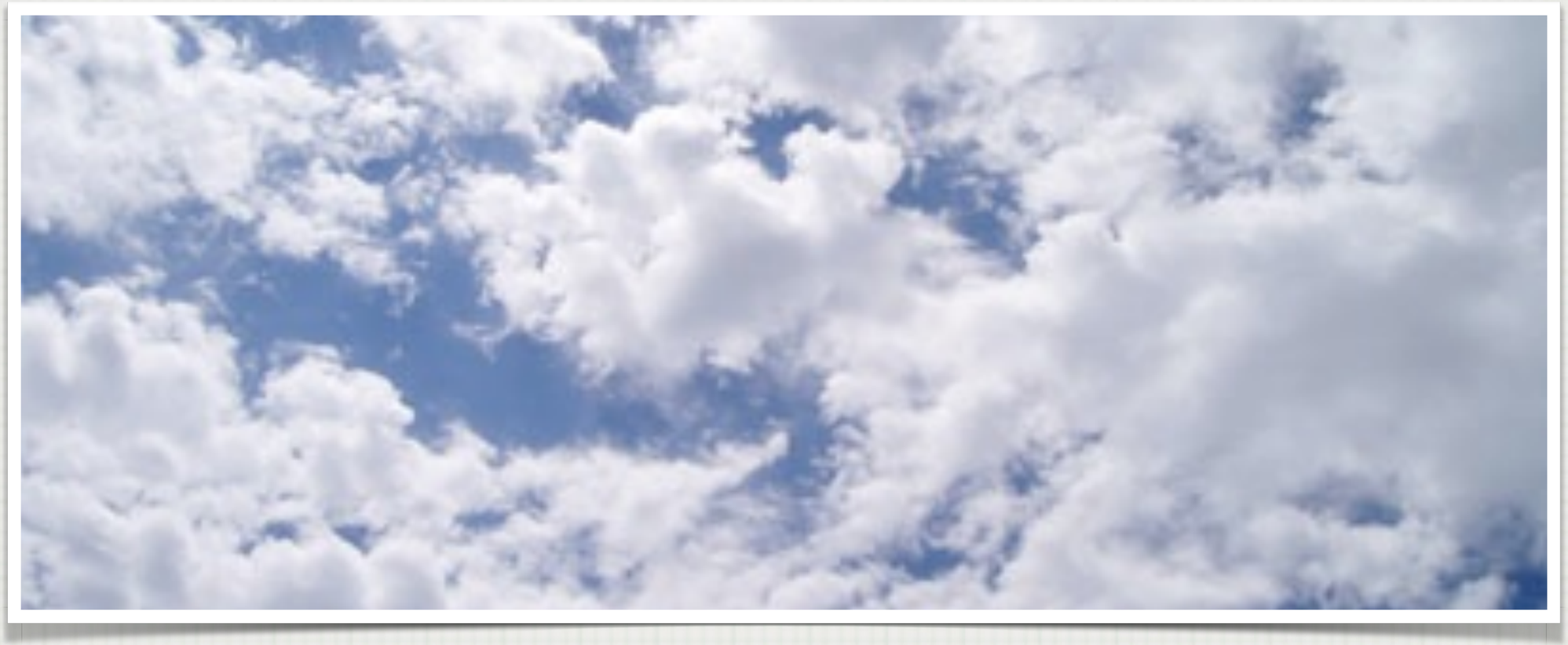
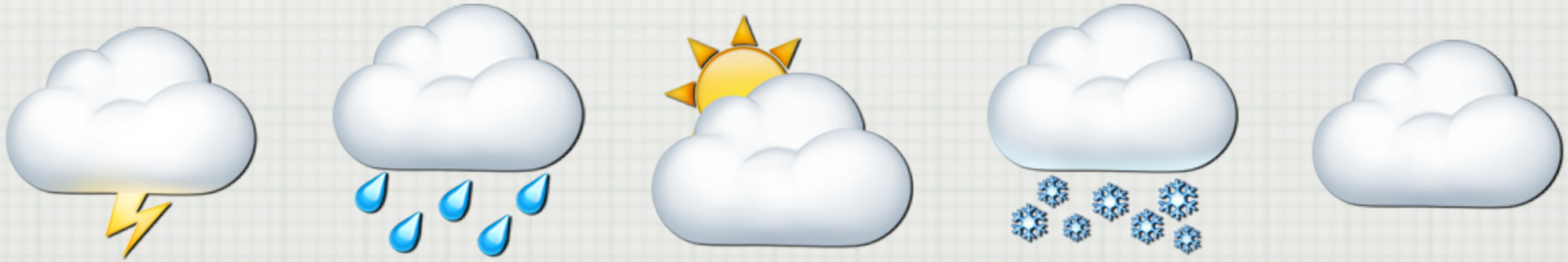


ATMOSPHERIC VARIABLES

WHAT VARIABLES LEAD TO WEATHER IN THE ATMOSPHERE?

