

Prof. Dr. Eng. Sandro Luigi Fiore

Associate Professor at the Department of Information Engineering and Computer Science (DISI) of the University of Trento and Lecturer at the School of Innovation, Trento, Italy.

Personal Information



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WORK EXPERIENCE

September 2020 – Present

Associate Professor, University of Trento, Italy

Associate Professor at the Department of Information Engineering and Computer Science (DISI) of the University of Trento and Lecturer at the School of Innovation, Trento, Italy. Research activity on data science and learning, Open Science & FAIR, scientific data management, big data and artificial intelligence applied to climate change in extreme-scale HPC & cloud environments.

- Courses on Software Engineering (Bachelor Degree course) *High Performance Computing for Data Science* (Master Degree course) at the Department of Information Engineering and Computer Science (DISI) of the University of Trento.
- Courses on *Data Science*, *Data Governance* and *Business Analytics* at the School of Innovation, University of Trento.
- Representative of the University of Trento in the *Executive Committee of the Italian Computing and Data Initiative* (ICDI)
- Member of the *Open Science Committee* of the University of Trento
- Node Director for the University of Trento in the *CINI Laboratory on HPC Key Technologies and Tools* (CINI HPC-KTT)
- Scientific Responsible for the University of Trento of the *Centro Nazionale ICSC* on HPC, Big Data and Quantum Computing (PNRR)
- Scientific Responsible for the University of Trento of the following *Horizon Europe* projects: *INTERTWIN*, *IMAGINE*, *SKILLS4EOSC*, *CLIMATEEUROPE2*

February 2020 – Present

Contract Professor in Computer Science at the University of Salento, Lecce, Italy

- Course on Computer Science (2019-2020, second semester), Bachelor Degree Course on Biological Sciences - Department of Biological and Environmental Sciences and Technologies at the University of Salento, Lecce (Italy).

September 2019 – Present

Contract Professor in Big Data at the University of Salento, Lecce, Italy

- Taught Course on Big Data (2019-2020, first semester), Bachelor Degree Course on Digital Management Department of Economics Science at the University of Salento, Lecce (Italy).

March 2019 – June 2019

Visiting Scientist at University of Chicago (Illinois, USA)

- Working at the University of Chicago (Department of Computer Science) on High Performance Data Analytics Workflows for eScience at scale (in particular for Climate Change use cases on HPC infrastructures) as well as analytics provenance and computational reproducibility (Host: Prof. Ian Foster).

Oct 8, 2018 – August 2020

Head of the Data Science and Learning Research Group of the CMCC Advanced Scientific Computing Division

- Supervision and coordination of the CMCC Data Science and Learning Research Group
- Design and implementation of High-Performance Data Analytics and Machine Learning (HPDA&ML) solutions for eScience (in particular in the climate change domain)
- Principal Investigator of the **Data Science and Learning** CMCC Strategic Project
- Scientific Coordinator deputy of **OFIDIA2** INTERREG Project
- Scientific responsible for CMCC of the projects: **H2020 ESIWACE2** and **H2020 EOSC-hub** and **H2020 EOSC-Pillar**.

Nov 2014 – Oct, 2018

Director of the Advanced Scientific Computing (ASC) Division at the Euro-Mediterranean Center on Climate Change (CMCC), Italy

- Supervision and coordination of the scientific & technical activities carried out in the Advanced Scientific Computing Division (4 Research Units, 16 people) of the Euro-Mediterranean Center on Climate Change (CMCC)
- Management, planning, financial and fund-raising tasks
- Engagement in outreach to local High Schools on climate change data management and high-performance computing.

Jan 2015 – August 2020

Senior Scientist, Advanced Scientific Computing Division (CMCC)

- Scientific responsible for CMCC of the following research projects: OFIDIA2, EOSC-PILLAR, EOSC-hub, EUBRAZILCC, CLIPC, INDIGO-DataCloud, EUBra-BIGSEA, RDA-EUROPE BARRACUDA.
- Scientific Coordinator Deputy of the OFIDIA2 Project
- Research on high performance data management, big data analytics and scientific computing. Two key projects:
 - EUBra-BIGSEA (www.eubra-bigsea.eu/): responsible for the design of a big and fast data analytics platform for smart cities based on Spark (and MLlib), Kafka/Storm, HDFS, and Ophidia. Implementation of descriptive and predictive models.
 - INDIGO-DataCloud <https://www.indigo-datacloud.eu/>: design of a cloud-based, big data analytics environment for parallel data analysis of multi-terabytes climate datasets based on Ophidia (<https://www.gitbook.com/book/indigo-dc/ophidia/>).
- Contribution to scientific roadmap regarding extreme data and computing towards exascale in Europe in the European Extreme Data & Computing Initiative (EXDCI) project (<https://exdci.eu/>).
- Principal Investigator and main architect of the Ophidia big data analytics framework (www.ophidia.cmcc.it) a research effort on High Performance Data Analytics and Mining for eScience (<https://github.com/OphidiaBigData> and <https://www.youtube.com/user/OphidiaBigData>).
- Member of the *Data Task Force* of the *European Network for Earth System Modelling* (ENES).

Jan 2012 – Mar 2015

Leader of the Scientific Data Management Research Group, Advanced Scientific Computing Division (CMCC)

- Supervision and coordination of the CMCC Scientific Data Management Research Unit (5 people)
- Design and implementation of open source solutions for access, analysis & mining of scientific data.
- Main architect of the Ophidia big data analytics framework.

Nov 2010 – Dec 2014

Scientist, Advanced Scientific Computing Division (CMCC)

- Contribution to the design and implementation of large-scale data management solutions (access/analysis/processing), preparation of deliverables and presentation of results, in the

following European projects: IS-ENES2, EUBRAZILCC, ORIENTGATE, and CLIPC.

- Use of parallel paradigms (MPI/OpenMP) to design scalable datawarehouse solutions for fast data analysis on top of relational (MySQL) and NoSQL (MongoDB) Databases.
- Main architect and lead developer of the ESGF-Dashboard module (<https://github.com/ESGF/esgf-dashboard>), based on a distributed datawarehouse (ROLAP on top of PostgreSQL) approach and several data marts to provide insights on hundreds of millions of data downloads across the Earth System Grid Federation.
- Contribution as *Scientific Data Management Expert* in the European Exascale Software Initiative (EESI - <http://www.eesi-project.eu/>) producing recommendations to lead research for efficient Exascale applications.

