EUCENTRE
European Centre for Training and Research in Earthquake Engineering

IUSS Sapere Aude

SEVENTH FRAMEWORK PROGRAMME

UNISDR
مكتب الأمم المتحدة للحد من مخاطر الكوارث

Seismic Risk Mitigation in Palestine

SASPARM Project

TRAINING ON NEAR-SURFACE SITE CHARACTERIZATION: LESSONS LEARNED AND FUTURE GOALS

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Outline

- Programme and objectives
- Course schedule
- Lesson learned
- Possible future goals

Programme

Seismic Risk Mitigation in Palestine
SASPARM Project

Place: An-Najah National University – Nablus
Period: May 2–4, 2013

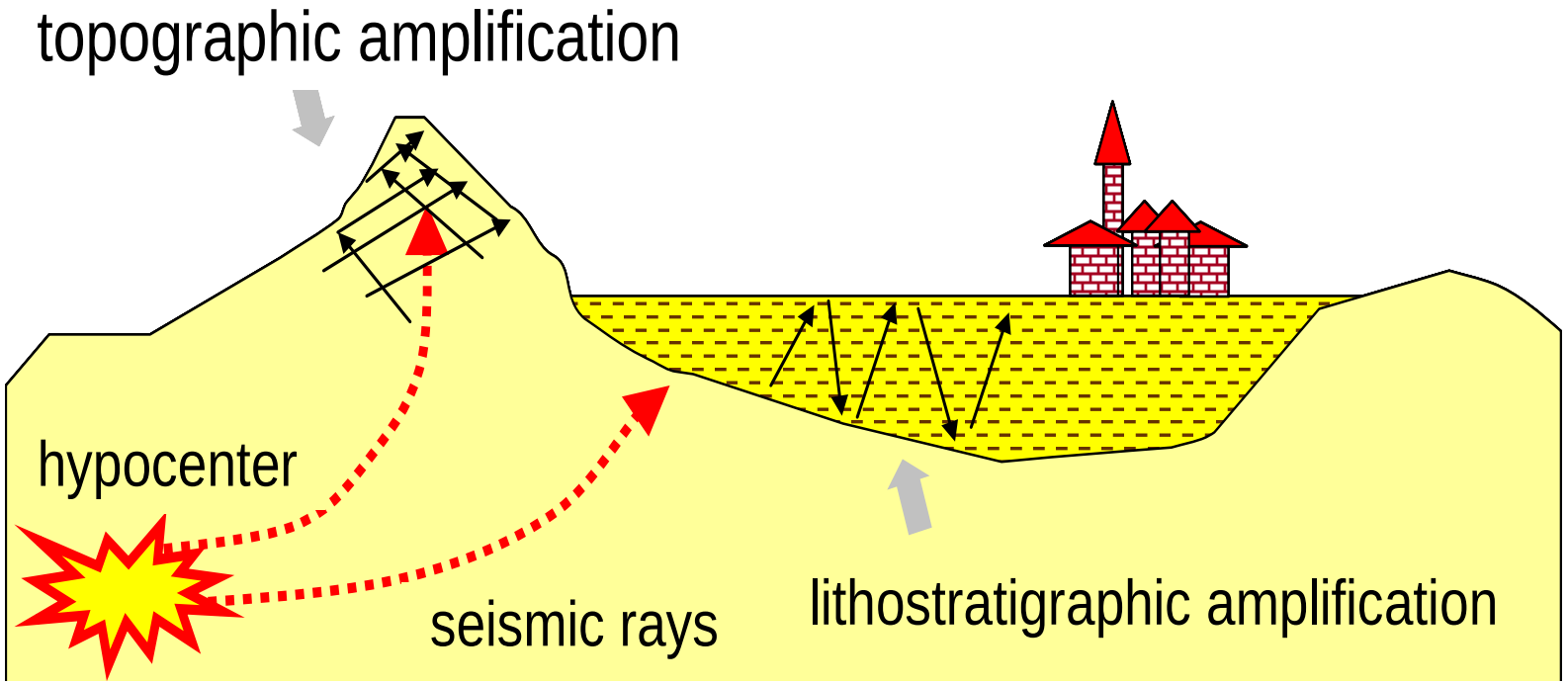
Module 3 : Ground response analyses and near-surface site characterization

Lecturers

- Prof. Carlo G. Lai (University of Pavia, Italy)
- Dr. Maria-Daphne Mangriotis (Heriot-Watt University, UK)

