

# Climatic drivers of dipterocarp mass flowering in Southeast Asia

Mariya Chechina\*<sup>1</sup> & Andreas Hamann<sup>1</sup>

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Affiliation: <sup>1</sup>University of Alberta  
Department of Renewable Resources  
751 General Services Building  
Edmonton, AB  
Canada, T6G 2H1

Corresponding author: Mariya Chechina  
Tel.: (780) 492-6429  
E-mail: mderen@ualberta.ca

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1 **Abstract**

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3 Dipterocarps, a dominant family of trees in Southeast Asian tropical forests, are remarkable in  
4 that they exhibit supra-annual mass flowering events. The flowering patterns are related to the El  
5 Niño Southern Oscillation, but the trigger that precipitates mass flowering is unknown. Here, we  
6 propose resource accumulation as alternative to a trigger mechanism, and we test the alternate  
7 hypotheses in a meta-analysis with published flowering records. Using a variety of candidate  
8 predictor variables (precipitation, cloud cover, minimum temperature and El Niño indices) we  
9 could not find a plausible environmental trigger (median AUCs around 0.55 indicating near  
10 random predictions), while the best resource accumulation model had a median AUC of 0.70,  
11 which could be improved to 0.75 when the date of previous flowering was included in the model.  
12 We further show that simple resource accumulation by individual trees can cause inter- and  
13 intraspecific flowering synchronization leading to community-wide flowering events.

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