Jan 2012 – Nov 2014

Division Manager, Advanced Scientific Computing Division (CMCC)

- Support activity to the Head of the Advanced Scientific Computing Divisions concerning both the monitoring of the proper implementation of the scientific activities and the coordination of the scientific staff.
- Financial and organizational aspects, planning activities and human resources management at the level of the Division.

Mar 2013 – May 2013

Visiting Scientist at Lawrence Livermore National Laboratory (USA)

- Design and implementation of the ESGF Dashboard distributed information system (datawarehouse, data marts, and distributed log collector components) for the analysis of large-scale data downloads across the Earth System Grid Federation (ESGF) in the Coupled Model Intercomparison Project, Phase 5 (CMIP5) experiment (Host: Dr. Dean Williams/LLNL).

Apr 2012 – May 2012

Visiting Scientist at Lawrence Livermore National Laboratory (USA)

- Design and implementation of the second official release of the ESGF Dashboard for the analysis of CMIP5 data download information. The second release specifically targets data usage metrics across the federation (Host: Dr. Dean Williams/LLNL).

2004-2012

Contract Professor in Database Systems, Advanced Data Management & Parallel Computing II at the University of Salento, Lecce, Italy

Taught 8 Courses (Master Degree) on Advanced Data Management (3), Database Systems (3) and Parallel Computing (2) as Contract Professor at the Engineering Faculty of the University of Salento (Italy):

- **Parallel Computing II** (a.y. 2004-2005 and a.y. 2008-2009)
Textbooks: *Parallel Programming in Openmp*, by Rohit Chandra, Ramesh Menon
Parallel Programming with MPI, by Peter S. Pacheco
- **Database Systems** (a.y. 2005-2006, a.y. 2006-2007 and a.y. 2007-2008)
Textbook: *Fundamentals of Database Systems*, by Ramez Elmasri, Shamkant B. Navathe
- **Advanced Data Management** (a.y. 2009-2010, a.y. 2010-2011 and a.y. 2011-2012)
Textbook: *Data Mining: Concepts and Techniques*, by Jiawei Han and Micheline Kamber

Oct 2011- Dec 2011

Visiting Scientist at Lawrence Livermore National Laboratory (USA)

- Design and implementation of the first official release of the ESGF Dashboard to support distributed monitoring in the ESGF infrastructure (Host: Dr. Dean Williams).

Jun 2006 – Oct 2010

Junior Scientist, Advanced Scientific Computing Division (CMCC)

- Implementation of scientific data management solutions at CMCC to enable climate data access, search & discovery, and metadata management.
- Development of Science Gateways to access to climate change data repositories at CMCC based on PostgreSQL/MySQL/SQLite and XML DBs and metadata standards: ISO19139 and ISO19115.

Jun 2004 – May 2006

Software Engineer at University of Salento

- Contribution to the Enabling Grids for E-Science in Europe (EGEE) project regarding the deployment procedure of the LGC middleware on IA64 platforms

- Active participation in the activities of sites certifications and sites monitoring at national level (Italian Grid Initiative).

EDUCATION AND TRAINING

- July 2018 **National Scientific Qualification (ASN 2016 - Associate Professor)**
Qualification (from 26/07/2018) ASN 2016, Competitive Sector 09/H1, Information Processing Systems, Associate Professor, call n. 1532/2016, by the Ministry of Education, University and Research (MIUR), Italy
- October, 2004 **Ph.D. degree in Innovative Materials & Technologies**
Ph.D. Thesis: "The GRelC Project: towards the definition of a Grid-DBMS" at the Istituto Superiore Universitario di Formazione Interdisciplinare (ISUFI), University of Lecce, Italy - Supervisor: prof. G. Aloisio
Final Mark: Excellent
The thesis focused on the Grid Relational Catalog (GRelC) project, a reference implementation of a Grid-Database Management System joining scientific data management, database systems and grid computing applied to several eScience contexts (e.g. astrophysics, bioinformatics).
- Jul 2002 **International School for Computer Science Researchers**
Participation in the 14th International School for Computer Science Researchers (Software Engineering), Lipari Island (Italy) June 30, 2002 - July 13, 2002
- Jan 2001 **Master degree cum Laude in Computer Engineering**
Thesis on the Parallelization of a QCD algorithm with Message Passing Interface at the Engineering Faculty of the University of Lecce, Lecce (Italy) – Supervisor Prof. G. Aloisio.
Final mark: 110/110 cum Laude (full marks with honors)
Key courses of my Master Degree: Database Systems, Software Engineering, Operating Systems, High Performance Computing, Information Systems, Computer Networks.

PERSONAL SKILLS

- Mother Tongue **Italian**
- Other Languages **English** (Full professional proficiency), **French** (Good working proficiency)
- Technical Skills
Software engineering: data structures, algorithms, software development (from analysis of the problem, to requirements gathering, design, implementation, test, validation, deployment), agile programming, UML documentation, DevOps approach, Lambda architecture.
10 years' experience in the design, implementation and setup of data analytics platforms for big data workflows. Experience also on Hadoop, Hive, HDFS, Python Notebooks and libraries (i.e. NumPy, SciPy, pandas, scikit-learn, dplyr, ggplot2), JupyterLab/IPython, Matlab.
15 years' experience in the design and implementation of OLTP (transactional DB) and OLAP systems (datawarehouses), data analytics, pre-processing (cleaning, integration, transformation, reduction), ETL systems for large scale (multi-Terabyte order) data, SQL, MySQL, PostgreSQL, SQLite and development of client/server applications in C and Java.
More than 15 years' experience on parallel programming with MPI, OpenMP.
More than 15 years' experience on geo-spatial data infrastructure, services and formats for the environmental domain, geospatial standards (ISO19115/19139)).

