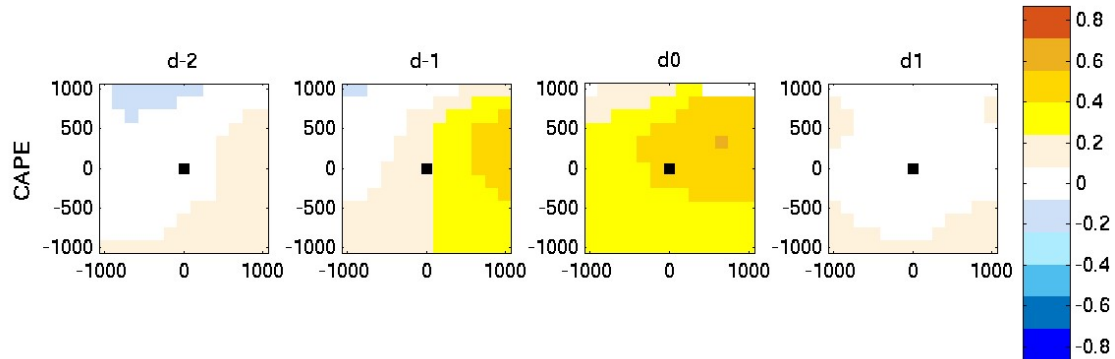
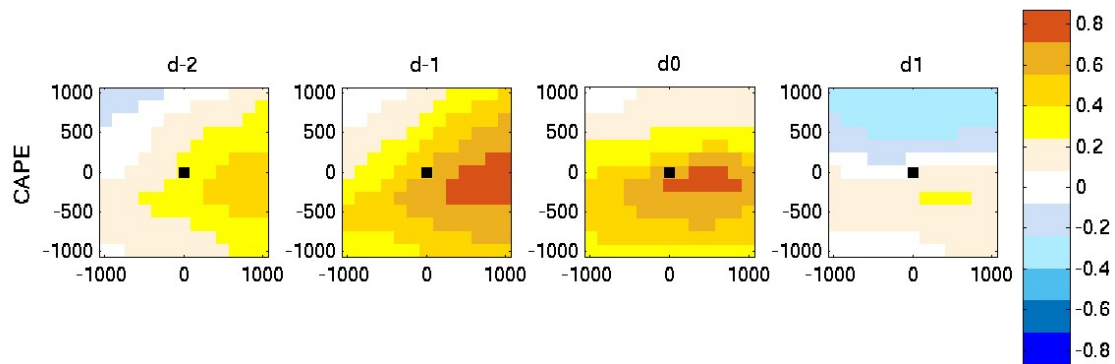


