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CORRESPONDENCE

'Megafire'—You May Not Like It, But You Cannot Avoid It

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ABSTRACT

Aim: The term 'megafire' is increasingly used to describe large fires worldwide. We proposed a size-based definition of megafire—fires exceeding 10,000 ha arising from single or multiple related ignition events. A recent perspective in *Global Ecology and Biogeography* argues against a size-based definition of megafire and suggest that the term is too emotive for scientific use. We highlight that many scientific terms originate from common terms. These terms are often defined once they enter the scientific

lexicon, enhancing both scientific understanding and public communication. We argue that standardised definitions facilitate better prediction, preparation, and management of fire events.
Location: Worldwide.
Time Period: 2022–2023.
Methods: We conducted an updated structured review of the term 'megafire' and its use and definition in the peer-reviewed scientific literature, collating definitions and descriptions and identifying the criteria frequently invoked to define the term.
Results: We demonstrate an increase in the use of 'megafire' in the scientific literature since our original definition in 2022, with many studies adopting the > 10,000 ha size-based criterion.
Main Conclusions: We contend that abandoning the term is neither practical, possible, nor beneficial. Instead, consistent usage underpinned by clear definitions is essential. Adopting a clear, size-based definition of megafire strengthens clarity and comparability across research and management practices globally. Precision in terminology is crucial for advancing research, improving communication, and informing effective fire management and policy.

1 | Introduction

'Megafire' is increasingly used to describe large fires globally, but its meaning has been ambiguous. To address this, we conducted a structured review of how megafire is used and defined in several languages across the peer-reviewed scientific literature (Linley et al. 2022). We proposed a size-based definition of megafire—fires exceeding 10,000 ha arising from single or multiple related ignition events—to establish an unambiguous, non-redundant, and universal definition that aligns with the most commonly used attribute (size) and thresholds (> 10,000 ha) for defining megafires. Aware that our definition may prove controversial, we invited discussion on how to define the term. Stoof et al. (2024) took up this offer and responded to our article, arguing against a size-based definition of megafire. In their considered perspective, they presented several arguments opposing a size-based definition and concluded that the term is too emotive and should be avoided by scientists. Below, we respond to their main points, ultimately concluding that a size-based threshold remains the best option for fostering clear communication among researchers, policymakers, and the public by providing a measurable, widely accepted benchmark that complements rather than replaces more nuanced descriptors of fire behaviour and impact.

1.1 | Scientific Language Often Has Its Roots Outside of the Scientific Literature

Stoof et al. (2024) point out that the term 'megafire' originated outside of science and continues to be used in a variety of contexts in public discourse. As such, they argue that "redefining a term widely used outside academia has the risk of creating a disconnect between science and practice". We reason that science does not operate in isolation from society; it interacts with and is shaped by broader cultural contexts, including language, which can enrich both domains.

There is a long history of the scientific community adopting and standardising terms from common usage. We offer three examples. First, 'El Niño' was originally used by Peruvian fishermen to describe the unusual warming of coastal waters around Christmas, which affected their fishing activities (Adamson 2023). The term has since been defined and used within the sciences by numerical thresholds related to sea surface temperatures and the Ocean Niño Index (Larkin and Harrison 2005). This led to a better understanding and refinement of El Niño events, which helped planning and preparation of region-specific weather forecasts (Larkin and Harrison 2005). For example, Larkin and Harrison (2005) demonstrate that distinguishing between El Niño events allows for more accurate predictions of U.S. seasonal temperature and precipitation anomalies.

Second, the term 'tsunami' was first recorded in a Japanese shogun's journal in 1611 and appeared in English print media in the 1800s (Cartwright and Nakamura 2008). Now frequently used in scientific literature, the term has been expanded and 'megatsunami' refers to a wave at least 100 m in height or an amplitude of 50 m at the source, coupled with extensive coastline inundation (Goff et al. 2014).

Third, the term 'hurricane' derives from 'huracán', a term from the language of the Indigenous Taino peoples of the Caribbean, describing a powerful storm or wind controlled by a supernatural deity (Neely 2016). The term was later adopted by the Spanish in the 15th century, who had never experienced these weather events (Neely 2016). Today, hurricanes are classified in the sciences using the Saffir-Simpson Hurricane Wind Scale, which categorises storms by wind speed, starting at 74 miles per hour for Category 1 storms.

