



International Training Course on

## **Seismology, Seismic Data Analysis, Hazard Assessment and Risk Mitigation**

September 26 to October 21, 2016  
Nay Pyi Taw, Myanmar

**Organised and sponsored by**

Helmholtz Centre Potsdam  
GFZ German Research Centre for Geosciences

and

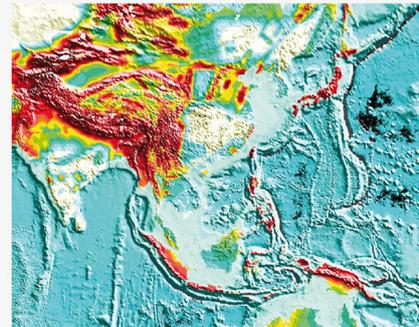
Department of Meteorology and Hydrology  
Nay Pyi Taw, Myanmar

**co-sponsored by**

*Federal Foreign Office (FFO), Berlin, Germany*



Circular & Programme



**International Training Course on  
Seismology, Seismic Data Analysis,  
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## **1. OBJECTIVES AND PROGRAMME OF THE TRAINING COURSE**

The disastrous consequences of destructive earthquakes place a heavy burden on many societies and their economies, particularly in developing countries. In order to avoid or at least to mitigate the negative effects of such events a thorough scientific knowledge of their geological and geophysical causes, their structural, kinematics and dynamic characteristics and destructive effects as well as a developed capability to monitor and to analyse them is indispensable. The vulnerability of human societies and related human and economic losses due to earthquakes are steadily growing as a consequence of rapid population growth and urbanization. Accordingly, improved risk assessment and effective disaster mitigation measures are prerequisites to ensure sustainable development in earthquake-prone countries.

The GFZ German Research Centre for Geosciences is running an annual international training course in the field of seismology and seismic hazard assessment. This training course is part of related programs of the United Nations (OCHA and UNESCO) aimed at promoting training and know-how transfer, especially to scientists and engineers from developing countries. In 2016, the GFZ organizes and runs the course in cooperation with Department of Meteorology and Hydrology, Nay Pyi Taw, Myanmar in the time period 26 September to 21 October for the benefit of participants from earthquake-prone developing countries from Southeast Asia under the main topics:

### **"SEISMOLOGY, SEISMIC DATA ANALYSIS, HAZARD ASSESSMENT AND RISK MITIGATION".**

The training course 2016 is co-sponsored by the Federal Foreign Office (FFO) of Germany (Berlin). It is also supported by the United Nations Educational, Scientific and Cultural Organization (UNESCO, Paris), and by the University of Bergen.

Until 2015, more than 1000 participants from 118 countries, amongst them graduate students, university lecturers as well as senior staff and directors of reputed research institutes, have attended the seismology training courses organized and supported by the GFZ Potsdam. Since the foundation of the GFZ in 1992 these courses are, as an essentially new feature, held alternately every second year in Potsdam and as regional courses in a hosting country of Africa, Asia or Latin America. In the latter case, the course topics are specifically tailored to the needs and potentials of the respective region and integrate many local lecturers into the international team of instructors. More details on all training courses since 1992, including the circular, programme and application form for the course in 2016 can be found on the GFZ web-page under <http://www.gfz-potsdam.de/en/events/international-training-courses>.

In line with the steadily growing demand by participants in former courses for mainly practice-oriented training and workshop discussions related to case studies, the current course programme comprises, besides introductory and state-of-the-art review lectures on the various subjects of earthquake seismology and risk assessment, extensive practical exercises, demonstrations, workshop discussions and scientific excursions. The excursion in 2016 focuses on visits to geological site and geophysical and seismological observatories. Generally, the course programme aims at developing interdisciplinary problem understanding, acquaintance with the theoretical fundamentals and basic features of modern instrumentation, commonly used models and algorithms as well as developing practical skills in data evaluation and analysis.

The detailed scientific programme of the course is annexed to this circular. After each major topic, time is reserved for workshop discussions based on short (15 min.) oral presentations by the participants. Data brought along or case studies can also be taken up for discussion.

The scientific-technical background and work duties of the course participants are usually rather different. None the less, there are generally two main groups of applicants:

- those mainly working in the field of seismic hazard and risk assessment, earthquake zonation and microzonation and/or earthquake engineering and disaster management;
- those responsible for the installation, maintenance, operation of and/or data analysis at seismic stations or network centres.

Throughout the course the completion of exercises by the participants as well as their contributions to workshop sessions and topical discussions are evaluated.

