

ANALISIS HUBUNGAN INDEKS IKLIM GLOBAL (*Sea Surface Temperature* NINO 3.4 DAN *Southern Oscillation Index*) TERHADAP VARIABILITAS CURAH HUJAN DI KABUPATEN CILACAP JAWA TENGAH

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INTISARI

Curah hujan merupakan bagian dari siklus air di bumi, yang saling berhubungan dengan sistem iklim di bawah atmosfer. Akibat kegiatan manusia, termasuk pertanian itu sendiri, iklim global mengalami perubahan, dan mengakibatkan terjadi perubahan curah hujan. Penelitian ini bertujuan untuk melihat hubungan antara curah hujan dengan indeks iklim global yang direpresentasikan dengan *Sea Surface Temperature* (SST) Nino 3.4 dan *Southern Oscillation Index* (SOI). Penelitian dilakukan di Kabupaten Cilacap Provinsi Jawa Tengah yang memiliki area pertanian terluas di Jawa Tengah.

Analisis korelasi dilakukan menggunakan metode *Principal Component Analysis* (PCA). Hasil menunjukkan korelasi antara curah hujan di Kabupaten Cilacap dengan *Southern Oscillation Index* (SOI) memiliki nilai (r) sebesar 0,25 dan dengan *Sea Surface Temperature* (SST) Nino 3.4 memiliki nilai (r) sebesar -0,31. Prediksi curah hujan rata-rata tahunan (2019 – 2023) menggunakan *Adaptive Neuro Fuzzy Inference System* (ANFIS) menghasilkan range nilai curah hujan antara 284 – 2.525 mm/ tahun.

Kata Kunci: *Sea Surface Temperature* (SST) Nino 3.4, *Southern Oscillation Index* (SOI), Curah Hujan, Cilacap

ANALYSIS OF THE CORRELATION BETWEEN GLOBAL CLIMATE INDICES (*Sea Surface Temperature NINO 3.4 AND Southern Oscillation Index*) AND THE RAINFALL VARIABILITY IN CILACAP REGION CENTRAL JAVA

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ABSTRACT

Rainfall is a part of hydrological cycle on the earth, which is interconnected with the climate system under the atmosphere. As a result of human activities, including the agriculture itself, the global climate is changing and furthermore rainfall is also changing. The purpose of this research was to investigate the relationship between rainfall and global climate indices which are represented by Sea Surface Temperature (SST) Nino 3.4 and Southern Oscillation Index (SOI). This research was conducted in Cilacap Region in Central Java Province which has the largest agricultural land area in the province.

The Correlation analysis was conducted by using Principal Component Analysis (PCA) method. The result showed correlation between rainfall in Cilacap region and Southern Oscillation Index (SOI) has the (r) value of 0.25 and the correlation between rainfall in Cilacap region and Sea Surface Temperature (SST) Nino 3.4 has the (r) value of -0.31. The annual average rainfall prediction for 2019-2023 using Adaptive Neuro Fuzzy Inference System (ANFIS) had the result of 284-2,525 mm/year rainfall.

Keywords: Sea Surface Temperature (SST) Nino 3.4, Southern Oscillation Index (SOI), Rainfall, Cilacap