CV

Parvin Ghafarian

Meteorologist (Faculty member)

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Gender: Female

Scientific Interests

My research interest is using numerical weather prediction models and global climate models to understand better the structure of extreme climate phenomena and how the improvement of the is improved. I study, monitor, and simulate wind field, convective storms, lake-effect snow and, extreme precipitation in regions with a complex topography and coastal area. A fundamental focus of my research is the sensitivity of models to initial and boundary conditions, model resolution, and physical schemes.

Education

- Ph.D. Meteorology, Science and Research Branch, Islamic Azad University, Tehran, Iran, 2011.

- M.Sc. Meteorology, Tehran_North Branch, Islamic Azad University, Tehran, Iran, 2006.

- B.Sc. Physics, Tarbiat Moalem University (Kharazmi University). Tehran, Iran, 1999.

Positions and Work Experiences

- Faculty member, Iranian national institute for oceanography and atmospheric science (INIOAS), 2013-present.
- Head of climate change program, INIOAS, 2019-2021.
- Head of atmospheric science department, INIOAS, 2014-2021.

Language

- English
- Persian

Skills

- WRF, WRF/Chem, WRF-Hydro model
- CESM model
- NCL
- Python
- GrADS

Selected publications (ISI)

- Lahijani, H., **Ghafarian, P**., Saleh, A., Kaveh-Firouz, A., Mohammadi, A., Azizpour, J., Sanjani, S., Rezaei, H., Afarin, M., 2024. Response of shelf waters in the northern Gulf of Oman to the passage of tropical Cyclone Shaheen (2021). Dynamics of Atmospheres and Oceans, 106, p.101449.

- Alizadeh, O., **Ghafarian, P,** 2023. Large-scale driving mechanisms of the lowest and highest annual temperatures in northwestern Iran. Weather, pp. 1-6.

- Lahijani, H.A., Azizpour, J., Arpe, K., Abtahi, B., Rahnama, R., **Ghafarian, P.**, Hamzeh, M.A., Hamzehpour, A., Penchah, M.M., Mahmoudof, S.M., 2023. Tracking of sea level impact on Caspian Ramsar sites and potential restoration of the Gorgan Bay on the southeast Caspian coast. Science of The Total Environment, 857, p.158833.

- **Ghafarian, P.**, Mohammadpour Penchah, M., 2023. Wind resource assessment over the Persian Gulf and Oman Sea using a numerical model simulation and satellite data. Journal of Ocean Engineering and Marine Energy, pp.1-10.

- **Ghafarian, P.,** Kabiri, K., Delju, A.H., Fallahi, M., 2022. Spatio-temporal variability of dust events in the northern Persian Gulf from 1991 to 2020. Atmospheric Pollution Research, 13(4), p.101357.

- Owlad, E., Stoffelen, A., **Ghafarian, P.**, Gholami, S., 2022. Wind field and gust climatology of the Persian Gulf during 1988–2010 using in-situ, reanalysis and satellite sea surface winds. Regional Studies in Marine Science, 52, p.102255.

- **Ghafarian, P.,** Delju, A.H., Tajbakhsh, S., Penchah, M.M., 2021. Simulation of the role of Caspian Sea surface temperature and air temperature on precipitation intensity in lake-effect snow. Journal of Atmospheric and Solar-Terrestrial Physics, p.105777.

- Maddah, M.A., Akhoond-Ali, A.M., Ahmadi, F., **Ghafarian, P**., Rusin, I.N., 2021. Forecastability of a heavy precipitation event at different lead-times using WRF model: the case study in Karkheh River basin. Acta Geophysica, 69(5), pp.1979-1995.

- **Ghafarian, P.** (2021). Impact of physical parameterizations on simulation of the Caspian Sea lake-effect snow. Dynamics of Atmospheres and Oceans, 94, 101219.

- **Ghafarian, P**., Reihani Parvari, M., Fathi, M., Owlad, E., Vazife, A. (2021). Analysis of an extreme Caspian Sea lake-effect snowfall based on observation data and radar images: a case study of 9–11 February 2020. Weather.

- **Ghafarian, P**., Tajbakhsh, S., Delju, A.H. (2021). Analysis of the Long-Term Trend of Temperature, Precipitation, and Dominant Atmospheric Phenomena in Lake Urmia. The Handbook of Environmental Chemistry.

- Gholami, S., Ghader, S., Khaleghi-Zavareh, H., **Ghafarian, P**. (2021). Sensitivity of WRF-simulated 10 m wind over the Persian Gulf to different boundary conditions and PBL parameterization schemes. *Atmospheric Research*. 105147.

