Photosynthetic efficiency vs. canopy N uptake at a high-N-loading Swiss forest and at a highly variable-N-loading Rocky Mountain subalpine forest

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The use of chlorophyll fluorescence measurements (fluorometry) for the assessment of plant photosynthetic performance and plant stress status is now an accepted tool for ecosystem analysis. Portable and rapid fluorometry has provided plant photosynthetic performance and plant stress status data in a small number of eco-physiological field studies that have investigated several specific atmospheric pollutants' impacts at forested ecosystems.

We have used fluorometry in the context of controlled N-amendment application studies at forest canopies. Canopy N-amendment applications have been undertaken at a Rocky Mountain subalpine spruce-fir forest and at WSL's ILTER oak forest study site at Novaggio, south-central Switzerland.

Fluorometry measurements have shown (among other results to be presented):
- growing-season N amendments increased photosynthetic efficiency for spruce trees at the Rocky Mountain N-limited, ~7 kg N ha^{-1} yr^{-1} (wet+dry) N deposition subalpine forest; and
- N-amendments decreased photosynthetic efficiency at WSL's Novaggio ILTER oak forest site (N-saturated, 30–35 kg N ha^{-1} yr^{-1} annual wet+dry N deposition).

References:
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