CURRICULUM VITAE

Claudio Piani, Ph.D.
AUP
American University in Paris
6, Rue du Colonel Combes, 75007, Paris
email:cpiani@aup.edu

Present Position.

American University in Paris, Paris, France
Department of Computer Sciences, Mathematics and Sciences
Full Professor,
Co-Director of the Environmental Research Centre
January 2012 to present.

Research:

- **Bias-correction methodologies for climate model output (Sultan et al. 2014; Haerter et al. 2015; Montroull et al. 2015,).**
- **Regional climate modeling (Lionello et al. 2013;Rauscher et al. 2016, Akumaga et al. 2017).**

Teaching:

- **New courses developed:**
  - **Climate and Climate Change (developed in 2012)**
  - **Natural and Unnatural Disasters (developed in 2012)**
  - **Ocean Environment (developed in 2013)**
  - **Contemporary environmental issues (developed in 2015)**
  - **Concepts in Relativity and Quantum Mechanics (developed in 2015)**
- **New modules Co-developed:**
  - **Environmental Sciences (Minor, developed in 2012)**
  - **Quantitative Environmental Sciences (Major, developed in 2013)**
  - **Environmental studies (Major, developed in 2016)**

Service:

- **Served on the Sin-Ming Shaw award committee 2012**
- **Chair of the CSMES new faculty search committee 2012/2013**
- **Serving on the executive committee 2013/2014 and 2014/2015**
- **Chair of the Sin-Ming Shaw award committee 2014**
- **Member of the Faculty Awards Committee 2014**
- **Co-Chair of the Computer Science, Mathematics and Environmental Sciences department from January 2015 to August 2016**
- **Chair of the executive committee January 2015 to July 2017**

Past Academic Positions.

The Abdus Salam International Centre for Theoretical Physics
Trieste, Italy,
Visiting Scientist;
March 2006 to December 2011:

Research projects:

- From February 2007 to February 2011, I have been funded by the European Union Project "Water and global Change"(WATCH). The tasks I have been directly responsible for are:
  - Developing a bias correction methodology for hydrological forcing data from climate models (Piani et al. 2010a&b).
  - Developing a methodology to transfer spread from hydrological forcing data from climate model ensembles to hydrological output (WATCH report # 6: http://www.eu-watch.org/nl/25222760-Technical_Reports.html)
  - Study the effects of future land use change on regional climate simulations on the Sahelian region (Mariotti et al. 2011).
  - Contributing to the "Twinned Ensemble Experiment" based within the CliamtePrediction.net group at Oxford (Rajul et al. 2011).
  - Leader of the cross-cutting activity on uncertainty in the components of the hydrological cycle (principal among 4 cross cutting activities of the project). (Hagemann et al., 2011, Haerter et al. 2010)
  - Leader of workblock 7 on training and dissemination.

- From February 2010 to December 2011, I have also participated to the European Union Project "Quantifying Weather and Climate Impacts on Health in developing countries" QWeCI. Within QWeCI my research involved:
  - Studying the links between endemic and epidemic malaria and seasonal climate variables in Malawi.
  - Establishing a WiFi medical data collection framework in Malawi.
  - Feasibility of a decision support system for health strategists in low income countries.

Teaching:

- Courses:
  - Introduction to Earth System Physics
  - Geophysical Fluid Dynamics
- I Directed two summer schools (2008 and 2010) at the United World College of the Adriatic and lectured on a host of topics such as: Earth system Physics, Climate Physics, the green house effect and geoengineering.

Department of Atmospheric, Oceanic and Planetary Physics
Oxford University, Oxford, UK,
Postdoctoral researcher.
March 2000 through February 2006:

Research projects.

- Simulation of ozone loss due to chlorine cold activation in the northern polar stratosphere and subsequent transport of ozone depleted air into mid-latitudes (Piani et al., 2002).
- Middle atmosphere summer dynamics. Explaining the occurrence of solid-body rotation in the high latitude regions of the stratosphere and mesosphere in summer (Piani et al., 2002).
- Global Climate Model parameterisations. Implementing the first `stochastic' parameterisations for gravity waves in the General Circulation Model of the UK Meteorological Office (Piani et al., 2004).
- Developing a norm in "climate space" or climate simulation index to rank different simulations of present day climate within the ClimatPrediction.net project.(Stainforth et al., 2005.)
- Constrained global climate forecasts from multi-thousand member ensembles (Piani et al. 2005).

Teaching:

- Courses:
  - Physics of Atmospheres and Oceans
  - Single lectures on selected topics of interest (ex.: Equatorial wave dynamics, Use and interpretation of the Tephigram.)

Department of Atmospheric Sciences,
University of Washington, Seattle, WA, USA,
FULBRIGHT FELLOW
Research Assistant.
September 1996 through March 2000:

Research projects.

