



















Friction Air in contact with the surface experiences frictional drag, effectively slowing the wind speeds. Magnitude: depends upon wind speed and surface roughness Direction: opposite to the movement of the air parcel Planetary Boundary Layer (PBL) – the lowest ~1-2 km of the atmosphere which experiences friction. Free Atmosphere – the remaining atmosphere which is free from frictional effects above the PBL.











Review of Forces Pressure Gradient Force – changes in pressure over a distance causes air to move. Gravity – only acts in the vertical direction Coriolis Force – due to Earth's rotation Centrifugal Force – when there is curved flow Friction – only important near the Earth's surface Only the first two forces listed above can cause winds in air that is initially at rest, and the last three are in action only when there is relative motion.













