

**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
DEPARTMENT OF EARTHQUAKE ENGINEERING**



CURRICULUM VITAE

**DR. DAYA SHANKER
ASSISTANT PROFESSOR
OF
ENGINEERING SEISMOLOGY**

IIT ROORKEE, INDIA February, 2008

CURRICULUM VITAE

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Nationality: Indian
Born: 29 May 1962
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Education: **B. Sc.** In Physics (Hons) **Ist Div** – Banaras Hindu University Varanasi, India (1982)
M.Sc.Tech. In **Geophysics - Ist Div** - Department of Geophysics, Banaras Hindu University, Varanasi, **1986**
Ph.D. in Geophysics (**Seismology**) - Department of Geophysics, Banaras Hindu University, Varanasi, **1991**

Languages: English, Hindi

Former career: **Junior Research fellow** in Seismology of the Council of Scientific Industrial Research in Department of Geophysics, Banaras Hindu University, Varanasi, (1988–1990)
Senior Research fellow in Seismology of the Council of Scientific Industrial Research in the Department of Geophysics, Banaras Hindu University, Varanasi, (1990–1992)
Lecturer (ad-hoc) in Geophysics, Department of Physics, Guru Nanak Dev University Amritsar, Punjab (Jan. 1992– June 1992)
Research Associate in Seismology (University Grant Commission), Banaras Hindu University, Varanasi, (1993–1996)
Senior Lecturer in Engineering Seismology, Department of Earthquake Engineering, University of Roorkee, Roorkee (1996-1999)
Assistant Professor in Engineering Seismology, Department of Earthquake Engineering, Indian Institute of Technology Roorkee, Roorkee (1999–2007)

Present position: Assistant Professor in Engg. Seismology, Department of Earthquake Engineering, Indian Institute of Technology Roorkee, Roorkee (1999 – present)

Field experience: Participation in several field experiments concerning seismotectonic studies and studies of earthquake sequences, Survey of Gravity and Magnetic field data collection, Tsunami damage survey.

Teaching and Research experience: About **Eighteen years** of research and teaching experience in the following subject-field:

Undergraduate Level:

Engineering Seismology & Seismotectonics, to B.Tech Engineering students of IIT Roorkee.
Solid Mechanics to B.Tech Engineering students of IIT Roorkee.

Introduction to Earthquake Engineering to B.Tech Engineering students of IIT Roorkee

Understanding Earthquake Disaster to B.Tech Engineering students of IIT Roorkee

Postgraduate level:

General Geophysics; to postgraduate student of geophysics, Banaras Hindu University Varanasi;

Solid earth geophysics to postgraduate student of geophysics of the Department of Physics, Guru Nanak Dev University Amritsar, Punjab.

Engineering Application of geophysical techniques;

Seismotectonics and

Engineering Seismology & Seismotectonics to postgraduate students of the Earthquake Engineering, IIT Roorkee.

Administrative Experience:

- Associated as paper setter, passing board examiner, conducting practical examinations, evaluation of project work, viva-voce and evaluation of answer books as an External Examiner for the Ph.D Thesis and M.Sc.Tech. (Geophysics) degree course of Banaras Hindu University, Varanasi. Involved in conduct of Entrance examination for B.Tech and M.Tech and evaluation of answer scripts.

- **Staff Advisor** - *Rowing*, Institute Rowing Team

- **Office Incharge**- Departmental Guest faculty/foreign visitors

- **Associate Manager**- Adarsh Bal Niketan, Senior Secondary School, Central Board of Secondary Education, Indian Institute of Technology Roorkee, India

Member of Professional societies:

Life Member Indian Society of Earthquake Technology

Life Member Seismological Society of India

Life member Indian Society for Rock Mechanics & Tunneling Technology

Life member, Hindi, Vigyan Sahitya Parisad

Member, Association of Exploration Geophysicists

Honorary; Member, Geological Association & Research Centre

Member, Indian Science News Association

Research activities

1. Long-term earthquake prediction in the Himalayas and its vicinity on the basis of seismicity and probabilistic models.
2. Studies of seismic sequences
3. Seismicity and Seismotectonics of the Northeast India.
4. Fault plane solutions and stress patterns.
5. Tectonic synthesis of gravity and magnetic field data
6. Time dependent seismicity by the application of the Time Predictable Model.
7. Identification of precursory swarm and earthquake prediction in Hinalayan belt
8. Unstable Mantle, Petrologic modeling and earthquake occurrences
9. Prediction of ground motion and Seismic microzonation
10. Identification of radioactive zones using insitu radiation observations
11. Stress evolution by the use of Coulomb Failure Function changes
12. Tsunami Survey and Seismological and Geotechnical damage studies in Andaman & Nicobars
13. Databas on occurrence patterns of Unusual Geological Incidents in Kerala State