ADDITIONAL INFO

GRANTS (a selection of the top ones with information on the funding and role in the project)

- Horizon Europe **InterTwin** (AN INTERDISCIPLINARY DIGITAL TWIN ENGINE FOR SCIENCE). (UNITN budget 299kEuro), **Scientific Responsible for UNITN**
- Horizon Europe **Imagine** (Imaging data and services for aquatic science). (UNITN budget 55kEuro), **Scientific Responsible for UNITN**

- **H2020 EOSC-Pillar** (Coordination and Harmonisation of National Initiatives, Infrastructures and Data services in Central and Western Europe), Proposal number 857650. **(CMCC budget 164KEuro), Scientific Responsible for CMCC**
- **H2020 ESIWACE2** (Excellence in Simulation of Weather and Climate in Europe, Phase 2), Proposal number SEP-210494560. **(CMCC budget 436KEuro), WP Leader and Scientific Responsible for CMCC**
- **H2020 IS-ENES3** (Infrastructure for the European Network for Earth System modelling - Phase 3), Proposal number SEP-210499769. **(CMCC budget 555KEuro), WP Leader**
- **H2020 IMMERSE** Improving Models for Marine Environment Services, Proposal number SEP- 821926, **(CMCC budget 255KEuro).**
- **OFIDIA2** (Operational Fire Danger prevention platform 2) Cooperation Programme INTERREG V/A Greece-Italy (EL-IT) 2014-2020 - MIS code: 5002571 **(CMCC budget 670KEuro). Scientific Coordinator Deputy**
- **H2020 EOSC-hub** (Integrating and managing services for the European Open Science Cloud), Proposal number: 777536, **(CMCC budget 210KEuro). Scientific Responsible for CMCC**
- **H2020 EUBRA-BIGSEA** (Europe – Brazil Collaboration of Big Data Scientific Research through Cloud-Centric Applications), Proposal number 690116. **(CMCC budget 280KEuro) Scientific Responsible for CMCC and WP Leader**
- **H2020 ESIWACE** (Excellence in Simulation of Weather and Climate in Europe). H2020, Project Proposal number: 675191. **(CMCC budget 290KE). Scientific Responsible for CMCC**
- **H2020 INDIGO-DataCloud** (Integrating Distributed data Infrastructures for Global Exploitation). Proposal Number 653549 **(CMCC budget 340KEuro). Scientific Responsible for CMCC.**
- **FP7 IS-ENES2** (Infrastructure for the European Network for Earth System modelling - Phase 2) **(CMCC budget 430KEuro).**
- **OFIDIA** (Operational Fire Danger prevention platform) - European Territorial Cooperation Operational Programme “Greece-Italy” (2007 – 2013). **(CMCC budget 460KEuro). Scientific Coordinator (Deputy).**
- **H2020 RDA Europe BARRACUDA** **(CMCC budget 15KEuro) Scientific Responsible for CMCC.**
- **FP7 EUBRAZILCC** (EU-Brazil Cloud infrastructure Connecting Federated Resources for Scientific Advancement). Proposal Number 614048. **(CMCC budget 200KEuro). WP Leader.**
- **UNIDATA Community Equipment Awards 2011** (sponsored by National Science Foundation (NSF)). <http://www.unidata.ucar.edu/community/equipaward/index.html#2011>
- **FP7 CLIP-C** (Climate Information Platform for Copernicus) - **(CMCC budget 130KEuro). Project Manager for CMCC**

**SCIENTIFIC, TECHNICAL,
PROGRAM, and
REVIEWING COMMITTEES**

- Participation in more than 30 Program Committees in Scientific Conferences.
- Organiser of more than 20 Workshops/Sessions on data management topics
- Member of the Executive Board of ICDI
- Director of the CINI HPC-KTT local node of the University of Trento
- Reviewer for (i) *Concurrency and Computation: Practice and Experience*, (ii) *Future Generation Computer Systems*, (iii) *Scientific Data (Nature)*, (iv) IEEE Access.
- Scientific data management expert in the following exscale initiatives and projects:
 - International Exascale Software Project (IESP)
 - Big Data and Extreme-scale Computing (BDEC)
 - European Exascale Software Initiative (EESI and ESSI2)
 - European Extreme Data & Computing Initiative (EXDCI and EXDCI2)
- Guest editor of: (i) 4 Special Issues on High Performance Computing and Simulations (*Concurrency and Computation: Practice and Experience*); (ii) 1 Special Issue on High Performance Computing and Simulations (*Future Generation Computer Systems*); (iii) 1 Special Issue on Data management for eScience (*Future Generation Computer Systems*)

**WORKSHOP/SESSIONS
ORGANIZATION**

[26] Convener/Organizer of the **Big data and machine learning in geosciences** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2020, May 2020.

[25] Organizer of the Symposium on “**Tools and Infrastructure for Reproducibility in Data-Intensive Applications**” at the International Conference on Parallel Computing (ParCO2019), September 10, 2019,

Prague. Co-organized with Ian Foster (Univ. of Chicago/ANL) and Carl Kesselman (Information Sciences Institute).

[24] Convener/Organizer of the **Big data and machine learning in geosciences** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2018, 8–13 April 2018.

[23] Convener/Organizer of the **Big data and machine learning in geosciences** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2017, 23–28 April 2017.

[22] Convener/Organizer of the **Big data and machine learning in geosciences** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2016, 17–22 April 2016.

[21] Demo Session Co-organizer at the **High Performance Computing & Simulation Series of Conferences** (HPCS2011 Istanbul, HPCS2012 Madrid, HPCS2013 Helsinki, HPCS2014 Bologna, HPCS2015 Amsterdam, and HPCS2016)

[20] Convener/Organizer of the **Full lifecycle of data and large scale data analytics** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2013, 07 – 12 April 2013. *Co-organized with Cliff Jacobs (NSF), David Arctur (OGC), Bryan Lawrence (BADC), Giovanni Aloisio (UniSalento), Peter Fox (NCAR/RPI, USA).*

[19] Convener/Organizer of the **New Data Paradigms, Modeling, and International Collaboration Strategies for Earth System Sciences** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2013, 07 – 12 April 2013. *Co-organized with David Arctur (OGC), Bryan Lawrence (BADC), Monique Petitdidier (IPSL), Mohan Ramamurthy (UNIDATA, USA), Dan Lunt, Kerstin Lehnert, Luit Jan Slooten, Pierre-Philippe MATHIEU*

[18] Convener/Organizer of the **New Data Paradigms, Modeling, and International Collaboration Strategies for Earth System Sciences** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2012, 22 – 27 April 2012. *Co-organized with David Arctur (OGC), Bryan Lawrence (BADC), Monique Petitdidier (IPSL), Mohan Ramamurthy (UNIDATA, USA)*

