ACPD INTERACTIVE DISCUSSION
COMMENTS REFEREE #1

AUTOMATED THUNDERSTORM TRACKING: UTILIZATION OF THREE-DIMENSIONAL
LIGHTNING- AND RADAR DATA

Many thanks for the comments.

The same comments were already given in the initial access peer-review (IAPR) process and as far as possible the authors have already considered them. The respective response text is given in the following. Where necessary, the content is adapted or completed with respect to the new context (e.g. line references).

– title should be changed, when the topic of the paper is tracking only. By including "Nowcasting" in the title the interested reader is waiting for examples and detailed verification
As considered in IAPR: The word nowcasting has been used, because the final goal of this study is the benefit of the new data source and the developed method for nowcasting purposes. But it is correct, that nowcasting is not the direct focus but rather a further perspective, only discussed in the conclusions. So the word nowcasting has been removed from the title and the text has been adapted accordingly.
New comment: However, the title has not been altered at the discussion webpage. For the final version, it will be considered.

Additional comments:
line 58: previous studies as Steinacker et al., used lightning data only for tracking
As considered in IAPR: Introduced on page 2182, line 1

line 85: examples of those stroke parameters would be helpful
As considered in IAPR: Examples are introduced on page 2182, line 11

line 370: see recommendation for title as nowcasting is not in the focus of the present study
As considered in IAPR: page 2189, line 15: The comment is correct. No changes were necessary in this line, since the meaning of the sentence remains in accordance to the altered title.

line 427: Fig. 4b/c show displacement in IC/CG to reflectivity (reflectivity more eastern of TL cluster). Do you have any explanation for that? LINET data +/–2 min, IC aloft of updraft?
As considered in IAPR: This is correct. Lightning data are taken form a larger time span, whereas the radar scan is more a kind of a snapshot. So there is cell evolution during a few minutes and a tilting of the cells due to wind shear effect. The explanation has been included in the text (page 2191, line 1).

line 540–555: As you mentioned – very small effect
Refers to page 2193, line 27

line 563: en–tries?
As considered in IAPR: Text has been altered according to the comment.

line 577: Do you have any explanation for the 4% start to pure lightning-cell. Not covered radar areas?
As considered in IAPR, refers to page 2194, line 25: Radar cells mark intensified precipitation at the lowest scan level (please, note chapter Data Base and Conclusions). This leaves the possibility that the precipitation intensity at low level is not high and extensive enough to be identified as radar-cell at the time lightning activity starts aloft. The investigated domain, which is oriented on the radar domain, is not affected by shading effects (please, note page 2184, line 25). To become clearer, the respective percentages have been added to the conclusion (page 2199, line 14ff).

line 622: no new paragraph
As considered in IAPR: text has been altered according to the comment.

line 725:Are there significant differences in the position of Cb-tram contours in comparison to ec-tram.Do you have analyzed the mean differences of cell-areas of li na rad-tram as well as mean difference vector in the location.
As discussed in IAPR: A detailed comparison between Cb-TRAM contours and ec-TRAM contours has not been in the focus of this study and therefore it was not performed. Only the storm classification retrieved by Cb-TRAM has been investigated. Line 732ff has been altered for a clearer understanding. An analysis about the overlaps of radar-cell and lightning-cell outlines has been considered more suitable to analyze the aerial differences between radar- and lightning cells. They have been used to tune the respective cell identification criteria. This issue is summarized on page 2191, line 7.

Fig.1: differences in white contour to yellow areas?
As considered in IAPR: The difference between the contour and the yellow areas is the result of the cell identification method, which extends coherent areas above the identification threshold by 3 pixel in each direction (please see chapter 2.1.2. Procedural Steps, Step 3). But for a better understanding an explanation is added in the text (page 2187, line 26).

Fig.5: is one of the main figures of the paper. Hopefully the image will be presented large enough. Other possibility would be to split the image into 3x3 panels for detailed comparison of ec-li tram in first line, ec-rad tram in second line and CG/IC in third line. Time Steps as presented in 3 col.
As considered in IAPR: The horizontal alignment has been changed to vertical so the subfigures can be larger illustrated.
New comment: it shall also be considered in the final version.

Fig.7: a is left hand side and b is right hand side. Give a note as in other figures.
As considered in IAPR: Text has been altered according to the comment.

Fig.9: IC height percentiles not found. Define cloud top and overshooting top height estimation in more detail.
As considered in IAPR: The false reference to IC height percentiles has been removed. An explanation for the term „overshooting top" has been added to the text (please see page 2195, line 18).

Fig.10: horizontal scale is missing (but available in Fig.4a)
As considered in IAPR: Figure has been altered according to the comment.

Other relevant references:
Meteorology and Atmospheric Physics
February 2000, Volume 72, Issue 2-4, pp 101-110
Automatic Tracking of Convective Cells and Cell Complexes from Lightning and Radar Data
Steinacker et al.
As considered in IAPR: The reference is considered now on page 2182, line 1.

Applied Meteorology and Climatology, 2012
Development and Application of a Satellite-based Convective Cloud Object-Tracking
Methodology: A Multipurpose Data Fusion Tool
Sieglaff et al.,
New comment: This reference has not been publicly available till March 2013. It can be
considered in the final version.
(Sieglaff, Justin M., Daniel C. Hartung, Wayne F. Feltz, Lee M. Cronce, Valliappa Lakshmanan,
2013: A Satellite-Based Convective Cloud Object Tracking and Multipurpose Data Fusion Tool
with Application to Developing Convection. J. Atmos. Oceanic Technol., 30, 510–525.
doi: http://dx.doi.org/10.1175/JTECH-D-12-00114.1)