



**Google Scholar Page:** <https://scholar.google.com/citations?user=zq-aD8kAAAAJ&hl=en>

**ResearchGate Profile:** [https://www.researchgate.net/profile/Swapnamita\\_Choudhury](https://www.researchgate.net/profile/Swapnamita_Choudhury)

**FIELD OF SPECIALIZATION:**

**REMOTE SENSING, TECTONIC GEOMORPHOLOGY, GEOARCHAEOLOGY**

**CAREER HIGHLIGHTS**

- Led Uttarakhand Government earth sciences disaster management programme
- Pioneering work on earthquake precursory studies and earthquake research exemplified by **25** publications in reputed peer reviewed journals, including IJRS, Natural Hazards, Current Science and others
- Involved in climate change and glacier mapping and monitoring using Remote Sensing and GIS
- Participated and presented in **20** international seminars and conferences around the world
- Won **Best Paper Award** in conference organized by Chinese Academy of Surveying and Mapping in Beijing, China

**EDUCATION:**

<b>Year</b>	<b>Degree</b>	<b>Subject</b>	<b>Institute</b>		
2005	Ph. D.	Development of Remote Sensing based Geothermic Techniques in Earthquake Studies	Indian Institute of Technology Roorkee, India	Awarded	

**PROFESSIONAL EXPERIENCE:**

<p><b>Aug 2020 – present</b></p> <p><b>Aug 2012 – Aug 2020</b></p> <p><b>Feb 2007 – Jun 2013</b></p>	<p><b>Wadia Institute of Himalayan Geology</b>, Department of Science and Technology, Ministry of Science and Technology, Government of India, Dehradun, India</p> <p><b>Scientist ‘D’</b></p> <ul style="list-style-type: none"> <li>• First to provide absolute dates to the archaeological sites in the Doyang-Dhansiri Valley in Assam</li> <li>• First to date the terraces of Neolithic remains in Garo Hills of Meghalaya</li> <li>• Breakthrough in determining past cultures and their resilience to major hazard events in historical Assam</li> </ul> <p><b>Scientist ‘C’</b></p> <ul style="list-style-type: none"> <li>• First ever detection of ground motion related to the Tehri Dam using GPS</li> <li>• Led the first ever mountain hazard study in Bhagirathi Valley and Gangotri Glacier using GIS</li> <li>• Collaborated with NTU, Singapore to locate the ruptures of 1897 and 1950 great earthquakes of NE India</li> </ul> <p><b>Scientist ‘B’</b></p> <ul style="list-style-type: none"> <li>• Pioneering work leading to detection of thermal anomalies as a precursor to earthquakes</li> <li>• Participated in glaciological training, including climate change in Hamta Glacier (HP) organized by GSI</li> <li>• Participated in training on ground based LiDAR for mapping organized by UNAVCO and NTU</li> </ul>
<p><b>Jul 2006 – Feb 2007</b></p>	<p><b>Disaster Mitigation and Management Centre</b>, Department of Disaster Management, Government of Uttarakhand (UK), Dehradun, India</p> <p><b>Junior Executive (Earth Sciences)</b></p> <ul style="list-style-type: none"> <li>• Spear-headed the UK Government Disaster Management programme for Earth Sciences related disasters</li> <li>• Advised government for policies on disaster management and mitigation</li> <li>• Played a key role in formulation of government policies in Uttarakhand to curtail anthropogenic activities in Himalayan Glaciers. Recognised by Principal Secretary for the work</li> <li>• Spearheaded the project which resulted in GIS based inventory of landslides in Rudraprayag District, UK</li> <li>• Led the investigation of Joshimath localized subsidence resulting in an official report citing the causes</li> </ul>
<p><b>Apr2004– Mar2006</b></p>	<p><b>Dept. of Earth Sciences, Indian Institute of Technology Roorkee</b>, India</p> <p><b>Senior Research Fellow (CSIR)</b></p> <ul style="list-style-type: none"> <li>• Delivered first-ever results on detection of pre-earthquake thermal anomalies using thermal and passive microwave satellite data. This brought international acclaim and was awarded <i>Best Paper Award</i> in Beijing, China</li> <li>• Performed first-ever quantitative fog mapping for North India using satellite data</li> <li>• Identified False Topographic Phenomenon (FTP) and its correction techniques observed in satellite data. Team published first ever results</li> <li>• Responsible for the operation of polar orbiting satellite data receiving earth station, which was at that time the only station in the country</li> <li>• Awarded <i>Senior Research Fellowship</i> by Council of Scientific and Industrial Research (CSIR), New Delhi, India, 2004</li> </ul>

