

# SESAME - Smolenice Workshop

Smolenice (Slovakia), 21-24 September 2004

In addition to “get-together” of all partners, the objectives were:

- to have a global view of the project for every partner and invited persons in presenting the various results already obtained after 2 years concerning the H/V technique, the array studies, the nature of noise wavefield, and noise simulation results;
- to discuss the scientific results
- to discuss the way to transfer the results in the scientific community and also in routine practice, with special emphasis on developing countries who make an extended use of the H/V technique;
- to have some feedbacks about the past results and the directions for the future of the project from external person;
- to prepare the future of the project.

The present minutes can not keep track of the richness of all the discussions that occurred during the meeting; their aim is basically to indicate all the decisions that were taken and are to be implemented by the corresponding task leaders, work package leaders and partners.

## I Partners attending the meeting

All partners were present to the meeting (Table 1).

TABLE 1 : List of the persons attending the Smolenice Workshop in Slovakia

Partners	Name of the person	Partners	Name of the person
1	Pierre-Yves Bard	6	Daniel Roten
1	Sylvette Bonnefoy	7	Petros Dimitriu
1	Laurence Bourjot	7	Alexandros Savaidis
1	Fabrice Cotton	7	Nikos Theodulidis
1	Jean-Luc Chatelain	8	Paula Teves-Costa
1	Philippe Guéguen	9	Fabrizio Para
1	Bertrand Guillier	9	Giovanna Cultrera
2	Corinne Lacave	10	Marco Pagani
2	Martin Koller	10	Alberto Tento
3	Matthias Ohrnberger	11	Lucia Fojtikova
3	Frank Scherbaum	11	Josef Kristek
	Estelle Schisselé	11	Miriam Kristekova
4	Denis Jongmans	11	Peter Moczo
4	Marc Wathelet	11	Peter Labak
5	Kuvvet Atakan	11	Martin Galis, Peter Franek
6	Cécile Cornou	12	Anne-Marie Duval
6	Donat Faeh	12	Jean-François Vassiliades

- And - Attila Ansal, Kandili Observatory and Earthquake research Institute, Bogazici University, Turkey  
- Michael Schmitz & Victor Rocabado, FUNVISIS, Venezuela  
- Bill Stephenson, Seismology section, Institute of Geological and Nuclear Sciences, New Zealand  
- Benoît Lebrun, BRGM Marseille, France  
- Hanan Nimry, Royal Scientific Society, Jordania

## II Schedule of the meeting

	Monday, 22/09	Tuesday, 23/09	Wednesday, 24/09
08:30 – 10:00	Short introduction + <b>Task A</b> Work + Results	<b>Task B</b> Work + Results	<b>Task C</b> Discussion Presentations / Comments / Feedback from "external scientists"
<b>10:00 – 10:30</b>	<b>Coffee break</b>		
10:30 – 12:00	<b>Task A</b> Work + Results	<b>Task B</b> Discussion Presentations / Comments / Feedback from "external scientists"	Brain-storming / general discussion (small groups) : What to do now ? In view of WP11, WP12, WP13 concluding discussion (whole consortium)
<b>12:00 – 14:00</b>	<b>Lunch break</b>		
14:00 – 15:30	<b>Task A</b> Discussion Presentations / Comments / Feedback from "external scientists"	<b>Task C</b> Work + Results	<b>Planning Task D</b> - WP11 : Scientific papers / Special issue / Monographs / Vancouver - WP12 : H/V User manual
<b>15:30 – 16:00</b>	<b>Coffee break</b>		
16:00 – 18:00	<b>Task B</b> Work + Results	<b>Task C</b> Work + Results	- WP13 : Array - ? Follow-up, STREP Next meetings
<b>18:00 – 24:00</b>	<b>Free discussions + entertainment</b>		

## III Scientific matters

### III.1 Task A – H/V Technique

Discussion on the entire Task A was done with the participation of the contributors of the task. Each work package has been discussed separately.

