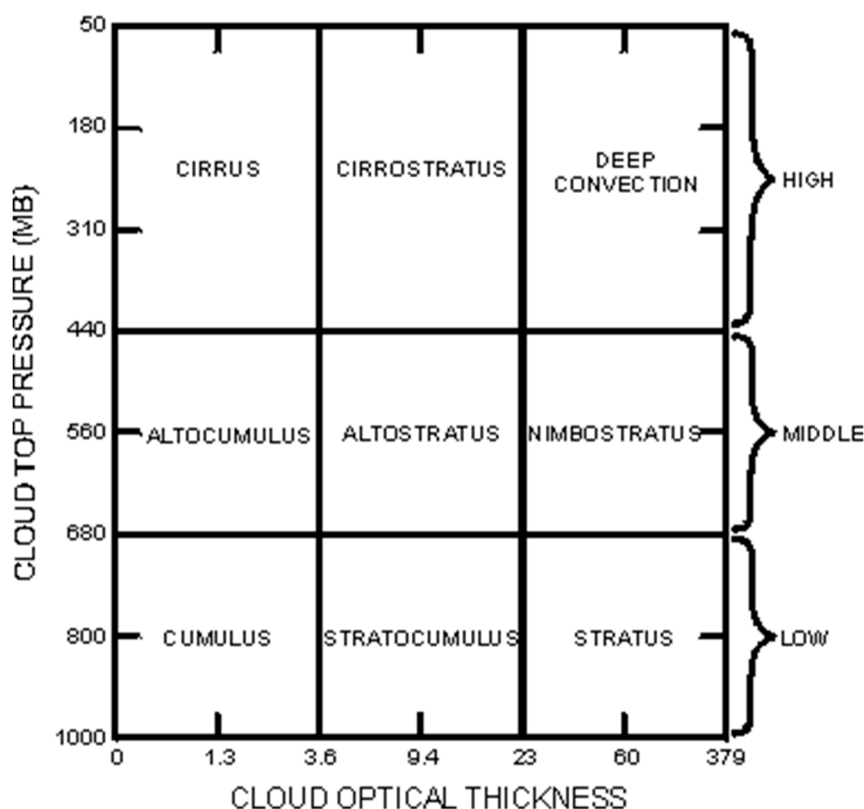
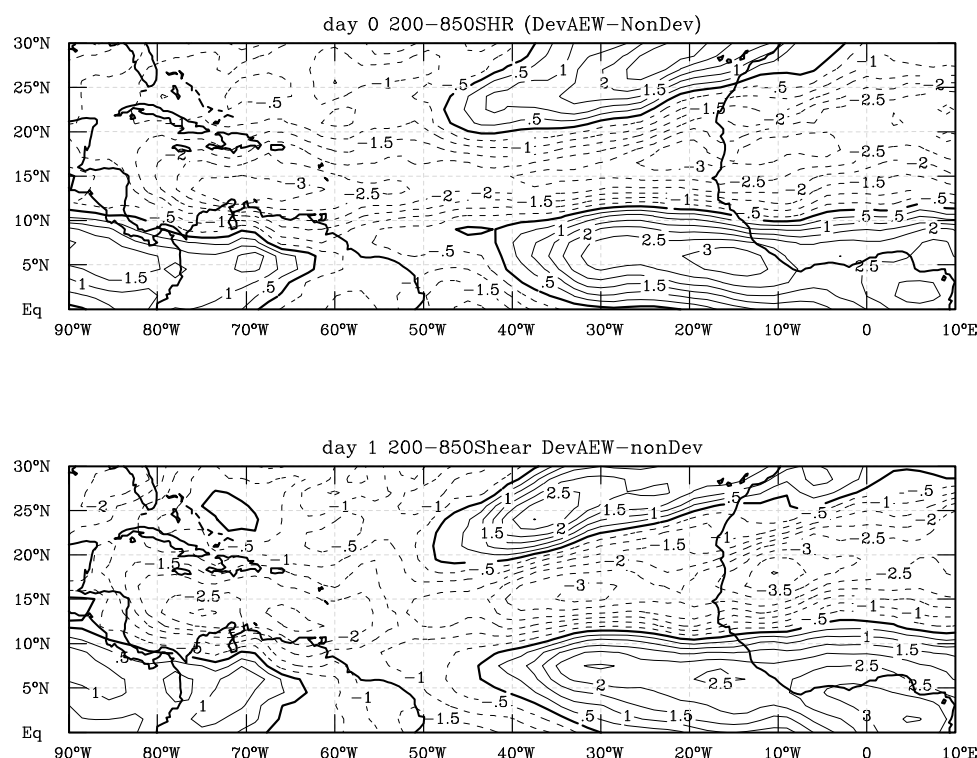


## Supplementary Materials:

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**Figure S1.** The ISCCP Cloud Classification: The nine basic cloud classification describe low-, middle and high-level clouds. This is similar to the World Meteorological Organization's (WMO) cloud classification. The WMO classify Cumulonimbus as the tenth cloud genera. More details can be found at <https://public.wmo.int/en/media/news/international-cloud-atlas>, accessed on 13 December 2021.



**Figure S2:** The vertical deep shear (200 hPa–8500 hPa) difference between developing and non-developing AEW events (contoured every  $0.5 \text{ ms}^{-1}$ ). Negative implies the wind shear magnitude during developing AEWs is weaker than non-developing AEW events. Day 0 indicates the time of AEWs as they exit the coast of West Africa and enter into the Atlantic. Day 1 represents the shear difference after waves exit West Africa and are located in the Atlantic. Contours are every  $0.5 \text{ ms}^{-1}$ .

Figure S1: The ISCCP Cloud Classification: The nine basic cloud classification describe low-, middle and high-level clouds. This is similar to the World Meteorological Organization's (WMO) cloud classification. The WMO classify Cumulonimbus as the tenth cloud genera. More details can be found at <https://public.wmo.int/en/media/news/international-cloud-atlas> (accessed on 13 December 2021), Figure S2: The vertical deep shear (200 hPa–8500 hPa) difference between developing and non-developing AEW events. Negative implies the wind shear magnitude during developing AEWs is weaker than non-developing AEW events. Day 0 indicates the time of AEWs as they exit the coast of West Africa and enter into the Atlantic. Day 1 represents the shear difference after waves exit West Africa and are located in the Atlantic. Contours are every  $0.5 \text{ ms}^{-1}$ .