

**Dr. RAJESH S., WIHG, DEHRADUN, INDIA**

**Google Scholar Page:**

**<https://scholar.google.com/citations?user=LLgD-MAAAAJ>**

**RESEARCH GROUP: ACTIVITY-7**

**FIELD OF SPECIALIZATION:**

MARINE AND HIMALAYAN GEODYNAMICS, PLATE BOUNDARY DEFORMATION & EARTHQUAKE PROCESS STUDIES THROUGH GNSS-GEODESY, LAND GRAVITY AND SATELLITE GEODETIC METHODS

**EDUCATION:**

Details of educational qualifications starting from the most recent ones.

1. Ph. D in Physics from University of Gujarat; Host Institute: Physical Research Laboratory/Space Applications Centre, Ahmedabad.
2. M. Sc. (Tech.) Marine Geophysics, Cochin University of Science & Technology, Kochi
3. B. Sc. Physics, University of Kerala

**PROFESSIONAL EXPERIENCE:**

Details of professional experience starting from the most recent position.

JOINED IN 2005 AS SCIENTIST 'B' AND CURRENTLY SCIENTIST 'D' IN WADIA INSTITUTE OF HIMALAYAN GEOLOGY, DEHRADUN

**VISITING POSITIONS: NIL**

**TEACHING EXPERIENCE: TAUGHT PH. D STUDENTS, DISSERTATION AND TRAINING STUDENTS**

**SERVICES:**

**a. Supervision/Guidance to Ph.D. Students: One**

**b. Training:** more than 15 students from various universities across the country

**c. Teaching:** Ph. D students in WIHG and Indian Forest Service (IFS) Probationers at IGNFA, Dehradun

**d. Membership:** Journal Himalayan Geology

**e. Editorial Board: NIL**

**f. International/National Seminars/Workshop:**

**1. 50<sup>th</sup> Annual conference of Tectonics study group**, Geological Society of London (GSL) held virtually from 5-8 Jan. 2021.

2. **International workshop on Climate change and extreme events in the Himalayan** region held at IIT Mandi from 18th to 20th March 2019.
3. **National Conference on Earth System Science with special reference to Himalaya: Advancement and Challenges** held at WIHG from May 16-18, 2018.
4. **1st Triennial congress of FIGA, 53rd Annual convention of IGU & 34th Annual convention of AHI on “Geosciences for Sustainability”**, held at IIT(ISM), Dhanbad during Nov. 8-10, 2016.
5. **2nd National Geo-Research Scholars Meet**, held at Wadia Institute of Himalayan Geology, Dehradun on 17-20 May 2017.
6. **30th International workshop on Himalaya-Karakoram-Tibet** held on 6-8 October, 2015 at Wadia Institute of Himalayan Geology, Dehradun, India.
7. **International Seminar on SARAL science and Applications** held in April 22-24, 2014 at Space Applications Centre, Ahmedabad.
8. **Workshop on the Modern Perspective in Himalayan Geosciences**, under the Golden Jubilee Year Celebration of the **Indian Geophysical Union** held in June 11 & 12th 2013 at WIHG
9. **49th Annual Convention of Indian Geophysical Union (IGU)** on “Towards the Energy security-Exploration, Exploitation and New Strategies” held at Pandit Deendayal Petroleum University, Gandhinagar, Gujarat on 29-31st Oct. 2012.
10. **European Geophysical Union (EGU) General Assembly Meeting**, held in Vienna, April 22nd to 27, 2012 Vol. 14, EGU2012-1133, 2012.
11. **International conference on “Indian Monsoon and Himalayan Geodynamics”**, held on November 2-5, 2011 at Wadia Institute of Himalayan Geology, Dehradun.
12. **7th International Conference on Asian Marine Geology**, held at National Institute of Oceanography (NIO), Goa – India, 11-14 October 2011.
13. **International Workshop on ISRO/SARAL science and Applications**, held in March 15-17, 2011 at Space Applications Centre, Ahmedabad.
14. **International Symposium on ‘The 2001 Bhuj earthquake and advances in earthquake science** held at Institute of Seismological Research, Gandhinagar, Gujarat on 22-27 January 2011.
15. **46th Annual convention of IGU** held at WIHG, Dehradun on 5-7 Oct. P. 30-33
16. **Collision zone Geodynamics workshop**, held on Sep, 20-21, WIHG, Dehradun.