- Three dimensional Simulations of equatorial convection and associated gravity waves (Piani et al., 2000).
- Equatorial dynamics. Interaction of convectively triggered gravity waves with the equatorial stratosphere (Piani and Durran, 2001).

Teaching:

- Assisting in teaching the introductory course of atmospheric sciences for new graduate students in autumn 1997 and 1998.

Department of Physical Oceanography,

University of Washington, Seattle, WA, USA,
FULBRIGHT FELLOW
Research Assistant.
September 1995 through September 1996:

Research projects.

- Oceanic equatorial-wave response to a rapidly translating wind burst.

Past non-Academic positions.

Larep Co., Rome Italy,
Meteorological Data Consultant.
February 1995 through August 1995:

Responsibilities.
Assistance in implementing and maintenance of the first computerised system of meteorological information retrieval and processing for the airport of Rome: `Aeroporto 4Internazionale di Roma Fiumicino'.

4th Fighter Wing, Italian Air force,
Grosseto, Italy,
Meteorological Officer (2nd lieutenant).
November 1993 through January 1995:

Responsibilities.

- Daily airdrome forecasting and now-casting.
- Daily regional 6hr. forecasts at 9:00 am, 12:00 pm and 3:00 pm.
- Meteorological assistance for pilots on request.
- Management of observational staff and junior forecasters.

Vitrociset Co., Rome Italy,
November 1992 through June 1993:
Student Internship.

Responsibilities.
Data analysis from the Low Level Wind Shear Alarm System (LLWAS) on the island of Pantelleria (Piani, 1995). Focus on risk management for incoming flights.

Fundraising:

I have been contributing author to the several European Project proposals (in reverse chronological order):

- MILLENIUM, 2004, successful bid.
- VIEWS, 2004, unsuccessful bid.
- WATCH, 2006, successful bid.
- GRACIE, 2008, unsuccessful bid.
- DECWATER, 2009 unsuccessful bid.
- QWECI, 2009, successful bid
- EXPRESSO, 2014, unsuccessful bid.

Education

Department of Atmospheric Sciences,
University of Washington, Seattle WA,
Ph.D.,
FULBRIGHT FELLOW
Started September 1996,
awarded March 2000

University of Rome "La Sapienza",
Rome, Italy
Laurea in Physics (Summa cum Laude),
FULL TUITION SCHOLARSHIP
Started September 1989,
awarded June 1993.

Peer reviewed publications

2017

1. Akumaga U., A. Tarhule, B. Traore, A. Yusuf, and **C. Piani**: Utilizing Process-based Modelling to Assess the Impact of Climate Change on Crop Yields and Adaptation Options in the Niger River Basin, West Africa., Agricultural and Forest Meteorology *Submitted 2017.*

2016

2. Kong, Y., C. Chen, **C. Piani**. A dynamical explanation for recent temperature and precipitation trends over the North China Plain. *Theor. and App. Meteor.. Submitted 2016.*

2015

3. Rauscher S. A., **C. Piani**, T. A. O'Brien, E. Coppola, F. Giorgi, W. D. Collins; A Multimodel Intercomparison of Resolution Effects on Precipitation: Simulations and Theory. *Clim. Dyn. (accepted with major revisions) 2015*.
4. Haerter J. O., B. Eggert, C. Moseley, **C. Piani**, P. Berg, Statistical precipitation bias correction of gridded model data using point measurements. *Geophysical Research Letters 42 (6), 1919-1926. 2015*

2014

5. Sultan B.[a], K. Guan, D. Lobell, M. Biasutti , **C. Piani** , M. Kouressy, G. L. Hammer, and G. McLean: Robust future dipolar changes of rainfall pattern in West Africa and its impact on sorghum yield., *Environmental Research Letters, vol 9(10), 2014*

2013

6. Planton, S., P. Lionello, V. Artale, R. Aznarr, J. Colin, L. Congedi, S. Gualdi, **C. Piani**, P. Ruti, S. Somot: The climate of the Mediterranean Region in Future climate Projections. Chapter 8 of: The Climate of the Mediterranean Region. *Elsevier, London ,ISBN: 978-0-12-398466-1, 2013.*
   (Book chapter)

2012

7. Rowlands, D. J., **C. Piani**, et al., Broad range of 2050 warming from an observationally constrained large climate model ensemble. *Nature Geoscience, **5**, 256–260 , 2012.*
8. **Piani, C**., and J. O. Haerter: Two dimensional bias correction of temperature and precipitation copulas in climate models. Geophys. *Res. Lett., vol.. 39, LXXXXX, doi:10.1029/2012GL053839*, 2012

2011

9. Hagemann, S., C. Chen, J. O. Haerter, J. Heinke, D. Gerten, **C. Piani**, : Impact of a Statistical Bias Correction on the Projected Hydrological Changes Obtained from Three GCMs and Two Hydrology Models. *J. Hydrometeor*, **12**, 556–578, 2011
10. Mariotti, L., E. Coppola, M. B. Sylla, F. Giorgi and **C. Piani**, Regional climate model simulation of projected 21st century climate change over an all-Africa domain: Comparison analysis of nested and driving model results., J. *Geophys. Res, **116**, D15111, 22 PP., 2011.*

11. Chen, C., J. O. Haerter, S. Hagemann, and **C. Piani**, On the contribution of statistical bias correction to the uncertainty in the projected hydrological cycle, *Geophys. Res. Lett.*, 38, 2011.