- Kazeminezhad, M.H., Vilibić, I., Denamiel, C., **Ghafarian, P**. and Negah, S., (2021). Weather radar and ancillary observations of the convective system causing the northern Persian Gulf meteotsunami on 19 March 2017. Natural Hazards, 106(2), pp.1747-1769.

- **Ghafarian, P**., Pegahfar, N., Owlad, E. (2018). Multiscale analysis of lake-effect snow over the southwest coast of the Caspian Sea (31 January–5 February 2014). *Weather*, *73*(1), 9-14.

- Alizadeh-Choobari, O., Bidokhti, A. A**., Ghafarian, P**., Najafi, M. S. (2016). Temporal and spatial variations of particulate matter and gaseous pollutants in the urban area of Tehran. *Atmospheric Environment*, *141*, 443-453.

- **Ghafarian, P**., Gholami, S., Owlad, E., Gerivani, H. (2016). Rainfall–runoff temporal variability in Kermanshah province, Iran and distinguishing anthropogenic effects from climatic effects. *Journal of Earth System Science*, 125(6), 1299-1311.

- Alizadeh-Choobari, O., **Ghafarian, P**., Adibi, P. (2016). Inter-annual variations and trends of the urban warming in Tehran. *Atmospheric research*, *170*, 176-185.

- Alizadeh-Choobari, O., **Ghafarian, P**., Owlad, E. (2016). Temporal variations in the frequency and concentration of dust events over Iran based on surface observations. *International Journal of Climatology*, *36*(4), 2050-2062.

- Haghroosta, T., Ismail, W. R., **Ghafarian, P**., Barekati, S. M. (2014). The efficiency of the Weather Research and Forecasting (WRF) model for simulating typhoons. *Natural Hazards and Earth System Sciences*, *14*(8), 2179.

- **Ghafarian, P**., Azadi, M., Meshkatee, A. H., Farahani, M. M. (2012). Numerical simulation of the impact of Anatolian and Caucasus Mountains on the precipitation distribution over the Black Sea. *Natural Hazards and Earth System Sciences*, *12*(3), 607.

- Tajbakhsh, S., **Ghafarian, P**., Sahraian, F. (2012). Instability indices and forecasting thunderstorms: the case of 30 April 2009. *Natural Hazards and Earth System Sciences*, *12*(2).

Research Grants

Iran meteorological organization: *Verification of hydro-meteorological coupled model (WRF-Hydro) for flood forecasting in Gilan province (2022).*

Iranian national institute for oceanography and atmospheric science: *Investigating and evaluating the effect of stratospheric ozone on weather patterns and climatic parameters in the Middle East using numerical modeling (CESM model) (2021-2022).*

Iran National Science Foundation: *Physical Mechanisms of Extreme Precipitations over the Southern Coast of the Caspian Sea (2018-2020).*

Iranian national institute for oceanography and atmospheric science: *A sensitivity analysis of the WRF model in surface wind simulation for Oman Sea to initial conditions and physical Parameterization of boundary and surface layer (2017).*

Kermanshah Regional Water Co: *Rainfall-runoff temporal variability in Kermanshah and isolating anthropogenic from climatic effects (2015-2016).*

Review Activities

- Reviewed proposals to the Iran National Science Foundation (INSF) (several programs).
- Reviewed manuscripts submitted to the Atmospheric Research, Natural Hazards, Marine Pollution Bulletin and Weather.

Educational Activities

Graduate Student Advising

Student Name	Degree	Departmental Affiliation	My role	Status
Siavash Gholami	Ph.D.	Atmospheric science, INIOAS	Advisor	Complete, 2019
Leila Goodarzi	Ph.D.	Irrigation and Drainage, Theran University	Advisor	Complete, 2018
Nasim Hossein Hamzeh	Ph.D.	Research Institute of	Advisor	Complete,

		Meteorology and Atmospheric Science		2018
Sajad Mahmoudi Babolan	M.S.	Irrigation and Drainage, Theran University	Advisor	Complete, 2021
Rouhollah Zahedi	M.S.	Meteorology Department, Islamic Azad University	Advisor	Complete, 2016
Samaneh Alidadi	M.S.	Department of Natural Resources, Isfahan University of Technology	Advisor	Complete, 2014
Faeghe Afshari	M.S.	Faculty of sciences, University of Hormozgan	Advisor	Complete, 2014

Teaching Activities

- Numerical weather prediction
- Synoptic meteorology

Awards

- IUGG2023 grant
- International Ocean Institute (IOI) 2015