PERSONAL INFORMATION

Francesco UBOLDI

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Google Scholar
ResearchGate
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LinkedIn

Sex M | Date of birth 17/08/1964 | Nationality Italian

COMPETENCE OVERVIEW

- Numerical design and implementation of solutions in technical-scientific fields. Numerical calculus, programming with large quantities of data
- Localization of unknown atmospheric pollutant sources using Lagrangian dispersion models running backward in time. Source apportionment and data assimilation with reactive Eulerian dispersion models.
- Data Assimilation in meteorology and oceanography with variational and sequential methods. Control of dynamic instabilities and error growth by assimilation of observations. Optimal location of targeted/adaptive observations and their dynamically consistent assimilation. Objective analysis and spatial interpolation of meteorological and oceanographic data. Representativeness analysis and automatic quality control of data from observational networks.
- Machine Learning techniques to integrate model forecasts with topographic predictors and realize high-resolution air quality fields.
- Meteorology, Air Quality, Oceanography, Climatology.
- Dynamical system predictability.
- Numerical prediction verification.
- Hydrological characterization of a territory for rainfall extreme events.

PERIODS OF WORK ABROAD
(details below)

- **FRANCE** 2002-2005
- **JAPAN** 1996-1998

WORK EXPERIENCE

From May 2017

Researcher

ARIANET, Milan, ITALY
Topics:

- Realization and test of a Data Assimilation scheme (3D-Var), and its inclusion in the source code of the model FARM /MINNI for Eulerian transport, dispersion and chemical transformation of pollutants in the atmosphere. Collaboration with ENEA – INAT (Bologna, Italy) for the Copernicus Atmosphere Monitoring Service (CAMS).
- Realization and test of the ORSA scheme (On-line Reactive Source Apportionment), with the tagged species approach, including chemical reactions, for the model FARM /MINNI. Collaboration with ENEA – INAT (Bologna, Italy).
- Localization of unknown pollution sources and emission estimation, by a variational approach using the retro-concentration fields produced by RetroSPRAY, the time-backward version of the Lagrangian particle dispersion model SPRAY.
- Localization of unknown odour source by means of logical/numerical elaboration on the retro-concentration fields produced by RetroSPRAY. Collaboration with CNR – ISAC (Turin, Bologna, Italy), NOSE project.
- Realization Fortran-C (iso_c_binding) interfaces for reading and writing, from Fortran, files in NetCDF-4 compressed format also in Windows systems (where the Unidata NetCDF-Fortran library is not available). Realization of a Fortran-C (iso_c_binding) interface to make use of the PROJ library for geographic coordinate system conversions.
- Machine Learning techniques to integrate model forecasts with topographic predictors and realize high-resolution air quality fields.
- Data assimilation with mesoscale and microscale meteorological models (WRF/ARW). Objective analysis, Optimal Interpolation.
- Model forecast verification. Bias estimation.

Business or sector: Meteorology, Air quality, Data Assimilation, Numerical Prediction.

November 2016 – April 2017

Independent researcher and scientific consultant

Customers:
- ARIANET Srl, Milan, ITALY
- NVE (The Norwegian Water Resources and Energy Directorate), Oslo, NORWAY

Topics:
- Localization of an unknown pollutant source and emission estimation: variational method with retroSPRAY, the adjoint of the lagrangian particle dispersion model SPRAY
- Analysis of precipitation by combining rain-gauge observations and meteorological radar estimates.

Business or sector: Meteorology, Hydrology, Climatology, Civil Protection, Data Assimilation.

2015, 2016

Web/database programming

Collaboration with Magritte SnC, Milan: partecipation to the realisation of a prototype software intended to support micro-trade, based on **MySQL** and **PHP** server-side, **JavaScript**/**jQuery** client-side and of a mobile device App based on the hybrid multi-platform technology Apache **Cordova**.