2010

12. **Piani, C**.; Haerter, J. O.; Coppola, E. 2010. Statistical bias correction for daily precipitation in regional climate models over Europe. *Theor. and Appl. Clim., vol. 99, num. 1-2.2010.*
13. Haerter, J. O., S. Hagemann, C. Moseley, and **C. Piani.** Climate model bias correction and the role of timescales. *Hydrol. Earth Syst. Sci. Discuss., **7**, 7863–7898*, 2010.
14. Rauscher S. A., E. Coppola, **C. Piani** and F. Giorgi, Resolution effects on regional climate model simulations of seasonal precipitation over Europe. *Clim. Dynam. Vol. **35**, Number 4, 685-711*, 2010.
15. **Piani, C**., G.P. Weedon, M. Best, S.M. Gomes, P. Viterbo, S. Hagemann, and J. O. Haerter, Statistical bias correction of global simulated daily precipitation and temperature for the application of hydrological models*, J. of Hydrol.,Vol. **395**, 3-4, Pages 199-215*, 2010.
16. Coppola, E., F. Giorgi, S. A. Rauscher, **C. Piani**, Model weighting based on mesoscale structures in precipitation and temperature in an ensemble of regional climate models. *J. Clim. Res., Vol. **44**, 121-134*, 2010.

2009

17. Berg, P.; Haerter; J. O.; **Piani, C.**; Thejll P.; Hagemann S.; Chritensen J. S. 2009. Seasonal characteristics of the relationship between daily precipitation intensity and surface temperature. *J. Geophys. Res., 114, D18102, doi:10.1029/2009JD012008.2009*

2008

18. **S**anderson, B. M., **C. Piani**, W. J. Ingram, D. A. Stone and M. R. Allen: Towards constraining climate sensitivity by linear analysis of feedback patterns in thousands of perturbed-physics GCM simulations. *J. Clim. Dyn., 30,pp. 175-190, 2008.*
19. Sanderson, B.M., R. Knutti, T. Aina, C. Christensen, N. Faull, D.J. Frame, W.J. Ingram, **C. Piani**, D.A. Stainforth, D.A. Stone, and M.R. Allen, Constraints on Model Response to Greenhouse Gas Forcing and the Role of Subgrid-Scale Processes. *J. Climate, 21, 2384¡V2400.* 2008.
20. Frame, D. J., **C. Piani**, T. Ania, C.M. Christensen, N. E. Fautll, J. A.Kettelbrough, S. H. E. Knight, S. M. Rosier, K. Yamazaki an dM. R. Allen**,** The ClimatePrediction.net BBC climate change experiment: design of the coupled model ensemble. Phil. Trans. R. Soc. A, doi: 10.1098 /rsta.2008.0240, 2008.

2007

21. **Piani, C.,** B. Sanderson, F. Giorgi, D. J. Frame, C. Christensen, and M. R. Allen*,* Regional probabilistic climate forecasts from a multithousand, multimodel ensemble of simulations*, J. Geophys. Res., 112, D24108, doi:10.1029/2007JD008712.*2007.

2006

22. Allen, M. R., and **C. Piani,** et al.: Observational Constraints on Climate Sensitivity. In: Avoiding Dangerous Climate change [Schellnhuber, et al. (eds.)]. *Cambridge Univ. Press, pp. 281-289, 2006 .*
(Book chapter)

2005

23. Stainforth D. A., T. Aina, C. Christensen, M. Collins, D. J. Frame, J. A. Kettleborough, S. Knight, A. Martin, J. Murphy, **C. Piani**, D. Sexton, L. Smith, R. A. Spicer, A. J. Thorpe, M.

