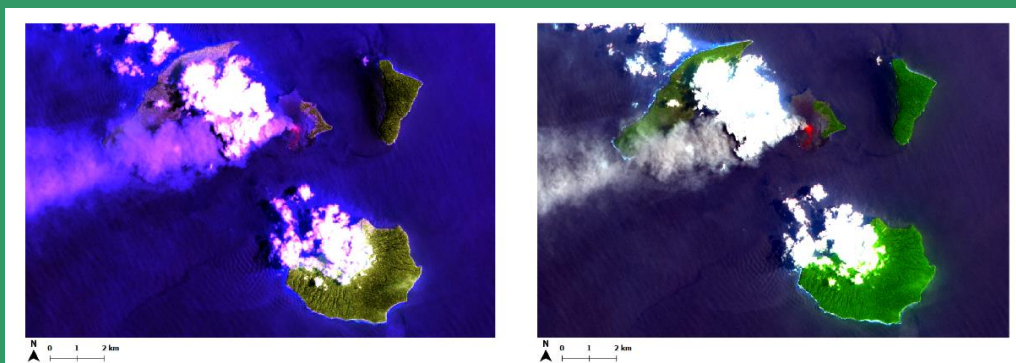
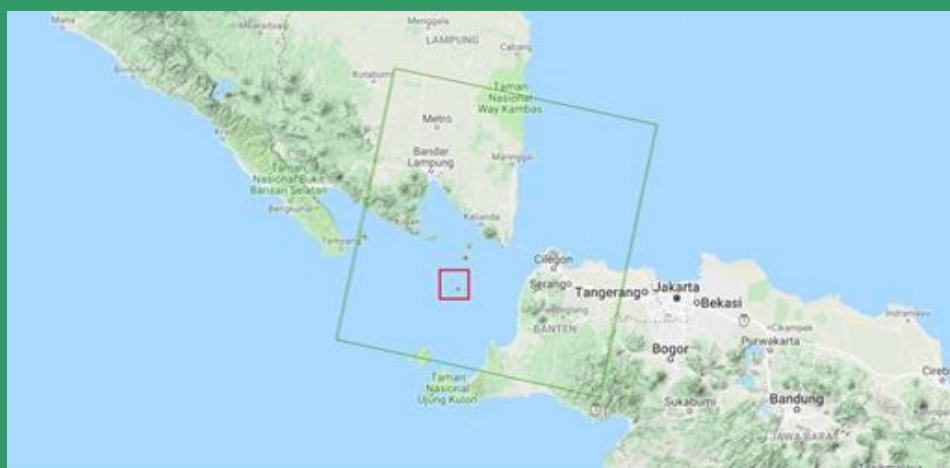




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Editorial Committee Preface

Dear IJReSES Readers,

There is no special day except today. Today, we deliver this journal volume to you all readers. We are sorry for a bit late on publishing this volume due to a very tight discussion on selection, review, and accept the papers. In total, we received 23 papers for publication. Four papers were rejected, 9 papers are accepted and published, and 10 papers are under review for the next publication.

From 9 papers published in this volume, we can divide into two categories of research. The first is remote sensing technology research. Those are Analysis of Antenna Specification for Very High Resolution Satellite Data Acquisition through Direct Receiving System (DRS) and Geometric Aspects Evaluation of GNSS Control Network for Deformation Monitoring in the Jatigede Dam Region. The second is the remote sensing application. Those are Accuracy Evaluation of Structure From Motion Thermal Mosaicing in The Center of Tokyo, Observing The Inundated Area Using Landsat-8 Multitemporal Images and Determination Of Flood-Prone Area in Bandung Basin, Mangrove Forest Change in Nusa Penida Marine Protected Area, Bali - Indonesia using Landsat Satellite Imagery, Detecting The Lava Flow Deposits From 2018 Anak Krakatau Eruption using Data Fusion Landsat-8 Optic And Sentinel-1 SAR, Preliminary Study of Horizontal and Vertical Wind Profile Of Quasi-Linear Convective Utilizing Weather Radar Over Western Java Region, Indonesia, Preliminary Detection of Geothermal Manifestation Potential using Microwave Satellite Remote Sensing, and The Utilization of Remote Sensing Data To Support Green Open Space Mapping In Jakarta, Indonesia.