Teaching in secondary school

- Aprile-Giugno 2016: Mathematics — I. I. S. "P. Frisi", Milano, Italy.
- Aprile 2015: Computer Science, — I. T. I. / L. S. A. "P. Hensemberger", Monza, Italy.

Scientific research

Stationarity analysis of rainfall annual maxima climatology in Lombardy (Italy) 1950-2005.

2014

Study and personal improvement

Revision:
- Climatological interaction between intense atmospheric convection and ocean subsurface temperature warm anomaly. Ocean dynamical circulation in the Mediterranean Sea.
- Verification of numerical and subjective weather forecast.
- Languages PHP, HTML, CSS.

New topics:
- Biology and Genetics (university text: Brooker et al., Vols. 1 and 2).
- Languages: Python, Java, Javascript, jQuery, Apache Cordova.

2005 - 2013

Independent researcher and scientific consultant

Main customers:
- ARPA , Meteorological and Hydrological Service, Milan, Italy
- Provincia Autonoma di Trento, Meteorological Service, Trento, Italy
- CNR - ISAC (Institute of Sciences of the Atmosphere and Climate), Bologna, Italy
- ARIANET Srl, Milan, Italy
- CAPP (Centre for Analysis of Public Policies) - University of Modena and Reggio Emilia, Italy
- Magritte SNC, Milan, and Ministry of Labour and Social Affairs of the Italian Government
- University of Camerino, MC, Italy
- Nubila SAS, Bologna, Italy

Main topics:
- Multiple-scale error growth in a convection-resolving model. Estimation of trajectory instabilities of a chaotic, high-dimensional, complex system with many different scales of motion.
- Hydrological characterization of a climatologically and orographically complex territory for return periods of extreme rainfall events (with uncertainty evaluation).
- Spatial interpolation algorithms for meteorological data (temperature, relative humidity, wind, precipitation, surface pressure, solar radiation, concentration of air pollutants) with uncertainty evaluation. Integration of in-situ observations and weather radar data for precipitation analysis.
- Automatic data quality control and analysis of observation representativity with respect to NWP (Numerical Weather Prediction) fields.
- Estimation of dynamical instabilities present in assimilation-forecast systems of the atmosphere and the ocean. Control of error growth by assimilation of observations.
- Statistical analysis in the socio-economic field (estimation of the time evolution of poverty with relation to retirement policies).
- Variational assimilation of satellite radio-occultation data
- Analysis and optimization of software for analysis of X-band disdrometer radar signal.

Business or sector: Meteorology, Hydrology, Climatology, Civil Protection, Physics of the Atmosphere, Data Assimilation, Dynamic System Predictability, Socio-Economic Statistics.

2002 - 2005 **Researcher**

Université de Bretagne Occidentale - Brest, FRANCE
Postdoc contract. Detached at LEGOS/SHOM - CNRS - Toulouse, **FRANCE**
CNRS: Centre national de la recherche scientifique
LEGOS: Laboratoire d'Études en Géophysique et Océanographie Spatiales
SHOM: Service hydrographique et océanographique de la Marine
Main topics:
- Optimisation of observational networks and ocean data assimilation.
- Development of assimilation system instabilities estimation techniques for optimal location of targeted observations and their assimilation in a primitive-equation ocean model.
- Collaboration with CNR-ISAC Bologna: development of the method BDAS (Breeding on the Data Assimilation System) for unstable direction estimation and AUS (Assimilation in the Unstable Subspace) for error growth control by assimilation of observations.
- Variational and sequential data assimilation

Business or sector: Data Assimilation, Dynamic System Predictability, Physical Oceanography

1999 - 2001 **Independent researcher and scientific consultant**

Main customers:
- CSI-Piemonte, Regional Meteorological Service,Turin, Italy
- CNR-ISAO (Institute of Studies on the Atmosphere and Ocean), Bologna, Italy
- ENEA, Centro ricerche Casaccia, Roma, Italy
- PicoDATA Srl: data management for local weather services in Italy (Piedmont, Sardinia, Trentino, Veneto)

Main topics:
- Three-dimensional, high resolution objective analysis of temperature observations from the mesoscale network.
- 3D analysis (Optimal Interpolation) as initial condition of NWP (Numerical Weather Prediction) models, in collaboration with ENEA, Centro ricerche Casaccia, Roma, Italy.
- Optimal location of targeted observations.
- Management of meteorological observations and model fields (data flow and storage) in Unix and Linux environment (collaboration with PicoDATA Srl).

