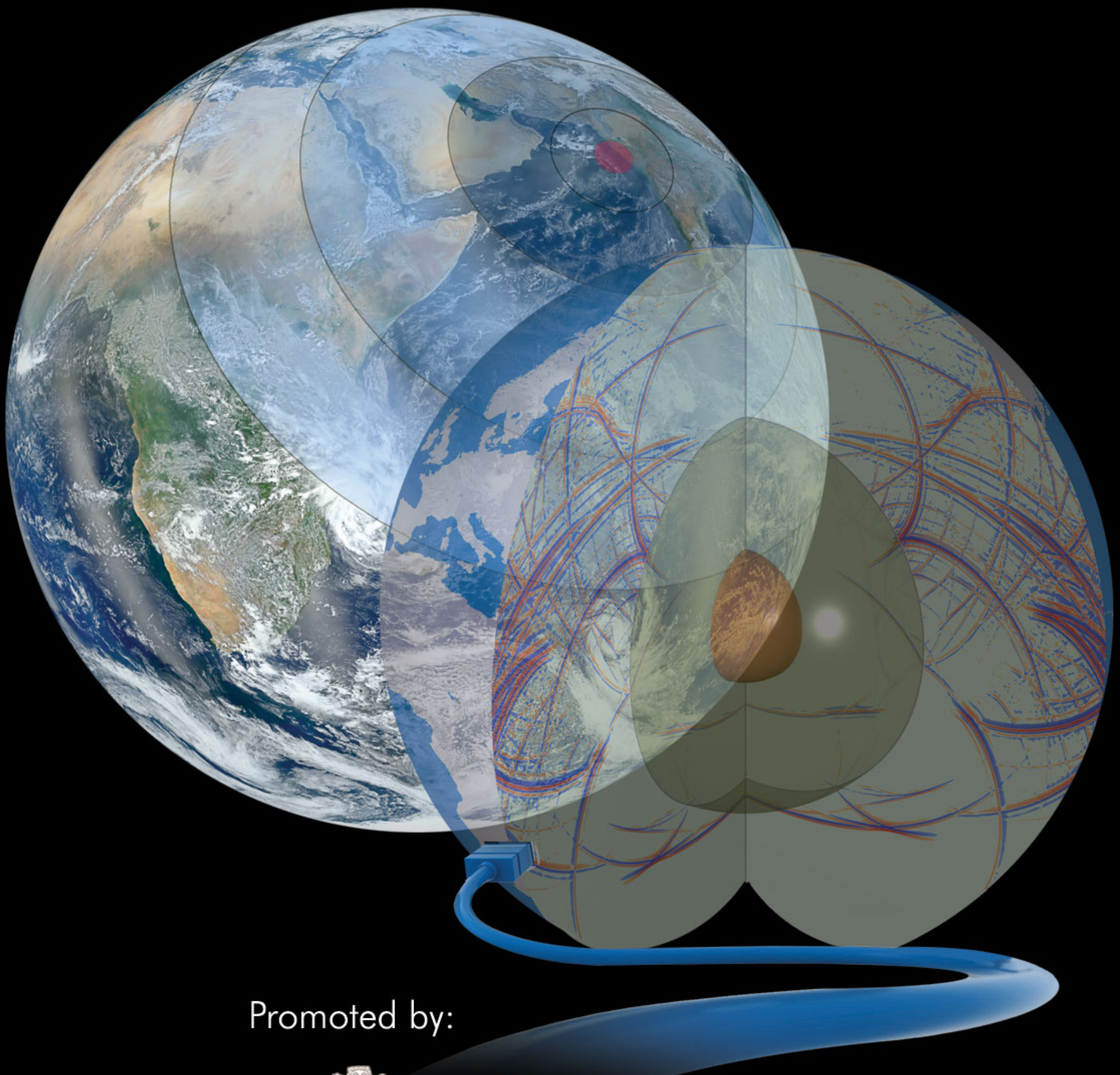
INDIAN SCHOOLS EARTHQUAKE LAB PROGRAM



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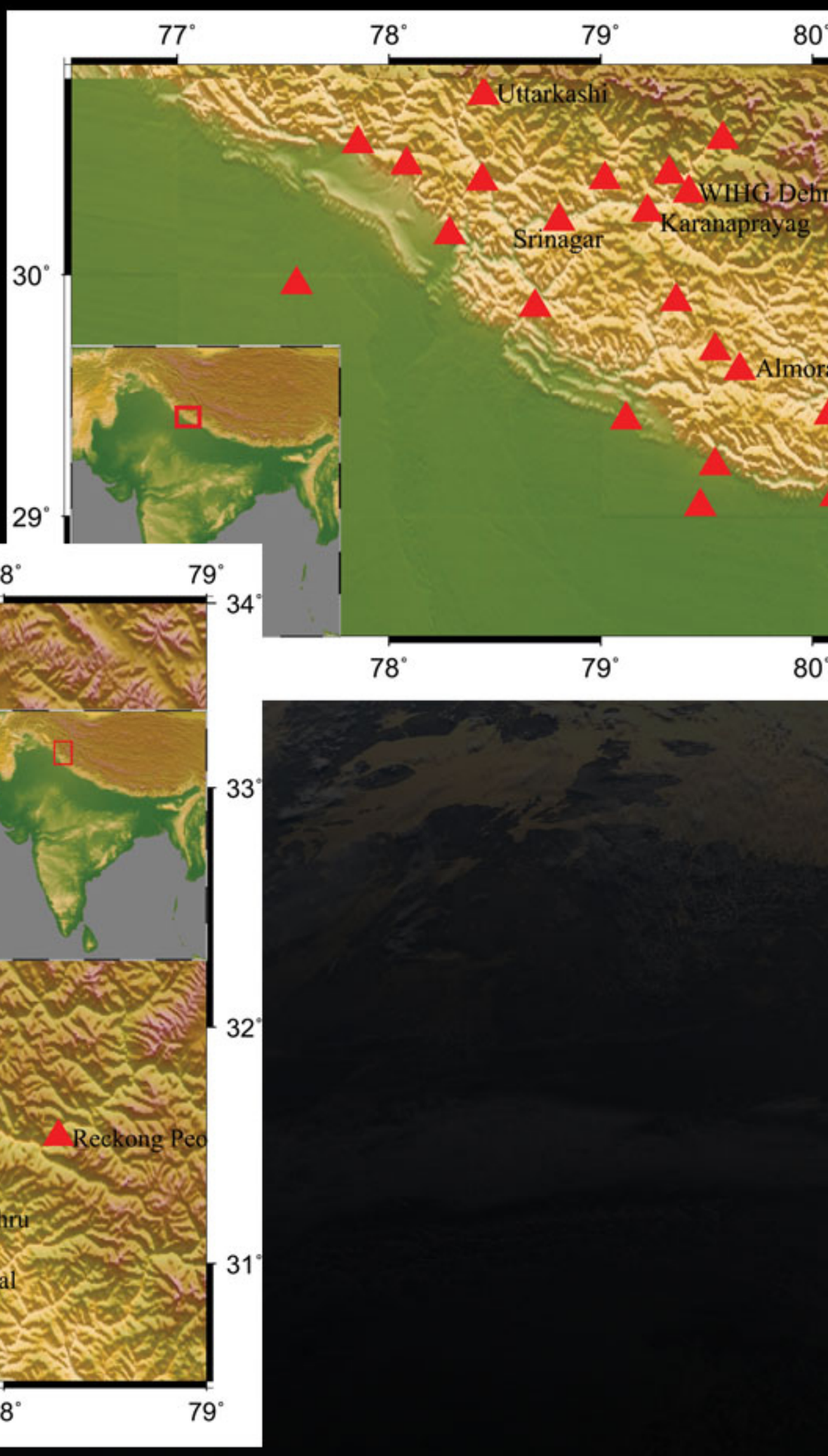
MINISTRY OF EARTH SCIENCES
Government of India

MISSION & MEANS

India has experienced several devastating earthquakes in the past, viz., Shillong 1897; Kangra 1905; Bihar-Nepal 1934; Assam 1950; Uttarkashi 1991; Latur 1993; Jabalpur 1997; Chamoli 1999; Bhuj 2001; Kashmir 2005 and Sikkim 2011 proves that we are one of the most vulnerable countries in the world. As earthquake forecast is not yet possible, it is necessary to mitigate seismic hazard / risk by adopting various approaches including preventive measures to minimize the loss of life and property due to future large earthquakes. The most important approach in disaster mitigation due to earthquakes is education and outreach for school students.