## **SERVICES:**

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

2017 - Watinaro Imsong, "Geomorphological appraisal of Neotectonic Activities in the Shillong Plateau Northeast India". **Awarded**

### **b. Teaching:**

Middle-High School students

### **c. Membership:**

- Life Member of Himalayan Geology
- Life Member of Indian Society of Remote Sensing
- Life Member of Indian Geological Congress

### **d. International/National Seminars/Workshop:**

Several International Seminars and Workshops

### **e. External Research Fund received & Project Handled:**

2008-2010:

Co-PI in Indo-Russian Joint Project, entitled, "EARTHQUAKE PRECURSOR RESEARCH USING SATELLITE THERMAL INFRARED DATA", under Integrated Long Term Programme in Science and Technology between India and Russia (ILTP).

### **f. Member of important Committees:**

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

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

**2004 Best Paper Award** for work on 'Thermal Anomalies associated with Earthquakes' Chinese Academy of Surveying and Mapping in Beijing, China

2004 DST Travel Grant for student participating in Conference in Beijing, China.

2012 DST Travel Grant for Scientists participating in Conference in Singapore

### **b. Fellowships:**

2004: SENIOR RESEARCH FELLOWSHIP by Council of Scientific and Industrial Research (CSIR)

### **c. Memorial Lectures:**

1. Silver Jubilee Special Lecture in "Mountain Fisheries: Challenges and Opportunity for Livelihood Security", held between 5-6 November 2012, by Directorate of Cold Water Fisheries Research, Bhimtal, Uttarakhand.
2. "International Seminar on Archaeological Heritage of South East Asia", held between 18-22 November 2017, conducted by Directorate of Archaeology, Assam.

3. “Archaeology and Heritage Management in the Indian Subcontinent”, Cotton University, Guwahati, Assam held on 22 November 2017.

**COUNTRIES VISITED:**

China, Singapore, Nepal related to collaborative work and conferences

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

International Collaboration:

1. Prof. Paul Tapponnier, Tectonics Group Leader, Earth Observatory of Singapore, Nanyang Technological University, Singapore.
2. Dr. Elise Kali, Research Engineer, Centre National de la Recherche Scientific (CNRS), Institute de Physique du Globe de Strasbourg, France.

National Collaboration:

1. Prof. Sarat Phukan, Head, Department of Geological Sciences, Gauhati university, Guwahati.
2. Prof. B. P. Duarah, Department of Geological Sciences, Gauhati University, Guwahati.
3. Dr. D. P. Kouli, Director, Directorate of Archaeology, Assam.

**PROFESSIONAL TRAINING**

	<b>Organization</b>	<b>Period</b>		<b>Details of Training</b>
		<b>From</b>	<b>To</b>	
1	Geological Survey of India Training Institute, Hyderabad Govt. of India	26 August 2007	20 September 2007	6 <sup>th</sup> Training Course in Glaciology, Held in Lucknow, Manali, Chattru and Hamta Glacier
2	Indian Institute of Technology-Satellite Earth Station (IITR-SES) Sponsored by DST, New Delhi	24 October 2002	March 2006	NOAA-AVHRR and FY-CHRPT SATELLITE data receiving earth station  Was responsible for operation, maintenance, research
3	EOS-NTU Singapore, jointly with UNAVCO, USA	12 August 2012		Introduction to Terrestrial Laser Scanning (ground based LiDAR) for Earth Science Research, Held in Singapore

