Sambit Sahoo
Doctor of Philosophy

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Department of Earth and Atmospheric Sciences
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Research interests

My current research interest mainly focuses on the feedback process between External stress and endogenous fluid dynamics at volcanoes and hydrothermal systems using Tidal loading and effects on critically stressed systems; Seasonal, Multi-annual, and climatic rainfall variation effects on volcanic deformation and eruptions. I also work on analytical models for volcanic landform evolution, Magma chamber modeling, volcanic hazard estimation, and possible mitigation and hydrothermal circulation associated seismicity modulation. Besides, I have also worked on Lithosphere-Ionosphere coupling processes using the change in Ionosphere electron content (TEC) and dynamic triggering of tremors. With ample experience in field surveys with setup and data extraction of GNSS stations I like to work on crustal deformations using GNSS, Ground tilt, and InSAR displacements.

Education

2019-2024: Doctor of Philosophy (PhD), in Geodynamics NIT Rourkela
Advisor: Dr. Bhaskar Kundu
Title: Feedback activity between exogenous and endogenous processes on Volcanic and hydrothermal systems

2014-2016: Master of Science (MSc) in Applied Geology, Pondicherry Central University, Pondicherry, India (83.8%)

2011-2014: Bachelor of Science (BSc) in Geology (Honors), Adikavi Sarala Das college, Tirtol, Utkal University, Odisha, India (68 %)

Professional experience

2021-2024: Senior Research Fellow, Doctoral student, in Geodynamics NIT Rourkela

2019-2021: Junior Research Fellow, Doctoral student, in Geodynamics NIT Rourkela

2016-2019: Lecturer in Geology, Gayatri Degree Science College, Utkal University, Odisha, India

Awards and Grants

- 2022: AGU Student Travel Grant for participating in AGU annual conference, Chicago, 2022
- 2018: Qualified National Eligibility Test (CSIR-UGC NET) for Lectureship/Assistant Professor (LS and JRF rank 98)
- 2016, 2017, 2018: Qualified GATE: 2016 (All India Rank- 553); 2017 (All India Rank- 435); 2018 (All India Rank- 396)
- 2015- State civil service examination, 2015 (mains)

Peer reviewed publications

- Sahoo, S., Senapati, B., Panda, D., Jin, S., & Kundu, B. (2024). Tidal triggering of seismic swarm associated with hydrothermal circulation at Blanco ridge transform fault zone, Northeast Pacific. *Physics of the Earth and Planetary Interiors*, 107259. (Impact factor 2.4) https://doi.org/10.1016/j.pepi.2024.107259
- Sahoo, S., Senapati, B., Kundu B., Zhou, Y., Ghosh, A., & Jin S., (2022). Delayed triggering of non-volcanic tremors in Cascadia by the 15th January 2022 Hunga Tonga-Hunga Ha'apai volcanic eruption. *Geomatics Natural Hazards and Risk (in press)* (Impact factor 4.5) https://doi.org/10.1080/19475705.2024.2409279
- Sahoo, S., Kundu, B., Petrosino, S., Yadav, R. K., Tiwari, D. K., & Jin, S. (2024). Feedback responses between endogenous and exogenous processes at Campi Flegrei caldera dynamics, Italy. *Bulletin of Volcanology*, *86*(3), 1-22. (Impact Factor: 3.5) https://doi.org/10.1007/s00445-024-01719-7
- Sahoo, S., Tiwari, D. K., Panda, D., & Kundu, B. (2022). Eruption cycles of Mount Etna triggered by seasonal climatic rainfall. *Journal of Geodynamics*, *149*, 101896. (Impact Factor: 2.673) https://doi.org/10.1016/j.jog.2021.101896
- Sahoo, S., Senapati, B., Panda, D., Tiwari, D. K., Santosh, M., & Kundu, B. (2021). Tidal triggering of micro-seismicity associated with caldera dynamics in the Juan de Fuca ridge. *Journal of Volcanology and Geothermal Research*, *417*, 107319. (Impact Factor: 2.986) https://doi.org/10.1016/j.jvolgeores.2021.107319