[17] Convener/Organizer of the **Full lifecycle of data and large scale data analytics** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2012, 22 – 27 April 2012. *Co-organized with Cliff Jacobs (NSF), David Arctur (OGC), Bryan Lawrence (BADC), Giovanni Aloisio (UniSalento), Peter Fox (NCAR/RPI, USA).*

[16] Program Co-chair of the “**Gateway Computing Environments 2011**” Workshop, in conjunction with the Supercomputing 2011, 12-18 November, 2011, Seattle, Washington (USA). Co-organized with R. Dooley, M. L. Green, C. Kiddle, S. Marru, M. E. Pierce, M. Thomas, N. Wilkins- Diehr (<http://dl.acm.org/citation.cfm?id=2110486>)

[15] Organizer of the First **International Workshop on Climate Change Data Challenges - (C2DC)** held in conjunction with the International Conference on Computational Science ICCS 2011, Tsukuba, Japan, June 1 - June 3, 2011. *Co-organized with Peter Fox (NCAR/RPI, USA), Andrew Woolf (STFC, UK), Giovanni Aloisio (University of Salento, Italy).*

[14] Convener/Organizer of the **International Collaboration and Integration Strategies for Climate and other Geosciences Informatics** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2011, 03 – 08 April 2011. *Co-organized with David Arctur (OGC), Bryan Lawrence (BADC), Monique Petitdidier (IPSL), Mohan Ramamurthy (UNIDATA, USA).*

[13] Convener/Organizer of the **Earth science on distributed infrastructures and in HPC** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2011, 03 – 08 April 2011. *Co-organized with Mohan Ramamurthy (UNIDATA, USA), Horst Schwichtenberg (Fraunhofer SCAI, Germany), Paolo Mazzetti (CNR, Italy).*

[12] Convener/Organizer of the **Collaborative environments and semantic interoperability** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2011, 03 – 08 April 2011. *Co-organized with Peter Fox (NCAR/RPI, USA), Paolo Diviacco (Istituto Nazionale di Oceanografia e di geofisica Sperimentale, Italy), Bruce Wright (Met Office, UK), Jonathan Blower (University of Reading, UK).*

[11] Convener/Organizer of the **Climate Information Integration** session sponsored by the Earth and Space Science Informatics at the American Geosciences Union (AGU2010), 13–17 December 2010, San Francisco, California, USA. *Co-organized with David Arctur (Open Geospatial Consortium), Ben Domenico (UCAR), Stefano Nativi (CNR & Univ. Florence).*

[10] Workshop and Special Session chair at the **2010 High Performance Computing & Simulation (HPCS10) In Conjunction With The International Wireless Communications and Mobile Computing Conference (IWCMC 2010)** June 14 - 17, 2010, Université de Caen Basse Normandie (ENSICAEN), France. *Co-chaired with Carsten Trinitis (Technische Universität München Institut für Informatik, Germany).*

[9] Convener/Organizer of the **Scientific Gateways and Visualization** session in the Earth & Space Science

Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2010, 02-07 May, 2010. *Co-organized with Giovanni Aloisio (University of Salento, Italy), Valentijn Venus (NL), Mohan Ramamurthy (Unidata) and Horst Schwichtenberg (Fraunhofer SCAI, Germany).*

[8] Convener/Organizer of the **Semantic Interoperability, Knowledge and Ontologies** session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2010, 02-07 May, 2010. *Co-organized with Peter Fox (NCAR/RPI, USA) and Kristin Stock (University of Nottingham, UK).*

[7] Workshop Organizer and chair of the **1st International Workshop on High Performance Distributed Data Management 2009 (HPDDM09)** held in conjunction with The 4th International Conference for Internet Technology and Secured Transactions (ICITST-2009), November 9-12, 2009, London, UK. *Co-organized with Peter Fox (NCAR/RPI, USA) and Giovanni Aloisio (University of Salento, Italy).*

[6] Workshop Organizer and chair of the **Workshop on Advanced and integrated data production and management at CMCC**, CMCC Annual Meeting 2009, June 10-12, Ugento, Italy. *Co-organized with Giovanni Aloisio (University of Salento, Italy).*

[5] Demo Session Organizer at the **The 2009 High Performance Computing & Simulation (HPCS09) In Conjunction With The International Wireless Communications and Mobile Computing Conference (IWCMC 2009)**, June 21 - 24, 2009, Leipzig, Germany.

[4] Workshop Organizer and Chair of the **1st International Workshop Data Grid for eScience (DaGreS09)** held in conjunction with 2009 ACM International Conference on Computing Frontiers 18-20 May 2009 - Ischia, Italy. *Co-organized with Giovanni Aloisio (University of Salento, Italy).*

[3] Workshop Organizer of the **1st International Workshop on Grids, Clouds and Virtualization** held in conjunction with 4th International Conference on Grid and Pervasive Computing, GPC 2009, Geneva, 4-8 May 2009. *Co-organized with Massimo Cafaro (University of Salento, Italy) and Giovanni Aloisio (University of Salento, Italy).*

[2] Convener/Organizer of the “**Semantic Interoperability, Knowledge and Ontologies**” session in the Earth & Space Science Informatics (ESSI) at the European Geosciences Union General Assembly (EGU) 2009, 19-24 April, 2009. *Co-organized with Peter Fox (NCAR/RPI, USA) and Kristin Stock (University of Nottingham, UK).*

[1] Workshop Organizer and Chair of the **1st International Workshop on High Performance Data Grid (HPDataGrid'08)** held in conjunction with 9th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT'08), 1-4 December 2008 - Dunedin, New Zealand”. *Co-organized with Giovanni Aloisio (University of Salento, Italy).*

PUBLICATIONS

A comprehensive list of all publications can be found at:

DBLP <http://www.informatik.uni-trier.de/~ley/pers/hd/f/Fiore:Sandro.html>

Google Scholar: <https://scholar.google.com/citations?user=VmTh7jcAAAAJ&hl=en>

EDITED BOOKS

[1] S. Fiore, G. Aloisio, “[Grid and Cloud Database Management](#)”, 2011. Springer, ISBN 978-3-642-20044-1.

