Atmospheric
Chemistry
and Physics

Supplement of

Cloud regimes over the Amazon Basin: perspectives from the GoAmazon2014/5 campaign

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Table S1. Cloud type definitions based on cloud boundaries and thickness. Table adapted from Giangrande et al., (2017).

Cloud type	Cloud-based height	Cloud-top height	Cloud thickness
Shallow	< 3 km	< 3 km	No restriction
Congestus	< 3 km	3-8 km	>= 1.5 km
Deep convection	< 3 km	> 8 km	>= 5 km
Altocumulus	3-8 km	3-8 km	< 1.5 km
Altostratus	3-8 km	3-8 km	>= 1.5 km
Cirrostratus/Anvil	3-8 km	> 8 km	>= 1.5 km
Cirrus	> 8 km	> 8 km	No restriction

Table S2. MCS event days during GoAmazon2014/5 and associated to the large-scale regime cluster and type (propagating, local).

MCS Event	Regime	MCS Type
140107	5	Local
140119	4	Local
140207	5	Local
140211	4	Propagating
140311	4	Local
140327	4	Local
140401	4	Propagating
140410	4	Local
140414	4	Local
140417	4	Propagating
140506	4	Local
140509	5	Propagating
140516	4	Local
140530	4	Local
140611	2	Local
140619	3	Propagating
140626	4	Propagating
140711	3	Local
140728	2	Local
140816	2	Local
140908	2	Propagating
141004	4	Local
141006	4	Local
141010	5	Propagating
141127	5	Propagating
141210	5	Local
141225	5	Local

