



Carbon uptake before and after the felling of an Eucalyptus forest

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Espirra site (38°38'N, 8°36'W) is located in a 300ha Eucalyptus globulus plantation, with a Mediterranean type climate with a mean annual precipitation of 709mm and a mean annual air temperature of 15.9°C. The plantation was established in 1986 with about 1100 trees ha⁻¹. A 33m observation tower was installed in 2002, with an eddy covariance system. A harvesting of trees was made at the end of the 2nd rotation period, from November to December 2006. During the last four years of the second rotation the coppice were 20m height. Harvesting was planned in order to initiate a new 12 year productive cycle. In October 2008 a first thinning was made in three fourths of emerging stems from stumps. At this stage the forest trees had a mean height of 6m. during the period of analyses the total annual precipitation has varied between a minimum of 248mmYr⁻¹ (2005) to a maximum of 796mm Yr⁻¹ (2007), pattern typical of a Mediterranean climate. The diminution of precipitation (and also how it is distributed along the year) affects the forest uptake of Carbon. The GPP and the Reco show lower values in dry years, both in the adult forest as in the young one. The GPP of the growing eucalyptus has been affected by the dry year but also by the thinning that took place in Oct 2008. The Ecosystem total respiration shows high values after the felling (the same order of magnitude as the forest before the felling) due to the leaves and branches that were left over the soil after the harvesting. Three years after the felling the GPP of the young forest is 61% the value of the adult forest (mean value, excluding the dry year). The seasonal pattern of RECO is similar before and after the felling, but in the young forest the GPP is lower and the NEE becomes positive in the summer time. In an annual base the growing eucalyptus forest only in the first year after felling was a source of carbon.