Soon after the Bhuj earthquake of January 21, 2001, a mission mode project in seismology was initiated by Govt. of India with a view to create new S&T methodologies developing infrastructure and appropriate human resources for mitigating the adverse impacts of earthquake hazard. The School Earthquake Laboratory Programme (SELP) was one such initiative which mainly focuses towards catalyzing creative minds of young students by capturing their innate curiosity about earthquakes and the preventive measures to be adopted in the event of ground shaking. The goal set for the SELP was centred on, creating fruitful linkages between research institutions and colleges, by involving students in acquisition of seismological data, and empower teachers with experiences in both scientific content and educational activities as the primary means of knowledge transfer.

The program was initially launched in NW and NE Himalayan regions, which are considered to be seismically one of the very active regions of the world. Under this programme, 100 schools were selected for establishing earthquake laboratories in parts of Uttaranchal, Himachal Pradesh, Jammu & Kashmir and in seven states of Northeast India. Since the frequency of earthquakes is high in the Himalayan region, these labs shall continue to provide the required data and become a source of constant excitement to students and their mentors. The school laboratories were equipped with a broadband vertical component seismometer, digitizer and a data acquisition-cum desktop computer along with software for data processing. The SELP has been very effective in imparting training and creating earthquake awareness. The program is successfully running in north east region. A total of 60 laboratories (40 with single component and 20 with 3-component BBS) are in operation.



