Earthquake Geology of Myanmar

Thesis by

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ABSTRACT

This thesis describes the active structures of Myanmar and its surrounding regions, and the earthquake geology of the major active structures. Such investigation is needed urgently for this rapidly developing country that has suffered from destructive earthquakes in its long history. To archive a better understanding of the regional active tectonics and the seismic potential in the future, we utilized a global digital elevation model and optical satellite imagery to describe geomorphologic evidence for the principal neotectonic features of the western half of the Southeast Asia mainland. Our investigation shows three distinct active structural systems that accommodate the oblique convergence between the Indian plate and Southeast Asia and the extrusion of Asian territory around the eastern syntaxis of the Himalayan mountain range. Each of these active deformation belts can be further separated into several neotectonic domains, in which structures show distinctive active behaviors from one to another.

In order to better understand the behaviors of active structures, we focused on the active characteristics of the right-lateral Sagaing fault and the oblique subducting northern Sunda megathrust in the second part of this thesis. The detailed geomorphic investigations along these two major plate-interface faults revealed the recent slip behavior of these structures, and plausible recurrence intervals of major seismic events. We also documented the ground deformation of the 2011 Tarlay earthquake in remote eastern Myanmar from remote sensing datasets and post-earthquake field investigations. The field observation and the remote sensing measurements of surface ruptures of the Tarlay earthquake are the first study of this kind in the Myanmar region.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Appendix 1

LIST OF TABLES