150201	4	Propagating
150409	4	Local
150413	4	Propagating
150425	4	Propagating
150621	4	Local
150623	3	Local
150725	2	Local
150730	1	Propagating
150830	3	Propagating
151019	2	Local
151024	2	Propagating
151028	4	Local
151029	5	Local
151104	5	Local
151105	5	Local
151109	4	Local
151114	1	Local
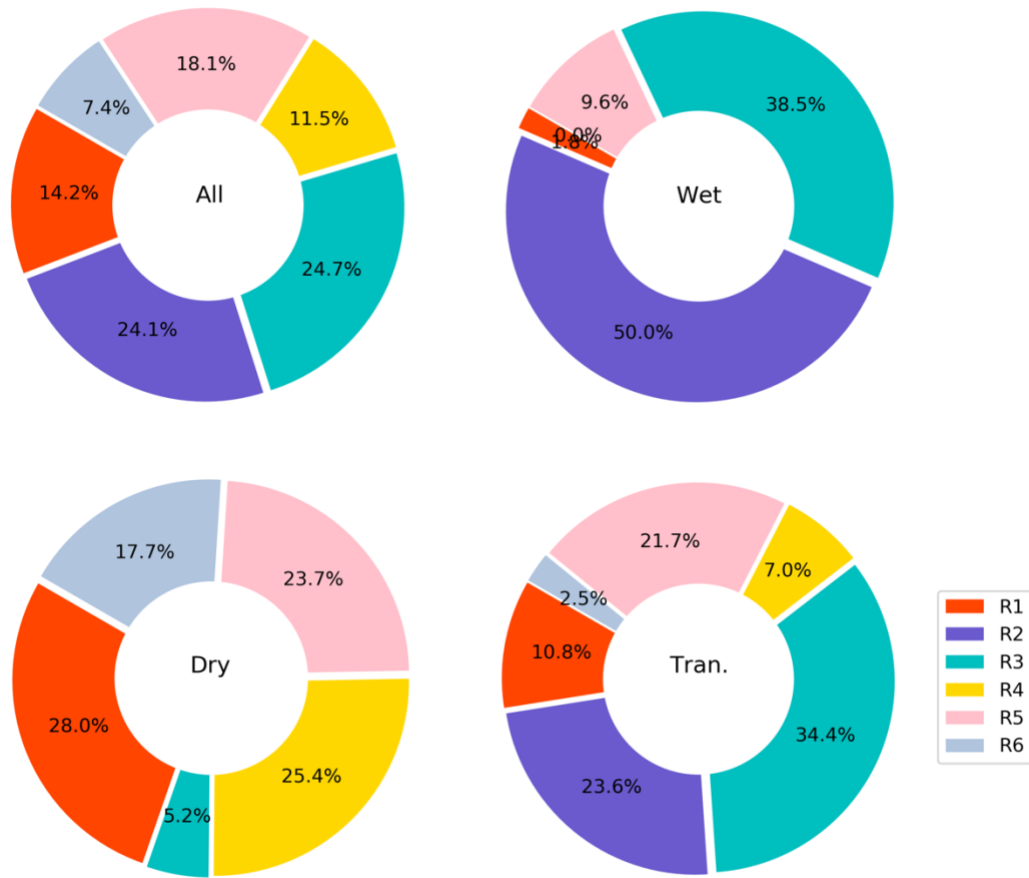
Figure S1. As in Figure 1, but for a six cluster solution. Note that the individual clusters (e.g, 'regime 1') do not retain the same cluster numbers from one solution to another.
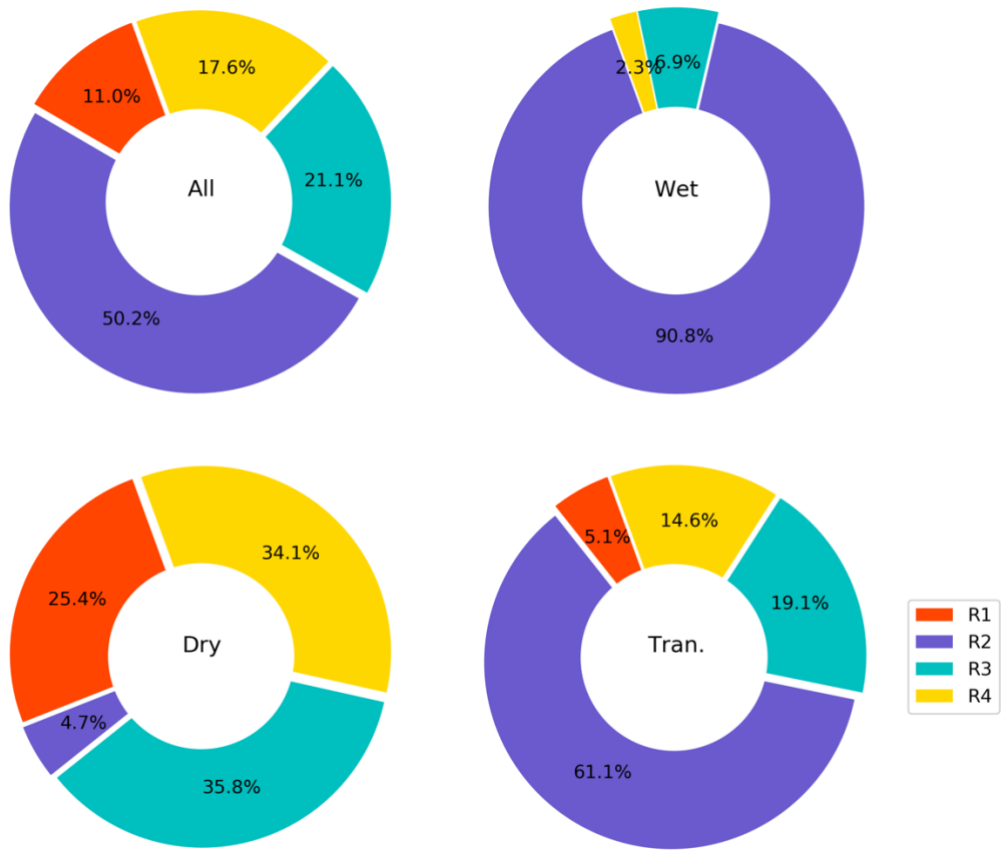
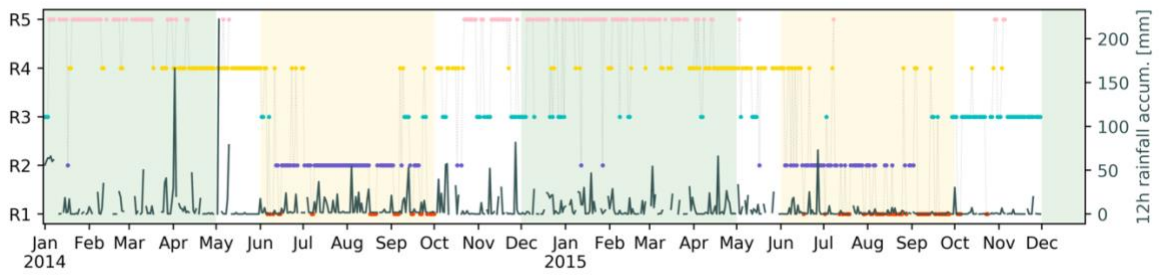**Figure S2. As in Figure S1, but for the four cluster solution.**