**PH.D. ADVISOR:**

1 Awarded

## LIST OF Publications

### (a) SCI Papers

#### In Journals:

1. Saraf, A. K., Choudhury, P. R., Roy, B., Sarma, B., Vijay, S., Choudhury, S. 2004. GIS based surface hydrologic modelling in identification of groundwater recharge zones. *International Journal of Remote Sensing*, 25 (24), 5759-5770.
2. Saraf, A. K., Choudhury, S. 2005. NOAA-AVHRR detects thermal anomaly associated with 26 January, 2001 Bhuj Earthquake, Gujarat, India, *International Journal of Remote Sensing*, 26 (6), 1065–1073. Cover.
3. Saraf, A. K., Ghosh, P., Sarma B., Choudhury, S. 2005. Development of a new image correction technique to remove false topographic perception phenomena. *International Journal of Remote Sensing*, 26 (8), 1523–1529.
4. Saraf, A. K., Choudhury, S. 2005. Thermal Remote Sensing Technique in the study of Pre-Earthquake Thermal Anomalies. *Journal of Indian Geophysical Union*, 9 (3), 197-207.
5. Saraf, A. K., Choudhury, S. 2005. Satellite detects surface thermal anomalies associated with the Algerian earthquakes of May 2003. *International Journal of Remote Sensing*, 26 (13), 2705-2713.
6. Saraf, A. K., Mishra, B. P., Choudhury, S., Ghosh, P. 2005. DEM generation from NOAA-AVHRR nighttime data and its comparison with USGS-DEM. *International Journal of Remote Sensing*, 26 (18), 3879-3887.
7. Saraf, A. K., Choudhury, S. 2006. Himalayas-the Abode of Snow: As Seen from Satellites. *International Journal of Remote Sensing*, 27 (9), 1739–1740.
8. Choudhury, S., Dasgupta, S., Saraf, A. K., Panda, S. 2006. Remote Sensing Observations of Pre-Earthquake Thermal Anomalies in Iran. *International Journal of Remote Sensing*, 27 (20), 4381-4396.
9. Saraf, A.K., Mishra, B. P., Choudhury, S., Ghosh, P. 2007. Digital Elevation Model (DEM) generation from NOAA-AVHRR night time data and its comparison with USGS-DEM. *International Journal of Remote Sensing*, 26 (18), 3879-3887. Technical Note and Cover.
10. Saraf, A. K., Sinha, S. T., Ghosh, P., Choudhury, S. 2007. A new technique to remove false topographic perception phenomenon and its impacts in image interpretation. *International Journal of Remote Sensing*, 28 (5), 811-821.
11. Choudhury, S., Rajpal, H., Saraf, A. K. 2007. Mapping and Forecasting of North Indian Winter Fog: an Application of Spatial Technologies. *International Journal of Remote Sensing*, 28 (16), 3649-3663.
12. Panda, S. K., Choudhury, S., Saraf, A. K., Das, J. D. 2007. MODIS land surface temperature data detects thermal anomaly preceding 08 October 2005 Kashmir earthquake. *International Journal of Remote Sensing*, 28 (20), 4587-4596.
13. Saraf, A. K., Rawat, V., Banerjee, P., Choudhury, S., Panda, S. K., Dasgupta, S., Das, J. D. 2008. Satellite Detection of earthquake thermal precursors in Iran. *Natural Hazards*, 47 (1), 119-135.

