

ABSTRAK

Cuaca ekstrem seperti hujan lebat, suhu tinggi, dan angin kencang semakin sering terjadi di berbagai wilayah Indonesia. Namun keterbatasan data observasi di sejumlah wilayah menghambat kajian atmosfer secara menyeluruh., sehingga digunakan data reanalisis ERA5 sebagai alternatif karena mencakup banyak variabel, memiliki resolusi tinggi, dan tersedia secara global. Penelitian ini bertujuan untuk mengkaji secara sistematis literatur yang membahas pemanfaatan data ERA5 dalam analisis cuaca ekstrem di Indonesia. Artikel terpilih dianalisis menggunakan pendekatan studi literatur dan dilengkapi dengan visualisasi bibliometrik VOSviewer. Hasil penelitian menunjukkan bahwa curah hujan dan suhu udara merupakan variabel ERA5 yang paling sering digunakan, diikuti oleh angin dan kelembapan. Metode yang paling umum meliputi analisis statistik sederhana, validasi terhadap data observasi, komposit, dan visualisasi spasial. Meskipun data ERA5 dinilai unggul dalam hal cakupan dan ketersediaan variabel, beberapa keterbatasan tetap ditemukan, seperti akurasi yang kurang untuk skala harian dan perlunya koreksi bias. Analisis juga menemukan adanya kekosongan penelitian di wilayah Indonesia bagian timur serta belum banyaknya penggunaan variabel lanjutan dan model numerik.

Kata Kunci : *ERA5, cuaca ekstrem, studi literatur, reanalisis, VOSviewer*

ABSTRACT

Extreme weather such as heavy rain, high temperatures, and strong winds are increasingly occurring in various regions of Indonesia. However, limited observational data in several regions hampers comprehensive atmospheric studies, so ERA5 reanalysis data is used as an alternative because it covers many variables, has high resolution, and is available globally. This study aims to systematically review the literature discussing the use of ERA5 data in extreme weather analysis in Indonesia. Selected articles were analyzed using a literature study approach and complemented with VOSviewer bibliometric visualization. The results showed that rainfall and air temperature were the most frequently used ERA5 variables, followed by wind and humidity. The most common methods included simple statistical analysis, validation against observational data, composites, and spatial visualization. Although ERA5 data is considered superior in terms of coverage and availability of variables, several limitations were still found, such as poor accuracy for daily scales and the need for bias correction. The analysis also found a gap in research in eastern Indonesia and the lack of use of advanced variables and numerical models.

Keywords : ERA5, extreme weather, literature study, reanalysis, VOSviewer