz M.J. & Millán M. (1998). The dynamics of polluted airmases and ozone cycles in the western Mediterranean: relevance to forest ecosystems. *Chemosphere*, 98(36): 1089-1094.

Sanz M.J. and G. Krause (1999)- Effects de l’ozone et pespective d’évaluation de ces effects. ISSN 1020-5896. *État des forêts en Europe CEE/EN-CE*.

Skelly, J.M.; Innes, J.L.; Savage, J.E.; Snyder, K.R.; VanderHeyden, D.; Zhang, J. & Sanz, M.J. (1999). Observation and confirmation of foliar ozone symptoms of native plant species of Switzerland and Southern Spain. *Water and Air Soil Pollution*, 116: 227- 234.

Sanz M.J. (+ 61 authors) (1999). *Ozone position paper*. ISBN 92-828-7865-1. Office for Oficial publication of the European Commission, Luxemburg.

Millán, M.M.; Mantilla, E.; Salvador, R.; Sanz, M.J.; Carratalá, A.; Alonso, L.; Gangpoiti, G. & Navazo, M. (2000). Ozone Cycles in the Western Mediterranean Basin: Interpretation of Monitoring data in complex coastal terrain. *Journal of Applied Meteorology*, 39(4): 487-508

Sanz, M.J., Calatayud, V. And Calvo, E. (2000). Spatial pattern of ozone injury in Aleppo pine related to air pollution dynamics in a coastal-mountain region of eastern Spain. *Environmental Pollution* 108, 239-247.

Sanz, M.J., Sanz, F., Sanchez, G (2001). Spatial and annual temporal distribution of ozone concentrations in the Madrid Basin using passive samplers. *The ScientificWorld*, 1: 785-795.

Millán, M. M., M. J. Sanz, R. Salvador & E. Mantilla (2002). Atmospheric dynamics and ozone cycles related to nitrogen deposition in the western Mediterranean. *Environmental Pollution*, 118: 167-186

Sanz M.J., Carratalá, A., Gimeno, C. & Millan, M.M. (2002) Atmospheric nitrogen deposition on the East Coast of Spain: Relevance of dry deposition in semiarid Mediterranean regions. *Environmental Pollution*, 118: 259-272.

Sanz, M.J. and Millán, M.M. (1999). Ozone in the Mediterranean Region: Evidence of Injury to Vegetation. In: *Forest Dynamics in Heavily Polluted Regions*, Innes & Oleksyn (Eds.). CABI Publishing, pp 165-192.

Lövblad, G, Krause, K. & Sanz, M.J. (2000). Monitoring of Air Quality and Sub-manual on Assessment of Ozone Injury on Intensive Monitoring Plots- pp. 22. United Nations Economic Commission for Europe, ICP-Forest. Bonn.

Sanz, M.J. & Karuse G. (2001). State of the art of passive sampling in the Pan European Program for Forest. *Proceedings International Conference Measuring Air Pollutants by Diffusive Sampling*. ERLAP. Montpellier.

Klumpp, A.....Sanz, M.J. (21 authors) (2002). EuroBionet: A Pan-European Bio monitoring Network for Urban Air Quality Assessment. *Environ. Sci & Pollut Res*, 9: 199-203.

Sanz, M.J. (2002). Efforts of standardisation of ozone bio indication in Europe. In: Verlag Günter Heimbach. Stuttgart

De Vries, W., Reinds, G.J., Posch, M., Sanz, M.J., Krause, G.H.M., Calatayud, V., Renaud, J.P., Dupouey, J.L., Sterba, H., Vel, E.M., Dobbertin, M., Gundersen, P., Voogd, J.C.H. (2003). Intensive Monitoring of Forest Ecosystems in Europe. Technical Report, 161 pp. United Nations Economic Commission for Europe. European Commission. ISSN 1020-6078. Forest Intensive Monitoring Coordinating Institute (FIMCI). Netherlands.

Fischer, R., de Vries, W., Beuker, E., Calatayud, V., Fürst, A., Häberle, K.-H., Haußmann, Karnosky, D.F., Krause, G.H.M., Gundersen, P., Lorenz, M., Luysaert, S., Mayer, F.-J., Meining, S., Mues, V., Neville, P., Percy, K.E., Posch, M., Preuhsler, T., Ratio, H., Reinds, G.J., Renaud, J.P., Sanz, M.J., Schulze, E.D., Vel, E. (2003). The Condition of Forests in Europe. Executive Report. UNECE and EC, Geneva and Brussels, 2003. ISSN1020-587X. Germany.

