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Biogeosciences Discussions

Interactive comment on "Recovery of GPP monthly pattern in a eucalypt site in Portugal after felling" *by* A. Rodrigues and G. Pita

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Introduction and major remarks We acknowledge and thank the comments of referee #2. In the sequence of the comments of referee #1 a revised second version of the text was made in which the main topics pointed by referee #2 are addressed. The new version is more focused to the comparison of our data of carbon sequestration after the felling, with information of 1980s and 1990s about characteristics of coppiced eucalypt stand obtained by hydrological and physiological studies in E.globulus in Portuguese, Spanish and Australian basins, whereby the maintenance of a viable and mature root system is crucial to promote a fast height growing of young plants after felling. Actually the first version of the manuscript was not very clear about the main objective of this text, which was the showing of the seasonal evolution of GPP in coppice after the felling

as is indicated in the title, highlighting the differences between mature and young eucalypt stands. This is the essential distinction relatively to the AFM paper (Rodrigues et al. 2001) which addressed the main drought effects. A general description of the site, methods and main results along the overall measurement period was made in order to allow the reader to contextualize the situation. Notwithstanding these considerations we changed the second version of the text to a new one which is annexed in order to address some of the comments of referee #2. Our data showed that the inherited mature root system and imbalanced aerial/root biomass ratio in young plants allowed tree growing and carbon assimilation in July-August usually when in mature trees, under intense summer water stress, stomatal control acts to prevent water losses almost stopping carbon uptake. The almost opposite pattern in GPP reflects the fact that in the young plants GPP peaks in July-August and diminishes in winter, especially in January, and in mature trees, GPP is diminished in Summer, due to water stress and continues for the whole year. A tendency to return to the mature seasonal pattern is initiated in 2010, four years after the cut. Concerning major remarks i) we changed the mistakenly g cm-2 in the text and in Fig. 3, and maintaining the units in Fig. 4 which are the usually used in daily carbon fluxes, ii) we presented an analysis and discussion of the seasonality of carbon fluxes after felling as mentioned above. An interesting point mentioned by referee #2 which is the comparison of aerial carbon mass (61,5ton/ha) and the annual NEE values of the production cycle in now mentioned in the second sentence of the second paragraph of Section 2. The structure of Figs. 3 and 4 aimed at comparing the seasonality of carbon fluxes in mature stands in normal years under non-drought conditions (2002-03), with the correspondent fluxes along the years after the felling is maintained. Considering the minor remarks: i) we introduced the abbreviations (NEE, GPP and TER) in the first occasion of use, ii) we changed the number of significant digits to one decimal in Table 1 and in the all text, iii) the text"0.205 PgC/ano 0135" was abolished, iv) we changed the reference to the two hour periods measurements to "The values of moisture and soil temperature were measured continuously every two hours since January 2007 onwards, at depths of 10 cm, 20,cm, 30 cm, 40 cm, 60cm and

1m with a Delta-T probe, model PR2,", v) we substituted "steady" by uniform, vi) we reduced the series of numbers of carbon fluxes to include only GPP numbers, vii) we cut "deficit" in "VPD deficit" and viii) focused the sensitiveness of young plants to winter frost by adding the "diminishing of LAI and GPP" to "crisp leaf yellowing processes".

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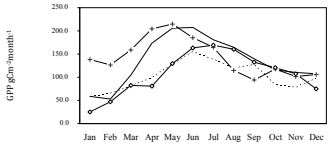

Fig. 1. Fig. 3- Monthly average GPP (+ avg. 2003-2006, —2008, âŮŁ 2009, âĂŤ 2010).