17. **International Union of Geodesy and Geophysics XXIV (IUGG)**, held at Perugia, Italy- July 2-13.

18. **International workshop on ‘Tectonic & Oceanic processes along the Indian Ocean Ridge system**, held at National Institute of Oceanography, Goa in 2005.

19. **National Seminar in connection with 150th year celebration of Geological Survey of India on topic “Four decades of Marine Geosciences in India- A Retrospect”**, held at Mangalore from 14-16th March 2001.

**g. External Research Fund received & Project Handled:**

Total Rs. 1.65 Cr, from three projects funded by MoES, and ISRO (SAC, Ahmedabad & IIRS, Dehradun)

**h. Member of important Committees: Nil**

**AWARDS/FELLOWSHIPS/HONORS/MEMORIAL LECTURES:**

**a. Awards/Medals/Prizes: NIL**

**b. Fellowships: NIL**

**c. Memorial Lectures: NIL**

**d. Recognition/Honors:**

Asst. Professorship of AcSIR

Letter of appreciation from Journal Acta Geophysica as Reviewer

**COUNTRIES VISITED: NIL**

**NATIONAL/INTERNATIONAL (outside WIHG) COLLABORATION:**

1. Space Applications Centre (SAC), ISRO, Ahmedabad
2. Indian Institute of Remote Sensing (IIRS), ISRO, Dehradun
3. Ministry of Earth Sciences (MoES), Govt. of India

**Inside WIHG Collaborator:**

1. For GNSS Geodesy: Dr. P. K. R. Gautam, Geophysics Group
2. For earthquake process studies: Seismology: Dr. Naresh Kumar & Narendar Kumar, Geophysics Group

**PATENT : NIL -**

**SCHOLARSHIPS AWARDED, GATE**

Dept. of Space, National Scholarship for Ph. D in 1998  
CSIR, Sr. Research Fellowship

**PH.D. ADVISOR:**

Host Institute Advisor: Prof. R. Ramesh, Physical Research Laboratory, Ahmedabad  
University Advisor: Dr. T. J. Majumdar, Scientist 'SG', Space Applications Centre, Ahmedabad

**LIST OF PUBLICATIONS**

**(a) SCI Papers**

1. Gautam P. K, Rajesh S., Kumar N and Dabral C. P (2020) GPS measurements on pre-, co- and post-seismic surface deformation at first multi-parametric geophysical observatory, Ghuttu in Garhwal Himalaya, India, *Journal of Geodetic Science*, 10:136-144
2. Param K Gautam, Rajesh Sathiyaseelan, John P Pappachen, Naresh Kumar, Arkoprovo Biswas, George Philip, Chandra P Dabral and Sanjith K. Pal (2019) GPS measured static and kinematic offsets at near and the far field of the 2011 Mw 9.0 Tohoku-Oki earthquake *Journal Geodesy and Geodynamics*, Elsevier Publications. <https://doi.org/10.1016/j.geog.2019.03.003> (online)
3. Param K Gautam, Vishal Chauhan, Rajesh Sathiyaseelan, Naresh Kumar and John P Pappachen, (2018), Co-seismic ionospheric GPS-TEC disturbances from different source characteristic earthquakes in the Himalaya and the adjoining regions, *NRIAG Journal of Astronomy and Geophysics*, Elsevier Publications. Vol. 7, 237-246.
4. Rajesh Sathiyaseelan, John P Pappachen and Anil K Mundepi, (2018), Micro-Tremor Induced Gravity and Seismic Noise Spectra in the Garhwal Himalaya and the Adjoining Regions, *Journal Geological Society of India*, Vol 91, 273-280.
5. Rajesh S., Anil K. Mundepi and Naresh Kumar, (2017), Quantifying seismic vulnerability, dynamical shear strain and liquefaction of the Quaternary deposits in the Doon valley near the Main Boundary Thrust in the Northwest Himalaya, India, *Journal Quaternary International*, Elsevier Publications, Vol. 462, p.162-175 <http://dx.doi.org/10.1016/j.quaint.2017.05.018>
6. Rajesh S., and Majumdar T. J., (2015), Satellite derived geoids for the estimation of Lithospheric cooling and basal heat flux anomalies over the Northern Indian Ocean Lithosphere, *Journal of Earth System Sciences (JESS)*, Springer Publications, ISSN: 0253-4126, Manuscript No. JESS-D-15-00002R1, Vol. 124, No.8, p1677
7. Rajesh S., Majumdar, T. J and Krishna K. S., (2015), Lithospheric stretching and the long wavelength free-air gravity anomaly of the Eastern Continental Margin of India and the 85° E Ridge, Bay of Bengal. *Indian Journal of Geo-Marine Sciences (IJMS)*, NISCAIR Publications, ISSN: 0975-1033 (Online), Vol. 44(6), June 2015,
8. Rajesh S., and Majumdar T. J., (2014), Effects of Ninetyeast Ridge magmatism and Pre- India-Eurasia collision dynamics on basement and crust-lithospheric structures of the Northeastern Indian Ocean, *Journal of the Geological Society of India (JGSI)*, Springer Publications, ISSN: 0016-7622, Vol. 84(5), Nov. 2015, p.531,
9. Sreejith K. M., Rajesh S., Majumdar T. J., Rao G. S., Radhakrishna M., Krishna K. S., and Rajawat A. S., (2013), High-resolution residual geoid and gravity anomaly data of the Northern Indian Ocean – An input to geological understanding, *Journal of Asian Earth Sciences (JAES)*, Elsevier Publications, ISSN: 1367-9120, Vol. 62, 2013, p. 616. <http://dx.doi.org/10.1016/j.jseaes.2012.11.010>,

