

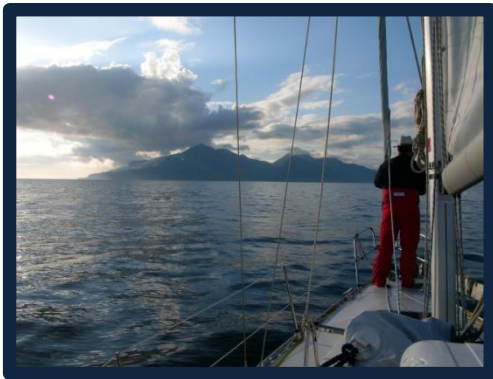


# Weather Basic Principles

# Introduction

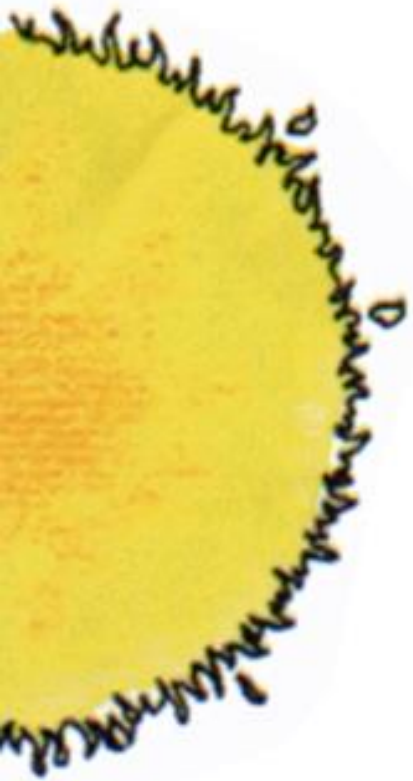


**This presentation deals with the basic principles of how weather works**



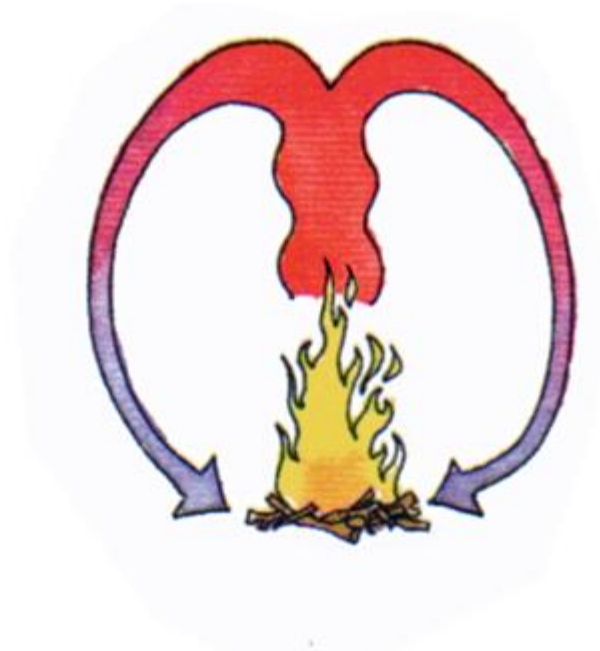
# Basic Principles

**The driving force behind our weather is the distribution and movement of energy from the sun around the earth**



# Basic Principles

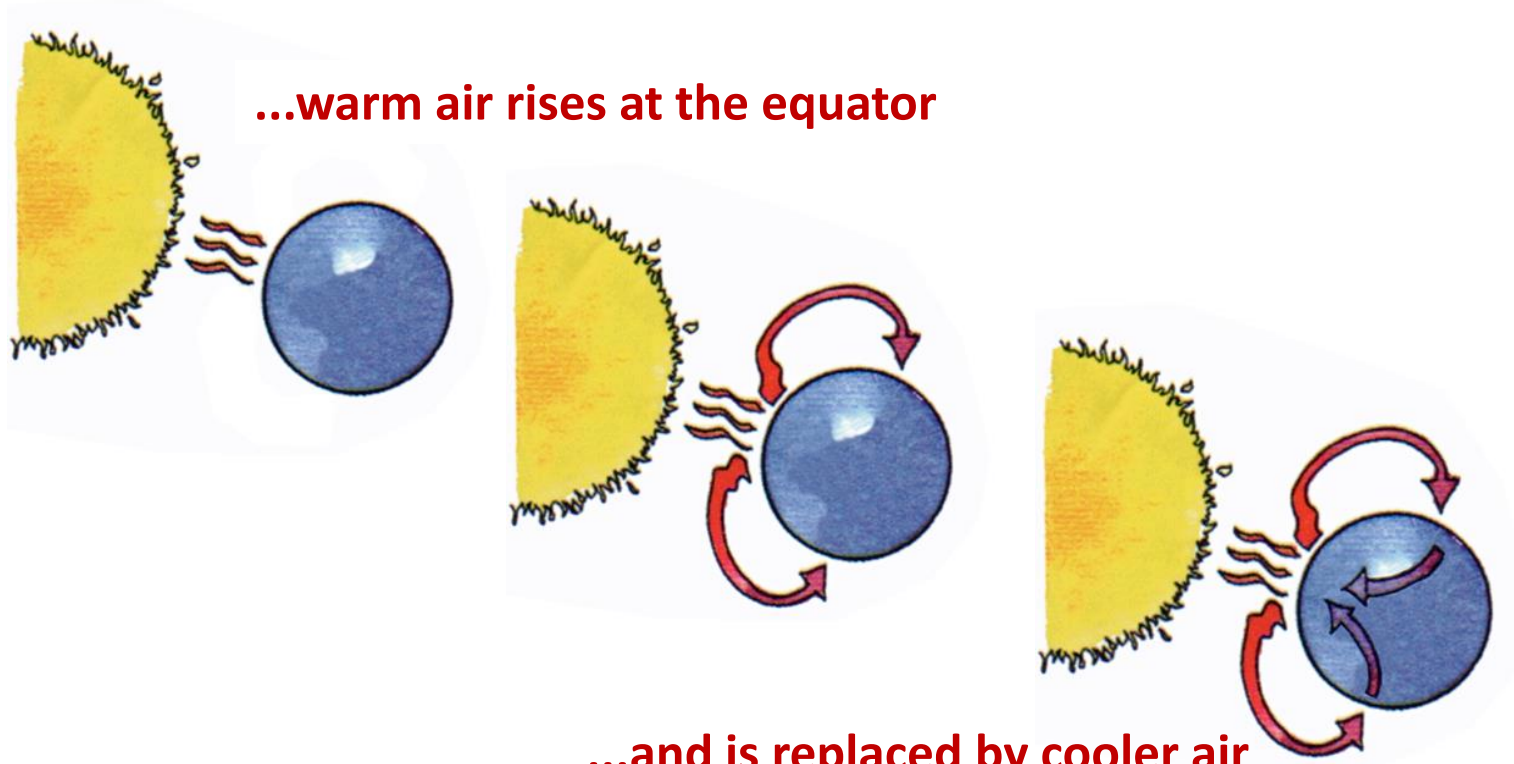
The sun heats the air, and rather like a bonfire...



...the air rises and is replaced by cooler air

# Basic Principles

Basically, a global scale.....



...warm air rises at the equator

...and is replaced by cooler air  
from other latitudes

# Basic Principles

In reality, the situation is far more complex...



...due to the unequal distribution of land and water

# Basic Principles

The oceans act like giant storage heaters...

