



*Supplement of*

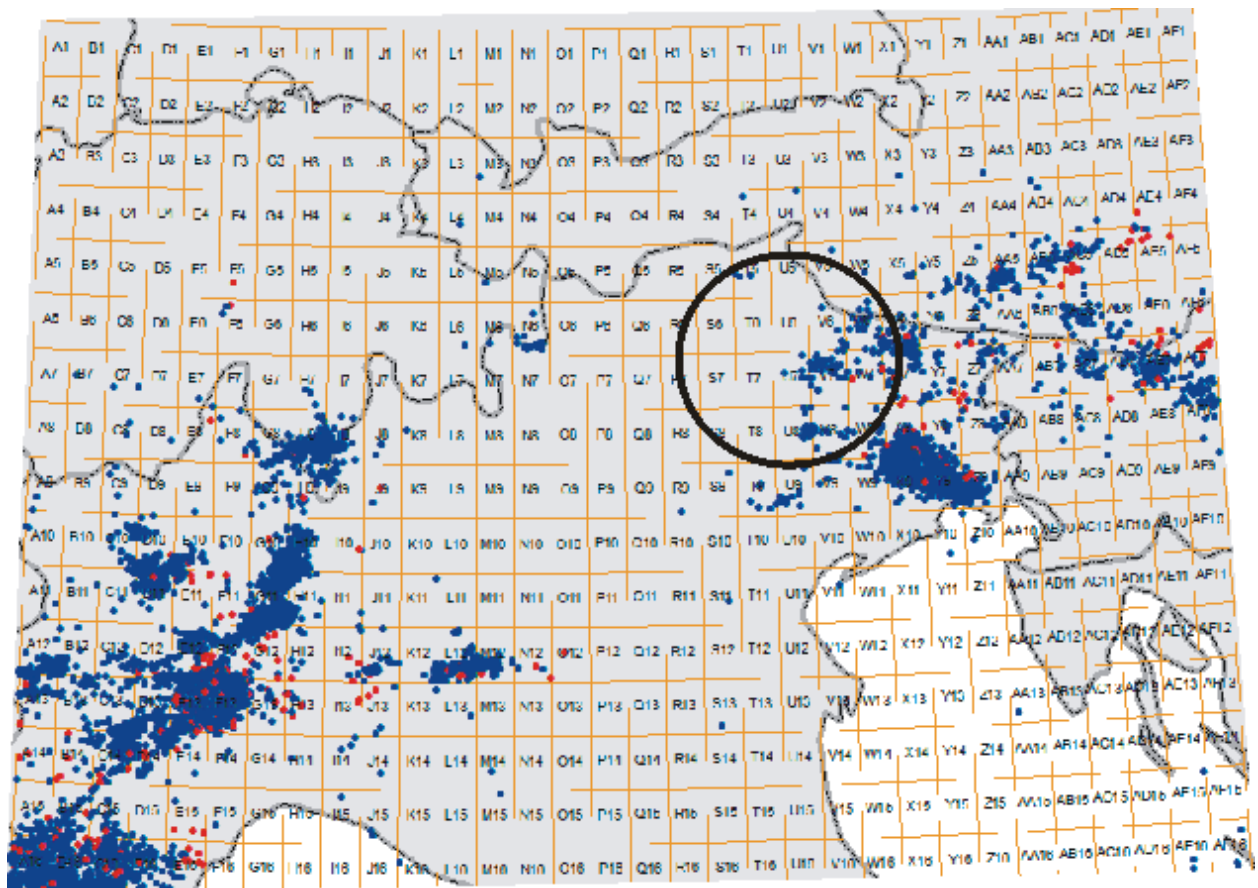
**Atmospheric circulation patterns, cloud-to-ground lightning, and locally intense convective rainfall associated with debris flow initiation in the Dolomite Alps of northeastern Italy**

**S. Jeffrey Underwood et al.**

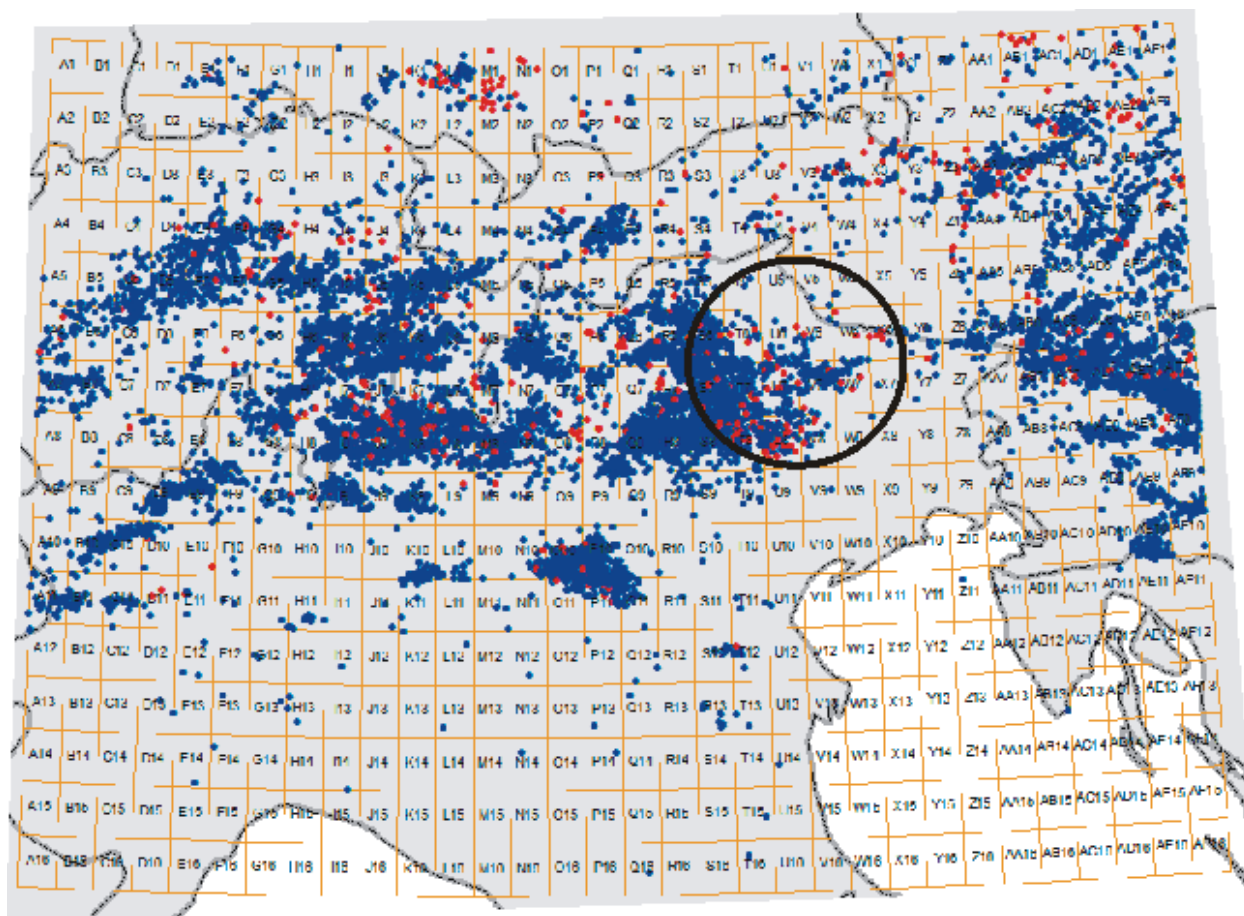
*Correspondence to:* S. Jeffrey Underwood ([sjunderwood@georgiasouthern.edu](mailto:sjunderwood@georgiasouthern.edu))

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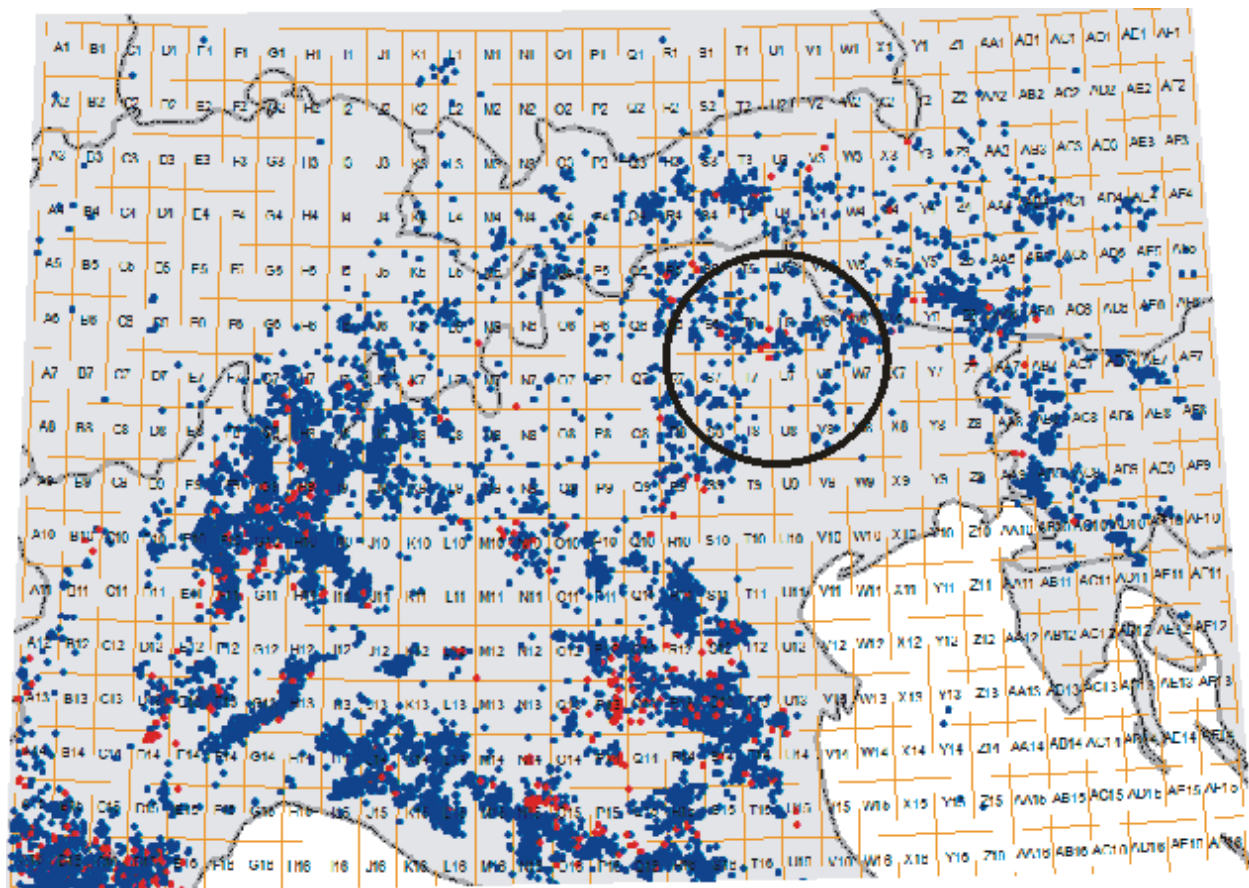
## Supplement S1