14. Saraf, A. K., Rawat, V., Choudhury, S., Dasgupta, S., Das, J. D. 2009. Advances in understanding of the mechanism for generation of earthquake thermal precursors detected by satellites. *International Journal of Applied Earth Observations and Geoinformation*. 11 (6), 373-379.
15. Saraf, A. K., Rawat, V., Das, J. D., Tronin, A., Choudhury, S., Sharma, K. 2011. NOAA-AVHRR Data Displaying Thermal Line in the Himalayan Earthquake Foothills and its Association with Frontal Thrust and Chamoli Earthquake. *Memoirs of the Geological Society of India*, 77, 195-204.
16. S. Choudhury, Gautam, P.K.R., Paul, A. 2013. Seismicity and reservoir induced crustal motion study around the Tehri Dam, India. *Acta Geophysica*. 61 (4), 923-934.
17. Gupta, V., Dobhal, D. P., Vaideswaran, S. C. 2013. August 2012 cloud burst and subsequent flash flood in the Asi Ganga, a tributary of the Bhagirathi river, Garhwal Himalaya, India. *Current Science*, 105 (2), 249-253.
18. Gupta, V., Vaideswaran, S. C., Dobhal, D. P. 2014. Colonization delay of *Rhizocarpon geographicum*: Study from the Gangotri Glacier, Northwestern Himalaya. *Journal Geological Society of India*. 84 (3), 335-340.
19. Imsong, W., Choudhury, S., Phukan, S. 2016. Ascertaining the neotectonic activities in the southern part of Shillong Plateau through geomorphic parameters and remote sensing data. *Current Science*, 110 (1), 91-98.
20. Imsong, W., Choudhury, S., Phukan, S. Duarah, B. P. 2018. Morphodynamics of the Kushi River Basin in the northern front of Shillong Plateau: Exhibiting episodic inundation and channel migration. *Journal Earth System Science*, 127 (5).
21. Imsong, W., Choudhury, S. & Phukan, S. Mid-late Holocene fluvial aggradational landforms and morphometric investigations in the southern front of the Shillong plateau, NE India. *J Earth Syst Sci* 128, 129 (2019). <https://doi.org/10.1007/s12040-019-1130-9>.
22. A. Coudurier-Curveur, P. Tapponnier, E. Okal, J. Van der Woerd, E. Kali, S. Choudhury, S. Baruah, M. Etchebes, Ç. Karakaş. 2020. A composite rupture model for the great 1950 Assam earthquake across the cusp of the East Himalayan Syntaxis. *Earth and Planetary Science Letters*. 531. 2020. <https://doi.org/10.1016/j.epsl.2019.115928>.

#### **(b) Non-SCI Articles**

1. Saraf, A. K. and Choudhury, S. 2003. Earthquakes and Thermal Anomalies. *Geospatial Today Magazine*, July-August, 2003, 18-20.
2. Saraf, A. K., Choudhury, S., Dasgupta, S. 2006. Satellite observations of the great mega thrust Sumatra earthquake activities. *International Journal of Geoinformatics*, 1 (4), 67-74.
3. Saraf, A. K., Choudhury, S. 2006. NOAA-HRPT and FY-CHRPT Satellite Earth Station at IITR, GIS Development. 9 (12), 44-46.
4. Choudhury, S., Saraf, A. K., Panda, S. K. 2006. SSM/I Applications in Studies of Thermal Anomalies associated with Earthquakes. *International Journal of Geoinformatics*. 2 (3), 9-16.

5. Saraf, A. K., Choudhury, S., Panda, S. K., Dasgupta, S., Rawat, V. 2007. Does a major earthquake precede a thermal anomaly? *International Journal of Geoinformatics*. 3 (3), 1-8.

**(c) Chapter in Books**

Saraf, A. K., Swapnamita Choudhury and Sudipta Dasgupta, (2006), "Satellite detection of pre-earthquake thermal anomaly and sea water turbidity associated with the Great Sumatra Earthquake" in the book "*The Indian Ocean Tsunami*" edited by Ted S. Murthy, U. Aswathanarayana & N. Nirupama, Taylor & Francis Group, London, pp. 215-234.

