

Interactive comment on “Partitioning of canopy and soil CO₂ fluxes in a pine forests at the dry timberline” by Rafat Qubaja et al.

Anonymous Referee #1

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This paper uses soil and canopy fluxes with stable isotopes (¹³C) and radiocarbon (¹⁴C) measurements of a 50-year-old dry pine forest over one year to partition the ecosystem's CO₂ flux into gross primary productivity (GPP) and ecosystem respiration (Re) and soil respiration flux into autotrophic (R_{sa}), heterotrophic (R_h), and inorganic (R_i) components. The measurements and data are valuable. The topics are of great interest. But the writing is very confusing. Abstract: The abstract lacks critical information. Introduction: The introduction should be rephrased. There are too much pieces of information on general knowledge. The Introduction needs a better flow. The scientific significance should be addressed more. A description that explain why the paper is needed following the previous studies (i.e. the 2001-2006 study) would be very informative for the readers. Furthermore, I suggest the authors cite more relevant

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papers on the Mediterranean climate zones and add one or two hypothesis. Site description: provide more information about the vegetation (e.g. root depth). Flux and meteorological measurements: How did the gaps in NEE and GPP are filled? How many missing data points are there due to instrument failure and quality control? Soil CO₂ flux: I'm really confused. How many data did the author used in the paper? Just one year? Using just one-year measurements can not identify the long-term temporal changes in the soil-atmosphere CO₂ fluxes in this environment. Discussion: The hypothesis should also be into Introduction. The present study used only one-year data, I suggest the authors using a tempered tone in the discussion part. The Discussion has the same problem with Introduction. There are many pieces of interesting information. But the discussion should be centered on several key aspects of your results. The Discussion should echoes the Introduction. I suggest rephrase the Discussion and make a better flow in the Discussion.

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