Dr. SANJAY SINGH NEGI
Project Scientist in Geosciences

National Centre for Polar and Ocean Research,
Ministry Of Earth Science,
Headland Sada,
Goa- 403804, India

: sasnegi85@gmail.com, sanjay@ncpor.res.in,
: +91-9536145596
: +91-832-2525569

Research Focus

Observational Seismology. Crust and Mantle structures utilizing local and regional seismological array (land and OBS). Physics of seismic sources using full moment tensor inversion with specific interest in Bayesian bootstrap approach to understand double-couple and non double-couple sources. Seismic noise source modelling by analyzing microseism generated due to Ocean-Ocean and Ocean-bedrock interactions.

Academic Appointments

May 2018 – Present National Centre for Polar and Ocean Research, Goa, India GOA, INDIA
Project Scientist
(Mantle structures beneath the lowest geoid, The Indian Ocean Geoid Low)

Feb 2016 - Sept 2017 Govt. Post Graduate College, Gopeshwar, Chamoli, UK, INDIA
Guest Faculty
(I taught Geology subjects along with basics in Seismology at graduate and post graduate level)

Education

2013 - 2017 Indian Institute of Technology, Roorkee, Uttarakhand, INDIA, **Ph.D**. in Earth Sciences, May 2017
(**Thesis title:** Understanding the Crustal Structure of Garhwal-Kumaun Himalaya)

2008 - 2010 Indian Institute of Technology, Kharagpur, West Bengal, INDIA, **M.Sc**. in Geophysics, May 2010
(**Thesis title:** Determining the Petrophysical parameters using Conventional Method in Borehole Logging.)

2004 - 2007 Kumaun University, Nainital, Uttarakhand, INDIA, **B.Sc.** with subjects (Physics, Mathematics, Geology)

Honors and Awards

- Recipient of **International Student Travel Grant** award for **Poster presentation** at the Annual meeting, Seismological Society of America, 18-20th April, 2017, Denver, Colorado, USA.
- Recipient of **International Student Travel Grant** award **(2013)** by **Helmholtz Centre**

Potsdam GFZ German Research Center for Geosciences and the Federal Foreign Office (FFO), Berlin to attend International Training Programme.

- UCOST **Young Scientist Award 2013**, Uttarakhand State Council for Science and Technology (UCOST), Doon University, Dehradun, India.
- **Research Fellowship Award** (2011-2016) Wadia Institute of Himalayan Geology, Dehradun, India
- Qualified **Graduate Aptitude Test** in Engineering (2011).
- Qualified Council of Scientific and Industrial Research-**National Eligibility Test** (CSIR-NET) (2010).
- **Merit-cum-Mean Scholarship** award (2009) in M.Sc. Programme, Indian Institute of Technology, Kharagpur.
- Qualified **Joint Admission Test for M.Sc. in IIT** -2008.

Publications

Peer-Reviewed

1- Pandey, D. K., Ningthoujam, L. S., Yadav, R., Nair, R., **Negi, S. S.**, Kumar, A., Shoraisam, K. **(2022)**. Seismic investigations of the aseismic Comorin ridge, central Indian Ocean basin, **Journal of the Geological Society**, (In press).

2- **Negi, S. S.**, Kumar, A., Ningthoujam, L. S., Pandey, D. K. (**2022**). Mapping the mantle transition zone beneath the Indian Ocean geoid low from Ps receiver functions, ***Tectonophysics***, https://doi.org/10.1016/j.tecto.2022.229330

3- Ningthoujam, L. S., Pandey, D. K., Nair, N., Yadav, R., Khogenkumar, S., **Negi, S. S.**, & Kumar, A. (2022). Plume-ridge interactions in the Central Indian Ocean Basin: Insights from new wide-angle seismic and potential field modelling. ***Tectonophysics***, https://doi.org/10.1016/j.tecto.2022.229222

4- **Negi, S. S.**, Kumar, A., Ningthoujam, L. S., Pandey, D. K. (2020). An efficient approach of data adaptive polarization filter to extract teleseismic phases from the ocean bottom seismograms. ***Seismological Research Letters***.