**(d) Abstract volume:**

1. Saraf, A. K. and Swapnamita Choudhury (2004), Satellite detects pre-earthquake thermal anomalies associated with past major earthquakes, *Proceedings of Map Asia 2004 held at Beijing* between 26-29 August 2004, organised by Chinese Academy of Surveying and Mapping and GIS Development, India held at Beijing, China, pp. 40 (full paper at [www.gisdevelopment.net](http://www.gisdevelopment.net)).
2. Saraf, A. K. and Swapnamita Choudhury (2004), Thermal Remote Sensing Technique in the Study of Pre-earthquake Thermal Anomalies, *Proceedings of IGU Conference held at NGRI, Hyderabad*, India held between 29-31 December 2004, pp. 5.
3. Saraf, A. K., Sudipta Dasgupta and Swapnamita Choudhury, (2005), Satellite Detects Pre-Earthquake Thermal Anomalies in Iran, *Proceedings of Symposium on Seismic Hazard Analysis and Microzonation*, held between September 23-24, 2005 at Department of Earthquake Engineering, Indian Institute of Technology Roorkee, Roorkee, pp.331-340.
4. Saraf, A. K., Swapnamita Choudhury and Santosh Panda, (2006), Satellite remote sensing detects pre-earthquake thermal anomalies, *Proceedings of Workshop on Himalayan Earthquakes: A Fresh Appraisal*, held between 7-8 October 2006 at Wadia Institute of Himalayan Geology, Dehra Dun, pp. 31-32.
5. Choudhury, Swapnamita and Saraf, A. K. (2006), Remote Sensing Based Pre-cursory Studies in Earthquakes, *Proceedings of First India Disaster Management Congress at Vigyan Bhawan, New Delhi, India*, held between 28-30 November, 2006, pp. 23 .
6. Saraf, A. K., Swapnamita Choudhury, Santosh Panda and Sudipta Dasgupta, (2006), Satellites Detect Pre-Earthquake Transient Thermal Anomalies, *Proceedings of 13<sup>th</sup> Symposium on Earthquake Engineering (13 SEE-06) on Earthquake Engineering*, held between 19-21 December 2006 at Department of Earthquake Engineering, Indian Institute of Technology Roorkee, Roorkee, Vol. I, pp. 65-74.
7. Das, J. D., S. Choudhury, A. K. Saraf and S. Panda, (2006), Earthquake Hazard Perception in Seismically Active Northeastern Part of India being Affected by the Analogous Sumatran Tectonic Setting, in *Proceedings of 13<sup>th</sup> Symposium on Earthquake Engineering (13 SEE-06) on Earthquake Engineering*, held between 19-21 December 2006 at Department of Earthquake Engineering, Indian Institute of Technology Roorkee, Roorkee, Vol. I, pp. 98-106.
8. Saraf, A. K. Swapnamita Choudhury, Santosh Panda and Sudipta Dasgupta, (2007), Remote Sensing Observations of Pre-earthquake Thermal Anomalies in Iran, *Proceedings of 5<sup>th</sup> Conference on Seismology and*

*Earthquake Engineering (SEE 5)*, held between 14-16 May 2007 at International Institute of Earthquake Engineering and Seismology, Tehran, Iran.

9. Saraf, A. K., S. Choudhury, V. Rawat, P. Banerjee, S. Dasgupta and J. D. Das, (2008), Detecting Earthquake Precursor: A Thermal Remote Sensing Approach, Map India-2008, Proceedings of Map India-2008, held between 6-8 February 2008, organized by GIS Development, Noida, India.

10. Saraf, A.K., Rawat, V., Choudhury, S., Banerjee, B., Dasgupta, S., Panda, S.K. and Das, J.D., 2008, Is Satellite Detection of Earthquake Thermal Precursor Possible?, held between 7-12 September 2008, European Seismological Commission ESC 2008, 31st General Assembly, Hersonissos, Crete, Greece.

11. Saraf, A.K., Rawat, V., Choudhury, S., Das, J.D. 2009. Earthquake Thermal Precursors: Their Detection and Analysis, held between 30-31 January 2009, Geo-Information Technology for Natural Disaster Management and Rehabilitation, Bangkok, Thailand.

12. Swapnamita C. Vaideswaran and Ajay Paul, 2011, The Tehri Dam, Uttarakhand: Crustal Strain and Implications in case of Reservoir Induced Loading, held between 22-27 January 2011, International Symposium on 'The 2001 Bhuj Earthquake and Advances in Earthquake Science (AES-2011)', at Institute of Seismological Research (ISR), Gandhinagar, Gujarat, India.

