

INTISARI

Penelitian ini bertujuan untuk (1) mengetahui besarnya sumbangan sedimen Sungai Panasen dan Noongan yang masuk ke Danau Tondano, dan (2) mengetahui perubahan morfologi dasar danau pada muara Sungai Panasen dan Sungai Noongan.

Penelitian ini menggunakan data primer dan data sekunder. Data primer yang digunakan meliputi tinggi muka air sungai, kecepatan aliran, debit aliran, muatan suspensi, material dasar, kedalaman danau di sekitar muara Sungai Panasen dan Noongan dilakukan pengukuran langsung. Data sekunder meliputi curah hujan, kondisi geologi, hidrologi, tanah, penggunaan lahan, erosi dan agihan satuan lahan serta peta batimetri tahun 1995-1996. Sedimen total dihitung berdasarkan jumlah muatan suspensi dan muatan dasar. Metode MPM (Meyer-Peter-Muller) dan Livesey digunakan untuk menghitung muatan dasar. Perbandingan data batimetri pada 1995, 1996 dan 2000 digunakan untuk menjelaskan dan analisis laju pengendapan di Danau Tondano.

Hasil penelitian menunjukkan bahwa grafik debit suspensi dan sedimen total di Sungai Panasen dan Noongan ternyata tidak menurun dari hulu ke hilir. Besarnya sedimen total di bagian hulu Sungai Panasen yang lebih tinggi terpengaruh oleh penggunaan lahan untuk perkebunan cengkeh pada bagian hulunya. Analisis material dasar menunjukkan bahwa distribusi ukuran butir (d_{50} dan d_{90}) adalah antara pasir kasar sampai gravel kasar dengan ukuran antara 0,335-19,95 mm. Perbedaan besarnya erosi dan hasil sedimen terukur pada badan sungai menunjukkan proses pengendapan material selama pengangkutan. Pendangkalan pada danau antara 1995-1996 tidak hanya terpengaruh oleh masukan sedimen dari daerah aliran sungai Sungai Noongan dan Panasen tetapi juga terpengaruh oleh proses arus sepanjang pantai danau yang mengakibatkan erosi dan akresi garis pantai.

Kata kunci: sumbangan sedimen, pendangkalan, morfologi

SEDIMENT CONTRIBUTION OF PANASEN AND NOONGAN SUB CATCHMENT TO DEPOSITION OF TONDANO LAKE, NORTH SULAWESI PROVINCE

(Sediment Study of The Southern Tondano Upland Sub Catchment)

Abstract

The objectives of the research are (1) to know sediment contribution from Panasen and Noongan Sub Catchment into Tondano Lake, (2) to know the changes of bed morphology of the Tondano Lake on Panasen and Noongan river mouth.

The study was conducted by primary and secondary data. The primary data were current velocity, water river level and discharge, suspended load, bed load and depth of lake around mouth of Panasen and Noongan river. The secondary data include: rainfall, geology condition, hydrology, soil, land-use, erosion and land unit, and bathymetric map of 1995-1996. The total sediment yields determined by suspended and bed load. Bed loads was calculate by MPM (Meyer-Peter-Muller) and Livesey method. By comparing bathymetric data at 1995, 1996 and 2000, the deposition of Tondano Lake can be explain and analyses.

The results of the study show the suspended discharge rating curve and sediment discharge rating curve in Panasen and Noongan River from the upstream to downstream is not getting lower. The upstream of the Panasen river has total of sediment very high, it was affected by farming system of the clove cultivation in upland of the Panasen River. Analyses of bed material shows that the grain size (d_{50} and d_{90}) is coarse sand to coarse cobble (0,335-19,95 mm). There was different of the total erosion rate and sediment yield in the river course affected deposition material along transportatin. The rate of deposition on the lake bed between 1995 to 1996 was not only affected by sediment from the upstream, but also was influenced by longshore processes, which activated erosion and accresion of lake coast line.

Keywords: sediment contribution, deposition, morphology