10. Rajesh S., and Majumdar T. J., (2010), Geoid versus topography of the Northern Ninetyeast Ridge: implications on crustal compensation, *Marine Geophysical Researches (MGR)*, Springer Publications, ISSN: 1573-0581 (Online), 2010 Dec, Vol. 30, p.251, DOI 10.1007/s11001-010-9088-7,
11. Rajesh S., (2009), “Geoid and the regional density anomaly field in the Indian plate”. *Himalayan Geology*, Biannual SCI publication of Wadia Institute of Himalayan Geology, ISSN: 0971-8966, Vol. 30, p. 187.
12. Rajesh S., (2008) “Eastward crustal extrusion of the Tibet: Lithospheric structure and the role of mantle density anomalies”. *Himalayan Geology*, Biannual SCI publication of Wadia Institute of Himalayan Geology, ISSN: 0971-8966, Vol. 29, p. 81.,
13. Rajesh, S., and Majumdar, T. J., (2004), '3-D geoidal surface of the Bay of Bengal lithosphere and its tectonic implications'. *International Journal of Remote Sensing (IJRS)*, UK. Taylor and Francis Publications, ISSN: 0143-1161, Vol. 25, No. 15, p.2897.
14. Rajesh, S., and Majumdar, T. J., (2003). 'Geoid generation and subsurface structure delineation under the Bay of Bengal, India using satellite altimeter data'. *Current Science*, Current Science Association & Indian Academy of Sciences Publication, ISSN: 0011-3891, Vol. 84, No. 11, p 1428.,
15. Rajesh, S., Majumdar, T. J., and Mitra, D. S., (2002) 'Geological structural pattern identification/analysis in the Eastern offshore, India, using satellite altimeter data'. *Geological Survey of India*, special publication for Four decades of Marine Geosciences in India- A Retrospect, ISSN-0254-0436, No. 74, P.231.

**(b) Non-SCI Articles: Nil**

**(c) Chapter in Books: Nil**

**(d) Books-authored/Edited volume: Nil**

**(e) Abstract volume:**

1. Rajesh S., and John P. Pappachen (2021) proceedings volume of 50<sup>th</sup> Annual conference of Tectonics study group, Geological Society of London (GSL) on topic ‘GPS measured deformation and associated surface strain patterns in the Garhwal-Kumaun region in the northwest Himalaya’ held virtually from 5-8 Jan. 2021.
2. Rajesh Sathyaseelan, John P Pappachen, Param K Gautam and George Philip, (2019) Temporal scaling of GPS measured differential Total Electron Content (DTEC) with precursor day windows of Major earthquakes. Proceedings volume on International workshop on Climate change and extreme events in the Himalayan region being held at IIT Mandi from 18<sup>th</sup> to 20<sup>th</sup> March 2019.
3. Adityam Rai, Arish Hasan, Rajesh Sathyaseelan, John P Pappachen and P. K. R. Gautam, (2018), Delineating Precursor Day Windows of Major Earthquakes Using Differential Total Electron Content (TEC) Analysis. Presented on National Conference on Earth System Science with special reference to Himalaya: Advancement and Challenges held at WIHG from May 16-18, 2018.
4. John P Pappachen, Rajesh S., P. K. R. Gautam and Dabral C. P., (2018), Kinematics of the Himalayan Frontal Thrust and the adjoining Ganga Tear Fault from GPS observations. Presented