13. Swapnamita C. Vaideswaran, Ajay Paul and Uma Ghosh, 2011. Implications of reservoir loading and water level fluctuations on seismicity around Tehri Dam, India. Abstract volume of the Indian Monsoon and Himalayan Geodynamics (IMHG-2011), at Wadia Institute of Himalayan Geology, Dehradun, India, held between 2-5 November 2011, 102-103.

14. Swapnamita Choudhury, 2011. Implications of reservoir loading and water level fluctuations on seismicity around Tehri Dam, India. Himalayan Glaciers and Community Responsibility, held between 26-27 September, 2011 by Wadia Institute of Himalayan Geology, Dehradun, Uttarakhand Space Application Center, Dehradun and Himalayan Environmental Studies and Conservation Organization, Dehradun at Wadia Institute of Himalayan Geology, Dehradun.

15. Swapnamita Choudhury, Ajay Paul, Uma Ghosh, 2012. Seismicity Study in and Around The Tehri Dam, India With Relation to Loading and Water Level Fluctuations in Reservoir Third International Geo-Hazards Research, held at Tehri Garhwal between 10-14 June, 2012.

16. Swapnamita Choudhury, 2012. *Invited Lecture: Hydropower Dams in Himalayan Rivers with special emphasis on the Tehri Dam, India*". Guest Lecture in Silver Jubilee Lecture Series at Directorate of Cold Water Fisheries Research (India Council of Agricultural Research), Bhimtal on 4 August 2012.

17. Swapnamita C.V, Ajay Paul and Uma Ghosh. 2012. Implications of reservoir loading and water level fluctuations on seismicity around the Tehri Dam, India. AOGS-AGU (WPGM) Joint Assembly, held between 13 and 17 August 2012, Singapore.

18. Elise Kali, Paul Tapponnier, Jérôme van der Woerd, Swapnamita Choudhury, Saurabh Baruah, A. K. M. Khorshed Alam, Aktarul Ahsan, Catherine Dorbath, Paramesh Banerjee. 2012. Tectonic geomorphology and active megathrust traces in the East-Himalayan Syntaxis, Himalayan-Karakoram-Tibet Workshop (HKT) 2012, held between 28 and 30 November 2012.



19. Elise Kali, Saurabh Barua, Swapnamita Choudhury, Paul Tapponnier, Jerome van der Woerd, Emile A Okal, Laurent Bollinger, Paramesh Banerjee, Aurelie Coudurier-Curveur, 2013. Tectonic geomorphology, Aftershock Relocation and sources of the great 1950 and 1897 East Himalayan Earthquakes. 2013 American Geophysical Union Fall Meeting, held between 9-13 December 2013 at San Francisco, California.

20. Aurelie Coudurier-Curveur, Elise Kali, paul Tapponnier, Jerome van der Woerd, Saurabh Baruah, Swapnamita Choudhury, Emile Okal, Cagil Karakas, 2014. Primary Surface Rupture of the 1950 Assam Earthquake. AOGF 11<sup>th</sup> Annual Meeting (AOGS 2014), held between 28 July-1 August 2014, at Sapporo, Japan.

#### **ADDITIONAL INFORMATION**

- Actively volunteered in the Society for the Promotion of Indian Classical Music and Culture amongst Youth (**SPIC MACAY**) to organize concerts and lectures at various colleges and schools
- Served as **residential warden** (2003-05) of Sarojini Bhawan, ensuring welfare, support and guidance to over 1000 girl students at the only girl's hostel in the IIT Roorkee campus. Responsible for major improvements in infrastructure and functioning of the hostel.
- Co-founded '**PRERNA: a step towards humanity**' (under NSS); a voluntary, social organization to impart quality education to under-privileged women and children in the campus
- Served as a Treasurer of **All Assam Geological Forum**; 1999-2000, and revived the forum into an active body with funds to set up museums and scientific instruments in labs
- Co-founded '**Project Ashaloy**' (in support of street children of Guwahati city, India) along with St. Mary's Convent, Guwahati which finally led to development of an orphanage for rescued children
- Languages: English, Hindi, Assamese