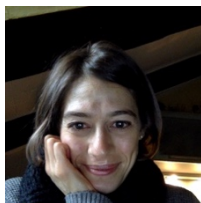


PERSONAL INFORMATION



Elisa Palazzi

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WORK EXPERIENCE

Since 2011

Researcher at the Institute of Atmospheric Sciences and Climate, National Research Council (ISAC-CNR)

Study of the climate system processes and interactions, with a particular focus on the hydrological cycle in the mountain region, climate change and its impacts in high-altitude environments and study of the elevation-dependent warming.

Specific scientific interests

My research topics in the recent years have been mostly addressed to the study of the climate variability and changes in the mountain regions, with a particular focus on the changes in the hydrological cycle (including the analysis of precipitation, snow, temperature). The topic is important because high- altitude mountains are climate change “hot-spots”, are more sensitive than other areas to global and environmental changes and respond more quickly than other regions to climate modifications. The specific activities include:

1. Study of the climate system and Earth-System processes, with a focus on the current and future evolution of the hydrological cycle in the mountain regions. In particular, analysis of the precipitation climatology, characteristics, and changes in the Alpine region and in the Karakoram-Himalaya-Tibetan Plateau using in-situ observations, observation-based gridded datasets, satellite and reanalysis data, and the output of regional and global climate models (e.g. from the CORDEX and CMIP5 experiments, and the EC-Earth global model run at ISAC-CNR).
2. Study of the elevation-dependent warming (EDW), the mechanism by which mountain regions are experiencing more rapid and intense warming than the surrounding areas or compared to the global mean, similar to the Arctic Amplification. Analysis of the factors driving EDW in different mountain regions of the World (in particular in the Alpine Region and in the Himalayas-Tibetan Plateau), using observations and climate model simulations.
3. Downscaling of climate scenarios: in particular, application of the stochastic rainfall downscaling procedure called RainFARM, developed at ISAC-CNR, for the generation of ensembles of high-resolution precipitation fields from coarser datasets. Recent advancements include the implementation in the model of an orographic correction accounting for the dependence of precipitation on orography.
4. Analysis of climate hot-spots, i.e. geographical regions which display the largest variations in multiple statistics (mean, variability, and extremes) of key climate variables (e.g., temperature and precipitation).
5. Use of earth system models of intermediate complexity to perform equilibrium and transient climate sensitivity experiments; analysis of possible tipping points in the climate system.

6. Study of the earth critical zone (ECZ) in mountain areas, through in-situ campaigns measuring CO2 fluxes and exchange between the soil and the atmosphere and defining models for future changes in the ECZ characteristics.

ORCID ID: orcid.org/0000-0003-1683-5267

2009-2011 **Short term researcher (Art. 23)** at the Institute of Atmospheric Sciences and Climate, National Research Council (ISAC-CNR), Italy, funded by the European Space Agency (ESA).

Principal Investigator (PI) of the ESA-funded project “DIMITRI (Diagnostics of Mixing and Transport in the Atmospheric Interfaces)”, on the use of satellite data to study transport processes in the atmosphere and across dynamical barriers (troposphere-stratosphere exchange, subtropical and polar barriers). The DIMITRI project was part of the ESA Changing Earth Science Network 2009-2011.

2008-2009 **Postdoctoral fellow** at the Institute of Atmospheric Sciences and Climate, National Research Council (ISAC-CNR), Italy

Diagnostics of mixing and transport mechanisms in the tropical tropopause layer (TTL) and across other dynamical barriers in the atmosphere (subtropical barrier and polar vortex barrier).

EDUCATION AND TRAINING

June 2008 **PhD in Physical Modeling for Environmental Protection, Dept. of Earth Sciences – University of Bologna, Italy**

- Retrieval of the vertical profile of atmospheric constituents (e.g., nitrogen dioxide and ozone) in the lower troposphere from remote sensing measurements performed using the Multiple-AXis Differential Optical Absorption Spectroscopy (MAX-DOAS) technique
- Implementation of Monte Carlo Radiative Transfer Models to simulate the transport of solar and infrared radiation in the Atmosphere.

June 2003 **Laurea (degree) in Physics, Dept. of Physics - University of Bologna, Italy (110/110L)**

Development of the Radiative Transfer Model “PROMSAR” (Processing of Multiple Scattered Atmospheric Radiation), based on a Monte Carlo technique, for the simulation of radiation transport in the Earth’s atmosphere. The model allows to interpret remote sensing measurements of diffuse solar radiation performed with the Differential Optical Absorption Spectroscopy (DOAS) technique, to derive the concentration of trace gases (e.g., pollutants like nitrogen dioxide, ozone, etc.) in the atmosphere.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	

English	C1	C1	C1	C1	B2
Replace with name of language certificate. Enter level if known.					
French	B2	B2	B2	B2	B1
Replace with name of language certificate. Enter level if known.					

