

PERSONAL INFORMATION

Roberto Buizza



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Sex Male | Date of birth 14/05/1961 | Nationality Italian

Married, three grown-up children

POSITION

Full Professor, Physics

Scuola Universitaria Superiore Sant'Anna, Pisa Italy

Joined on 1 November 2018 the Scuola Universitaria Superiore Sant'Anna of Pisa as Full Professor in Physics.

Qualified Full Professor in Italy ('*Abilitato al titolo di Professore di Prima Fascia*') in Physics (Sector 02/C1) and Geophysics (Sector 04/A4). Member of Scientific Advisory Boards of international research centres.

Leading scientist and key developer of the ECMWF medium-range/monthly ensemble, considered the most accurate and reliable source of global forecasts for this time range. Leader of the group that completed the ensemble ocean re-analyses that are key to understand climate trends, and coordinator of the project that has been producing the first coupled reanalysis of the 20th century. Responsible for research and development of the ECMWF coupled ocean-land-atmosphere-cryosphere ensembles.

A very successful manager of the ECMWF Research Department, with proven ability to bring together people from different backgrounds, and a member of the ECMWF Senior Management Team. A key contributor to stakeholder communication activities, especially with the ECMWF National Meteorological and Hydrological Services. Responsible for the ECMWF partnership activities that led to the establishment of cooperation agreements with China, the United States National Weather Service and the US National Centre for Atmospheric Research.

A committed team player with a strong multidisciplinary educational background, teaching experience, effective communication skills and a strong publication record. Integrity, passion for work and intellectual curiosity, and genuine interest in teaching and mentoring are also key traits of my personality.

Business or sector: Academia, International organizations, weather services

WORK EXPERIENCE

11/2018 – to date

Full Professor, Physics

Scuola Universitaria Superiore Sant'Anna, Pisa Italy

- Teaching undergraduates and graduate students, supervisory role
- Leading and coordinating research and development in climate impact and sustainability
- Establish new inter-university, inter-disciplinary initiative
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Business or sector: Academia

01/2016 – 10/2018

Lead Scientist, member of the Senior Management Team

ECMWF, U.K.

- Leading and coordinating research and development work across the Research Department, in particular in predictability, coupled data assimilation and extended-range prediction
- Co-responsible of two of the ECMWF ten strategic Work Streams and coordinator of the Research Department Research-to-Operation's activities
- Concluded the negotiation of a framework Cooperation Agreement with the US National Center for Atmospheric Research (NCAR)
- Member of the Senior Management Team
- Coordinator of the European Union FP7 project ERA-CLIM2 (7M€)

Key impact: contributed to the implementation of the Research Department re-organization; concluded the CA with NCAR; concluded the first European coupled reanalysis of the 20th century (with the EU project ERA-CLIM2)

Business or sector: International organization, weather services

2011 – 2015 Division Head, member of ECMWF Senior Management Team**ECMWF, U.K.**

- Leading and managing the Predictability Division (one of the 4 Divisions of the Research Department); responsible for the work of 30 scientists
- Leading and coordinating research work in medium-range, monthly and seasonal forecasting, coupled ocean-land-atmosphere-cryosphere data-assimilation and modeling
- Involved in stakeholder management activities (Member and Cooperating States visits, high-level bilateral meetings)
- Member of the Senior Management Team, with responsibility for the 'Partnership' objective;
- Contributor to the preparation of ECMWF 2016-2025 strategy and to securing ECMWF role in managing the Copernicus Climate Change and Atmospheric Monitoring Services (C3S/CAMS)

Key impact: re-organized RD activities in predictability and ocean modelling/data-assimilation in 2011; expanded division staff and capabilities, and led work that maintained ECMWF leadership in medium-range probabilistic forecasting; led work that introduced for the first time a coupled ocean-atmosphere model for Numerical Weather Prediction (NWP); established a Cooperation Agreements with the China Meteorological Administration and the US National Weather Service; contributed to ECMWF strategic planning to secure that ECMWF operates two of the European Union Copernicus Services (€291M investments in 7 years).

Business or sector: International organization, weather services

2009 – 2011 Section Head, Principal Scientist and Group Leader**ECMWF, U.K.**

- Directed international projects on the development of hydrological ensemble systems that led to the establishment of HEPEX, the international project on flood prediction (co-chair)
- Contributed to the development and testing the ECMWF Ensemble of Data Assimilation, and implemented it in the medium-range/monthly ensemble to simulate initial uncertainties
- Led international evaluation studies on the accuracy of probabilistic weather prediction
- Helped the COSMO Consortium (which includes the National Meteorological Services of Austria, Germany, Greece, Italy and Switzerland) to design and develop their Limited Area Ensemble Prediction System (COSMO-LEPS)
- Developed new applications in weather risk, energy demand and river flood management
- Member of the team that secured the establishment at ECMWF of the Computational Centre of the European Flood Awareness System (EFAS)
- Stakeholder engagement (e.g. Member/Cooperating States' visits, training, users' meeting)
- Internal auditor for the ECMWF Quality Management System process

Key impact: further improved skill of ECMWF ensemble by introducing Ensemble Data Assimilation perturbations in the ensemble; contributed to the establishment of ECMWF as the EFAS Computational Centre (which involves about €650k investments every year)