Figure S3. Time series cluster results as in Figure 2, but using standardized inputs. The green shading indicates the wet seasons and the yellow shading indicates the dry seasons according to calendar definition.
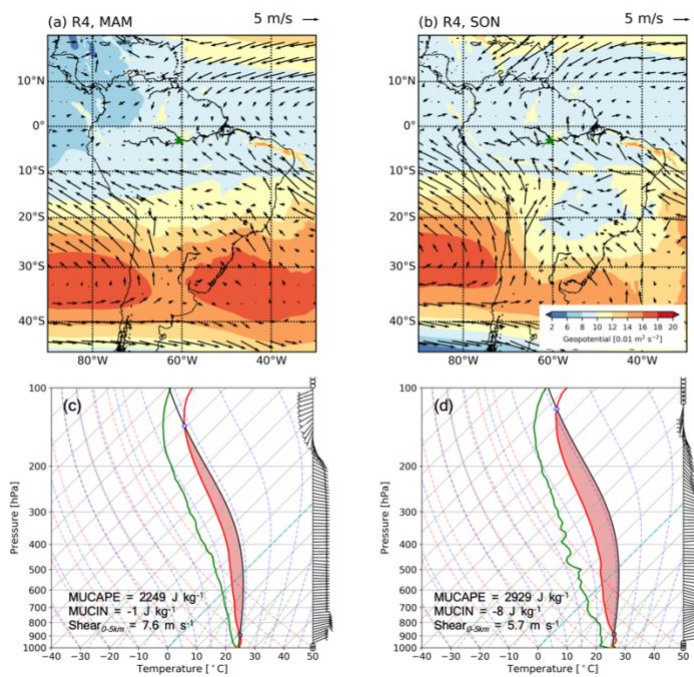
Figure S4. Composite ERA5 large-scale patterns (a,b), and 12:00 UTC soundings (c,d) for March through May (MAM) and September through November (SON) regime 4.
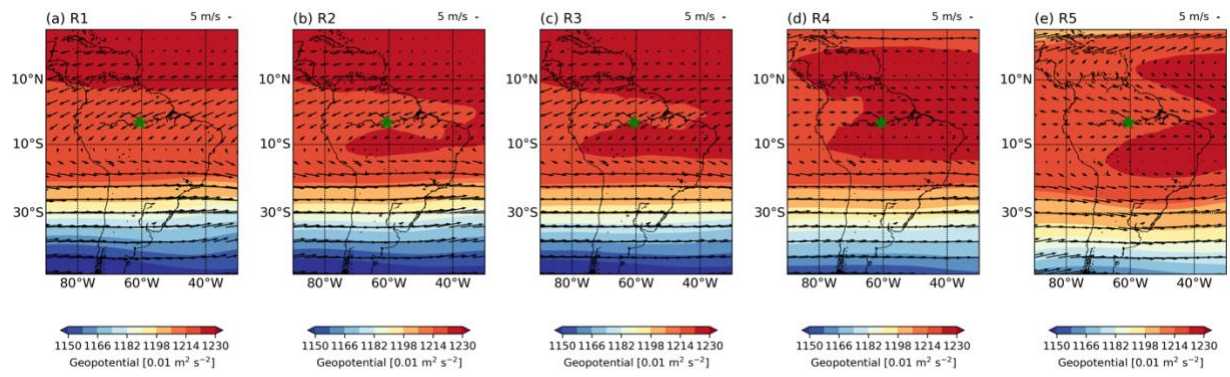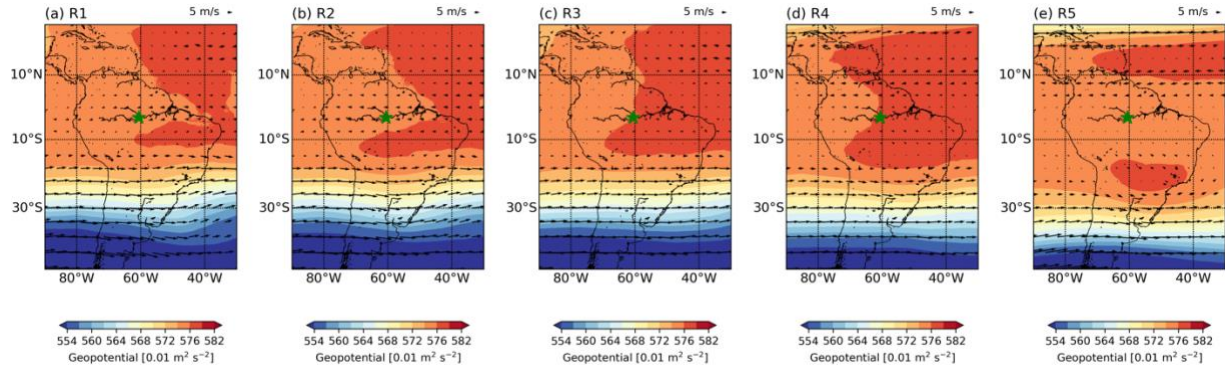
Figure S5. As in Figure 5, but for the 200-hPa level.