Finally, enjoy your reading of the IJRESES Vol. 15 No. 2 December 2018, and please refer this journal content for your next research and publication. For editorial team members and the journal secretariat, thank you very much for all big supports for this volume publication.

Editor-in-Chief,

Dr M. Rokhis Khomarudin

Editorial Committee Members
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ABSTRACT

MAPPING APATITE-ILMENITE RARE EARTH ELEMENT MINERALIZED ZONE USING FUZZY LOGIC METHOD IN SIJUK DISTRICT, BELITUNG/ Muhamad Iqbal Januadi Putra, Sobirin IJRESES, 15 (1) 2018 : 1- 14

District of Sijuk located in Belitung Island is rich with non-lead mineral content. As the part of Southeast Asia's Lead Belt, the presence of Apatite-ilmenite Rare Earth Element formed by the region's geological condition is very likely. However, there has not been any activity to map and identify the apatite-ilmenite distribution in this region. Therefore, the objective of this study was to map the mineralized apatite-ilmenite in Sijuk District. Using remote sensing technology, Landsat 8 OLI were utilized to map the distribution of mineralized apatite-ilmenite rare earth element. Alteration mineral carrier, geological structure, and lithology data were all used as variables. Landsat-8 was pre-processed using band ratio and Directed Principal Component Analysis (DPCA) method for gaining alteration variable. The fuzzy logic method was then deployed for integrating all data. The result of this research showed the potential distribution of mineralized apatite-ilmenite with a total area of 1,617 ha. The most prioritized areas for apatite-ilmenite mineral exploitation are located in Air Seruk Village's IUP (Izin Usaha Pertambangan/Mining Business License), Sijuk Village's IUP, and Batu Itam Village's IUP. This study also illustrates the orientation of the metal utilization of apatite-ilmenite in district Sijuk.

Keywords: *Apatite-ilmenite; fuzzy logic; Landsat 8; Rare earth elements*

SPECTRAL ANALYSIS OF THE HIMAWARI-8 DATA FOR HOTSPOT DETECTION FROM LAND/FOREST FIRES IN SUMATRA/ Hana Listi Fitriana, Sayidah Sulma, suwarsono, Any Zubaidah, Indah Prasasti IJRESES, 15 (1) 2018 : 15-24

Himawari-8 is the last generation of the low spatial resolution satellite imagery that has capability to detect the thermal variation on the earth of every 10 minute. This must be very potential to be used for detecting land/forest fire. This paper has explored the spectral prospective of the Himawari-8 for detecting land/forest fire hotspot. The main objective for this study is to identify the potential use of Himawari-8 for detecting of land forest fire hotspot. The study area was performed in Ogan Komering Ilir, South of Sumatra, which on 2015 occur great forest/land fire event. The main process included in this study are image projection, training sample collection and spectral statistical analysis measured by calculate statistic, they are average values, standard deviation values from reflectance visible band value and brightness temperature value, beside that validation of data obtained from medium resolution data of Landsat 8 with the similar acquisition time. The study found that the Himawari-8 has good capacity to identify land/forest fire hotspot as expressed for high accuracy assessment using band 3 and band 7.

Keywords: *Himawari-8; hotspot; spectral*

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ABSTRACT

THREE-WAY ERROR ANALYSIS OF SEA SURFACE TEMPERATURE (SST) BETWEEN HIMAWARI-8, BUOY, AND MUR SST IN SAVU SEA/ Bambang Sukresno, Rizki Hanintyo, Denny Wijaya Kusuma, Dinarika Jatisworo, Ari Murdimanto, Rizki Hanintyo, Denny Wijaya Kusuma, Dinarika, Jatisworo, Ari Murdimanto IJRESES, 15 (1) 2018 : 25-36

