

The background image shows a two-story house with a red-tiled roof that has significant damage, with many tiles missing or broken. The house has white upper walls and light green lower walls. A green chimney is visible on the right side of the roof. The house is situated on a hillside with sparse vegetation and some bare trees in the foreground. In the distance, a coastal town is visible on a hillside overlooking the sea.

CHAPTER 3

GEER/EERI/ATC Team

GEER/EERI/ATC Cephalonia, Greece 2014
Report Version 1

3 GEER/EERI/ATC Team

The 2014 Cephalonia GEER/EERI/ATC reconnaissance efforts were a collaboration of a multidisciplinary international team of more than 70 members affiliated with different institutions, universities and private companies. This Chapter explains the role of each contributor in this mission and the next chapter explains how the information is presented.

USA TEAM

USA Mission to Cephalonia

The first main shock M_w 6.1 event in Cephalonia on January 26th, 2014 caught the attention of members of the Geotechnical Extreme Events Reconnaissance (GEER), due to the well-known history of sequential earthquakes in the island. Consideration was given to the possibility of a second shock, considering the destructive earthquake sequence of 1953 (described in Chapter 5).

When the second M_w 6.0 event hit Cephalonia on February 3rd, GEER immediately activated a reconnaissance team, with funding by the National Science Foundation (NSF), under the leadership of Dr. Sissy Nikolaou, senior associate and director of geo-seismic department at Mueser Rutledge Consulting Engineers (MRCE) and GEER Advisory Panel member. The USA team included Professor Dimitrios Zekkos of University of Michigan and Professor Dominic Assimaki of Georgia Institute of Technology.

At the same time, the Earthquake Engineering Research Institute (EERI) activated its Learning from Earthquakes (LFE) Program, and in collaboration with the Applied Technology Council (ATC), supported the USA team with the participation of Mr. Ramon Gilsanz of Gilsanz Murray Steficek (GMS), board member of EERI-NYNE Chapter and past president of ATC. Dr. Nikolaou, Dr. Zekkos, and Mr. Gilsanz arrived in Cephalonia on February 7th, 2014.

The USA team met daily with the contributing local teams to coordinate reconnaissance activities and discuss findings of the previous day. Several of the Greek collaborators were already on the island and had performed reconnaissance even after the first event. The USA team spent a week in Greece documenting geotechnical, structural, and nonstructural effects of the Cephalonia earthquake sequence and organizing the structure and assignments of this report. The USA team consisted of members of universities, organizations, and private firms, all listed in this Chapter. External reviewers are denoted by (E).

USA Team Funding Agencies

GEER support was funded in part by NSF Grant No. CMMI-0825734, with key contacts:

GEER **Jonathan D. Bray**, PE, Faculty Chair in Earthquake Engineering Excellence, University of California at Berkeley, and GEER Steering Committee Chair
J. David Frost, PE, Professor, Georgia Institute of Technology and GEER Steering Committee Member
Christine Z. Beyzaei, PE, Doctoral Student, University of California at Berkeley, and GEER Recorder

EERI support was funded by the LFE program with key contacts:

EERI **Ken Elwood**, PhD, Professor, University of British Columbia, EERI Board Member and LFE committee chair
Jay Berger, EERI Executive Director
Marjorie Greene, EERI Special Projects Manager

ATC supported this mission with key contact:

ATC **Chris Rojahn**, PE, ATC Executive Director

Collaborating Universities

The following USA universities supported this mission (see also Chapter 4 for roles).