Details Of Thesis Supervised

M.E/M.Tech. Thesis – Superised three on the topics:

1. Estimation of Earthquake Hazard in Andaman & Nicobar and its Vicinity
2. Development of Time- and - Magnitude- Predictable Model for Indian Region
3. Application of Earthquake Prediction Algorithms (M8 & M.Sc) for Specific Sites

Ph.D Thesis –Supervising to students on the topics:

- (i) Seismicity and Seismotectonic Study of NW Himalayas
- (ii) Diagnostic of Seismicity in Peninsular India

Area of current research interest:

Engineering Seismology and Seismotectonics
 Seismic hazard and Earthquake prediction / Earthquake Disaster Management
 Prediction of Ground Motion studies and seismic Microzonation
 Exploration Seismology
 Applied Geophysics/ Theoretical seismology/
 Geophysical application in Civil Engineering and tunneling Technology
 Landslide Control and Hill development
 Tsunami study

Invited Special Lectures delivered:

1. Precursory swarm identification and prediction of earthquake hazard in Hindukush-Pamir Himalaya
2. Petrologic model for generation of medium size earthquake in Deccan Trap, India
3. Application of geophysics in Tunnelling and site survey activities
4. Damage due to devastating earthquake and tsunami of December 26, 2004 in Andaman and Nicobar, India-A perspective
5. Role of insitu stress in rock and implications to earthquake triggering
6. Application of probabilistic model to estimate earthquake hazard in Himalayas
7. Earthquake induced landslide hazard determination and associated construction in Himachal region.
8. Long-term earthquake hazard prediction in Himalaya
9. Role of Tibetan plateau and tectonic activity along Bengal basin
10. Earthquake instrumentation and monitoring
11. Estimation of seismic risk using Guembel's Extreme value method
12. Seismotectonic of Himalaya-an overview
13. Introduction to Engineering Seismology and Earthquake Engineering

Award/Scholarship :

National Merit Scholarship, 1977 - 82
 Studentship, University Grant Commission, 1986
 Junior Research fellowship, Council of Scientific and Industrial Research (CSIR), New Delhi, 1988-90.
 Senior Research fellowship, Council of Scientific and Industrial Research (CSIR), New Delhi, 1990-93.
 Research Associateship, from University Grant Commission(UGC), New Delhi, 1993-1996
 Turkish Govt. Scholarships, 1994-95.
 Japanese Govt. Scholarship, 1996.
 Japanese Govt. Scholarship, 1997.
 INSA Visiting Scientists, 2001-2002.

Academic Achievements (Peer reviewer of many Journal and projects):

1. Research Paper - An International Journal Computers and Geosciences (1999),
2. Geological Society of Canada (Pergamon)
3. Research Paper – Tectonophysics (2002)
4. Research Paper – Tectonophysics (2003)
5. Research Paper – Tectonophysics (2004)

6. Research Paper – Natural Hazard (2005)
7. Research Paper – Nonlinear Dynamics(2006)
8. Research Paper -- ICFAI Journal Of Earth Sciences (2006)
9. Research Paper – Journal of Geoscience (2007)
10. Research Paper – Journal of Natural Hazards and Earth System Sciences (2007)
11. Research Paper - Journal of Earth System Science (2008)
12. Research paper - Journal of hydrological process (2008)
13. Research Project - Department of science and Technology, New Delhi
14. Research Board of Advisors -1999, Honorary Appoinment by the American Biographycal Institute (ABI), U.S.A.
15. Contemporary Who's Who 2002/2003 by ABI, USA.
16. Consulting Editor of the Contemporary Who's Who by ABI, USA
17. Complimentary Certificate of Recognition - Marquis Who's Who in Science and Engineering USA.
18. Citation Index-more than twenty
19. Co-Organizing Secretary of “ Symposium on seismic Hazard Analysis and Microzonation SYSHAM), September 23-24, 2005, Department of Earthquake Engineering, IIT Roorkee, India
20. Chaired Session “Strong Ground Motion, Earthquake Hazard and Risk” IASPEI-2006
21. Co-Convenor in Session “Tsunamis in the European Mediterranean Region and the Sumatra Earthquake and Tsunami in the Indian Ocean” 1st European Conference on Earthquake Engineering and Seismology (ECEES), Geneva, Swetizerlands September 3-8, 2006.
22. Chaired Session “23rd National Convention of Civil Engineers” 2007

