



KAJIAN SEDIMEN TERSUSPENSI DI SUB-DAS BEDOG, DAERAH ISTIMEWA YOGYAKARTA

INTISARI

Sub-DAS Bedog merupakan bagian dari DAS Progo hilir. Sungai Bedog dalam penelitian ini memiliki hulu di lereng selatan Gunung Merapi dan tidak terdampak langsung oleh erupsi lahar tahun 2010. Data TSS di hilir Sungai Bedog tahun 2024 menunjukkan nilai tertinggi ketiga. Fenomena tersebut dapat dikorelasikan dengan kekritisitas DAS. Sub-DAS Bedog berperan penting terhadap sistem hidrologi di DIY menopang keberlangsungan ekosistem dan kebutuhan masyarakat di sekitarnya. Pemahaman terhadap dinamika aliran sungai merupakan hal krusial dalam upaya pengelolaan sumber daya air yang berkelanjutan. Penelitian ini bertujuan untuk: (1) Menganalisis korelasi tinggi muka air dengan debit aliran sungai (2) Menganalisis korelasi antara debit aliran sungai terhadap debit suspensi, serta (3) Mengetahui total muatan sedimen tersuspensi di hilir Sub-DAS Bedog. Pengambilan data primer berupa pemantauan tinggi muka air dan sampel suspensi menggunakan integrasi kedalaman dengan *equal-width-increment*, serta data sekunder *rating curve* debit pos pengukuran. Data diolah menggunakan persamaan lengkung debit dan lengkung sedimen serta pengujian korelasi. Total muatan suspensi dihitung pada 2015 – 2024. Terdapat korelasi yang kuat antara tinggi muka air dengan debit aliran pada fase naik dan turun adalah 0,95 dan 0,99. Begitu pula korelasi antara debit aliran dan debit suspensi fase naik dan turun adalah 0,97 dan 0,93 yang sama-sama mendekati 1. Hasil korelasi tersebut kemudian dikaitkan dengan beberapa faktor morfometri DAS seperti luas dan bentuk DAS, serta kemiringan lereng. Jumlah suspensi dihitung dari tahun 2015 – 2024 pada kisaran 3360,59 – 4550,29 ton/tahun. Akan tetapi, muatan sedimen yang terbawa pada tiap hektar masih tergolong sangat rendah yakni pada kisaran 0,291 – 0,393 ton/ha/tahun.

Kata kunci : Debit, Debit Suspensi, Korelasi, Sedimen

*STUDY OF SUSPENDED SEDIMENTS IN BEDOG SUB-BASIN,
SPECIAL REGION OF YOGYAKARTA*

ABSTRACT

Bedog sub-watershed is part of the downstream Progo watershed. The Bedog River in this study has its headwaters on the southern slope of Mount Merapi and was not directly affected by the 2010 lava eruption. TSS data in the downstream Bedog River in 2024 showed the third highest value. This phenomenon can be correlated with watershed criticality. Bedog sub-watershed plays an important role in the hydrological system in Yogyakarta to sustain the ecosystem and the needs of the surrounding communities. Understanding the dynamics of river flow is crucial for sustainable water resources management. This study aims to: (1) Analyze the correlation between water level and river flow discharge (2) Analyze the correlation between river flow discharge and suspension discharge, and (3) Determine the total suspended sediment load in the downstream Bedog Sub-watershed. Primary data were collected in the form of water level monitoring and suspension samples using depth integration with equal-width-increment, as well as secondary data on the discharge rating curve of the measurement post. Data were processed using the discharge curve and sediment curve equations and correlation testing. Total suspension load was calculated for 2015 - 2024. There is a strong correlation between water level and flow discharge in the rising and falling phases of 0.95 and 0.99, respectively. Similarly, the correlation between flow discharge and suspension discharge in the ascending and descending phases is 0.97 and 0.93 which are both close to 1. The correlation results are then associated with several watershed morphometric factors such as watershed area and shape, as well as slope. The amount of suspension was calculated from 2015 - 2024 in the range of 3360.59 - 4550.29 tons/year. However, the sediment load carried on each hectare is still very low in the range of 0.291 - 0.393 tons/ha/year.

Keywords: Discharge, Suspended Discharge, Correlation, Sediment