Business or sector: Meteorology, Physics of the Atmosphere, Data Assimilation, Dynamic System Predictability.

1998 - 1999 **Researcher**

CNR-ISAO (Institute of Studies on the Atmosphere and Ocean), Bologna, Italy

Main topics:
- Weak-constraint variational data assimilation.
- Diagnostics of cyclonic cases in an increased greenhouse gases scenario.

Business or sector: Meteorology, Physics of the Atmosphere, Data Assimilation, Climatology.

1996 - 1998 **Researcher**

Meteorological Research Institute - Ocean Division, Tsukuba, **JAPAN**

Main topics:
- Design of an ocean eddy synthetic model for the Data Assimilation System of the North Pacific Ocean Circulation Model.
- Weak-constraint variational data assimilation (with consideration of model error).

Business or sector: Data Assimilation, Physical Oceanography

1992 - 1996 **Meteorologist**

CISE SpA (1992-1993); ISMES SpA (1994-1996) (ENEL-controlled private companies)
Detached at ENEL-CRAM, Milan, Italy
ENEL: the Italian Electric Energy Company;
CRAM: Researh Center on Environment and Materials

Main topics:

- Operational weather forecasts.
- Objective analysis of 2D and 3D meteorological fields.
- Implementation of diagnostics algorithms for operational weather forecasting.
- Research: data assimilation for limited-area numerical weather prediction models.

Business or sector: Meteorology, physics of the atmosphere, data assimilation.

1990 - 1991 **Research and Development**

AGIP S.p.A.(the Italian Petroleum Company), S. Donato Milanese, MI, Italy.

- Simulation of fluid dynamics in porous means (hydrocarbon oil and gas reservoirs) with finite-difference models

Business or sector: Evaluation and simulation of hydrocarbon reservoirs.

EDUCATION

1983-1989

LAUREA IN FISICA ("vecchio ordinamento": "old system") - degree in Physics (master level)

Università degli Studi di Milano, Italy

- Thesis: Utilizzo di materiali a transizione di fase solido-solido per accumulo termico (Use of solid-solid phase transition materials for thermal storage). Marks 108/110. October 1989.

Post-graduation courses

June 1997 (2 weeks)

Summer School on Inverse Methods and Data Assimilation

COAS (College of Earth, Ocean, and Atmospheric Sciences), Oregon State University, Corvallis, Oregon, USA. Director: Prof. Andrew F. Bennett

- Inverse methods, variational data assimilation with weak and/or strong dynamics constraint.

August 1993 (4 weeks)

International Summer School on Assimilation of Meteorological and Oceanographical Observations

Université de Toulon e du Var, La Garde, FRANCE. Director: Prof. Olivier Talagrand.

- Lessons and talks in English: variational methods - tangent linear and adjoint of the circulation (NWP) model, sequential methods and Kalman filters; optimal interpolation; first-order sensitivity to initial conditions; splines; Bayesian methods; ensemble forecasting and probabilistic predictions.

November 1990

Course on hydrocarbon reservoir models

Computer Modelling Group, Calgary, Alberta, CANADA

- Lessons and numerical practice on finite-difference models of fluid dynamics in porous means.