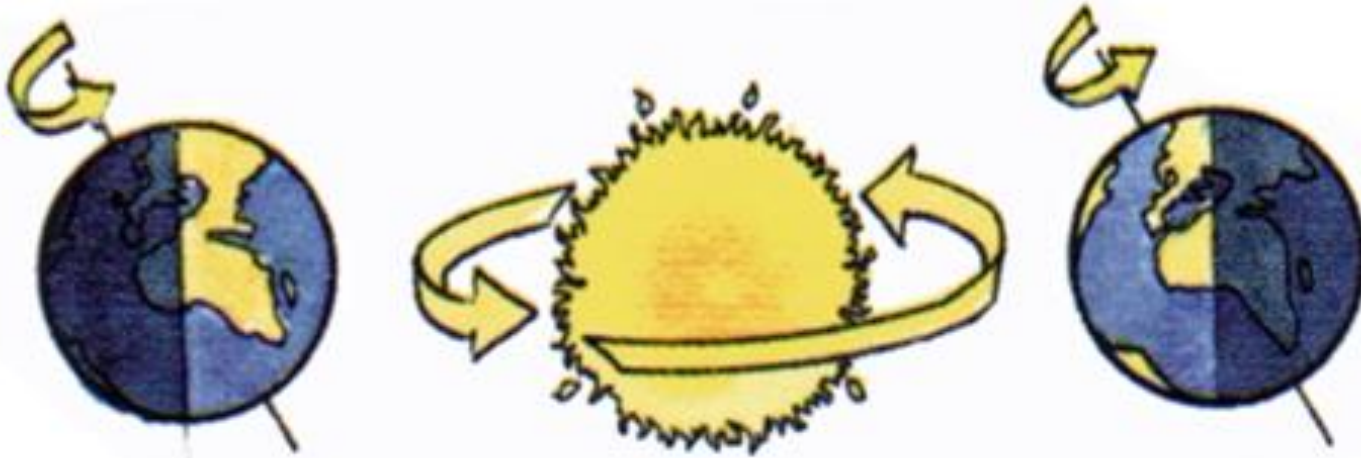


...ocean currents move warm and cold water around the globe

# Basic Principles

Heat distribution round the world also changes with the seasons

Northern hemisphere summer



Southern hemisphere summer



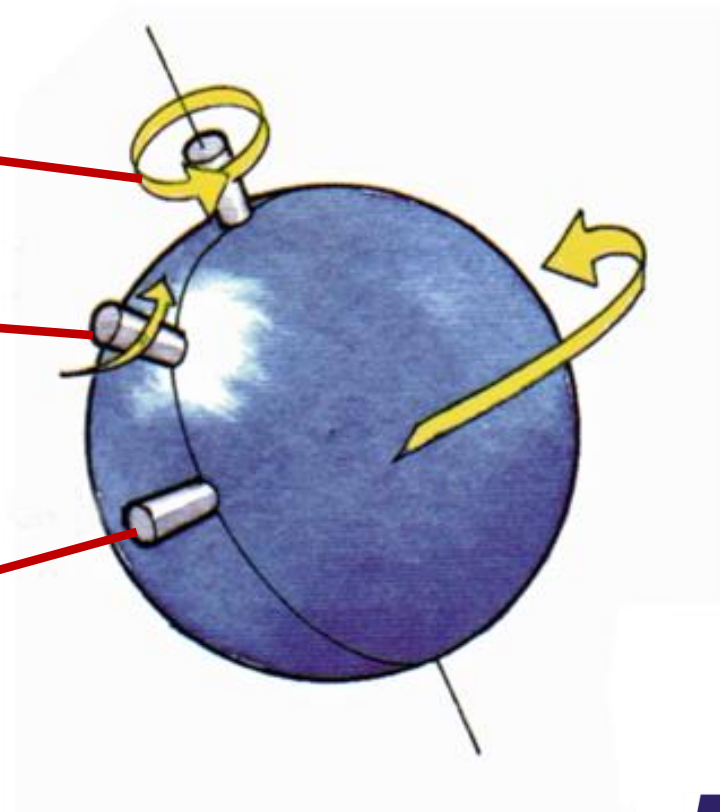
# Coriolis Effect

The spin of the earth causes air to be deflected as it moves around the earth