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

- Computer skills**
- Operating systems: Linux, Unix, Mac OS, Windows
 - Programming Languages: IDL, Matlab, R, Fortran 90
 - Programming skills: Development of numerical models for the simulation of radiative transfer in the atmosphere, making use of Monte Carlo algorithms.
 - Software for manipulation, analysis and plotting data: cdo, gnuplot, MS Office Package
 - Editing: Latex, MS Word, vi

ADDITIONAL INFORMATION

- Publications
- Projects
- Memberships
- Assignments
- Other

Relevant publications since 2011

1. Terzago, S., **Palazzi, E.**, and von Hardenberg, J.: Stochastic downscaling of precipitation in complex orography: a simple method to reproduce a realistic fine-scale climatology, *Nat. Hazards Earth Syst. Sci.*, 18, 2825-2840, <https://doi.org/10.5194/nhess-18-2825-2018>, 2018.
2. **Palazzi E.**, L. Mortarini, S. Terzago, J. von Hardenberg. Elevation-dependent warming in global climate model simulations at high spatial resolution, accepted for publication on *Climate Dynamics*, DOI: 10.1007/s00382-018-4287-z, 2018
3. Pasetto D., S. Arenas-Castro, J. Bustamante, R. Casagrandi, N. Chrysoulakis, A. F. Cord, A. Dittrich, C. Domingo-Marimon, G. El Serafy, A. Karnieli, G. A. Kordela, I. Manakos, L. Mari, A. Monteiro, **E. Palazzi**, D. Poursanidis, A. Rinaldo, S. Terzago, A. Ziemba, G. Ziv. Integration of satellite remote sensing data in ecosystem modelling at local scales: practices and trends, Accepted for publication on *Methods in Ecology and Evolution*, doi: 10.1111/2041-210X.13018, 2018
4. Massimiliano Alvioli, Massimo Melillo, Fausto Guzzetti, Mauro Rossi, **Elisa Palazzi**, Jost von Hardenberg, Maria Teresa Brunetti, Silvia Peruccacci, Implications of climate change on landslide hazard in Central Italy, *Science of The Total Environment*, 630, 1528-1543, <https://doi.org/10.1016/j.scitotenv.2018.02.315>, 2018.
5. Ciantelli, C.; **Palazzi, E.**; von Hardenberg, J.; Vaccaro, C.; Tittarelli, F.; Bonazza, A. How Can Climate Change Affect the UNESCO Cultural Heritage Sites in Panama? *Geosciences* **2018**, 8, 296
6. Carolina Adler, **Elisa Palazzi**, Aino Kulonen, Jörg Balsiger, Guido Colangeli, Douglas Cripe, Nathan Forsythe, Grace Goss-Durant, Yaniss Guigoz, Jürg Krauer, Davnah Payne, Nicholas Pepin, Manuel Peralvo, José Romero, Roger Sayre, Maria Shahgedanova, Rolf Weingartner, and Marc Zebisch, Monitoring Mountains in a Changing World: New Horizons for the Global Network for Observations and Information on Mountain Environments (GEO-GNOME), *Mountain Research and Development* 2018 38 (3), 265-269
7. Terzago, S; J von Hardenberg; **E. Palazzi**, A. Provenzale, Snow water equivalent in the Alps as seen by gridded data sets, CMIP5 and CORDEX climate models, *The Cryosphere*, 11, 1625-1645, <https://doi.org/10.5194/tc-11-1625-2017>, 2017.
8. **Palazzi E.**, Filippi L., von Hardenberg J., Insights into elevation-dependent warming in the Tibetan Plateau-Himalayas from CMIP5 model simulations, *Clim. Dyn.*, 48 (11-12), 3991-4008, 2017.
9. **Palazzi E.**, Provenzale A., Water in the climate system, in "The Fluid Dynamics of Climate", pp: 161-182, Springer Vienna, 2016.
10. Norris, J., Carvalho, L.M.V., Jones, C. Cannon, F., Bookhagen, B., **Palazzi, E.**, Tahir A. A., The spatiotemporal variability of precipitation over the Himalaya: evaluation of one-year WRF model simulation, *Clim Dyn.*, doi:10.1007/s00382-016-3414-y, 2016.
11. Pepin, N., Bradley, R.S., Diaz, H.F., Baraer, M., Caceres, E.B., Forsythe, N., Fowler, H., Greenwood, G., Hashmi, M.Z., Liu, X.D., Miller, J.R., Ning, L., Ohmura, A., **Palazzi, E.**, Rangwala, I., Schöner, W., Severskiy, I., Shahgedanova, M., Wang, M.B., Williamson, S.N., Yang, D.Q., Elevation- dependent warming in mountain regions of the world (2015) *Nature Climate Change*, 5 (5), pp. 424-430. DOI: 10.1038/nclimate2563, 2015.
12. Turco, M., **E. Palazzi**, J. von Hardenberg, and A. Provenzale, Observed climate change

