

## INTISARI

### INVERSI DUA DIMENSI DATA MAGNETOTELLURIK DI SESAR SAN ANDREAS

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Sesar San Andreas merupakan patahan geser kanan yang terletak di California, Amerika Serikat. Sesar ini terbentuk akibat dari pergerakan lempeng Pasifik (yang bergerak relatif ke arah barat laut) dan lempeng Amerika utara (yang bergerak ke arah tenggara). Sesar sepanjang hampir 1300 km ini terbagi menjadi 3 segmen, yaitu segmen utara, tengah, dan selatan. Penelitian di sesar San Andreas bagian utara sudah banyak dilakukan sejak gempa San Francisco 1906, namun tidak di bagian tengah dan selatan. Penelitian ini menggunakan data magnetotellurik (MT) untuk mengetahui distribusi resistivitas bawah permukaan di sesar San Andreas bagian tengah dan selatan. Data MT yang digunakan dalam penelitian ini terdiri dari 35 titik pengukuran MT digunakan dan dibagi menjadi 4 lintasan. Data MT berupa data impedansi dan tipper, yang kemudian dilakukan *masking*, analisa data, dan pemodelan inversi 2-D pada keempat lintasan.

Hasil pemodelan inversi 2-D data MT di keempat lintasan menunjukkan fitur resistif ( $>150$  Ohm.m) dan fitur konduktif ( $<10$  Ohm.m). Fitur resistif tampak di bagian barat dan timur sesar San Andreas yang diasosiasikan sebagai formasi batuan Salinian, formasi batuan Franciscan, dan lempeng Pasifik. Fitur Konduktif ditemukan di bawah zona sesar yang mengindikasikan sebagai *high-conductivity zone*. Fitur Konduktif juga ditemukan di bagian timur sesar San Andreas diasosiasikan sebagai *Nevada Volcanism*.

Kata-kata kunci : magnetotellurik, pemodelan, inversi 2-D, San Andreas.

## **ABSTRACT**

### **TWO DIMENSIONAL INVERSION OF MAGNETOTELURIC DATA IN THE SAN ANDREAS FAULT**

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The San Andreas Fault is a dextral strike-slip fault located in California, United States of America. This fault is formed due to the movement of the Pacific plate (which moves relatively northwest) and the North American plate (which moves southeast). This fault that has nearly 1300 km long is divided into 3 segments, which are northern, central, and southern segments. Many studies have been done in the northern segment since the 1906 San Francisco earthquake, but not in the central and southern parts. This study uses magnetotelluric (MT) data to determine the distribution of subsurface resistivity in the central and southern parts of the San Andreas fault. The MT data used in this study consisted of 35 sites and divided into four lines. MT data was provided in the form of impedance and tipper, which were then masked, analyzed, and modelled using 2-D inversion on all four lines.

The results of 2D inversion modeling on all four lines of MT data show resistive features ( $>150 \text{ Ohm.m}$ ) and conductive features ( $<10 \text{ Ohm.m}$ ). Resistive features are observed in the western and eastern parts of the San Andreas fault, associated with the Salinian Rock Formation, Franciscan Rock Formation, and the Pacific plate. The conductive features are found beneath the fault zone indicated as high conductivity zone. Conductive features were also found in the eastern part of the San Andreas fault associated with Nevada volcanism.

Keywords: magnetotelluric, modelling, 2-D inversion, San Andreas.