JOURNALS

[28] Jorge Ejarque, Rosa M. Badia, Loic Albertin, Giovanni Aloisio, Enrico Baglione, Yolanda Becerra, Stefan Boschert, Julian R. Berlin, Alessandro D’Anca, Donatello Elia, François Exertier, Sandro Fiore, José Flich, Amau Folch, Steven J. Gibbons, Nikolay Koldunov, Francesc Lordan, Stefano Lorito, Finn Løvholt, Jorge Macias, Fabrizio Marozzo, Alberto Michelini, Marisol Monterrubio-Velasco, Marta Pienkowska, Josep de la Puente, Anna Queralt, Enrique S. Quintana-Ortí, Juan E. Rodríguez, Fabrizio Romano, Riccardo Rossi, Jędrzej Rybicki, Mirosław Kupczyk, Jacopo Selva, Domenico Talia, Roberto Tonini, Paolo Trunfio, and Manuela Volpe. 2022. **Enabling dynamic and intelligent workflows for HPC, data analytics, and AI convergence**. *Future Gener. Comput. Syst.* 134, C (Sep 2022), 414–429. <https://doi.org/10.1016/j.future.2022.04.014>

[27] Petrie, R., Denvil, S., Ames, S., Levavasseur, G., Fiore, S., Allen, C., Antonio, F., Berger, K., Bretonnière, P.-A., Cinquini, L., Dart, E., Dwarakanath, P., Druken, K., Evans, B., Franchistéguy, L., Gardoll, S., Gerbier, E., Greenslade, M., Hassell, D., Iwi, A., Juckes, M., Kindermann, S., Lacinski, L., Mirto, M., Nasser, A. B., Nassisi, P., Nienhouse, E., Nikonov, S., Nuzzo, A., Richards, C., Ridzwan, S., Rixen, M., Serradell, K., Snow, K., Stephens, A., Stockhause, M., Vahlenkamp, H., and Wagner, R.: **Coordinating an operational data distribution network for CMIP6 data**, *Geosci. Model Dev.*, 14, 629–644, <https://doi.org/10.5194/gmd-14-629-2021>, 2021.

[26] Gabriele Accarino, Marco Chiarelli, Sandro Fiore, Ivan Federico, Salvatore Causio, Giovanni Coppini, Giovanni Aloisio, **A multi-model architecture based on Long Short-Term Memory neural networks for multi-step sea level forecasting**, *Future Generation Computer Systems*, Volume 124, 2021, Pages 1-9, ISSN 0167-739X, <https://doi.org/10.1016/j.future.2021.05.008>.

[25] D. Elia, S. Fiore and G. Aloisio, “**Towards HPC and Big Data Analytics Convergence: Design and Experimental Evaluation of a HPDA Framework for eScience at Scale**,” in *IEEE Access*, vol. 9, pp. 73307-73326, 2021, doi: 10.1109/ACCESS.2021.3079139.

[24] S. Fiore et al., “**An Integrated Big and Fast Data Analytics Platform for Smart Urban Transportation Management**” in *IEEE Access*, vol. 7, pp. 117652-117677, 2019. doi: 10.1109/ACCESS.2019.2936941

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- [16] G. Aloisio, M. Cafaro, I. Epicoco, S. Fiore, D. Lezzi, M. Mirto and S. Mocavero, "Resource and Service Discovery in the iGrid Information Service", Lecture Notes in Computing Science, ICCSA 2005: International Conference - Grid Computing and Peer-to-Peer Systems, O. Gervasi et al. (Eds.), Volume 3482, pp. 1-9, ISBN 3-540-25862-0, Singapore, May 9-12, 2005
- [15] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto. "ProGenGrid: a Grid-enabled platform for Bioinformatics", "From Grid to HealthGrid" Proceedings of HealthGrid 2005, Tony Solomonides et al. (Eds), IOS Press, Volume 112, pp. 113-126, ISSN 0926-9630, 2005.
- [14] G. Aloisio, M. Cafaro, I. Epicoco, S. Fiore, D. Lezzi, M. Mirto and S. Mocavero, "iGrid, a Novel Grid Information Service", Proceedings of the First European Grid Conference (EGC) 2005, LNCS 3470, Lecture Notes in Computer Science, Springer-Verlag, pp. 506—515, P.M.A. Sloot et al. (Eds.), 2005.
- [13] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto. "The Grid-DBMS: Towards Dynamic Data Management in Grid Environments". Proceedings of IEEE ITCC 2005, Vol. II, pp. 199-204, 2005.
- [12] G. Aloisio, M. Cafaro, D. Conte, S. Fiore, I. Epicoco, G.P. Marra, G. Quarta, "A grid enabled Map Server", Proceedings of Information Technology Coding and Computing (ITCC 2005), IEEE Press, Volume I, pp. 298-303.
- [11] G. Aloisio, M. Cafaro, S. Fiore, G. Quarta, "A Grid-Based Architecture for Earth Observation Data Access", Proceeding of the 2005 ACM Symposium on Applied Computing (SAC 2005), ACM Press, ISBN 1-58133-964-0, March 13 -17, 2005, Santa Fe, USA, Volume I, pp. 701-705
- [10] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto, "Bioinformatics Data Access Service in the ProGenGrid System". Proceedings of the First International Workshop on Grid Computing and its Application to Data Analysis (GADA 2004), OTM Workshops 2004, LNCS 3292, pp.211-221, R.Meersman et al. (Eds.), October 25-29, Larnaca, Cyprus, Grecia.
- [9] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto, "Advanced Delivery Mechanisms in the GReLC Project", ACM Proceeding of 2nd International Workshop on Middleware for Grid Computing (MGC 2004), October 18 2004,

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Prof. Dr. Eng. Sandro Luigi Fiore

Toronto, Ontario Canada, pp. 69-74.

[8] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto, "ProGenGrid: A Grid Framework for Bioinformatics", Proceeding of Biological and Artificial Intelligence Environments, 15th Italian Workshop on Neural Nets WIRN 2004, Vietri, Italy, pp. 1-9, Springer-Verlag.

[7] M. Mirto, G. Aloisio, M. Cafaro, S. Fiore, "A Gather Service in a Health Grid Environment", CD-Rom of Medicon and Health Telematics 2004, IFMBE Proceedings, Volume 6, July 31 – August 05, Island of Ischia, Naples, Italy.