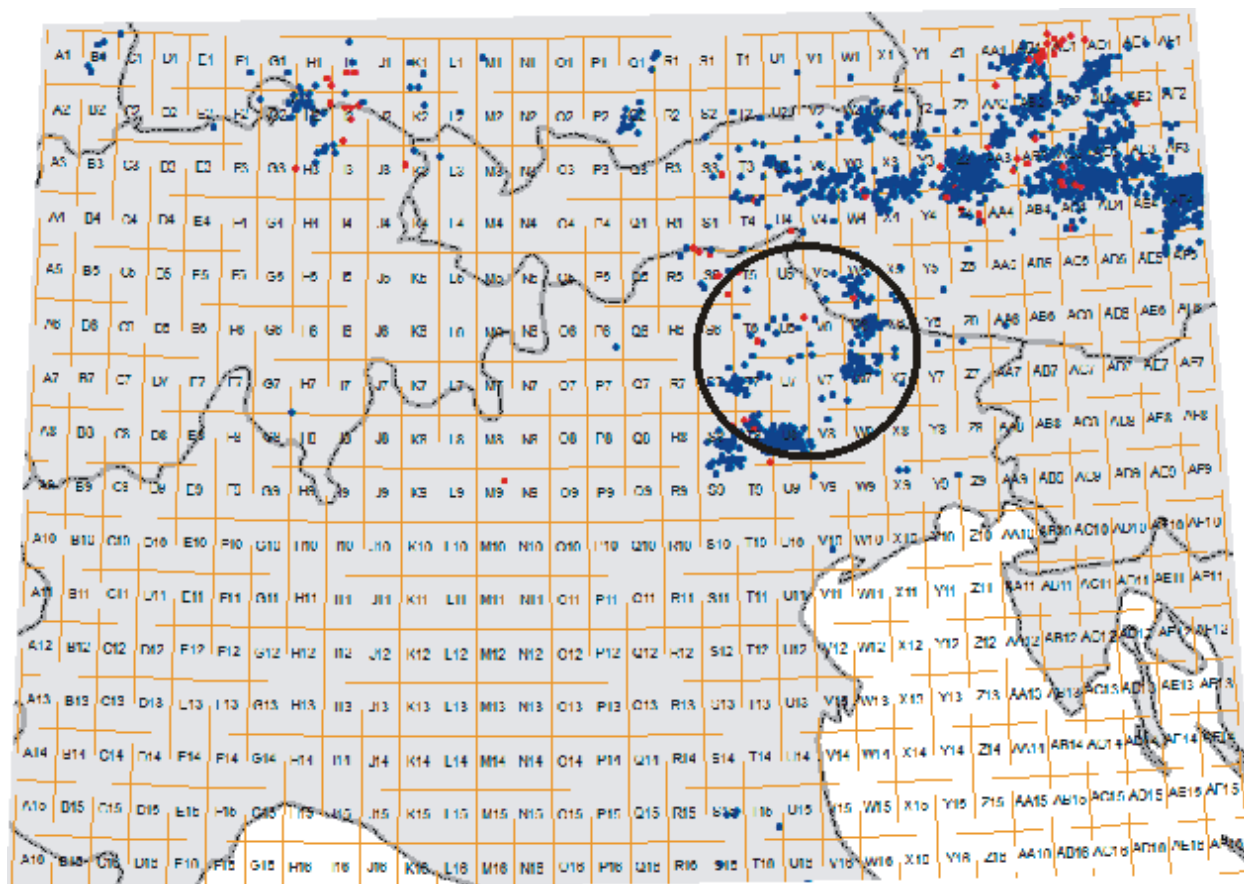
Event-day CG flashes for 7 August 1996 (blue markers = negative flash; red markers = positive flash)



Event-day CG flashes for 12 June 1997 (blue markers = negative flash; red markers = positive flash)

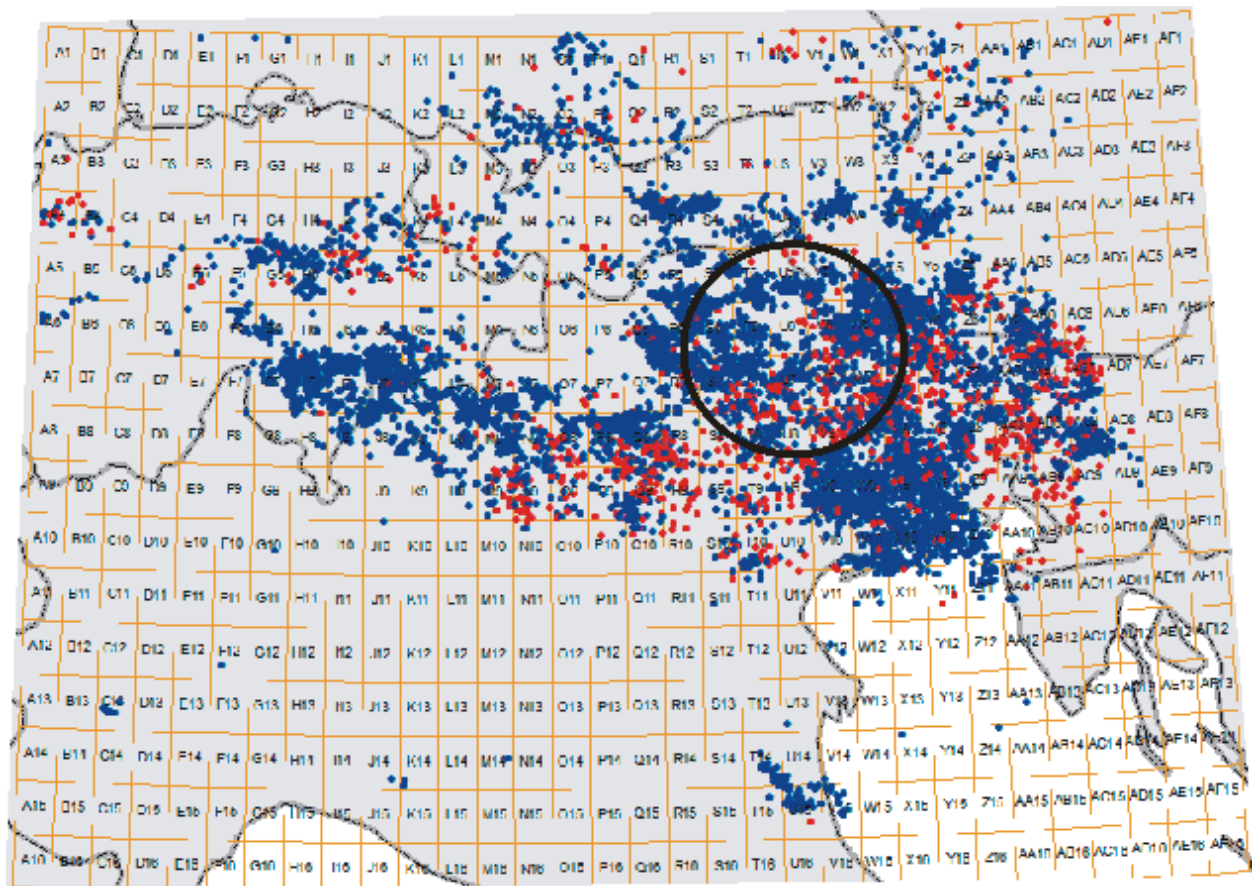


Event-day CG flashes for 17 August 1998 (blue markers = negative flash; red markers = positive flash)

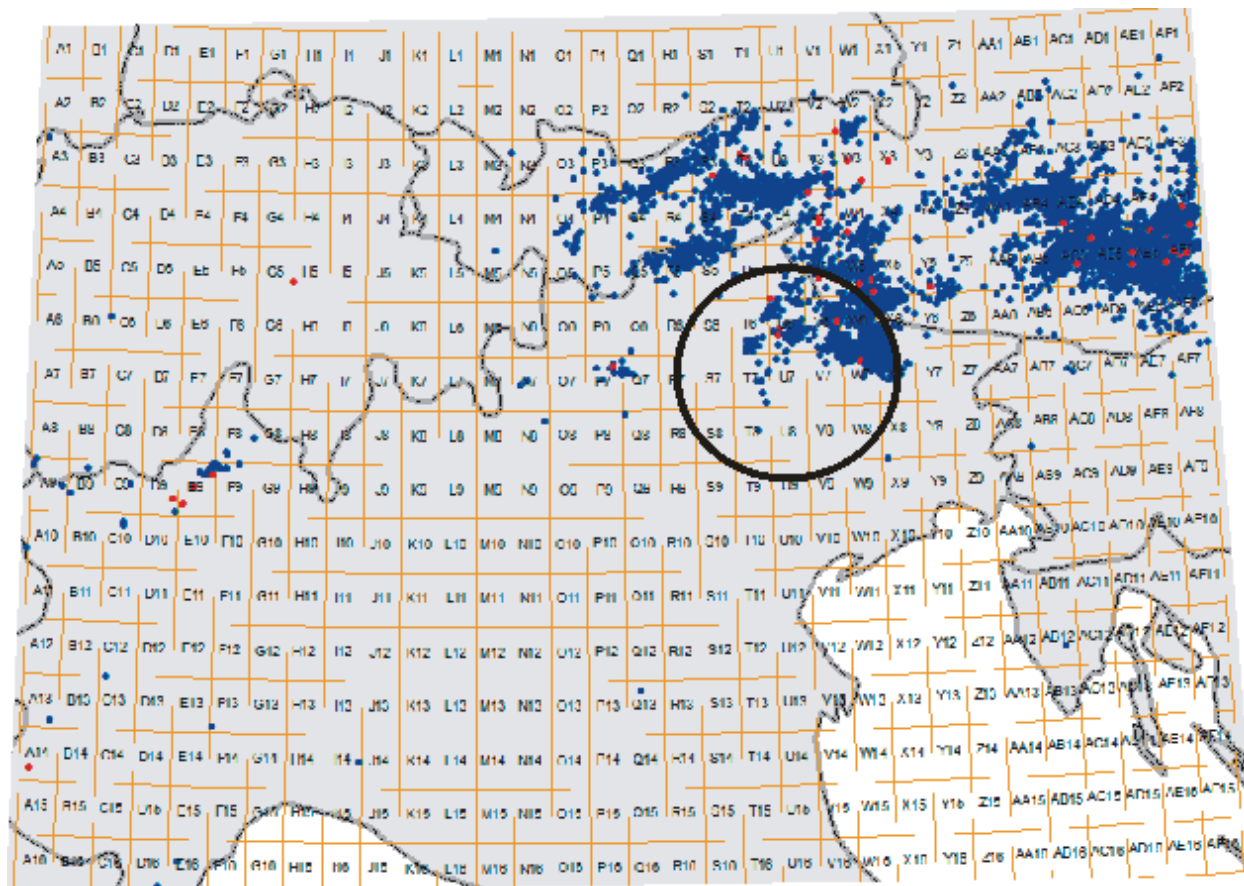


Event-day CG flashes for 20 August 1999 (blue markers = negative flash; red markers = positive flash)