#### **WPO2 discussions**

The extensive work done on the experimental conditions are now finalized and the report is now delivered. The entire analysis results are compiled by the Grenoble team on a DVD and delivered to the participants during the workshop. A summary of the results are also presented by Jean-Luc Chatelain during the first day of the workshop. This extensive data set collected on many tested parameters (ca. 58) by several groups have been now analysed systematically using a statistical approach. Student t-test is applied to all test results and the deviation from the reference records are presented on individual "Technical Cards" for each tested parameter. Following this systematic evaluation, there is a need to make a thorough interpretation.

Clear set of conclusions should be drawn and disseminated. This is planned in two parallel lines of further work:

1. active participation in the guidelines that will be prepared within WP12. **Jean Luc Chatelain** and **Corinne Lacave** are given the responsibility (see the minutes of the WP12) to lead the work and each group which has performed tests are encouraged strongly to participate in this work;
- 2a. preparation of a dedicated paper on experimental conditions - **Jean Luc Chatelain** is given the responsibility to lead the work;
- 2b. preparation of a paper on the instrumental conditions - This paper will be lead by **Bertrand Guillier**



- For points 2a and 2b, the lead authors will prepare the first draft and send it for suggestions to other participants at the beginning of February 2004. The deadline for the preparation of these two papers is set to the beginning of the year (**January 2004**).
- Preparation of the guidelines in connection with WP12.

#### **WPO3 Discussions**

The software J-SESAME was presented by Kuvvet Atakan during the workshop. The tests that were performed by different groups have revealed a number of bugs, which need to be corrected. There were also some suggestions with regard to additional functionalities. A general decision was made to do all the changes on the software through a concentrated effort on a location where all developers get together to finalize the work. This

work-session will be done in **8-13 February 2004** in Lisbon, Portugal. Paula Teves-Costa will host the meeting. The purpose of this work-session is to prepare the final version of the J-SESAME software (and SAF format) and is NOT meant as another discussion forum for further suggestions.

Following are invited to the planned meeting:

- Pierre-Yves Bard (window selection module),
- Alberto Tendo (processing module),
- Bladimir Moreno (browsing module),
- Pedro Roquette (display module).

In addition, - Bertrand Guillier (Macintosh implementation),  
- Kuvvet Atakan (general co-ordination and testing),  
- Paula Teves-Costa (work-session host and testing) will also participate.

A parallel line of work is planned in connection with the user manual of the software, which will be done within the WP12 (see the minutes). This will be lead by **Kuvvet Atakan** and **Bertrand Guillier**. The deadline will be 15 April 2004.



- next meeting : 8-13 February 2004 in Lisbon, Portugal.
- preparation of a user manual of the software in connection with WP12.

### **WPO4 Discussions**

Status of the work was presented by Nikos Theodulidis during the first day of the workshop. Compilation of the database for experimental validation is completed. Specific software is developed for easy access to the data. All information regarding the individual records are archived in Standard Information Sheets (SIS), which are organized in a relational data base management system (using MS-Access). This system provides easy access to the users in choosing a relevant sub-set of data. It is wished that this data base can survive the project, and a proposal was made to use the same data base structure for the "SISMOVALP" data base to be built under the coordination of Fabrice Cotton.

Various comparisons were the presented based on this data set: the ITSAK group presented comparisons between noise H/V ratios and theoretical transfer functions for a number of sites with reliable geotechnical information, or with H/V ratios from earthquake recordings (Petros Dimitriu); Pierre-Yves Bard presented the preliminary results obtained by E. Haghshenas about the comparison between noise H/V ratios and experimental site transfer functions (ESTF).

It is agreed upon that the comparison between H/V ratio and other quantities (numerical transfer functions, H/V ratios from earthquake recordings) should be performed with the JSESAME software, or at least a procedure similar to the one used within JSESAME (windowing, smoothing, etc.). For some sites with reliable shear velocity profile information (Edessa, ...), it is recommended to compare also H/V ratio with theoretical H/V ellipticity ratios. It is also recommended to add in the global comparison H/V / ESTF the few Swiss sites for which there exist a pair of site / reference sites, and to check the results for the Predappio sites. It would also be nice to perform a generalized inversion on the strong motion data to obtain estimates of the site transfer functions.