**The successful participation in the course is acknowledged by a certificate at the end of the course.**

## **2. APPLICATION AND ADMISSION**

### **2.1 Conditions for application and admission**

The course is arranged for the benefit of participants from earthquake-prone countries from Southeast Asia. To make the training effective, the number of participants is limited to about 28. Preference is given to young candidates engaged in seismology, seismic monitoring and zonation, earthquake data analysis, hazard, vulnerability and/or risk assessment. They should have active interest and obligations in these fields. Applicants with background and duties in earthquake engineering and disaster management who want to deepen their understanding of seismological phenomena, methods and data products are also considered, as are researchers or university lecturers in geosciences who may act as conveyers of the knowledge acquired in the course (training of trainers).

**Applicants must have** a scientific degree (B.Sc. or M.Sc.) or diploma in geosciences, physics or engineering from a recognized university. Preferably they should have several years of professional experience in subjects covered by the course. Applicants must also have **a thorough knowledge of English** which is **the only working language of the course**.

It is also **mandatory** for admission to the course that applicants are able and willing to present **a short paper (about 15 minutes) on their research or operational work and/or specify a problem or case study** they wish to discuss with their instructors and fellow participants. In the latter case they should bring along relevant data, documents and/or computer programmes for demonstration and analysis.

Priority is given to applicants who are able to cover the cost for travel from domestic institutional or development-aid project funds for training. A limited number of **Travel grants** are available to selected participants from developing countries in need of support.

**An application is considered only** when:

- **the attached application form is duly filled-in and submitted in time;**
- **the application form is accompanied by two letters of recommendation by supervisors or heads of nominating institutes/organisation. These letters should refer to the personality, academic qualification, obligations and performance as well as to future job requirements of the candidate;**
- **the applicants also explicitly confirm to appropriate command of the English, if possible by adding copies of respective language certificates;**
- **the application form is accompanied by a letter of motivation (1/2 – 1 page);**
- **the applicants give the title/topic of their scientific presentation in the application form (with abstract);**
- **The applicants confirm, that an international travel and health insurance will be concluded.**

**Without such specifications and accompanying documents an application will not be considered!**

Those who intend to present and discuss additionally in a special workshop session data, methods used or case studies from their country should indicate this separately in the registration form and submit an abstract giving details about the subject, method applied, kind of data available as well as of the open questions they want to discuss about.

All participants have to present, at social evening get-togethers (cultural evening), slide, power point or video shows or any other suitable kind of material or personal performances (dances, songs, instruments) which can convey to their fellow participants some impressions about geography, culture, customs, music and daily life in their respective home countries. Such presentations should be limited to 10-15 min.

In the selection of participants **preference is given to those applicants**, who (as confirmed in the application forms and accompanying letters):

- are most in need of training in the subjects covered by the course;
- are concerned with the operation of and data analysis at seismic stations or network centres;
- are working in the field of seismic hazard assessment or microzonation;
- are involved in vulnerability and risk assessment, engineering seismology, and/or disaster management and mitigation projects;

- can serve as multipliers in spreading the knowledge and skills acquired;
- can make an active contribution to the workshop sessions and discussions;
- had applied already earlier for the course, been found eligible/qualified but could not be accepted due to the limited number of fellowships available for each course;
- can pay their travel.

The application forms and accompanying candidates' files will be carefully screened by the Academic Board and Selection Committee of the course. Members of the board are prominent geoscientists of the GFZ German Research Centre for Geosciences and representatives of the Federal Foreign Office (FFO) as the main sponsor of the course. Chairman is Prof. Dr. T. Dahm, head of section 2.1 "Physics of Earthquakes and Volcanoes" at the GFZ.

## 2.2 Application formalities

Applications should include the following information:

- (1) Filled-in application form;
- (2) List of scientific publications;
- (3) Two letters of recommendation or reference which give details on the applicants personality, duties and performance in seismic station operation, data analysis or other specified applied or research projects;
- (4) Confirmation of appropriate command of English;
- (5) Title and one page abstract of the proposed topic or case study to be presented or discussed in a special workshop session;
- (6) Title and kind of intended cultural presentation;
- (7) Letter of motivation.

One copy of the application documents should be sent by email as scanned documents to **course-un@gfz-potsdam.de** not later than **June 3, 2016**:

Helmholtz Centre Potsdam  
GFZ German Research Centre  
for Geosciences  
Dr. C. Milkereit  
Telegrafenberg  
D-14473 Potsdam  
GERMANY

Phone: (+49 331) 288 -1289 or -1201  
Fax: (+49 331) 288 -1296 or -1204

E-mail: [course-un@gfz-potsdam.de](mailto:course-un@gfz-potsdam.de)

Any additional questions may be directed to the address above.

