

ABSTRACT

Saiful Pomahiya, 2024. *MARKOV CHAIN MONTE CARLO MODELING USING BEAUFORT SCALE AND METROPOLIS-HASTINGS ALGORITHM. UNDERGRADUATE THESIS.* Gorontalo. Study Program of Statistics. Department of Mathematics. Faculty of Mathematics and Natural Sciences. Universitas Negeri Gorontalo.

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The use of Markov chain Monte Carlo and the Metropolis-Hastings algorithm aimed to predict wind speed transitions from one day to the next. The modeling was conducted using a transition probability matrix, which was calculated based on the Beta distribution with parameters obtained from the mean and variance of the data. Simulations were carried out using the Metropolis-hastings algorithm to predict the steady-state distribution, indicating wind speed stability. The research findings show that wind speed in Bone Bolango Regency can be categorized into several categories: calm, gentle breeze, and fresh breeze. The transition probability matrix indicates that if the wind is calm today, it will likely become a gentle breeze (60%) or a fresh breeze (40%) tomorrow. The Metropolis-Hastings simulation provides a steady-state distribution that illustrates the stability of wind speed from day to day.

Keywords: *Markov Monte Carlo, Beaufort scale, Metropolis-Hastings algorithm, transition probability matrix, Beta distribution.*



LEMBAR PENGESAHAN

Skripsi yang berjudul **"PEMODELAN RANTAI MARKOV MONTE CARLO
MENGUNAKAN SKALA BEAUFORT DAN ALGORITMA
METROPOLIS-HASTINGS"**

Oleh

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Hari, tanggal : Jum'at, 11 Oktober 2024

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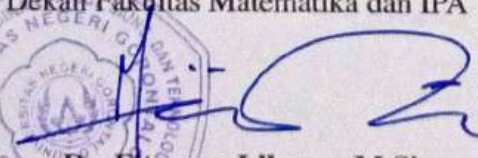
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