

MODEL PENYEBARAN ENDAPAN PASIR BESI DI MUARA SUNGAI PROGO DAN OPAK, KABUPATEN KULON PROGO DAN BANTUL, DAERAH ISTIMEWA YOGYAKARTA

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SARI

Endapan pasir besi merupakan potensi sumber daya mineral strategis yang banyak dijumpai di pesisir selatan Jawa. Di muara Sungai Progo dan Opak, sebaran dan karakter endapan menunjukkan variasi yang dipengaruhi oleh perbedaan sumber batuan dan sistem transportasi material. Penelitian ini bertujuan membangun model deskriptif penyebaran endapan pasir besi di bagian barat (Kulon Progo) dan timur (Bantul), dengan fokus pada keterkaitan antara sumber, jalur transportasi, dan ciri fisik endapan.

Objek penelitian adalah endapan pasir besi dari sistem aliran Sungai Progo dan Sungai Opak, yang masing-masing memiliki perbedaan ciri litologi dan kondisi geomorfologinya. Metode yang digunakan meliputi pengamatan geomorfologi untuk mengenali bentuklahan pengontrol akumulasi, pengambilan sampel di 22 titik yang mewakili variasi lokasi dan posisi geografis, analisis mineral butiran untuk mengidentifikasi komposisi mineral, serta pengujian derajat kemagnetan guna menilai penyebaran mineral magnetik.

Hasil menunjukkan bahwa endapan pasir besi Progo didominasi magnetit dengan nilai kemagnetan yang tinggi, terutama di zona gisik dan dekat muara. Endapan pasir besi Opak memiliki kandungan magnetit lebih rendah dan umumnya bersifat masif, tanpa struktur berlapis. Derajat kemagnetan cenderung menurun menjauhi muara dan garis pantai. Variasi kandungan mineral dan kemagnetan tidak selalu linear, menunjukkan pengaruh keberadaan mineral non-magnetik. Penelitian ini memberikan acuan awal dalam eksplorasi dan pemetaan sebaran pasir besi.

Kata kunci: model penyebaran, muara Sungai Opak, muara Sungai Progo, pasir besi

**BLACK SAND DEPOSIT DISTRIBUTION MODEL
AT THE RIVER MOUTHS OF THE PROGO AND OPAK RIVERS,
KULON PROGO AND BANTUL REGENCIES,
SPECIAL REGION OF YOGYAKARTA**

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ABSTRACT

Black sand deposits are a potential source of strategic mineral resources commonly found along the southern coast of Java. At the river mouths of the Progo and Opak Rivers, the distribution and characteristics of the deposits vary, influenced by differences in source rocks and material transport systems. This study aims to develop a descriptive model of black sand distribution in the western (Kulon Progo) and eastern (Bantul) coastal areas, focusing on the relationship between source, transport pathways, and physical characteristics of the deposits.

The research objects are black sand deposits derived from the fluvial systems of the Progo and Opak Rivers, each with distinct lithological and geomorphological features. The methods employed include geomorphological observation to identify landforms that control accumulation, sampling at 22 points representing a range of locations and geographic positions, grain mineral analysis to determine mineral composition, and magnetic susceptibility testing to evaluate the distribution of magnetic minerals.

The results show that Progo black sand deposits are dominated by magnetite with high magnetic susceptibility, particularly in the backshore zones and near the river mouth. In contrast, Opak black sand deposits contain less magnetite and are generally massive in structure, lacking clear stratification. Magnetic susceptibility tends to decrease with distance from both the shoreline and the river mouth. The variation in mineral composition and magnetism is not always linear, indicating the influence of non-magnetic minerals. This study provides an initial reference for exploration and mapping of black sand deposits.

Keywords: *black sand, distribution model, Opak river mouth, Progo river mouth*