**Candidates will be informed of the decision of the Academic Board by July 1, 2016** and, if accepted, will receive further instructions by the GFZ in a letter of acceptance and a Letter of Invitation from the hosting Department of Meteorology and Hydrology, Nay Pyi Taw in Myanmar.

## 2.3 Services provided to selected participants

Fellowships granted to participants entitle them to the following services:

- Accommodation in single rooms, meals and tea-break refreshments within the facilities and arrangements provided by the organizers; (Only during the excursion we may ask the participants to stay for one or two nights in double rooms);
- Tuition, printed course material, scientific and cultural excursions;
- Collection of scientific textbooks and software which participants can take home;
- A small amount of pocket money (5 EURO per day) to cover incidental expenses;
- Local transport in connection with the official programme, field excursions and pick-up arrangements for meeting participants arriving at and departing from the airport.

Travel grants to cover the cost of international air travel might be available for only some of the selected participants. Therefore, every applicant is urged to look into available possibilities to cover travel expenses on his/her own with the support of his/her nominating or sponsoring institution and to make, an explicit statement to this effect in the application form.

## 2.4 Costs borne by participants or nominating agencies

Participants or their nominating governments/agencies are required to bear the following:

- Cost of personal travel, accident, live and medical insurance;

- All expenses in the home country for travelling abroad, including passports, visa, medical examinations, inoculations, domestic travel, etc.;
- Salary and related allowance during the period of participation in the training course;
- Any expenses other than the travel grants for selected participants and the living and accommodation expenses at the seminar place (see 2.3) including subsistence and incidental expenses during travel, any expenses incurred during stop-over en route and any additional costs for travel by other route than the one originally provided with the ticket;
- Any costs for excess luggage.

Neither the GFZ nor any other co-organiser or co-sponsor of the course will assume responsibility for the following expenditures or services:

- Costs incurred by participants with respect to travel insurance, medical bills and hospital fees in connection with their attendance at the training course;
- Loss of or damage to property while attending the training course;
- Compensation in the event of death or disability of participants in connection their attendance at the training course;
- Any claim towards expenses incurred by participants other than those mentioned in section 2.4. above (e.g. for accommodation in hotels, food and drink orders or private trips of the participants own choice, shopping, laundry, telephone, internet, excess luggage, etc.);
- Re-routing tickets or making visa arrangements other than those required for entering or leaving Myanmar on the shortest possible way.

Participants may exchange their own freely convertible currency to cover themselves the cost for any additional personal needs beyond what is provided under 2.3

**With their signature under the application form all applicants and their nominating institutions accept these conditions irrevocably.**

### **3. GENERAL INFORMATION**

#### **3.1 Location of the course**

Naypyitaw is the administrative capital of the Union of Myanmar. Centrally located, it is 391 km from Yangon and 302 km from Mandalay city, being easily accessible from all parts of the Union. Naypyitaw is generally translated as "royal capital" which used as a suffix to the names of royal capitals, such as Mandalay. The 24th and 25th ASEAN Summit as well as the Ninth East Asia Summit were held in Naypyitaw. It was also one of the host cities for the 2013 Southeast Asian Games among ASEAN countries. The city covers an area of 7,054.37 km<sup>2</sup> (2,723.71 sq mi) and has a population of 924,608, according to official figures. Naypyitaw Airport is about 30 minutes from Nay Pyi Taw. All domestic carriers operate daily flights from Naypyitaw to the commercial capital, Yangon, and the cultural capital Mandalay. There are flights via Naypyitaw to tourist destinations such as Bagan, Heho, Sittwe, Myitkyina, Kyaing Tong and others. Naypyitaw Station is on the main Yangon-Mandalay rail line. It takes nine hours by train to get from Yangon to Naypyitaw. Naypyitaw Airport, located 10 miles southeast of the city, is served by all domestic airlines. Air Bagan, Air Mandalay, Myanma Airways and Yangon Airways, with regular flights to Yangon and other cities across the country. A new highway from Yangon to Naypyitaw has been opened and the travelling time from Yangon to Naypyitaw is only about 4 hours' drive.

Information about Naypyitaw and Myanmar can be found at:

<https://en.wikipedia.org/wiki/Naypyidaw>

<https://en.wikipedia.org/wiki/Myanmar>

#### **3.2 Excursions**

During weekends, excursions will be organized.

#### **3.3 Climate and recommended dressing**

It is recommended that the participants bring along a sweater and a rain coat or an umbrella as well as proper shoes for the field excursions. No formal dressing is required during the course.

#### **3.4 The Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences**

The GFZ is the national research centre for geosciences of Germany and belongs to the Hermann von Helmholtz Association of German Research Centres. It has been jointly established by the Federal Ministry of Education and Research and by the Ministry of Science, Research and Culture of the State of Brandenburg on January 1, 1992.