A person on the North Pole spins on the axis of the earth

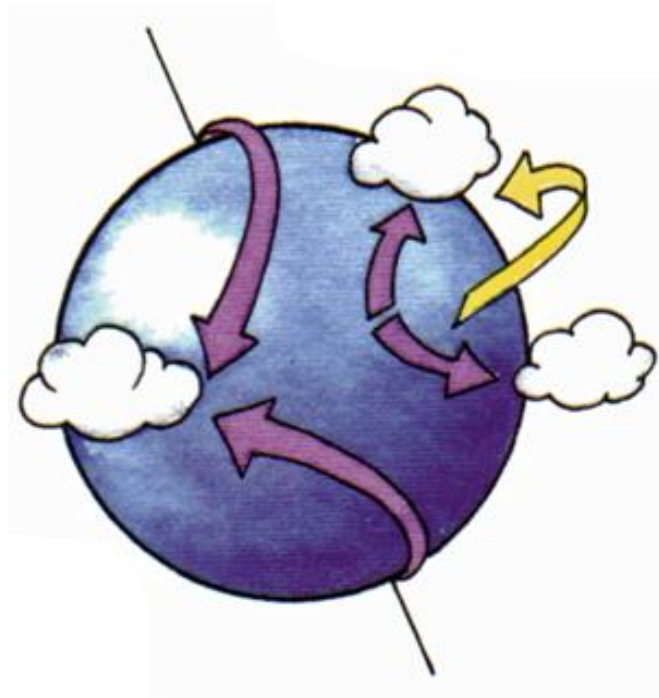
At mid latitude the spin is less

At the equator there is no spin about the axis



# Coriolis Effect

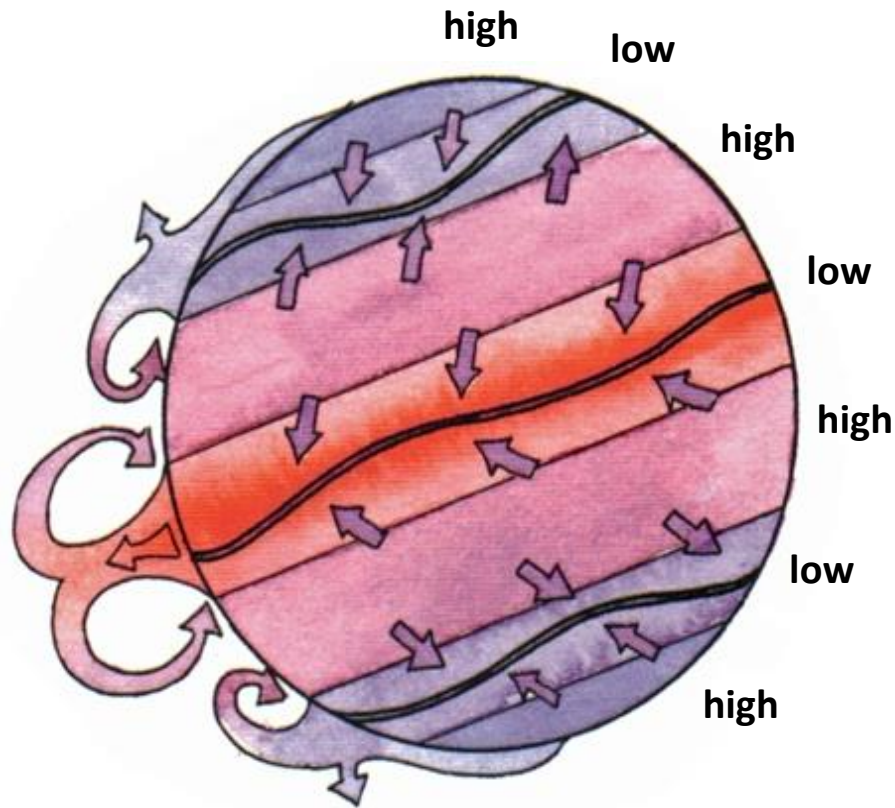
When air moves from the poles to the equator it is deflected to the west