BERKELEY **Jonathan D. Bray**, PE, Faculty Chair in Earthquake Engineering Excellence, Civil and Environmental Engineering, University of California at Berkeley, CA
Christine Z. Beyzaei, PE, Doctoral student

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GATECH **J. David Frost**, PE, Director of GT Savannah & Professor, Civil and Environmental Engineering School, Georgia Institute of Technology
Dominic Assimaki, Associate Professor, School of Civil and Environmental Engineering, Georgia Institute of Technology

ILLINOIS **Youssef Hashash^E**, Professor & John Burkitt Webb Endowed Faculty Scholar, Civil & Environmental Engineering, University of Illinois at Urbana-Champaign

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UM **Dimitrios Zekkos**, PE, Associate Professor, Civil and Environmental Engineering, University of Michigan, Ann Arbor
Adda Athanasopoulos-Zekkos^E, Assistant Professor, Civil and Environmental Engineering, University of Michigan

Note: ^E denotes External reviewer

USA Engineering Firms

The following private USA engineering firms contributed with staff participation and offered their resources.

GMS	<i>Gilsanz, Murray, Steficek, LLP, New York, NY</i> Ramon Gilsanz , PE, SE, F.SEI, Founding Partner Eugene Kim , PE, Associate Joseph Mugford , PE, Associate Connie Yang , Staff member James Rosenmann , Structural Intern
HDR	<i>HDR, Inc.</i> Chris Sklavounakis^E , PE, Associate Vice President
MAS	<i>Mosaic Architectural Solutions, Orange County, CA</i> Philip J. Richter , PE, Principal
MRCE	<i>Mueser Rutledge Consulting Engineers, New York, NY</i> Peter W. Deming , PE, Partner, Mueser Rutledge Consulting Engineers, New York, NY Sissy Nikolaou , PhD, PE, Sr. Associate, Geoseismic Dept. Director Michael Law , PhD, PE, GE, Associate Cheryl Moss^E , Senior Geologist Dimitrios Iliadelis , PE, Senior Structural Engineer Jesse Richins , PE, GE, Senior Geotechnical Engineer Menzer Pehlivan , PhD, Geotechnical Engineer Lysandra Lincoln , Geotechnical Engineer Nonika Antonaki , Geotechnical Engineer Mojtaba Malek , PhD, Structural Engineer Adam Dyer , PE, Geotechnical Engineer Kyriakos Barbagianis , Structural Engineer Allan Amador , Geotechnical Engineer Edward Phelps , Geotechnical Engineer

Note: ^E denotes External reviewer

GREEK TEAM

The Greek universities and institutions related to the earthquake engineering field volunteered to participate in this reconnaissance by documenting geotechnical, structural, nonstructural and socioeconomic effects of the two main Cephalonia earthquake events and providing information, or acting as external reviewers. Some of the Greek teams had already been on the island since the first event, while most of the teams joined the USA group and performed reconnaissance studies after the second event. Several practicing engineers volunteered their time with representatives on site and participated in data collection and report preparation. The Greek team is presented by academic, institution, or company affiliation.

Greek Team Funding Agencies

The following funding resources supported some of our Greek team members, with further details in the Acknowledgments of this report.

ESF and NSRF	Achilleas Papadimitriou and Panos Tsopelas of UTH and Nikos Klimis and Manos Psaroudakis of DUTH were co-financed by European Union's Social Fund (ESF) and Greek national funds through the Operational Program "Education & Lifelong Learning" of the National Strategic Reference Framework (NSRF) – Research Program Thales, Investing in knowledge society through European Social Fund. The UTH members were funded by Thales grant MIS375618: "Mitigation of seismic liquefaction in the foundation soil of existing structures via pore fluid enrichment with environmentally safe nano-particles." The DUTH members were supported by Thales grant ESF Project 85330 entitled: "Characterization of site conditions in Greece for realistic seismic ground motion simulations: pilot application in urban areas."
FORENSEIS	George Gazetas of NTUA. Support by Research Project "FORENSEIS" (Investigating Seismic Case Histories and Failures of Geotechnical Systems), implemented under "ARISTEIA" Action of "Operational Programme Education and Lifelong Learning", co-funded by the European Social Fund (ESF) and national resources.
REAKT	Dimitris Pitilakis of AUTH-LSDEE. Support by European Research Project "Strategies and tools for Real Time Earthquake Risk Reduction (REAKT) Grant No. 28286
DUTH	Nikos Klimis and Manos Psaroudakis of DUTH were funded by the Geotechnical Division of Civil Engineering Dept. of Democritus University of Thrace, in addition to the support by ESF/NSRF above.
TEE	George Bouckovalas & Ioannis Psycharis of NTUA were funded by the Technical Chamber of Greece (TEE) for their reconnaissance visits.
UB-UK	George Mylonakis of UPATRAS was funded for his travel by the Queens School of Engineering of the University of Bristol.

