

## Sensitivity of GPP and NEE to direct vs diffuse radiation across Fluxnet sites

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### Abstract

It is well known that enhancement in diffuse radiation by clouds and aerosol may increase the primary productivity by smoothing the light distribution on the leaf area. An analysis of this effect for a limited number of Fluxnet sites has been published by Gu et al. (2002), demonstrating the importance of flux measurements for the assessment of this phenomena at ecosystem scale. Despite the scientific relevance of this issue, a comprehensive global assessment of the impact of the interannual variability in the incoming photosynthetic radiation (Phar) on the primary productivity is still missing. Such an analysis is needed to improve our understanding of the impact of aerosols and cloud cover on GPP spatial and temporal variability. The increased availability of ecosystem carbon fluxes together with incoming direct and diffuse Phar measurements will allow an improvement of the analyses performed in the past, both in terms of ecosystem and spatial coverage and of scientific understanding. We therefore propose to assess the sensitivity of different biomes to the enhancement of diffuse radiation using fluxes and meteorology data of Fluxnet sites.

### Sites

All FLUXNET sites

### Co-authorship strategy

Members of the FLUXNET community are welcome as coauthors given that they provide academic input for the analysis. Any collaborator not in the FLUXNET community who is willing to provide substantial intellectual input to the analysis is also welcome as a co-author. If a site PI would rather their data not be used in the synthesis activity, data from their site will not be included in the analysis.