

include geographical location, data collection and sample size to increase relevance of the study. Also, never overlook limitations mentioned in the source article to increase clarity in the research work. The facilitators underlined the authenticity and use of factual data as the soul of responsible science journalism. To make the writing more appealing along with sufficient scientific credibility inclusion of expert views, comments, suggestions, and quotes was suggested. The article should be structured keeping the context and coming to point quickly before the reader loses interest. Use of contextual illustrations elevates curiosity and interest in the readers. Effective writing also requires avoidance of distractions, which improves concentration and maintains focus on writing. Regularity in writing minimizes complexity and improves clarity of expression.

The facilitators shared some of the proven methods that have increased the potentials and creativity of many artists and writers. Following ‘morning pages’ (from the book *The Artist’s Way* by Julia Cameron), one can fix a schedule dedicated to writing in one’s daily routine, which increases concentration and focus. Using Pomodoro technique increases productivity during writing by time management. It requires dividing the writing time into small intervals, usually 25 minutes with short breaks. They suggested to organize groups like ‘Shut Up & Write’ practised in many parts of the world. It is a simple gathering of interested people

indulged in personal commitment to writing in a supportive atmosphere on any topic.

Science journalism largely relies on professionals with a science background, as a better understanding of the subject reduces the risk of diluting the core of the research concept. However, anyone interested in understanding science, and with the art of storytelling and good command over language can fit the position. But as professional science journalists, the facilitators stressed to break out of the cocoon (subject-specific) with interest and ability to write on any branch of science. In their words, appreciating perspectives from multidisciplinary fields and presenting the research to a wider audience is an art which can be developed with experience, reviews and feedbacks. As science journalists they suggested to openly accept critical feedbacks to hone one’s writing skills.

In the modern internet, world science journalists have options to write for print and online media, and these options increase with writing and oratory skills. As highlighted during the training sessions, a good science journalist essentially creates a big picture with the story and efficient flow in writing is a critical to keep readers glued till the end. Researchers must ensure that crux of the work should be maintained within limited words. The story should progress cohesively in a synchronized manner to keep the readers engaged in the article.

The workshop also helped explore career options available for women with an interest and understanding of science. It provided baseline information for career building and guidance to skill up as a science journalist. The entire session was devoted to the researchers for understanding their moral obligation to develop science temper in the society. The secret for becoming a science journalist is hidden in the personal commitment made to oneself to take charge of one’s own career. The workshop imparted an appetite for career in science journalism by empowering the participants with values, networking and collaboration. The facilitators gave a mantra for a successful career in science journalism – SMART (S, specific, M, measurable, A, agreed, R, realistic, T, time-based) action approach to make specific time-constrained, self-motivating goals.

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1. Gopen, G. D. and Swan, J. A., *Am. Sci.*, 1990, **78**(6), 550–558; <http://www.jstor.org/stable/29774235A> science journalist can sense the background for news and uses the elements which can breathe life in the story.
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Recent earthquakes in Arunachal Himalaya

Of late, there has been a rise in the number of earthquakes in the North East Region (NER) of India. Very recently, a mild tremor shook the East Kameng district of Arunachal Himalaya, when a shallow-depth (16.8 km) earthquake of M_W 5.5 with epicentre 27.707°N and 92.890°E struck at UTC 09 h 22 m 15 s (14 h 52 m 14 s ITC) on 19 July 2019 (refs 1, 2). Importantly, within half an hour two aftershocks were recorded, one in the same epicentral zone of the M_W 5.5 earthquake and another at the southern site of East Kameng district² (Table 1). A M_W 4.9 earthquake was recorded at

on 20 July 2019) with epicentre 27.736°N and 92.810°E and depth of 10 km. The highest impact of these earthquakes was felt in the epicentral zone of East Kameng district and in the adjoining regions of Arunachal Pradesh, Guwahati and other parts of Assam and Dimapur, Nagaland. The NER is one of the highly seismically active regions^{3,4} and falls in the zone V in the seismic zoning map of India (BIS 2004)⁵. In this context, these felt events are significant because of their epicentral region being located in the NER itself. Figure 1 shows the epicentral plot of the earthquakes and focal mechanism of two earthquakes

(from USGS) with prominent tectonic elements of NE India.