Collaborating Greek and European Universities

The following universities (listed alphabetically) supported this mission and report with participation of members whose role is explained in Chapter 4.

ASPETE	<i>School of Pedagogical & Technological Education, Athens</i> Panagiotis Pelekis , Associate Professor, Department of Civil Engineering Educators Vagelis Plevris , Assistant Professor of Earthquake Engineering, Department of Civil Engineering Educators
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DUTH	<i>Democritus University of Thrace, Civil Engineering Dept., Greece</i> Nikolaos Klimis , Associate Professor, Head of Laboratory of Soil Mechanics & Foundation Engineering Manos Psaroudakis , Civil Engineer DUTH, MSc UPatras
HUA	<i>Harokopion University of Athens, Greece</i> Issaak Parcharidis , Associate Professor in Remote Sensing, Department of Geography
NTUA	<i>National Technical University of Athens, Greece</i> George Gazetas , Professor, Director of Soil Mechanics and Dynamics Laboratory, School of Civil Engineering Elli Vintzilaïou , Professor, Director of Structural Engineering, School of Civil Engineering George Bouckovalas ^E , Professor, Department of Geotechnical Engineering, School of Civil Engineering Ioannis Psycharis , Professor of Earthquake Engineering, Department of Structural Engineering, School of Civil Engineering Harris Mouzakis , Assistant Professor, Department of Structural Engineering, School of Civil Engineering Vasilis Tsouras , Associate Professor, Architectural Research Unit

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UPATRAS	<i>University of Patras, Department of Civil Engineering, Greece</i> George Athanasopoulos , Professor of Geotechnical Engineering Stephanos Dritsos , Professor of Structural Engineering Nicos Makris^E , Professor of Structural Engineering George Mylonakis , Professor of Geotechnical Engineering Costas Papantonopoulos , Associate Professor of Geotechnical Engineering Anastasios Batilas , Doctoral Candidate Xenia Karatzia , Doctoral Candidate Vasileios Kitsis , Doctoral Candidate Fotini Lyrantzaki , Doctoral Candidate Stavroula Skafida , Doctoral Candidate Vasileios Vlachakis , Doctoral Candidate Elpida Katsiveli , Postgraduate Student Olga Theofilopoulou , Postgraduate Student Eva Agapaki , Undergraduate Student
UTH	<i>University of Thessaly, Department of Civil Engineering, Greece</i> Marina Moretti , Assistant Professor of Structural Engineering Achilleas G. Papadimitriou , Assistant Professor of Geotechnical Engineering Panos Tsopelas , Professor of Structural Dynamics and Earthquake Engineering

Note: ^E denotes External reviewer

Greek Engineering Firms

The following private engineering firms contributed with staff participation and offered resources.

DIA	<i>Diatonos Mechaniki, Nafpaktos, Greece</i> Fotis G. Pantelis , Professional Civil Engineer, Founder and Owner Dionysios Ch. Moschonas , Professional Civil Engineer Katerina Ch. Sypsa , Professional Civil Engineer
EF	<i>Easy Facilities SA, Athens, Greece</i> Angeliki Psychogiou , Managing Director and President George Tsakalias , Vice President Dimitris Kopanos , Professional Civil Engineer, Project Manager
GENG	<i>Geoengineer.org, Athens, Greece</i> Dimitrios Zekkos , PhD, PE, Founder Vasiliki Dimitriadi , Geotechnical Engineer Ilias Giannoutsos , IT division Kostis Tsantilas , IT division
OTM	<i>Omilos Technikon Meleton, SA, Athens, Greece</i> Aris Gazetas , Professional Civil Engineer

Public Organizations

The following Greek public organizations contributed significantly in numerous ways.

