

1 **Corrigendum**

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3 In the author comments in the open discussion of this paper, in particular in
4 the supplement of the Author comment C1305 ([http://www.nat-hazards-
7 earth-syst-sci-discuss.net/2/C1305/2014/nhessd-2-C1305-2014-
8 supplement.pdf](http://www.nat-hazards-
5 earth-syst-sci-discuss.net/2/C1305/2014/nhessd-2-C1305-2014-
6 supplement.pdf)), we used three Tables: Table T10 shows the objective scores
9 for the six case studies analysed in the paper when the lightning module is
10 called every 10 minutes of the model run; Table T5 shows the objective
11 scores when the lightning module is called every 5 minutes of the model run;
12 Table T5b shows the objective scores when the lightning module is called
13 every 5 minutes of the model run and when, to compute lightning, stricter
14 ranges (5 km and 0.5 s instead of 10 km and 1 s) are used for binning the
15 strokes recorded by LINET from an initial strike point.

16 **The scores shown in Tables T5 and T5b are incorrect.** We apologize for
17 the error. At the end of this supplement there are the correct Tables. T10 is
18 unchanged compared to that used in the supplement of the Author Comment
19 C1305.

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21 *-Time interval between two calls of the lightning scheme*

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23 Changing the time interval between two calls of the lightning scheme had
24 some impact on the results. Comparing the scores of Tables T10 (10 minutes
25 between two calls of the lightning scheme) and T5 (5 minutes between two
26 calls of the lightning scheme), it is apparent that the largest change occurs for
27 the 28 November 2012 case study.

28 For this case study, the number of lightning simulated for T5 is 15527, while
29 for T10 it is 13842 (a difference larger than 10%). So, flashes were partially
30 missed using 10 minutes between two calls of the lightning scheme.

31 Moreover, the objective scores for the 28 November 2012 case study are
32 better for T5 than for T10. Other cases show similar results for T5 and T10,
33 both for total lightning simulated and for the objective scores. In the revised
34 version of the paper we decided to use 5 minutes interval between two calls
35 of the lightning scheme (instead of 10 minutes) because, being this time
36 interval closer to the time scales involved in rapidly evolving convective
37 systems, it gives better results.

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39 *- Lightning flash multiplicity*

40 In the paper we assumed that all strokes observed within 10 km and 1 s
41 (hereafter R10_1) from an initial strike point are grouped as a single flash. In
42 a recent paper, Yair et al. (2014) showed that using stricter ranges (5 km, 0.5
43 s, hereafter R5_05) is sufficient to discriminate between successive flashes in
44 most cases.

45 Using R5_05 for the lightning binning affects the results in two ways: a) by
46 increasing the number of total observed flashes, which spread over a wider
47 area of the verification domain; b) by increasing the number of grid elements
with more than 10 flashes per day.

1 Table T5b shows the scores for the R5_05 for all case studies considered in
2 this paper. Comparing the results of T5 (R10_1) and T5b (R5_05) it is pointed
3 out that: a) the number of LINET lightning is larger for R5_05, as expected; b)
4 as a consequence of point a), the bias decreases for R5_05 (particularly for
5 the 15 October 2012 case study for MLT10); c) the differences between
6 R5_05 and R10_1 are larger as the grid element size becomes finer (i.e. for
7 increasing horizontal resolution), because the differences between the
8 observed flashes for R10_1 and R5_05 are small and the statistics accounts
9 for this difference when computed at the finer scales; d) the ETS score shows
10 a small improvement for R5_05.

11 While there are differences between R10_1 and R5_05 statistics, consistency
12 was found between the overall results for R5_05 and for R10_1 for all the
13 cases analysed. This consistency provides further robustness to the findings
14 of this study.

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17 **Bibliography**

18 Yair, Y., Lynn, B., Price, C., Kotroni, V., Lagouvardos, K., Morin, E., Mugnai,
19 A., Llasat, M. C., 2014. Lightning flash multiplicity in eastern Mediterranean
20 thunderstorms, *Natural Hazards and Earth System Sciences* 14, 165-
21 173. doi:10.5194/nhess-14-165-2014.