Variance errors of Himawari-8, buoy, and Multi-scale Ultra-high Resolution (MUR) SST in Savu Sea have been investigated. This research used level 3 Himawari-8 hourly SST, in situ measurement of buoy, and daily MUR SST in the period of December 2016 to July 2017. The data were separated into day time data and night time. Skin temperature of Himawari-8 and subskin temperature of MUR SST were corrected with the value of $15 \hat{\Delta} T_{\text{dept}}$ before compared with buoy data. Hourly SST of Himawari-8 and buoy data were converted to daily format by averaging process before collocated with MUR SST data. The number of 2,264 matchup data are obtained. Differences average between Himawari-8, buoy and MUR SST were calculated to get the value of variance (V_{ij}). Using three-way error analysis, variance errors of each observation type can be known. From the analysis results can be seen that the variance error of Himawari-8, buoy and MUR SST are 2.5 oC, 0.28oC and 1.21oC respectively. The accuracy of buoy data was better than the other. With a small variance errors, thus buoy data can be used as a reference data for validation of SST from different observation type.

Keywords: *Sea surface temperature (SST); Himawari-8; Buoy data; MUR SST; Validation*

BIOMASS ESTIMATION MODEL FOR MANGROVE FOREST USING MEDIUM-RESOLUTION IMAGERIES IN BSN CO LTD CONCESSION AREA, WEST KALIMANTAN/ Sendi Yusandi, I Nengah Surati Jaya, Fairus Mulia IJRESES, 15 (1) 2018: 37-50

Mangrove forest is one of the forest ecosystem types that have the highest carbon stock in the tropics. Mangrove forests have a good assimilation capability with their environmental elements as well as on carbon sequestration. However, the availability of data and information on carbon storage, especially on tree biomass content of mangrove is still limited. Conventionally, an accurate estimation of biomass could be obtained from terrestrial measurements, but those methods are very costly and time-consuming. This study offered an alternative solution to overcome these limitations by using remote sensing technology, i.e. by using Landsat 8 and SPOT 5. The objective of this study is to formulate the biomass estimation model using medium resolution satellite imagery, as well as to develop a biomass distribution map based on the selected model. The study found that the NDVI of Landsat 8 and SPOT 5 have considerably high correlation coefficients with the standing biomass with a value of higher than 0.7071. On the basis of the values of aggregation deviation, mean deviation, bias, RMSE, χ^2 , R^2 , and s , the best model for estimating the mangrove stand biomass for Landsat 8 is $B=0.00023404 e(20 \text{ NDVI})$ with the R^2 value of 77.1% and $B=0.36+25.5 \text{ NDVI}^2$ with the R^2 value of 49.9% for SPOT 5. In general, the concession area of Bina Silva Nusa (BSN) Group (PT Kandelia Alam and PT Bina Ovivipari Semesta) have the potential of biomass ranging from 45 to 100 ton per ha.

Keywords: *mangrove forests; biomass; model; score; NDVI*

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ABSTRACT

STUDY ON POTENTIAL FISHING ZONES (PFZ) INFORMATION BASED ON S-NPP VIIRS AND HIMAWARI-8 SATELLITES DATA/ Sartono Marpaung, Teguh Prayogo, Kuncoro Teguh Setiawan, Orbita Roswintiarti
IJRESES, 15 (1) 2018: 51-62

Sea surface temperature (SST) data from S-NPP VIIRS satellite has different spatial resolution with SST data from Himawari-8 satellite. In this study comparative analysis of potential fishing zones information from both satellites has been conducted. The analysis was conducted on three project areas (PA 7, PA 13, PA 19) as a representation Indonesian territorial waters. The data used were daily for both satellites with a period time from August 2016 to December 2016. The method used was Single Image Detection (SIED) to detect thermal fronts. Method of mass center point for determining potential fishing zones coordinate point from result thermal front detection. Furthermore, an analysis of overlapping was done to compare the coordinate point information from both satellites. Based on data analysis that had been done, the result showed that potential fishing zones coordinate points of Himawari-8 satellite was mostly far from potential fishing zones coordinate point of S-NPP VIIRS. The coordinate points whose positions were close together or nearly same from both satellites was only about 20 %. Differences in potential fishing zones coordinate positions occur due to the effect of different spatial resolutions of both satellite data and the size of the front thermal events that had high variability. The ideal potential fishing zones coordinate points information was probably a combination of the potential fishing zones coordinate points of S-NPP VIIRS and Himawari-8 by making two adjacent coordinate points to be a single coordinate point. Field validation testing was required to prove the accuracy of the coordinate point.

