Summary of the Scientific Activity of Prof Giovanni Pitari

Associate Professor, Department of Physical and Chemical Sciences, Univ. L'Aquila, 1/11/1999.
Associate Researcher, Department of Physical and Chemical Sciences, Univ. L'Aquila, 1/11/1984.

Prof Giovanni Pitari is associate professor at the University of L'Aquila (Department of Physical and Chemical Sciences), responsible or contributing teacher of the following courses: Radiative Transfer in Atmosphere, Environmental Meteorology, Atmospheric Chemistry, Climate Changes, Atmospheric Physics with Laboratory. His research activity is primarily in the field of numerical modelling of climate and dynamical-radiative-photochemical processes in the middle atmosphere, with the main interest on anthropogenic changes of atmospheric ozone and aerosols. The most important studies have been made on the following subjects:

1) aerosol-ozone interactions in the stratosphere;
2) impact of climate-chemistry coupled processes on past and future trends of stratospheric and tropospheric ozone;
3) aerosol microphysics and climatic effects of volcanic eruptions;
4) climate-chemical impact of aircraft emissions;
5) climate change mitigation using sulfate geoengineering techniques.

Prof Giovanni Pitari has contributed to the preparation of three IPCC volumes (aviation, TAR and ozone-climate) and six WMO-UNEP assessments of atmospheric ozone. He has also contributed to assessment volumes of: NASA (aviation impacts), EU (ozone and ozone-climate) and SPARC-WCRP (stratospheric aerosols). He was also partner of several European (among them SCOUT-O3, ATTICA, REACT4C) and international research projects (ACCENT, AEROCOM, HTAP, SPARC-CCMVal, SPARC-CCMI, WCRP-GeoMIP). He has contributed to the award of the Nobel Peace prize for 2007 to the IPCC, deserving acknowledgement both from the IPCC and the Italian Government.

A summary of bibliographic indices follows:
peer-reviewed articles on scientific journals: 140;
contributions to assessment volumes (peer-reviewed): 30;
workshop proceedings: 40;
abstracts to workshops: 80;
h-index: 67 (45 from 2016), source Google Scholar;
citations: 27000 (7700 from 2016), source Google Scholar.

In detail, he has been co-author of the following international scientific reports:
1) three IPCC volumes for studies of anthropogenic climatic changes: IPCC-TAR, IPCC-TEAC, IPCC-AVIATION;
2) six volumes of UNEP/WMO for ozone depletion studies and connections with climate variability: WMO-report-37, WMO-report-44, WMO-report-47, WMO-report-50, WMO-report-52, WMO-report-55 ;
3) two NASA volumes on photochemistry and transport of tracer species in the stratosphere: NASA-HSRP-MM, NASA-HSRP-MM2;
4) one WCRP volume on stratospheric aerosols: WCRP-SPARC-strat_aerosols;
5) one WCRP volume on stratospheric ozone: WCRP-SPARC-CCMVal-2;
6) two EU volumes on ozone-climate interactions: EU-report-20623, EU-report-19867.

From 2002, Prof Giovanni Pitari is responsible for the scientific activity of five fellowship researchers (modelling studies of atmospheric ozone and aerosol and impact studies of aviation emissions).

Contribution to the Nobel Peace prize for 2007 to the IPCC

The scientific activity of Prof Giovanni Pitari and his work for the IPCC assessments has contributed to the award of the Nobel Peace prize for 2007 to the IPCC, deserving acknowledgement both from the IPCC and the Italian Government.

Highly Cited Researchers

From 2014 to 2016 and in 2018, Prof Giovanni Pitari was included in the Thomson-Reuters list of the Highly Cited Researchers, *i.e.*, researchers in the top 1% of the different scientific areas in terms of citations number (geosciences in his case).

Editorial responsibilities

From 2016 to 2019, Prof Giovanni Pitari was in the Editorial panel of the scientific journal "Atmosphere" (MDPI publisher), as responsible for the special sections "Aerosols".

AGU Highlights

On December 2002, the following official communication was sent by the AGU to Prof Giovanni Pitari, following the publication of a paper on Geophysical Research Letters and a selection made by the Editors for the paper publication in the Highlights:
Dear Dr Pitari, The Editors have selected your GRL paper, entitled "Climate forcing of subsonic aviation: Indirect role of sulfate particles via heterogeneous chemistry" as an "AGU Journal Highlight." The following summary (below) of your paper will be published in GRL and distributed to interested news media in advance of the paper's publication. If any revisions are required in this summary, please contact me no later than 5 p.m. (EST) on 5 December, or within 48 hours. Thank you very much for your time and help.
Sincerely, Jonathan Lifland - Science Writer, Special Publications - The American Geophysical Union, 2000 Florida Ave. NW, Washington, DC 20009.