The individual studies performed for comparing the H/V ratios with damage, are discussed. In general, the results gave room for a variety of interpretations. Although in some cases there seems to be a positive correlation (generally in case of distant earthquakes: Thessaloniki, Palermo, Roma), in general it is agreed that the comparison to damage is a complex procedure. It is recommended to focus first on the comparisons with the near-surface geology. Bill Stephenson also suggested principal component analysis to look for possible correlations between H/V and damage. In order to have a "homogeneous" description of damage, it is also recommended, as much as possible, to express to use the EMS98 intensity scale for building and damage characterization.

### **Planned papers in Task A**

In total 19 papers (long: journal or short: conferences) are planned covering the various results of Task A, out of which 2 are already submitted. It is agreed that person responsible for each paper sends the detailed information to the Task leader who will forward these to the project co-ordination. Following is a short summary of these.

*11<sup>th</sup> SDEE-EGE (Berkeley, CA, USA, Jan.2004) papers:*

- On the reliability of the H/V technique (abstract accepted + paper by Atakan et al., submitted)

- Experimental conditions (abstract accepted + paper by Duval et al., submitted)

*13<sup>th</sup> WCEE (Vancouver, Canada, Aug.2004) papers:*

- Task A results (abstract submitted + paper by Atakan et al., in prep.)
- WP02 results (abstract submitted + paper by Duval et al., in prep.)
- WP03 results (abstract submitted + paper by Atakan et al., in prep.)
- WP04 results (abstract submitted + paper by Theodulidis et al., in prep.)
- Individual WP04 paper on Italian case 1 (abstract submitted + paper in prep.)
- Individual WP04 paper on Italian case 2 (abstract submitted + paper in prep.)

*To be sent together to the same journal (or to the special issue):*

- Instrumentation paper (Guillier et al., in prep.)
- Experimental conditions (Chatelain et al., in prep.)
- JSESAME paper (in prep.)(to be submitted to SRL (electronic seismologist) or Computer Geosciences and/or Special Issue of the BEE (?)). This paper can be sent together with another paper about the WP04 database (an article in SRL)
- Empirical evaluation of the H/V (Bard et al., in prep.)

*Individual papers:*

- Thessaloniki seasonal variation of noise (empirical comparison paper) : Pageoph
- Thessaloniki : an other paper on comparison of H/V ratios with observed damage
- Paper on strong motion network data comparison of weak, strong and noise data (Greek case)
- Palermo: comparison of H/V ratios with observed damage
- Paper on the Colfiorito on the stability
- Azores case study
- A common paper for all the six case studies for WP04

### **III.2 Task B – Array measurement techniques**

Frank Scherbaum presented first an overview of Task B (Array measurement techniques). It was followed by more detailed presentations of each work package by Matthias Ohrnberger (WP05: Instrumental layout for array measurements; and WP06: Derivation of dispersion curves) and Marc Wathelet (WP07: Inversion of velocity profile). After all the presentations and the feedback from the audience, it became clear that several issues remain to be addressed within the coming year. The most relevant ones relate to the overall consistency of the WP in terms of improving consistency between data acquisition - processing - inversion but also in terms of display and interpretation of the results.

After discussing the pros and cons an agreement was reached upon the following points:

- all the processing (determination of dispersion curve, misfit function, etc.) should be consistently done in slowness instead of velocity;
- the selection of the acceptable range of slowness to be considered for the inversion should be based on chosen fractiles of the distribution of slowness values;
- the inclusion of constraints into the inversion remains a topic of primary importance. In particular, the relevance of depth to bedrock information and vs30 needs to be investigated;
- information about model resolution needs to be included into the display of the models as well as for the SH transfer functions;
- the comparison of inverted slowness-depth models needs to be done in a quantitative way;
- the importance of pre/post processing needs to be investigated further.