## Supplementary material

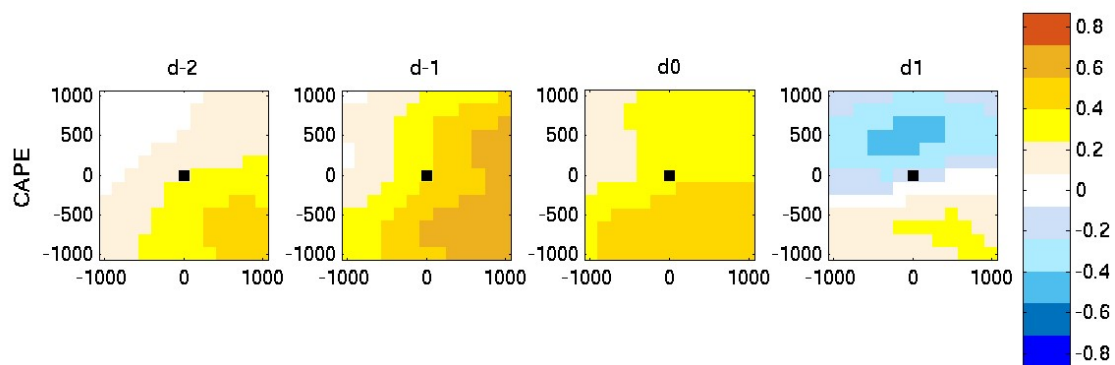
(a) Cluster 1



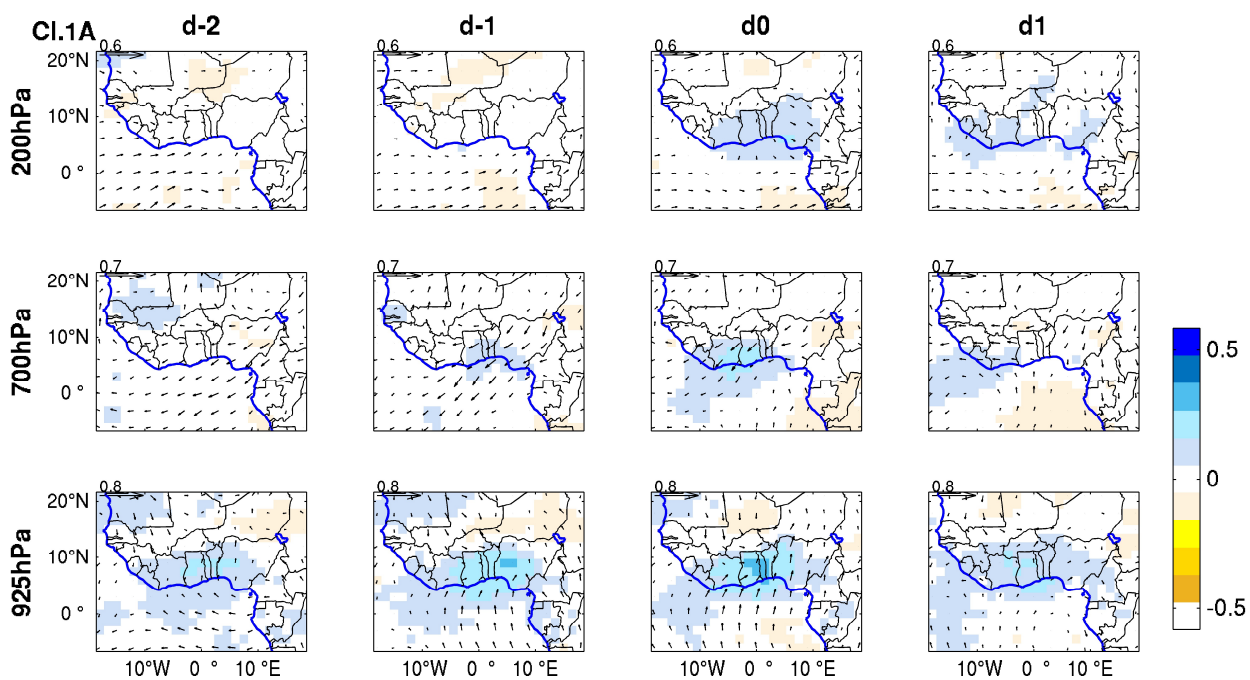
(b) Cluster 2



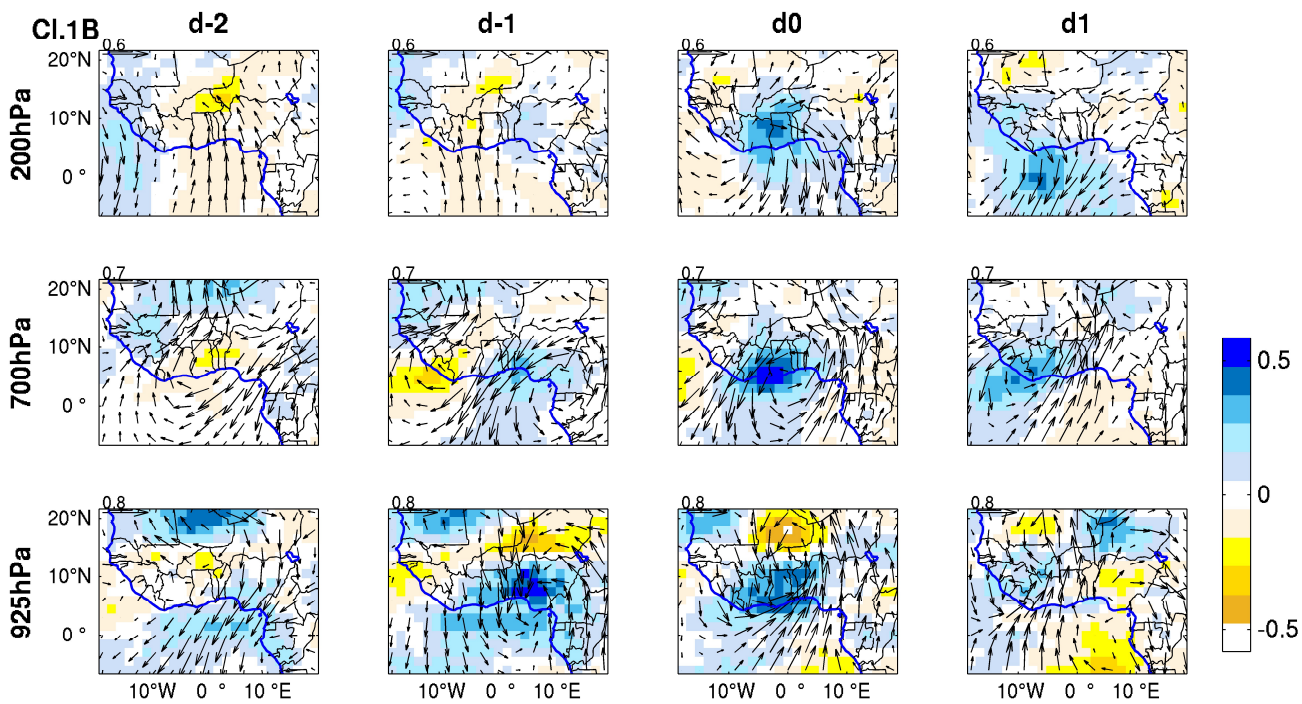
(c) Cluster 3



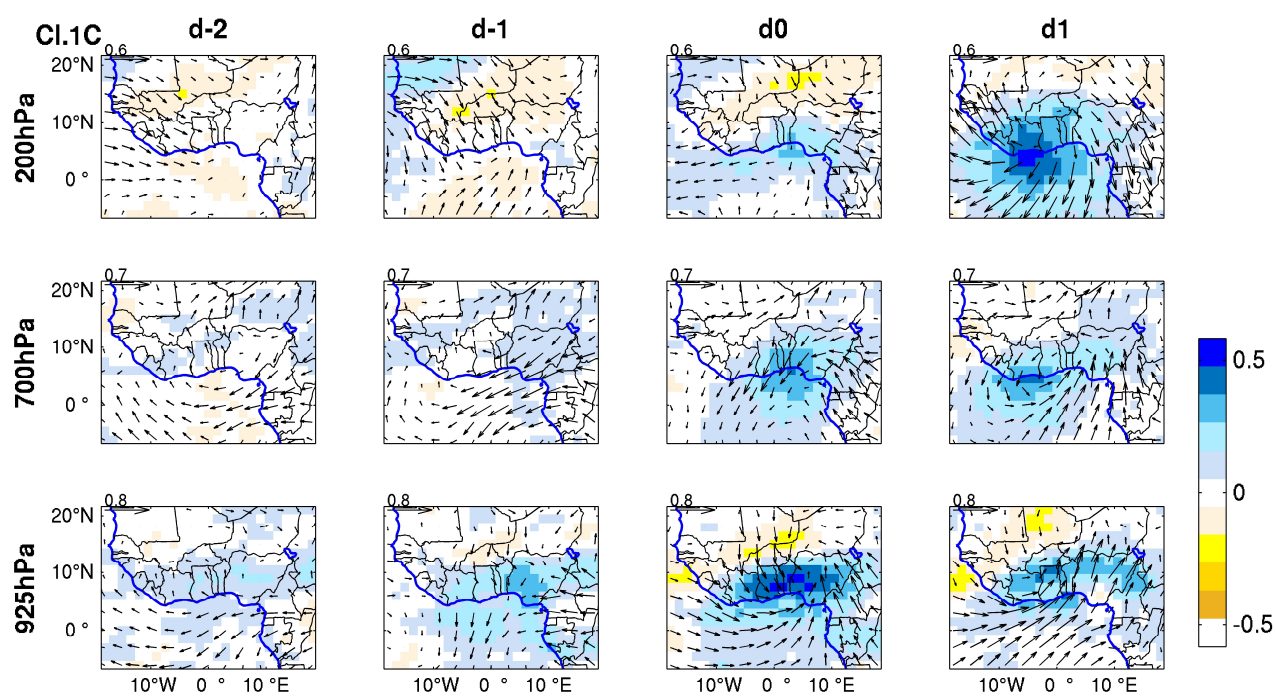
**Figure S1.** Standardised CAPE anomalies for the 3 clusters of intense rainfall events for each day of a 4-day sequence (2 days before to 1 day after the event d0). All colour shadings indicate significant anomalies (t-test,  $P=0.999$ ).



**Figure S2.** Composite anomalies of wind (vectors) and specific humidity (shadings) associated with rainfall events of cluster 1A (upper panel) from two days before to one day after the intense precipitation event (day d0). The locations of all events being different from each other, the composite is based on the average location. Blank: non-significant anomalies ( $P=0.999$ ). Units: standardised anomalies on deseasonalised data.



**Figure S3.** Same as figure S2 but for cluster 1B.



**Figure S4.** Same as figure S2 but for cluster 1C.