Keywords: Potential fishing zones; S-NPP VIIRS; Himawari-8; satellite; coordinate points

WATERMARKING METHOD OF REMOTE SENSING DATA USING STEGANOGRAPHY TECHNIQUE BASED ON LEAST SIGNIFICANT BIT HIDING/ Destri Yanti Hutapea, Octaviani Hutapea
IJRESES, 15 (1) 2018: 63-70

Remote sensing satellite imagery is currently needed to support the needs of information in various fields. Distribution of remote sensing data to users is done through electronic media. Therefore, it is necessary to make security and identity on remote sensing satellite images so that its function is not misused. This paper describes a method of adding confidential information to medium resolution remote sensing satellite images to identify the image using steganography technique. Steganography with the Least Significant Bit (LSB) method is chosen because the insertion of confidential information on the image is performed on the rightmost bits in each byte of data, where the rightmost bit has the smallest value. The experiment was performed on three Landsat 8 images with different area on each composite band 4,3,2 (true color) and 6,5,3 (false color). Visually the data that has been inserted information does not change with the original data. Visually, the image that has been inserted with confidential information (or stego image) is the same as the original image. Both images cannot be distinguished on histogram analysis. The Mean Squared Error value of stego images of all three data less than 0.053 compared with the original image. This means that information security with steganographic techniques using the ideal LSB method is used on remote sensing satellite imagery.

Keywords: *Steganography; least significant bit; security*

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ABSTRACT

**LAPAN-A3 SATELLITE DATA ANALYSIS FOR LAND COVER CLASSIFICATION (CASE STUDY: TOBA LAKE AREA, NORTH SUMATRA)/ Jalu Tejo Nugroho, Zylshal, Dony Kushardono
IJRESES, 15 (1) 2018: 71-80**

LAPAN-A3 is the 3rd generation satellite for remote sensing developed by National Institute of Aeronautics and Space (LAPAN). The camera provides imagery with 15 m spatial resolution and able to view a swath 120 km wide. This research analyzes the performance of LAPAN-A3 satellite data to classify land cover in Toba Lake area, North Sumatera. Data processing starts from the selection of region of interest up to the assessment of accuracy. Supervised classification with maximum likelihood approach and confusion matrix method was applied to classify and evaluate the assessment results. The land cover is classified into five classes; water, bare land, agriculture, forest and secondary forest. The result of accuracy test is 93.71%. It proves that LAPAN-A3 data could classify the land cover accurately. The data is expected to complement the need of the satellite data with medium spatial resolution.

Keywords: *LAPAN-A3 micro satellite; land cover; pixel-based classification*

**COMPARISON OF MODEL ACCURACY IN TREE CANOPY DENSITY ESTIMATION USING SINGLE BAND, VEGETATION INDICES AND FOREST CANOPY DENSITY (FCD) BASED ON LANDSAT-8 IMAGERY (CASE STUDY: PEAT SWAMP FOREST IN RIAU PROVINCE) /Faisal Ashaari, Muhammad Kamal, Dede Dirgahayu
IJRESES, 15 (1) 2018: 81-92**

Identification of a tree canopy density information may use remote sensing data such as Landsat-8 imagery. Remote sensing technology such as digital image processing methods could be used to estimate the tree canopy density. The purpose of this research was to compare the results of accuracy of each method for estimating the tree canopy density and determine the best method for mapping the tree canopy density at the site of research. The methods used in the estimation of the tree canopy density are Single band (green, red, and near-infrared band), vegetation indices (NDVI, SAVI, and MSARVI), and Forest Canopy Density (FCD) model. The test results showed that the accuracy of each method: green 73.66%, red 75.63%, near-infrared 75.26%, NDVI 79.42%, SAVI 82.01%, MSARVI 82.65%, and FCD model 81.27%. Comparison of the accuracy results from the seventh methods indicated that MSARVI is the best method to estimate tree canopy density based on Landsat-8 at the site of research. Estimation tree canopy density with MSARVI method showed that the canopy density at the site of research predominantly 60-70% which spread evenly.