Moraes, R.M., Furlan, C.M., Bulobas, P., Domingos, M., Meirelles, S.T., Salatino, A., Deletti, W.B.C. & M.J. Sanz. (2004). Photosynthetic responses of tropical trees to short-term exposure to ozone. *Photosynthetica*, 42 (2): 291-293.

Moraes, R., Bulbovas, P., Furlan, C., Domingos, M., Meirelles, Wellington, D., Sanz, M.J. (2004) Physiological responses of saplings of *Caesalpinia echinata* Lam., a Brazilian tree species, under ozone fumigation. *Ecotoxicology and Environmental Safety*. 34.

Sanz, M.J., Chordá, J.V. (2005). Air pollutants. In: *Environmental Pollution Monitoring. Pollution, analysis, legislation, quality assurance and managing*. (Danet, A. F., eds. pp. 499). ISBN: 937-0-03917-8, pp 4-25. S.C. PRO ACT BIROTICS S.R.L., Bucharest, Romania

Marty, J. L., Occhigrossi, L., Neagu, D., Pallechi, G., Lucaciu, I., Sanz, M.J., Chordá, J.V. and Emneus, J. (2005). Legislation in the field of environmental monitoring and control. In: *Environmental Pollution Monitoring. Pollution, analysis, legislation, quality assurance and managing*. (Danet, A. F., eds. pp. 499). ISBN: 937-0-03917-8, pp 404-419. S.C. PRO ACT BIROTICS S.R.L.. Bucharest, Romania

M. Raivonen, T. Vesala, L. Pirjola, N. Altimir, P. Keronen, M., Kulmala, M. J. Sanz and P. Hari. 2005. Branch-Level NO_x Fluxes of Scots Pine. *Geophysical Research Abstracts*, Vol. 7, 06168, 2005

Fisher, R, Bastrup-Birk, A., Becker, R., Calatayud, V., Dise, N., Dobbertin, M., Graf-Pannatier, E., Gundersen, P., Haussman, T., Hildingsson, A., Lorenz, M., Müller, J., Mues V., Pavlenda, P., Petriccione, B., Raspe, S., Sanchez-Peña, G., Sanz, M.J., Ulrich, E., Volz,

R., Sture, V. (2005) The Condition of Forests in Europe- 2005 Executive Report. UNECE, Geneva 2005, ISSN 1020-587x, 32 p. Germany.

R. Matyssek, A. Bytnerowicz, P.-E. Karlsson, E. Paoletti, M.J. Sanz, M. Schaub and G. Wieser (2006) Promoting the O₃ flux concept for European forest trees. Environmental Pollution. doi:10.1016/j.envpol.2006.11.011.

M.C. Minguillón, X. Querol, A. Alastuey, E. Monfort, E. Mantilla, M.J. Sanz, F. Sanz, A. Roig, A. Renau, C. Felis, J.V. Miró, B. Artiñano. (2006). PM₁₀ speciation and determination of air quality target levels. A case study in a highly industrialized area of Spain. Science of the Total Environment, doi:10.1016/j.scitotenv.2006.10.023

X. Querol, M.C. Minguillo, A. Alastuey, E. Monfort, E. Mantilla, M.J. Sanz, F. Sanz, A. Roig, A. Renau, C. Felis, J.V. Miro, B. Artiñano (2006). Impact of the implementation of PM abatement technology on the ambient air levels of metals in a highly industrialised area. Atmospheric Environment, doi:10.1016/j.atmosenv.2006.09.013

Ferretti, M., Bussotti, F., Calatayud, V., Schaub, M., Kräuchi, N., Petriccione, B., Sanchez-Peña, G., Sanz, M.J., Ulrich, E. (2007). Ozone and forests in south-western Europe - A synthesis. Environmental Pollution (in press)

Sanz, M.J, Calatayud, V., Sanchez, G. (2006). Measures of ozone concentrations using passive sampling in forests of South Western Europe. Environmental Pollution <http://dx.doi.org/10.1016/j.envpol.2006.02.031>

M Raivonen, B Bonn, M J Sanz, T Vesala, P Hari (2006). UV-induced NO_x emission from Scots pine: could it originate from photolysis of deposited HNO₃?. Atmospheric Environment (in press)

Sanz, M.J., Sanz, F., Calatayud, V., and Sanchez-Peña, G. (2006). Ozone in Spain's national parks and protected forests. TheScientificWorldJOURNAL (DOI 10.1100/tsw.2006.279)