#### ***Planned papers in Task B***

Furthermore, the discussion focussed on the different papers to be written. Below is the list of responsible authors/coordinators with the working titles of the papers which were discussed:

- Marc Wathelet: Direct inversion of SPAC
- Matthias Ohrnberger: Comparison of different methods for the determination of dispersion curves
- Alexandros Savaidis: Determination of dispersion curves and comparison with those obtained from geotechnical models for the Greek data sets

- Estelle Schisselé: The influence of Pre/post selection
- Frank Scherbaum: Comparison between Rayleigh H/V ellipticity peak frequency, and fundamental S-wave resonance frequency



- next meeting : 16-20 February 2004 in Potsdam, Germany

### III.3 Task C – Physical background and noise simulation

At first, Pierre-Yves Bard gave a rapid overview of Task C. It was followed by more detailed presentation by Sylvette Bonnefoy (WP08: Nature of noise wavefield), Peter Moczo (WP09: Numerical simulation of seismic noise) and Cécile Cornou (WP10: Simulation for real sites). Joseph Kristek also gave some indications on the latest developments of the "NOISE" program package (already implemented: HF filtering + new viscoelastic formulation, + under work: excitation box), while Miriam Kristekova presented the results obtained with time-frequency analysis techniques for the derivation of H/V curves.

The discussion outlined the following points:

- There are strong interactions between Tasks B and C, especially for the real sites; it was therefore decided to create a new sub-group, especially in order to compare the observations and the simulations in a consistent way (similar array processing techniques). This group will meet in Potsdam in February 16-20 to compare the results.
- Another meeting between groups B and C might be needed in Spring 2004, once the computations and processing are over, including the CWT analysis on real data and synthetics. The decision to hold it, its date and location should be discussed in Potsdam in February.
- Concerning the structure of the noise wavefield, the following suggestions were performed
  - The ratio between body and surface waves may be investigated with the help of the energy carried by non-dispersive and dispersive wave trains. CWT should help in quantifying such energy.
  - It looks interesting to investigate the ratio between Rayleigh and Love waves through a polarization analysis, as the noise observed in most real sites exhibit very clear predominant azimuths. Donat Fäh suggests that the proportion of Love waves is increased in deep basins.
  - The mode jump issues should be investigated on some simple models
- Concerning the interpretation of the H/V ratio, the following suggestions were performed
  - The shifts between Rayleigh ellipticity peak frequency and fundamental S-wave frequency, outlined by Frank Scherbaum, should be clarified and quantified, taking also into account the uncertainty in their estimation (what is the tolerance on  $f_0$  estimation ?). It is therefore also very important to look at this issue (frequency shifts) in all modelling results (1D, 3D), and to see whether local sources "stabilize" the results and provide better estimates
  - It is also important to understand why there sometimes exist several peaks on the observed H/V ratios. In this perspective, a) having a look at higher mode eigenfunctions in simple models and b) a compilation of all real sites exhibiting several peaks, would be precious.
  - The interest of new computations accounting for a high scattering / low Q in the underlying half-space was indicated. It was also mentioned that none of the test sites includes a very soft soil, and that some models involving such a structure would be welcome.
  - Although we do not understand now the meaning of the amplitude of the H/V ratio, it is thought useful to have a systematic look at its comparison with the SH amplification.

#### *Planned papers in Task C*

The discussion also allowed to establish a list of the papers to be written, together with their main content and their main author (scientist in charge !):

Paper 1: Review paper from the literature survey (Sylvette Bonnefoy)  
Earth Science review: Check the audience of the journal

Paper 2: Noise modelling Part I - Simulation (Joseph Kristek / Peter Moczo)

RANSOURCE: include demonstration of randomness

FD: theory + comparison with Hisada

Excitation box (not 100% sure)

Examples: local sources, far sources (M7b)

first draft before Christmas.

Paper 3: Noise modelling II: Parameter studies and constraints on source properties (Sylvette Bonnefoy)

Following Sylvette's presentation + AFPS.

M1 + M2.2 + M6b (source distance / depth)

H/V, array + Cross-correlation maps

Source properties

first draft before Christmas.

Paper 4: Canonical models / 3D models (Cécile Cornou)

Goal : ? Relevancy of H/V technique and array processing techniques for 3D structures.

Include some comparison with transfer functions for 3D cases (with excitation box)

1st draft : January / February 2004

Paper 5 to 9: Real sites

5: Grenoble (Cécile Cornou + Sylvette Bonnefoy)

6: Colfiorito (INGV)

7: Basel (Cécile Cornou)

8: Liège (Marc Wathelet)

9: a synthesis paper: overall comparison

The processing of synthetics and observations should be the same (see above), and the structure of the papers should be similar.

