



# Temperature rises, photosynthesis stops, forest dies

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Data from the International Space Station reveals that, in some tropical forests, a small percentage of forest leaves are exposed to extreme temperatures [1]. Scientists are concerned and warn that this trend may continue to escalate [2].

This is a consequence of the Earth's warming process, causing tropical forests to become excessively hot, potentially surpassing the maximum temperature threshold for leaves to photosynthesize. The ultimate result could be the collapse of the flora system [2].

Research indicates that the maximum temperature threshold for the photosynthetic process is 46.7°C. At the moment, a relatively small proportion, approximately 0.01% of all leaves, are exceeding this threshold each year. However, if the temperature rises by 4°C, the situation will become widespread, leading the forest to the tipping points and triggering a "cascade effect." It unfolds as Christopher Doughty, an associate professor of ecoinformatics at Northern Arizona University, explained [1]:

"If you have 10% of the leaves dying, the whole branch is going to be warmer because a critical part of that branch can no longer cool the broader branch. Likewise, you can make that assumption across the whole forest when a tree dies."



**Illustration:** Mature tropical dipterocarp rainforest in Sabah, Borneo (CC-BY-SA-4.0); [https://commons.wikimedia.org/wiki/File:BorneoRainforest\\_DSC\\_9267.JPG](https://commons.wikimedia.org/wiki/File:BorneoRainforest_DSC_9267.JPG)

Therefore, expanding strict conservation areas is becoming increasingly urgent [3,4]. Although this mass die-off of tropical forests may not occur instantly, today's tropical forests could transform into grasslands if the exploitation of ecological resources for economic gain remains unchanged. Given that the culture of pursuing economic benefits at the expense of environmental degradation has been ingrained for centuries, and our material needs are ever-growing, it is crucial to implement a "one-way valve" that rewards economic value to only those who generate ecological surplus [3,5].

It seems quite late to discuss this issue now. The process of reevaluating the corporate profit equation should have already commenced. Or will we collectively wait for the demise of our forests as our motivation to take action?

## References

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