

Rema Vaishali

Senior Research Fellow

CONTACT

EMAIL

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LOCATION

Gandhinagar, Gujarat, India

LINKEDIN

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TECHNICAL SKILLS

Python

Obspy

NA Algorithm

GMT

Surfer

RfsedPy

ArcGIS

Seispy

SplitRF

Splitracer

Winglink

MAPROS

IPI2Win

Geopsy

EDUCATION

Ph.D. Seismology

Institute of Seismological Research (ISR),
Gandhinagar

2021 - Present | DST-INSPIRE Fellow

M.Sc. Applied Geophysics

Manonmaniam Sundaranar University

2017 - 2019 | CGPA: 9.76/10 (Gold Medal)

B. Sc Physics

V.O. Chidambaram College

2014 - 2017 | 90.79% (1st Rank)

PROFESSIONAL SUMMARY

Doctoral researcher focused on crust and upper-mantle structure using receiver-function methods, including H- κ stacking, waveform inversion, and S-receiver analysis. Experienced in studying crustal and mantle anisotropy through shear-wave splitting. Skilled in Python/MATLAB workflows for processing and interpreting large seismic datasets, with a strong emphasis on producing reliable structural models and clear geological insight.

CURRENT POSITION

Senior Research Fellow (SRF)

[Institute of Seismological Research \(ISR\), Gandhinagar](#)

September 2023 - Present | DST-INSPIRE Fellow (2021-Present)

Ph.D. Research Focus: Seismic velocity structure of crust and uppermost mantle of Bhuj epicentral zone, Kachchh region, Gujarat, Western India.

- Processing and analyzing broadband seismic station data using advanced receiver function techniques
- Investigating seismic evidence of magmatic underplating in the 2001 Bhuj earthquake epicentral zone
- Analyzing mantle transition zone structure beneath the Northwestern Deccan Volcanic Province
- Providing real-time earthquake monitoring and live reporting using the Gujarat State Seismic Network, seismic array networks, and dam monitoring networks to disaster management teams, government officials, and the public (SEIDAC, ISR)

RESEARCH EXPERIENCE

Junior Research Fellow

[Institute of Seismological Research](#)

January 2021 - August 2023

- Data processing and analysis of 50 broadband seismic stations for crustal and mantle studies.
- Seismic hazard assessment through seismic ambient noise and earthquake waveforms

Research Internship Projects

Magnetotelluric Modelling Studies of Palghat Cauvery Shear Zone

CSIR-NGRI, Hyderabad | May - June 2018 | Guide: Dr. Prasanta K Patro

Evaluation of Local Site Conditions Using Ambient Seismic Noise Recordings Case study from Rajkot, Saurashtra, Western India.

ISR, Gandhinagar | January - March 2019 | Guide: Dr. A.P. Singh

REFERENCES

Dr. K. Madhusudhana Rao

Scientist – E

Institute of Seismological Research
382009 Gandhinagar, Gujarat, IN

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Prof. Dr. Georg Rumpker

Professor of Geophysics

Goethe-University Frankfurt

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60438 Frankfurt, DE

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Dr. Prasanta K. Patro

Chief Scientist

CSIR – National Geophysical

Research Institute

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Dr. A.P Singh

Scientist – F

National Center for Seismology

Ministry of Earth Science (MOES)