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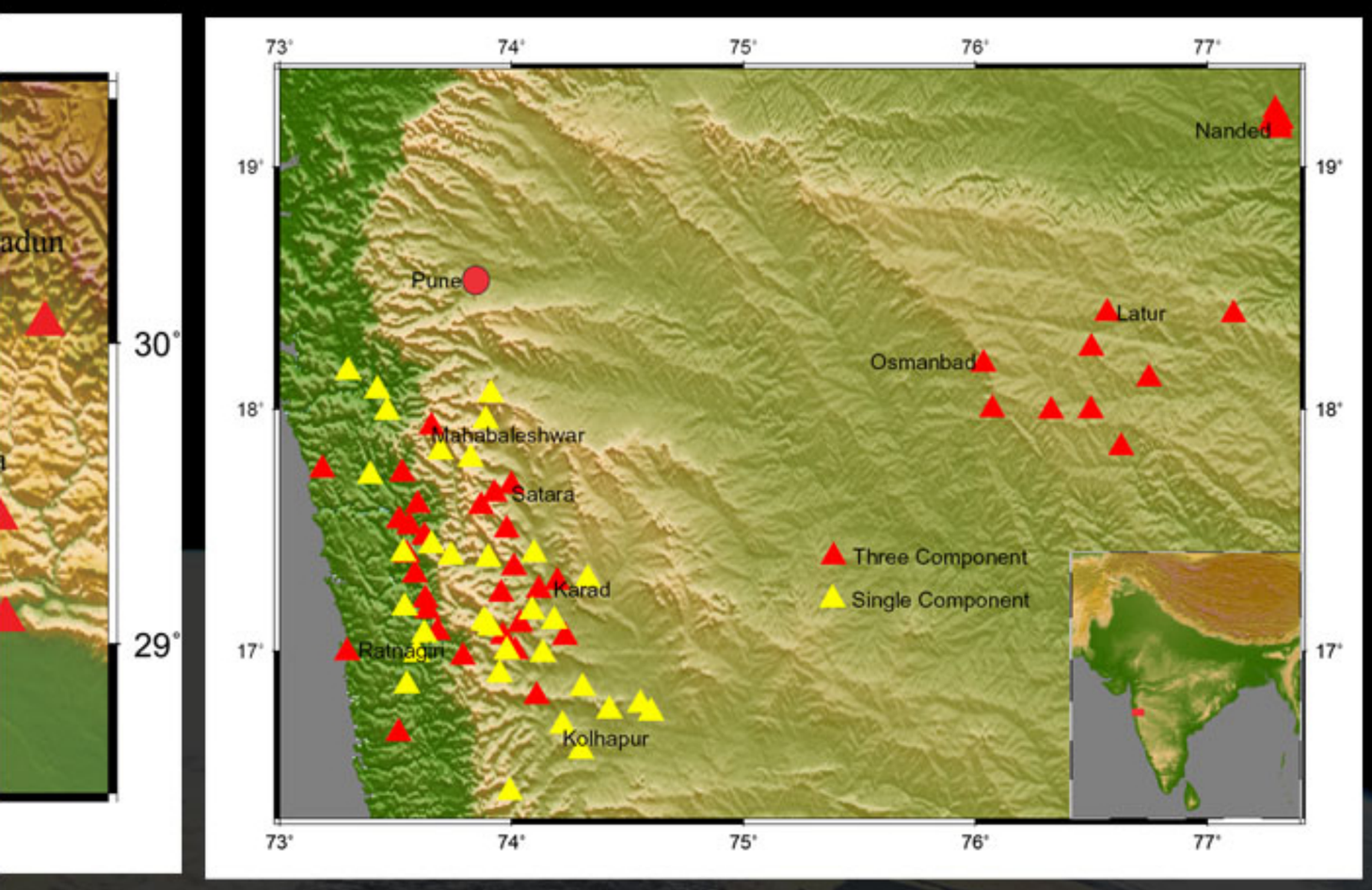
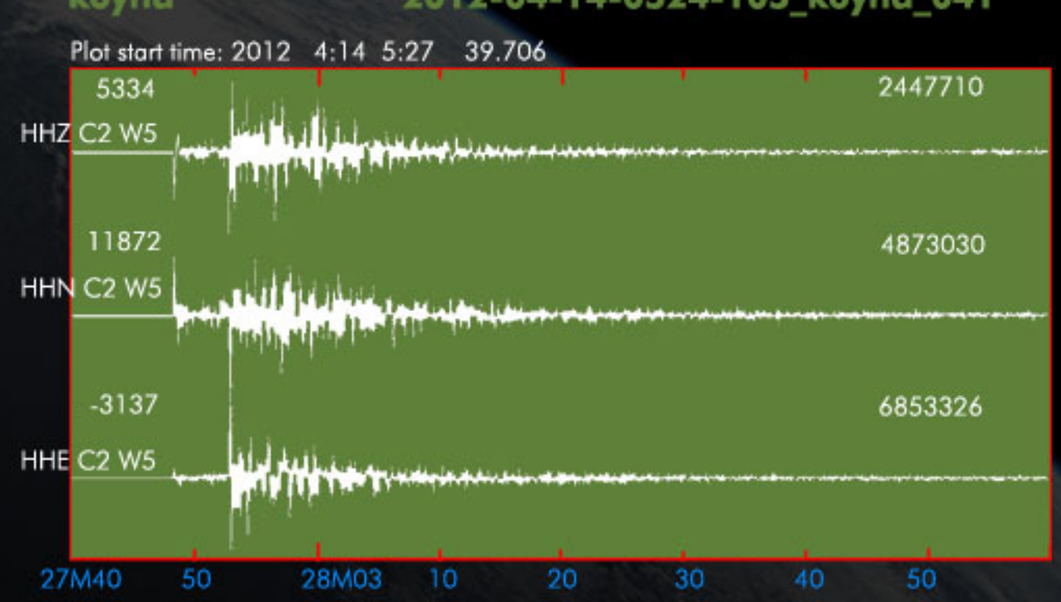
The scope of SELP has recently been expanded and 85 laboratories have been established in selected schools and colleges in western India, spread over 8 districts in Satara, Sangli, Kolhapur, Ratnagiri, Raigad, Osmanabad, Latur and Nanded. Out of the total 85 locations, 35 schools are equipped with single component broadband seismographs and 50 labs with 3-component BBS along with data storage facility, desktop computer and data processing software. This project is being executed by National Geophysical Research Institute. Needless to mention that Koyna and Warna area has been seismically active for more than four decades. The region has witnessed the largest triggered earthquake of M~6.3 on Dec 10 1967; 22 earthquakes of M>5, about 200 earthquakes of M~4, and several thousand smaller earthquakes since 1962. The region continues to be active and recently an event of magnitude 3.9 was reported on 19th September, 2011 from the same source zone. Recently, two earthquakes (M:4.9 and M:3.9), occurred on 14th April, 2012 in Koyna region were recorded in 40 schools, which comprise of 3- component and single component broadband seismometers.