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1 T10: Skill score statistics of the six case studies. Date of forecast and number of flashes observed (LINET) and simulated (RAMS) for each case
2 study are shown in the first column. POD, FAR, Bias, and ETS are given for the MLT1 and MLT10 (in parentheses) for the 25 km, 12.5 km and 5
3 km overlays superimposed to the 2.5 km RAMS grid. The area considered for the statistics is the area shown in Fig. 4 (10.5 – 14.5 E, 40.5 – 43.5
4 N). The spatial and temporal thresholds used for the binning of the strokes from an initial strike point recorded by LINET are 10 km and 1 s,
5 respectively. The time interval between two calls of the lightning scheme is 10 minutes.
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Case study	25 km overlay				12.5 km overlay				5 km overlay			
	POD	FAR	Bias	ETS	POD	FAR	Bias	ETS	POD	FAR	Bias	ETS
20111020 LINET: 16231 RAMS: 18631	0.73 (0.76)	0.21 (0.17)	0.92 (0.91)	0.46 (0.57)	0.66 (0.68)	0.18 (0.17)	0.80 (0.82)	0.47 (0.54)	0.58 (0.46)	0.18 (0.51)	0.71 (0.95)	0.45 (0.28)
20120903 LINET: 6666 RAMS: 6496	0.85 (0.58)	0.09 (0.33)	0.93 (0.88)	0.63 (0.30)	0.68 (0.43)	0.25 (0.55)	0.91 (0.97)	0.38 (0.21)	0.43 (0.18)	0.56 (0.84)	0.99 (1.07)	0.18 (0.09)
20120930 LINET: 7073 RAMS: 7635	0.90 (0.85)	0.13 (0.32)	1.03 (1.25)	0.68 (0.48)	0.79 (0.46)	0.27 (0.62)	1.08 (1.20)	0.46 (0.18)	0.53 (0.05)	0.54 (0.96)	1.16 (1.01)	0.22 (0.01)

20121015	0.80	0.20	1.00	0.53	0.70	0.29	0.99	0.42	0.42	0.58	1.01	0.19
LINET: 4820												
RAMS: 6554	(0.68)	(0.38)	(1.09)	(0.39)	(0.40)	(0.67)	(1.23)	(0.15)	(0.01)	(0.99)	(1.97)	(0.00)
20121111	0.79	0.05	0.84	0.69	0.73	0.06	0.78	0.61	0.62	0.24	0.81	0.44
LINET: 9030												
RAMS: 12308	(0.76)	(0.05)	(0.80)	(0.67)	(0.65)	(0.25)	(0.87)	(0.47)	(0.31)	(0.80)	(1.53)	(0.12)
20121128	0.90	0.02	0.92	0.81	0.80	0.06	0.85	0.63	0.52	0.25	0.69	0.31
LINET: 14357												
RAMS: 13842	(0.79)	(0.06)	(0.84)	(0.64)	(0.46)	(0.29)	(0.65)	(0.27)	(0.15)	(0.83)	(0.94)	(0.01)

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1 T5: Skill score statistics of the six case studies. Date of forecast and number of flashes observed (LINET) and simulated (RAMS) for each case
2 study are shown in the first column. POD, FAR, Bias, and ETS are given for the MLT1 and MLT10 (in parentheses) for the 25 km, 12.5 km and 5
3 km overlays superimposed to the 2.5 km RAMS grid. The area considered for the statistics is the area shown in Fig. 4 (10.5 – 14.5 E, 40.5 – 43.5
4 N). The spatial and temporal thresholds used for the binning of the strokes from an initial strike point recorded by LINET are 10 km and 1 s,
5 respectively. The time interval between two calls of the lightning scheme is 5 minutes.
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	25 km overlay				12.5 km overlay				5 km overlay			
Case study	POD	FAR	Bias	ETS	POD	FAR	Bias	ETS	POD	FAR	Bias	ETS
20111020 LINET: 16231 RAMS: 19435	0.70 (0.78)	0.18 (0.16)	0.85 (0.94)	0.47 (0.60)	0.64 (0.67)	0.15 (0.16)	0.75 (0.80)	0.48 (0.53)	0.60 (0.50)	0.16 (0.49)	0.72 (0.99)	0.48 (0.31)
20120903 LINET: 6666 RAMS: 6368	0.77 (0.55)	0.09 (0.33)	0.84 (0.81)	0.55 (0.28)	0.61 (0.41)	0.25 (0.57)	0.81 (0.95)	0.34 (0.19)	0.41 (0.18)	0.56 (0.83)	0.93 (1.06)	0.17 (0.08)
20120930 LINET: 7073 RAMS: 7421	0.90 (0.81)	0.13 (0.31)	1.03 (1.17)	0.68 (0.47)	0.78 (0.48)	0.27 (0.61)	1.05 (1.23)	0.45 (0.19)	0.54 (0.05)	0.53 (0.95)	1.16 (0.97)	0.23 (0.01)