- on National Conference on Earth System Science with special reference to Himalaya: Advancement and Challenges held at WIHG from May 16-18, 2018.
5. Rajesh S., John P. Papachan and S. K. Pal, (2016) ‘Near and far field Co-seismic offsets of 25th April 2015 Mw 7.8 Nepal earthquake from continuous GPS data’. Presented on 1<sup>st</sup> Triennial congress of FIGA, 53<sup>rd</sup> Annual convention of IGU & 34<sup>th</sup> Annual convention of AHI on “Geosciences for Sustainability” held at IIT(ISM), Dhanbad during Nov. 8-10, 2016.
  6. John P. Papachan, Rajesh S. & Gokul V. S, (2017) ‘Estimation of surface Rayleigh wave spectrum using continuous GPS data from recent Nepal earthquakes’. Presented on 2<sup>nd</sup> National Geo-Research Scholars Meet held at Wadia Institute of Himalayan Geology, Dehradun on 17-20 May 2017.
  7. Rajesh S., (2015) ‘Present day kinematics of Himalayan Frontal Thrust in Garhwal and Himachal Himalaya through GPS measurements: Role of Geoid, topography and Gravitational Potential Energy. Presented at 30<sup>th</sup> International workshop on Himalaya-Karakoram-Tibet held on 6-8 October, 2015 at Wadia Institute of Himalayan Geology, Dehradun, India.
  8. Rajesh S. and Majumdar T. J., (2014) “Study on the geodynamic evolution of the Indian Plate using high resolution geoid/gravity derived from SARAL/ALTIKA altimeter data”. Presented at International Seminar on SARAL science and Applications held in April 22-24, 2014 at Space Applications Centre, Ahmedabad.
  9. Rajesh S., (2013), “Seasonal effects in the GPS measured uplift and subsidence rates from the Kangra and Dehradun re-entrants in the Northwestern Himalaya, Workshop on the Modern Perspective in Himalayan Geosciences” being held in June 11 & 12<sup>th</sup> 2013 at WIHG under the *Golden Jubilee Year Celebration of the Indian Geophysical Union*, Hyderabad.
  10. Rajesh S. and Gautam P. K. R., (2013), “Post and co-seismic crustal velocity offset close to the Main Central Thrust in the Uttarakhand Himalaya followed by the 22<sup>nd</sup> July 2007 Kharsali earthquake (Mw= 5.0), Workshop on the Modern Perspective in Himalayan Geosciences” being held in June 11 & 12<sup>th</sup> 2013 at WIHG under the *Golden Jubilee Year Celebration of the Indian Geophysical Union*, Hyderabad.
  11. Rajesh S., Majumdar T. J. and Krishna K. S., (2012), “Upward continuation of free-air gravity anomaly of the 85° E Ridge, Bay of Bengal”, 49<sup>th</sup> Annual Convention of Indian Geophysical Union (IGU) on “Towards the Energy security-Exploration, Exploitation and New Strategies” held at Pandit Deendayal Petroleum University, Gandhinagar, Gujarat on 29-31<sup>st</sup> Oct. 2012.
  12. Rajesh S., (2012), “What drives the Tibetan crust to the Southeast Asia? Role of upper mantle density discontinuities as inferred from the continental geoid anomalies” , *European Geophysical Union (EGU) General Assembly Meeting* held in Vienna, April 22<sup>nd</sup> to 27, 2012 Vol. 14, EGU2012-1133, 2012.
  13. Rajesh S., and Sreelaxmi M., (2011), “ Dynamics of pore space fluid in the Doon Valley from Gravity and GPS measurements, presented in International conference on “Indian Monsoon and Himalayan Geodynamics” held on November 2-5, 2011 at Wadia Institute of Himalayan Geology, Dehradun.
  14. Rajesh S., Majumdar T. J and Krishna K. S., (2011), ‘ Cessation of northward propagation of fault rupture beyond 14° N generated by the 2004 Great Sumatra earthquake: Inferences derived from the interaction of Ninetyeast Ridge-Andaman Trench. Paper presented in 7<sup>th</sup> International Conference on Asian Marine Geology, held at National Institute of Oceanography (NIO), Goa – India, 11-14 October 2011 (Proc. Abstract ICAMG-7, p. 142).
  15. Sreejith K. M., Rajesh S., Majumdar T. J., Srinivasa Rao G and Krishna K. S., (2011) ‘High resolution residual geoid map of the Northern Indian Ocean and its geological significance’. Paper presented in 7<sup>th</sup> International Conference on Asian Marine Geology, held at National Institute of Oceanography (NIO), Goa – India, 11-14 October 2011.
  16. Rajesh S. and Majumdar T. J., (2011) “Study on the geodynamic evolution of the Indian Plate using high resolution geoid/gravity derived from SARAL/ALTIKA altimeter data”. Presented at