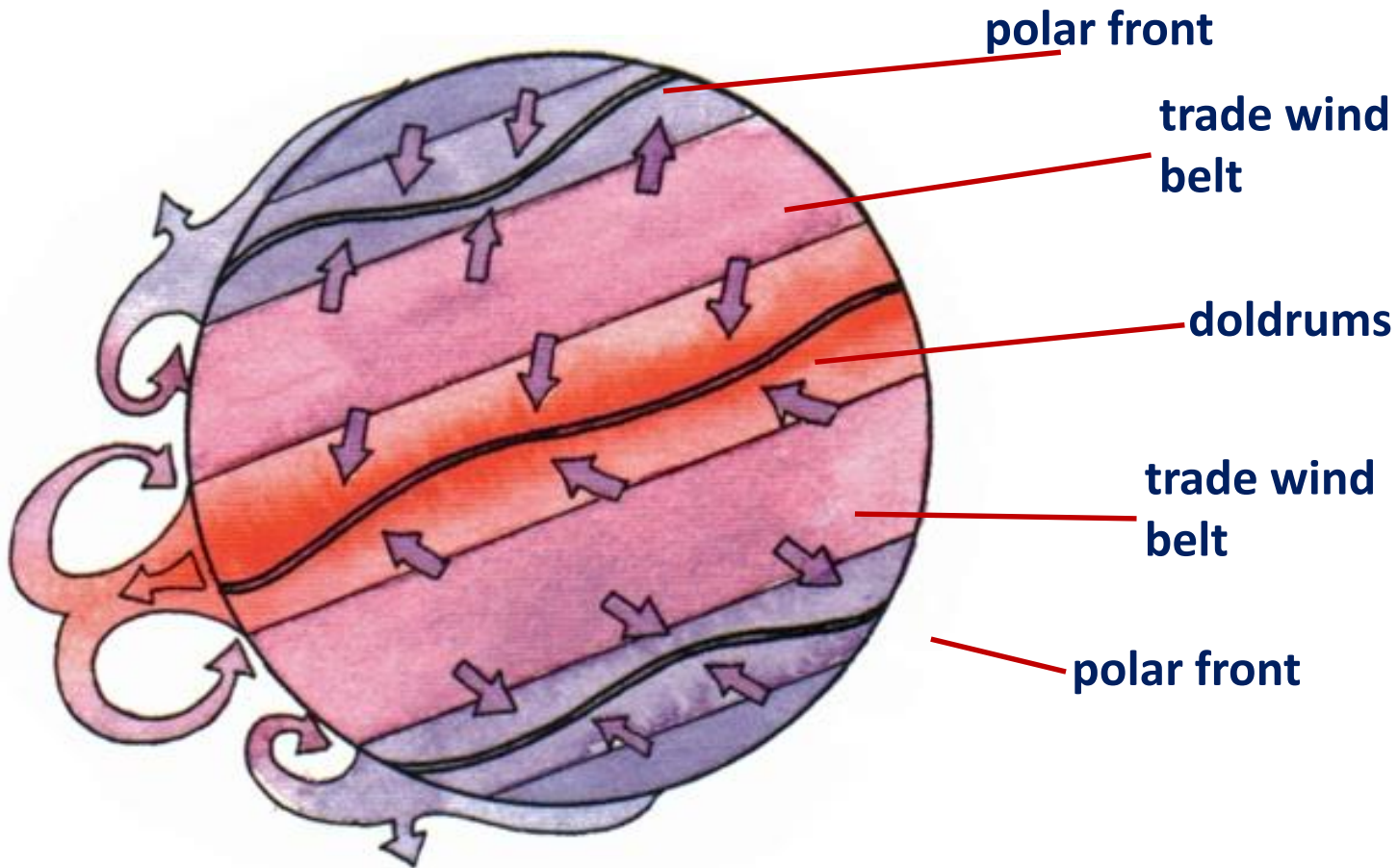
When air moves away from the equator to the poles it is deflected to the east

