# Ecophysiology of tropical dry evergreen forest,Thailand: measured and modelled stomatal conductance of *Hopea ferrea,* a dominant canopy emergent.

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## ABSTRACT

1.The diurnal variation in leaf stomatal conductance of three canopy emergent trees (*Hopea ferrea*) was measured over a 6-week period during the wet season in tropical dry evergreen forest, Sakaerat, Thailand along with micrometeorological variables.

2. Measured maximum stomatal conductances g were between 510 and 343 mmol m-2 s-1 for the three sampled trees. Diurnal variations of g were primarily controlled by incident radiation and soil water potential for the range of temperatures observed. During the measuring period, mean soil water potential psi-s varied between –0.1 and –2.9 Mpa.

3. A multiplicative model was used to estimate the stomatal conductance from measurements of solar radiation I, temperature T, vapour pressure deficit D and soil water potential psi-s. Non-linear optimization of the g functions for I, T, D and psi-s of the pooled normalized tree data set explained 84 % of the variance (n = 332 , P gt 0.0001), with I and psi-s exerting the greatest effect on g. optimization of g functions for the individual trees' data sets gave r-2 values from 0.9-0.8.

4. The optimized value of psi-s that reduces g by 50% was found to be –1.2 (+/- 0.07) Mpa. The optimized response to D is small and negative.

5. The model can be used to predict the effects of changes in I, T, D and psi-s on the g of tropical dry evergreen forests.