Business or sector: International organization, weather services

1991 - 2008 Senior Scientist and Scientist**ECMWF, U.K.**

- Designed and implemented the ECMWF medium-range ensemble
- Designed/coded verification/evaluation tools to diagnose probabilistic forecasts
- Developed a stochastic model error scheme and implemented it in the ECMWF ensemble
- Developed first simplified tangent forward/adjoint physics used in data-assimilation and predictability
- Studied perturbations' growth in the atmosphere, analysed the effect of initial and model errors
- Developed applications of probabilistic forecasting in flood prediction, energy and finance
- Started the international project HEPEX, to promote the use of ensemble methods to estimate uncertainty in flood prediction (co-chair for the first 4 years)
- Helped Norway to develop and test a limited-area ensemble nested in the ECMWF ensemble
- Contributed to the strategic planning of TIGGE (THORPEX International Grand Global Ensemble) project, a World Weather Research Program (WWRP) to accelerate forecasts improvements

Key impact: developed and implemented the ECMWF medium-range ensemble; developed and implemented a stochastic model error scheme; developed diagnostic/evaluation suite; established and co-chaired HEPEX; established TIGGE; developed applications of probabilistic forecasts;

Business or sector: International organization, weather services

1987 - 1991 **Scientist and Team Leader**

'Centro Ricerca Termica e Nucleare, Ente Nazionale Energia Elettrica' (CRTN/ENEL), Milan, Italy

- Coordinated research activities in climate and weather, building expertise and capacities
- Identified potential valuable use of weather data in energy production and operation, inducing pilot changes in operational activities (e.g. maintenance and generation)
- Advised ENEL Directors on key environmental issues, and contributed to the establishment of one of the very few Italian CO₂ measurement station

Key impact: built capacities in weather prediction; implemented in operation a Limited Area Model; established CO₂ monitoring station

Business or sector Energy, public services, environment

EDUCATION AND TRAINING

2002 - 2004 **Master in Business and Administration (overall distinction)**

London Business School, United Kingdom

Management report on Monte Carlo-based risk assessment; MBA included courses in leadership, management, economics, energy, decision risk, strategy, accounting and governance

1993 - 1997 **PhD in Mathematics**

University College London, United Kingdom

Thesis on instability theory and error growth in the atmosphere.

1981 - 1986 **'Laurea' in Physics (110/110, magna cum laude)**

'Universita' degli Studi di Milano', Italy

Thesis in plasma fusion on the energetic of a plasma in a tokamak.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
Proficient User					
French	C1	C1	B2	B2	A2
Basic User					

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Communication skills Communication of scientific results to different types of audiences has been a significant part of my activity, for example in explaining how probabilistic forecasts can be used in different sectors. I am used to working in an international context, and I have been a leader of collaborations between worldwide institutions. The MBA gave me an excellent opportunity to work with interdisciplinary teams that included scientists, bankers, marketing experts, lawyers and head masters.

Organisational / managerial skills I have a strong experience with teams of increasing size, and of managing a large number of projects in parallel. Between 2011 and 2015 I led a Division of between 20 and 30 people. Routine appraisal and comments from direct and matrix reports continue to indicate that I have excellent leadership and team-building skills. I am now coordinating work across sections and departments (the RD re-organization introduced a matrix management structure). I have also been leading successfully multi-disciplinary research teams and projects for over twenty-five years.

Computer skills Expert level in programming (Fortran, Unix, Linux, python) and use of word processors, spread sheets, software for oral presentations, wiki/forums.

Publications and teaching

- *Google Scholar*: **H-index 55**; citations 12,499; i10-index 104;
- *Researchgate*: **H-index 51**; citations: 9,996; RG score 38.62 (higher than 95% of RG members);
- *ISI-Web of Knowledge*: **H-index: 44**; citations: 6,573;
- *Scopus*: **H-index 43**; citations 6,919;
- 223 publications: 109 in peer-reviewed journals (33 published in QJRMS, 16 in MWR, 15 in JAS, lead author in 48, sole author in 22 articles) in weather forecasting, data assimilation, predictability, extreme events, diagnostic and evaluation, coupled ocean-atmosphere, observation and model uncertainty, flood prediction, applications of probabilistic forecasts; 10 contributions to volumes/books; 104 Technical Reports and ECMWF publications
- Teaching experience: lecturer at the ECMWF NWP Training Courses and at University courses and at International Schools; lecturer and organizer of seminars and workshops
- Graduate/post-graduate supervisor, thesis examiner, evaluator of professorship appointments
- Participation to 100+ International seminars and workshops

AFFILIATIONS AND AWARDS

- 'Abilitato al titolo di **Professore di Prima Fascia** nel Settore Fisica 02/C1: Abilitazione Scientifica Nazionale 2016 (MIUR, Bando D.D. 1532/2016, Italy, 28 March 2017)
- 'Abilitato al titolo di **Professore di Prima Fascia** nel Settore Geofisica 04/A4: Abilitazione Scientifica Nazionale 2016 (MIUR, Bando D.D. 1532/2016, Italy, 4 April 2017)
- Appointed member of an Independent Review Panel of the Australian Bureau of Meteorology 's Science to Services Program (2018-2019)
- Appointed Member of the International Scientific Advisory Panel (ISAP) of the Centre for Climate Research Singapore (CCRS), by the Ministry of Environment and Water resources of Singapore (2017-2020)
- Elected Honorary Life Member of the Italian Society for Climate Sciences (SISC; 2017)
- Buchan prize, awarded in 2002 by the Royal Meteorological Society, United Kingdom, for outstanding scientific contributions in the field of probabilistic numerical weather prediction
- Elected Fellow of the UK Royal Meteorological Society
- Elected Fellow of the UK Institute of Physics
- Member of the American Meteorological Society
- Member of the 'Societa' Italiana di Fisica'

7 November 2018

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