

Topics (T)

Understanding and Predicting the Climate Change for our Planet (1)

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CROWNING THE KING IN THE NORTH: THE NORTHWARD GREENBELT MIGRATION AND
THE QUEST FOR THE MOST RESILIENT PLANT

Abstract

Global warming is a pressing issue facing our planet, and understanding and predicting its effects is crucial for taking necessary action. As the world continues to experience the effects of global warming and climate change, one of the more interesting observations that can be said is in terms of the shift in vegetation distribution across the globe. It is predicted that there will be a significant rise in green vegetation in the northern hemisphere, as the global temperature rises. This phenomenon which can be referred to as the “Greenbelt migration”, has already been observed in some parts of the world, with vegetation moving northward at a rate of approximately 11 km per decade (Fei et al., 2017). As the Greenbelt migration continues, we can expect to see significant changes in the distribution of vegetation, with some species potentially disappearing from certain regions and others colonizing new areas. These changes will have consequences for the animals and insects that rely on these plants for food and habitat, leading to shifts in biodiversity.

The Paleocene-Eocene Thermal Maximum (PETM) can be an analog model for future anthropogenic global warming (Wing & Curran, 2013). In the geological record, with a rise in global temperature by about 5-8°C, the PETM has been one of the most extreme periods of global warming. It happened during the transition between the Paleocene and Eocene epochs, some 56 million years ago (Jardine, 2012). As one of the key questions to address in the changing climate of Earth and this migration is which plant species will be most resilient, leaf fossils from the PETM can reveal insights into how plants respond over time to rising temperatures due to carbon dioxide greenhouse gas emissions. The northward Greenbelt migration and the search for the most resilient plants not only could be seen as a testament to the resilience and adaptability of nature, but also reminiscent in some ways of the enthronement of the “King in the North” in George R.R. Martin’s fantasy series, *A Song of Ice and Fire*, or better known as *Game of Thrones*.

A systematic review will be undertaken by studying leaf fossils from the PETM, and looking at satellite images of global vegetation distribution together with satellite data on greenhouse gases, to both inform our mitigation and conservation responses and to shed light on the interplay of, as per Jardine (2012), “evolution, extinction, migration and climate change”.