

## ***Interactive comment on “Numerical modeling and analysis of the effect of Greek complex topography on tornado genesis” by I. T. Matsangouras et al.***

**Anonymous Referee #2**

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Title: Numerical modelling and analysis of the effect of Greek complex topography on tornado genesis. I.T. Matsangouras, I. Pytharoulis and P.T. Nastos

This paper investigates and analyses the influence of topography on the phenomenon of tornado genesis by studying three different tornado cases that occurred in three areas over the Greek mainland. These tornados were triggered under strong synoptic systems which approached the specific areas. The role of topography in tornadogenesis is obvious in the experiments conducted since the inner grid (D3) modified from actual topography to without topography. The absolute vorticity, vorticity equation and instability variables used to describe the conditions are significant for tornadogene-

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sis. The paper investigates an important topic and puts forward an interesting and well-structured argument. Thus, I would say it is worth being published in NHESS. However, some important revisions should be considered before publication. IMPORTANT POINTS: 1. The setup of the experiment should be better justified. For example, the reason why domain D3 was chosen is not clear enough. I would suggest that an appropriate reference should be made so that it is explained further. 2. ECMWF's ERA-Interim reanalyses with resolution of 12 Km was used to initialize the model on the external domain. Since the jump in resolution is large, I would recommend you explain why you did not use a different model (COSMO-GR7, SKIRON). 3. You modified the topography only in the domain D3 while you used initial and boundary conditions for this domain which is calculated without removing the orography. I suggest you include some appropriate references to sustain your choice. MINOR POINTS : The use of English in this paper is not competent enough and the paper as a whole may not have a satisfactory effect on the target reader. Even though you make an attempt to use appropriate format, information and ideas are inadequately organized and there are basic errors which may not always hinder meaning but may make language sound unnatural. In view of the fact that you are not a native speaker of English, it would be recommended that you get professional help. It was not in my plans to point out mistakes in wording or grammar but some linguistic weaknesses are as follows: 1. There is significant lack of linking words and phrases such as moreover, furthermore, firstly etc both on sentence and paragraph level. Complex sentences are comprised mainly of main clauses and there are not enough dependent clauses. As a result, the writer's argument is sometimes difficult to follow. Attention should be paid to complex sentences such as: 'Tornadoes...phenomena', p.1435, lines 7-11 'This interval...modifications', p.1440, lines 5-8 'Based on...followed by T10', p. 1447, l.22 'However, Weisman...when BRN 35', p.1437, l.3-7 'In the vertical...nests', p. 1439, l.10-11 2. The use of punctuation is not effective enough. Generally, commas and semi-colons should be used more carefully. For example, there are unnecessary commas after the following words: 'forcing' p.1434, line 14

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'UTC', p. 1439, l. 28 – 'low-level SRH', p.1437, l.22 3. Several spelling errors or typos. – Density-weighed over 'density-weighted' – 40 years over '40 yr' , p.1435, l. 10 – Studying over 'Studing', p.1446, l.24 4. Inaccurate use of adjectives and adverbs – 'Additional' should be 'additionally', p.1434, line 24 – A brief tornado over 'a briefly tornado', p. 1440, l.10 – Actual topography over 'actually topography', p.1445, l.23 – Dynamic over 'dynamical', p. 1438, l.22 – A brief weather synoptic analysis instead of 'a briefly weather synoptic analyses' p.1438, l.1 5. Wrong choice of words – 'refer', perhaps mention would be more appropriate, p.1435, l.23 – Since over 'beginning' ,p.1438, l.8 – Prerequisite over 'requisite', p. 1436, l.11 6. Wrong prepositions – in the west/east over 'at the west', 'at the east' ,p.1434, l. 4-5 – On a large scale over 'at various scales' ,p.1434, l.4 7. Grammar & Word order – Have always fascinated over 'have always fascinating' , p.1435, l.8 – Calculates over 'calculate' ,p. 1437, l.10 – Are these diagnostic variables sufficient. . . over 'Do these diagnostic variables are sufficient. . .' ,p. 1436, l.4-5 – 'on a regular basis' should be placed at the end of the sentence ,p. 1438, l.14 – Damage over 'damages' ,p.1438, l.20 – A lot of nouns used together sound unnatural, eg 'open-ended online tornado report database web system' ,p.1438, l.9

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