LEEPKA	<i>35th Ephorate of Prehistoric and Classical Antiquities</i> Antonis Petropoulos , Professional Civil Engineer
EPPO-ITSAK	<i>Institute of Engineering Seismology & Earthquake Engineering</i> Christos Karakostas , PhD, Research Director Vassilios Lekidis , PhD, Research Director Konstantia Makra , PhD, Senior Researcher Basil Margaris , PhD, Researcher Konstantinos Morfidis , PhD, Researcher Christos Papaioannou , PhD, Research Director Manos Rovithis , PhD, Researcher Thomas Salonikios , PhD, Senior Researcher Alexandros Savvalidis , PhD, Senior Researcher Nikos P. Theodulidis , PhD, Researcher
NOA-IG	<i>National Observatory of Athens-Institute of Geodynamics</i> Ioannis Kalogeras , PhD, Seismologist and Researcher Director Melis N. , PhD, Research Director Evangelidis C. , PhD, Assistant Researcher Ganas A. , PhD, Research Director Papanikolaou M. , Associate of IG
EYDAP	<i>The Athens Water Supply and Sewerage Company</i> George Sachinis , Head of Operations Kostas Papadakis , Supervisor, Electromechanical Department Cleio Eleutheriou , Head of Water Operations

PROFESSIONAL SOCIETY AND INSTITUTIONS MEMBERS

This reconnaissance mission brought together professionals of multidisciplinary backgrounds, affiliated with various professional societies listed below. The team included 13 members of GEER, 32 members of EERI, 2 past presidents and the executive director of ATC, 15 members of Seismological Society of America (SSA), and 25 members of Hellenic Society of Earthquake Engineering (ETAM). Additionally, US Geological Survey (USGS), Multidisciplinary Center for Earthquake Engineering Research (MCEER), and Structural Engineering & Earthquake Simulation Laboratory (SEESL) were represented.

GEER

Bray J.D., Steering Committee chair
Frost J.D., Steering Committee member
O'Rourke T.D., Advisory Panel Member
Nikolaou S., Advisory Panel Member
Assimaki D., Member
Athanasopoulos-Zekkos A., Member
Hashash Y., Member
Papaioannou C., Member
Papathanassiou G., Member
Pitilakis D., Member
Stewart J.P., Member
Zekkos D., Member
Christine Z. Beyzaei, Recorder

EERI

Ken Elwood, EERI Board Member and LFE Committee Chair
Stewart J.P., LFE Advisory Committee, Earthquake Spectra Editor
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SSA	Assimaki D. , Member Deming, P. , Member Evangelidis C. , Member Gazetas G. , Member Hashash Y. , Member Kalogeras I. , Member Margaris B. , Member Melis N. , Member Mylonakis G. , Member Nikolaou S. , Member Papadimitiou A. , Member Papaioannou Ch. , Member Stewart J.P. , Member Theodulidis N. , Member Zerva, A. , Member	
ETAM	Pitilakis K. , President Vintzilaïou E. , Vice President Sextos A. , Secretary Gazetas G. , Board Member Psycharis I.N. , Board Member Bouckovalas G. , Member Garini E. , Member Karatzetzou A. , Member Klimis N.S. , Member Lekidis V. , Member Makra, K. , Member Makris N. , Member Margaris B. , Member Moretti M. , Member Mouzakis H. , Member Mylonakis G. , Member Nikolaou S. , Member Papathanasiou A. , Member Pitilakis D. , Member	

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MCEER	Whittaker A. , Director
SEESL	Constantinou M.C. , Deputy Director