[6] G. Aloisio, M.C. Barba, M. Cafaro, E. Blasi, S. Fiore, M. Mirto, "Web Services for Edgebreaker Compression in a Grid Portal", CD-Rom Proceedings of HealthGrid, 29-30 January, 2004, Clermont-Ferrand, Francia

[5] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto, "The GRelC Library: A Basic Pillar in the Grid Relational Catalog Architecture", Proceedings of Information Technology Coding and Computing (ITCC), April 5 to 7, 2004, Las Vegas, Nevada, Volume I, pp.372-376.

[4] G. Aloisio, M. Cafaro, S. Fiore, M. Mirto, "The GRelC Project: Towards GRID-DBMS", Proceedings of Parallel and Distributed Computing and Networks (PDCN) – IASTED, pp. 1-6, February 17 to 19, 2004, Innsbruck, Austria.

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[2] G. Aloisio, M. Cafaro, E. Blasi, M. Mirto, S. Fiore, D. Lezzi, "Web Services for a Biomedical Imaging Portal", Proceedings of ITCC2003, Volume IV, pp- 432-437, Las Vegas, Nevada, 2003. Best Student Paper award.

[1] G.Aloisio, M.Cafaro, E.Biasi, I. Epicoco, S.Fiore, M.Mirto, "Dynamic Grid Catalog Information Service", Proceedings of the First European Across Grids Conference, February 13-14, 2003 Santiago de Compostela (Spain), LNCS, Springer-Verlag, N. 2970, pp. 198-205, 2003.

Talks & Invited lectures

- S. Fiore, Invited Lecture, "Real Use Case Session (Part I): The ENES Climate Analytics Service", ICTP Trieste, EUDAT CDI & PRACE Summer School on managing scientific data from analysis to long term archiving, Friday 27 September 2019.
- S. Fiore, talk, "An HPC-enabled Data Science and Learning Environment for Climate Change Experiments at Scale", ParCO2019 Conference, Prague, September 12, 2019.
- S. Fiore, Invited Talk, "HPDA & CoEs: ESIWACE Centre of Excellence in Simulation of Weather and Climate in Europe", 1st European Communities Workshop on Exascale Computing Focus on High Performance Data Analytics, EuroHPC Summit Week 2019, Poznan, Poland, May 16 2019.
- S. Fiore, Invited Talk, "Ophidia: a high performance data analytics framework for eScience", Argonne National Laboratory, April 15, 2019.
- S. Fiore, Talk, "Ophidia: a high performance data analytics framework for eScience", University of Chicago, March 2019.
- S. Fiore, talk, "High Performance Data Analytics and Machine Learning developments in Ophidia", 8th Annual ESGF F2F Conference, Washington, USA, December 4-7, 2018
- S. Fiore, Panel, "Designing Thematic Services", Session on The EOSC-hub service portfolio and applicable policies for service providers and users, Digital Infrastructures for Research 2018, 09-11 October 2018 Lisbon.
- S. Fiore, "Invited Lecture", The Ophidia project: towards a High Performance Data Analytics and Machine Learning framework for climate change", SOSC 2018 Second International PhD School Open Science Cloud Perugia, September 19, 2018.
- S. Fiore, talk, "Analytics workflows with Ophidia/ECAS", 3rd ENES Workshop on Workflows funded by the Center of Excellence ESIWACE, Brussels, September 13, 2018.
- S. Fiore, Invited Talk, "The ENES Climate Analytics Service", 2018 UNIDATA User Workshop, Boulder, Colorado, June 25th, 2018.
- S. Fiore, talk, "ECASLab: a user-friendly, integrated environment for scientific data analytics and visualization in the European Open Science Cloud landscape", Session ESSI2.4 - Virtual Research Environments: creating online collaborative environments to support research in the Earth Sciences and beyond, EGU2018, Thursday, 12 Apr 2018.
- S. Fiore, talk, "Large-scale, high performance and cloud-enabled multimodel analytics experiments in the context of the Earth System Grid Federation", Advanced Information Systems for Earth System Data Access and Analysis II Session, American Geosciences Union (AGU2017), San Francisco, USA, 11 December 2017.
- S. Fiore, invited talk, "Ophidia: a big data analytics framework for eScience", Department of Earth Science,

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Barcelona SuperComputing Centre, Barcelona, Spain.

