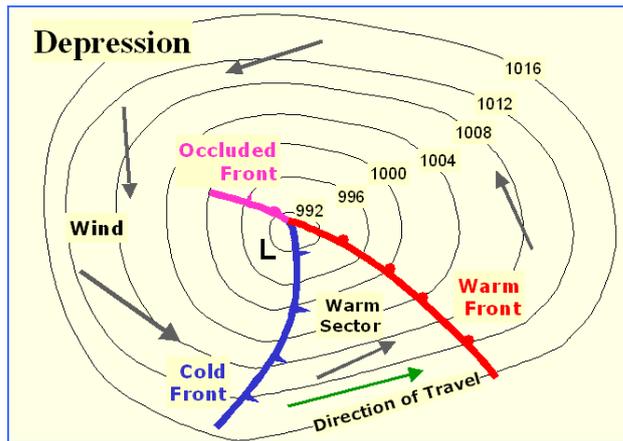


## If a depression is an area of low pressure, why doesn't the wind just blow towards the centre?

We all know that the wind blows anticlockwise round a depression, that's what Dutch meteorologist Christophe Buys Ballot first observed in 1857.

Buys Ballot's Law said 'In the Northern Hemisphere, if you stand with your back to the wind, the area of low pressure will be on your left.' Since then every Day Skipper has memorised it for the seamanship assessment!

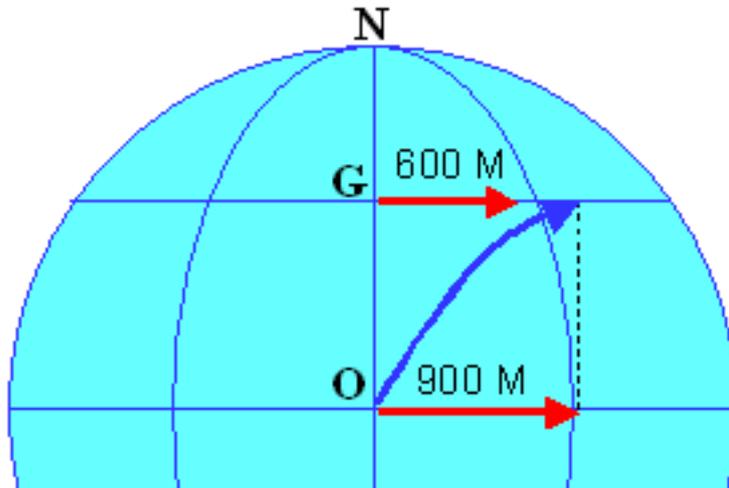


Buys Ballot made no attempt to explain his observation, but it was predicted by William Ferrel in the USA a year earlier. This knowledge has been of immense use to weather forecasting and even extends to what the best course is if your boat is overtaken by a hurricane.

So what is happening, and why does the wind blow anticlockwise?

It is all down to the Coriolis effect (G G Coriolis, French scientist, 1835) which is generated by the rotation of the Earth. Coriolis effect is the apparent deflection of moving objects when they are viewed from a rotating frame of reference, in this case the Earth itself.

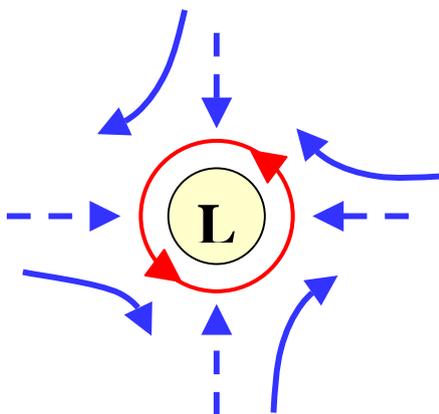
The earth makes one rotation per day, so the speed of an object on the surface at the Equator is approximately 900 knots, while closer to the poles the speed of an object on the surface reduces eventually to zero at the pole.



Let's assume I am standing on the equator at O, due south of Greenwich. Because of the earth's rotation, I am travelling eastwards at 900 knots. I throw a ball due north, which lands at the latitude of Greenwich an hour later. When I throw the ball, it is also travelling east at 900 knots. Greenwich is travelling to the east at say, only 600 knots. So the ball lands 300 miles further to the east of Greenwich - it is diverted to the right. This happens no matter what direction the ball travels, in the Northern Hemisphere. If I stand at Greenwich and throw the ball south, it lands west of latitude zero on the equator because it is travelling at only 600 knots to the east. South of the Equator the ball would divert to the left.

### What happens around a depression?

When a depression is formed out in the Atlantic, the surrounding air will move towards the centre of the depression to equalise the pressure in the atmosphere. The moving air is wind, and the Coriolis effect will deflect the air to the right.



The wind attempts to blow towards the area of low pressure but is diverted to the right.

(N Hemisphere)

There are now two forces acting on the wind – the Coriolis force to the right, and the pressure force to the centre of the depression. The result of this is to spin the air anticlockwise, so Mr Buys Ballot is absolutely correct! In practice the wind is not truly parallel to the isobars, it is angled towards the centre of the depression by the low pressure so the two forces are in balance.

Round a high pressure area or anti-cyclone, the air flows outwards but still deflects to the right – so the wind is clockwise.

Note – none of the above affects the way the water spins down the plughole.....