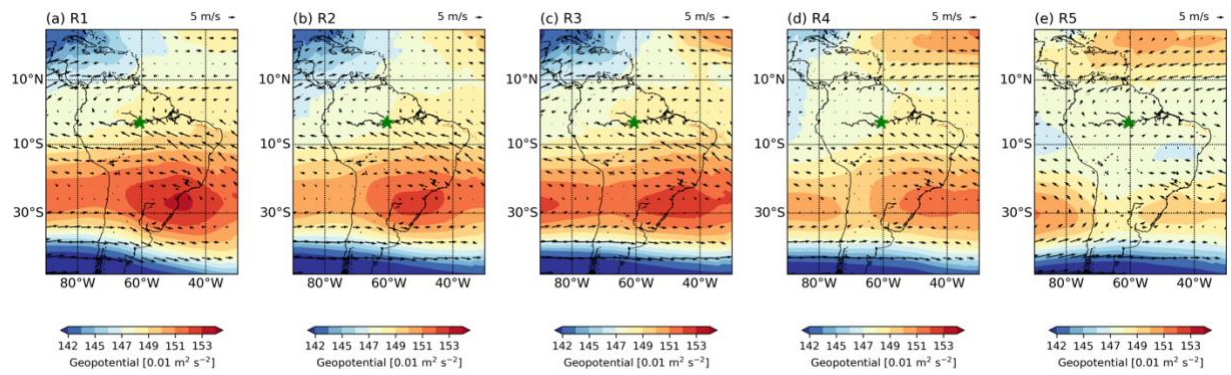**Figure S6. As in Figure 5, but for the 500-hPa level.**

