



Dynamical Different between West and East Portion of Upper Anticyclone

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Upper anticyclone is a system of winds that clock-wisely rotates around a center of high atmospheric pressure (850hPa, 700hPa, 500hPa, 200hPa etc) in the northern hemisphere; the warm poleward flow forms at western boundary current of it; the cool equatorward flow forms at eastern boundary current of it, but why and how like this has not been recognized unanimously, analysis from perspective of geopotential height changes is employed below: there is an image line in middle which divides anticyclone into east portion of equator-ward flow and west portion of pole-ward flow, its east (*west*) part is generally descending (*ascending*) air as its east (*west*) part generates positive (*negative*) planetary vorticity advection due to equator (*pole*)-ward flow which just balances its east (*west*) negative (*positive*) vorticity in its below troposphere; but if more deeper researching, it is disclosed that there are some other significant and obvious dynamical different features between east flank and west flank, such as, there is one southward (*northward*) biggest component of jet in east (*west*) of anticyclone, respectively, this phenomena is important quality, southward (*northward*) biggest component of jet is also the pronounced boundary to separate anticyclone negative vorticity from positive vorticity of its east (*west*); the strongest descending (*ascending*) center just locates between southward (*northward*) biggest component of jet and a center of high (*low*) pressure of its west, as well as being most approaching to southward (*northward*) biggest component of jet from its west; in addition, although east side of southward biggest component of jet of east part of anticyclone is in area of positive vorticity, but this part still pervades descending air due to southward upper wind whose geostrophic vorticity lessens when air moves southward, then this area geopotential height becomes greater, similarly, although west part of anticyclone is in area of upper northward wind, but east flank of northward biggest component of jet of west of anticyclone also pervades descending air due to this location being just in negative vorticity area; therefore, it is very vital for diagnose for monsoon and desert that left side of northward (*southward*) biggest component of jet of west (*east*) of anticyclone is characterized by strongest ascending (*descending*) air owing to being in positive (*negative*) vorticity, simultaneously also in biggest northward (*southward*) upper wind which obtains (*lost*) biggest geostrophic vorticity when air moves northward (*southward*), then geopotential height becomes smallest (*greatest*) in this portion according to Thermal-Wind Principle. So that the center of anticyclone (*cyclone*) is not in fact center of strongest descending (*ascending*) but left side of southward (*northward*) biggest component of jet of east (*west*) of anticyclone does. By comparing, although right side of southward (*northward*) biggest component of jet of east (*west*) of anticyclone is also in upper southward (*northward*) wind, but the right side is actually not center of strongest descending (*ascending*) because the right side is located in positive (*negative*) vorticity area of its east.

Key words:

Absolute Vorticity Balance, Thermal Wind, Desert, Monsoon, Two Flank of Meridian Jet Axis

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