Publications under review

- Kundu, B., Bürgmann, R., Xue, L., Panda, D., & Sahoo, S. (2024). Diurnal modulation of micro-seismicity in New Madrid seismic zone:natural or artifact? *Seismica,(under review)*
- Ray, S., Kundu, B., Sahoo, S., & Tiwari, D.K. (2024). Discerning double coseismic travelling ionospheric disturbances following the April 2024 Hualien Earthquake, from GNSS TEC. *Advances in Space Research.* (under review)
- Kundu, B., Senapati, B., Chilukoti, N., & Sahoo, S. (2024) ENSO teleconnection possible pacemaker for the Greenland Glacial earthquakes. *Acta Geophysica* (under review)

Published chapters

- Sahoo, S., Subhadarshini, S., Jena, A.K., & Kundu, B. (2024). Structural form of stratovolcanoes on planetary bodies: A theoretical perspective and model validation. *Structural Geology and Tectonics. Springer*

Conference presentations

2022	Tidal Triggering of Seismic Swarm Associated with Hydrothermal Circulation at Blanco RidgeTransform Fault Zone in Northeast Pacific, AGU Fall meeting, Chicago, 2022
2023	Exogenous forces on unrest volcanic systems: Seasonal and Tidal modulations of tremors at Campi Flegrei caldera, Italy, AGU Fall meeting, San Francisco, 2023

Professional skills

Analytical:	Tidal loading estimations using SPOTL, GOTIC2; Rainfall associated pore pressure modelling; InSAR time-series and LOS displacement analysis; Seismic waveform analysis; Clustering and Declustering of catalogs; Seismicity correlations with tidal, hydrological, dynamic stress; Geodetic Bayesian inversion using GBIS; d-MODELs inversion, GAME inversion; Swarm detection by nearest neighbor method; Periodicity analysis in time series; GNSS displacement analysis: Rainfall and associated pore-pressure change analysis; Euler pole estimation from geodetic observations, GNSS data processing: TEQC, GAMIT/GLOBK Strainmap: SSPX; TEC analysis; Analytical code development from theoretical equations for fluid flow in porous aquifers;
Graphical:	GMT; COULOMB; Stereonet; Zmap 6.0; Grapher; Surpher; Global mapper; ArcGIS; Coreldraw; MS office

Expedition skills

Site selection, Installation and data collection of GNSS receivers (GR50) for official project

Outreach skills

Web development for official website (https://www.tectonicgeodesylab.in/)

Video documentation for outreach program (https://www.youtube.com/@tectonicgeodesylab5991)

Teaching skills

2016-2019: Structural geology, Earth surface process, Economic geology, Stratigraphy during Lecturer in Geology (Graduation course), Gayatri Degree Science College, Utkal University, Odisha, India

Mentoring skills

2022-23, M.Sc. Dissertation topic; 2 students, Title: Evolution of geometrical shape of volcano: A theoretical approach.

2023-24, M.Sc. Dissertation topic; 2 students, Title: Volcanic eruption cycle through magma chamber deformation modeling.
Title: External stress modulation of seismic swarms at hydrothermal systems.

2024-25, M.Sc. Dissertation topic, 2 students, Title: Volcanic eruption cycles at Mount Etna and interaction with seal level change.

Referees

Prof. Bhaskar Kundu, NIT Rourkela, Odisha, India, Email: rilbhaskar@gmail.com

Dr. Simona Petrosino, INGV, Italy, Email: simona.petrosino@ingv.it

Prof. Abhijit Ghosh, UC, Riverside, California, USA, Email: aghosh.earth@gmail.com

Prof. Birendra Jha, USC Viterbi, California, USA, Email: bjha@usc.edu

Prof. Shuanggen Jin, Shanghai Astronomical Observatory, China, Email: sgjin@shao.ac.cn