Abstract. Increased sulfate aerosols from commercial airliners will affect tropospheric ozone levels and may lead to surface cooling while contributing to upper-atmospheric warming. Pitari et al. [Climate forcing of subsonic aviation: Indirect role of sulfate particles via heterogeneous chemistry] examined how sulfur in exhaust emissions from subsonic aircraft affects atmospheric chemistry with the use of two independent global chemical models. This simulation analyzes the effects of aerosol particles on climate forcing including, for the first time, both the direct aerosol forcing and the indirect impact due to heterogeneous chemical reactions. The authors propose that sulfuric acid particles in aircraft fuel exhaust may significantly perturb the number density of background sulfate aerosols and enhance the chemical reactions on the surface of these particles. Significantly less ozone increase is predicted to occur from aircraft emissions, with respect to the case when only nitrogen oxides and other gas pollutants are assumed to be injected. Unlike previous studies that had primarily focused on jet contrails and the effects on the climate from pollutants and emissions, this "dual" atmospheric model simulation predicts how both chemical reactions and atmospheric particles from subsonic aviation are responsible for forcing climate change.

International research projects

AEROCOM
EU-MOSTOZ
EU-ECHSTRA
EU-ROCS
EU-AEROCHEM-I
EU-AEROCHEM-II (Funded)
EU-TOPOZ-II (Funded))
EU-TOPOZ-III (Funded))
EU-THESEO
EU-ACCENT
EU-INTAS (Funded))
EU-TRADE OFF (Funded))
EU-SCENIC (Funded)
EU-PARTS (Funded)
EU-QUANTIFY
EU-SCOUT-O3 (Funded)
EU-ATTICA (Funded)
EU-REACT4C (Funded)
HTAP
ICAO-CAEP
NASA-HSRP
SPARC-ACCENT
SPARC-CCMVal-1
SPARC-CCMVal-2
SPARC-CCMI
WCRP-GACP
WCRP-GeoMIP

Main international collaborations

University of Cambridge United Kingdom Prof John Pyle
University of Cambridge United Kingdom Dr Helen Rogers
University of Oxford United Kingdom Dr Warwick Norton
University of Leeds United Kingdom Dr M. Chipperfield
Manchester Metropolitan University UK Prof David Lee
Manchester Metropolitan University UK Dr Ling Lim
UK Meteorological Office United Kingdom Dr John Austin
Max-Planck-Insitute Hamburg Germany Prof Hans Graf
Max-Planck-Insitute Hamburg Germany Dr. Claudia Timmreck
DLR Germany Prof Robert Sausen
DLR Germany Dr Volker Grewe
DLR Germany Dr Martin Dameris
DLR Germany Dr Bernd Karcher
Danish Meteorological Institute Denmark Dr Niels Larsen
University of Oslo Norway Prof Ivar Isaksen
University of Oslo Norway Dr Bjorg Rognerud
University of Oslo Norway Dr Terje Bertsen
University of Oslo Norway Dr Jostein Sundet
University of Oslo Norway Dr Michael Gauss

NILU Norway Prof Frode Stordal
NILU Norway Dr Yvan Orsolini
CNRS France Dr D. Hauglustaine
CNRS France Dr Slimane Bekki
Meteo-France Toulouse France Dr Hubert Tesseydre
KNMI The Nederlands Dr Bram Bregman
ETHZ Switzerland Dr Dominik Brunner
St. Petersburgh Met-Office Russia Dr Sergei Smyshlaev
University of Michigan USA Prof Joyce Penner
University of California – Irvine USA Prof Michael Prather
GISS USA Dr Drew Shindell
GSFC USA Dr Charles Jackman
NCAR USA Dr Doug Kinnison
LARC USA Dr Chip Trepte
University of Miami USA Prof Joseph Prospero
AER USA Dr Debra Weisenstein

International scientific commissions

1) World Climate Research Project – Global Aerosol Climatology Project (WCRP – GACP)
2) European Union – Aviation, Aerosol, Cirrus Clouds and Contrails (EU– A2C3)

Publications of the last ten years (2012-2021)

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2) Iachetti, D., and G. Pitari: Study of the impact of altered flight trajectories on soot-cirrus: a EC-REACT4C study, Proceedings of the 3rd International Conference on Transport, Atmosphere and Climate (TAC-3), *DLR-Forschungsbericht 2012-17,* 183-188, R. Sausen et al. Eds., Prien am Chiemsee*,* 25-28 June 2012, 2012.

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7) Pitari, G., E. Coppari, N. De Luca, and P. Di Carlo: Observations and box-model analysis of Radon-222 in the atmospheric surface layer at L'Aquila, Italy: March 2009 case study, *Environ. Earth Sci., 71*, 2353-2359, doi:10.1007/s12665-013-2635-1, 2014.

8) De Luca N., G. Di Genova e G. Pitari: Impatto su atmosfera e clima del traffico stradale: possibili strategie di mitigazione, *Atti dei Convegni Lincei*, *280,* 145-152*,* XXX Giornata dell'Ambiente, *"Mobilità, Traffico e Sicurezza Stradale",* Roma, 17 October 2012, 2014.

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