ATMOSPHERIC VARIABLES

- TROPOSPHERE - THE LOWEST PORTION OF THE ATMOSPHERE WHERE TEMPERATURE DECREASES
  - WEATHER OCCURS IN THIS LAYER



ATMOSPHERIC VARIABLES

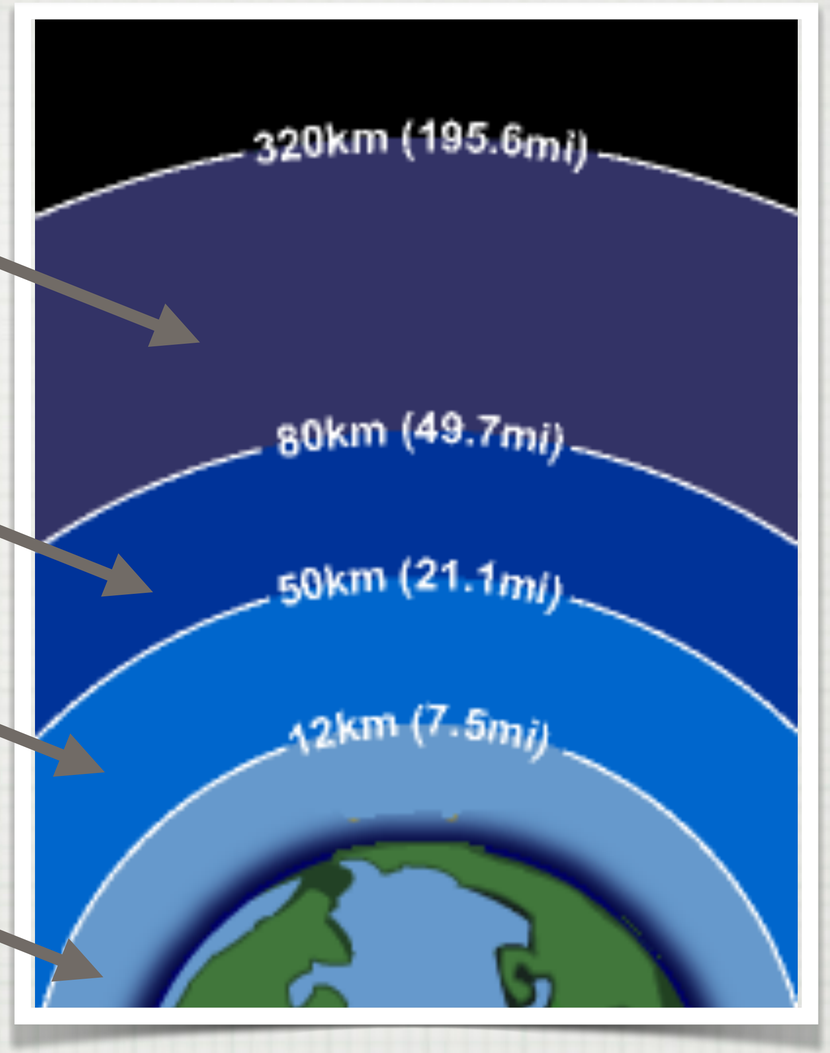
- STRATOSPHERE - A REGION OF THE ATMOSPHERE WHERE TEMPERATURE INCREASES
- MESOSPHERE - A REGION OF THE ATMOSPHERE WHERE TEMPERATURE DECREASES
- THERMOSPHERE - A REGION OF THE ATMOSPHERE WHERE TEMPERATURE INCREASES

