ANALISIS HUJAN SIKLON TROPIS DAN KEJADIAN BENCANA BANJIR (STUDI KASUS SIKLON TROPIS CEMPAKA DAN DAHLIA TAHUN 2017)

Oleh
Sekar Aramitha Hapsarini
15/382343/GE/08113

INTISARI

Siklon tropis merupakan bencana hidrometeorologi dengan peningkatan kejadian di wilayah perairan selatan Indonesia selama 35 tahun terakhir. Kejadian Siklon tropis Cempaka dan Dahlia pada tahun 2017 merupakan kejadian siklon yang terbentuk paling dekat dengan wilayah Indonesia. Tujuan dari penelitian ini yaitu ; 1. Menganalisis karakteristik hujan pada saat kejadian Siklon tropis Cempaka dan Dahlia dan 2. Mengkaji kejadian banjir sebagai bencana turunan dari Siklon tropis Cempaka dan Dahlia.

Data yang digunakan pada penelitian ini yaitu data hujan harian wilayah terdampak Siklon tropis Cempaka dan Dahlia periode 21 November-4 Desember 2017, data kondisi siklon tropis, data CHIRPS *daily* 0,05^{o}, dan data kejadian banjir pada periode 21 November-4 Desember 2017. Analisis spasial hujan dilakukan dengan peta hujan wilayah yang dihasilkan melalui interpolasi Kriging. Analisis temporal hujan dilakukan melalui *diagram multiple-box plot* dan hietograf. Analisis kejadian banjir dilakukan melalui tabel silang kejadian banjir dan kejadian hujan.

Kesimpulan penelitian ini yaitu : (1) Hujan Siklon tropis Cempaka (Skala 1) pada periode puncak bervariasi pada kategori lebat (25,1-50 mm/hari) hingga badai ekstrem (lebih dari 250 mm/hari) dengan sebaran spasial mencakup wilayah daratan dengan jarak 16-180 kilometer dari pusat siklon. Sementara, hujan Siklon tropis Dahlia (Skala 2) pada periode puncak bervariasi pada kategori lebat (25,1-50 mm/hari) hingga badai (50,1-100 mm/hari) di wilayah daratan dengan cakupan 171-364 kilometer dari pusat siklon. (2) Banjir sebagai bencana turunan siklon tropis terjadi pada periode 26-28 November 2017 di wilayah dengan jarak 16-100 kilometer dari pusat Siklon tropis Cempaka. Sebagian besar kejadian banjir yang terjadi di wilayah tersebut merupakan banjir bandang yang terjadi pada fase puncak (28 November 2017) di wilayah bertopografi datar. Walaupun demikian, terdapat terdapat faktor lokal topografi dan bentuk lahan yang selanjutnya berpengaruh terhadap jenis kejadian banjir yang terjadi selama periode Siklon tropis Cempaka.

Kata kunci : Siklon tropis, Siklon tropis Cempaka, Siklon tropis Dahlia, Hujan Ekstrem, Banjir

ANALYSIS OF EXTREME RAINFALL DURING TROPICAL CYCLONE AND FLOOD EVENTS (CASE STUDY : CEMPAKA AND DAHLIA TROPICAL CYCLONE 2017)

by
Sekar Aramitha Hapsarini
15/382343/GE/08113

ABSTRACT

Tropical cyclone is a part of the hydrometeorological disaster event with the increasing trend for the past 35 years in the southern region of Indonesia. Cempaka and Dahlia Tropical cyclones (2017) occurred with the most nearby distance within the land territory that ever took place in Indonesia. The convective activity during tropical cyclone events had been increased intensively along with the following events of extreme rainfall, specifically in the area which directly fronting with the cyclonic convective area (TC). The aims of this research are ; 1. Analyzing the rainfall characteristic during Cempaka and Dahlia Tropical Cyclones and 2. Studying the flood event as the descendant impact of Cempaka and Dahlia events.

This study used daily rainfall data during November 21 th-December 4 th periode, Tropical Cyclone tracks data, Climate Hazard Group Infrared Precipitation with Station (CHIRPS) daily improve 0,05^{o}, and flood events data during the storms. Spatial analysis are done through daily rainfall map which processed with Kriging interpolation. Temporal analysis are done through multiple-box plot diagram and hyetograph. Flood events analysis are done through flood and rainfall events cross-table.

The conclusions of this research are ; (1) The storms during the peak periode of Cempaka tropical cyclone (November 28th 2017) had variation from heavy rainfall (25,1-50 mm/day) to extreme storm rainfall (more than 250 mm/day). This storms were spatially distributed in land regions which come under 16 to 180 kilometers from Cempaka TC. Likewise, the storms during the peak periode of Dahlia tropical cyclone (November 30th 2017) had variation from heavy rainfall (25,1-50 mm/day) to storm rainfall (50,1-100 mm/day) in land regions which come under 171-364 kilometers from Dahlia TC. (2) Flood events as the following impacts occurred on November 27th-29th in the land regions which come under 16-100 kilometers from Cempaka TC. Most of flood events had identified as flash flood that took place in flat area. However, there are local factor, such as topography and land form that had impacted flood events more specifically.

Key Words : Tropical Cyclone, Cempaka Tropical Cyclone, Dahlia Tropical Cyclone, Extreme Rainfall, Flash Flood