

**LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING**

Judul Karya Ilmiah : The use of a MLP neural network for analysis and aodeling of land use changes with variations variable of physical and economic social

Jumlah Penulis : 4 Orang (S Subiyanto, A Sukmono, N Bashit and **F J Amarrohman**)

Status Pengusul : Penulis ke-4

Identitas Prosiding :

- a. Judul Prosiding : Geomatics International Conference 2019
- b. ISBN/ISSN : Online ISSN: 1755-1315, Print ISSN: 1755-1307
- c. Thn Terbit, Tempat Pelaks. : 2019, Surabaya, Indonesia
- d. Penerbit/Organiser : IOP Publishing
- e. Alamat Repository/Web : <https://iopscience.iop.org/article/10.1088/1755-1315/389/1/012029>
- f. Alamat Artikel : <https://iopscience.iop.org/article/10.1088/1755-1315/389/1/012029/pdf>
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Semarang,

Reviewer 2



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Reviewer 1



Moehammad Awaluddin, S.T., M.T.
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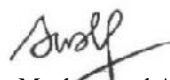
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d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	9,00		8,00
Total = (100%)	30,00		27,00
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Penelitian dengan topik geodesi di bidang kewilayahan ini menggunakan metode MLP neural network, dengan kajian teori yang lengkap dan metode yang terstruktur jelas. Kedalaman pembahasan sudah cukup baik.
- Kecukupan dan kemutakhiran data/informasi dan metodologi:**
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Semarang,

Reviewer 1



Moehammad Awaluddin, S.T., M.T.
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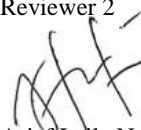
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Semarang,

Reviewer 2



Arief Laila Nugraha, S.T., M.Eng.

NIP. 198105302006041001

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Document type

Conference Paper • Bronze Open Access

Source type

Conference Proceedings

ISSN

17551307

DOI

10.1088/1755-1315/389/1/012029

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The use of a MLP neural network for analysis and modeling of land use changes with variations variable of physical and economic social

Subiyanto S.^a, Sukmono A.^a, Bashit N.^a, [Amarrohman F.J.^a](#)[Save all to author list](#)^a Geodesy Department, Faculty of Engineering, Diponegoro University, Indonesia

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The use of a MLP neural network for analysis and modeling of land use changes with variations variable of physical and economic social

S Subiyanto, A Sukmono, N Bashit and F J Amarrohman

Geodesy Department, Faculty of Engineering, Diponegoro University, Indonesia

Abstract. Modeling the land use changes is a method that used to understand the causes and effects of dynamic changes. The model in this research is the ANN model with Multi-layer Perceptron (MLP) network architecture and backpropagation algorithm. The Artificial Neural Network (ANN) method is a potential method for land change as well as test the predictive abilities that will be produced by the model. Land use change modeling uses a combination of ANN and GIS methods. The aim of this research are (1) predict land use and land use change in Banyumanik District in 2011, 2015 and 2019, (2) build the land use model using the ANN method and (3) predict of land use in Banyumanik District in 2027. To predict the land use change is use Markov Chain models. The purpose of modeling land changes is as well as the factors that drive these changes. Some of the drivers of land use changes are physical and socio-economic variables. Physical variables are distance to road, distance to river, distance to agricultural and vacant land, elevation, slope, and climate. Whereas the economic variables are population density, and market land prices. Physical data variables obtained from high resolution satellite image processing. For socio-economic variables data are obtained from statistical data and field surveys. In this research, the model is carried out in a framework with various variables that are different, so that the best model is obtained. Cramer's V value each variable is tested to see the relationship between these variables.

1. Introduction

The Changes in land use and land cover (LULC) can be analyzed using the model [1]. The model used is a technique or method used to determine the causes by dynamic changes caused [2]. [3] Conducted a model of land use change in Siak Regency to find out the process and patterns of changes that occur and the variables that drive these changes. [4] Modeling with changes models in demographic and physical factors in land use or closure in Costa Rica, including reciprocity of land use or self-closure of the above factors. [5] Conducted a research of decreasing availability of vacant land due to an increase in residential areas which was followed by an increase in fair market land prices in Banyumanik Regency, Semarang City.

The benefits of the land use change model are used for environmental impact studies [6]. Future land use planning and policies can be seen from the results of the final analysis of modeling changes in use. Some researchers model changes in land use using various methods. [3] Uses modeling using the Multinomial Logistic Regression (MLR) method. The results of this modeling were successfully built



Landslides hazards assessment using geographic information system and remote sensing: Gakenke District

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Abstract. Gakenke district is located in the Northern Province of Rwanda and is known as the district with several landslide events. Assessment of landslide in Rwanda has not been a problem until the weather changed frequently with heavy rainy season. The purpose of conducting this study was due to massive movement of earth having impacts on roads infrastructures, community, and negative impacts for the planners and decision makers. Remote sensing and Geographical Information system methods were used in the study for the assessment of landslide hazard occurrence, weighted overlay model was used where the different triggering factors were considered and scored according to the relationship between causative factor contribution the and landslides and then weighted for producing landslides vulnerability map. The results revealed that Gakenke is vulnerable to landslides and this is due to the most triggering factors: slope that present 40% with 30% of the land cover in addition to rainfall having 20% and 10% of Gakenke District soil type of this area. Landslide hazard map of Gakenke have been created using GIS by combining the causing factors. Hence, an updated map of exposed areas in Gakenke District to landslide could be prepared taking into account different points

1. Introduction

Earth's surface is changing through both folding and faulting forces, triggering movements in the terrain's crust and on its surface. Landslides are downward movement of slant materials such as rocks, debris or soils due to gravitational pull. Landslide is the one of the natural disasters in the world which causes loss of life, harms, and destroy properties in year [1]. Sideways plate boundaries people are to be exposed to earthquakes or volcanic activity, people who live close to the coast may be exposed to floods or tsunamis, and societies who live in hilly areas could be affected by sweeps. Landslides occur naturally in all parts of the world and are termed differently subject on factors such as material structure and rapidity of movement [2].

