

KAUSHAL GIANCHANDANI

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EDUCATION

Ph.D. in Oceanography [GPA: 89/100] Oct 2017 – present
Hebrew University of Jerusalem, Israel (HUJI)

Integrated B.Sc. - M.Sc. in Physics [GPA: 7.4/10] Aug 2012 – May 2017
National Institute of Science Education and Research (NISER), Bhubaneswar, India

SKILLS

Analytical: Climate modeling, Renewable Energy, Oceanography, Bio-geo-chemistry, Fluid Mechanics, Nonlinear Dynamics, Time Series Analysis, Statistics, Data Science, Machine Learning
Computational: Python, jupyter, C++, Bash, Fortran, Parallel Programming, MITgcm, LaTeX, MATLAB, Linux, MS Office, MS Azure

WORK EXPERIENCE

Graduate Research Assistant, Hebrew University of Jerusalem, Israel (HUJI) Oct 2017 – present
Project title: Statistical analysis of global data on winds and ocean currents

- Developed statistical tests for **time series analysis** of global surface winds and ocean currents (**10⁹ data points**) provided by European Centre for Medium-Range Weather Forecasts (ECMWF).
- Recommended an alternative probability distribution function, which **reduced the error** in estimated renewable electric power available **from ~10% to >1%**.

Project title: Modeling wind-driven ocean currents

- Derived how the dimensions of an ocean basin affect the volume of water transported by strong ocean currents like the Gulf Stream.
- Benchmarked the analytical results by programing a **numerical model in MATLAB**.

Project title: Examining physical and bio-geo-chemical properties of oceans in extremely cold climate

- Programmed a state-of-the-art climate model (MITgcm)** to simulate extremely cold 'snowball' Earth climate.
- Investigated the physical and bio-geo-chemical properties of the ocean during extreme climate conditions.

Summer Intern, École Normale Supérieure de Lyon (ENS de Lyon) May – Jul 2016
Project Title: Transition to turbulence in baroclinic flows (cont. as Master's thesis)

- Programmed a python package** (pyqg) to model baroclinic flows.
- Determined how the coupled effect of rotation and friction leads to reorganization of Jet Stream-like turbulent flows.

Summer Intern, Institute of Mathematical Sciences (IMSc), Chennai Jun – Jul 2015
Project Title: Binary logic (unconventional computing) using chemical oscillators

- Numerically modeled** an array of 20 coupled chemical oscillators **in MATLAB**.
- Constructed logic gates (parity checker, OR, NOT, NOR) by applying chemical perturbations on the array.

Summer Intern, Indian Institute of Science Education & Research (IISER), Kolkata May – Jul 2014
Project Title: Time series analysis of bouncing ball experiment using Wavelets and EMD

- Designed and carried out an experiment to obtain **non-stationary time series** from ball(s) bouncing on a sinusoidally driven, piezoelectric platform.
- Analysed the multi-scale time series using **Fourier transformation, Wavelet transformation, and Empirical Mode Decomposition** to identify **self-similarity, complex scaling behavior, and quasi-periodicity**.

PUBLICATIONS

[2] Gianchandani, Kaushal, Hezi Gildor, and Nathan Paldor. "[On the role of domain aspect ratio in the westward intensification of wind-driven surface ocean circulation](#)." *Ocean Science* 17, no. 1 (2021): 351-363.

[1] Campisi-Pinto, Salvatore, Kaushal Gianchandani, and Yosef Ashkenazy. "[Statistical tests for the distribution of surface wind and current speeds across the globe](#)." *Renewable Energy* 149 (2020): 861-876.

FELLOWSHIPS and AWARDS

- **Innovation in Science Pursuit for Inspired Research (INSPIRE) Fellowship** Aug 2012 – May 2017
Sponsor: Department of Science & Technology (DST), Govt. of India
- **Physics Summer Research Fellowship** Jun – Jul 2015
Sponsor: Institute of Mathematical Sciences (IMSc), Chennai
- **Best Student award**, St. Gregorios Senior Secondary School, Udaipur 2012

SELECT PRESENTATIONS

- **Atmospheres and Oceans seminar** *Invited Talk* Jan 2021
Johns Hopkins University, Baltimore, MD, USA
- **Summer School on Fluid Dynamics of Sustainability & the Environment (FDSE)** *Poster presentation* Sep 2018
University of Cambridge, Cambridge, UK

MISCELLANEOUS

- **Initiated, procured sponsorship and organized** street dancing competition 'Abhivyakti' at NISER.
- Represented NISER in two inter-university basketball tournaments.