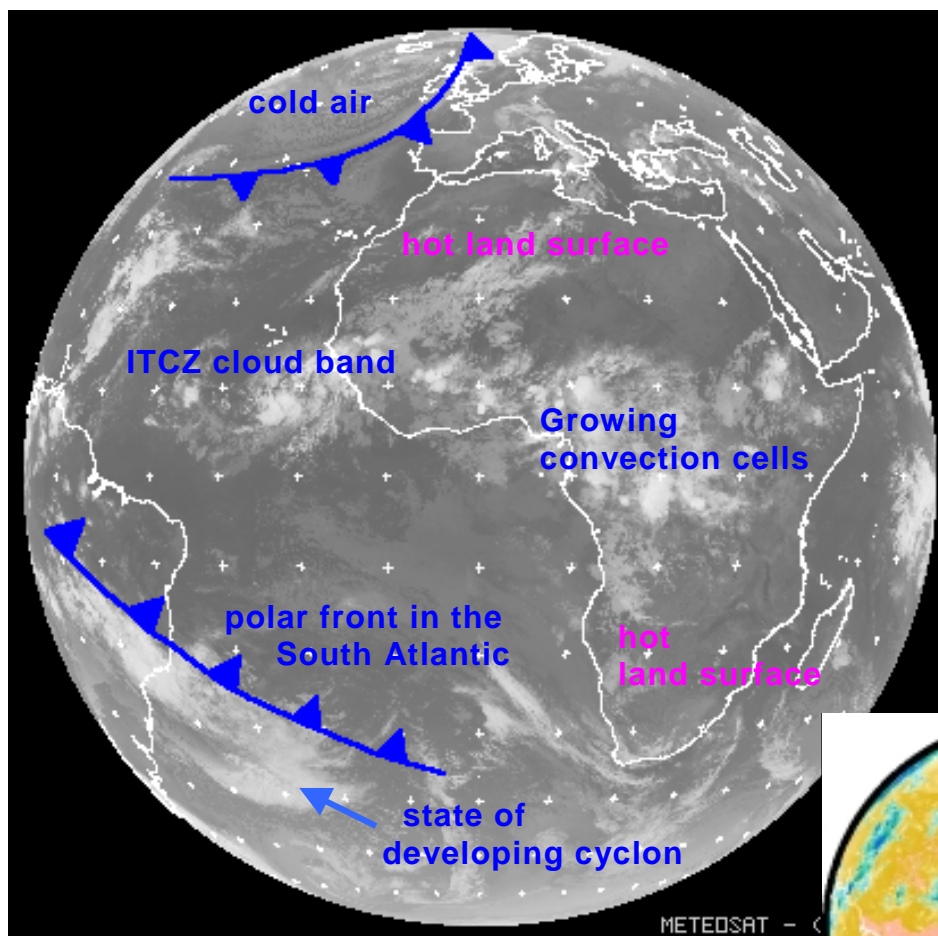


(1/10) Weather on Earth

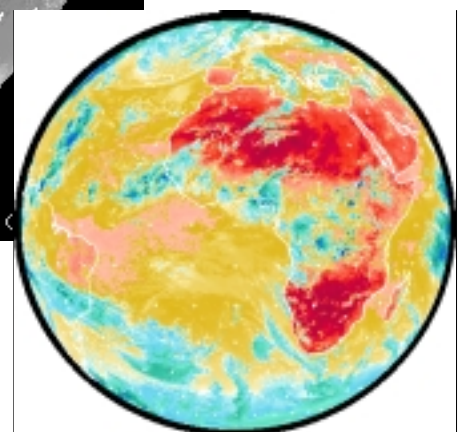
The satellite picture illustrates the main features of the global circulation system.

Note the following.

- Well-developed region of equatorial cloud (the inter-tropical convergence zone or ITCZ) and the generally easterly direction of movement in the Northern Hemisphere.
- Strong late-afternoon convection cells above equatorial Africa
- Tropical trade winds, north and south of the ITCZ, with stratocumulus cloud over the south Atlantic
- Cyclonic circulation in the middle latitudes



Meteosat satellites, positioned in a geostationary orbit about 35 800 km from the Earth, provide a view of almost half the Earth. Images in visible or infrared light can be studied directly (as at left) or used to derive theoretical models (as in the summer temperature distribution model below).



Images: *The Weather Machine* CD-ROM, (C) ESA 1997

All meteorological processes, such as winds, cloud formation, temperature changes and precipitation, are 'powered' by energy radiated from the sun. The amount of solar energy absorbed at the surface varies greatly between the equator and the poles. It is this imbalance which is primarily responsible for movements of air and water (in its various forms) in the atmosphere.

The excess of energy absorbed in the tropics is carried away from the equator, in a northerly and southerly direction, creating powerful wind systems.

What we call 'weather' is limited to the thin lower layer of the atmosphere.