Acknowledge SESAME + Lugano (when there is an author from Zurich)

Tentative schedule : First draft in Spring (May-June).

Paper 10: Time Frequency analysis (Miriam Kristekova + Donat Fäh),

Working meeting in Potsdam to meet mathematicians

Methodology

Apply it to SESAME synthetic data

Apply it to SESAME real data

1st draft in March 2004



- paper writing
- computations to finish

#### III.4 Task D – Practical implementation and guidelines (M. Koller and D. Jongmans)

Task D is devoted to the dissemination and implementation of the scientific results. It is composed of the following three work-packages:

##### → WP11 - Scientific outcomes:

In addition to the different papers defined in the different WP, the following scientific dissemination means were considered and agreed upon.

- Special session on microtremors at XXIX ESC (Potsdam, 12-17 /09/ 2004). Pierre-Yves Bard is supposed to act as a co-convenor of this session.
- The SESAME project has been proposed by Attila Ansal a special issue in the Bulletin of Earthquake Engineering / or a book in a new book series. The special issue has been preferred and, given the number of papers planned in the various tasks, it was agreed upon that this special issue should be "user oriented" and driven by the H/V user guidelines (WP12), and might include a CD with the JSESAME software.

For a publication by the end of 2004, the manuscripts should be ready by the end of July; for a publication in early 2005, the deadline would be postponed to the end of November 2004..

- In order to ease the concertation and exchange on the many papers to be written, it was also agreed upon to implement a limited access zone on the SESAME web site, for partners to upload and download ongoing versions of the various papers

## → WP12 - H/V user guidelines

### General content of the guidelines

1. Technical requirements for measurements (ca. 5 pgs.)
  2. Data processing standard (ca. 5 pgs.)
  3. Interpretation guidelines (ca. 5 pgs.)
- Appendices: a. "Good" and "bad" examples illustrating the merits and limitations (ca. 10 pgs.)  
b. Physical explanations (ca. 5 pgs.)  
c. "Field summary" (2 pgs.) + "Field-sheet" (1 pg.)  
d. Technical card (ca. 2-3 pgs.)

**Total Review of the guidelines:** Hanan Nimry (pilot application?), Benoit Lebrun and Martin Koller

- Deadlines : - For the first draft version: **15 April 2004**  
- For the reviewers: **15 May 2004**  
- Revised version: **30 June 2004**  
- WCEE display: **1 August 2004**  
- Final version: end of September 2004



**It is mandatory to have a display version for WCEE13 in Vancouver !**

### Detailed content of the guidelines

#### 1. Technical requirements

*Who will do the work:* Gaillot and Corinne (review: Anne-Marie and Giovanna)

*How the work will proceed:* close interaction with people involved in the work. No meetings planned unless necessary.

*What should be included:* instrumentation work and experimental conditions. Detailed references and pointers to SESAME reports should be given.

##### **Field-summary (and Example field-sheet) as a part of technical requirements**

*Who will do the work:* Corinne and Gaillot

*How the work will proceed:* it will be integrated to the work in point 1.

*What should be included*

#### 2. Data processing standard

*Who will do the work:* Kuvvet and Bertrand (review: Gaillot and Alberto Tinto and Paula)

*How the work will proceed:* close interaction with people involved in the work. No meetings planned unless necessary.

*What should be included:* description and the guidelines. JSESAME software and user manual on a CD. SAF format description and pointers to web sites or individuals for the available conversion programs.

#### 3. Interpretation guidelines

*Who will do the work:* Corinne/Martin and Pierre-Yves and Alberto Marcellini (Review: Bertrand and Frank)

*How the work will proceed:* close interaction with people involved in the work. No meetings planned unless necessary.

*What should be included:* clear guidelines for the interpretation of results.

### Appendixes

#### **a. Data examples ("good" and "bad")**

*Who will do the work:* Nikos and Cecile (Review: Fabrizio and Bill Stephenson)

*How the work will proceed:* close interaction with people involved in the work. No meetings planned unless necessary.  
*What should be included:* based on examples of case studies.