LANGUAGES

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
ENGLISH	C2	C2	C2	C2	C2
FRENCH	C2	C2	C2	C2	C2
JAPANESE	B1	B1(*)	B1	B2	B1(*)
	Certificate Japanese-Language Proficiency. Level 2 (top:1, bottom:4), Tokyo, December 1997, Association of International Education Japan and The Japan Foundation. (*): today with dictionary				
SPANISH (courses: I - 2013, II - 2014)	B1	B1	B1	B1	B1

COMPUTER SKILLS

PROGRAMMING AND SCRIPTING LANGUAGES:

- **Fortran** (f77, f90, f95 etc.): 20-year experience, in particular for numerical computation, and working several times with **large complex codes** and **large quantities of data**, also making use of **MPI** for parallel computation. Modern Fortran functionalities such as Fortran – C interoperability (iso_c_binding) and function/subroutine overload.
- **C**: for example, in 2009 I wrote, tested and used two C functions to write and read (the CAPP model state) in **Stata binary data format**, starting from the official documentation available on-line. The work for Magritte SnC, in the same period, was also done using C.
- Automatic compilation: CMake. IDE: MS Visual Studio, Code::Blocks. Version control: CVS, Subversion, **Git**/**Gitlab**
- Statistical analysis software and their scripting languages: **R**, Rstudio; Stata..
- **Python**, Spyder, Numpy, Matplotlib.
- Geophysical analysis and graphics software and formats: **NetCDF**, GrADS, GRIB. **PROJ**.
- **Javascript, jQuery**; **PHP**; Apache Cordova; HTML; CSS.
- Database management software: **MySQL**; LibreOffice-Base/MS-Access (in the past: Paradox).
- Other scientific analysis software: Gnuplot, Octave, Matlab.
- Shell scripts in Linux/Unix environment.
- Basis of Java

- **VIM**/**GVIM** editor.
- **EPUB** e-book format.
- Operating systems: **Unix**/**Linux**; MS-Windows; (in the past: DEC-VMS; MainFrame IBM and HITACHI).
- **LaTeX**, LyX, TexStudio.
- Office suites (MS office, LibreOffice/OpenOffice). Main software packages with operating systems Linux, MS-Windows and Apple.