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Prof. Dr. John Prince

Head of Department

Department of Physics

V. O. Chidambaram College, IN

Contact: (+91) 98940 29229

Email id: johnprince06@gmail.com

PUBLICATIONS

Published

- **Spatial distribution of crustal anisotropy in the epicentral zone of the Mw 7.7 Bhuj 2001 earthquake in Gujarat, India from splitting analysis of local S waves**
A Maripireddi, **R Vaishali**, KM Rao, KV Swami. Journal of Earth System Science, Vol. 135, 208, 2026. <https://doi.org/10.1007/s12040-026-02925-x>
- **The seismogenic structure of the seismically active Samakhiali basin and its surrounding region of Kachchh rift basin, Gujarat**
S Saikia, **R Vaishali**, A Maripireddi, M Katlamudi, S Chopra, S Kumar. Seismological Research Letters, 2026. <https://doi.org/10.1785/0220250323>
- **Mantle transition zone dynamics beneath the Northwestern Deccan Volcanic Province, India: Implications for plume mediated upper mantle processes**
R Vaishali, M Katlamudi, A Kaviani, G Rumpker. Tectonophysics, 231000, 2025.
- **Assessment of radon concentration in groundwater and its human health implications: a case study of Gandhinagar, Gujarat, India**
SK Sahoo, BC Perumal, **R Vaishali**, A Maripireddy, M Katlamudi. Environmental Geochemistry and Health, Vol. 47(8), 301, 2025.
- **Seismic evidence of magmatic underplating in the epicentral zone of 2001 Bhuj earthquake, Kachchh region, Gujarat, Western India: P-receiver function perspective**
R Vaishali, M Katlamudi, A Maripireddi. Natural Hazards, 1-30, 2024.
- **Hydrological subsurface investigation using geophysical electrical and magnetic methods in and around Valliyar river basin, India**
R Stanly, S Yasala, **RV Murugesan**. Results in Geophysical Sciences, Vol. 7, 100022, 2021.

Manuscripts in Preparation:

- **Tectonic Implications of Crustal Azimuthal Anisotropy beneath the Bhuj epicentral zone, Kachchh region, Gujarat, Western India through Ps Splitting analysis**
M. Rema Vaishali, Ayoub Kaviani, M. Ashok, Madhusudhan Rao Katlamudi, Georg Rumpker
- **Implications of Crust -Mantle coupling mechanism using SK(K)S Shear wave splitting: Studies beneath the Bhuj epicentral zone of Kachchh, Gujarat.**
Ashok Maripireddi, **Rema Vaishali**, Madhusudhan Rao, Srijayanthi, Swamy
- **Nature of the Lithosphere–Asthenosphere Boundary Beneath the 2001 Bhuj Earthquake Epicentral Region, Northwestern Deccan Volcanic Province: Evidence from Sp Receiver Functions**
M. Rema Vaishali, Ayoub Kaviani, Madhusudhan Rao Katlamudi, Georg Rumpker

For complete list of publications and citations, visit: [Google Scholar Profile](#)

INTERNATIONAL COLLABORATION

- **Ps splitting of receiver functions**
Prof. Dr. Georg Rumpker & Dr. Ayoub Kaviani
Institute of Geosciences, Goethe University Frankfurt, Germany

MEMBERSHIPS &

AFFILIATIONS

President

ISR-IGU Student Chapter
(2024-Present)

Member

Indian Geophysical Union - IGU
(2023-Present)

Student Fellow

European Geophysical Union
(2023-Present)

BOOK REVIEWS

1. *“If I Am Right, and I Know I Am: Inge Lehmann, the Woman Who Discovered Earth’s Innermost Secret”* by Hanne Strager (2025)

Columbia University Press, 320 pp.
(hbk)
Geoscientist, Geological Society of London

2. *“When Worlds Quake: The Quest to Understand the Interior of Earth and Beyond”* by Hrvoje Tkalčić (2026)

Geoscientist, Geological Society of London

FELLOWSHIPS & AWARDS

- **DST-INSPIRE Fellow (PhD)**
(1 among 1000 recipients nationally)
Department of Science & Technology, Government of India (2021-Present)
- **Anni Talwani Memorial Grant for Young Women Researchers Award**
Indian Geophysical Union (2022)
- **Short-term Research Internship**
Institute of Geosciences, Goethe University Frankfurt, Germany (Institute Sponsored, 2023)
- **Jagdeo Singh & Dr. Balakrishna Memorial Grant**
Indian Geophysical Union (2018)
- **University Gold Medalist**
Post-graduation in Applied Geophysics (2019)
- **Merit Scholarships**
Undergraduate and post-graduate (2014-2019)
- **National Means-cum-Merit Scholarship during Secondary School**