Foreign Visits

1. Country visited-- **Wellington, New Zealand** University/Institute—**Victoria University**
Purpose -----International Symposium; Duration-- 07- days; Year--- Feb., **2008**
2. Country visited -**Taipei, Taiwan** University/Institute---**National Taiwan University, Dept of Geoscience** ; Purpose -----Conference (9th ICGG-07); Duration-----10 -Days;
Year October, 2007
3. Country visited -----**Kathmandu Nepal** Institutes/University -----Department of Mines and Geology Purpose ---International Workshop, Duration --02 -days;
Year---November 28-29, **2006**.
4. Country visited -----**Bangkok, Thailand** Institutes/University -----Asian Disaster Preparedness Center & TMD; Purpose ---- Asian Seismological Commission VI General Assembly & Regional Training, Duration --21 -days; **Year**-----22 October-10 November, **2006**.
5. Country visited -----**Santiago, Chile** South America Institutes/University -----**Department of Geophysics, University of Chile**; Purpose ---- International Association of Seismology and Physics of the Earth's Interior (IASPEI – 05) General Assembly; Duration --08 -days;
Year-----02-08 October, **2005**.
6. Country visited --- (**Chania Crete, Greece**) University/Institute ----**University of Thessaloniki**; Purpose--- 22nd International Tsunami symposium (As Invited Speaker) & short visit Duration----- one week Year – 27 June - 9th July, 2005.
7. Country visited---(**Vancouver, Canada**) University/Institute---**Vancouver Convention & Exhibition Centre British Columbia Canada**; Purpose--- 13th World Conference on Earthquake Engineering Duration----- one week Year –1 - 6 August, 2004
8. Country visited ----(**Taipei, Taiwan**) University/Institute----**National Center for Research on Earthquake Engineering (NCREE)**; Purpose--- International Training Program; Duration- one week Year –13 Oct, 2003 ----- 17 Oct., 2003
9. Country visited ---**Russia, Moscow**; University/Institute-----**Russian Academy of sciences, International Institute of Earthquake Prediction Theory and Mathematical Geophysics**; Purpose ----INSA Visiting Scientist Exchange Programme; Duration --1 & ½ months;
Year -- 24th Dec.2001-07th Feb. 2002
10. Country visited ---**Nepal** University/Institute ----**International Centre for Integrated Mountain Development (ICIMODE) & National Society for Earthquake Technology (NSET)**,

Kathmandu, Nepal Purpose ---International Training-cum Workshop Duration-----16 – Days; Year----- November, 2002.

11. Country visited--**Italy**; University/Institute—**Abdus Salam International Centre for Theoretical Physics (ICTP)**; Purpose -----International Training-cum Workshop Duration--- 20 – Days; Year -----October, 2001
12. Country visited -**Vietnam**; Institutes/University ---**Institute of Geophysics, Hanoi, Vietnam**; Purpose -1st IAGA-IASPEI Joint Assembly; Duration --15-days Year-----August. 2001.
13. Country visited ---**Italy**; University/Institute---**Abdus Salam International Centre for Theoretical Physics (ICTP)**; Purpose----International Training-cum Workshop Duration---20 – Days; Year -- October, 1999
14. Country visited -**China**; University/Institute ---**Institute of geophysics State Seismological Bureau, Beijing**; Purpose –International Training Duration---10 -Days; Year - October, 1998
15. Country Visited---**United Kingdom (U.K.)**; University/Institute----**Keele University, London**; Purpose- International Conference (As invited Speaker); Duration---One Week; Year-----April, 1998
16. Country visited -**Greece**; University/Institute **University of Thessaloniki, Aristotle Geophysical Laboratory**; Purpose -----Conference (IASPEI-97); Duration-----10 -Days; Year August, 1997

Research collaboration:

- (i) Department of Geophysics, Aristotele University of Thessaloniki, Greece.
- (ii) Institute for Geophysik, Bundesstr. 55, Hamburg, Germany.
- (iii) Russian Academy of sciences, International Institute of Earthquake Prediction Theory and Mathematical Geophysics
- (iv) National research center for Disaster Prevention, Tennodai, Tsukuba-shi, Japan
- (v) Department of Geophysics, Banaras Hindu University, Varanasi.
- (vi) Center for Earth Science Studies, Trivandrum.
- (vii) Department of Earth Sciences, IIT Roorkee.
- (viii) Geological Survey of India, Central Geophysics Division, Calcutta.
- (ix) Geological Survey of India Marine Wing Geophysics Division Calcutta.
- (x) GE Capital International Services Race Course Road Bangalore.
- (xi) Department of Earth Sciences IIT Roorkee
- (xii) Department of Applied Geophysics, ISM, Dhanbad.

Participation in Scientific Meetings

1. Evison Symposium on Seismogenesis and Earthquake Forecasting, Wellington, New Zealand, 18-22 Feb. 2008.
2. 23rd National Convention of Civil Engineers & National seminar on Design & Strengthening of building Structures, 27-28 October 2007, Institution of Engineer Jabalpur Local Center.
3. 9th International Conference of Gas Geochemistry, Department of Geosciences, National Taiwan University, Taipei Taiwan, 01-08 Oct. 2007.
4. Workshop on Web of Science Citation Index, Indian Institute of Technology Roorkee, India, April 03, 2006.
5. International Workshop on Seismology, Seismotectonics and Seismic Hazard in the Himalayan region, Kathmandu, Nepal, 28-29 November, 2006.
6. Regional Course on Earthquake and Tsunami Vulnerability Reduction focusing the use of spatial geodata, Bangkok, Thailand October 22-November 06, 2006.
7. Asian Seismological Commission VI General Assembly (ASC-2006), Bangkok, Thailand, 07-10 November, 2006.
8. National Workshop on "IPR Creation and Management in Academic and Research Institutions" Indian Institute of Technology Roorkee, India, February 24-25, 2006.
9. 22nd International Tsunami Symposium, Chania Crete Greece, June 27-29 2005.
10. Symposium on Seismic Hazard Analysis and Microzonation, IIT Roorkee September 23-24, 2005.
11. 33rd Assembly of the International Association of Seismology and Physics of the Earth's Interior, Santiago, Chile, October, 2–8, 2005.