PUBLICATIONS

A - INTERNATIONAL, PEER-REVIEWED SCIENTIFIC JOURNALS

- M. Adani and F. Uboldi, 2022. Data assimilation experiments over Europe with the Chemical Transport Model FARM. *Submitted*.
- G. Tinarelli, F. Uboldi and G. Carlino, 2019. Source term estimation using an adjoint model: a comparison of two different algorithms. *International Journal of Environment and Pollution*, **64**, 209-229, DOI:IJEP.2018.099157
- C. Lussana, O. E. Tveito and F. Uboldi, 2018. Three-dimensional spatial interpolation of two-meter temperature over Norway. *The Quarterly Journal of the Royal Meteorological Society,* **144**, 344-364, DOI:10.1002/qj.3208
- F. Uboldi and C. Lussana, 2018. Evidence of non-stationarity in a local climatology of rainfall extremes in northern Italy. *International Journal of Climatology*, **38**, 506-516, DOI: 10.1002/joc.5183
- F. Uboldi and A. Trevisan, 2015. Multiple-scale error growth in a convection-resolving model. *Nonlinear Processes in Geophysics*, **22**, 1-13, DOI: 10.5194/npg-22-1-2015
- F. Uboldi, A. N. Sulis, C. Lussana, M. Cislaghi and M. Russo, 2014. A spatial bootstrap technique for estimation of rainfall annual maxima distribution parameters. *Hydrology and Earth System Sciences*, **18**, 981-995, DOI: 10.5194/hess-18-981-2014
- C. Lussana, F. Uboldi, and M. R. Salvati, 2010. A spatial consistency test for surface observations from mesoscale meteorological networks. *The Quarterly Journal of the Royal Meteorological Society*, **136**, 1075-1088, DOI: 10.1002/qj.622
- C. Lussana, M. R. Salvati, U. Pellegrini, and F. Uboldi 2009. Efficient high-resolution 3-D interpolation of meteorological variables for operational use. *Advances in Science and Research*, **3**, 105-112, DOI: 10.5194/asr-3-105-2009
- C. Lussana and F. Uboldi, 2009. Reference crop evapotranspiration estimate using high-resolution meteorological network's data. *Advances in Science and Research*, **3**, 113-118, DOI: 10.5194/asr-3-113-2009
- F. Uboldi, C. Lussana and M. Salvati, 2008: Three-dimensional spatial interpolation of surface meteorological observations from high-resolution local networks. *Meteorological Applications*, **15**, 331-345, DOI: 10.1002/met.76
- A. Carrassi, A. Trevisan, L. Descamps, O. Talagrand and F. Uboldi, 2008: Controlling instabilities along a 3DVar analysis cycle by assimilating in the unstable subspace: a comparison with the EnKF. *Nonlinear Processes in Geophysics*, **15**, 503-521, DOI: 10.5194/npg-15-503-2008
- A. Carrassi, M. Ghil, A. Trevisan and F. Uboldi, 2008: Data assimilation as a nonlinear dynamical systems problem: Stability and convergence of the prediction-assimilation system. *Chaos*, **18**, 023112, DOI: 10.1063/1.2909862
- A. Carrassi, A. Trevisan and F. Uboldi, 2007: Adaptive Observations and Assimilation in the Unstable Subspace by Breeding on the Data-Assimilation System. *Tellus*, **59A**, 101-113, DOI: 10.1111/j.1600-0870.2006.00210.x
- F. Uboldi and A. Trevisan, 2006: Detecting unstable structures and controlling error growth by assimilation of standard and adaptive observations in a primitive equation ocean model. *Nonlinear Processes in Geophysics*, **13**, 67-81, DOI: 10.5194/npg-13-67-2006
- F. Uboldi, A. Trevisan and A. Carrassi, 2005: Developing a Dynamically Based Assimilation Method for Targeted and Standard Observations. *Nonlinear Processes in Geophysics*, **12**, 149-156, DOI: 10.5194/npg-12-149-2005
- A. Trevisan and F. Uboldi, 2004: Assimilation of standard and adaptive observations within the unstable subspace of the observation-analysis-forecast cycle system. *Journal of the Atmospheric Sciences*, **61**, 103-113, DOI: 10.1175/1520-0469(2004)061<0103:AOSATO>2.0.CO;2
- M. Kamachi, T. Kuragano, H. Ichikawa, H. Nakamura, A. Nishina, A. Isobe, D. Ambe, M. Arai, N. Gohda, S. Sugimoto, K. Yoshita, T. Sakurai and F. Uboldi, 2004: Operational Data Assimilation System for the Kuroshio South of Japan: Reanalysis and Validation. *Journal of Oceanography*, **60**, 303-312, DOI: 10.1023/B:JOCE.0000038336.87717.b7
- M. Kamachi, T. Kuragano, S. Sugimoto, K. Yoshita, T. Sakurai, T. Nakano, N. Usui and F. Uboldi, 2004: Short-range Prediction Experiments with Operational Data Assimilation System for the Kuroshio South of Japan. *Journal of Oceanography*, **60**, 269-282, DOI: 10.1023/B:JOCE.0000038333.97882.51
- M. Kamachi, T. Kuragano, N. Yoshioka, J. Zhu and F. Uboldi, 2001: Assimilation of satellite altimetry into a western North Pacific operational model. *Advances in Atmospheric Science*, **18**, 767-786.
- F. Uboldi and M. Kamachi, 2000: Time-space weak-constraint data assimilation with nonlinear models. *Tellus*, **52A**, 412-421, DOI: 10.1034/j.1600-0870.2000.00878.x
- F. Uboldi and A. Buzzi, 1994: Successive Corrections Methods Applied to Mesoscale Meteorological Analysis. *Nuovo Cimento C*, **17**, 745-761, DOI: 10.1007/BF02510883