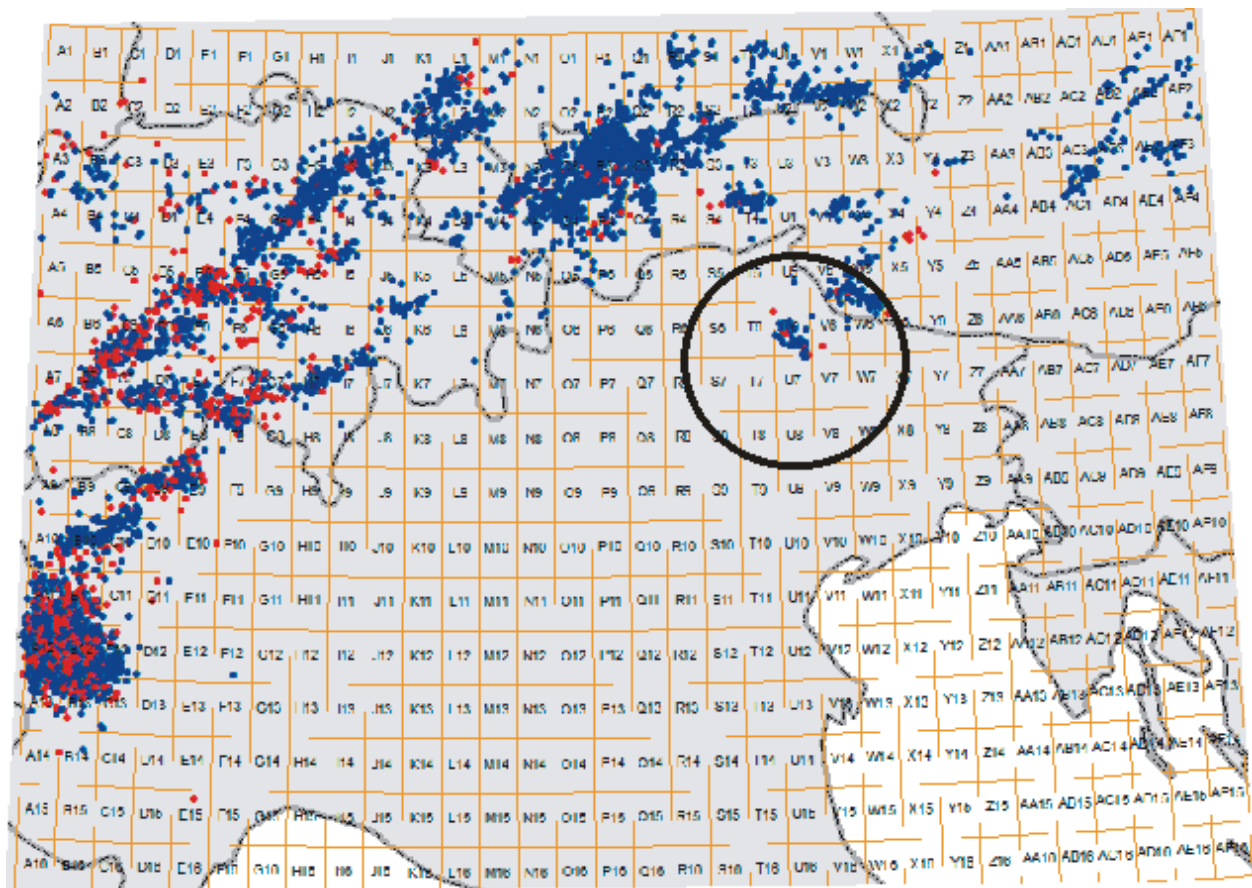




Event-day CG flashes for 30 June 2001 (blue markers = negative flash; red markers = positive flash)

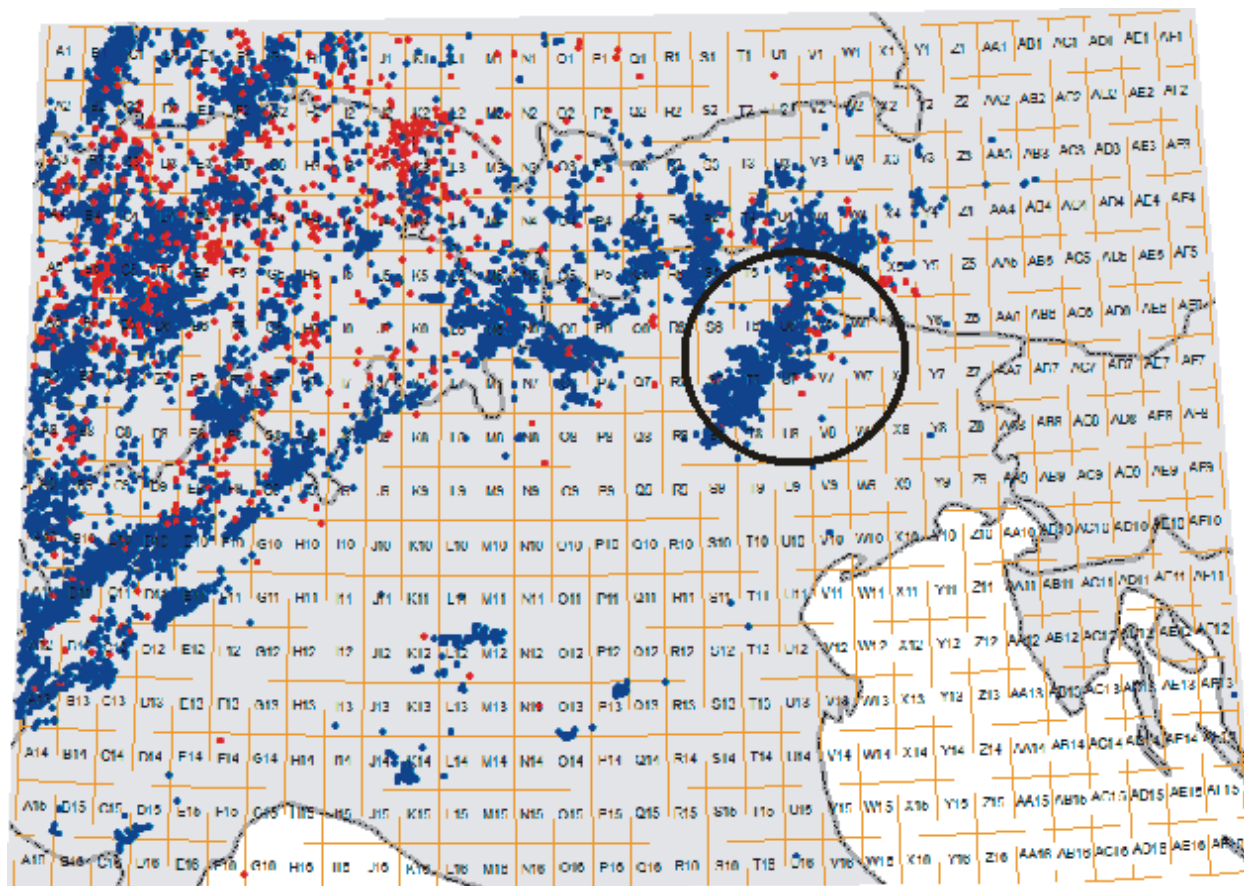


Event-day CG flashes for 19 July 2004 (blue markers = negative flash; red markers = positive flash)

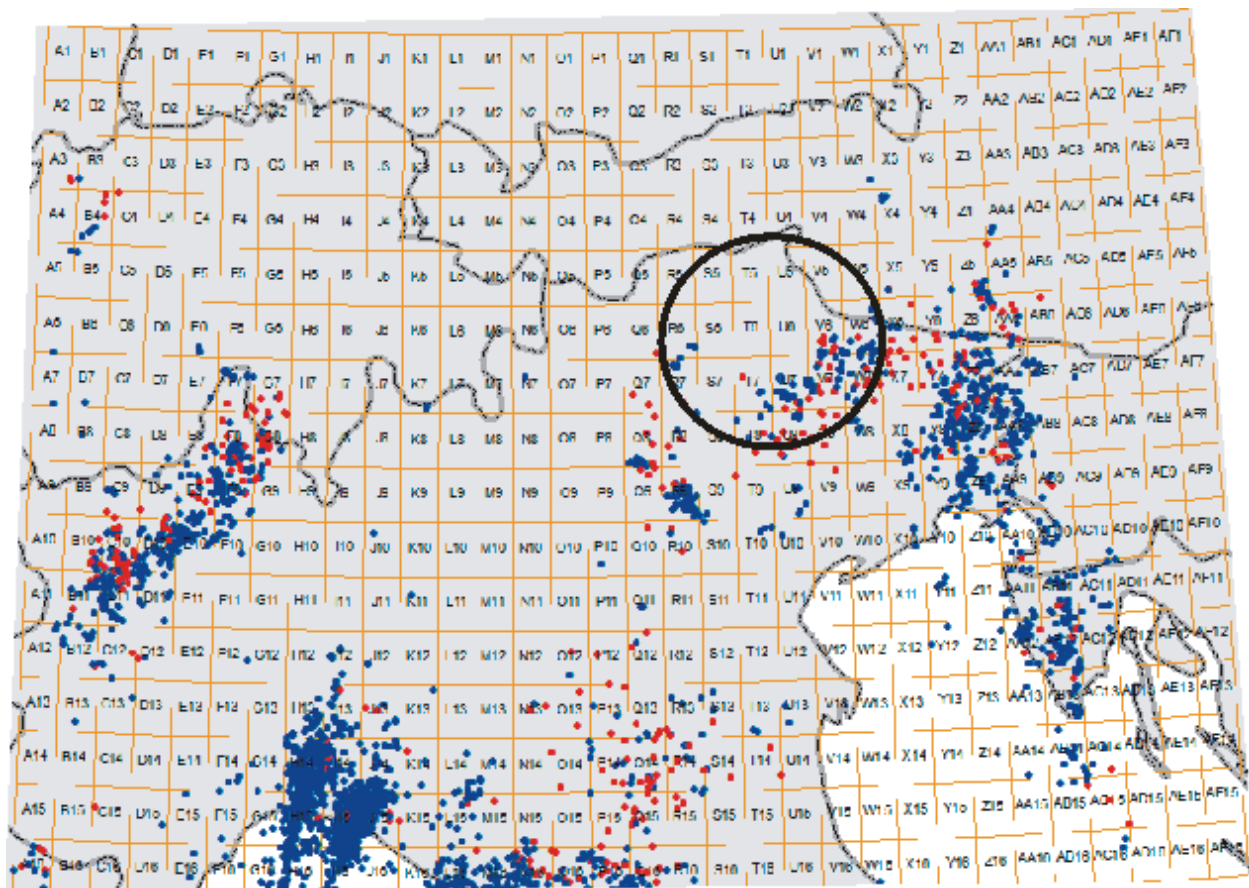


Event-day CG flashes for 18 August 2011 (blue markers = negative flash; red markers = positive flash)

