

**CORRELATION BETWEEN ELECTROMAGNETIC PHENOMENA
AND EARTHQUAKE**

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ABSTRACT

The earthquake is earth event that causes damage and making many losses to people. This project is highlight about the correlation between electromagnetic phenomena and Earthquake. The studied is done by using MAGnetic Data Acquisition System (MAGDAS) data that received from Space Environment Research Center (SERC), Kyushu University. In this project, data are observed from one of MAGDAS station which is situated at Manado, Indonesia (1.44°N, 124.84°E) and the location that earthquake occurred is situated at Seram, Indonesia (3.595°S, 127.214°E) on 14 March 2006. The distance between these two locations is 619.602 km. The MAGDAS data is consist of three magnetic fields which are known as H, D and Z components. These three components were analyzed by examined their amplitude variation. In order to prove that any changed of these components related to Earthquake, the polarization ratio (Z/H) and Kp index were used. The MAGDAS data was processed by using MATLAB version R2007a. From this project, there had magnetic field enhancements for H, D and Z components within 3 to 10 days before the earthquake.

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CHAPTER 1

INTRODUCTION

1.1 PROJECT OVERVIEW

Earthquake is the result of a sudden release of energy in the earth's crust that creates seismic waves. The earthquakes are recorded using seismometer or seismograph. The size or magnitude of earthquakes is usually expressed in terms of the Richter scale which assigns levels from 1.0 or lower to 8.0 or higher. The earthquake causes damage buildings, bridges, dams, and other structures, as well as many natural features which make a lot of losses to peoples.

Space weather is the concept of changing environmental conditions in near-Earth space. It is distinct from the concept of weather within a planetary atmosphere but its deals with phenomena involving ambient plasma, magnetic fields, radiation, geomagnetic storm and other matter in space or in another word, we can correlate it with electromagnetic phenomena. Space weather often implicitly means the conditions in near-Earth space within the magnetosphere, but it is also studied in interplanetary space.