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Biogeosciences Discussions

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 #1

Received and published: 5 March 2009

General comments

The manuscript describes the background site characteristics, measurement conditions and some plant physiological features during the ACCENT-VOCBAS measurement campaign in a western Italy sand dune ecosystem. Writing this kind of background paper is a necessary but at the same time demanding task, since all published papers should include also some original scientific contribution, even if they were jus-

tified on the basis of a background reference for other, specific papers from the campaign. The authors have attempted to do this by adding some data and analysis of several dynamic features in plant-atmosphere interface, and atmospheric and meteorological factors involved in the potential interesting results of the campaign and their evaluation.

I find the manuscript rather unbalanced: lengthy in some aspects, and too general in some others that would warrant some discussion. E.g. the discussion on ozone episodes and their dependence on the urban plumes is quite intensive. However, since I do not have all the other papers from the campaign here, I can not define how important these parts are for the background of these. I suggest that the authors should try to clarify the story they wish to tell us with this manuscript. I suggest highlighting more the novelty and unique characteristics (as compared with e.g. BEMA) of this particular campaign site, and building the story on that basis.

The statement in the abstract that these dune ecosystems may differ from other Mediterranean ecosystems is interesting and dealt in the manuscript in respect of BVOC emissions. However, not much of the specific features in these nutrient-poor, saline (or vulnerable to increasing salinity) dune ecosystems are discussed in detail. Interesting finding is that developing and mature leaves have a different blend of monoterpenes, and that irrigation has such dramatic effect on emissions. Some important methodological issues are not clearly written and should be clarified.

Specific comments

- The introductory chapter lacks basic references regarding the coastal dune ecosystem structure and functions

- p 1189 line 10: Loreto et al 2007 - shouldn't this be Loreto et al 2006?

- some more details on the ecosystem would be necessary: what is the elevation of the dunes; how stable are the ecosystems for e.g. mechanical damage by tramping;

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are there specific abiotic or biotic disturbances potentially present; soil nutrients (other than Ca)

Materials and Methods:

- specific information on how the vegetation composition was assessed is missing (p. 1195): was it evaluated by species or at genera level; only vascular plants ?

- how many plants were used for projected and sapwood area determinations; were they destructively sampled from the site or from somewhere else (and how this influences the ecosystem BVOC fluxes?); were the sample leaves for LA from same or different plants and if latter then the number should be given; why were they dried over a week (normally three days is sufficient)?

- what was the time of the day in photosynthesis and isoprenoid emission measurements? did you wait until a steady state for emissions was reached in the leaf cuvette? was there any VOC sampling from incoming air to check the filtering efficiency or other potential error sources?

- In the abstract the month (May) is given for measurements, but in the materials and methods there is no such information available for physiological measurements. This should be added.

Results and Discussion:

- some of the subtitles are numbered, while others are not. Unify!

p. 1197 line 25: the authors give 200 mm rainfall month-1 as a threshold for drought BUT see figure 2 where the maximum monthly sums are around 120 mm, and summer precipitation values below 20! Is there a typo here or am I misunderstanding something?

- For readers not so familiar with these indexes, it might be good to discuss a bit the high evaportranspiration which produces the plant water deficit under these conditions.

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Measurements of leaf or soil water potential would have helped to quantify the stress level, but obviously they are not available?

- p. 1198 line 20: fig 5 should be refereed before fig 6

- Contrary to the other referee, I find the lengthy discussion (pages 1999-02) about ozone levels during the campaign perhaps not necessary for this background paper

- p.1203-4 discussion on water table depth is too speculative for this paper: only very few measurements on soil water table level are presented, in order to draw conclusions of the causes of abiotic stress during dry periods

- p 1204-5 also too speculative discussion on ozone and acid deposition effects on plants (no data shown although something was obviously measured), not necessary here unless elaborated more

- p 1208 irrigation should be described in Materials & Methods –section

- The language needs revisions (I found numerous typos and unclear sentences)

- many latin names e.g. Phillyrea latifolia are spelled in several different ways – should be checked throughout the text

- indexing Lab, LMtot etc is not uniform

- table 1: some confusion with units

- table 1: height of Oxicedrus macrocarpa hardly is 4032 cm?

- table 2: adult = mature

- Fig 1: explain Montelibretti in the fig legend and show the locations of the meteorological stations in the detailed map

- Fig 2: explain axes P, T in legend. Is the upper graph 2005?

- Fig 3: show the period of campaign also here

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- Fig 4: why do you present results from different stations for different parameters? They are difficult to compare

- Fig 5: peak O3 level should be shown in the figure

- References: Ciccioli et al 2007: name of the book is missing

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Interactive comment on Biogeosciences Discuss., 6, 1185, 2009.