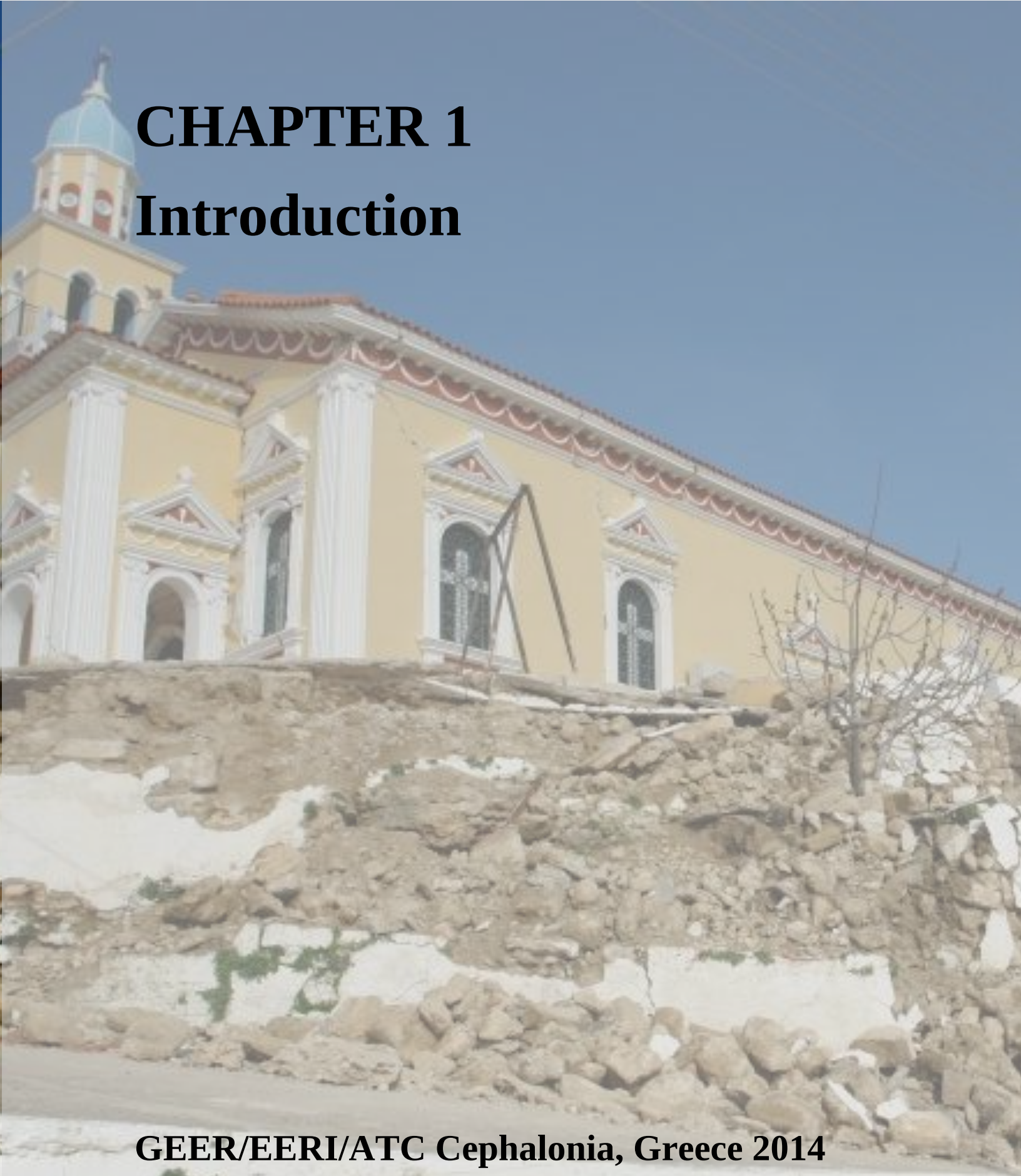
CHAPTER 1
Introduction



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

1 Introduction

Two major earthquakes with moment magnitudes of M_w = 6.0 and M_w = 6.1 hit the Cephalonia Island of Greece on January 26th and February 3rd of 2014, respectively. Cephalonia has a remarkable seismic history that can be traced back to antiquity. In 1953, the island was destroyed by a sequence of destructive shocks that caused more than 450 deaths. No lives were was lost during the 2014 earthquakes. The majority of the structures performed remarkably well considering they were subjected to ground motions that were often more than twice their elastic code design values probably due to significant site and topographic effects. However, damage to nonstructural elements was significant enough to affect life, business operations, and economy.

The reconnaissance mission of the Cephalonia earthquakes was unique for two main reasons: First, it brought together the local, highly qualified earthquake engineering community with the United States GEER/EERI/ATC group to form a multidisciplinary team of more than 70 people, who documented geotechnical, structural, and nonstructural observations. Second, the resiliency of the building stock, geostructures, and communities that responded successfully to one of the highest sequence of ground motions ever recorded in Europe provided the opportunity to focus on collecting data of successful performance in addition to failures – a new generation of reconnaissance.

The efforts after the Cephalonia earthquakes has yielded a number of invaluable datasets, lessons, and suggestions for future research. This report presents reconnaissance team observations on:

(i) seismological and recorded motions
(ii) geotechnical aspects
(iii) rigid blocks behavior
(iv) structural response
(v) infrastructure lifelines
(vi) nonstructural components response
(vii) economical and societal aspects.

Data collected, including instrumentation and design documentation, can be used in combination with much needed in-situ geotechnical testing and 3-D mapping to further understand the recorded ground motion. The information will also allow us to analyze and explain the successful response of the built and natural environment.