THERMOSPHERE

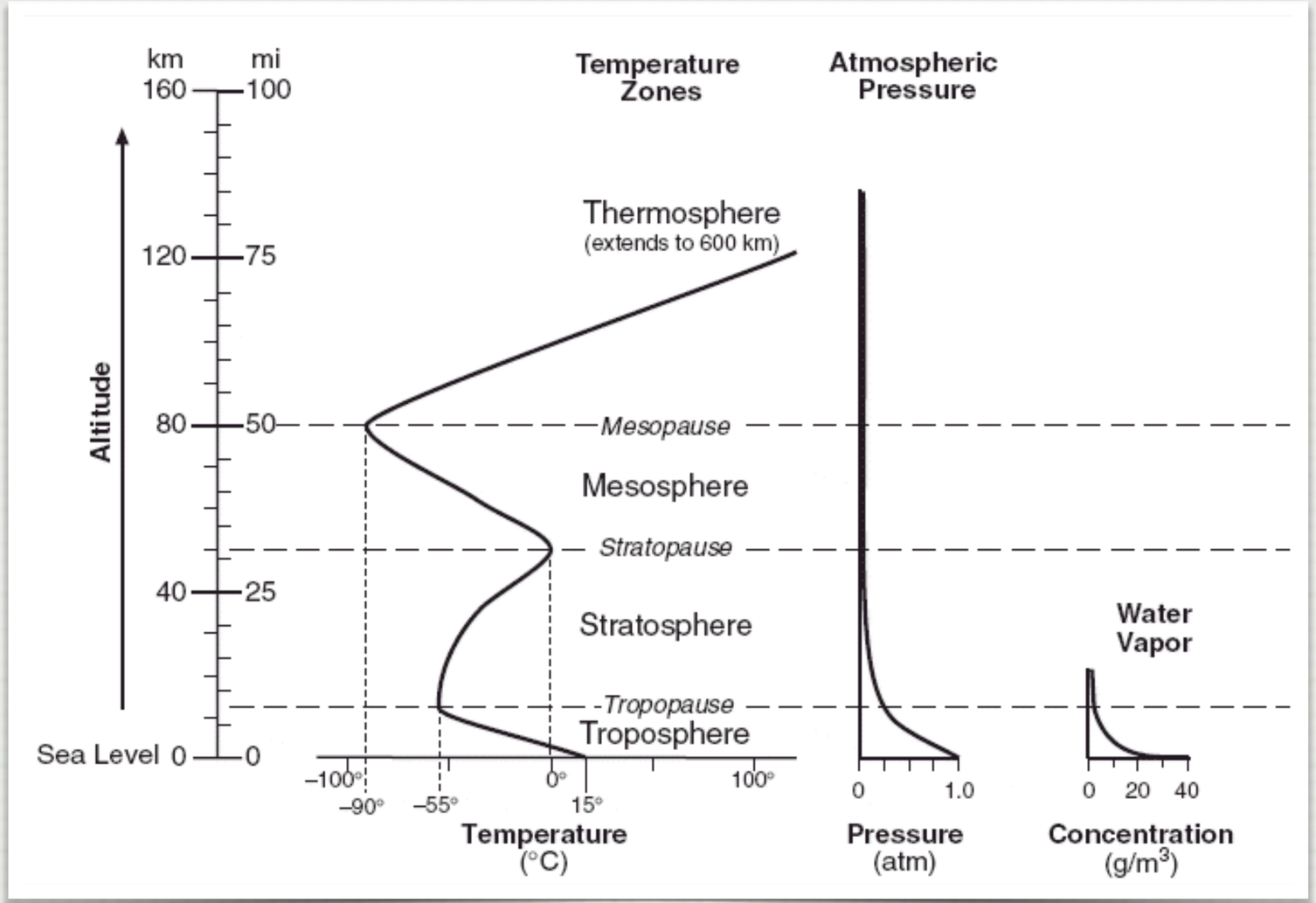
MESOSPHERE

STRATOSPHERE

TROPOSPHERE



EARTH'S LAYERS



EARTH SCIENCE REFERENCE TABLES

ATMOSPHERIC VARIABLES

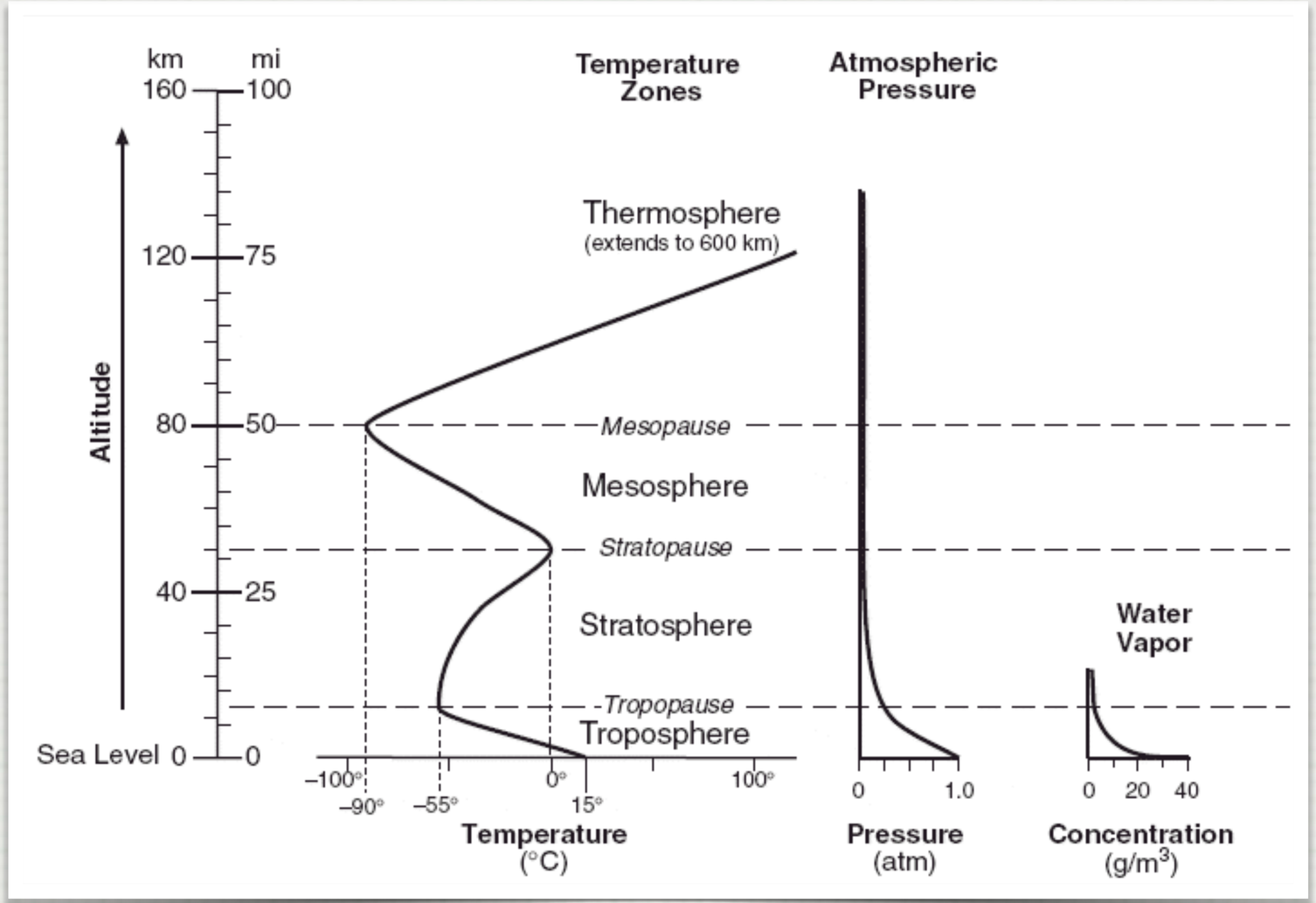
- WEATHER - THE PRESENT CONDITION OF THE ATMOSPHERE --- INCLUDING TEMPERATURE, PRESSURE, WIND, HUMIDITY, AND MOVEMENT
    - CHANGES ARE DUE MAINLY TO UNEQUAL HEATING OF LAND MASSES, OCEANS, AND THE ATMOSPHERE

ATMOSPHERIC VARIABLES

- TEMPERATURE - THE HEAT ENERGY PRESENT IN THE ATMOSPHERE AT THAT LOCATION
    - INFLUENCES AFFECTING TEMPERATURE ARE SOLAR RADIATION, ANGLE OF INSOLATION, HOURS OF DAYLIGHT, AND REFLECTION OFF THE ATMOSPHERE