These three examples illustrate how terms from common usage can enter scientific discourse and, through precise definition, contribute to scientific progress. Failing to define terms risks miscommunication, both within the scientific community and with the general public.

1.2 | Disturbance Events Should be Interpreted Relative to Context, But They Need Not Always be Defined By It

Stoof et al. (2024) referenced a 200-ha fire in the Netherlands and Germany that caused widespread damage in a region where the typical fire size is around 1–2 ha. A local landowner referred to this fire as a "megafire", and Stoof et al. (2024) asked "was this landowner wrong to call it a megafire?"—and answered— "We argue they were not".

We agree with Stoof et al. (2024) that fire impacts are context-dependent—relatively small fires can cause severe damage in areas unaccustomed to fire or even harm species and ecosystems restricted to small areas within fire-prone regions. But that does not mean that megafire cannot have a clear, unambiguous definition. Consider the classification of hurricanes. Hurricanes are defined primarily by a threshold of wind speed—a single, measurable parameter—even though they vary in other ways (e.g., size and extent, duration) and their impacts vary widely depending on differences in infrastructure, topography, and community preparedness. For example, although Hurricane Andrew (a Category 5 storm in 1992) and a comparable tropical cyclone in Bangladesh (1991) had similar maximum wind speeds, their impacts diverged dramatically: Andrew resulted in 23 fatalities in Florida, while the Bangladeshi cyclone claimed over 100,000 lives (Pausas and Leverkus 2023). Similarly, while a fire's consequences depend on many contextual factors, defining "megafire" by a size threshold provides a clear, operational benchmark. Just as it would be inaccurate to label a storm with 50 mph winds as a hurricane, it is essential to classify "megafire" based on an objective, quantifiable measure—namely, area burned—even if this does not capture every nuance of fire behaviour. Establishing clear definitions for events like hurricanes and megafires helps improve our understanding, prediction, and preparedness for their impacts.

Importantly, size-based definitions of megafire can coexist with other terms used to describe regional fire dynamics and that are defined by criteria that reflect other characteristics and their impacts. There are terms that already describe smaller yet extreme or impactful fires, such as 'environmentally extreme fire' which describes a fire event that is extreme in at least one fire dimension (e.g., size, intensity, severity) relative to a historical baseline (Linley et al. 2022), and 'wildfire disaster' and 'catastrophic fire', which are defined by their impacts (Tedim et al. 2018). A rich 'pyro-vocabulary' is needed to describe the complexity of fires and their impacts, whether it be detailing when, where, and how fires occur or differentiating the outcomes of wildfires and intentional fires used for agriculture, hunting, fuel reduction and biodiversity management (Kelly et al. 2023).

Stoof et al. (2024) highlight more general concerns with the prefix 'mega', arguing that it is akin to general descriptors such as hot, dry, warm, and cold. Mega is a common intensifier of nouns across scientific disciplines, evidenced by terms like megafauna, megacity, megaspore, megalith, and megadune, among others. In the context of natural disasters, we see its use in terms such as megaflood (Carling and Fan 2020), megatsunami (Goff et al. 2014), and megathrust earthquake (or megaquake) (Scholl et al. 2015). The 'mega' prefix has proven to be a valuable descriptor in various fields, emphasising the size or magnitude of the phenomena. While 'mega' serves as a general descriptor, terms like megafire, similar to megatsunami, specifically denote types of events that meet specific criteria. As we see it, the crux of the debate is determining which events qualify under the term 'megafire' and which do not.

1.3 | 'Megafire' is Here to Stay, So We Need Consistent Usage

One proposed option is "avoiding the term or leaving the term megafire to popular media" (Stoof et al. 2024). While Stoof et al. (2024) argue that varied use of the term justifies abandoning it, we reason its popularity requires the scientific community to provide a clear and accurate definition that can guide its use in both scientific and public discourse. Precision in scientific terminology is crucial for ensuring that terms are not only understood across the scientific community but also accurately convey the phenomena they describe. Clear definitions, like that provided for 'megafire,' are essential for advancing research, improving communication, and guiding effective management and policy-making. As fire behaviour changes due to climate change, maintaining a size-based classification, in combination with other terms and concepts, such as wildfire disaster, extreme wildfire event, and environmentally extreme fire, will allow us to track how the multiple dimensions of fire and fire regimes are shifting. Furthermore, by proposing the terms 'gigafire' and 'terafire', Linley et al. (2022) aimed to further extend this semantic approach, providing additional definitions that might help to better characterise fire events.