**b. Physical explanations**

*Who will do the work:* Pierre-Yves and Donat (Review: Kuvvet and Frank)

*How the work will proceed:* close interaction with people involved in the work. No meetings planned unless necessary.

*What should be included:* physical explanations taking also into account the theoretical considerations.

**c. Technical card**

*Who will do the work:* Gaillot and Bertrand (Review: Alberto Marcellini and Matthias, testing the software by Marco)

*How the work will proceed:* close interaction with people involved in the work. No meetings planned unless necessary.

*What should be included:* a description on how and why the technical cards are produced and the software to do the Student t-tests and the plots. The software will not be part of the distribution CD, but will be referenced to a web-site for download and the corresponding developers.

The "external" participants from Venezuela, Jordan and Algeria also volunteered to test the preliminary versions of the guidelines (together with the software).

→ **WP13 – recommendations for quality array measurements and processing**

The main target of these recommendations is for the users of the "Ses\_array" software under development. These users are thought to be essentially scientists, as the method looks too sophisticated for general dissemination and explanation.

It is wished to propose new, more appealing names for this software : suggestions welcome !

## **IV Administrative and Financial Matters**

### **IV.1 Financial follow-up**

A second financial report with all the cost statements was sent to the EC in July 2003.

The EC started the procedure for the second payment, only at the end of October and the University of Joseph Fourier received the money in November. I will send to each partner a financial state of art.

The University have done the payments to each partner in November 2003.

→ During February 2004, Laurence will send to you and/or the person following the financial part of the project, a table presenting the financial situation of each partner.

→ The next financial report is for May 2004. Laurence will ask each partner to complete their expenses table at the end of December 2003 and then at the end of April 2004. Thank you to be on time

### **IV.2 Progress and/or management reports**

On 6-monthly intervals from the project's starting date, the project provide the Commission services with a short management report, outlining the practical information of the project in accordance with the time schedule indicated in the project proposal.

A first management report was sent to the EC in November 2001, a second one in June 2002 (with the first annual report), a third one in January 2003 and a fourth one in July 2003 (with the second annual report). A fifth one will be sent in January 2004.

→ The next reports are:

- January 2004: fifth progress report (done);
- May 2004: sixth progress report or the third annual report with 7 deliverables (D13.08 second part, D11.10, D12.09, D16.04, D17.10, D18.06, D19.06 D20.04 and D21.07) and the cost statements;



- November 2004: seventh progress report with 4 deliverables (D22.11, D23.12, D24.13 and D25.01 corresponding to the final report) and the final cost statements.
- December 2004: TIP (Technological Implementation Plan)

### IV.3 Website

The website will be updated by Philippe in the next weeks

### IV.4 Miscellaneous

The **table**, page 17 is a summary of all the important Dates (Task meeting, General meeting, Workshop,...)

## V Other important points

### V.1 Final meeting



- The final meeting of the project will be in Les Houches (near Chamonix) in France from:

**Sunday 3 October 2004 to Tuesday 5 October 2004**

All the necessary information will be send in August 2004. If you want to have an idea of the place, you can go on the following website: [www-houches.ujf-grenoble.fr](http://www-houches.ujf-grenoble.fr)

### V.2 Vancouver

The deadline for the participation to the Vancouver meeting is the 31 January 2004. About 11 people from the project will attend the meeting.

In February-March, Pierre-Yves will do a common letter to ask the European Commission, the authorization for using the SESAME budget to go to the Vancouver meeting.

Below, you can see all the abstracts presented by the SESAME project during the 13 WCEE, in the Special Theme Session "Site characterization for site effect studies using ambient vibrations Pierre-Yves must ask".

The abstract presented by Nikos doesn't appear, Pierre-Yves must ask in which session it will be presented.

