

Supplementary Material

1 Supplementary Figures and Tables

This supporting information provides a Hovmöller diagram of Convective Available Potential Energy (CAPE) during the storm life-cycle within 24-25/01/2016 (Figure S1). A 3D terrain model based on Shuttle Radar Topography Mission (SRTM-dem) of Esmeraldas river basin showing meteorological stations and precipitation on 25 of January 2016 (Figure S2). The anomalous frequency of occurrence for each phase of the Madden-Julian oscillation (MJO) for the Dec-Jan 2016 period (Figure S3). MJO phase diagram for the 1 Dec – 31 Mar 2016 period (Figure S4).

We also include the hourly evolution of the cloud shield and inner core of the meso-scale convective complex measured in IR wavelength from GOES 13 during 25th January 2016 (Table S1)





Fig. S1. Hovmöller diagram of Convective Available Potential Energy (CAPE) during the 24-25/01/2016.



Fig. S2. 3D terrain model based on Shuttle Radar Topography Mission (SRTM-dem) of Esmeraldas river basin (red line) showing meteorological stations and precipitation on 25 of January 2016 (red-wine dots). The vertical scale is exaggerated by a factor of 1.5.





Fig. S3. Anomalous frequency of occurrence (in days) for each phase of the Madden-Julian Oscillation (MJO) for Dec-Jan 2016 period.





IRMM1,RMM21 phase space for 1-Jan-2016 to 31-Mar-2016

Fig. S4. Madden-Julian oscillation phase diagram for the 1 Dec - 31 Mar 2016 period.



	Area (km ²)	
Time	< -32°C	< -52 °C
2:15	18554	14337
4:15	53061	36116
6:15	95633	51846
8:45	138985	70680
10:15	173468	88273
12:45	178116	87573
13:15	175302	72525
16:15	112080	22299

Table S1. Cloud area measured in IR wavelength from	n GOES 13 during 25 th January