ATMOSPHERIC VARIABLES

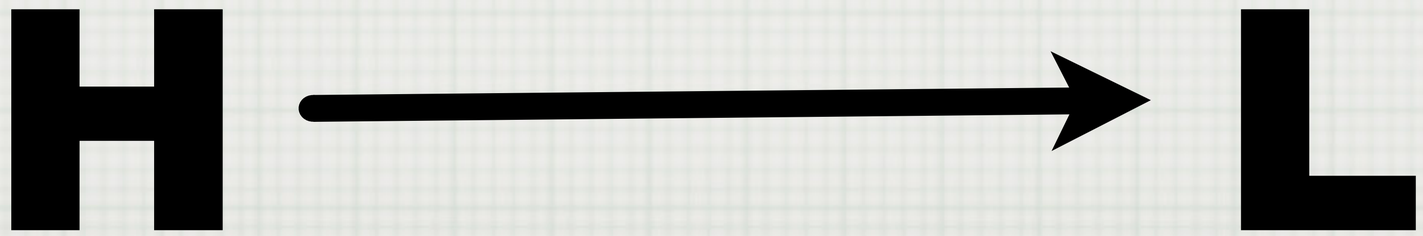
- AIR PRESSURE - THE FORCE EXERTED ON A UNIT OF AREA BY THE AIR THAT IS EXERTED EQUALLY IN EVERY DIRECTION
    - AIR IS A MIXTURE OF GASES WITH MOLECULES THAT ARE FAST MOVING AND FAR APART