5- Ningthoujam, L. S., **Negi, S. S.**, Pandey, D. K. (2019). Seismologists search for the Indian Ocean's "missing mass", ***Eos, 100***.

6- **Negi, S. S.**, Paul, A., Simone, C., Kamal, Kriegerowski, M., Mahesh, P., Gupta, S., (2017). Crustal velocity structure and earthquake processes of Garhwal-Kumaun Himalaya: Constraints from Regional Waveform Inversion and Array Beam Modeling. ***Tectonophysics***, *712-713,45-63.*

7- Luirei, K., Bhakuni, S. S., **Negi**, **S.S.**, (2017). Landforms along transverse faults parallel to axial zone of folded mountain front, southeastern Kumaun Sub-Himalaya, India. ***Journal of Earth***

System Sciences. *126:5, DOI 10.1007/s1204001607894*.

8- **Negi, S. S.**, Paul, A., Joshi, A., Kamal, (2015). Body Wave Crustal Attenuation Characteristics in the Garhwal Himalaya, India. ***Pure and Applied Geophysics***, *172, 1451-1469, DOI: 10.1007/s0002401409669.*

9- **Negi, S. S.**, and Paul, A., (2015). Space time clustering properties of seismicity in the Garhwal-Kumaun Himalaya, India. ***Journal of Himalayan Geology***, 36(1), 91-101.

Under Review

10- Kumar, A., **Negi, S. S.**, Ningthoujam, L. S., Pandey, D. K. (**Under review**). Seismic velocity structure underneath the Indian Ocean geoid low using surface wave phase velocity (**Tectonophysics**).

In Preparation

11- **Negi, S. S.**, Pandey, D. K., Ningthoujam, L. S., Kumar, A., **(In preparation)**. Microseism sources of the North Indian Ocean: Degree of polarization measurement on IOGL-OBS array.

Conference Proceedings

2021

Negi, S. S., Ningthoujam, L,S., Kumar, A., Pandey, D.K., (24th August 2021). Mantle structure beneath Indian Ocean Geoid Low: Constraints from Receiver function study using OBS-array (Oral Presentation). Joint Scientific Assembly IAGA-IASPEI (2021), NGRI, Hyderabad.

2019

Negi, S. S., Ningthoujam, L,S., Kumar, A., Pandey, D.K. (2019). An overview of Ocean Bottom Seismometer records from the Indian Ocean Geoid Low region: Implications towards deep mantle understanding. Federation of Geosciences Associations Conference, NGRI, Hyderabad, India.

2017

Negi, S. S., Paul, A., Simone, C., Kamal, Kriegerowski, M., Mahesh, P., Gupta, S., (2017). Active Lesser Himalayan Duplex: Constrains from Velocity structure and Regional Waveform Inversion. **Annual Meeting, Seismological Society of America,** 18-20th April, 2017, Denver, Colorado,USA.

2015

Negi, S. S., Paul, A., Mahesh, P., (2015). 1-D Velocity structure of Garhwal-Kumaun Himalaya, **Himalayan Karakorum Tibet (HKT) Workshop**, 6-8th October, 2015 at Wadia Institute of Himalayan Geology, Dehradun, India.

2013

Negi, S. S., and Paul, A., (2013). Insight to the Seismicity around Tehri Reservoir, India" at

Uttarakhand State Council for Science and Technology (UCOST) at Doon University, Dehradun.

Invited Talk

2021

Talk delivered on the topic entitled " **Seismology: Unearthing the Mysterious Anomalies on Earth**" on 22nd April 2022, at the webinar series to celebrate **Earth Day** under '**Azadi ka Amrit Mahotsava'**.

Talk delivered on "**Exploring the largest Geoid Low on Earth through deep Seismological observation**" at **webinar series 'Indian Polar and Ocean Mission'** from 30th April to 4th June 2021 to celebrate **'Azadi ka Amrit Mahotsav'** at **NCPOR**.