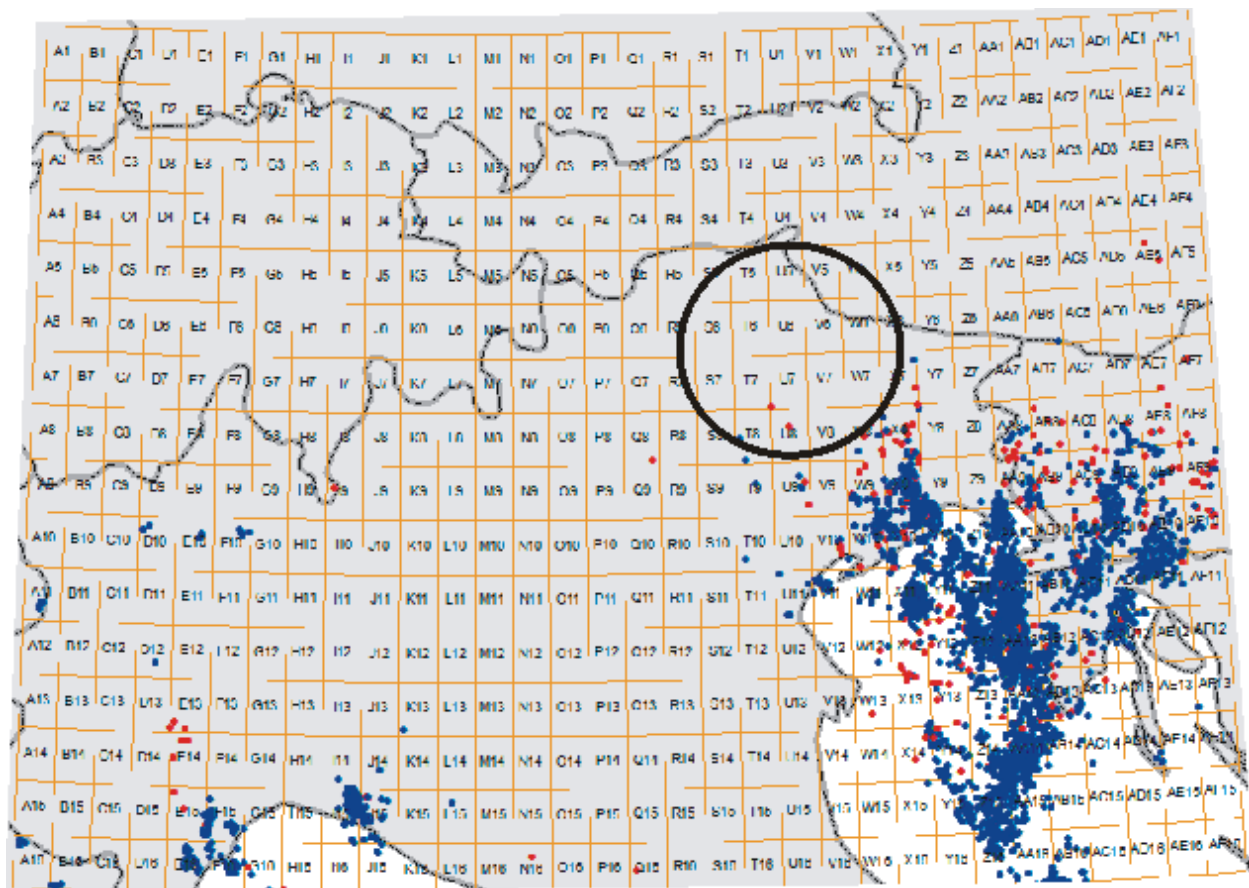




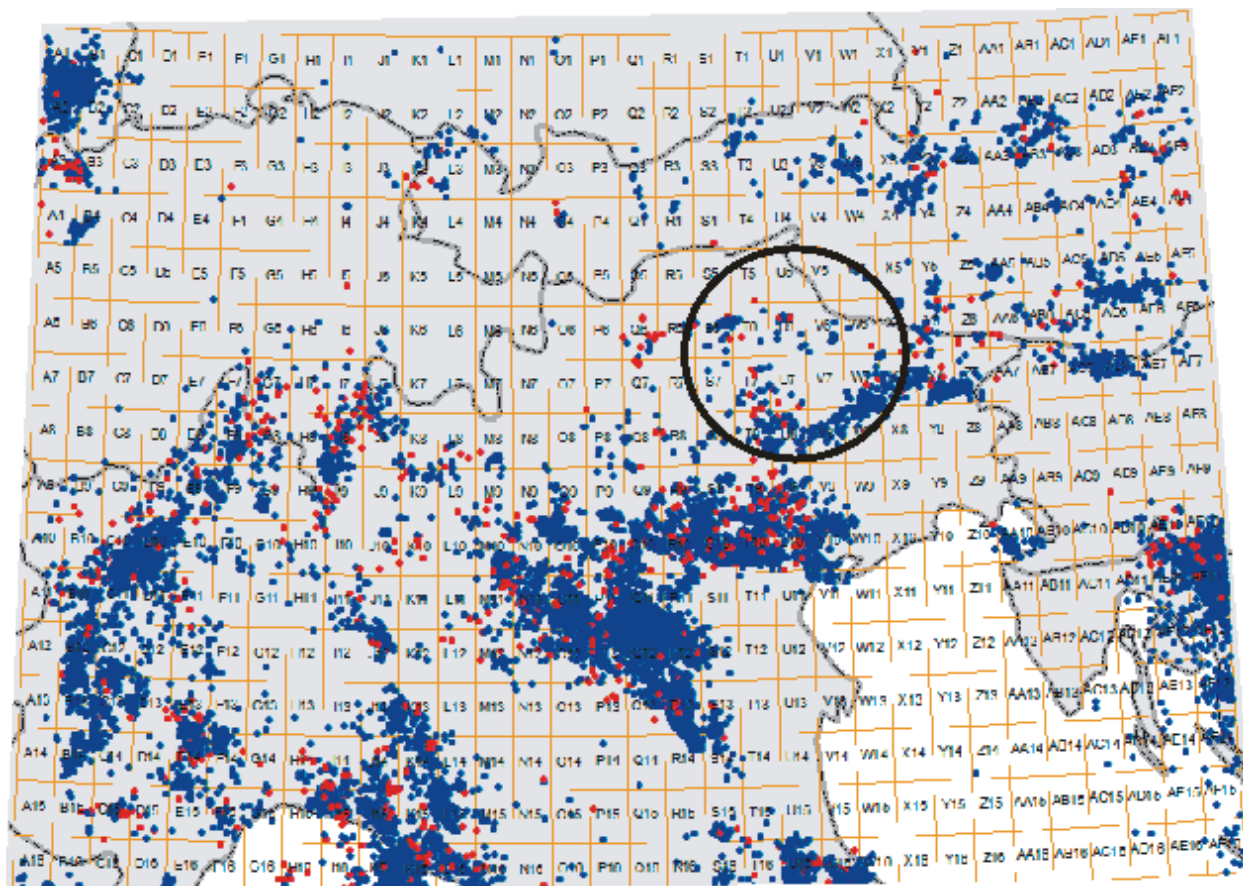
Event-day CG flashes for 5 July 2006 (blue markers = negative flash; red markers = positive flash)



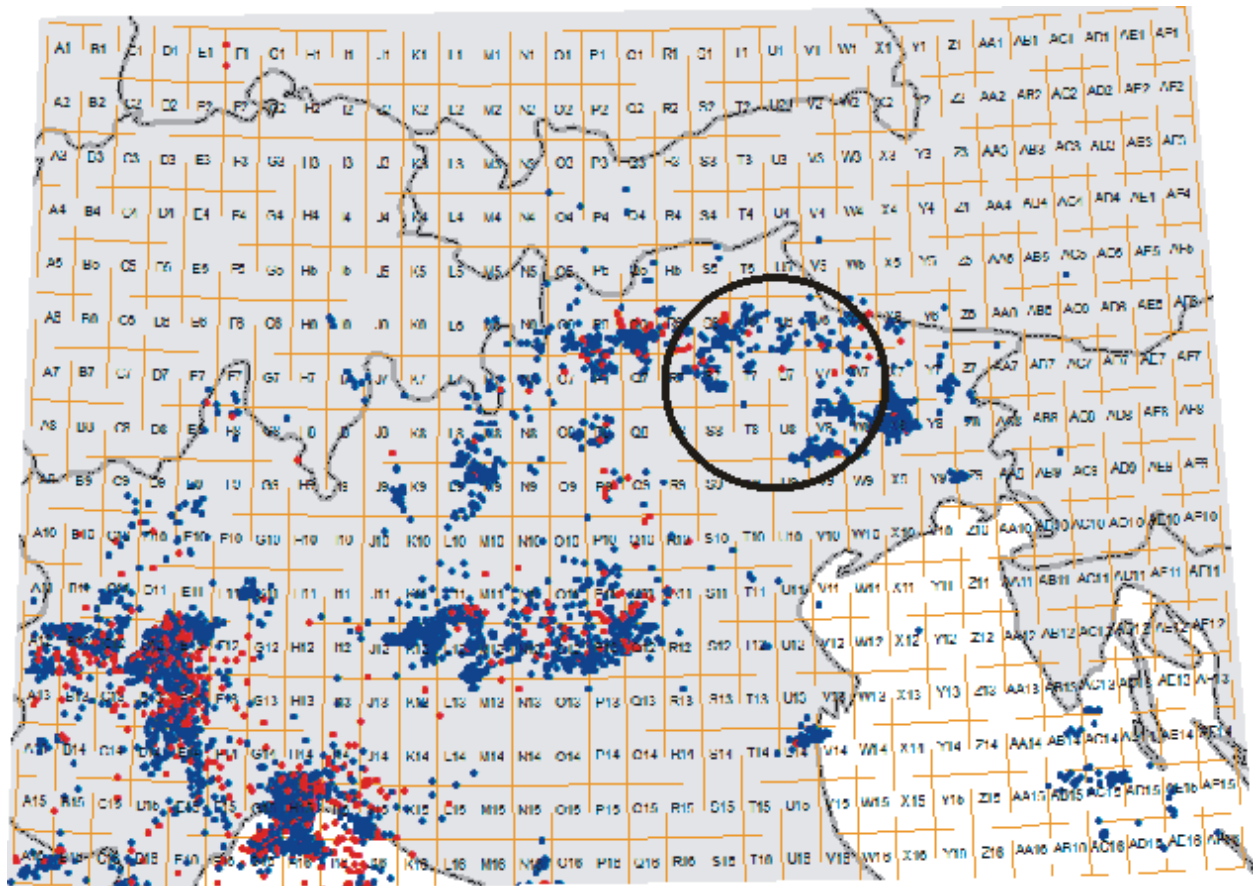
Event-day CG flashes for 20 September 1999 (blue markers = negative flash; red markers = positive flash)



Event-day CG flashes for 30 September 2000 (blue markers = negative flash; red markers = positive flash)