PUBLICATIONS

B 1/2 - CONTRIBUTIONS TO CONFERENCES AND SEMINARS

- Silvia Trini Castelli, Francesco Uboldi, Gianni Tinarelli, Oxana Drofa, Piero Malguzzi, Paolo Bonasoni, 2022. A novel approach for tracing the origin of odour nuisance with SMART meteo-dispersive modelling system. Harmo21 – Aveiro, Portugal – 27-30 September 2022.
- Francesco Uboldi, Silvia Trini Castelli, Gianni Tinarelli, Paolo Bonasoni, 2022. Combinazione numerico-logica di campi lagrangiani backward per individuare una sorgente di odori molesti a partire da segnalazioni dei cittadini nel sistema NOSE. Presentazione orale al 4° Congresso Nazionale AISAM, Università degli Studi di Milano, 15-18 Febbraio 2022.
- Francesco Uboldi, Mario Adani, Giuseppe Calori, Luisella Ciancarella, 2022. Assimilazione 3D-Var/OI di osservazioni orarie di concentrazione di inquinanti su scala europea con il modello FARM-MINNI operativo in CAMS. Poster al 4° Congresso Nazionale AISAM, Università degli Studi di Milano, 15-18 Febbraio 2022.
- Gianni Tinarelli, Francesco Uboldi and Giuseppe Carlino, 2018. Source term estimation using an adjoint model: a comparison of two different algorithms. NOSE 2018 – 6th INTERNATIONAL CONFERENCE ON ENVIRONMENTAL ODOUR MONITORING & CONTROL, 9-12 September 2018, Milan, Italy
- F. Uboldi, G. Tinarelli e G. Carlino, 2018. Ricostruzione di sorgenti mediante il codice RetroSPRAY. Presentazione alla V giornata sulla modellistica in ARIA(NET), Milano, Italy 31 January, 2018 (in Italian).
- F. Uboldi, 2017. Multiple-scale error growth and data assimilation in convection-resolving models. Invited talk at: "Numerical Modelling, Predictability and Data Assimilation in Weather, Ocean and Climate – A Symposium honouring the legacy of Anna Trevisan", 17-20 October, 2017, Bologna, ITALY.
- F. Uboldi, 2017. Predictability and data assimilation issues in multiple-scale convection-resolving systems. Meteorologisk Institutt, , 23 March 2017, Oslo, NORWAY.
- F. Uboldi, 2017. Hourly precipitation analysis combining rain-gauge observations with radar estimates. NVE (The Norwegian Water Resources and Energy Directorate), 22 March 2017, Oslo, NORWAY.
- F. Uboldi, 2017. Individuazione di una sorgente incognita di inquinanti con retroSPRAY: metodo variazionale. Presentazione presso ARIANET, 15 Marzo 2017, Milano, ITALY
- F. Uboldi, 2017. (Ricostruzione di sorgenti:) Metodo bayesiano /variazionale. Presentazione alla IV giornata sulla modellistica in aria(net), 25 Gennaio 2017, Milano, ITALY.
- F. Uboldi, 2016. Variazioni dei massimi di precipitazione in area prealpina — Evidenza di cambiamento locale nel tempo della climatologia dei massimi annuali di precipitazione. Seminario presso ARPA Emilia Romagna, 2 Maggio 2016, Bologna, ITALY.
- F. Uboldi and C. Lussana, 2013. Representativity of a mesonet temperature observations with respect to model fields. Poster presentation at EMS (European Meteorological Society) - ECAM (European Conference on Applications of Meteorology) meeting, 09-13 September 2013, Reading, UK.