- hotspots. *Geophys. Res. Lett.*, 42, 3521–3528. doi: 10.1002/2015GL063891, 2015
13. Soncini, A., Bocchiola, D., Confortola, G., Bianchi, A., Rosso, R., Mayer, C., Lambrecht, A., **Palazzi, E.**, Smiraglia, C., Diolaiuti, G. Future hydrological regimes in the upper Indus basin: A case study from a high-altitude glacierized catchment, *Journal of Hydrometeorology*, 16 (1), pp. 306-326. DOI: 10.1175/JHM-D-14-0043.1, 2015.
 14. **Palazzi, E.**, Von Hardenberg, J., Terzago, S., Provenzale, A. Precipitation in the Karakoram-Himalaya: a CMIP5 view, *Climate Dynamics*, Vol 45, pp. 21-45, DOI: 10.1007/s00382-014-2341-z, 2015.
 15. Terzago S, **Palazzi E**, Probenzale A., Current Status and Future Projections of the Snow Depth in the Third Pole from CMIP5 Global Climate Models, *Engineering Geology for Society and Territory-Volume 1*, 39-42, 2015
 16. **Palazzi E**, Tahir A Ahmad, Cristofanelli P, Vuillermoz E, Provenzale A, Climatic Characterization of Baltoro Glacier (Karakoram) and Northern Pakistan from In-situ Stations, *Engineering Geology for Society and Territory-Volume 1*, 33-37, 2015
 17. A Provenzale, **E Palazzi**, Assessing climate change risks under uncertain conditions *Engineering Geology for Society and Territory-Volume 1*, 1-5, 2015.
 18. Filippi, L., **Palazzi, E.**, Von Hardenberg, J., Provenzale, A. Multidecadal variations in the relationship between the NAO and winter precipitation in the Hindu Kush-Karakoram, *Journal of Climate*, 27 (20), pp. 7890-7902. DOI: 10.1175/JCLI-D-14-00286.1, 2014.
 19. D'Onofrio, D., **Palazzi, E.**, Von Hardenberg, J., Provenzale, A., Calmanti, S. Stochastic rainfall downscaling of climate models, *Journal of Hydrometeorology*, 15 (2), pp. 830-843. DOI: 10.1175/JHM-D-13-096.1, 2014.
 20. Terzago, S., von Hardenberg, J., **Palazzi, E.**, Provenzale, A. Snowpack changes in the Hindu Kush- Karakoram-Himalaya from CMIP5 global climate models, *Journal of Hydrometeorology*, 15 (6), pp. 2293-2313. DOI: 10.1175/JHM-D-13-0196.1, 2014.
 21. Garcia-Aristizabal, A., Bucchignani, E., **Palazzi, E.**, D'Onofrio, D., Gasparini, P., Marzocchi, W. Analysis of non-stationary climate-related extreme events considering climate change scenarios: an application for multi-hazard assessment in the Dar es Salaam region, Tanzania, *Natural Hazards*, 75 (1), pp. 289-320. DOI: 10.1007/s11069-014-1324-z, 2014.
 22. **Palazzi, E.**, Von Hardenberg, J., Provenzale, A. Precipitation in the hindu-kush karakoram himalaya: Observations and future scenarios, *Journal of Geophysical Research: Atmospheres*, 118 (1), pp. 85-100. DOI: 10.1029/2012JD018697, 2013.
 23. Premuda, M., **Palazzi, E.**, Ravegnani, F., Bortoli, D., Masieri, S., Giovanelli, G. MOCRA: A monte Carlo code for the simulation of radiative transfer in the atmosphere, *Optics Express*, 20 (7), pp. 7973-7993. DOI: 10.1364/OE.20.007973, 2012.
 24. **Palazzi, E.**, Fierli, F., Stiller, G.P., Urban, J. Probability density functions of long-lived tracer observations from satellite in the subtropical barrier region: Data intercomparison (2011) *Atmospheric Chemistry and Physics*, 11 (20), pp. 10579-10598. DOI: 10.5194/acp-11-10579-2011.

