

Jet Propulsion Laboratory, California Institute of Technology.  
Aerosols and Clouds Group (329J)  
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## **RESEARCH INTERESTS AND EXPERTISE**

- Statistical Climatology
- Application of statistical methods to detection and attribution of climate change analysis in regional and local scale
- Extreme events attribution (such as, droughts, extreme precipitation)
- Identifying human-induced changes in continental Carbon and Water Cycle as an interconnected system

## **EDUCATION**

- **Ph.D. in Atmospheric Science (2013)– University of Hamburg, Germany**

*Thesis:* Consistency of recent climate change and expectation as depicted by scenarios over the Mediterranean region

*Synopsis of research:* I developed a statistical model to detect and attribute anthropogenic climate change in regional and local scale (Barkhordarian et al., 2012a, 2012b, 2013, - Barkhordarian A 2012c)

*Supervisors:* Prof. Hans von Storch and Dr. Eduardo Zorita

*Achievements:* Cumulative doctoral thesis with 4 peer-reviewed published papers

- **Master of Science in Meteorology (2009) – University of Teheran**

*Thesis:* Numerical Modeling of the Sea Breeze phenomenon over the Bushehr area.

*Synopsis of thesis:* I developed a numerical model for simulating the sea breeze circulation over the Bushehr area (using Visual FORTRAN). In the translation layer of the model the governing equations are solved numerically by applying second order finite-difference method.

*Minor:* Numerical Modeling of the Atmosphere and Ocean  
Atmospheric Physics  
Dynamical Meteorology  
Micro-meteorology  
Hydrometeorology

- **Bachelor of Science in Solid State Physics (2006) – University of Teheran**

*Minor:* Analytical Mechanics

Electromagnetism

Quantum Mechanics

Solid-State Physics

Crystallography

## **EMPLOYMENT**

- Assistant Researcher. JIFRESSE at NASA's Jet Propulsion Laboratory, California Institute of Technology (2019-present)
- Visiting Researcher at the Max-Planck Institute for Meteorology, The Land in the Earth System, Hamburg, Germany (2017-2018)
- UCLA Post-doctoral scholar at NASA's Jet Propulsion Laboratory, California Institute of Technology (2016-2019)
- Post-doctoral researcher at the Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany (2013-2015)
- Doctoral scientific assistant (PhD student) at the Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany (2009-2013)

## **AWARDS**

- Fellowship from the Cluster of Excellence (CliSAP) of Hamburg University awarded by the Alexander von Humboldt-Foundation (9/2017-11/2017)

## **PUBLICATIONS**

15. **Barkhordarian A**, Saatchi S, Behrangi A, Loikith PC, Mechoso CR (2019) A Recent Systematic Increase in Vapor Pressure Deficit over Tropical South America. *Nature-Scientific Reports*. (accepted with minor revision)
14. Loikith PC, Albertani L, ... **A Barkhordarian** (2019) A Climatology of Daily Synoptic Circulation Patterns and Associated Surface Meteorology over Southern South America. *Climate Dynamics*. <https://doi.org/10.1007/s00382-019-04768-3>.
13. Detzer J, Loikith PC, **Barkhordarian A** and Lee H, (2019) Characterizing Temperature Variability States and Associated Meteorological Drivers Across Southern South America. *I. Journal of Climatology*. <https://doi.org/10.1002/joc.6224>.
12. **Barkhordarian A** et al., (2018) Simultaneous Regional Detection of Land-use Changes and Elevated GHG Levels: The Case of Spring Precipitation in Tropical South America. *Geophysical Research Letters*, **45**, 6262-6271.

11. Loikith, P. C., J. Detzer, C. R. Mechoso, H. Lee, and **A. Barkhordarian**, (2017) The Influence of Recurrent Modes of Climate Variability on the Occurrence of Monthly Temperature Extremes over South America. *Journal of Geophysical Research*, **122**, 10, 297-10, 311.
10. **Barkhordarian A**, von Storch H, Zorita E, Loikith PC and CR Mechoso (2017) Observed Warming over Northern South America Has an Anthropogenic Origin. *Climate Dynamics*, **51**, 1901-1914.
9. **Barkhordarian A**, von Storch H, Zorita E and J Gómez-Navarro (2016) An Attempt to Deconstruct Recent Climate Change over the Baltic Sea Basin. *Journal of Geophysical Research – Atmosphere*, 121, doi:10.1002/2015JD024648.
8. Soares D, Lee H, Loikith P, **Barkhordarian A** and Mechoso CR (2016) Can Significant Trends in Surface Air Temperature and Precipitation be Detected over South America? *International Journal of Climatology*. DOI: 10.1002/joc.4792.
7. **Barkhordarian A** (2015) Annex 2: The Concept of Detection and Attribution in the “*Second Assessment of Climate Change for the Baltic Sea Basin*”, Springer, Apr 15, 2015, ISBN: 978-3-319-16005-4.
6. Niang, et al (2014) Africa. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the **Fifth Assessment Report of the IPCC**. 2014. pp. 1199-1265.
5. **Barkhordarian A**, von Storch H and Bhend J (2013) The Expectation of Future Precipitation Change over the Mediterranean Region is Different from What We Observe. *Climate Dynamics*, 40, 225 – 244.
4. Planton S, **Barkhordarian A**, Aurélien R, von Storch H (2013) Detection and Attribution: Regional Assessment of Climate Change in the Mediterranean. Volume 1: Air, Sea and Precipitation and Water. Editors: Antonio Navarra, Laurence Tubiana, Volume 50, 2013, pp 157-186.
3. **Barkhordarian A**, von Storch H and Zorita E (2012b) Anthropogenic Forcing is a Plausible Explanation for the Observed Surface Specific Humidity Trends over the Mediterranean area. *Geophysical Research Letters*, 39, L19706.
2. **Barkhordarian A**, Bhend J and von Storch H (2012a) Consistency of Observed near Surface Temperature Trends with Climate Change Projections over the Mediterranean Region. *Climate Dynamics*, 38, 1695—1702.
1. **Barkhordarian A** (2012c) Investigating the Influence of Anthropogenic Forcing on Observed Mean and Extreme Sea Level Pressure Trends over the Mediterranean Region. *The Scientific World Journal*, 525303, 16 pages doi:10.1100/2012/525303.