- F. Uboldi, A. N. Sulis, M. Cislaghi, C. Lussana and M. Russo, 2013. Systematic errors and time dependence in rainfall annual maxima statistics in Lombardy. Oral presentation at EMS (European Meteorological Society) - ECAM (European Conference on Applications of Meteorology) meeting, 09-13 September 2013, Reading, UK
- C. Lussana, M. Ranci, F. Uboldi, 2012. A quality-control-oriented database for a mesoscale meteorological observation network. Poster presentation at EGU General Assembly, 22-27 April 2012, Vienna, AUSTRIA
- F. Uboldi, 2012. Confronto tra stime da campi di modello e osservazioni della rete regionale lombarda; classificazione delle stazioni per rappresentatività riferita a COSMO-I7 e ECMWF-0125. Seminario presso ARPA Emilia Romagna, 5 Giugno 2012, Bologna, ITALY.
- F. Uboldi, A. Trevisan and O. Drofa, 2011. Assessing the role of remote-sensing data assimilation in controlling the trajectory instabilities of a convection-resolving system. Poster presentation at the joint SRNWP (Short-Range Numerical Weather Prediction Programme) Workshop on Data Assimilation and Ensemble Prediction Sysyem, 23-25 February 2011, Bologna, ITALY.
- F. Uboldi, C. Lussana, M. R. Salvati and M. Ranci, 2010. Interpolation and automatic quality control in mesoscale observation networks. Seminar at the Meteorological Institute of Belgium, 26 November 2010, Bruxelles, BELGIUM.
- F. Uboldi, A. Trevisan, 2010. Perturbation growth characterization in a convection-resolving system. Oral presentation at the workshop “Instability properties of regional models: ensemble forecast, boundary forcing and assimilation” at the Meteorological Institute of Belgium, 25 November 2010, Bruxelles, BELGIUM.
- C. Lussana, F. Uboldi and C. Antoniazzi, 2010. Spatial interpolation of solar global radiation. Oral Presentation at 10th conference EMS - 8th ECAC (European Conference on Applied Climatology), 13-17 September 2010, Zurich, SWITZERLAND.
- C. Lussana, F. Uboldi, M. R. Salvati and M. Ranci, 2010. Spatial interpolation of atmospheric pressure observations from automatic weather stations in complex alpine terrain. Poster Presentation at 10th conference EMS - 8th ECAC, 13-17 September 2010, Zurich, SWITZERLAND.
- F. Uboldi, A. Trevisan and S. Davolio, 2010. Evolution and growth of perturbations in a convection-resolving model. Poster presentation at the 4th HyMeX (HYdrological cycle in Mediterranean EXperiment) workshop,, 8-10June 2010, Bologna, ITALY.
- F. Uboldi, 2010. Inspecting the trajectory instabilities of a convection-resolving model. Poster presentation at the ECODYC (Exploring Complex Dynamics in High-Dimensional Chaotic Systems: From Weather Forecasting to Oceanic Flows) workshop, 25-29 January 2010 Dresden, GERMANY.
- C. Lussana, M. R. Salvati and F. Uboldi, 2009: Testing the performance of a spatial consistency test for data quality control. Oral Presentation at 9th conference EMS - 9th ECAM , 28 September - 2 October 2009, Toulouse, FRANCE.
- C. Lussana, M. Salvati, U. Pellegrini and F. Uboldi, 2008: Efficient high resolution 3-D interpolation of meteorological variables interpolation of meteorological variables for operational use. Oral Presentation at the 8th conference EMS - ECAC, 29 September - 3 October 2008, Amsterdam, HOLLAND.