Keywords: *Tree canopy density; single band; vegetation indices; FCD*

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ABSTRACT

**ANALYSIS OF LAND USE SPATIAL PATTERN CHANGE OF TOWN DEVELOPMENT USING REMOTE SENSING/ Samsul Arifin, Mukhoriyah, Dipo Yudhatama
IJRESES, 15 (1) 2018: 93-102**

The Assessment of the physical character of a city is considered relatively easier than the social-cultural aspects. It is important to recognize the type of city form and to predict the behavior of people in the city and its surrounding. Due to those characteristics, the study of the pattern of physical development of the city is required. The objective of research is to analyze the change of spatial pattern of the city due to the city growing by remote sensing. The multitemporal data of Landsat 5/7/8 year 2000, 2006 and 2015 in Jabodetabek area were used. The classification technique had been done and it produced five classes of land uses. Those are water, built-up area, vegetation, other land use and no data. The results of the analysis in Jabodetabek area (Jakarta, Bogor, Depok, Tangerang and Bekasi) show that there was land use changes from vegetation and other land use area to built-up area with an average accuracy of 78% in each year. The pattern of physical development of the city looks linear from year 2000 until year 2006, which is confirmed as concentric pattern from year 2006 to 2015. Based on those analysis, it confirmed that the city development in Jakarta as the center was influenced by the spatial land development of the surrounding cities of Depok, Bogor, Bekasi and Tangerang. The pattern of spatial development from 2000 to 2006 in Bogor, Bekasi and Depok areas is Linear pattern, whereas from 2006 - 2015 the pattern of spatial development shows Propagation Concentric pattern. For Tangerang Region in 2000-2015 its development is patterned Propagation Concentric.

Keywords: *Analysis; Spatial; Remote Sensing; Pattern; Development*

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ABSTRACT

ACCURACY EVALUATION OF STRUCTURE FROM MOTION THERMAL MOSAICING IN THE CENTER OF TOKYO/ Atik Nurwanda, Tsuyoshi Honjo, Nobumitsu Tsunematsu, Hitoshi Yokoyama IJRESES, 15 (2) 2018: 103-112

In the airborne and high-resolution measurement of Land Surface Temperature (LST) over large area, capturing and synthesizing of many images are necessary. In the conventional method, the process of georeferencing a large number of LST images is necessary to make one large image. Structure from Motion (SfM) technique was applied to automatized the georeferencing process. We called it "SfM Thermal Mosaicing". The objective of this study is to evaluate the accuracy of SfM thermal mosaicing in making an orthogonal LST image. By using airborne thermal images in the center of Tokyo, the LST image with the 2m resolution was created by using SfM thermal mosaicing. Its accuracy was then analyzed. The result showed that in the whole examined area, the mean error distance was 4.22m and in the small parts of the examined area, the mean the error distance was about 2m. Considering the image resolution, the error was minimal indicating good performance of the SfM thermal mosaicing. Another advantage of SfM thermal mosaicing is that it can make precise orthogonal LST image. With the progress of UAV and thermal cameras, the proposed method will be a powerful tool for the environmental researches on the LST.

Keywords: accuracy evaluation; the center of Tokyo; georeferencing; structure from motion; land surface temperature; orthogonal

ANALYSIS OF ANTENNA SPECIFICATION FOR VERY HIGH RESOLUTION SATELLITE DATA ACQUISITION THROUGH DIRECT RECEIVING SYSTEM (DRS)/ Muchammad Soleh, Ali Syahputra Nasution, Arif Hidayat, Hidayat Gunawan, Ayom Widipaminto IJRESES, 15 (2) 2018: 113-130