# Basic Principles

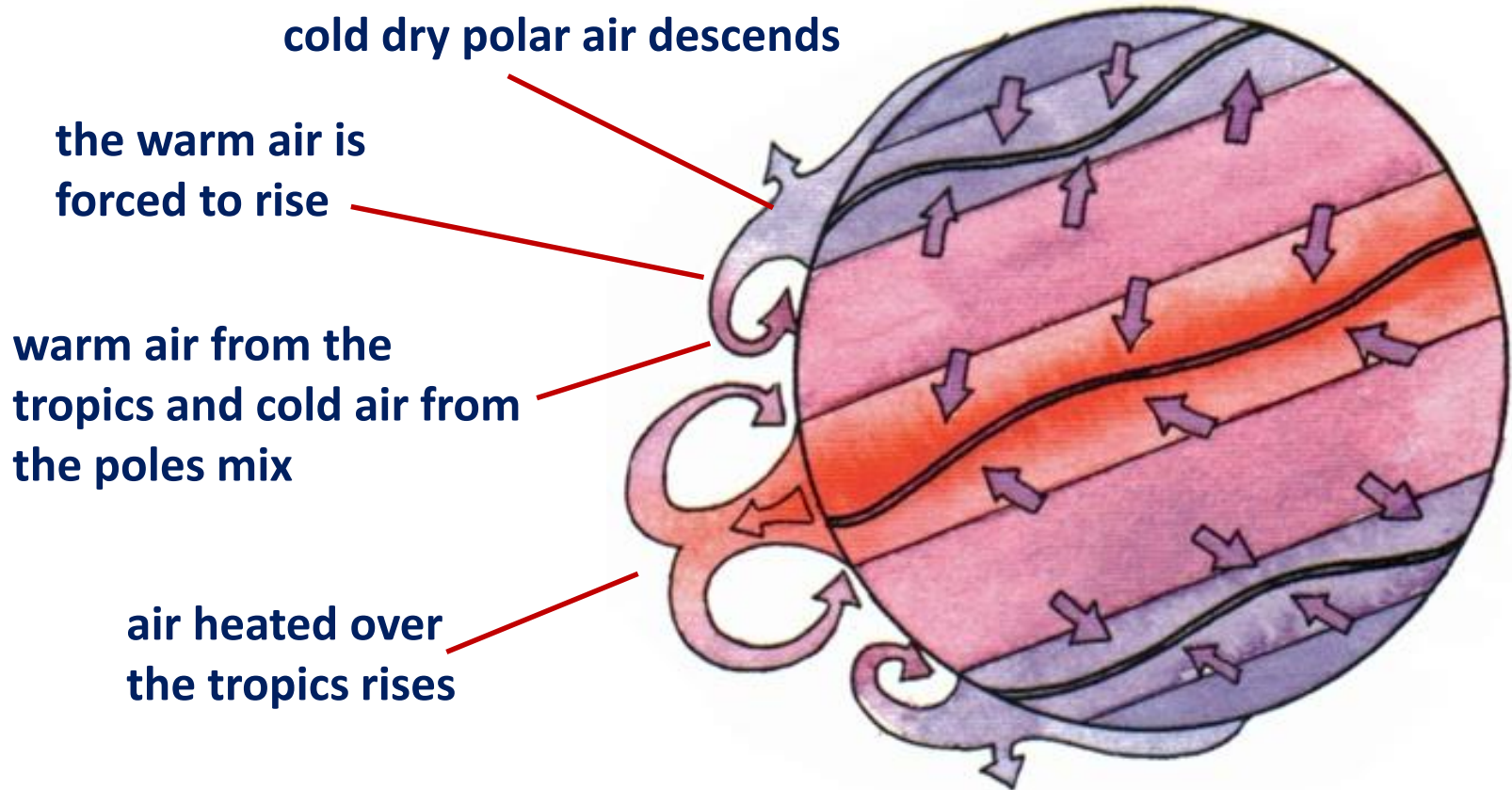
A combination of all these effects leads to bands of high and low pressure around the globe...



# Basic Principles



# Basic Principles



the warm air is forced to rise

cold dry polar air descends

warm air from the tropics and cold air from the poles mix

air heated over the tropics rises

**Creating very complex weather patterns**

# Further Reading



We highly recommend Chris Tibbs's  
**RYA Weather Handbook (G1)**



We highly recommend David Haughton's  
**RYA Weather Forecasts(G5)**

You can buy a copies of these books by visiting our on-line shop at  
**[www.penguinsailing.com](http://www.penguinsailing.com)**