|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Time** | **Cyclone lat/lon** | **Z1000 at cyclone center** | **GRV at cyclone center** | **GAVA** | **nearly LTHAD** | **LTHAD** | **LAD\*** | **LDIA\*** | **GRVT** |
| t0 [P0] |  |  |  |  |  |  |  |  |  |
| t0 + 6-hr  [P1] |  |  |  |  |  |  |  |  |  |

**ATMS 411 Synopsis Data Table For Case Study Synopsis Due \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Group Members \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Synopsis Group Number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\*[ Use the same assumptions for these terms as was used in the final project in Synoptic I (ATMS 410) ]**

**GFS thinned forecast initialization time [**HHHH **UTC** DD MMM YYYY**]: \_\_\_\_\_\_\_\_\_ UTC \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Where

HHHH = Time of GFS initialization in UTC

DD = Day of GFS initialization

MMM = Month (e.g. JAN, FEB, etc.) of GFS initialization

YYYY = Year (e.g. 2008) of GFS initialization

**GFS forecast hour corresponding to “t0”: F\_\_\_\_\_\_\_\_\_\_\_ , GFS forecast hour corresponding to “t0 + 6-hr”: F\_\_\_\_\_\_\_\_\_\_\_**

**Give a brief synopsis describing [must be typed]:**

**[a] the general synoptic-scale weather features of interest,**

**[b] the physical mechanisms that are contributing to cyclogenesis,**

**[c] the physical mechanisms that are opposing cyclogenesis,**

**[d] whether the vertical motion at the 700 hPa level over the 1000 hPa cyclone center is reflecting cyclogenesis, and**

**[e] the upper-tropospheric (e.g. 300 hPa) contribution to cyclogenesis or cyclolysis**

The description should be written for readers having a grasp of meteorology comparable to senior-level Atmospheric Science majors.

**A synopsis of the brief synopsis**

**[a] the general synoptic-scale weather features of interest,**

print {with a light-colored map background to save toner} the following maps: [1] 1000 hPa geopotential height and 1000-500 hPa thickness (contour interval 60 m), [2] 850 hPa geopotential height and e (contour interval 2 K), [3] 700 hPa geopotential height and omega, [4] 500 hPa geopotential height and ***geostrophic*** absolute vorticity, and [5] 300 hPa geopotential height and isotachs (knots) at the early forecast time [**t0**], plot on each of the five maps the later forecast [**t0 + 6-hr**] position of the 1000 hPa cyclone center, and briefly describe the features relevant to cyclogenesis at each of the five levels {description should be **one** type-written page, at most}

**[b] the physical mechanisms that are contributing to cyclogenesis,**

note which of the terms (GAVA, LTHAD, LAD, LDIA) are contributing to a 1000 hPa level geostrophic relative vorticity (GRV) ***increase*** over the later forecast [**t0 + 6-hr**] position of the 1000 hPa cyclone center at the early forecast time [**t0**]

**[c] the physical mechanisms that are opposing cyclogenesis,**

note which of the terms (GAVA, LTHAD, LAD, LDIA) are contributing to a 1000 hPa level geostrophic relative vorticity (GRV) ***decrease*** over the later forecast [**t0 + 6-hr**] position of the 1000 hPa cyclone center at the early forecast time [**t0**]

**[d] whether the vertical motion at the 700 hPa level over the 1000 hPa cyclone center is reflecting cyclogenesis, and**

note the trend in the 700 hPa vertical motion (omeg) over the 1000 hPa cyclone center from the early forecast time to the later forecast time [**t0 + 6-hr**] and describe whether this trend is consistent with vortex stretching or with vortex “squashing”, one of which is consistent with cyclogenesis

**[e] the upper-tropospheric (e.g. 300 hPa) contribution to cyclogenesis or cyclolysis.**

Throughout the semester we’ll be learning more about how the jet stream or jet streaks can influence surface cyclogenesis. You’ll need to examine and document the upper-level divergence, the upper-level geostrophic absolute vorticity advection, and the upper-level thermal advection patterns at the 300 hPa level and then describe how each of these fields would be contributing either to cyclogenesis or cyclolysis over the later forecast [**t0 + 6-hr**] position of the 1000 hPa cyclone center at the early forecast time [**t0**].