

Interactive comment on “The ACCENT-VOCBAS field campaign on biosphere-atmosphere interactions in a Mediterranean ecosystem of Castelporziano (Rome): site characteristics, climatic and meteorological conditions, and eco-physiology of vegetation” by S. Fares et al.

Anonymous Referee #2

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General comments

This paper introduces the ACCENT-VOCBAS field campaign conducted in a Mediterranean sandy dune ecosystem during one month in 2007. General aspects of climate and vegetation are presented, as well as leaf scale measurements of BVOC emissions. The overall presentation is well structured with no major language flaws. I found the section about ozone levels during the field campaign; particularly inter-

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esting – it describes a complex subject so that even a reader without extensive background knowledge can easily follow.

It is clear that the Castelporziano site is an excellent location to study an important and fragile ecosystem under the pressure of many different kinds of environmental stress (both natural and anthropogenic). However, after reading the paper I was still left wondering how representative the sand dune ecosystem is for the Mediterranean macchia vegetation in general, considering, e.g., the proximity to the sea and the related problems with salt water intrusion? It is briefly mentioned on p1209, line 29, but I would find it worthwhile to elaborate a bit more on this theme, especially considering that the measurements are interesting for modeling and upscaling purposes (conclusions p1211, line 12-17)

Specific comments

Abstract

p1187, lines 7 and 17: after the 15 years of BVOC emission investigations in the area (line 7), is it the specific coastal sand dune ecosystem that you consider “poorly studied” (line 17) in comparison with the Mediterranean macchia in general, or do you refer to other ecosystem types, such as evergreen oak stands (p1190, line5)?

p1187, line 26: “It is speculated that environmental stresses limit the emission during summer, differently than in other Mediterranean ecosystems” Is it the environmental stress factors (salinity, temperature etc) that differs from others Mediterranean ecosystems, or emission responses? Please clarify.

Introduction

p1188, line 6: “The Mediterranean ecosystems represent 1% of the Earth’s land surface” Is there any available figure on the aerial extent of Mediterranean sand dune ecosystems similar to the one in this study?

p1190, line 8: “The Presidential Estate of Castelporziano is a large park at the

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southeastern edge of the large conurbation of Rome. Looking at Fig. 1, to me it looks like the site is located more to the southwest of Rome? C.f. the companion special issue paper (Methods section) by Davidson et al. (BGD 6 2183-2216).

p1191-1192, points a-f: Would it be possible to here also refer to the other papers of the special issue where the respective objectives are treated?

Material and methods

p1192, line 14: located 25 km SE from the center of Rome; Should it be SW (see comment above)?

p1196: Measurements of plant physiological properties and isoprenoids emission; Did you allow any time for leaf acclimation in-between leaf enclosure and onset of BVOC sampling to avoid sampling of any stress-related emissions? Was the active carbon cartridge placed in the inlet sample stream before or after the LI-6400 console and chemical tubes and did you analyze any blank cuvette samples to compensate for possible contamination generated by the system?

p1206, line10-12: Therefore, in the Mediterranean area, whose climate is characterized by already rather high spring temperatures, a sustained emission of isoprenoids could be seen already in spring. What was the developmental state of the investigated leaves?

p1206, line 24-25: Both mature (second year) leaves, and young, still expanding leaves, emitted similar rates of total monoterpenes; Please clarify if this relates to the current study or earlier ones from Castelporziano (see comment above).

p1208, lines 19-26: our finding indicates strong control of water availability over the synthesis of isoprenoids in this species. This finding is in contrast with recent conclusions that isoprenoid biosynthesis is resistant to drought stress (Pegoraro et al., 2004; Brillì et al., 2007). However, *Cistus* spp. are water-spending plants characterized by low stomatal control on water content and very dramatic changes of leaf

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water status, especially when living in an environment subjected to fast changes of soil water content, as is the case of the sandy soil of Castelporziano site. What could the main reason for this strong link to water availability be? Any links to, e.g., photosynthetic capacity coupled to plant water status?

p1209, line 11-17: After measuring the basal emission at leaf level of each representative species of the stand (Table 2), an upscaling procedure was developed. Can these figures be compared with the figures presented in Davidson et al. (BGD 6 2183-2216)? It would be interesting to directly compare how well the two measurement/modeling techniques (leaf scale vs. ecosystem scale measurements) agree.

Technical comments

p1200, line 12: can be as twice as the; should be can be twice as high as the;

Table 1: Please indicate in the table legend the number of replicates in this inventory (did it include all individuals in the whole study area or a selected number of plants). What were the respective standard deviations?

Figures 2 and 4 would benefit (especially when printed) from increased font sizes and line thicknesses.

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