Also, the educational seismographs have been located in the southern part India, which is not seismically vulnerable, but experiences smaller events, occasionally. It is clear that the seismographs installed under the SELP at different locations in the country not only serve the purpose of providing education, training and creating awareness amongst the students, but also helps in generating wealth of data for carrying out scientific studies as presented above. The SELP, so far, has helped in imparting training and creating awareness amongst more than 1, 00,000 students in NW and NE region and about 2, 00,000 students are likely to be covered in next five years. It is also planned to strengthen these efforts and set up school labs in other parts of India, viz., Gujarat and NE region. These efforts will go a long way as Knowledge brings Wisdom and Wisdom in turn empowers the youth to lead a safe and secure life from Natural Hazards such as earthquakes.

In consonance with the charter of Ministry of Earth Sciences, Government of India, programs have been initiated to promote seismology education in the country to create awareness on earthquake hazard and its mitigation. The Geoscience/Seismology division of MoES has strategically targeted children and teachers at school level by providing them with hands-on experience in the operation of the state-of-the-art educational seismographs in their campus. The excitement created by these efforts have led to the development of skills amongst young students in experimental sciences which is of utmost importance in developing scientific temper, besides bringing awareness at a very young age. Under this program training is being provided to school teachers, distribution of Educational material in different local languages is distributed to the school children and teachers for wider circulation. In the intial phase these programs are being executed in NE India, which is one of the most earthquake prone regions of India, NW India and states of Maharashtra and Tamil Nadu. I wish all success to these programs for spreading awareness amongst the youth about Earthquakes which are solely responsible for 50% of human lives claimed during the 20th century by this natural hazard.

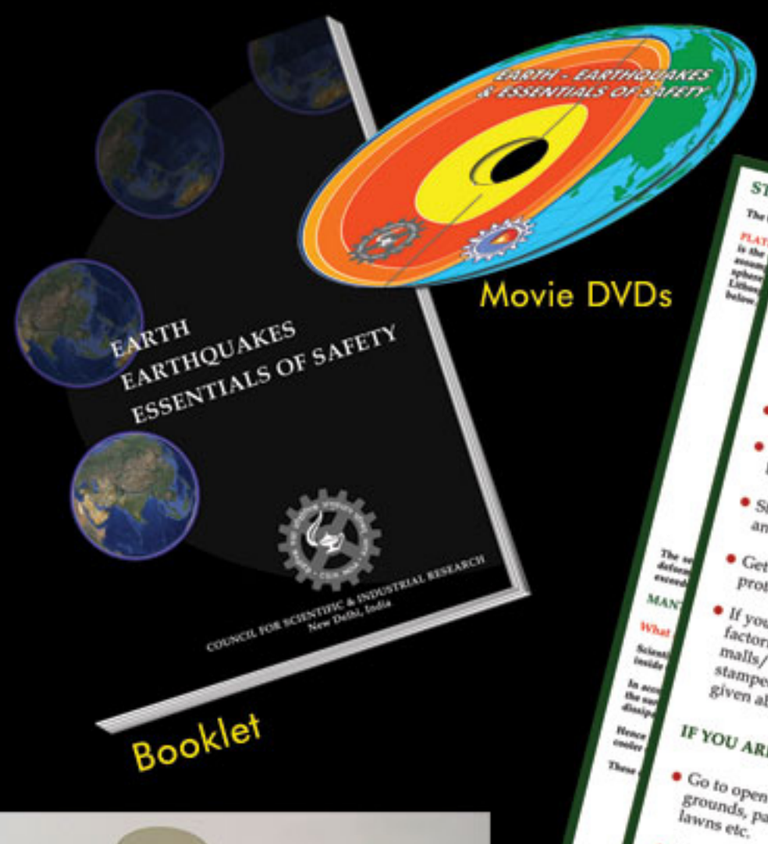
The Secretary
Ministry of Earth Sciences
Government of India



3- component seismogram of the 4.9 magnitude earthquake of April, 14, 2012 recorded at Charan Station, near Warna. This earthquake was located to south west of Koyna reservoir