International Workshop on ISRO/SARAL science and Applications held in March 15-17, 2011 at Space Applications Centre, Ahmedabad.

17. Rajesh S., and Majumdar, T. J., (2011), "Satellite altimeter derived geoid/gravity and the lithospheric density anomaly along the convergent zone of Sumatra-Andaman: Implications on the cessation of fault rupture up to 14° N after 26 December 2004 Sumatra-Andaman earthquake". Presented in *International Symposium on 'The 2001 Bhuj earthquake and advances in earthquake science'* being held at Institute of Seismological Research, Gandhinagar, Gujarat on 22-27 January 2011.
18. Rajesh S., and Majumdar T. J., (2009), "Lithospheric cooling and retrieval of basal heat flux anomalies of spreading Carlsberg Ridge from satellite altimeter derived geoid anomalies", Presented on 46<sup>th</sup> Annual convention of IUGU on the "Evolution of Himalayan Foreland Basin and emerging exploration challenges", held at WIHG, Dehradun on 5-7 Oct. P. 30-33.
19. Rajesh S., (2007) "Gravity/Geoid and mass anomaly structures of the Himalaya. Himalayan Geology, Vol. 28, p. 30., Presented in *Collision zone Geodynamics workshop*, Sep, 20-21, WIHG, Dehradun.
20. Rajesh S., and Majumdar T. J., (2007) "Residual Geoid and topography of Ninety East Ridge in Northeastern Indian Ocean: Inference on the nature of Ridge crustal compensation". Presented in the *International Union of Geodesy and Geophysics XXIV (IUGG)*, Perugia, Italy-July 2-13
21. Rajesh S., and Majumdar, T. J., (2005) "Analysis of residual geoid and topography of Northern Ninety East Ridge: Inference on the nature of ridge crustal compensation". Presented in an *International workshop on 'Tectonic & Oceanic processes along the Indian Ocean Ridge system'* held at National Institute of Oceanography, Goa ([http://www.nio.org/past\\_events/interidge/interidge\\_contents.jsp#GeneralInterest](http://www.nio.org/past_events/interidge/interidge_contents.jsp#GeneralInterest))
22. Rajesh, S., Majumdar, T. J., and Mitra, D. S., (2002) 'Geological structural pattern identification/analysis in the Eastern offshore, India, using satellite altimeter data'. *Geological Survey of India*, Presented in National Seminar in connection with 150<sup>th</sup> year celebration of Geological Survey of India on topic "Four decades of Marine Geosciences in India- A Retrospect", held at Mangalore from 14-16<sup>th</sup> March 2001.

#### **(f) Reports/Other Documents:**

1. Project Completion Report on MoES, funded project titled 'Establishment of continuously operating permanent GPS stations at Panamik in J&K and Pithoragarh in Uttarakhand region'
2. Project Completion Report on SAC, funded project titled 'Geodynamic evolution of the India Plate through high resolution geoid/gravity derived from SARAL/ALTIKA altimeter data'
3. Project Completion Report on IIRS funded project titled 'Geodynamics and Seismicity investigations in the Northwest Himalaya- GNSS component'

#### **(g) Articles in Proceeding Volumes**

1. Rajesh, S., Majumdar, T. J., and Mitra, D. S., (2002) 'Geological structural pattern identification/analysis in the Eastern offshore, India, using satellite altimeter data'. *Geological Survey of India*, In the proceedings volume on National Seminar in connection with 150<sup>th</sup> year celebration of Geological Survey of India on topic "Four decades of Marine Geosciences in India- A Retrospect", held at Mangalore from 14-16<sup>th</sup> March 2001.