OUTREACH

Teaching

- **AGL 101 - Earth system science**
Department of Geology, Gujarat University (2022)

Research Mentor – Master’s Thesis (2022-2025)

- **Varun & Shrikanth (2022)**
Evaluation of seismic events and analyzing local site conditions of Kachchh region
- **Sunil, Himaja & Jagan (2023)**
Estimation of crustal thickness and shear wave velocities using receiver function inversion
- **Kithu Suresh (2024)**
Estimation of crustal radial anisotropy beneath Kachchh region using receiver function analysis
- **Dedeepya (2024)**
Crustal structure beneath Kachchh, Gujarat, using receiver function analysis
- **Nandhini, Jitendra & Sivashankar (2025)**
Estimation of crustal thickness beneath Kachchh region using P receiver function analysis

Prize-Winning Presentation (2024)

- **“Mantle Transition Zone Structure beneath the Northwestern Deccan Volcanic Province, India: Evidence for Imprints of upper mantle volcanism”**
AES-2024, 8th Annual Convention | Second Prize | IIT-Roorkee

Conference Presentations

- **“Tectonic Implications of crustal azimuthal anisotropy beneath Gujarat, Western India through Ps splitting”**
Advances in Earth system sciences with special reference to weather and climate
61st Annual Convention | Indian Geophysical Union | December 3-5, 2024
- **“Seismic evidence of magmatic underplating in the epicentral zone of 2001 Bhuj earthquake, Kachchh region, Gujarat, Western India: P-Receiver function perspectives”**
AES-2022, 6th Annual Convention | ISR, Gandhinagar | July 21-23, 2022

LANGUAGES

- **English (Professional)**
 - **Hindi (Professional)**
 - **Tamil (Native)**
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PROFESSIONAL DEVELOPMENT

Training Programs

- **Seismology Skill Building Workshop - EarthScope Consortium, IRIS (2024)**
- **Introduction to deep learning in seismology – Frankfurt institute of advanced studies & Institute of seismological research (2023)**
- **Online Training: Inversion and Machine Learning for Geoscience Data Analysis - CSIR-NGRI, Hyderabad (March 2021)**
(1 among 30 on national level selection)
- **IMPRESS 2018 & Workshop on Nonlinear Processes - Indian Institute of Geomagnetism, Mumbai (February 2018)**

Certificate Courses

- **Data Science and Machine Learning**
NIELIT, Chennai (October 2020 - January 2021)
- **AI for Everyone in Deep Learning**
Coursera (August - September 2020)
- **Basics of remote sensing, Geographical information system and Global Navigation Satellite system**
ISRO (2017)

WORKSHOPS & SEMINARS

- **National Workshop – “Brittle Deformation and Upper Crustal Fluid Flow,”** Geological Studies Unit, Indian Statistical Institute, Kolkata (2025)
(Selected as 1 of 40 participants nationally)
- **EGU General Assembly, Vienna - Geodynamics, Seismology, And Solid Earth Divisions (2023)**
- **3rd International Virtual Workshop - Advanced Seismology, Seismic Hazards & Earthquake Engineering (December 2021)**
- **55th Annual Convention of Indian Geophysical Union (IGU) - "Changing Water Cycle & Water Resources" (2018)**
- **National Workshop - "Status of Petroleum Exploration in India 2018" | ONGC & APG (2018)**
- **National Workshop - "Geophysical Prospecting: Present and Future Scenario" | Science Academies (2018)**
- **National Seminar - "Recent Trends in Geosciences" | Center for Geotechnology (2018)**
- **National Workshop - "Popularization of Remote Sensing-based Maps" | ISRO & ISRS (2018)**