Academic Services

Reviewed for Tectonophysics; Geomatics, Natural Hazards and Risk

Memberships

Since 2014 Seismological Society of America

Outreach Activities

- Volunteered for outreach of Indian Ocean Discovery Programme (IODP)- India, at Indian Science Congress, IIT Mumbai.
- Volunteered for presenting the Project updates on V-SAT Linked Seismic Network for Seismic Hazard Studies in Garhwal Himalaya, at **5th GMC meeting** from **23-24 Aug 2012** at CMLRE, Cochin.
- Core committee member and student delegate at "The **Indo-Iceland Workshop**- With special reference to the Earthquake Precursory Studies", Wadia Institute of Himalayan Geology. The workshop was held to outreach seismological activities in India and to build scientific collaboration between India and Iceland.

International Training

- The **International Training Course** on "**Seismology, Seismic Data Analysis, Hazard Assessment and Risk Mitigation**", for 26 days, organized and sponsored by **Helmholtz Centre Potsdam GFZ German Research Center for Geosciences and the Federal Foreign Office (FFO),Berlin**.

Fieldwork Experience

- Under the Indian Ocean Geoid Programme, **scientific cruises in ORV Sagar-Kanya** as a Chief Scientist for the acquisition of **marine magnetic anomalies and sub-bottom profiling in the Indian Ocean**. The acquisition aims to delineate the seafloor spreading anomalies and its tectonic evolution (**2022**).
- Under the **Indian Ocean Geoid Low-Seismic Experiment**, **two scientific cruises in ORV Sagar-Kanya** as a deputy Scientist from National Center for Polar and Ocean Research. I was responsible for data retrieval, onboard data quality check and redeployment of **17 Ocean bottom seismometers deployed in the Indian Ocean** (**2019/2020**).
- During the **International training course** on Seismology, GFZ Potsdam, I gained an experience in **array measurements and analysis headed by Dr. Marco Pilz**. I participated in deployment of a dozens of geophones to **acquire ambient noise data** around Deep Crustal Laboratory, KTB site, Germany. On site, the data was analyzed through in-house build Matlab codes for quick demonstration to **image 3D shear-wave velocity structures** at engineering scale (**2013**).
- For VSAT linked broadband Seismic Station Network (**Nanometrics**) deployed in the northwest Himalaya, I was institutional lead student. My responsibilities were to service and maintain **11 broadband seismometers** deployed in the northwest Himalaya(**2011-2015**).
- I volunteered for the palaeo-seismological and geomorphological field in the Frontal Himalaya with research fellows experienced in the respective fields. I learned to identify field samples and evidences related to the active tectonics. Additionally, I gained invaluable off road driving skills during these field visits (**2017 & 2018**).
- During Post-graduation, I gained experience in seismic profiling and data gathering. I also learned to handle the differential global positioning system and Worden gravimeter for detailed survey of chromite deposits in Tangarparha, Orissa, India (**2010**).
- As a part of course work in graduation, I have gained experience in various geological fields in the high elevation regions of the Himalaya. I have learned basics of field geology along with outcrop recognition, structural mapping and active tectonic studies (**2004-2007**).

Teaching Experience

February 2016 - September 2017
(graduates and post graduates)
Taught courses on Geotectonics, Structural Geology, and Earthquake Seismology in the Department of Geology, Govt. Post Graduate College, Gopeshwar, Chamoli, India.

Technical Skills

Advanced Level Matlab, SAC, SEISAN, MS-Office

Intermediate to Basic level Python, GMT, C-shell, Adobe Illustrator, ArcGIS

Scientific Contributions

- Developed data adapative porlarization filter (DAPF) software package in Matlab to remove the stochastic noise from the seismograms (OBS/land) (https://github.com/SanjaySNegi/DAPF-v1.git).
- Developed Earthquake waveform analysis tools in Matlab platform to process passive OBS data (NCPOR-IOGL programme in-house repository).

Personal Profile

Nationality:	Indian
Marital Status:	Married
Languages:	English (Fluent: written and spoken) , Hindi (mother tongue)