Very High Resolution Satellite Image (VHRSI) data for Indonesian Government license is required by ministries/agencies, TNI, police, and local government to support national programs. But Indonesia did not have a VHRSI data recipient facility to directly acquire this data. In accordance with Law 21/2013 on Space, LAPAN is mandate to provide high resolution satellite data, and based on a roadmap for provision of satellite data in 2017, LAPAN will provide a VHRSI data reception facility through direct receiving system (DRS). This will be more efficient than other methods in providing the data. Priority provision of satellite data is for acquiring Pleiades and TerraSAR-X operating in the frequency range 8 GHz (X-Band). Therefore, to receive both data, it requires antenna subsystem with optimum coverage throughout Indonesia. Parameters to obtain the minimum antenna specifications include Free Space Loss (FSL), Carrier to Noise Ratio (C/No) and Antenna Gain to Noise Temperature (G/T). The calculation of G/T antenna is done for both satellites based on satellite parameters and analysis of antenna product availability in the market. Based on the calculation of satellite parameters shows that the minimum G/T value with the elevation of 5 degrees is 27.71 dB/K for Pleiades data reception and the minimum G/T value of 26.10 dB/K for the TerraSAR-X data reception. In general, the minimum G/T value for receiving the Pleiades and TerraSAR-X data is at 28 dB/K. While based on the calculation of antenna products availability in the market is require G/T value of 33.45 dB /K for the elevation of 5 degrees with a diameter of 7.5 mm antenna. This can be conclude that the antenna products meets the minimum requirements specification and to receive both satellite data. However, both calculation for the antenna subsystem still will be evaluated further in order to be directly installed at Parepare Remote Earth Station (SPBJ), South Sulawesi.

Keywords: VHRSI; Optic; SAR; Direct Receiving System (DRS); Antenna

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ABSTRACT

OBSERVING THE INUNDATED AREA USING LANDSAT-8 MULTITEMPORAL IMAGES AND DETERMINATION OF FLOOD-PRONE AREA IN BANDUNG BASIN/Fajar Yulianto, Suwarsono, Sayidah Sulma, Muhammad Rokhis Khomarudin IJRESES, 15 (2) 2018: 131-140

Flood is the most frequent hydro-meteorological disaster in Indonesia. Flood disasters in the Bandung basin result from increasing population density, especially in the Citarum riverbank area, accompanied by land use changes in upstream of the Citarum catchment area which has disrupted the river's function. One of the basic issues that need to be investigated is which areas of the Bandung basin are prone to flooding. This study offers an effective and efficient method of mapping flood-prone areas based on flood events that have occurred in the past through the use of historical remote sensing image data. In this research, Landsat-8 imagery was used to observe the inundated area in the Bandung basin in the past (2014–2018) using an improved algorithm, the modified normalized water index (MNDWI). The results of the study show that MNDWI is the appropriate parameter to be used to detect flooded areas in the Bandung basin area that have heterogeneous land surface conditions. The flood-prone area was determined based on flood events for 2014 to 2018, identified as inundated areas in the images. The estimation of the flood-prone area in the Bandung basin is 11,886.87 ha. Most of the flood-prone areas are in the subdistricts of Rancaekek, Bojongsoang, Solokan Jeruk, Ciparay, Cileunyi, Bale Endah and Cikancung. This area geographically or naturally is a water habitat area. Therefore, if the area will be used for residential, this will have consequences that flood will always be a threat to the area.

Keywords: *inundated area; flood-prone area; Bandung basin; Landsat-8; MNDWI*

MANGROVE FOREST CHANGE IN NUSA PENIDA MARINE PROTECTED AREA, BALI - INDONESIA USING LANDSAT SATELLITE IMAGERY/August Daulat, Widodo Setiyo Pranowo, Syahrial Nur Amri IJRESES, 15 (2) 2018: 141-156

Nusa Penida, Bali was designated as a Marine Protected Area (MPA) by the Klungkung Local Government in 2010 with support from the Ministry of Marine Affairs and Fisheries, Republic of Indonesia. Mangrove forests located in Nusa Lembongan Island inside the Nusa Penida MPA jurisdiction have decreased in biomass quality and vegetation cover. It's over the last decades due to influences from natural phenomena and human activities, which obstruct mangrove growth. Study the mangrove forest changes related to the marine protected areas implementation are important to explain the impact of the regulation and its influence on future conservation management in the region. Mangrove forest in Nusa Penida MPA can be monitored using remote sensing technology, specifically Normalized Difference Vegetation Index (NDVI) from Landsat satellite imagery combined with visual and statistical analysis. The NDVI helps in identifying the health of vegetation cover in the region across three different time frames 2003, 2010, and 2017. The results showed that the NDVI decreased slightly between 2003 and 2010. It's also increased significantly by 2017, where a mostly positive change occurred landwards and adverse change happened in the middle of the mangrove forest towards the sea.