Research is carried out in seven departments and further centers:

- Geodesy;
- Geophysics;
- Geochemistry;
- Geomaterials;
- Geoarchives;
- Geotechnologies;
- Geoservices incl. the Center for Early Warning and the MESY instrumental pools.

Besides this, the GFZ:

- provides effective management for major joint geoscientific research projects;
- executes research drilling projects, runs observatories and provides extensive modern facilities, equipment and logistics for both large-scale field projects as well as laboratory measurements;

- performs research with satellites;
- provides, in close cooperation with universities and within the framework of international collaboration, training, expertise and equipment to other countries in need;

Earthquake disaster related topics of the GFZ are:

- research on the Physics of Earthquakes and Volcanoes
- development of early warning systems concerning earthquakes;
- microzonation studies;
- multidisciplinary task-force missions to be dispatched into areas which are struck by devastating geological events with the aim to collect first-hand data about damage,
- vulnerability, aftershocks or other post-event activity, local underground effects, seismotectonic conditions, etc.;

Other research projects deal with deep seismic and electromagnetic soundings and with seismology and seismic tomography. The seismology project is mainly concerned with the installation and operation of a global digital broadband system for research (GEOFON), with operational quick determinations of source parameters from strong regional and global earthquakes and with the investigation of deep seismic structures, material properties such as anisotropy and the nature of discontinuities in the Earth's mantle and core.

The training course on "Seismology and Seismic Hazard Assessment" is part of the activities of the Department "Physics of the Earth". Disaster related topics of the Department are research on earthquakes and volcanic eruptions, multidisciplinary task force missions to be dispatched into areas which are struck by devastating, geological events with the aim to collect first-hand data about damages, vulnerability, aftershocks or other post events activity, local underground effects, seismotectonic conditions.

The international UNESCO-sponsored training course on "Seismology and Seismic Hazard Assessment" was initiated in 1979. After the unification of Germany, the GFZ has been founded and took over the course under a new scientific concept with a wider scope of national and international research activities and international co-operation. More information is available from the GFZ home-page <http://www.gfz-potsdam.de/>

### **3.5 Department of Meteorology and Hydrology**

The Department of Meteorology and Hydrology (DMH) is under the administration of the Ministry of Transport. The Department of Meteorology and Hydrology (DMH) is the responsible agency for Cyclone/Storm warning, flood forecasting and warning as well as Earthquake information and Tsunami Early Warning in the country. For daily weather forecasting, multifunctional Satellite Image as (MTSAT) ground receiving system and using JMA GSM, GRIB data, JMA storm surge model are using now.

Department of Meteorology and Hydrology (DMH), earthquake recording was undertaken at Yangon as early as 1962 and at Mandalay in 1966, using only then the electromagnetic seismographs with photographic recordings. National Earthquake Data Center (NEDC), belong to Department of Meteorology and Hydrology (DMH) has organized monitoring earthquakes and disseminates information of earthquake events to authorities and public in Myanmar. The NEDC was expected to be capable of disseminating information on big/strong earthquake as early as possible occurring in the territories of the country. Nowadays, NEDC is collaborated with United State of Geological Survey (USGS) in order to upgrade seismic network in Myanmar by installing more seismic stations and new monitoring system. Thailand based RIMES (Regional Integrated Multi-Hazard Early Warning System for Africa and Asia) also provide assistance for improvement of seismic network and system in Myanmar together with Capacity building development of DMH staffs.

Website: <http://www.dmh.gov.mm/>

**List of institutions and lecturers contributing to the International Training Course on "Seismology, Hazard Assessment and Risk Mitigation",**  
September 26 to October 21, 2016 in Nay Pyi Taw, Myanmar

**GFZ German Research Centre for Geosciences, Germany**

Dr. Andrey Babeyko	andrey.babeyko@gfz-potsdam.de
Dr. Dino Bindi	dino.bindi@gfz-potsdam.de
Dr. Simone Cesca	simone.cesca@gfz-potsdam.de
Prof. Fabrice Cotton	fabrice.cotton@ujf-grenoble.fr
Prof. Dr. Torsten Dahm	torsten.dahm@gfz-potsdam.de
Dr. Sebastian Heimann	sebastian.heimann@gfz-potsdam.de
Dr. Jörn Lauterjung	joern.lauterjung@gfz-potsdam.de
Dr. Claus Milkereit	claus.milkereit@gfz-potsdam.de
Prof. Dr. Stefano Parolai	stefano.parolai@gfz-potsdam.de
Dr. Eleonora Rivalta	eleonora.rivalta@gfz-potsdam.de
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**Department of Meteorology and Hydrology, Nay Pyi Taw, Myanmar**

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