**Natural Hazards
and Earth System
Sciences**
Discussions

Interactive comment on "Calibration of FARSITE fire area simulator in Iranian northern forests" *by* R. Jahdi et al.

Anonymous Referee #1

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General comments to the author

The article is not innovative because it consist in the calibration of a well-known fire behavior model (FARSITE) to a set of 4 fires in Iran. For this reason I think it should not be accepted in NHESS. In addition, this is an article: (i) very extensive that needs to be reduced by removing a large part and unnecessary repetition of text information displayed in tables and figures; (ii) repetition of the same information in different parts that also need to be removed; (iii) confused and needing to be rearranged because of the dispersion of information across different sections. There are a lot to explain and too many corrections to make. Most of the discussion section is composed by general aspects (e.g. lines 380 − 394), a repeated presentation of results (e.g., lines 410 - 422) but misses the true discussion/interpretation/validation of the obtained results.

At this stage, the manuscript cannot be accepted for publication and should only be reconsidered after a major revision.

Some more specific comments

1. Lines 40 − 50, It does not seem to follow the nhess rules for the citations 2. According to the nhess "Informal or so-called "grey" literature may only be referred to if there is no alternative from the formal literature." With this in mind please remove citations on lines 150, 162, 783, 788 and 798; 3. Line 102, please replace "We tested different standard fuel models" by "We tested two sets of different standard fuel models"; 4. Lines 104 − 105, I believe that the authors did not analyzed this aspect; 5. Please avoid relative or imprecise concepts. For example, in line 111, please replace "This study was carried out considering a set of fires" by "This study was carried out considering a set of four fires"; what is a "not too strong" wind (line 361)? What are "relatively moderate values" (line 423)? 6. Line 116, please provide a definition of "xeric weather conditions" or substitute that concept by a more known concept by the general reader; 7. Line 117, Guilan, as well as, other provinces mentioned in the manuscript are not shown in Figure 1. Please remove these references in the manuscript or include the names of the provinces in Figure 1; 8. Line 117, the same for the South Caspian forest belt; 9. Line 122, please remove the "(0°C)"; unless the air pressure is very different from the normal atmospheric pressure, it is unnecessary; the space between the temperature value and the degree symbol should be removed; 10. Lines 124 − 130, please see comment n.° 1; 11. Lines 131 − 134, please see comment n° 7; 12. Lines 144 − 147, did the author computed the trends? How? Were these trends statistically significant? If not please do not use the term "trend"; 13. Line 147 − 148, provide values to prove the sentence or a citation; 14. Line 150 − 152, what is compatibility of this sentence with the sentence of lines 118 − 120? Please explain; 15. Line 155, Why "March to December"? Why not "Jun to December"? please explain end replace "with the peak of ignition and area burned in June and November" by "with two peaks of the number of fires and burnt area in June-July and November-December" 16. Lines 156 − 157, it

is not clear the meaning of the burnt area value. It corresponds to annual averaged? Averaged fire size? Please explain. The same in line 160; 17. Lines 159 – 160, please replace by the size of the largest fire; 18. Line 166, please do not start this section with "FARSITE simulations" because you are just defining the fires/case studies; 19. Line 170 – 173, the information from all these sources was concordant? The reader do not know how (exactly) the fire ignition locations and real fire perimeters were determined; please explain; 20. Lines 174 – 213, most of this text can be removed because it is already shown in the figures/Tables; 21. Lines 218 – 220, what does this mean? It means that the map is not sufficient accurate/useful? Please explain exactly how the fuel mapping and canopy were produced; 22. Lines 222 – 223, please explain why different number of line transects and transect length in the two regions; 23. Lines 228 – 229, is this the only/best method? Please explain; 24. Lines 236 – 251, most of this information is repeated because it is already provided in Tables; 25. Lines 260 – 262, there are two weather stations for GNP in Figure 5. Data from both stations were used to simulate fires in this region? It seems so. Please explain how; what is the altitude of the weather stations? Did you correct the data? How? Please provide evidences that the weather stations are representative of the fire locations (please see lines 392 – 393); 26. Lines 267 – 268, as before, what were the values used: from the literature, from observations of a mixture of the two? Please explain; 27. Line 272, why mentioned Table 5 before Table 4? 28. Line 275, why? Please explain; 29. Lines 276 – 277, it is not clear if suppression activities were present during the studied fires. Please explain (please see lines 414 – 416); 30. Lines 281 – 282, so, why repeat? 31. Lines 284 – 285, repeated in lines 270-271; please remove; 32. Lines 290 – 303, unnecessary but…OK. 33. Lines 306 – 307, these are "results"; 34. Lines 312 – 313, How to define the best simulations? A definition should be provided here and not let the reader wait until line 320; 35. Line 319, what is the definition of "4.1 ha and 5.5 ha were respectively underestimated and overestimated by FARSITE"? How were these values computed? Please explain in the text and also in Table 4 and 5; 36. Line 317 -355, most of this information is a repetition of the information already provided in tables; 37.

C2357

Lines 357 – 358, the acronyms ROS, FLI and FML were already defined; please avoid repetitions; however, a better definition of those concepts (for example the units could be provided in the first time they appear in the text; 38. How do the results of section 3.2 differ from those obtained in other studies with (or not) similar conditions? 39. Line 381, what do you mean by the fire "itself"? please explain; 40. Line 385, please replace "calibration protocol" by "calibration process";

Tables and Figures

41. Table 1, please complete the table caption; for example, see caption of Table 5; It is not clear that the spatial coordinates respects to the fire ignition point; The elevation is the altitude of the ignition point or the averaged altitude of the burnt area? 42. Table 2, please be coherent with the altitude information of the weather stations; 43. Table 3, please provide a definition for FMC in the Table caption. Once again, please see caption of Table 5; 44. Table 4, please provide a definition/explanation for the "FARSITE underestimation" and "FARSITE overestimation"; the observed burnt area could be provided in Table 4, for example, in parenthesis below the "fire name"; 45. Table 5, please replace "Wildfire Area" and "Simulated Area" by "Observed fire size" and "Simulated fire size"; I believe that there is a mistake in line 770, and "Table 5" should be replaced by "Table 4"; 46. Figure 1, the north arrow is not necessary if the map is N-S oriented; remove the plots of the right hand side (province of Siahkal and GNP), they are in Figure 5; and try to consider highlighting the borders of the Siahkal province and GNP, include their names in the left hand side plot and remove the reference from the legend; why "Azerbaijan" appear twice? Why the words "Turkey" and "Azerbaijan" are plotted over the Iranian area? 47. Figure 4, please move the legend to the top of the figure; change the x-axis to "Fire size class (ha)", and the y-axis to "Burnt area (%)" 48. Figure 7, please explain and change the caption (and the text) to explain which simulation are being plotted; the same for Figure 8; 49. Figure 8, why the results for the other two fires are missing?

Technical corrections 1. Line 70, please remove the extra space; 2. Line 89, why use

C2358

the ":"? Please consider rewrite the entire sentence. 3. Line 130, please remove the dot. 4. Line 257, please replace "for each case study" by "for each study area";