

# Chapter 4

## General Trends and New Perspectives on Landslide Mapping and Assessment Methods

**Murat Ercanoglu**  
*Hacettepe University, Turkey*

**Harun Sonmez**  
*Hacettepe University, Turkey*

### ABSTRACT

*Landslides and their consequences are of great importance throughout the world and they constitute an important responsibility on the damages and fatalities among the natural or man-made hazards. Landslide mapping and assessment studies have become a very important issue for the geoscientists and the decision makers to prevent from the consequences of the landslides, particularly in the last decades. In addition to the increase in population and poor economic conditions, unconsciously built settlements, located in the landslide-prone areas, were the most influencing factors on these losses and damages sourced from the landslides. This section particularly focuses on the landslide mapping and assessment methods considering the chronological development of these methods. In addition, this section also summarizes the landslide inventory, susceptibility, hazard and risk concepts, considering the scientific landslide literature. Furthermore, past-actual trends and new perspectives on these issues were also compiled to show the readers how this subject emerged and evolved progressively.*

### 1. INTRODUCTION

Natural hazards such as earthquakes, landslides, tsunamis, floods have been occurring on the Earth since the beginning of the planet. Actually, these events have been involved in the auto-dynamics of the Earth. But, if the human beings and their living environments are included in these natural events, they are transformed into the natural hazards. It means that if a natural event affects the people and

DOI: 10.4018/978-1-5225-7033-2.ch004

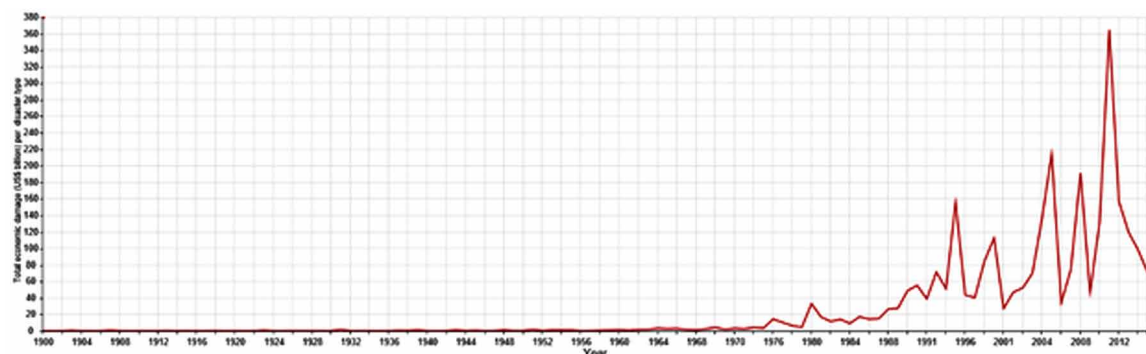
## General Trends and New Perspectives on Landslide Mapping and Assessment Methods

the inhabitants around them, it is called a natural hazard. These natural events, to some extent, natural hazards, not only affects the people but also harms their living environment including plants, animals, buildings, transportation lines etc. In other words, although these events are natural and they occur in nature, their deleterious consequences affect all living creatures and their environment. If so, who is guilty? Nature? Faults, soils and rocks as the geological materials? Of course, they are not. Human beings are mainly responsible for these consequences since they unconsciously build their residences, roads, living environments in the hazardous regions on the Earth, and cause irretrievable damages to their environment for their own needs. Of these natural events, the landslides play an important role on these losses and damages and they affect many people and the environment throughout the world. For example, when EM-DAT (Emergency Events Database) launched by CRED (The International Disaster Database, the Centre for Research on the Epidemiology of Disasters, CRED) database is examined, it is clear that the natural hazards affect many people and cause dramatic consequences all over the world. Based on a recent research from the internet link (<http://emdat.be>) performed for this chapter selecting the years between 1900-2015, disaster types as hydrological, meteorological and geophysical, number of total affected people sums up to 4954745590 with total deaths of 11260586, injured of 7387664 and 26033499164 (\*000 \$) of total damage. In this research, disaster type includes earthquake, extreme temperature, flood, landslide, mass movement (dry), storm and volcanic activity. Some research results related to all types in concern with respect to number of disasters and total economic damage are shown in Figure 1 and Figure 2.

*Figure 1. Number of disasters versus years (1900-2015)*



*Figure 2. Total economic damage versus years (1900-2015)*



28 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/general-trends-and-new-perspectives-on-landslide-mapping-and-assessment-methods/212937](http://www.igi-global.com/chapter/general-trends-and-new-perspectives-on-landslide-mapping-and-assessment-methods/212937)

## Related Content

---

### Integrated Management of Energy Resources in the Residential Sector Using Evolutionary Computation: A Review

Ana Soares, Álvaro Gomes and Carlos Henggeler Antunes (2015). *Soft Computing Applications for Renewable Energy and Energy Efficiency* (pp. 320-347).

[www.irma-international.org/chapter/integrated-management-of-energy-resources-in-the-residential-sector-using-evolutionary-computation/121401](http://www.irma-international.org/chapter/integrated-management-of-energy-resources-in-the-residential-sector-using-evolutionary-computation/121401)

### Creative Energy Alternatives: Cheap and Clean Future Energy for Turkey

Esin Okay (2017). *Renewable and Alternative Energy: Concepts, Methodologies, Tools, and Applications* (pp. 1984-2006).

[www.irma-international.org/chapter/creative-energy-alternatives/169664](http://www.irma-international.org/chapter/creative-energy-alternatives/169664)

### Evaluation of Renewable Energy Alternatives Using Hesitant Fuzzy TOPSIS and Interval Type-2 Fuzzy AHP

Baár Öztay and Cengiz Kahraman (2017). *Renewable and Alternative Energy: Concepts, Methodologies, Tools, and Applications* (pp. 1378-1412).

[www.irma-international.org/chapter/evaluation-of-renewable-energy-alternatives-using-hesitant-fuzzy-topsis-and-interval-type-2-fuzzy-ahp/169640](http://www.irma-international.org/chapter/evaluation-of-renewable-energy-alternatives-using-hesitant-fuzzy-topsis-and-interval-type-2-fuzzy-ahp/169640)

### Bondonic Electrochemistry: Basic Concepts and Sustainable Prospects

Mihai V. Putz, Marina A. Tudoran and Marius C. Mirica (2017). *Renewable and Alternative Energy: Concepts, Methodologies, Tools, and Applications* (pp. 277-359).

[www.irma-international.org/chapter/bondonic-electrochemistry/169599](http://www.irma-international.org/chapter/bondonic-electrochemistry/169599)

### Climate Change Discourse and Adaptation Narrative

(2018). *Innovative Strategies and Frameworks in Climate Change Adaptation: Emerging Research and Opportunities* (pp. 6-14).

[www.irma-international.org/chapter/climate-change-discourse-and-adaptation-narrative/191153](http://www.irma-international.org/chapter/climate-change-discourse-and-adaptation-narrative/191153)