EARTH SCIENCE REFERENCE TABLES

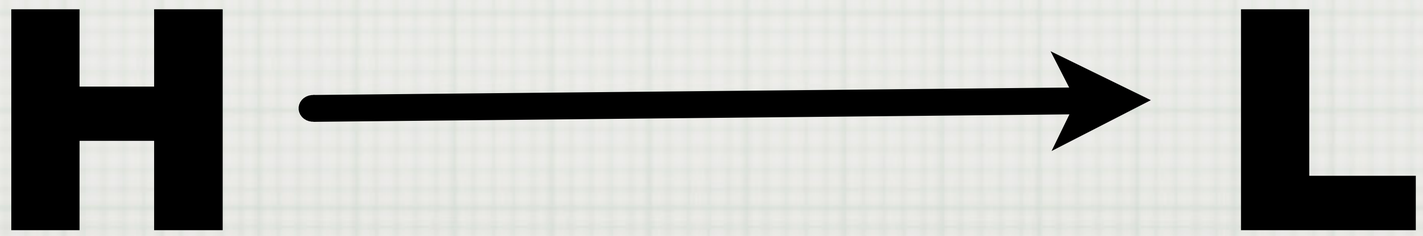
ATMOSPHERIC VARIABLES

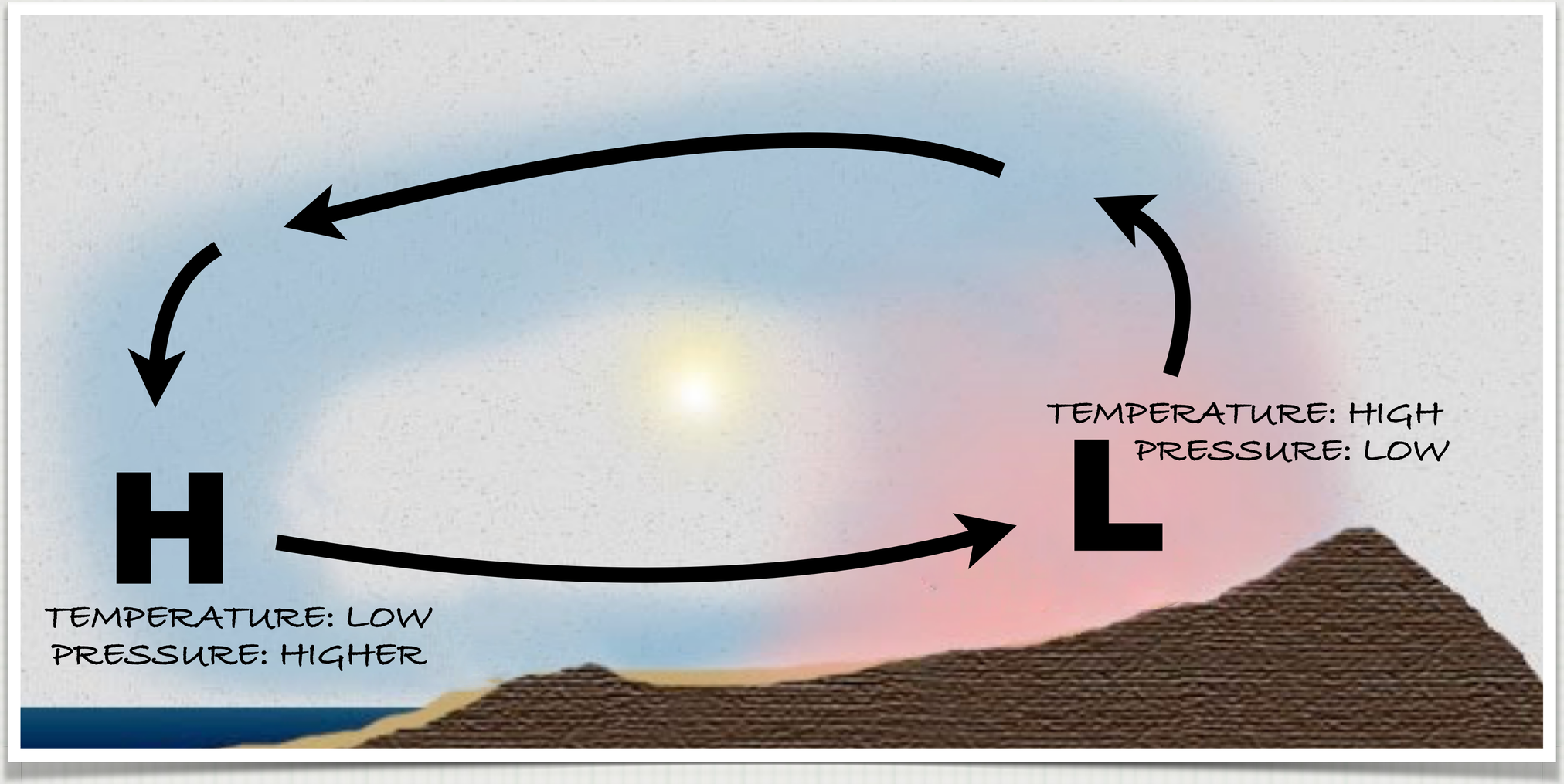
- WIND - THE HORIZONTAL MOVEMENT OF AIR PARALLEL TO THE EARTH'S SURFACE
    - WIND BLOWS FROM AREAS OF HIGH PRESSURE TO AREAS OF LOW PRESSURE



ATMOSPHERIC VARIABLES

- SEA BREEZE - DURING THE DAY LAND HEATS UP FASTER THAN THE WATER, THUS CREATING A LOW PRESSURE ZONE OVER THE LAND
    - WIND BLOWS FROM AREAS OF HIGH PRESSURE TO AREAS OF LOW PRESSURE

