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Segments of the Sumatran Fault Zone

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Anggie Susilawati, Supriyadi, Yasuo Ogawa, Didik Sugiyanto, Doddy Sutarno

dan Wahyu Srigutomo

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	dan artikel yang disubmit		
2.	Bukti konfirmasi review (status	6 Agustus 2024	Lampiran 2
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## Lampiran 1.





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To: 

Lisa' Yihaa Roodhiyah

Fri 7/19/2024 11:51 PM

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Dear Ms. Roodhiyah,

We are writing to let you know that we have received the below submission to Applied Sciences for which you are listed as a co-author.

Manuscript ID: applsci-3140337

Type of manuscript: Article

Title: Interpretation of a 3-D Magnetotellurics Model of the Aceh and

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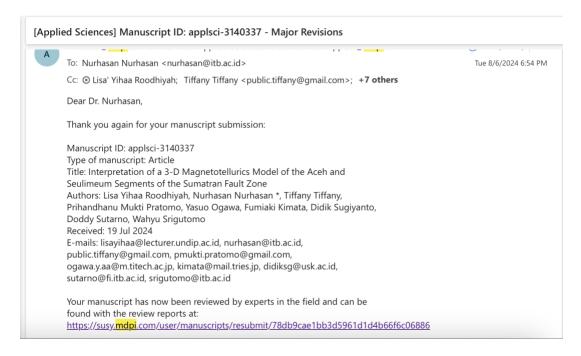
Authors: Lisa Yihaa Roodhiyah, Nurhasan Nurhasan \*, Tiffany Tiffany,

Prihandhanu Mukti Pratomo, Yasuo Ogawa, Fumiaki Kimata, Didik Sugiyanto,

Doddy Sutarno, Wahyu Srigutomo

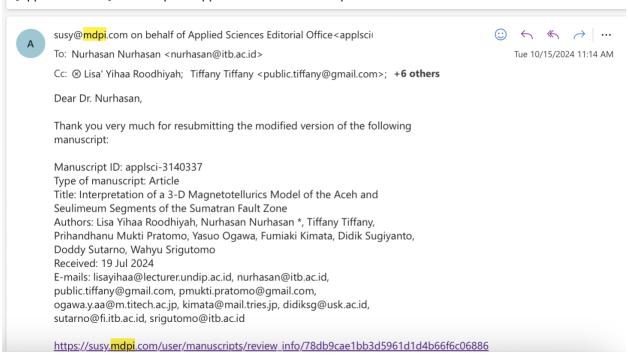
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## Lampiran 4.

#### [Applied Sciences] Manuscript ID: applsci-3140337 - Accepted for Publication



ronald.ci@mdpi.com on behalf of Applied Sciences Editorial Office<application

To: Nurhasan Nurhasan < nurhasan@itb.ac.id >

Cc: 
Stisa' Yihaa Roodhiyah; Tiffany Tiffany <public.tiffany@gmail.com>; +9 others

Dear Dr. Nurhasan,

Congratulations on the acceptance of your manuscript, and thank you for submitting your work to Applied Sciences:

Manuscript ID: applsci-3140337

Type of manuscript: Article

Title: Interpretation of a 3-D Magnetotellurics Model of the Aceh and

Seulimeum Segments of the Sumatran Fault Zone

Authors: Lisa Yihaa Roodhiyah, Nurhasan Nurhasan \*, Tiffany Tiffany,

Prihandhanu Mukti Pratomo, Anggie Susilawati, Supriyadi Supriyadi, Yasuo

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## Lampiran 5.

[Applied Sciences] Manuscript ID: applsci-3140337; doi: 10.3390/app142311335. Paper has been published.



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Thu 12/5/2024 1:13 PM

Wed 11/6/2024 2:27 PM



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Dear Authors,

We are pleased to inform you that your article "Interpretation of a 3D Magnetotellurics Model of the Aceh and Seulimeum Segments of the Sumatran Fault Zone" has been published in Applied Sciences and is available online at the following links:

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Article

# Interpretation of a 3D Magnetotellurics Model of the Aceh and Seulimeum Segments of the Sumatran Fault Zone

Lisa Yihaa Roodhiyah <sup>1,2</sup>, Nurhasan <sup>1,\*</sup>, Tiffany <sup>1</sup>, Prihandhanu Mukti Pratomo <sup>1</sup>, Anggie Susilawati <sup>3</sup>, Supriyadi <sup>1</sup>, Yasuo Ogawa <sup>4</sup>, Didik Sugiyanto <sup>5</sup>, Doddy Sutarno <sup>1</sup> and Wahyu Srigutomo <sup>1</sup>

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Abstract: The Sumatran Fault runs from the southeast (SE) to the northwest (NW) of Sumatra Island, with the highest slip rates reaching about 3.0 cm per year in the northwestern part. There is a seismic gap along this fault, including the northern Aceh domain, which consists of the Aceh and Seulimeum fault segments. Previous studies have used various methods to investigate the Sumatran Fault system, including seismic, geoelectric, gravity anomaly, and magnetotellurics (MT). The MT method has proven advantageous as it can non-destructively image a wide range of depths. However, previous studies using the two-dimensional (2D) MT inversion did not represent realistic information of the subsurface conditions. Therefore, a three-dimensional (3D) MT data inversion was used in this study to obtain more realistic information about the resistivity structure of the Aceh and Seulimeum segments. The results confirmed that the Sumatran Fault is a strike-slip fault, with a relatively northwest (NW)-southeast (SE) direction of conductivity strike with an angle of S 71.61° E from Groom-Bailey decomposition of MT data. The 3D resistivity distribution model from 33 stations showed that the Aceh Fault Segment is 20-30 km away, while the Seulimeum Fault Segment is 55-60 km away based on the MT data. The results also indicated a creeping zone at a depth of 2 km beneath the Aceh Fault Segment. Different rock formations were identified beneath the fault system, with the western part of the Aceh Segment dominated by high-resistivity metamorphic rocks (150–1000  $\Omega$ m) from the Triassic–Cretaceous age. The zone between the Aceh and Seulimeum fault segments exhibited low resistivity, characterized by volcanic rocks (1–15  $\Omega$ m) from the Lam Teuba Volcanic Formation and the Indrapuri Formation. Beneath the eastern part of the Seulimeum Fault Segment was found to consist of low-resistivity quaternary volcanic rocks (1–15  $\Omega$ m) and high-resistivity and esite rocks (4.5  $\times$  10<sup>4</sup>–1.7  $\times$  10<sup>5</sup>  $\Omega$ m). These findings correlated well with the geological map.



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