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Interactive comment on “A model-based study of the wind regime over Corinthian Gulf in Greece” by I. Koletsis et al.

Anonymous Referee #1

Received and published: 1 July 2013

Manuscript nhess-2013-162

Title: Revision of a model-based study of the wind regime over Corinthian Gulf in Greece

Author(s): I. Koletsis, V. Kotroni, and K. Lagouvardos

In my comments below I summarize the major items that in my opinion should be considered by the authors in order to improve the paper.

Nowadays it is a common practice to use meteorological models to forecast several meteorological variables such as temperature precipitation or wind velocity and direction. However, models have errors and uncertainties, especially in areas where the

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spatial scale of complex topography and surface heterogeneities is smaller than the model's resolution. In regard to this, I think that the authors should justify the domains that they have used. In my opinion, domains 2 and 3 should be larger, and the latter should be focused on the study area. If authors used resolutions of 27, 9 and 3 km it would be possible to increase the resolution of the studied domain to 3 km and palliate the spatial scale problem.

It is important for this kind of studies to verify the best relation quality of results/computational cost ratio in order to determine an adequate spatial resolution. However, even in the case of improving resolution it cannot be expected that the model describes adequately the region's circulation or climatology and therefore if the model is used its error must be known in advance. Although the authors have performed a qualitative validation comparing modelled and measured frequency distribution of wind speed and direction (wind rose) at the three measurement stations used in this work, a model evaluation must be quantitative. To do this several statistics such as mean bias, root-mean-square error, standard deviation of the error or some others statistics may be used.

In section 3, authors based their selection of the model parameterization schemes of MM5 used for this study on the findings of others authors. However, I think it would be convenient to give additional information on top of the bibliographic reference, commenting the most representative results found in these references.

In section 4, when the short-term climatology of the wind flow across the Corinthian Gulf is discussed, authors claim several times that the air flow is noticeably modified by local scale topographic effects. However, this relevant result is not tested in any of the sections devoted to the discussion of the Corinthian's Gulf wind regime. One way to do this is by creating a composite wind pattern over the study domain, or even analysing in detail the wind pattern of some wind events used for the composite analysis in section 5. This kind of analysis allows to easily investigate the influence of the topographic features in the wind flow.

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Please also note the supplement to this comment:

<http://www.nat-hazards-earth-syst-sci-discuss.net/1/C414/2013/nhessd-1-C414-2013-supplement.pdf>

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