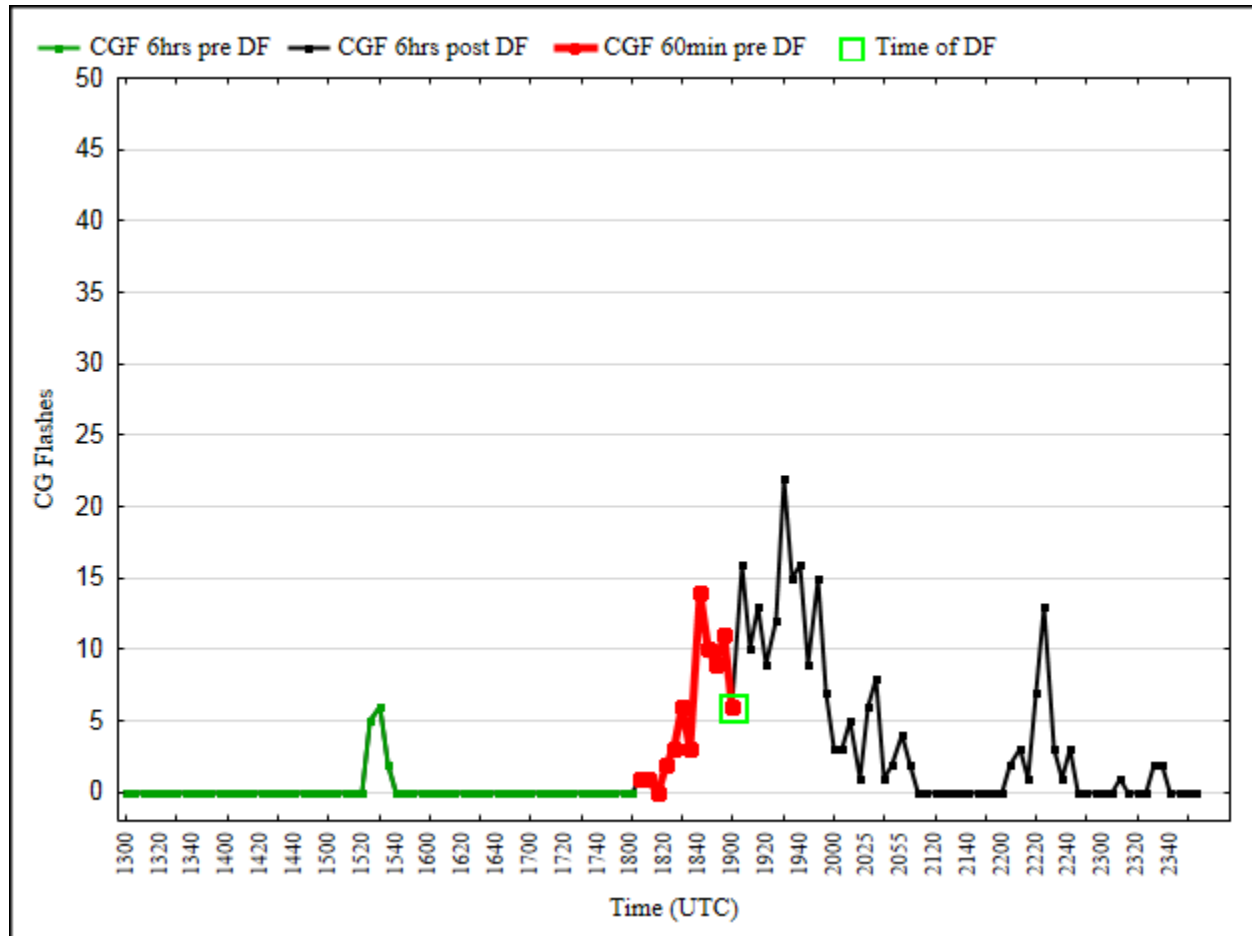
Event-day CG flashes for 28 July 1999 (blue markers = negative flash; red markers = positive flash)



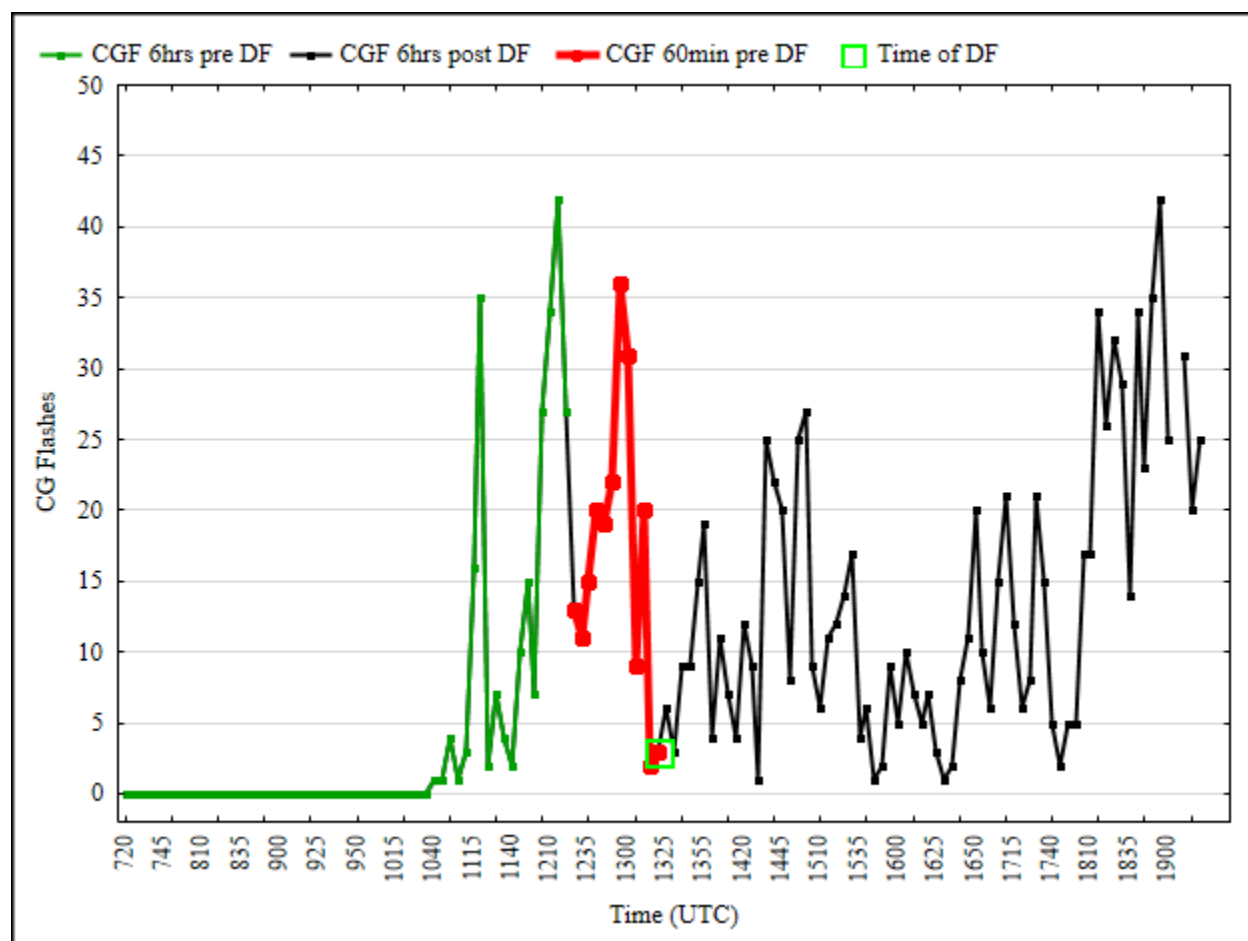
Event-day CG flashes for 4 July 2011 (blue markers = negative flash; red markers = positive flash)