The means to initiate this mission lies in the following course of action:

- Divide the implementation process in different phases
- Select specific schools for each phase
- Disseminate educational material to students and initiate the educational process in seismology and mitigation of hazard.
- Setup basic seismic lab with seismometers in each school and generate real-time seismic data and simultaneously train teachers to interact meaningfully with students.
- Bring all participating schools under a single network to interact, share and analyse data

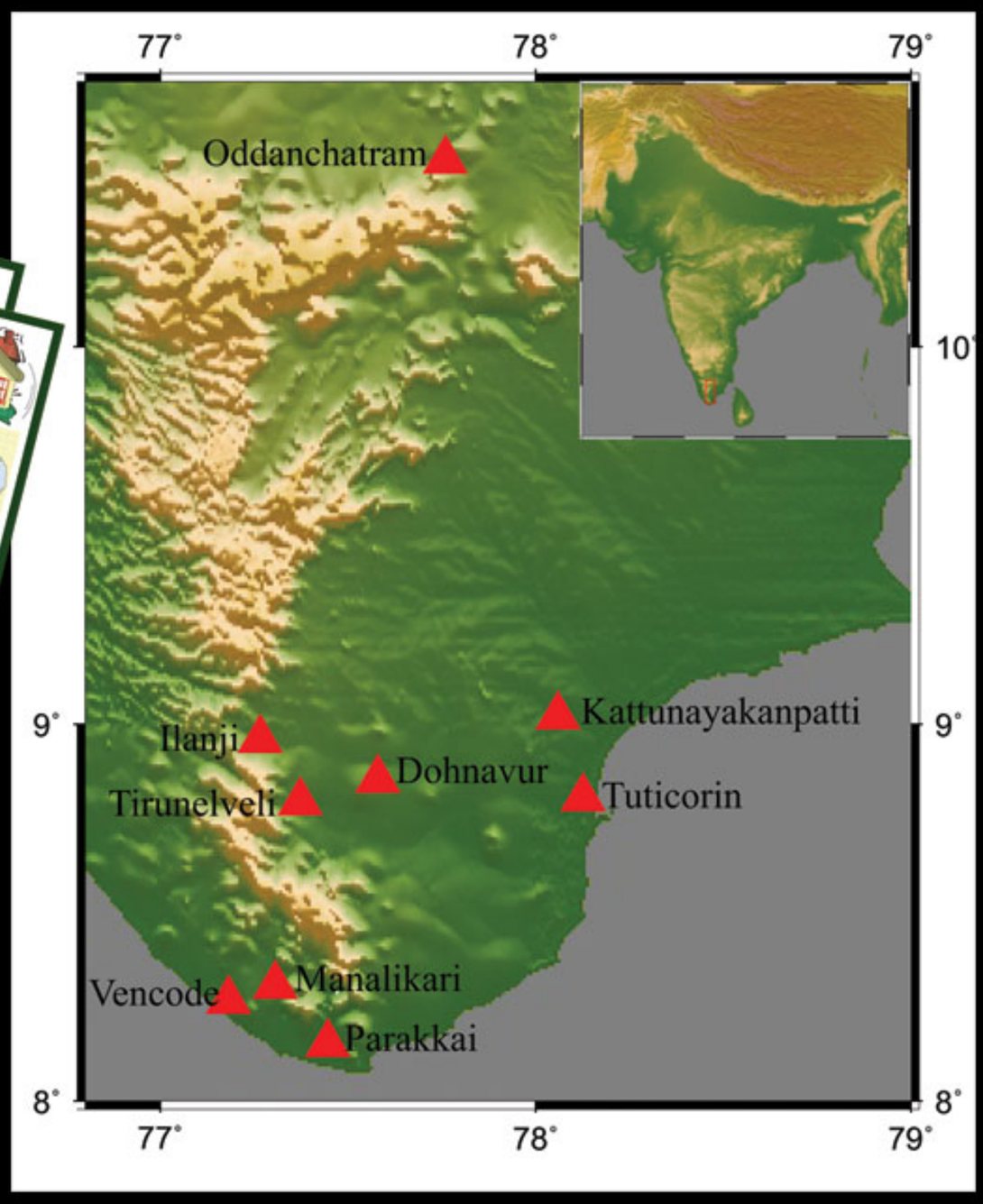


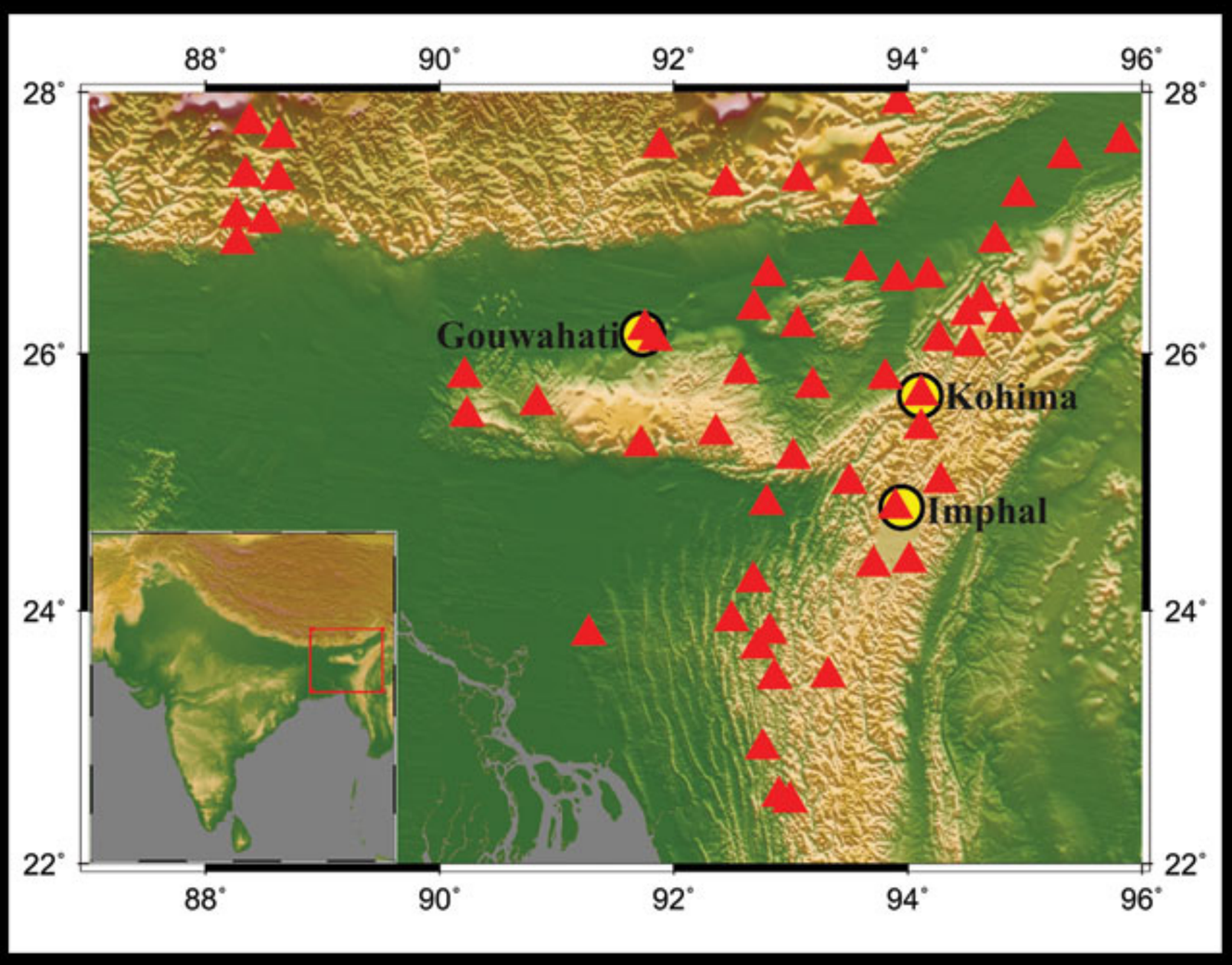
Movie DVDs

Booklet

Educational Seismometer

Charts





Location of "Educational Seismographs " in other vulnerable parts of India.

KNOWLEDGE brings WISDOM
&
WISDOM provides power
to lead a
SAFE, SECURE
and
SUCCESSFUL life.