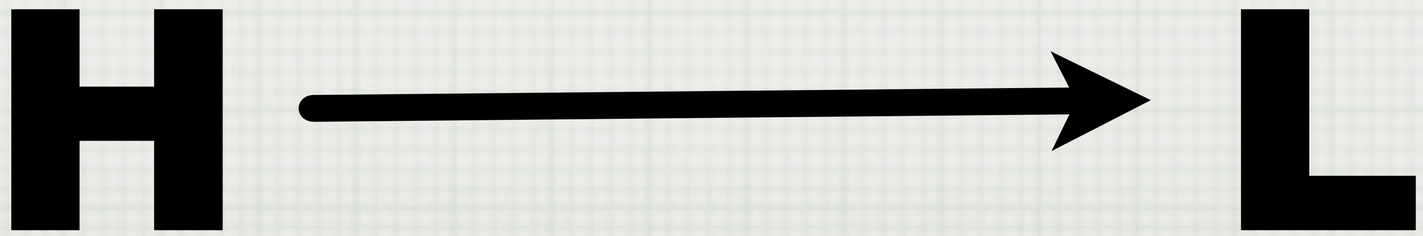


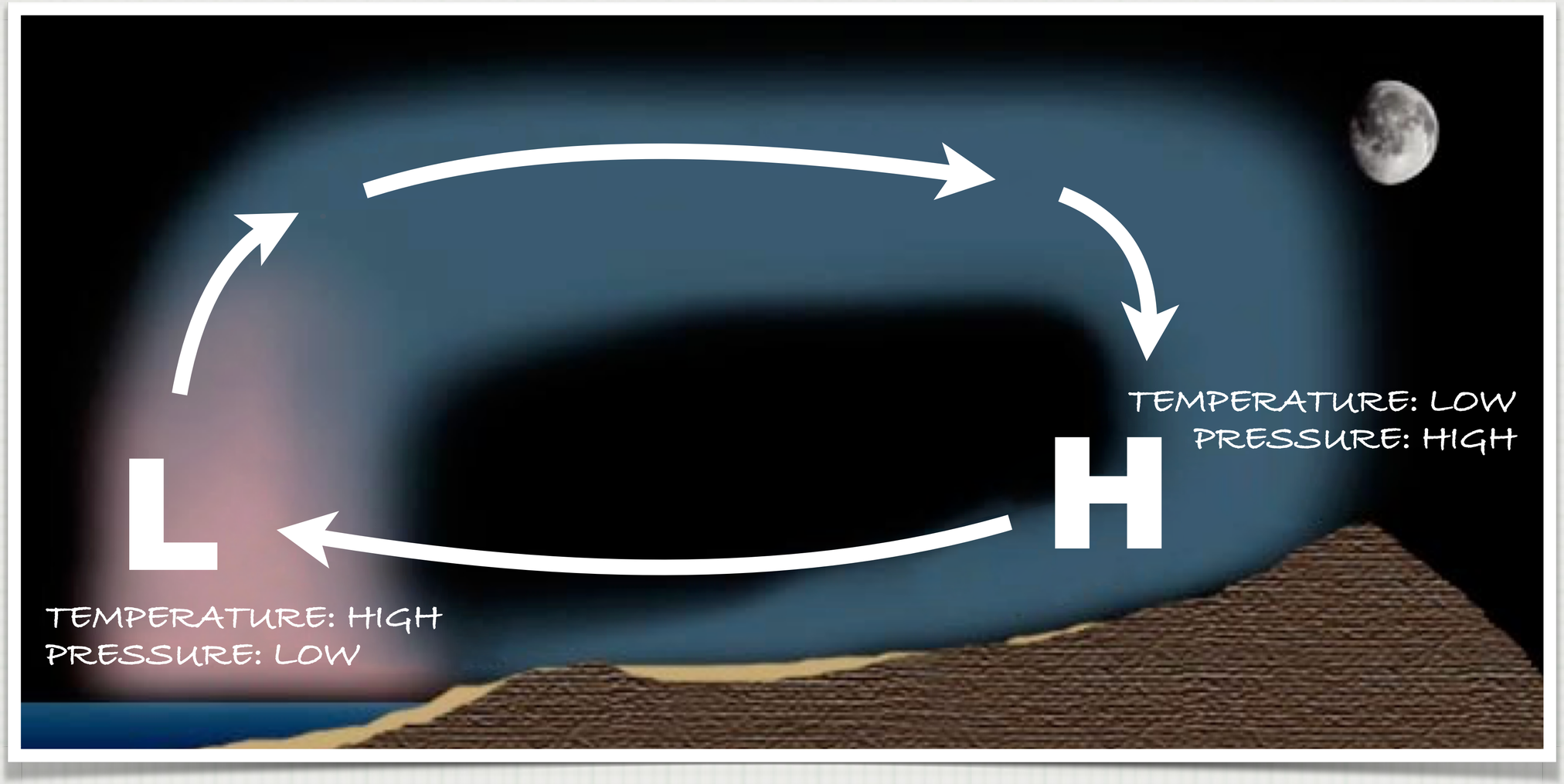

H
TEMPERATURE: LOW
PRESSURE: HIGHER
L
TEMPERATURE: HIGH
PRESSURE: LOW

SEA BREEZE

ATMOSPHERIC VARIABLES

- LAND BREEZE - DURING THE NIGHT LAND COOLS FASTER WHILE WATER HOLDS ITS HEAT, THUS CREATING A LOW PRESSURE ZONE OVER THE WATER
    - WIND BLOWS FROM AREAS OF HIGH PRESSURE TO AREAS OF LOW PRESSURE