12. *13th World Conference on Earthquake Engineering*, Vancouver, B.C. Canada, August 1-6, 2004.
13. *International Training Program for Seismic Design of Structures*, 14-18 April, NCREC, Taipei, Taiwan, ROC, 13-17 Oct., 2003.
14. *12th Symposium on Earthquake Engineering*, Indian Institute of Technology Roorkee, India, Dec., 16-18, 2002.
15. *Second International Training Course on "Earthquake vulnerability Reduction for cities (EVRC-2)"*, Kathmandu Nepal, 11-22 November, 2002.
16. *Symposium on Seismology Earthquake Hazard Assessment and risk management, in Conjunction with 4th Asian Seismological Commission ASC-2002*, Kathmandu, Nepal, November, 24-26, 2002.
17. *IAGA-IASPEI Joint Scientific Assembly*, Hanoi, Vietnam, August 19-31, 2001.
18. *National Workshop on Application of Rock Engineering in Nation's development*, department of Civil Engg. University of Roorkee, Roorkee, April 27-28, 2001.
19. *International Conference On Mathematical Modelling*, Department of Mathematics, University of Roorkee, Roorkee, January 29-31, 2001.
20. *Sixth Workshop on "Non-Linear Dynamics and Earthquake Prediction"* at International Center for Theoretical Physics (ICTP), Trieste, Italy, October 15 -27, 2001.
21. *Lesson for Architects & Engineers from recent Indian earthquakes*, The Institution of engineers (India) Roorkee Local center, Roorkee, December 2-5, 2000.
22. *Fifth Work shop on" Non-Linear Dynamics and Earthquake Prediction"* at International Centre for Theoretical Physics (ICTP), Trieste, Italy, October 4 - 22 October, 1999.
23. *International conference Geoscience-98* University of Keele, Keele U.K. April 4-18, 1998.
24. *IUGG/SSB Internal Training course on" Continental Earthquake and seismic Hazard"* at Institute of Geophysics, State Seismological Bureau, Beijing, China, October 4 - 14, 1998.
25. *Eleventh Sym. on Earthquake Engineering*, University of Roorkee, Dec.17-19, 1998.
26. *29th General Assembly of International Association of Seismology and Physics of the Earth Interior (IASPEI-97)*, Thessaloniki, Greece, 18-28, August 1997.
27. *Workshop on "Earthquake Disaster Preparedness"*, Department of Earthquake Engineering University of Roorkee, Roorkee, Oct. 13-14, 1997.
28. *World Bank Project on" Strong Motion Building Instrumentation"* at Department of Earthquake Engineering University of Roorkee, U.P., India, 1st Dec.-6th dec. 1997.
29. *33rd Annual Convention and Modelling on Geophysical Instrumentation*, Indian Geophysical Union, Dec.18-20, 1996.
30. *Third SERC School on "Seismology and Earthquake Processes"* at Indian School of Mines (ISM), Dhanbad, Bihar, India, 23rd Sept-12 th Oct, 1996.
31. *Mathematics and its Application in Engineering and Industry*,. Department of Mathematics, University of Roorkee, Roorkee, Dec.16-18, 1996.
32. *Fourth SERC School on "Electromagnetic induction in the earth Recent Advances (EMII)"* under the series on "Geomagnetism and earth's interior, at Department of Geophysics, Banaras Hindu University, Varanasi, India April 17-May 6, 1995,
33. *Eighteenth Annual Convention of AEG* January 24-26, 1993.
34. *Third SERC Summer School in "Geomagnetism and Earth's interior"* at (IIT, Powai, IIG, Colaba and TIFR) Bombay, India, 29th March -17th April, 1993.
35. *Signal Processing and Modelling of Geosignature for Exploration of Oil Natural Gas"* Banaras Hindu University December 14-16, 1992.
36. *1st SERC Winter School in the series "Seismology and Earthquakes Processes"* at National Geophysical Research Institute, Hyderabad, India, Dec.11 – 31, 1992.
37. *Platinum Jubilee of Banaras Hindu University*, January 28-31, 1991.
38. *17th Annual Convension of AEG "International Seminar on Exploration Geophysics*, Hyderabad Novembei 25-30, 1991.
39. *Sixteenth Annual Convention and Seminar on Exploration Geophysics*, Wadia Institute of Himalayan Geology, Dehra, December 7-10, 1990.
40. *ISER Silver Jubilee National Symposium*, February 25-26, 1989, Roorkee.

Participation in Research Projects

Supervised and successfully completed several research projects and consultancy dealing with microzonation, long-term earthquake prediction, seismic hazard assessment and risk analysis.

- (1) A data base in the Himalayas and its Vicinity for Seismic Hazard Assessment"
Sponsored by Department of Science And Technology (DST), No.HR/OY/A-04/1997
- (2) "Estimation of earthquake Probabilities and Seismic Hazard in Andaman Nicobar island Arc and adjoining Burmese and Indonesian Arcs" Sponsored by University of Roorkee seed money project No.UPG/NP-530/Earthq. Engg/106-Deptt-1999
- (3) Seismic Hazard Assessment in Delhi and its vicinity Sponsored by University of Roorkee seed money project No. DRIL/SM/R-8/2859 ; 2000
- (4) A report on the allowable bearing pressure and seismic parameters for Kathilei and Adaka mosques in Massawa area, Eritrea, northeast Africa. Project Sponsored by ARH consultants Riyadh, University of Asmara, Asmara, 2000
- (5) "Microseismic Zonation and Prediction of Earthquake Hazard in Himalayas"
Sponsored by All India Council for Technical Education (AICTE) , New Delhi,
Project F.No: 8020/RID/R&D-129/2001-02
- (6) Diagnostic seismicity and identification of potential seismic sources for prediction of earthquake hazard in Peninsular India" Ministry of Human Resource Development, Department of Education MHR-192-EQD/ 2005-2008

Publications:

1. D. Shanker, R.B.S. Yadav and H.N. Singh (2007). On the seismic risk in the Hindukush-Pamir-Himalaya and vicinity. *Current Sciences*, 92 (11), 1625-1630.
2. D. Shanker and H.N. Singh (2007). Application of the Time predictable model in Peninsular India for future seismic hazard assessment. *Acta Geophysics*, 55 (3), 302-312.
3. D. Shanker, E. E. Papadimitriou, M. Banerjee, Harihar Paudyal, H.N. Singh, and V.P. Singh (2007). Would it have been possible to Predict October 08, 2005 Kashmir Earthquake? Possibility of another Earthquake in Himalayas. *Journal of Rock Mechanics and Tunneling Technology* 13 (1), 55-59.
4. V. P. Singh, D. Shanker, H. N. Singh and M. Banerjee (2007). Upper mantle instability and seismic activity of Kachch and adjoining areas with special reference to Bhuj earthquake of 2001, Gujarat, India - A petrologic model *Acta Geod. Geophy. Hung.*, Vol., 42 (3), 323-340.
5. H.N. Singh, D. Shanker, V.N. Neelakandan, V.P. Singh (2007). Distribution patterns of natural radioactivity and delineation of anomalous radioactive zones using in situ radiation observations in Southern Tamil Nadu, India. *Journal of Hazardous Materials*, 141 (1), 264-272.
6. V. P. Singh, J. Duda and D. Shanker (2005). A plausible model for present day seismicity and tectonic activity in the Hindukush complex zone. *Asian Journal of Earth Sciences*, 12, 147-156.
7. H. N. Singh, D. Shanker V. P. Singh (2005). Occurrence of Anomalous Seismic Activity Proceeding Large to Great Earthquakes in Northeast India Region with Special Reference to 06 August 1988. *Physics of the Earth and Planetary Interiors*. 148 (2-4), 261-284.
8. Singh, M., Singh, B. and D. Shanker (2005). Critical state mechanics in non-critical failure criteria for rocks. *Journal of Rock Mechanics and Tunneling Technology*, 11(1), 13-24.
9. H. N. Singh, John M., V.N. Neelakandan, D. Shankar and V.P. Singh (2005). A Database on Occurrence Patterns of Unusual Geological Incidents in Southwest Peninsular India and its implication on Future Seismic Activity. *Acta Geod. Geophy. Hung.*, 40, pp. 69-88
10. D. Shanker and E. Papadimitriou (2004). Time dependent seismicity in Hindukush-Pamir-Himalayas. *Tectonophysics Special Volume*, 390 (1-4), 129-140.
11. D. Shanker, N. Kapur and V. P. Singh (2004). Modelling quaternary thrusting in Himalayas and its geodynamic constraints in southern Tibet. *Acta Geod. Geophy. Hung.*, 39(1), pp.73-87.
12. V. P. Singh, D. Shanker and R. Singh (2004). A structural and tectonic synthesis of parts of Archeans, Satpurus and Chhattisgarh basins around Mandala-Raipur districts, M. P. India, using gravity field data. *IUGG Special Volume 'Earthquake Hazard, Risk, and Strong Ground Motion, 1, 121-136.*
13. D. Shanker, N. Kapur and V. P. Singh (2003). Evidence on triggered seismicity associated with the October 20,1991 Uttarkashi Earthquake (Garhwal Himalaya). India. *Acta Geod. Geophy. Hung.*, 38, No. 3, 363-374.