Synergistic Activities

1. Teaching: Course “Physics of Climate”, University of Turin, Department of Physics, since 2013 (CFU 6)
2. Teaching at the “Scuola di Studi Superiori” of the University of Turin Ferdinando Rossi (SSST), an institution of excellence and higher education for University Studies, since 2012
3. Series of seminars at the University of Pisa, within the course: “Meteoclimatology”, February-May 2018
4. Teaching experiences in summer schools: 1) Alpine Summer School on "Fundamental processes in geophysical fluid dynamics and the climate system", Valsavarenche, Valle d'Aosta, Italy (2012, 2013); 2) ENVIMAT International Summer School on Environment-Material Interaction (2014, 2015)
5. Referee for the following journals: *Climatic Change*, *Journal of Geophysical Research*, *Climate Dynamics*, *Nature Geoscience*, *Mountain Research and Development*, *Atmospheric Measurement Techniques*, *Earth System Dynamics*, *International Journal of Water Resources Development*, *Science of the Total Environment*, *International Journal of Climatology*, *Climate*.

Relevant Projects

1. Co-coordinator from November 2011 to 2013 of the Italian PAPRIKA-Karakorum project focused on the evolution of water resources in the Kararoram/Himalaya region.
2. Coordinator of Subproject 2 on future projections and responsible of WP2.6 in the Italian NextData project (A national system for the retrieval, storage, access and diffusion of environmental and climate data from mountain and marine areas, 2012-2018) - ongoing.
3. Participant to the H2020 EU projects ECOPOTENTIAL (Improving future ecosystem benefits through earth observations, Task Leader of the Task on downscaling and future scenarios) and CRESCENDO (COORDINATED RESEARCH IN EARTH SYSTEMS AND CLIMATE:

EXPERIMENTS, KNOWLEDGE, DISSEMINATION AND OUTREACH, participant) - ongoing.

4. Participant to the INTERREG Central Europe "ProteCH2save" project, which contributes to an improvement of capacities of the public and private sectors to mitigate the impacts of climate change and natural hazards on cultural heritage sites – ongoing
5. Partner of the project "Innovative methods for water resources management under hydro-climatic uncertainty scenarios", PRIN 2010-2011 (D.M. 1152/ric del 27/12/2011) - closed

Assignments

1. Co-coordinator, together with the Mountain Research Initiative (MRI) of the Global Network for Observations and Information in Mountain Environments (GEO-GNOME), a "Group on Earth Observations (GEO)" Initiative since 2016
2. Member of the Working Group for Italy in the Belmont Forum (International Group of Funding Agencies) and GPC (Group of Program Coordinators) member of the Belmont Collaborative Research Action (CRA) "Mountains as Sentinels of Change"
3. Co-coordinator of the European Climate Research Alliance (ECRA) Collaborative Programme "Changes in the Hydrological Cycle".
4. Member of the Mountain Research Initiative (MRI) EXPERTS DATABASE AND COMMUNITY. Expertise: Process studies along altitudinal gradients and in associated headwater basins
5. Since 2014 to 2018 in the Scientific Council of the Italian-French Alpine summer school on "Fundamental processes in geophysical fluid dynamics and the climate system" organized each year by the Institute of Atmospheric Sciences and Climate (ISAC) - CNR (Turin, Italy) and by the Centre national de la recherche scientifique (France).

Outreach and Dissemination papers/articles

1. Elisa Palazzi, Susanna Corti. "El Niño: dal Pacifico equatoriale all'intero globo", n. 6 - november/december 2016 - pp. 16-21, edizioni Dedalo - Bari – Italia, DOI: 10.12919/sapere.2016.06.2 (in Italian)
2. Collaboration with "Origami", weekly insert of the Italian daily newspaper "La Stampa"
 - Le farfalle del Gran Paradiso anticipano i destini nella savana, n. 96 (Fratello Elefante)
 - Meteo futuro: le previsioni del tempo di Blade Runner 2049 sono corrette?, n. 99 (BLADE RUNNER IL FUTURO CHE NON VERRÀ)
 - L'esempio di Yellowstone: sono tornati i pioppi e i salici ricomparsi uccelli e insetti, n.103 (ATTENTI AL LUPO)
3. Author of a scientific paper for kids/teens: E Palazzi, L Filippi, J von Hardenberg, Why are the Himalayas getting hotter?, April 2017, Associate editor: Lindsey Hall (<http://www.sciencejournalforkids.org/science-articles/why-are-the-himalayas-getting-hotter>)
4. Other dissemination activities including seminars and conferences in schools or addressed to the generic audience during public events/festivals; participation to TV (RaiScuola: Nautilus; Rai3: Geo&Geo) and radio (Radio24: "Terra in Vista" and "L'Altra Europa", Radio2: "Caterpillar") Italian programs

Personal data In compliance with the Italian legislative Decree no. 196 dated 30/06/2003, I hereby authorize to use and process my personal details contained in this document".

Date 05/09/2018