20121015	0.76	0.18	0.93	0.53	0.68	0.28	0.94	0.42	0.45	0.57	1.04	0.20
LINET: 4820												
RAMS: 7012	(0.62)	(0.39)	(1.01)	(0.34)	(0.39)	(0.68)	(1.22)	(0.14)	(0.03)	(0.99)	(2.31)	(0.01)
20121111	0.74	0.03	0.76	0.65	0.71	0.05	0.75	0.60	0.61	0.23	0.79	0.44
LINET: 9030												
RAMS: 12099	(0.75)	(0.06)	(0.80)	(0.65)	(0.65)	(0.25)	(0.87)	(0.47)	(0.29)	(0.80)	(1.45)	(0.11)
20121128	0.91	0.01	0.92	0.83	0.88	0.05	0.92	0.74	0.70	0.26	0.94	0.41
LINET: 14357												
RAMS: 15527	(0.92)	(0.05)	(0.97)	(0.81)	(0.66)	(0.32)	(0.98)	(0.37)	(0.17)	(0.85)	(1.14)	(0.06)

T5b: Skill score statistics of the six case studies. Date of forecast and number of flashes observed (LINET) and simulated (RAMS) for each case study are shown in the first column. POD, FAR, Bias, and ETS are given for the MLT1 and MLT10 (in parentheses) for the 25 km, 12.5 km and 5 km overlays superimposed to the 2.5 km RAMS grid. The area considered for the statistics is the area shown in Fig. 4 (10.5 – 14.5 E, 40.5 – 43.5 N). The spatial and temporal thresholds used for the binning of the strokes from an initial strike point recorded by LINET are 5 km and 0.5 s, respectively. The time interval between two calls of the lightning scheme is 5 minutes.

	25 km overlay				12.5 km overlay				5 km overlay			
Case study	POD	FAR	Bias	ETS	POD	FAR	Bias	ETS	POD	FAR	Bias	ETS
20111020 LINET: 18373 RAMS: 19435	0.68 (0.78)	0.17 (0.16)	0.82 (0.94)	0.46 (0.60)	0.63 (0.66)	0.14 (0.15)	0.73 (0.78)	0.47 (0.54)	0.59 (0.50)	0.14 (0.43)	0.68 (0.88)	0.48 (0.34)
20120903 LINET: 7291 RAMS: 6368	0.77 (0.54)	0.09 (0.32)	0.84 (0.80)	0.55 (0.28)	0.60 (0.40)	0.24 (0.55)	0.80 (0.90)	0.34 (0.20)	0.41 (0.17)	0.54 (0.81)	0.88 (0.92)	0.18 (0.01)
20120930 LINET: 8055 RAMS: 7421	0.90 (0.81)	0.12 (0.31)	1.02 (1.17)	0.69 (0.48)	0.78 (0.49)	0.25 (0.57)	1.03 (1.13)	0.46 (0.21)	0.55 (0.04)	0.50 (0.95)	1.09 (0.80)	0.24 (0.01)
20121015 LINET: 5337 RAMS: 7012	0.76 (0.61)	0.18 (0.38)	0.93 (0.99)	0.53 (0.35)	0.67 (0.38)	0.27 (0.68)	0.92 (1.15)	0.42 (0.14)	0.45 (0.03)	0.54 (0.99)	0.99 (1.95)	0.21 (0.01)

20121111	0.74	0.02	0.76	0.65	0.71	0.05	0.75	0.60	0.61	0.19	0.76	0.50
LINET: 11155												
RAMS: 12099	(0.74)	(0.06)	(0.79)	(0.64)	(0.64)	(0.23)	(0.83)	(0.48)	(0.29)	(0.74)	(1.11)	(0.13)
20121128	0.91	0.01	0.92	0.83	0.87	0.04	0.91	0.74	0.70	0.23	0.90	0.43
LINET: 17100												
RAMS: 15527	(0.92)	(0.04)	(0.96)	(0.82)	(0.65)	(0.29)	(0.92)	(0.37)	(0.16)	(0.81)	(0.84)	(0.06)