- S. Fiore, invited lecture, "Persistent Identifiers in the big data analytics landscape", Research Data Alliance (RDA) School, Barcelona SuperComputing Centre, Barcelona, Spain.
- S. Fiore, talk, "High performance climate data analytics in the INDIGO-DataCloud project", ENES/ESIWACE HPC workshop: "HPC for weather and climate applications", May 16, 2017 – Barcelona.
- S. Fiore, talk, "Big Data Analytics on Large-Scale Scientific Datasets in the INDIGO-DataCloud Project", ACM Computing Frontier 2017 Workshop on Big Data Analytics, May 15, 2017 – Siena.
- S. Fiore, talk, "Ophidia: big data analytics experiments in the cloud for eScience", EGI-INDIGO Workshop on community application support - New communities track, building SaaS applications, May 10, 2017 – Catania.
- S. Fiore, talk, "Analytics in the cloud for ENES", EGI-INDIGO Workshop on community application support: Mature communities track, May 10, 2017 - Catania
- S. Fiore, Invited Talk, "Distributed and cloud-based climate change analytics experiments in the INDIGO-DataCloud project", INDIGO Summit Plenary session: Exploiting INDIGO solutions, May 11, 2017 - Catania
- S. Fiore, talk, "Data Ingestion in ENES and collaboration with RDA", INDIGO Summit About data ingestion, May 12, 2017 - Catania
- S. Fiore, talk, "Large scale and cloud-based multi-model analytics experiments on climate change data in the Earth System Grid Federation", PICO Session, EGU General Assembly 2017, Vienna, Austria.
- S. Fiore, talk, "Climate Model Intercomparison Data Analysis Case study (ENES community)", Session on Data Management Services in the cloud, RDA 9TH PLENARY MEETING 2017 - DATA INFRASTRUCTURES FOR OPEN SCIENCE, April 4, 2017, Barcelona.
- S. Fiore, talk, "Ophidia big data analytics framework", 2016 Earth System Grid Federation (ESGF) Face-to-Face Conference (Washington, D.C.) - Advanced Computational Environments and Data Analytics Session, Dec 5, 2016 to Dec 9, 2016.
- S. Fiore, talk, "Distributed and cloud-based experiments for multi-model data analytics in the Earth System Grid Federation (ESGF) eco-system", ENES Community Meeting Reading 2016, October 25-27, 2016.
- S. Fiore, talk, "Toward large scale distributed experiments for climate change data analytics in the Earth System Grid Federation (ESGF) eco-system", 4th BDEC closed meeting – Frankfurt (Germany), June 16-17, 2016.
- S. Fiore, Invited talk, "Ophidia: a big data analytics framework for climate change", Oak Ridge National Laboratory (ORNL), Oak Ridge, USA, May 26, 2016
- S. Fiore, Invited talk, "Ophidia: a big data analytics framework for climate change", Lawrence Livermore National Laboratory (LLNL), Livermore, USA, May 24, 2016.
- S. Fiore, talk, "The Ophidia Big data analytics framework", 2015 Earth System Grid Federation (ESGF) F2F Meeting Monterey, USA, CA - December 9, 2015.
- S. Fiore, talk, "The Ophidia stack: a big data analytics framework for Virtual Research Environments", EGI Community Forum 2015 - Building Next Generation e-Infrastructures through Communities, Bari, 10-13 November 2015
- S. Fiore, talk, "Big data analytics workflows for climate", Research Data Alliance Earth System Science Data Management BOF, Paris - September 24, 2015.
- S. Fiore, talk, "Ophidia: a big data analytics framework for eScience", 2014 ESGF & UV-CDAT F2F Meeting, Livermore, (USA, CA), December 11, 2014.
- S. Fiore, talk, "The Ophidia framework: toward big data analytics for climate change", Symposium on HPC and Data-Intensive Applications in Earth Sciences: Challenges and Opportunities, ICTP, Trieste, 13 November - 14 November, 2014.
- S. Fiore, talk, "The Ophidia framework: toward cloud-based big data analytics for eScience", EGI Conference on Challenges and Solutions for Big Data Processing on Cloud, Amsterdam, 24-26 September 2014, CWI Conference Centre
- S. Fiore, talk, "Data analytics workflows for climate", Workshop on Workflow Solutions in Earth System Modelling, Hamburg, DKRZ, June 03-05, 2014
- S. Fiore, talk, May 21, 2014, "Big data analytics in the EUBrazil Cloud Connect project", EGI Community Forum 2014, Helsinki, 19 May 2014 - 23 May 2014.
- S. Fiore, talk, October 6, 2013, "Ophidia: towards parallel data analytics", Workshop on Scalable IO in climate models, Hamburg, Germany.

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- S. Fiore, talk, October 6, 2013, "A big data analytics framework for scientific data management", IEEE Big Data Conference, Santa Clara, USA.
- S. Fiore ICCS2013, talk, June 6, 2013, "Ophidia: toward big data analytics for eScience", ICCS2013 conference, Barcelona.
- S. Fiore, panel, April 30, 2013, "Scientific big data analytics challenges at large scale", Big Data and Extreme-scale Computing workshop. Charleston, (NC) USA.
- S. Fiore, talk, March 20, 2013, "Big data analytics for climate change", PCMDI/LLNL, Livermore, CA (USA).
- S. Fiore, talk, December 7, 2012, "Monitoring the Earth System Grid Federation through the ESGF Dashboard", American Geophysical Union 2012 (AGU2012), December 3-7, 2012, S. Francisco, CA (USA).
- S. Fiore, talk, November 27, 2012, "The ESGF Dashboard and Desktop capabilities and update", 2nd ESGF P2P F2F Workshop, November 27-29, 2012, High Performance Computing Innovation Center, PCMDI/LLNL, Livermore, CA (USA).
- S. Fiore, 3-hour tutorial, December 14, 2011, "Grid Database Management: the GRelC Middleware and Its Applications in the Environmental Context", Parallel and Distributed Computing and Systems, PDCS 2011, December 14 – 16, 2011, Dallas, USA.
- S. Fiore, talk, November 29, 2011, "The ESGF Dashboard", 1st ESGF P2P F2F Workshop, November 29 - December 1, Building 170 Auditorium, PCMDI/LLNL, Livermore, CA (USA).
- S. Fiore, talk, November 15, 2011, "The GRelC Project", ASQ & GS-CAD Tech Talk, November 15, 2011, Building 170 Auditorium, PCMDI/LLNL, Livermore, CA (USA)
- S. Fiore, talk, September 22, 2011, "GRelC database access and integration service - EGI SA3 Services", EGI Technical Forum, 19-23 September 2011, Lyon Conference Centre.
- S. Fiore, talk, June 14, 2011, "Data management challenges and issues at large scale: the Earth System Grid Federation", CMCC Annual Meeting 2011, Otranto, Italy.
- S. Fiore, talk, April 14, 2011, "Climate Change Challenges at Exascale", DEISA PRACE Symposium 2011, Helsinki, April 13-14, 2011.
- S. Fiore, talk, April 8, 2011, "Monitoring, registry, browsing and access functionalities in the Dash-G system", Earth science on distributed infrastructures and in HPC session, European Geosciences Union General Assembly 2011 (EGU2011), 3-8 April 2011.
- S. Fiore, talk, September 16, 2010, "Shared Services and Tools - Services: GRelC", Services for the EGI Heavy User Communities Session, EGI Technical Forum, 14-17 September 2010.
- S. Fiore, talk, September 16, 2010, "The Climate-G testbed: issues, requirements and results", Heavy User Communities - Requirements Session, EGI Technical Forum, 14-17 September 2010.
- S. Fiore, talk, May 3, 2010, "The Climate-G Portal: a Grid Enabled Scientific Gateway for Climate Change", European Geosciences Union (EGU) 2010, Vienna, Austria.
- S. Fiore, talk, December 7, 2009, "The Climate-G Testbed", All Hands Meeting (AHM) 2009, December 7-9, 2009, Oxford, United Kingdom (UK).
- S. Fiore, talk, October 8, 2009, "A Grid Enabled Scientific Gateway for Climate Change", Global Organization for Earth System Science Portals (GO-ESSP) 2009 Workshop, October 6-8, 2009, Hamburg, Germany.
- S. Fiore, Invited Talk, October 1, 2009 - "Grid Database Management: the GRelC Project and some interesting use cases". School of Computer Science, University of Nottingham, UK.
- S. Fiore, G. Aloisio - Invited Presentation at CERN - EGEE-III Review, "The Climate-G testbed towards a large scale data sharing environment for climate change", June 24-25, 2009, Geneva, Switzerland.
- S. Fiore, 3-hour tutorial, May 8, 2009, "Grid Metadata Management: GRelC Project and CMCC Metadata Handling System", GPC09 Conference & Swiss Grid School, Geneva, Switzerland.
- S. Fiore, talk, April 24, 2009, "The Climate-G testbed towards a large scale data sharing environment for climate change", Earth & Space Science Informatics Session, European Geosciences Union 2009 (EGU09), Vienna, Austria.
- S. Fiore, talk, December 3, "The GRelC Portal: A Ubiquitous and Seamless Way to Manage Grid Databases", PDCAT08 Conference - December 1-4, 2008 - Dunedin, New Zealand
- S. Fiore, Internal meeting presentation, "Data Management at CMCC", University of Reading, Reading, UK, October 2, 2008.