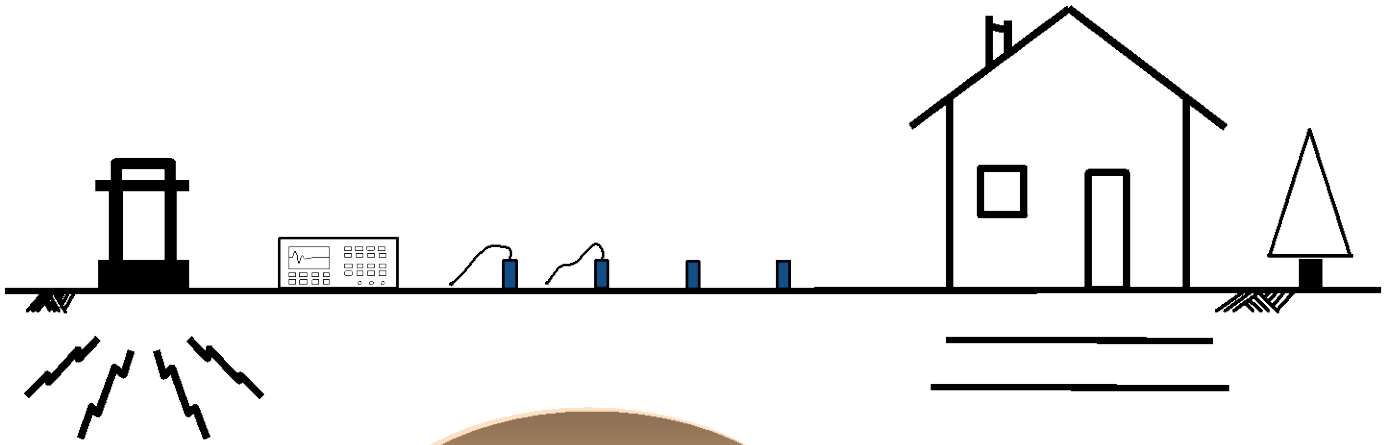
Objectives

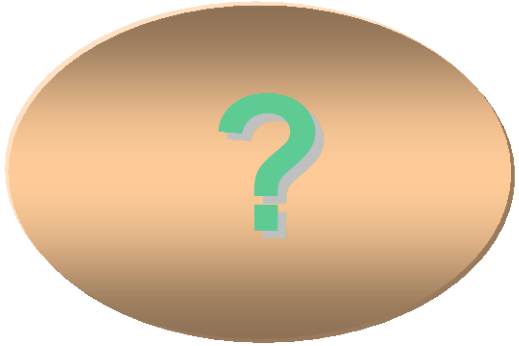
SCOPE: assess the influence of soft soil deposits in the observed ground motion at a given construction site caused by earthquakes



Objectives

SCOPE: geotechnical characterization of the subsoil through measurement of small-strain elastic moduli using geophysical tests





Aim:

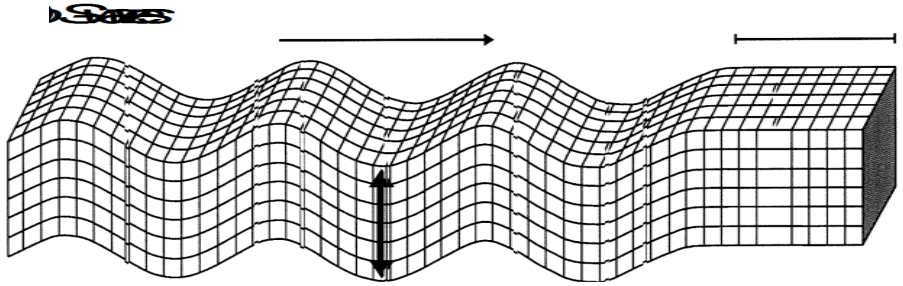
V_S and V_P profiles

Course schedule

May 2 (Prof. Carlo G. Lai)

09:00 – 10:30: Fundamentals of wave propagation (Part 1)
10:30 – 11:00: Coffee break
11:00 – 12:30: Fundamentals of wave propagation (Part 2)
12:30 – 14:30: Lunch break

14:30 – 16:00: Ground response analyses
16:00 – 16:30: Coffee break
16:30 – 18:30: Case study and exercising

