

Sap flow measurements to assess the impact of fog in tree transpiration of a laurisilva forest

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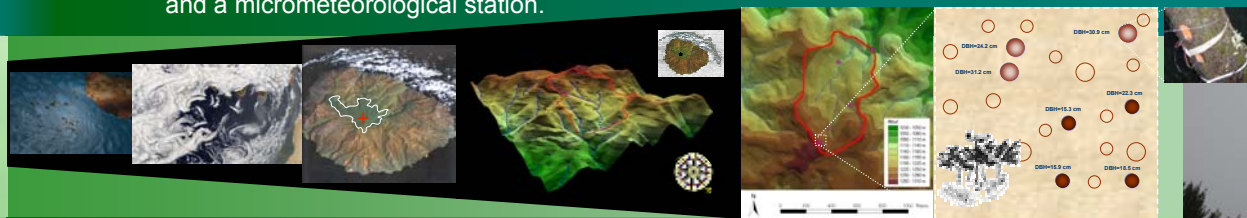
INTRO:

The evergreen relict 'laurisilva' forests of the Canary Islands (Spain) are frequently immersed in fog. However the role of fog precipitation remains yet unanswered, despite the extended belief that fog is important for the survival and distribution of endemic 'laurisilva' tree species.



METHODS:

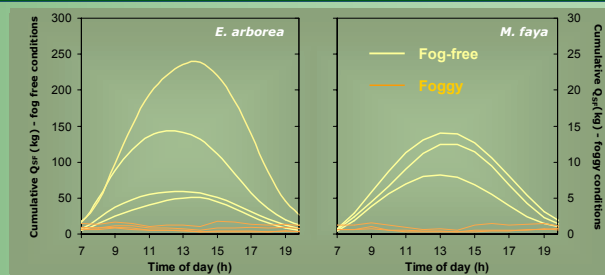
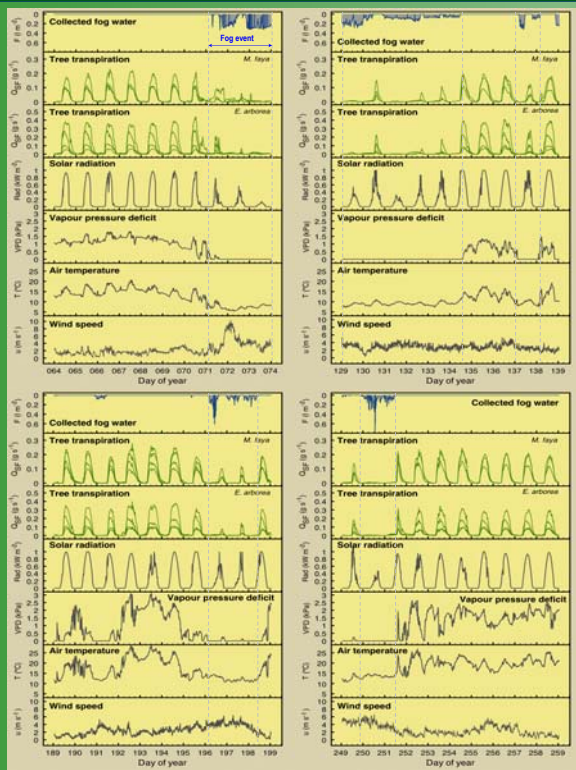
In a selected watershed within the Garajonay National Park (La Gomera), transpiration of *Erica arborea* needle-leaf and *Myrica faya* broad-leaf laurisilva tree species was measured with Granier sap flow sensors for ten months. Concomitantly, fog water collection and climatic variables were monitored with a passive fog catcher and a micrometeorological station.



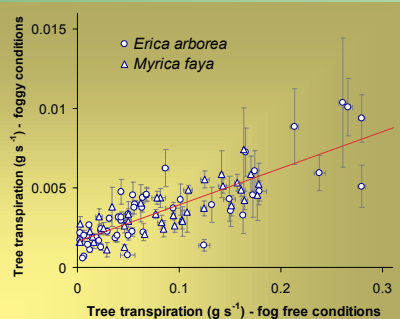
RESULTS:

1. Tree transpiration, solar radiation and temperature are concomitantly reduced by fog.

2. Reduction in transpiration as a consequence of fog is independent of time of the day.



3. Mean diurnal tree transpiration is reduced 30-times during fog events, down to nighttime values.



CONCLUSIONS:

Transpiration measurements using Granier's thermal dissipation technique have been shown to be a valuable method to understand the puzzling role of fog in laurisilva cloud forests. Sap flow measurements indicate that cloud immersion may be crucial to down-weight the transpirational water loss of the Garajonay National Park relict heath-laurel forest, where tree species with a non-conservative strategy of water use efficiency are abundant.

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