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- S. Fiore, invited talk, September 25, 2008 - "Grid metadata management for Climate Change", EGEE08 Conference, Istanbul, Turkey – September 22 – September 26, 2008.
- S. Fiore, talk, July 18, 2008 - "CMCC Climate Metadata Management". Barcelona Supercomputing Center, Spain – July 18, 2008
- S. Fiore (Invited Talk), July 4, "Data Issues in challenging HPC applications to Climate Change", International Advanced research Workshop on High Performance Computing and Grids, Cetraro (Italy), June 30 - July 4, 2008
- S. Fiore, (Tutorial, 3 hours), May 19, 2008 Tutorial at CCGrid08 - IEEE Int. Symposium on Cluster Computing and the Grid Title: "GReIC DAIS: A P2P Framework for Data Access and Integration in Grid", Ecole Normale Supérieure de Lyon, France, May 19-22, 2008, URL: http://ccgrid2008.ens-lyon.fr/CCGrid2008_program.html#tutorial6
- S. Fiore, (Talk), April 16, 2008 – "Grid Metadata Management for Earth Science", EGU General Assembly 2008 - Vienna, Austria, 13-18 April 2008
- [S. Fiore, (Talk), January 16, 2008 – "The GReIC Metadata Handling System for Earth Science", 3rd GRID e-collaboration Workshop for Earth Science and Space, 16 - 17 January 2008, ESRIN, Frascati (Rome), Italy
- S. Fiore, (Invited Talk), October 3, 2007 - "Grid database management in gLite based production Grids with the GReIC DAS". 5th EGEE Conference – Budapest, Hungary – October 1-5, 2007
- S. Fiore, (Invited Talk), September 6, 2007 - "The Grid Relational Catalog Data Access Service". Department of Computer Science, University of Ioannina, Greece – September 6, 2007
- S. Fiore, (Invited Talk), July 12, 2007 - "Managing Grid Databases with GReIC". International Summer School on Grid Computing – Gripsholmsviken, Sweden – July 8-20, 2007
- S. Fiore, (Invited Talk), June 14, 2007 - "Grid Relational Catalog Overview". Workshop on Grid Portal and Data Management Techniques for Earth Science – Pula, Italy – June 14-15, 2007
- S. Fiore, (Invited Talk), May 17, 2007 - "Access to relational and non relational databases in grid with GReIC". 1st International BioMed Grid Summer School – Varenna, Italy – May 14-19, 2007
- [S. Fiore, (Talk), May 10, 2007 - "GReIC Data Access Service: Extreme Performance Managing Grid Databases". 2nd EGEE User Forum / OGF 20 – Manchester, UK – May 7-11, 2007
- S. Fiore, (Invited Talk), March 13, 2007 - "The GReIC Project: Towards Grid-DataBase Management System". Workshop on HPC Tools for e-Science – Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, March 5-16, 2007
- S. Fiore, (Talk), June 2, 2004, "The GReIC Project", Advanced Research Workshop on High Performance Computing Technology and Applications Cetraro (Italy) - June 2, 2004
- S. Fiore, (Invited Talk), July 23, 2003 - "The Grid Relational Catalog Project", First International Summer School on Grid Computing, Vico Equense (Naples) July 13-25, 2003
- S. Fiore, June 25, 2003 – "The GReIC Project", The Eighth Global Grid Forum (GGF8), RGIS-RG, Session on Data discovery in the grid environment, June 25, 2003, Seattle, WA, USA

1 Ph.D. Student under supervision at UniTrento

1 Ph.D. Student supervised in 2009-2011

1 Ph.D. student currently supervised (2018-2021)

40 Master and Bachelor degree students supervised from 2004 to 2022.

Best Student Paper award for the paper: G. Aloisio, M. Cafaro, E. Blasi, M. Mirto, S. Fiore, D. Lezzi, "*Web Services for a Biomedical Imaging Portal*", Proceedings of ITCC2003, Volume IV, pp-432-437, Las Vegas, Nevada, 2003.

Earth System Grid Federation Team Award 2017, for the excellent results on the ESGF Dashboard activity for the CMIP5 experiments, December 5-7, 2017, San Francisco, USA.

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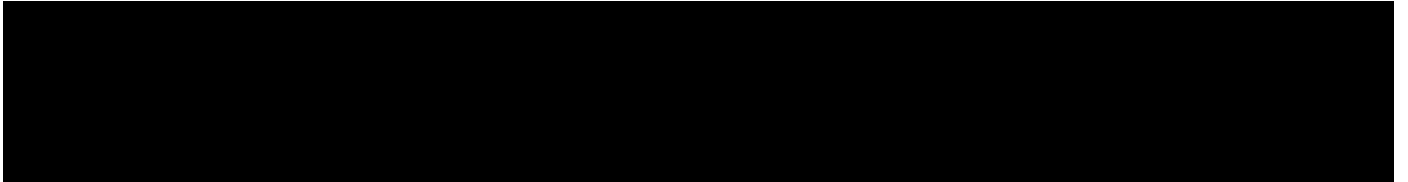
*Ph.D., BACHELOR and
MASTER DEGREE
STUDENTS SUPERVISION*

AWARDS

INTERESTS/HOBBIES

Reading, cooking, travelling, swimming, and running outside.

DICHIARAZIONE SOSTITUTIVA DI CERTIFICAZIONI (Art. 46 D.P.R. 445 del 28/12/2000)



Luogo e data

Il Dichiarante

Trento, 10/05/2023