Keywords: *mangrove changes; Nusa Penida MPA; remote sensing; NDVI*

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ABSTRACT

**DETECTING THE LAVA FLOW DEPOSITS FROM 2018 ANAK KRAKATAU ERUPTION USING DATA FUSION LANDSAT-8 OPTIC AND SENTINEL-1 SAR/ Suwarsono, Indah Prasasti, Jalu Tejo Nugroho, Jansen Sitorus, Djoko Triyono
IJRESES, 15 (2) 2018: 157-166**

The increasing volcanic activity of Anak Krakatau volcano has raised concerns about a major disaster in the area around the Sunda Strait. The objective of the research is to fuse Landsat-8 OLI (Operational Land Imager) and Sentinel-1 TOPS (Terrain Observation with Progressive Scans), an integration of SAR and optic remote sensing data, in observing the lava flow deposits resulted from Anak Krakatau eruption during the middle 2018 eruption. RGBI and the Brovey transformation were conducted to merge (fuse) the optical and SAR data. The results showed that optical and SAR data fusion sharpened the appearance of volcano morphology and lava flow deposits. The regions are often constrained by cloud cover and volcanic ash, which occurs at the time of the volcanic eruption. The RGBI-VV and Brovey RGB-VV methods provide better display quality results in revealing the morphology of volcanic cone and lava deposits. The entire slopes of Anak Krakatau Volcano, with a radius of about 1 km from the crater is an area prone to incandescent lava and pyroclastic falls. The direction of the lava flow has the potential to spread in all directions. The fusion method of optical Landsat-8 and Sentinel-1 SAR data can be used continuously in monitoring the activity of Anak Krakatau volcano and other volcanoes in Indonesia both in cloudy and clear weather conditions.

Keywords: lava flow; Anak Krakatau; data fusion; Landsat-8; Sentinel-1 SAR

**GEOMETRIC ASPECTS EVALUATION OF GNSS CONTROL NETWORK FOR DEFORMATION MONITORING IN THE JATIGEDE DAM REGION/Made Ditha Ary Sanjaya, T. Aris Sunantyo, Nurrohmat Widjajanti
IJRESES, 15 (2) 2018: 167-176**

Many factors led to dam construction failure so that deformation monitoring activities is needed in the area of the dam. Deformation monitoring is performed in order to detect a displacement at the control points of the dam. Jatigede Dam deformation monitoring system has been installed and started to operate, but there has been no evaluation of the geometry quality of control networks treated with IGS points for GNSS networks processing. Therefore, this study aims to evaluate the geometric quality of GNSS control networks on deformation monitoring of Jatigede Dam area. This research data includes the GNSS measurements of five CORS Jatigede Dam stations (R01, GG01, GCP04, GCP06, and GCP08) at doy 233 with network configuration scenarios of 12 IGS points on two quadrants (jat1), three quadrants (jat2), and four quadrants (jat3 and jat4). GNSS networks processing was done by GAMIT to obtain baseline vectors, followed by network processing using parameter method of least squares adjustment. Networks processing with least squares adjustment aims to determine the most optimal by precision and reliability criterion. Results of this study indicate that network configuration with 12 IGS stations in the two quadrants provides the most accurate coordinates of CORS dam stations. Standard deviations value of CORS station given by jat1 configuration are in the range of 2.7 up to 4.1 cm in X-Z components, whereas standard deviations in the Y component are in the range 5.8 up to 6.9 cm. An optimization assessment based on network strength, precision, and reliability factors shows optimum configuration by jat1.

Keywords: Jatigede dam; control network; IGS; GNSS

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ABSTRACT

PRELIMINARY STUDY OF HORIZONTAL AND VERTICAL WIND PROFILE OF QUASI-LINEAR CONVECTIVE UTILIZING WEATHER RADAR OVER WESTERN JAVA REGION, INDONESIA /Abdullah Ali, Riris Adrianto, Miming Saepudin IJRESES, 15 (2) 2018: 177-186