1. J-SESAME: A STANDARDIZED SOFTWARE SOLUTION FOR THE H/V SPECTRAL RATIO TECHNIQUE  
Atakan K., P.-Y. Bard, F. Kind, B. Moreno, P. Roquette, A. Tendo and SESAME-Team
2. THE H/V SPECTRAL RATIO TECHNIQUE: EXPERIMENTAL CONDITIONS, DATA PROCESSING ANDEMPIRICAL RELIABILITY ASSESSMENT  
Atakan K., A.-M. Duval, N. Theodulidis, B. Guillier, J.-L. Chatelain, P.-Y. Bard and SESAME-Team
3. THE SESAME PROJECT: AN OVERVIEW AND MAIN RESULTS  
Bard P.-Y.
4. SIMULATION OF SEISMIC AMBIENT VIBRATIONS : I. H/V AND ARRAY TECHNIQUES ON CANONICAL MODELS  
Bonneyfoy-Claudet S., C. Cornou, J. Kristek, M. Ohrnberger, M. Wathelet, P.-Y. Bard., D. Faeh, P. Moczo and F. Cotton
5. SIMULATION OF SEISMIC AMBIENT VIBRATIONS : II. H/V AND ARRAY TECHNIQUES FOR REAL SITES  
Cornou C., J. Kristek, S. Bonneyfoy-Claudet, D. Fäh, P.-Y. Bard, P. Moczo, M. Ohrnberger and M. Wathelet
6. MICROTREMOR MEASUREMENTS IN PALERMO, ITALY: A COMPARISON WITH MACROSEISMIC INTENSITY AND EARTHQUAKE GROUND MOTION  
Cultrera G., R. Azzara, F. Cara, R. D'Anna, G. Di Giulio, M. S. Giammarinaro, G. Passafiume A. Rovelli and P. Vallone

7. INFLUENCE OF EXPERIMENTAL CONDITIONS ON H/V DETERMINATION USING AMBIENT VIBRATIONS (NOISE)  
Duval A.-M., J.-L. Chatelain, B. Guillier and SESAME Project WP02 Team
8. NOISE - FORTRAN95 PROGRAM PACKAGE FOR GENERATION AND NUMERICAL SIMULATION OF SEISMIC NOISE IN SURFACE GEOLOGIC STRUCTURES  
Kristek J. and P. Moczo
9. PRACTICAL USER GUIDELINES AND SOFTWARE FOR THE IMPLEMENTATION OF THE H/V RATIO TECHNIQUE: MEASURING CONDITIONS, PROCESSING METHOD AND RESULTS INTERPRETATION  
Koller M. and C. Lacave
10. IS THE PHASE OF THE ONE-SIDED AUTOCORRELOGRAM OF THE HORIZONTAL COMPONENTS OF AMBIENT VIBRATIONS (TOKESHI'S METHOD) ABLE TO REVEAL THE FUNDAMENTAL RESONANCE FREQUENCY OF A SITE ?  
Lacave C. and M. Koller
11. MICROTREMOR ARRAY MEASUREMENTS FOR SITE EFFECT INVESTIGATIONS: COMPARISON OF METHODS, CASE STUDIES, FIELD EXAMPLES, PROSPECTS AND LIMITATIONS  
Ohrnberger M., F. Scherbaum, M. Wathelet, D. Jongmans, A. Savvaidis, C. Cornou, E. Schissele and F. Kind
12. FREQUENCY WAVENUMBER AND SPATIAL AUTOCORRELATION METHODS FOR DISPERSION CURVE DETERMINATION FROM AMBIENT VIBRATION RECORDINGS  
Ohrnberger M., C. Cornou, E. Schissele, M. Wathelet, A. Savvaidis, F. Scherbaum and D. Jongmans
13. 2D RESONANCES IN ALPINE VALLEYS IDENTIFIED FROM AMBIENT VIBRATION WAVEFIELDS  
Roten D., C. Cornou, S. Steimen, D. Faeh and D. Giardini
14. CORRELATION BETWEEN DAMAGE DISTRIBUTION AND SOIL BEHAVIOUR ESTIMATED WITH AMBIENT VIBRATIONS  
Teves-Costa P. and M.L. Senos

and

Theodulidis N., G. Cultrera, A. Tenta, D. Faeh, K. Atakan, P.-Y. Bard, A. Panou and the SESAME-Team, Empirical evaluation of the horizontal-to-vertical spectral ratio technique: results from the SESAME project.