Furlan, C., Moraes, R.M., Salatino, A., Bulbovas, P., Domingos, M., Sanz, M.J. (2007). Psidium guajava 'Paluma' (the guava plant) as a new bio-indicator of ozone in the tropics. Environmental Pollution (Accepted)

Alonso, R., Elvira, S., Sanz, M.J., Emberson, L., and Gimeno, B.S. (2007). Parameterization of the stomatal component of the DO₃SE model for Mediterranean evergreen broadleaf species. TheScientificWorldJOURNAL , (In Press)

PUBLICATIONS IN RELATION TO THE CLIMATE CHANGE (UNFCCC, IPCC, EU POLICY ETC...) (SELECTED)

Schulze, E.D., Valentini, R., Sanz M.J. (2002) The long way from Kyoto to Marrakech: Implications of the Kyoto Protocol negotiations for global ecology. Global Change Biology 8: 1-14.

Kruijt, B, Sanz M.J., Dolman, H., Moors, E., Cámara, P.V., Elbers, J., & Cosin, S. (2000). Sub grid variability in water and carbon fluxes in three coastal Mediterranean land cover types. Geophysical Research , 2 (CD)

Sanz M.J., Dolman, H., Moors, E., Cámara, P.V., Elbers, J., Kruijt, B. & Cosin, S. (2000). Seasonal variability of the carbon fluxes from a maquia-pine tree forest under Mediterranean climatic conditions. Geophysical Research, 2 (CD)

Raupach, MR.... Sanz, MJ .. et al. (2003). Interactions between CO₂ stabilization pathways and requirements for sustainable earth system. In: The Global Carbon Cycle: Interacting Humans, Climate, and the Natural World (Field & Raupach eds.). Island Press

Sanz, MJ, Schulze, ED, Valentini, R. (2003). International Policy framework on climate change: sinks in recent international agreements. In: The Global Carbon Cycle: Interacting Humans, Climate, and the Natural World (Field & Raupach eds.). Island Press

Grace, J., Kruijtit, B., Freibauer, A., Benndorf, R., Carr, R., Duschke, M., Federici, S., Mollicone, D., Sanz, M.J., Schlamadinger, B., Sezzi, E., Waterloo, M., Valentini, R., Verhagen, R., Van Putten, B. (2003) Scientific and technical issues in the clean development mechanism. Report 1: CARBOEUROPE-CGH. Concerted Action. Synthesis of the European Greenhouse Gas Budget. Foligno, Italy: The European Commission. 1-47 p.

Gioli, B., Miglietta, F., De Martino, B., Hutjes, R.W.A., Dolman, A.J., Lindroth, A., Lloyd, J., Sanz, M.J., Valentini, R., Dumas, E. (2004) Comparison between tower and aircraft-based eddy correlation fluxes in five regions of Europe. *Agricultural and Forest Meteorology* 127 (1-2): 1-1

Casals, P., Garcia-Pausas, J., Romanyà, J., Sanz, M.J., Camarero, L., Sebastià, M.T. (2004) Management effects on carbon stocks and fluxes in the compartments soil-plant-atmosphere in grassland ecosystems at the Pyrenees. *Grassland Science in Europe* 9, 136-138

M. Reichstein, E. Falge, D. Baldocchi, D. Papale, M. Aubinet, P. Berbigier, C. Bernhofer, N. Buchmann, T. Gilmanov, A. Granier, T. Grunwald, K. Havrankova, H. Ilvesniemi, D. Janous, A. Knohl, T. Laurila, A. Lohila, D. Loustau, G. Matteucci, T. Meyer, F. Miglietta, J.M. Ourcival, J. Pumpanen, S. Rambal, E. Rotenberg, M.J. Sanz, J. Tenhunen, G. Seufert, F. Vaccari, T. Vesala, D. Yakir and R. Valentini. On the separation of net ecosystem exchange into assimilation and ecosystem respiration: review and improved algorithm. (2005) *Global Change Biology* 11: 1-16

Ph. Ciais, M. Reichstein, N. Viovy, A. Granier, J. Ogée, V. Allard, M. Aubinet, N. Buchmann, Chr. Bernhofer, A. Carrara, F. Chevallier, N. De Noblet, A. D. Friend, P. Friedlingstein, T. Grünwald, B. Heinesch, P. Keronen, A. Knohl, G. Krinner, D. Loustau, G. Manca, G. Matteucci, F. Miglietta, J. M. Ourcival, D. Papale, K. Pilegaard, S. Rambal, G. Seufert, J. F. Soussana, M. J. Sanz, E. D. Schulze, T. Vesala and R. Valentini (2005). Europe-wide reduction in primary productivity caused by the heat and drought in 2003. *Nature*, 437: 52 -533

M. M. Millán, M. J. Estrela, M. J. Sanz, E. Mantilla, M. Martín, F. Pastor, R. Salvador, R. Vallejo, L. Alonso, G. Gangoiti, J. L. Iardia, M. Navazo, A. Albizuri, B. Artiñano, P. Ciccioli, G. Kallos, R. A. Carvalho, D. Andrés, A. Hoff, J. Werhahn, G. Seufert, B. Versino (2005). Climatic Feedbacks and Desertification: The Mediterranean Model. *Journal of Climate*, 18 (5): 684-701.

