Let’s examine that paths air parcels will follow on this idealized weather map, based on the combination of forces acting on the parcels.

We have a map of sea-level pressure here, with an area of low pressure marked and an area of high pressure marked.

For our first case, we’ll pretend that only the pressure gradient force is acting on air parcels, which are marked by these purple boxes. If only the pressure gradient force acts, air parcels cross isobars perpendicularly, flowing from higher pressure toward lower pressure, like this

Now, let’s add in the Coriolis force. If only the pressure-gradient force and the Coriolis force act on air parcels, they’re in a state of geostrophic balance, and the Coriolis force turns the air parcels 90 degrees to the right of the original direction of motion in the Northern Hemisphere. So, air parcels in geostrophic balance flow parallel to local isobars, with lower pressure on the left of the direction of motion. You can also see the general counterclockwise flow around the low pressure, and the clockwise flow that results around highs.

Now, let’s add in friction, for the most realistic look at how air really flows near Earth’s surface. Friction disrupts geostrophic balance by slowing down the air parcels, which weakens the Coriolis force slightly. Eventually a balance develops between the pressure-gradient force, the Coriolis force, and friction, with parcels now crossing local isobars in toward lower pressure as they flow counterclockwise around lows and clockwise around highs.