J. Webb, M. R. Allen: Evaluating uncertainty in the climate response to changing levels of greenhouse gases. ***Nature 433****, 403-406, 2005.*

24. **Piani C**., D. J. Frame, D.A. Stainforth, and M. R. Allen: Constraints on climate change from a multi-thousand member ensemble of simulations. *Geophys. Res. LettL,**32**, L23825, 2005***.***

2004

25. **Piani C.,** W. A. Norton, and D. A. Stainforth: The equatorial stratospheric response to variations in deterministic and stochastic gravity-wave parameterizations. *Submitted to J.Geophys. Res., 2004.*

2002

26. **Piani C.,** W. A. Norton, A. M. Iwi, E. A.Ray and J. W. Elkins: transport of ozone depleted air on the breakup of the stratospheric polar vortex in spring/summer 2000. *J.Geophys. Res*.-*atmos*, 107 (D20), art. no. 8270 sep-oct 2002.
27. **Piani C**., and W.A. Norton: Solid-body rotation in the northern hemisphere summer stratosphere. *Geophys. Res*. *Lett*., 29 (23), art. no. 2117 dec 11 2002.

2001

28. **Piani C.** and D. Durran: A numerical study of stratospheric gravity waves triggered by squall-lines observed during the TOGA-COARE and COPT-81 experiments. *J. Atmos. Sci*., Vol. 58, 3702-3723, 2001.

2000

29. **Piani C.,** D. Durran, M. J. Alexander and J. R. Holton : A numerical study of three dimensional gravity waves triggered by deep tropical convection and their role in the dynamics of the QBO. *J. Atmos. Sci*., Vol. 57, 3689-3702 2000.

1995

30. **Piani, C**.: Turbolenza su terreno molto ondulato. *Rivista di Meteorologia Aeronautica (Meteorological Journal of the Italian Air Force),* Vol. 55, 43-54, 1995.

Selected Presentations in recent workshops and Symposia

2016

1. Extracting gridded probability density functions for precipitation intensity from point measurements J Haerter, B Eggert, C Moseley, C Piani, P Berg - EGU General Assembly Conference Abstracts, 2016
2. A path to multivariate statistical bias correction (oral presentation). *Berlin-Workshop on Bias Correction in Climate Studies.* 4-6 October, Berlin, Germany. *http://www.climate-bias-correction.de/news/news-schedule.html*
3. Conclusions from the IPCC WG1 Focus group on Bias correction (oral presentation). *Berlin-Workshop on Bias Correction in Climate Studies*. 4-6 October, Berlin, Germany. *http://www.climate-bias-correction.de/news/news-schedule.html*

2015

4. Applying 2D bias correction method to gridded simulations of precipitation and temperature over South-eastern South America. ***Poster.*** *IPCC Workshop on Regional Climate Projections and their Use in Impacts and Risk Analysis Studies. 15-18 Sept. 2015, Sao Jose dos Campos, Brazil. https://www.ipcc-wg1.unibe.ch/meetings/region/region.html*

5. Report from the 4th Break out Group on bias correction. ***Oral presentation***. *IPCC Workshop on Regional Climate Projections and their Use in Impacts and Risk Analysis Studies. 15-18 Sept. 2015, Sao Jose dos Campos, Brazil.*
   https://www.ipcc-wg1.unibe.ch/meetings/region/region.html
6. Statistical bias correction of hydrological forcing fields from GCMs: basic concepts. ***Oral presentation.*** *Third Workshop on Water Resources in Developing Countries: Planning and Management in Face of Hydroclimatological Extremes and Variability*. *12 April to 8 May 2015, Trieste Italy*. *http://indico.ictp.it/event/a14265/*
7. An introduction to climate change and Climate Change modelling. ***Short course***. *Allegheny College 2-6 March, Meadville, PA, USA.*
   http://sites.allegheny.edu/registrar/2015/02/05/new-short-course-on-climate-change/

2014

8. Applying 2D Bias Correction Method to Gridded Simulations of Precipitation and Temperature over Southeastern South America. ***Poster***. *American Geophysical Union Fall Meeting 15-19 Dec. 2014. San Fransisco, CA, USA. Abstract # H13F-1172*
9. Agricultural Adaptations to Climate Changes in West Africa. ***Poster.*** *American Geophysical Union Fall Meeting 15-19 Dec. 2014. San Fransisco, CA, USA. Abstract # GC11E-0604.*

2013

10. *Evaluating climate change impacts and adaptation options for agriculture in West Africa: a multi-model comparison.* ***Poster.*** *American Geophysical Union, Fall Meeting 9-13 Dec. 2013,San Francisco. Abstract #GC33A-1080.*
11. *Statistical Bias Correction of hydrological forcing fields from GCMs: basic concepts.* ***Oral presentation***. *2nd Workshop on Water Resources in Developing Countries: Planning and Management in a Climate Change Scenario. 6-17 May 2013, Trieste Italy. http://indico.ictp.it/event/a12179/.*
12. *Statistical Bias Correction: operational challenges and common blunders. .* ***Oral presentation***. *2nd Workshop on Water Resources in Developing Countries: Planning and Management in a Climate Change Scenario. 6-17 May 2013, Trieste Italy. http://indico.ictp.it/event/a12179/.*