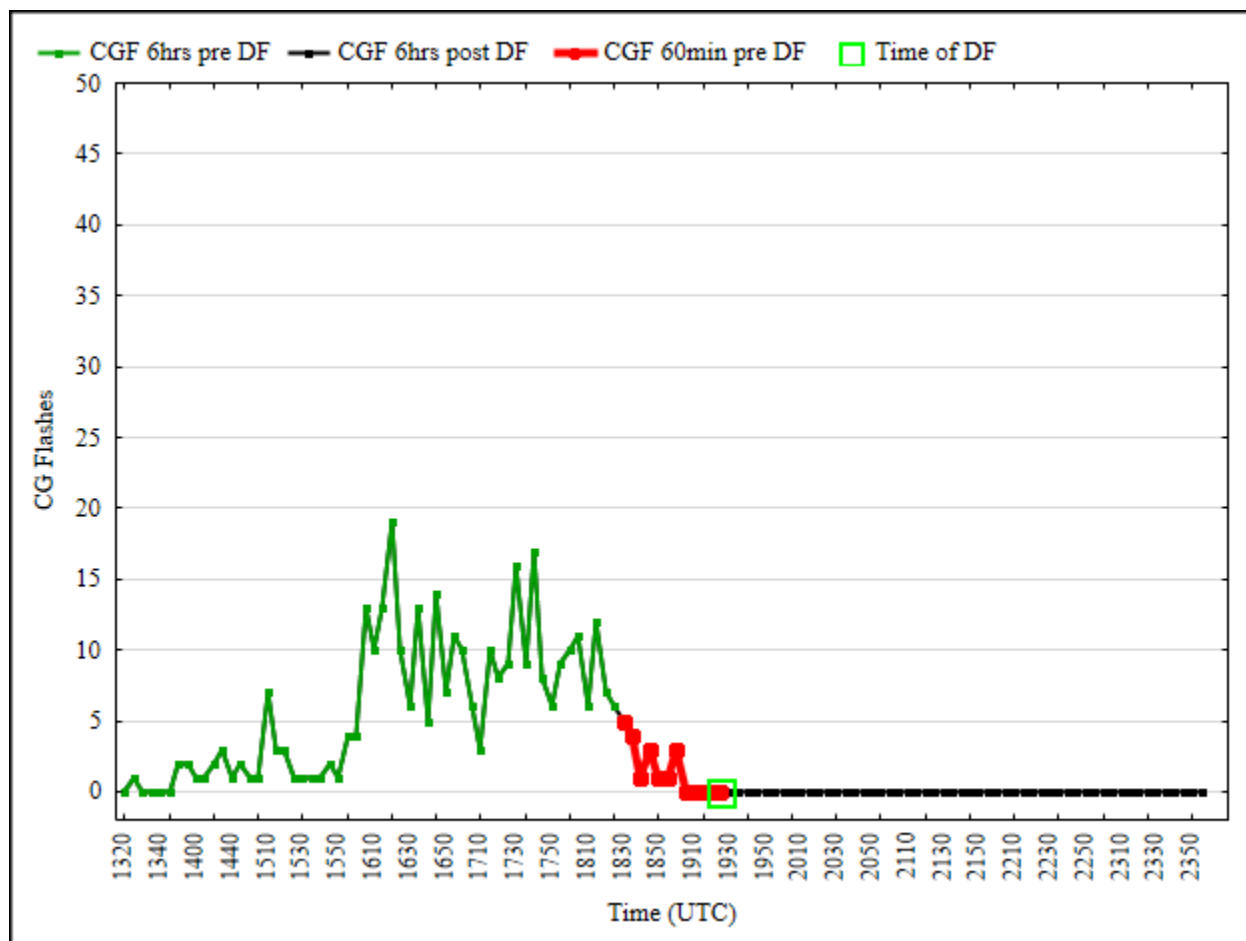
## Supplement S2



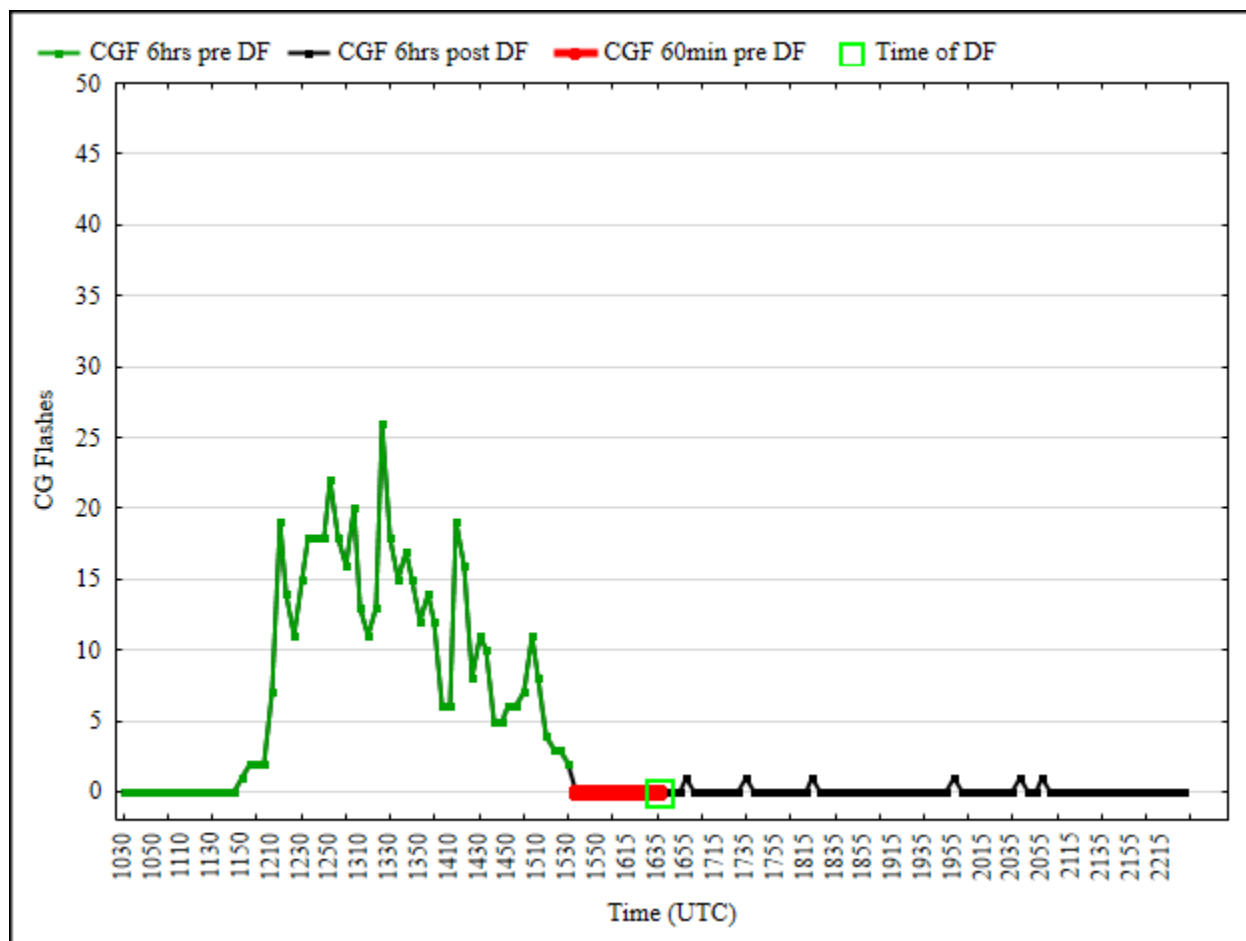
Meso- $\beta$  CG flash plot for 7 August 1996



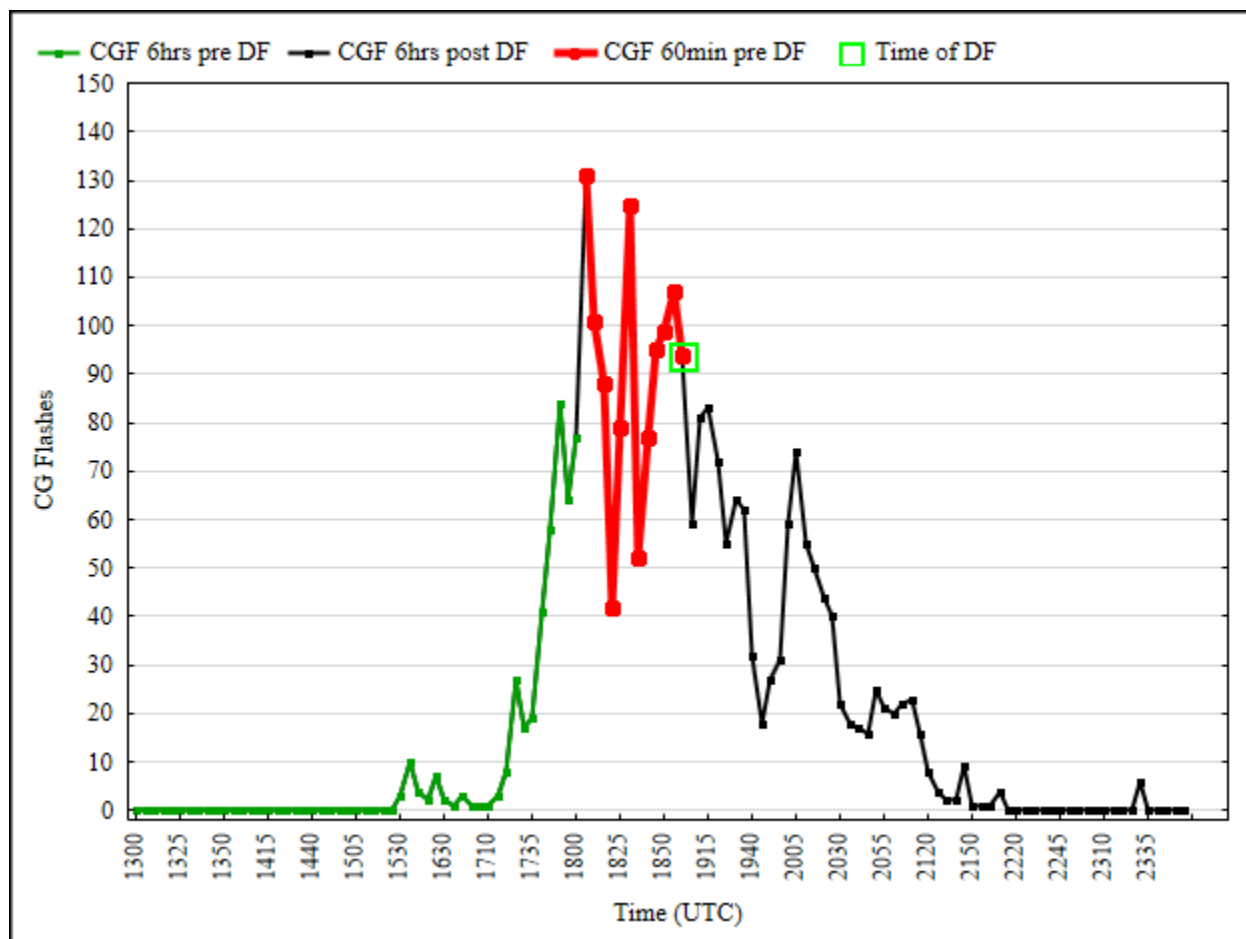
Meso- $\beta$  CG flash plot for 12 June 1997