One of the weather phenomena that potentially cause extreme weather conditions is the linear-shaped mesoscale convective systems, including squall lines. The phenomenon that can be categorized as a squall line is a convective cloud pair with the linear pattern of more than 100 km length and 6 hours lifetime. The new theory explained that the cloud system with the same morphology as squall line without longevity threshold. Such a cloud system is so-called Quasi-Linear Convective System (QLCS), which strongly influenced by the ambient dynamic processes, include horizontal and vertical wind profiles. This research is intended as a preliminary study for horizontal and vertical wind profiles of QLCS developed over the Western Java region utilizing Doppler weather radar. The following parameters were analyzed in this research, include direction pattern and spatial-temporal significance of wind speed, divergence profile, vertical wind shear (VWS) direction, and intensity profiles, and vertical velocity profile. The subjective and objective analysis was applied to explain the characteristics and effects of those parameters to the orientation of propagation, relative direction, and speed of the cloud system's movement, and the lifetime of the system. Analysis results showed that the movement of the system was affected by wind direction and velocity patterns. The divergence profile combined with the vertical velocity profile represents the inflow which can supply water vapor for QLCS convective cloud cluster. Vertical wind shear that effect QLCS system is only its direction relative to the QLCS propagation, while the intensity didn't have a significant effect.

Keywords: horizontal and vertical wind profile; QLCS; doppler weather radar; Western Java Region; Indonesia

PRELIMINARY DETECTION OF GEOTHERMAL MANIFESTATION POTENTIAL USING MICROWAVE SATELLITE REMOTE SENSING/Atriyon Julzarika, Udhi Catur Nugroho IJRESES, 15 (2) 2018: 187-198

The satellite technology has developed significantly. The sensors of remote sensing satellites are in the form of optical, Microwave, and LIDAR. These sensors can be used for energy and mineral resources applications. The example of those applications are height model and the potential of geothermal manifestation detection. This study aims to detect the potential of geothermal manifestation using remote sensing. The study area is the Northern of the Inverse Arc of Sulawesi. The method used is remote sensing approach for its preliminary detection with 4 steps as follow (a) mining land identification, (b) geological parameter extraction, (c) preparation of standardized spatial data, and (d) geothermal manifestation. Mining lands identification is using Vegetation Index Differencing method. Geological parameters include structural geology, height model, and gravity model. The integration method is used for height model. The height model integration use ALOS PALSAR data, Icesat/GLAS, SRTM, and X SAR. Structural geology use dip and strike method. Gravity model use physical geodesy approach. Preparation of standardized spatial data with re-classed and analyzed using Geographic Information System between each geological parameter, whereas physical geodesy methods are used for geothermal manifestation detection. Geothermal manifestation using physical geodesy approach in Barthelmes method. Grace and GOCE data are used for gravity model. The geothermal manifestation detected from any parameter is analyzed by using geographic information system method. The result of this study is 10 area of geothermal manifestation potential. The accuracy test of this research is 87.5 % in 1.96 σ . This research can be done efficiently and cost-effectively in the process. The results can be used for various geological and mining applications.

Keywords: The Northern of Inverse Arc of Sulawesi; geothermal manifestation; remote sensing; gravity model

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ABSTRACT

**THE UTILIZATION OF REMOTE SENSING DATA TO SUPPORT GREEN OPEN SPACE MAPPING IN JAKARTA, INDONESIA/Hana Listi Fitriana, Sayidah Sulma, Nur Febrianti, Jalu Tejo Nugroho, Nanik Suryo Haryani
IJRESES, 15 (2) 2018: 199-208**

Green open space becomes critical in maintaining the balance of the environment and improving the quality of urban living for a healthy life. The use of remote sensing data for calculation of green open space has been done notably using NDVI (Normalized Difference Vegetation Index) method from Landsat 8 and SPOT data. This research aims to calculate the accuracy of the green open space classification from multispectral data of Landsat 8 and SPOT 6 using the NDVI methods. Green open space could be assessed from the value NDVI. The value of NDVI generated from Landsat 8 and SPOT 6's Red and NIR channels. The accuracy of NDVI values is then examined by comparing with Pleiades data. Pleiades data which has 50 cm panchromatic resolution and 2 m multispectral with 4 bands (B, G, R, NIR) can precisely visualize objects. So, it can be used as the reference in the calculation of the green open space based on NDVI. The results of the accuracy testing of Landsat 8 and SPOT 6 image could be used to identify the green open space by using NDVI SPOT of 6 can increase the accuracy of 5.36% from Landsat 8.

Keywords: *green open space; NDVI; Remote sensing*