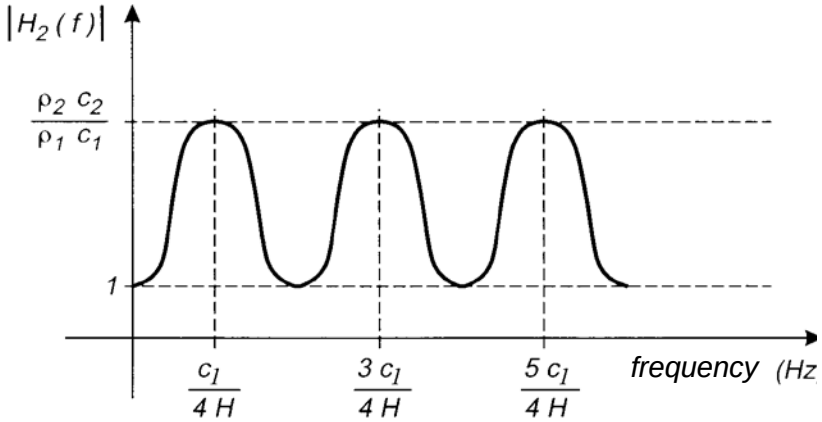


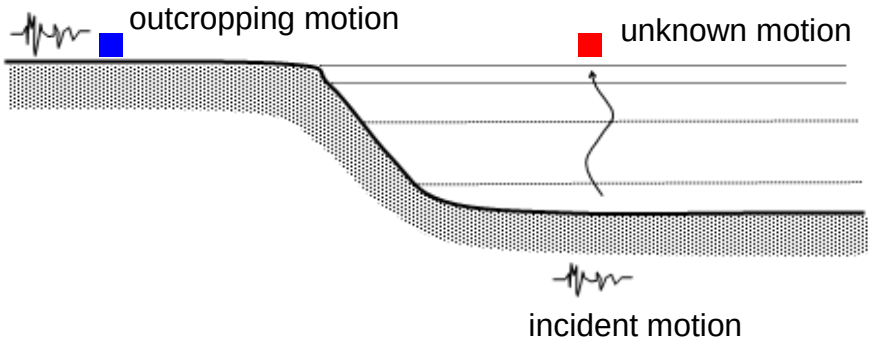
Course schedule

May 3 (Prof. Carlo G. Lai)

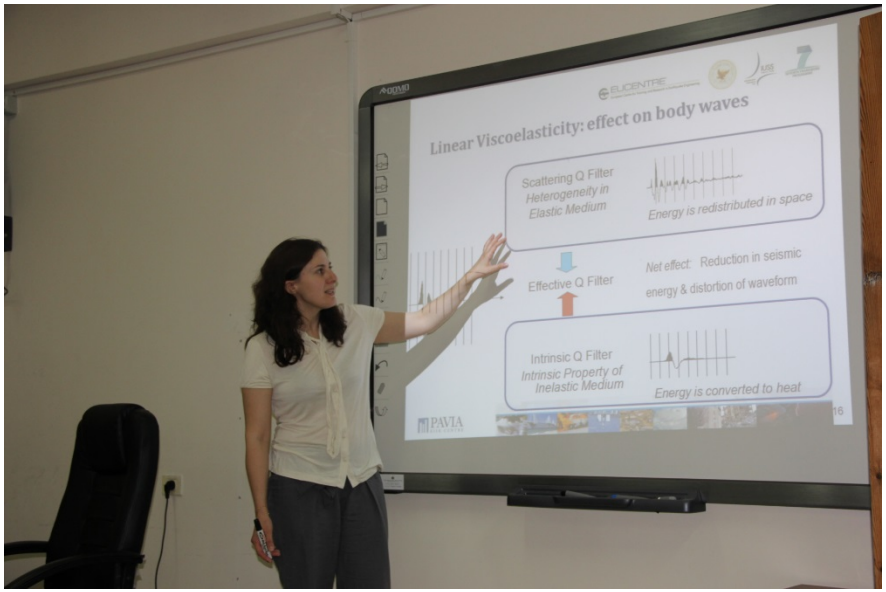
09:00 – 10:30: Ground response analyses (Part 2)
10:30 – 11:00: Coffee break
11:00 – 12:30: Near-surface site characterization
12:30 – 14:30: Lunch break

14:30 – 16:00: Near-surface site characterization
16:00 – 16:30: Coffee break
16:30 – 18:30: Review of Fourier analysis and discrete inverse theory





Course schedule



May 4 (Dr. Maria-Daphne Mangriotis)