Rwanda is currently vulnerable to change of climate conditions as it takes more precipitation which is very significant in agriculture even rural and cities livelihoods met with irregular situation from drowning and landslides disasters. Rwanda is located in equatorial Africa, with a shortage of data to produce strong climate projections. Having realized that most of families in the affected areas are regularly living with agricultural and livestock activities, there is a need to know effects that caused

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Impact of Kigali City master plan implementation on living conditions of urban dwellers: case of Nyarugenge District in Rwanda

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Abstract. The increasing population and inadequate planning resulted in informal settlements and poor social infrastructures in Kigali City. As response, the Kigali City authority adopted the Kigali City Master Plan (KCMP) to guide the urban development. However, no evaluations of the KCMP implementation has been carried out. This study assessed therefore the level of KCMP implementation and its impact on living conditions of urban dwellers in Nyarugenge District. We evaluated the KCMP implementation using Geographical Information System (GIS) overlay analysis, based on indicators of degree of conformity: accordance, unfulfillment and deviation. We assessed the impact of KCMP implementation using a paired sample t-test analysis to compare the availability/accessibility of urban quality of life indicators before and after the adoption of the KCMP. The results indicated that the level of KCMP implementation is low due to zoning categories and construction standards that are not affordable for low-income citizens. Nevertheless, this implementation has partly improved dwellers' living conditions through the provision of some elements of urban quality of life. The KCMP should be revised thereby considering the affordability of its implementation by different stakeholders including low-income populations. Further researches should assess negative impacts of KCMP implementation on living conditions of urban dwellers.

1. Introduction

Rural-urban migration has been causing a rapid population growth in Kigali City, resulting in the emergence of informal settlements and poor social infrastructures [1]. To handle this problem, the planning authority of Kigali City adopted a legal framework which guides and regulates urban planning and development in Kigali City. This legal framework includes among others the detailed Master Plans for Nyarugenge, Gasabo and Kicukiro Districts. These detailed Master Plans were later integrated into a single Kigali City Master Plan that was approved in 2013 for the entire City of Kigali [2]. The Kigali City Master Plan has several objectives and some of them are related to the improvement of living



The seismogenic source on the deep lateral ramp of Sumatra accretionary wedge inferred from the source model of the 2009 mw 7.6 Padang, Indonesia, earthquake

I D M A Sanjiwani¹, K E Ching¹, and I M Anjasmara²

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Abstract. The 2009 Mw 7.6 Padang earthquake has been inferred as an intraslab event because it locates at approximately 80 km depth which is within the oceanic slab with maximum curvature. However, the major trench-parallel-striking normal faulting event usually occurs at this tectonic environment but not the trench-normal-striking reverse event like this 2009 Padang earthquake. To solve this enigma, the coseismic displacements were estimated based on the analysis of daily coordinate time series calculated by GAMIT software from 15 continuous GPS stations along the Sumatra region. The maximum horizontal displacement is approximately 58.3 mm toward SW at the MSAI station while the maximum vertical displacement reaches 16.1 mm. The optimized geometry parameters of the source fault were determined by the Markov Chain Monte Carlo using the uniform-slip dislocation model. The optimized strike and dip of fault plane are 80^{circ} and 57^{circ}, respectively. The coseismic slip distribution was then estimated using the distributed-slip dislocation model in terms of optimized fault geometry. The geodetic moment of 1.35 x 10²⁷ dyne-cm in our best-fit model is equivalent to Mw 7.39. The coseismic slip mainly ranges 28-70 km in depth with the maximum slip of 2000 mm. The optimized source fault plane is also comparable to the relocated aftershock distribution. Comparing to the location of interface, our source fault is mainly located at the place above the interface. We therefore proposed that this 2009 Padang earthquake occurred in the deep part of accretionary wedge, but not with the slab. In addition, we also proposed this 2009 event as a lateral ramp event because its strike is normal to the trench, such as the 2010 Jaishian earthquake in Taiwan. Finally, we proposed that a thick-skinned deformation may be also represented in the prism of Sumatra subduction zone.

1. Introduction

A current study purposed by [1] shows that their joint analysis of geodetic and seismic waveform data initiated the Padang earthquake was an intraslab event and ruptured primarily downdip and to the southwest. In the previous study, the depth sections emphasize the agreement between the larger magnitude aftershock locations between 74 and 97 km depth. However, [2] and [3] define a shallow portion of a slab as a depth range 20 - 60 km and judge either is intraslab by observing the focal mechanism and depths. Generally, intraslab earthquakes