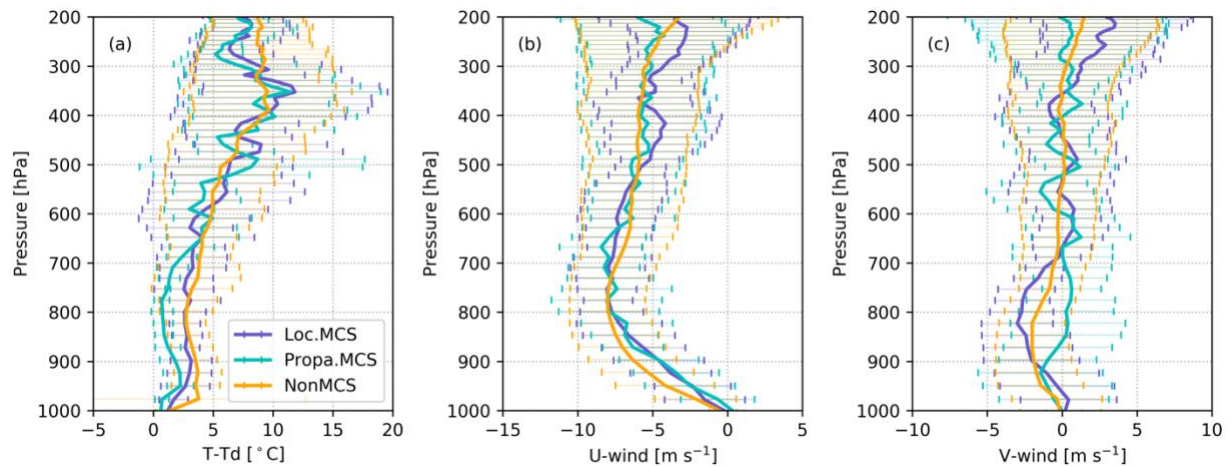**Figure S7. As in Figure 5, but for the 850-hPa level.**

Figure S8. Profiles of radiosonde quantities for nonMCS, local MCS, and propagating MCS cases in regime 4.
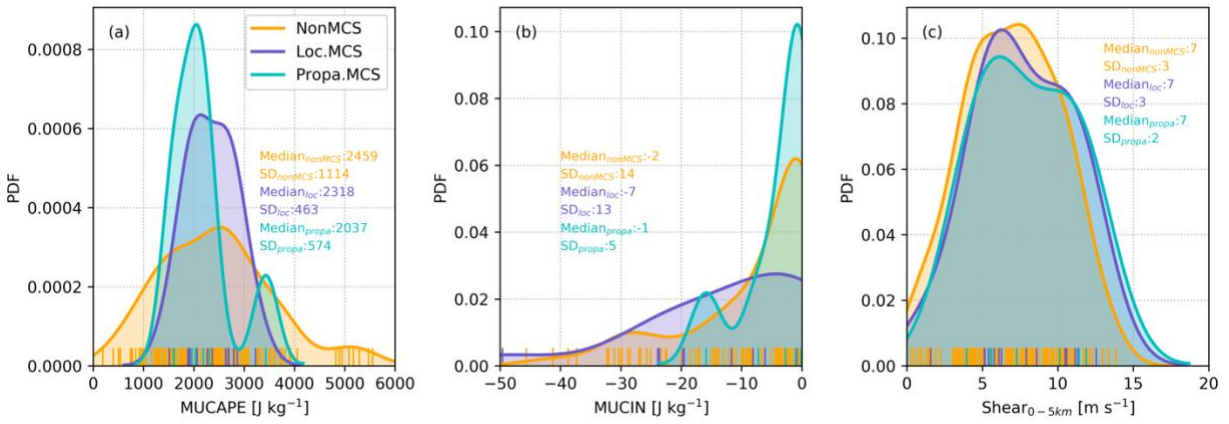
Figure S9. Histograms for MUCAPE, MUCIN, and low-level wind shear for nonMCS, local MCS, and propagating MCS cases in regime 4.