## **PRESENTATIONS AT MEETINGS AND CONFERENCES**

- General Assembly of the “European Geosciences Union” (EGU), **Vienna**, Austria, 2019 (**Co-Convener, PICO presentation**)
- American Geophysical Union Fall Meeting, **Washington DC**, USA, December 2018 (**poster presentation**).
- Space Studies Board meeting at Beckman Center of the National Academies of Sciences, Engineering and Medicine. **CA**, USA, November 2018 (**poster presentation**).
- Caltech YLY Lunch Seminar. California Institute of Technology, **CA**, USA, November 2018 (**Invited talk**).
- Workshop on “Amazon Drought” in California Institute of Technology (Caltech), **CA**, USA, June 2018.
- Cluster of Excellence (CliSAP) of Hamburg University. **Hamburg**, Germany, June 2018 (**Invited talk**)
- Portland State University (PDX), Oregon, **Portland**, USA, February 2018 (**oral presentation**)
- Max-Planck Institute of Meteorology, November 2017, **Hamburg**, Germany. (**oral presentation**)
- Institute of Coastal Research, Helmholtz-Zentrum Geesthacht (HZG), October 2017, **Geesthacht**, Germany. (**oral presentation**).
- American Geophysical Union Fall Meeting, New Orleans, **Louisiana**, December 2017 (**oral presentation**).
- American Geophysical Union Fall Meeting, New Orleans, **Louisiana**, December 2017 (**co-author, oral presentation**).
- 30th Conference on Climate Variability and Change. 25-27 July, Baltimore, **Maryland**, USA, 2017 (**oral presentation**)
- American Geophysical Union Fall Meeting. 14-18 December, **San Francisco**, USA (**co-author, poster**)
- 96th American Meteorological Society Annual Meeting. 10-14 January 2016, New Orleans, **Louisiana**, USA (**co-author, oral presentation**)
- Jet Propulsion Laboratory, California Institute and Technology, Climate Sciences Seminar, **CA**, USA, 2015 (**Invited Talk**).
- Baltic Sea Conference, Riga, **Latvia**, 16-19 June 2015 (**co-author, oral presentation**)
- International Scientific Seminar “Uncertainty in climate variability and projections of climate change: towards a process-based understanding”, **Chicheley Hall**, UK, 2015 (**co-author, oral presentation**).

- International Detection and Attribution Group (IDAG) meeting, UCAR, Boulder, **Colorado**, USA, 2013 (**oral presentation**).
- 12<sup>th</sup> International Meeting on Statistical Climatology, **Jeju**, Korea, 2013 (**co-author, oral presentation**)
- 7<sup>th</sup> Study Conference on BALTEX, **Oland**, Sweden, 2013 (**co-author, oral presentation**).
- International Mediterranean Climate Variability and Predictability (MedCLIVAR) Conference, **Madrid**, Spain, 2012 (**oral presentation**).
- The Concept of Detection and Attribution, BACC||, **Tallinn**, Estonia, 2012 (**Poster**)
- Open Science Conference of the “World Climate Research Program” (WCRP), Denver, **Colorado**, USA, 2012 (**Poster**).
- “Gemeinsames Seminar” der Meteorologie, **Hamburg**, Germany, 2012 (**Invited Talk**)
- General Assembly of the “European Geosciences Union” (EGU), **Vienna**, Austria 2011 (**oral presentation**).
- Retreat of “School of Integrated Climate System Sciences” (SICSS) Doctoral Researchers”, **Lauenburg**, Germany, 2011.
- International Detection and Attribution Group (IDAG) meeting, NCAR, Boulder, **Colorado**, USA, 2011 (**oral presentation**).
- General Assembly Meeting of the “Climate Change and Impact Research: The Mediterranean Environment” (CIRCE) in **Madrid**, Spain, 2010.
- International Precipitation Working Group (IPWG) conference, **Hamburg**, Max-Planck institute, 2010 (**Poster**).
- General Assembly of the “European Geosciences Union” (EGU), **Vienna**, Austria, 2010 (**oral presentation**)
- International Detection and Attribution Group (IDAG) meeting, UCAR, Boulder, **Colorado**, USA, 2010 (**oral presentation**).
- 2<sup>nd</sup> Progress Meeting of the Research Line 1 “Identification and Attribution of Present Climate Trends” with an oral presentation in Prague, **Czech Republic**, 2009.
- Workshop on “The Mediterranean Region and the Global Climate System” in Toulouse, **France**, 2009.
- 6<sup>th</sup> Summer School of the “Geesthacht Centre for Material and Coastal Research” on “Statistical Analysis in Climate Research” in Lecce, **Italy**, 2009.

## COMPUTER SKILLS

- R PROGRAMMING LANGUAGE
- FORTRAN
- CDOs
- LINUX
- TEC PLOT

## LANGUAGES

- ARMENIAN
- ENGLISH
- PERSIAN

## TRAVEL AWARDS

- Open Science Conference of the “World Climate Research Program” (WCRP), Denver, Colorado, USA, 2012. **Student travel grant recipient.**
- 6th Summer School of the GKSS Research Centre on “Statistical Analysis in Climate Research” in Lecce, Italy, 2009. **Student travel grant recipient.**