14. V. P. Singh O. P. Singh B.N.P. Agrawal and D. Shanker (2003). Analysis of total magnetic anomalies over the north eastern marginal part of Deccan Traps and adjoining areas of Central India. *Acta Geophysica Polonica*, 51 (2), pp.165-177.
15. D. Shanker, N. Kapur and B. Singh (2002). Thrust wedge mechanics and coeval development of normal and reverse fault in the Himalayas. *Journal of Geological Society, London*, 159, 264-273.
16. D. Shanker and N. Kapur (2001). On the spatio temporal distribution of global seismicity and rotation of the earth. A-review. *Acta. Geod. Geoph. Hung.*, 36. No.2. pp.175-187.
17. M. L. Sharma and D. Shanker (2001). Estimation of seismic hazard parameters for the Himalayas and its vicinity from incomplete data files. *ISCT Journal of Earthquake Technology*, 38(2-4), 93-102.
18. D. Shanker, B. Singh and V.P., Singh (2000). Earthquake time cluster in North-East India during February to April 1988. *Acta Geod. Geophys. Hung.*, 35(2), pp.195-204.
19. D. Shanker and M.L. Sharma (1998). Estimation of seismic hazard parameters for the Himalayas and its vicinity from complete data files. *Pure and Appl. Geophys (PAGEOPH)*, 152, pp. 267-279.
20. D. Shanker (1998). Earthquake risk evaluation in Koyna region of Maharashtra, India. *Acta Geod. Geophys. Hung.*, 33, No.(2-4), pp.335-340.
21. V. P. Singh and D. Shanker (1997). Petrologic model for generation of medium size earthquake in Deccan Trap; India. *Proc. Indian National Science Academy*, 63A, No. 6, pp. 457-467.
22. D. Shanker and M. L. Sharma (1997). Statistical analysis of completeness of seismicity data of the Himalayas and its effect on earthquake hazard determination. *Bull. Indian Soc of Earthquake Technology*, 34, No. 3, pp. 159-170.
23. D. Shanker and V.P. Singh (1997). Seismic risk analysis for the occurrence of medium size earthquakes in Kangra region, Himachal Pradesh, India; *Proc. Indian. Natn Sci. Acad.* 63, A, No.2. pp. 197-202.
24. D. Shanker and V.P. Singh (1996). Seismicity behaviour of north-East India and its vicinity. *Science and Culture*, 62(7-8), pp-215-217.
25. D. Shanker and V.P. Singh (1996). Regional Time- and Magnitude- predictable Seismicity model for north-east India and vicinity; *Acta Geod. Geoph. Hung.*, 31(1-2), pp. 181-190.
26. D. Shanker, H.N. Singh and V.P. Singh (1995). Anomalous seismic activity and long-range earthquake prediction in Himachal Pradesh, India; *Acta Geod. Geophys. Hung.*, 30(2-4), pp. 379-395.
27. D. Shanker and V.P. Singh (1995). Earthquake distribution characteristics and seismicity rate in Hindu Kush and its vicinity. *Acta Geophysica Polonica*, 43, No. 4, pp. 337-342.
28. D. Shanker and V.P. Singh (1995). Long-term prediction of earthquakes in the major seismogenic sources of adjoining areas of north-east India; *Acta Geod. Geophys. Hung.*, 30(2-4), pp. 207-216.
29. V. P. Singh, C.L. Singh and D. Shanker (1995). Patna fault as a subsurface feature of the Ganga-Basin and its geodynamic constraints; *Proc. Indian National Science Academy*, 61A(1), pp. 47-52.
30. V. P. Singh, D. Shanker and K. Hamada (1994). A study of seismicity of north-east India and adjoining area based on statistical analyses; *Current Science*, 66,(12), pp. 922-926
31. D. Shanker and V.P. Singh (1994). Latur earthquake of eastern Maharashtra *Science and Culture*, 60, (6-12), pp. 99-103.
32. V. P. Singh and D. Shanker (1993). Flow of Tibetan Plateau and tectonic along Burmese Arc; *Geophysical Transactions*, 38(2-3), pp. 135-149.
33. V. P. Singh, D. Shanker and J. Singh (1992). On the validity of Time-predictable model for earthquake generation in North-East India; *Proc. Indian Acad. Sci.(Earth-Planet. Sci.)*, 101(4), pp. 361-368.
34. V. P. Singh and D. Shanker (1992). On the seismicity and tectonic activity of Bengal basin and its adjoining regions; *MAUSAM*, 43 (4), pp. 371-378.
35. V. P. Singh, D. Shanker and A. Ram (1991). Seismological approach to earthquake prediction in Himalayas and adjoining areas; *The Journal of Scientific Research*, 41B, pp. 101-110.
36. D. Shanker (1991). Bhayanak Aur Vinashkari Bhukamp (in Hindi). Vagyanik, 23(1), pp. 41-43.
37. U. S. Singh, D. Shanker and R.K. Singh (1988). Spectra of different fluxes over the arid and semi-arid zones of North-West India during MONEX-1979; *Proc. Indian Acad. Sci. (Earth Planet Sci.)*, 97, pp. 137-147.

**In International / National conferences / symposia
(Full papers, Short notes & Abstracts etc.)**

38. D. Shanker, H.N. Singh, Harihar Paudyal and V. P. Singh (2008). Searching for an earthquake precursor – a case study of precursory swarm as a real seismic pattern before major shocks, *Evison Symposium on Seismogenesis and Earthquake Forecasting, Wellington, New Zealand*, 18-22 Feb. 2008, pp. 40.
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