Meso- $\beta$  CG flash plot for 17 August 1998

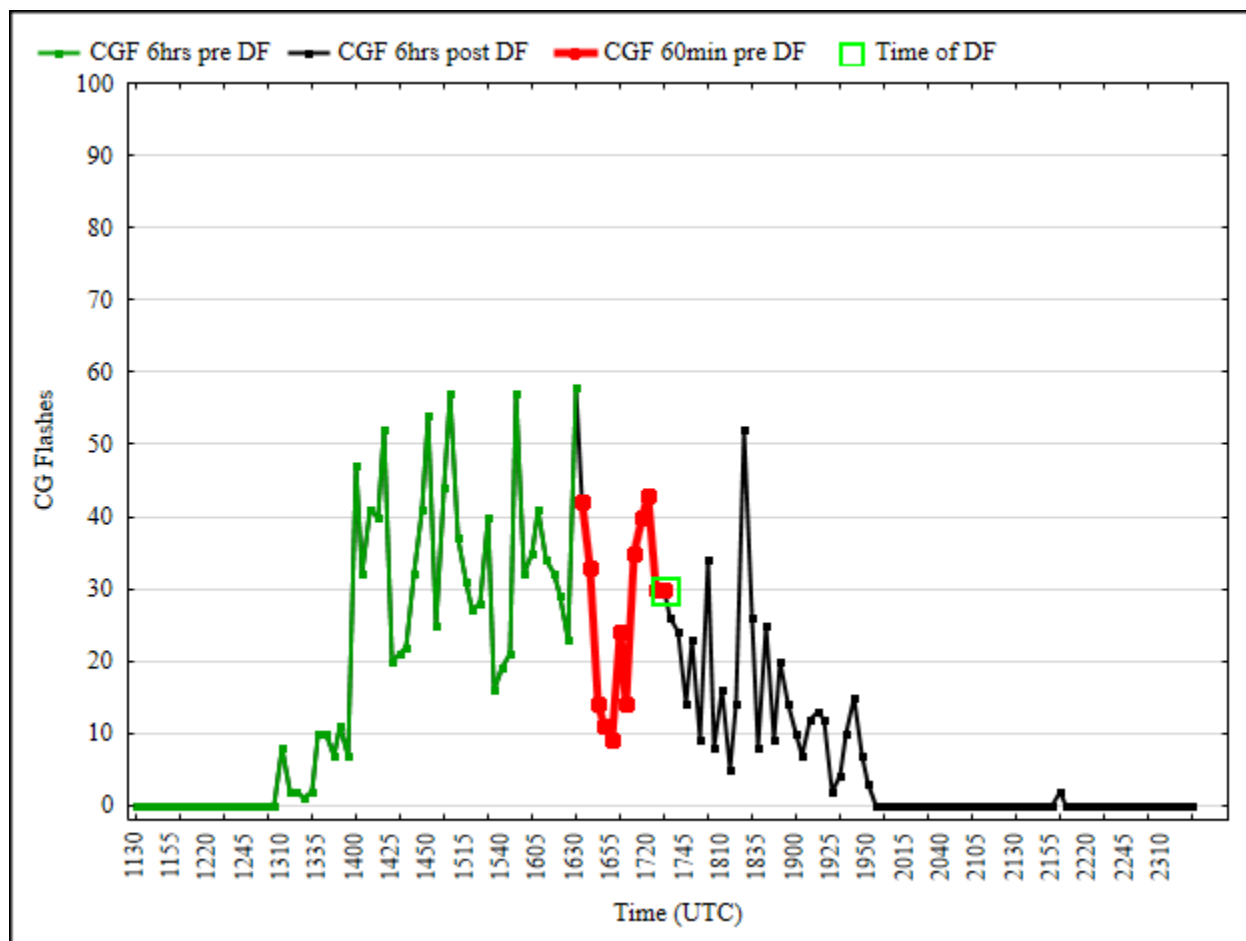


Meso- $\beta$  CG flash plot for 20 July 1999

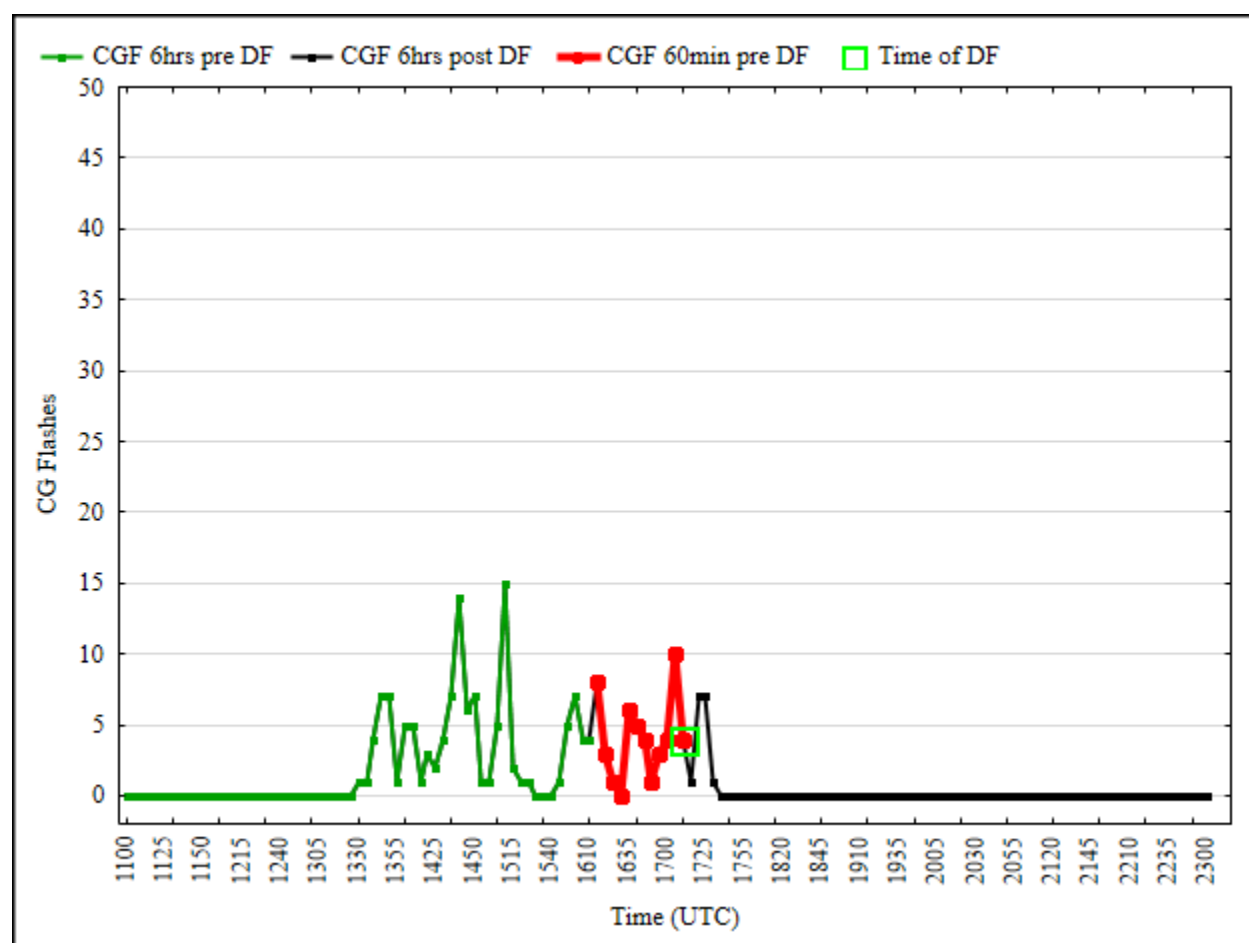


Meso- $\beta$  CG flash plot for 30 June 2001

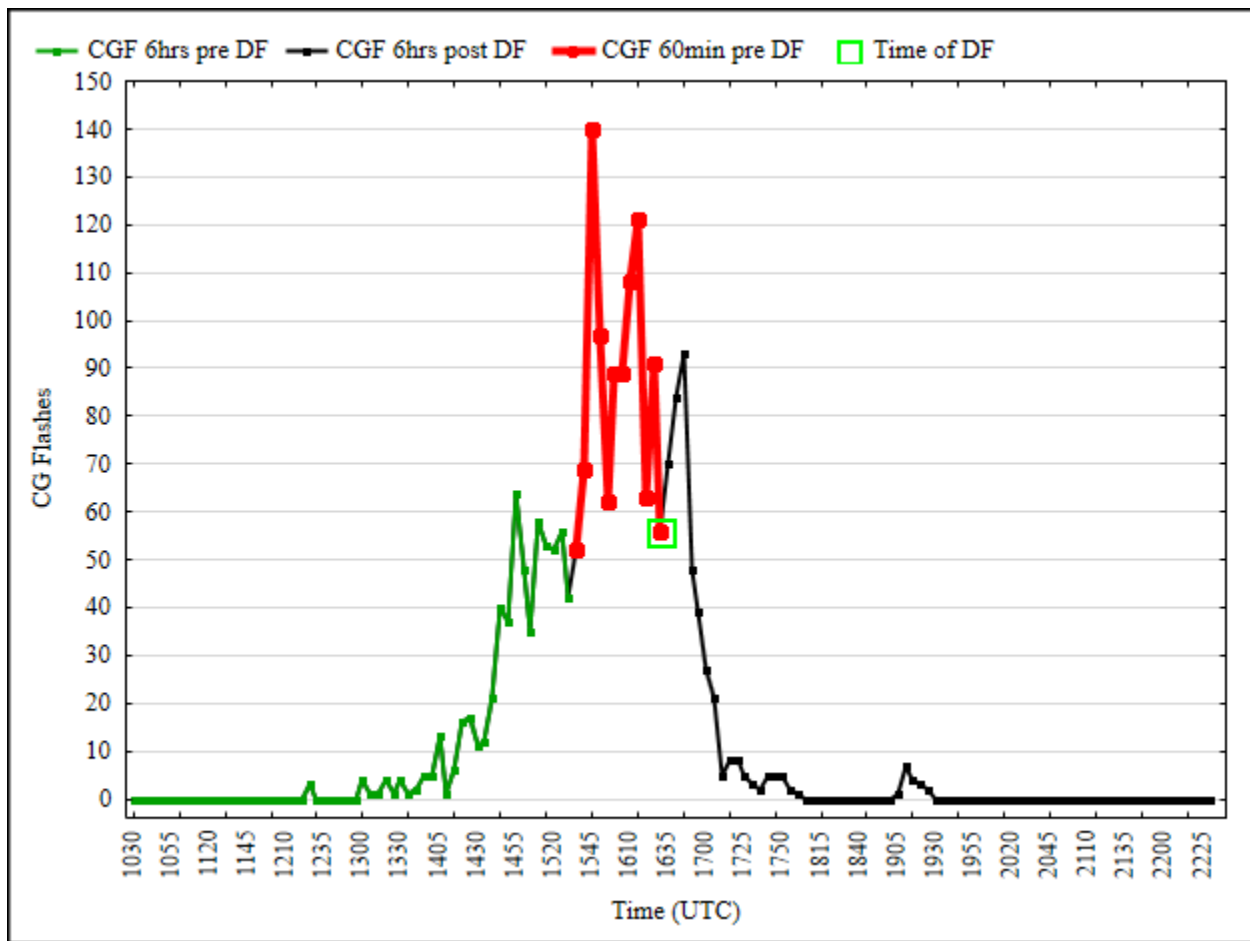




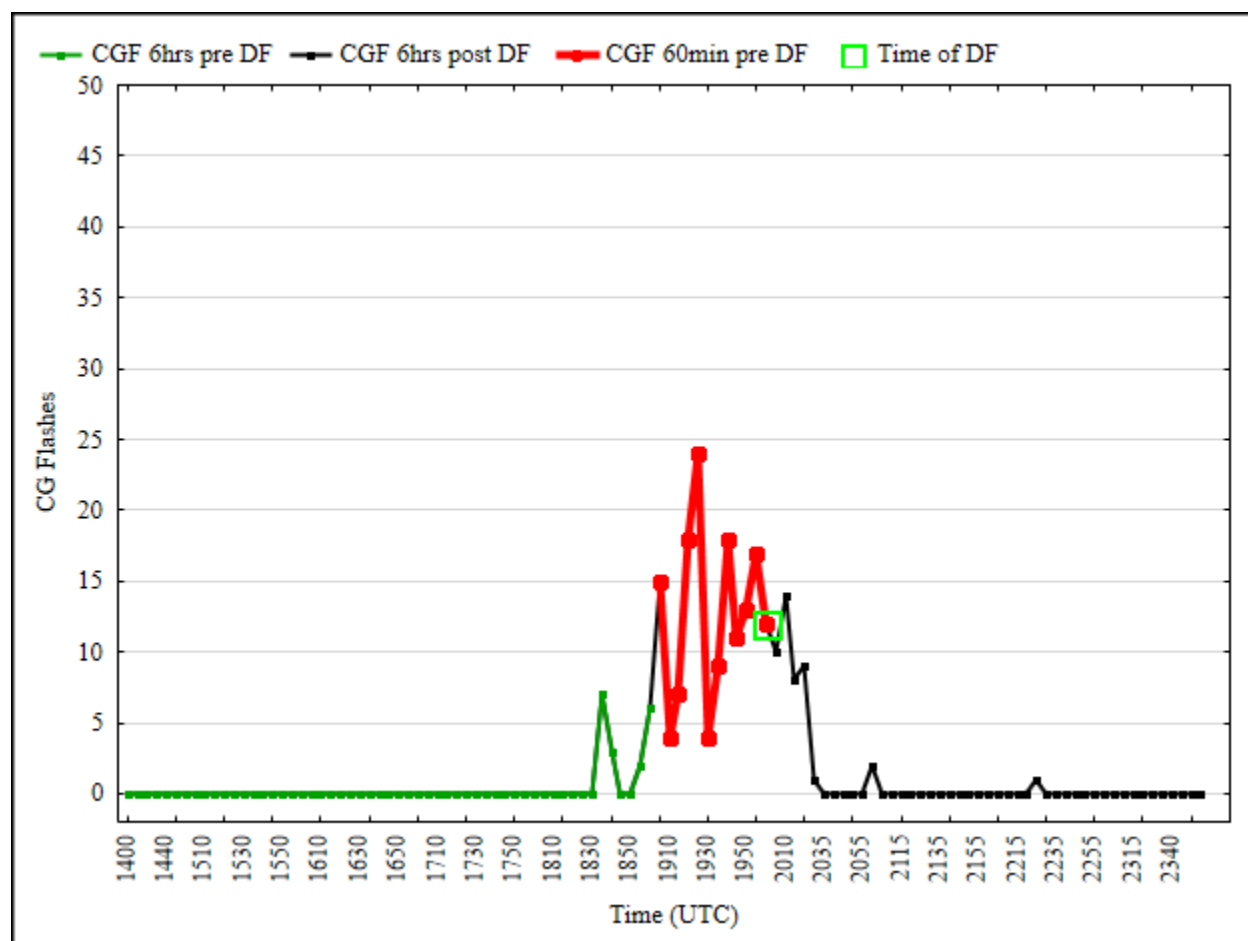
Meso- $\beta$  CG flash plot for 19 July 2004