NE India is a signatory of complex geotectonics and is characterized by varying features. For instance, there is foreplay of active north–south convergence along the Himalayan arc with east–west subduction folding. Simultaneously, there exists thrusting under the Burmese microplate along the Indo-Burmese arc^{6,7}. Meanwhile, another feature is the Eastern Himalaya comprising Sikkim Himalaya, Bhutan Himalaya, Arunachal Himalaya and the Eastern Himalayan Syntaxis. From north to south the Main Central Thrust (MCT) and

Table 1. Parameters of Arunachal Himalaya earthquakes

ID	Date	Origin time (UTC)	Latitude (°N)	Longitude (°E)	Depth (km)	Magnitude	Strike/rake/dip	M_w (N-m)
USGS ¹								
Ev1	19 July 2019	09:22:15.635	27.707	92.809	16.8	5.5 (M_w)	244/32/108	2.138e+17
Ev2	19 July 2019	09:52:02.213	27.729	92.773	10	4.7 (M_b)		
Ev3	19 July 2019	22:54:24.709	27.736	92.810	10	4.9 (M_w)	219/17/55	2.416e+16
IMD ²								
Ev1	19 July 2019	14:52:14	27.7	92.8	10	5.6		
Ev2	19 July 2019	15:04:58	27.4	92.9	10	3.8		
Ev3	19 July 2019	15:21:59	27.9	93.3	95	4.9		
Ev4	20 July 2019	04:24:23	27.7	92.7	10	5.5		

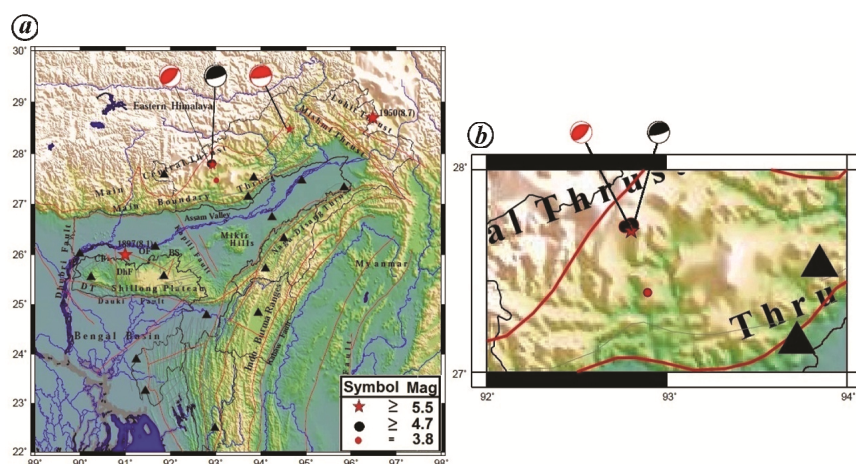


Figure 1. a, Tectonic settings of North East Region of India and surrounding regions with focal mechanism solution of three recent earthquakes. The great earthquakes of 12 June 1897 and 15 August 1950 are shown by two big stars. The seismic stations operated by IMD are shown by black triangles. The major tectonic features in the region are also indicated. MCT, Main Central Thrust; MBT, Main Boundary Thrust; DF, Dauki Fault; DT, Dapsi Thrust; Dhubri Fault; Dh F, Dudhnoi Fault; OF, Oldham Fault; CF, Chedrang Fault; BS, Barapani Shear Zone; KF, Kopili fault; NT, Naga-Disang Thrust; MT, Mishmi Thrust; LT, Lohit Thrust; Kabaw Fault. (Inset) Earthquakes with different magnitude range. b, The red star shows M_w 5.5 earthquake and two of its aftershocks. The focal mechanism solution of M_w 5.5 (red) and M_w 4.9 (black) earthquakes shows thrust faulting.

Main Boundary Thrust (MBT) are the major crustal discontinuities spanning along the northernmost boundary of NE India.

The dominant mechanism behind the active seismicity of NE of India is presumably ascribed to the continental collision between the Indian and Eurasian Plates. GPS measurements indicate continental drift. GPS observations in NE India indicate that about 15–20 mm/yr of convergence is being accommodated in the NE Himalaya wedge and also suggest that Eastern Himalaya is rotating clockwise at a very slow rate with respect to the Tibetan block in the north^{8,9}. Different studies on crustal structure imaged the Indian lithosphere dipping northward from ~150 km beneath the Himalaya to

about ~210 km further north¹⁰. Northward underthrusting of India beneath Eurasia generates numerous earthquakes and consequently makes this area one of the most seismically vulnerable regions on Earth. The largest earthquakes in the Himalayan region are caused mainly by the movement on thrust faults.

The focal mechanism solution of two recent earthquakes of 19 July 2019 (M_w 5.5 and 4.9) indicates primarily thrust faulting. Another M_w 5.9 earthquake was also recorded in the Eastern Himalayan Syntaxis at UTC 20 h 15 m 50 s on 23 April 2019 with epicentre at 28.407°N, 94.561°E and depth 14 km. The focal mechanism solution of this event (strike: 234, rake: 15, Dip: 62) also shows thrust faulting¹ (Figure 1). These earthquakes

are recorded south of the MCT and focal depth is estimated to be less than 20 km. The focal mechanism solutions of these three earthquakes indicate collision or underthrusting of the Indian Plate below the Himalaya and seismically very active under higher stress.

Considering this growing rise in felt tremors, there is a need for preparedness so that probable damage can be reduced. As earthquakes cannot be averted, we can effectively mitigate the hazard through a synergistic approach by policy makers and subsequent scientifically robust implementation.

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