09:00 – 10:30: Seismic prospecting using active

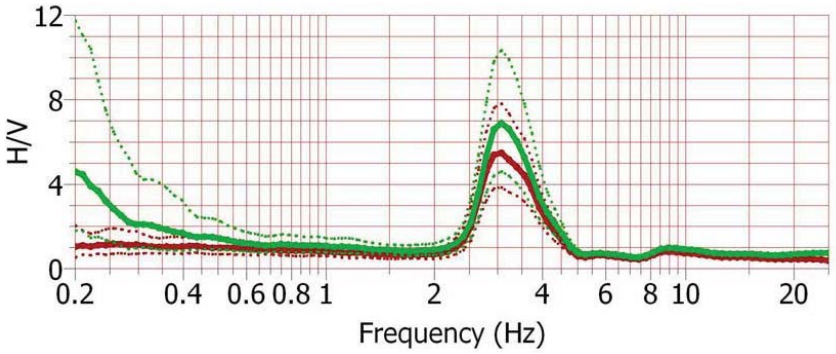
10:30 – 11:00: Coffee break

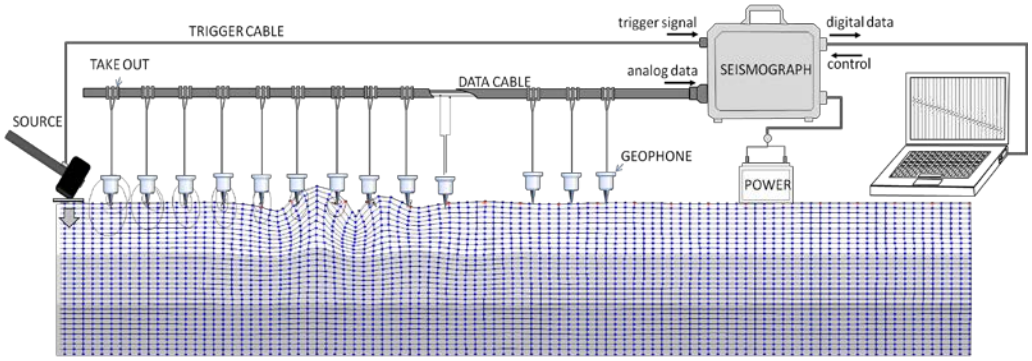
11:00 – 12:30: Seismic prospecting using active

12:30 – 14:30: Lunch break

14:30 – 15:30: Seismic prospecting using passive MASW, ReMi and H/V techniques

15:30 – 16:45: Case study using real and synthetic geophysical seismic data





Lessons learned

- Although ground response analyses and near-surface site characterization are two related topics, they are by themselves complicated subjects deserving more time to be treated thoroughly: *a 3 days course for both is not sufficient !*

- Ground response analyses and seismic hazard assessment are subjects that should be treated jointly one after the other

- Although training abroad on the use of geophysical methods for near-surface site characterization is important, best training would be to jointly carry out experimental sessions locally

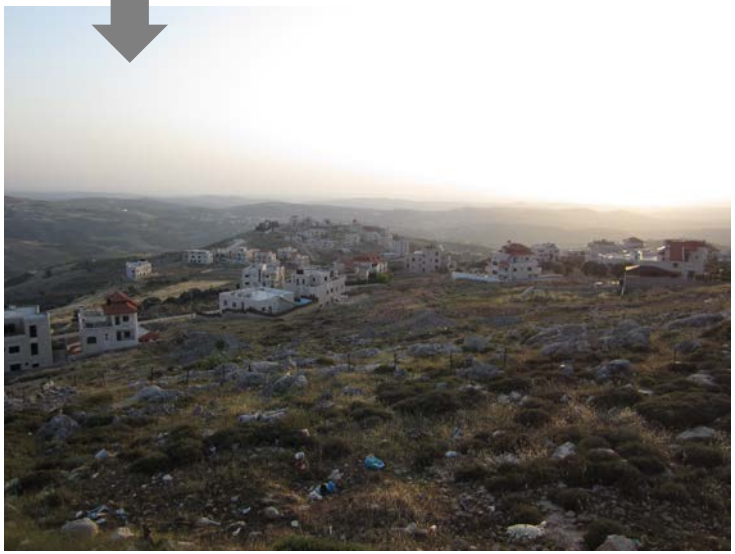
Lessons learned

- Nablus and surroundings are highly dense urban areas in a geologically and geo-morphologically complex territory
- Non-invasive geophysical techniques are ideal in this environment for site characterization due to cost-effectiveness

Possible future goals

- Organization of geophysical (e.g. MASW/ReMi) investigation campaigns at local sites to be carried out and interpreted jointly between ANU and EUCENTRE (*technology transfer*)

- Seismic microzonation for ground shaking of an important urban centre (pilot study) using geophysical techniques ??



- Perform MSc and PhD theses on PSHA, geophysical testing and seismic microzonation jointly guided by ANU, IUSS, UNIPV

- Setting cooperation agreements between ANU, IUSS, UNIPV ?

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Thank you for your attention !