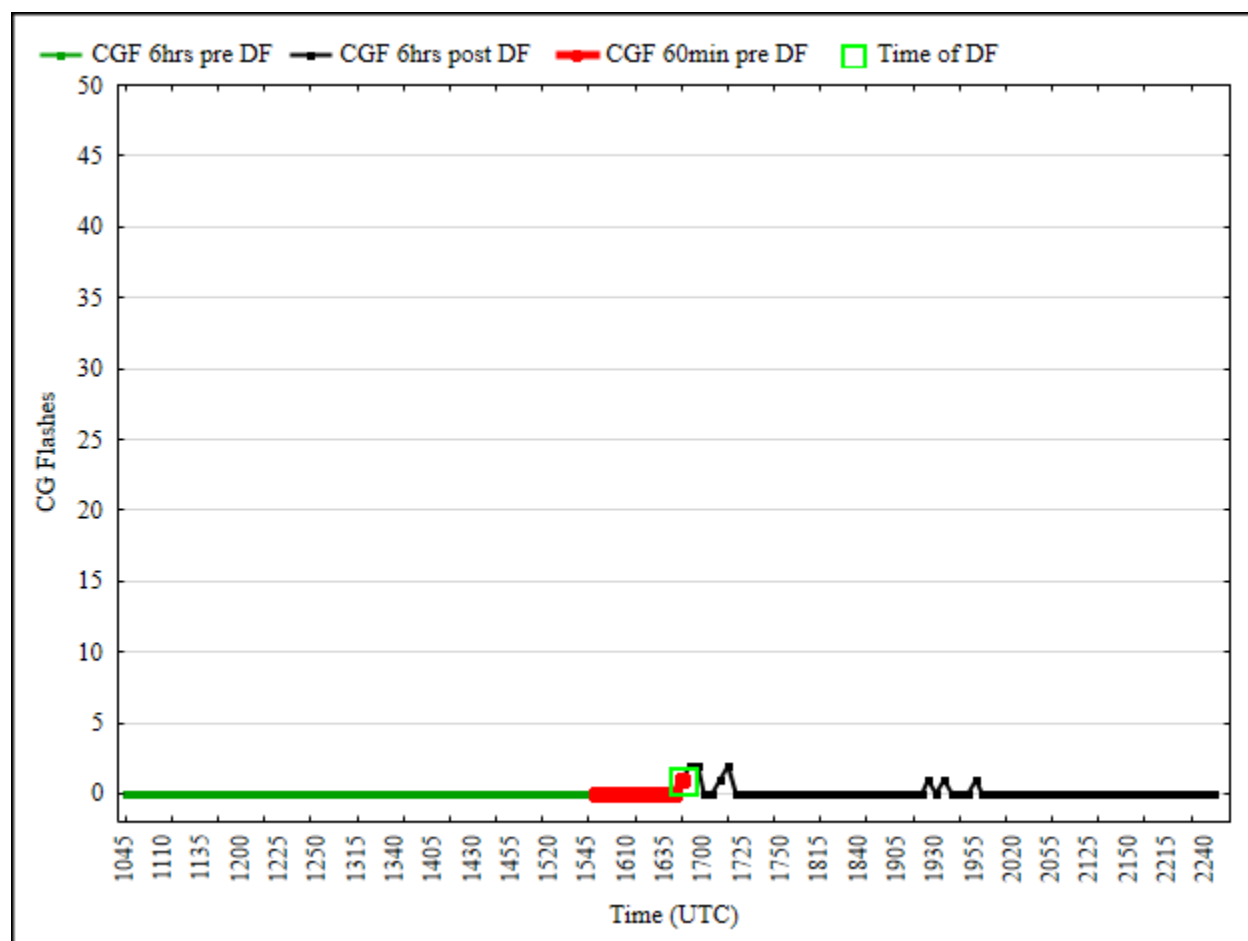
Meso- $\beta$  CG flash plot for 18 August 2011



Meso-β CG flash plot for 5 July 2006

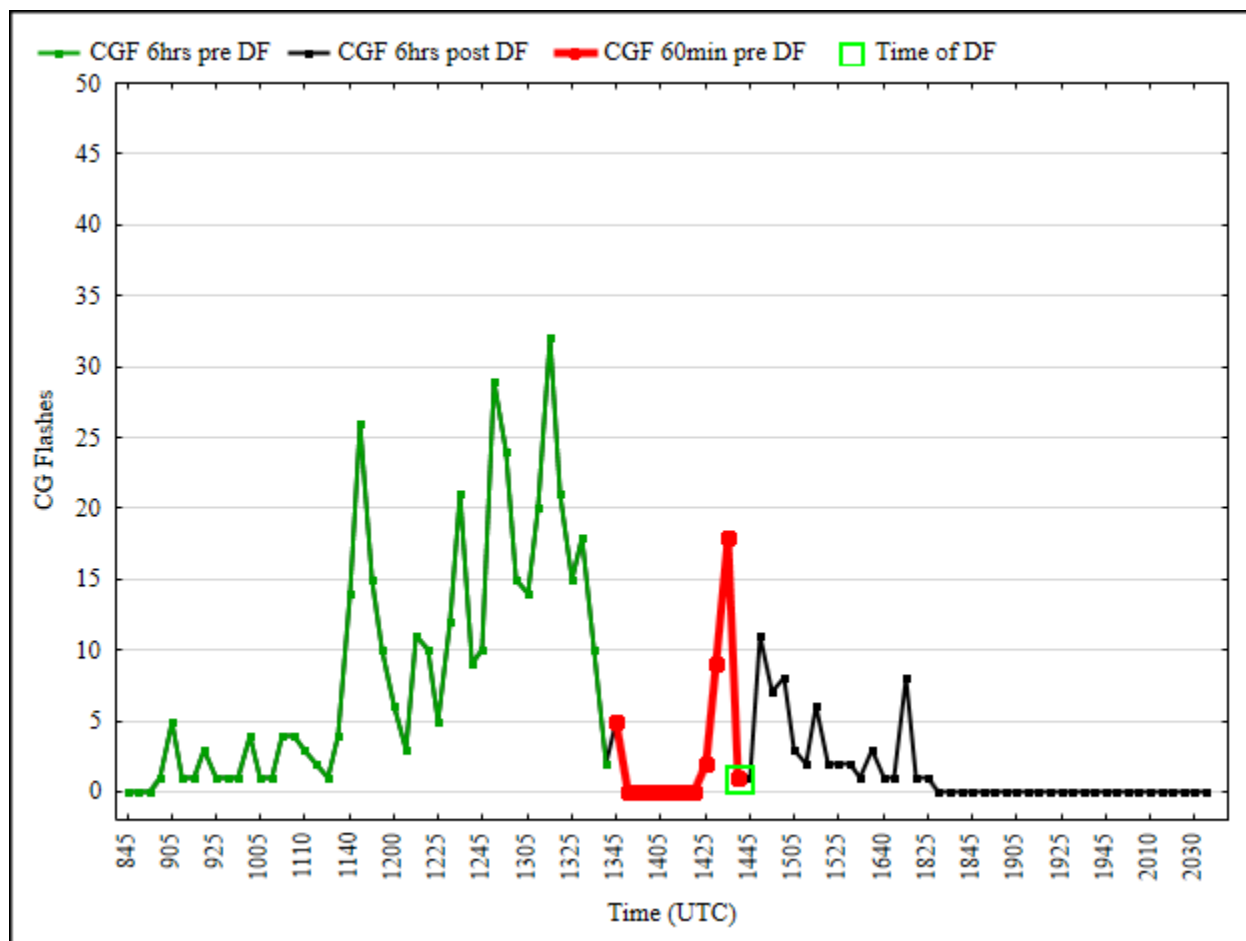


Meso- $\beta$  CG flash plot for 20 September 1999

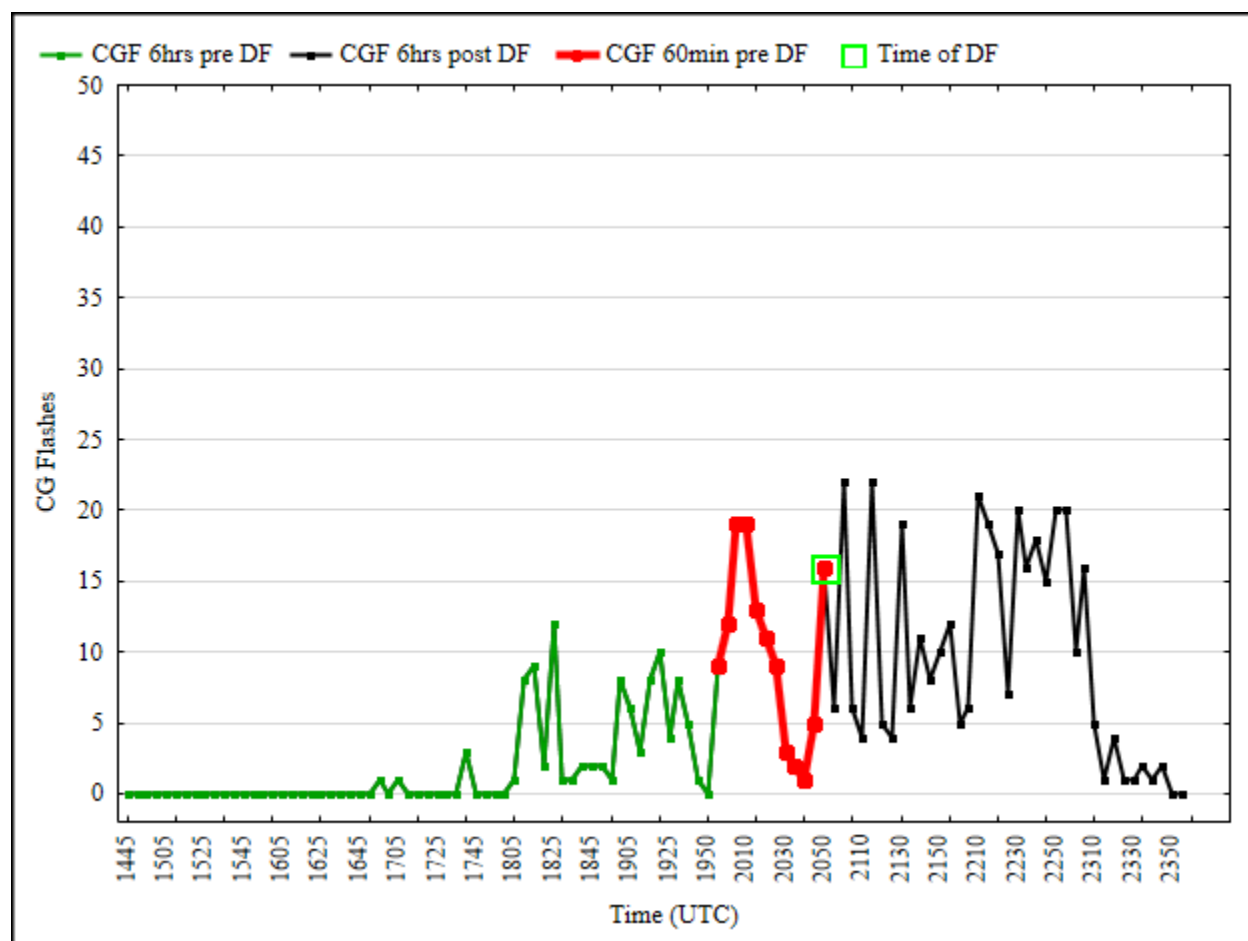


Meso- $\beta$  CG flash plot for 30 September 2000





Meso- $\beta$  CG flash plot for 28 July 1999



Meso- $\beta$  CG flash plot for 4 July 2011