PUBLICATIONS

B 2/2 - CONTRIBUTIONS TO CONFERENCES AND SEMINARS

- M. R. Salvati, C. Lussana e F. Uboldi, 2007: Verification of worded areal forecast of temperature extremes using a high resolution mesoscale analysis field. Poster presentation at the 7th conference EMS - ECAC, 1-5 October 2007, Madrid, SPAIN
- F. Uboldi, M. R. Salvati, and C. Lussana 2007: Spatial analysis of observations from high resolution automatic meteorological networks. Poster presentation at the 7th conference EMS - ECAC, 1-5 October 2007, Madrid, SPAIN
- C. Lussana, M. Ranci, M. R. Salvati, and F. Uboldi, 2007: Automatic data quality control using spatial interpolation with statistical methods. Poster presentation at the 7th conference EMS - ECAC, 1-5 October 2007, Madrid, SPAIN
- A. Trevisan, F. Uboldi e A. Carrassi, 2007: L'assimilazione dati come problema di dinamica non-lineare. Presentazione orale al convegno nazionale di fisica della terra fluida e problematiche affini, 11-15 Giugno 2007, Ischia (NA), ITALIA.
- F. Uboldi, C. Lussana e M. Salvati, 2007: Interpolazione spaziale e controllo di qualità automatico di reti osservative regionali ad alta risoluzione. Poster al convegno nazionale di fisica della terra fluida e problematiche affini, 11-15 Giugno 2007, Ischia (NA), ITALIA.
- A. Carrassi, A. Trevisan, L. Descamps, O. Talagrand and F. Uboldi, 2007: Controlling the instabilities along a 3DVAR analysis cycle by assimilating in the unstable subspace: a comparison with the EnKF. Oral presentation at the annual EGU general assembly, 19 April 2007, Wien, AUSTRIA.
- A. Trevisan, A. Carrassi and F. Uboldi, 2006. Prospects of forecast improvements by assimilating in the unstable subspace. Poster and extended abstract, Second THORPEX International Science Symposium, 04-08 December 2006, Landshut, GERMANY. WMO/TD N.1355, WWRP/THORPEX N.7.
- C. Lussana, M. Salvati, M. Ranci and F. Uboldi, 2006: Vertical and horizontal detrending for the optimal interpolation of temperature observations from a high resolution meteorological network. Oral presentation at the 6th conference EMS annual meeting 4-8 September 2006, Ljubljana, SLOVENJA
- C. Lussana, M. Ranci, M. Salvati, F. Uboldi and M. Valentini, 2006: 3D Interpolation of high resolution meteorological observations as a tool for forecast verification. Poster presentation at the FORALPS project conference, September 6th, 2006, Ljubljana, SLOVENJA.
- F. Uboldi, A. Carrassi and A. Trevisan, 2005: Developments of a dynamically consistent targeting and assimilation method. Poster presentation at the Fourth WMO International Symposium on Assimilation of Observations in Meteorology and Oceanography, 18-22 April 2005, Prague, CZECH REPUBLIC.
- A. Trevisan, A. Carrassi and F. Uboldi, 2004: Targeting and assimilation: a dynamically consistent approach. Poster presentation at the First THORPEX International Science Symposium, 6-10 December 2004, Montreal, Québec, CANADA.
- F. Uboldi, A. Trevisan and A.Carrassi, 2004: Developing a dynamically based assimilation method for targeted and standard observations. Seminar at LMD (Laboratoire de Météorologie Dynamique), Paris, FRANCE.
- F. Uboldi, A. Trevisan and A. Carrassi, 2004: Developing a dynamically based assimilation method for targeted and standard observations. Oral presentation at the 1st EGU general assembly, April 2004, Nice, FRANCE.
- A. Carrassi, A. Trevisan and F. Uboldi, 2003: Development of a dynamically based assimilation method. Poster presentation at the Roger Daley memorial symposium, October 2003, Montreal, CANADA.
- A. Buzzi, A. Carillo, M. D'Isidoro, P. Malguzzi, P. M. Ruti, N. Tartaglione and F. Uboldi, 2001: 3D-VAR Assimilation Experiments of MAP events using BOLAM. Proceedings of the 3rd EGS Plinius Conference on Mediterranean Storms, October 2001, Baja Sardinia OT, Italy.
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