

Interactive comment on “Inter-annual variation of carbon uptake by a plantation oak woodland in south-eastern England” by M. Wilkinson et al.

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Received and published: 24 September 2012

General Comments

The paper addresses relevant scientific questions within the scope of BG. It presents an account of the function of a well known research site over 12 years. Whilst some of this data has been presented elsewhere, the value of this paper is in its exploration of the environmental and other controls on the variability of productivity viewed over the medium term.

Substantial conclusions are reached, specifically that some interannual variability in ecosystem scale productivity can be linked to particular weather (for example) events, whilst other aspects of climatic variability (for instance variation in precipitation) ap-

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peared a less important driver.

More could possibly be made to investigate the relative importance of the various contributing drivers of variability, providing a type of sensitivity analysis in an observational setting, basing these within a physiological context. For example, the relationship between ecosystem respiration (Reco) and soil moisture is shown to be largely conserved through the whole observation period, but no discussion is made about what processes this relationship might result from – this is important because Reco is not itself measured directly, but derived from the observed data, constrained by environmental drivers some of which may themselves be correlated with soil moisture. If soil moisture content were an important driver of some ecosystem-scale physiological processes, would this signal not also be observed in, for example, GPP? GPP is shown to be well correlated with LAI (i.e. fig. 8), but it would be interesting to see is how the residual variation could be explained by other environmental drivers – this dataset provides an excellent opportunity to probe this question further.

An interesting point that could be explored further is that the CV of NEP is large compared to its components (GPP and Reco). This highlights that fact that variations in the two partial processes are not coherent over the annual timescale, even though both are declining at the decadal timescale. This long term decline also merits further consideration – how important are the two insect-impacted years to the significance of this long term decline?

The scientific methods and assumptions are valid and clearly outlined.

The results are sufficient to support the interpretations and conclusions.

The description of experiments and calculations are sufficiently complete and precise to allow their reproduction by fellow scientists (given sufficient time & resources!)

The authors give proper credit to related work and clearly indicate their own new/original contribution.

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The title and abstract clearly reflect the contents of the paper & provide a concise and complete summary

The overall presentation is well structured and clear, the language is fluent and precise, mathematical formulae, symbols, abbreviations, and units are correctly defined and used.

No parts of the paper (text, formulae, figures, tables) need to be clarified, reduced, combined, or eliminated.

The number and quality of references are appropriate. No supplementary material is indicated.

Technical corrections

Page 9676, Line 18: Replace “NEP was assumed to be opposite. . .”, with “By convention, NEP was defined as opposite. . .”

Table 5 – SEM and SD of r^2 has no meaning, so remove from table.

Interactive comment on Biogeosciences Discuss., 9, 9667, 2012.

BGD

9, C4244–C4246, 2012

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