Linley et al. (2022) showed that the use of megafire is on a rapid incline in the scientific literature. Between January 1st 2022 and the 31st of December 2023, an additional (i.e., excluding those captured in Linley et al. 2022) 196 peer-reviewed articles mentioned or defined megafire, confirming the rapid, upward trajectory of the term's use (Figure 1). In total, 41% (81/196) of studies that mentioned megafire defined it. Of these, 86% (70/81) included fire size or area burned in their definition, and 42% (34/81) defined megafire in relation to fire size or area burned alone. A majority of megafire definitions included a specific size threshold (44/81), and, among these, the 10,000-ha threshold was used more than any other (20/44). Clearly, the term megafire is being increasingly used in the scientific literature, with the majority referencing a size threshold.

Given the widespread and increasing use of megafire across the peer-reviewed literature, the notion that scientists should abandon the term is both unrealistic and undesirable. Once a

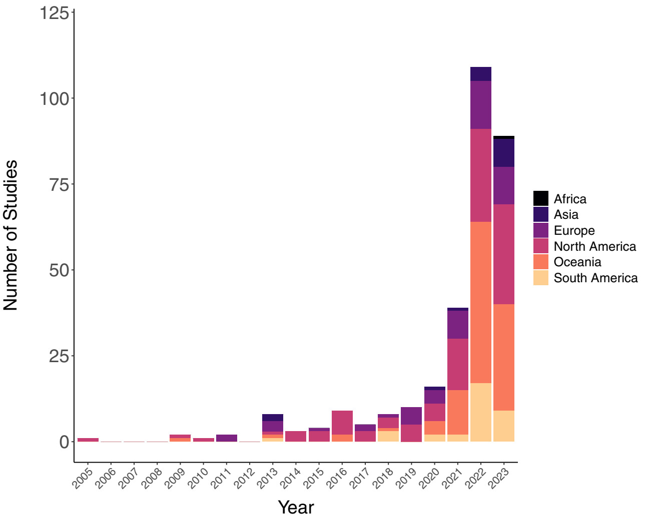

FIGURE 1 | The updated number of studies from Linley et al. (2022) that defined, described or reported a 'megafire' found during a structured review of the peer-reviewed scientific literature. Continent was assigned as that of the first author's primary affiliation. We have now updated this figure from Linley et al. (2022), to include data from 2022 and 2023.

term widely used by the public is adopted in peer-reviewed literature, scientists have a responsibility to ensure that the term is clearly defined and applied consistently. This enables accurate and meaningful communication among scientists, between scientists, and the broader public. The scientific community has a vital role in standardising terminology so that it is used consistently inside and outside of the peer-reviewed literature.

2 | Conclusion

The use of the term 'megafire' is increasing in the scientific literature. Given the intensification of fire-prone conditions in many regions, a universal size-based threshold serves as a practical tool for monitoring and comparing large wildfires, regardless of shifting baselines over time. Adopting a clear, size-based definition for megafire serves as a critical foundation for nuanced and scientifically robust discussions and research into fire management and impacts. Precision in terminology complements, rather than constrains, our understanding of complex environmental phenomena. While Stoof et al. (2024) raised important considerations about the term 'megafire', we argue for the value of adopting a clear, size-based definition. Such a definition does not preclude the examination of a fire's multifaceted impacts or reporting the size of individual fires, but rather provides a foundational criterion for classifying fire events. The approach we advocate aligns with the traditions of scientific inquiry because a size-based definition for megafire improves clarity and comparability across research endeavours, providing opportunities for more effective fire management and policy.

Author Contributions

G.D.L., C.J.J. and D.G.N. conceived the study. G.D.L. conducted the structured review. G.D.L., C.J.J., D.G.N. discussed and interpreted the data. G.D.L. and C.J.J. curated, analysed and visualised the data. G.D.L., C.J.J. and D.G.N. led the writing and revision of the manuscript with contributions from all authors.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data used in this study are openly available at zenodo.org: https://doi.org/10.5281/zenodo.14020711.

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