Vallejo V.R., Rovira P., Romanyà J., Duguay B. & Sanz M.J. (2005). Contenido de materia orgánica en los suelos españoles. In: *Protección del Suelo y el Desarrollo Sostenible*. A. Callaba, I. Iribarren & P. Fernández-Canteli (eds). Vol 6: 11-22. Publicaciones del IGME, Serie Medio Ambiente

M. Reichstein, P. Ciais, D. Papale, R. Valentini, S. Running, N. Viovy, W. Cramer, A. Granier, J. Ogée, V. Allard, M. Aubinet, Chr. Bernhofer, N. Buchmann, A. Carrara, T. Grünwald, B. Heinesch, A. Knohl, D. Loustau, G. Manca, G. Matteucci, F. Miglietta, J.M. Ourcival, K. Pilegaard, J. Pumpanen, S. Rambal, S. Schaphoff, G. Seufert, J.-F. Soussana, M.-J. Sanz, T. Vesala, and M. Heimann. (2006). Reduction of ecosystem productivity and respiration during the European summer 2003 heat wave: a joint flux tower, remote sensing and modelling analysis. *Global Change Biology* (in press).

T G. Gilmanov, J-F Soussana, Aires, L, Allard, V., Ammann, C., Balzarolo, M., Barcza, Z., Bernhofer, C, Cescatti, A, Dirks, B.O.M, Eugster, W., Fuhrer, J., Gimeno, C, Gruenwald, T., Haszpra, L., Hensen, A., Ibrom, A, Jacobs, A.F.G, Jones, M.B., Lanigan, G., Laurila, T., Lohila, A., Manca, G., Nagy, Z., Pilegaard, K., Pinter, K., Pio, C, Raschi, A., Rogiers, N. Sanz, M.J., Stefani, P., Sutton, M, Tuba, Z., Valentini, R., Williams, M.L., Wohlfahrt, G. (2007). Partitioning European grassland net ecosystem CO₂ exchange into gross primary

productivity and ecosystem respiration using light response function analysis. *Agriculture, Ecosystems & Environment*, doi:10.1016/j.agee.2006.12.008

Dolman A.J., Noilhan J, Durand P, Sarrat C, Brut A, Pignatelli A, Butet A, Jarosz N, Brunet Y, Loustau D, Lamaud E, Tolck L, Ronda R, Miglietta F, Gioli B, Magliulo V, Esposito M, Gerbig C, Körner S, Galdemard P, Ramonet M, Ciais P, Neiniger B, Hutjes R.W.A., Elbers J.A, Macatangay R, Schrems O, Perez-Landa G, Sanz M.J., Scholz Y, Facon G, Ceschia E & Beziat P. (2006). The Carboeurope Regional Experiment Strategy. *Bulletin of the American Meteorological Society*, 87 (10): 1367-1379.

SEAE (2006). Contribución de la agricultura ecológica a la mitigación del Cambio Climático, en comparación con la agricultura convencional. SEAE (Sociedad Española de Agricultura Ecológica). 48 pp.

A. García, M. Laurín, M J. Llosá, V. González, M. J. Sanz, & J L Porcuna (2006). Contribución de la agricultura ecológica a la mitigación del cambio climático en comparación con la agricultura convencional. *Agroecología* 1: 75-88.

J G. Canadell and M Kirschbaum, B Schlamadinger, W A. Kurz, M-J Sanz, Y Yamagata, A Freibauer. (2007). Factoring out Natural, Indirect and Direct Human-Induced Effects on Terrestrial Carbon Sources and Sinks. *Environmental Science and Policy* (in press)

Bendorf, R.; S. Federici; C. Forner; N. Pena*; Z. Rakonczay; E. Rametsteiner; M. J. Sanz; Z. Somogyi (2007). Including land use, land-use change and forestry in future climate change agreements: a systematic approach. *Environmental Science and Policy* (in press)

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