L
H
TEMPERATURE: LOW
PRESSURE: HIGH
TEMPERATURE: HIGH
PRESSURE: LOW

LAND BREEZE

ATMOSPHERIC VARIABLES

- CLOUD - VISIBLE AGGREGATE OF MINUTE DROPLETS OF WATER, OR TINY CRYSTALS OF ICE, OR A MIXTURE OF BOTH

ATMOSPHERIC VARIABLES

- CLOUD FORMATION - PROCESS WHEN WATER VAPOR IN THE AIR CONDENSES [GAS TO LIQUID] AS THE AIR IS COOLED TO THE DEWPOINT

R.E.C.C

RISES - EXPANDS - COOLS - CONDENSES

ATMOSPHERIC VARIABLES

- GENERALLY, CLOUDS ARE CLASSIFIED ON THE BASIS OF FORM AND HEIGHT [FROM CLOUD BASE]
    - HIGH-LEVEL CLOUDS [ABOVE 6,000 M]
    - MID-LEVEL CLOUDS [2,000 – 6,000 M]
    - LOW-LEVEL CLOUDS [BELOW 2,000 M]
    - VERTICALLY DEVELOPED CLOUDS [RANGE]

ATMOSPHERIC VARIABLES

- THREE TYPES OF CLOUDS:
  - CIRRUS - MEANING "CURL" OR "FILAMENT"
  - CUMULUS - MEANING "HEAP"
  - STRATUS - MEANING "LAYER"

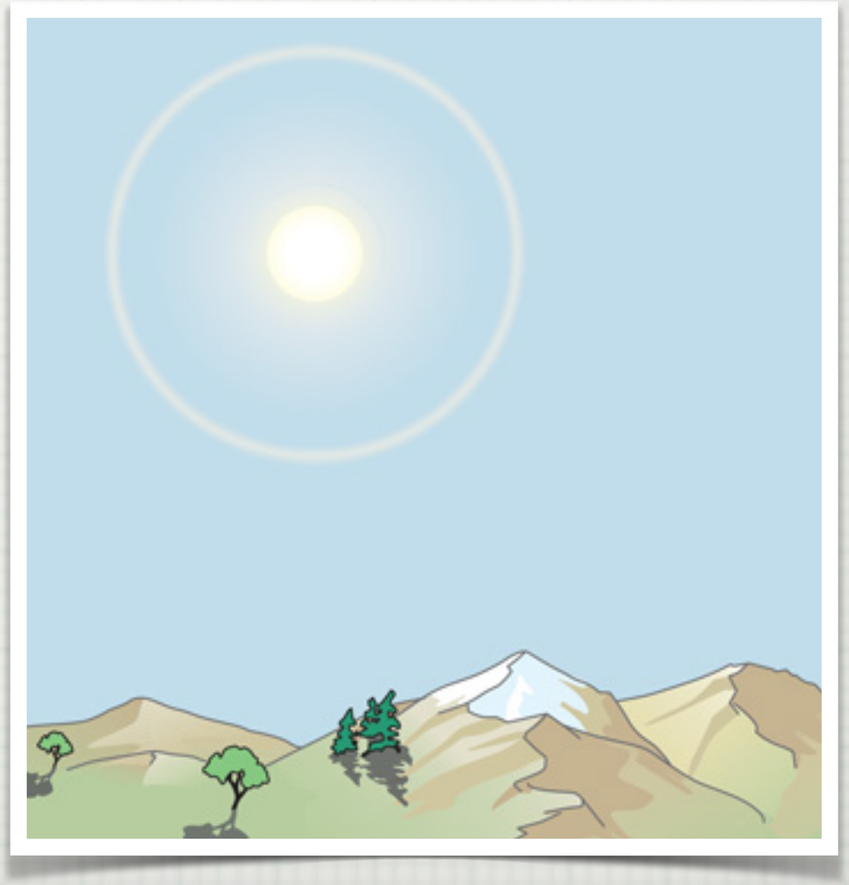
ATMOSPHERIC VARIABLES

- CIRRUS CLOUDS:
  - MOST COMMON HIGH LEVEL CLOUDS
  - OCCUR IN FAIR WEATHER
  - POINT IN THE DIRECTION OF AIR MOTION
  - MADE OF ICE CRYSTALS

CIRRUS

ATMOSPHERIC VARIABLES

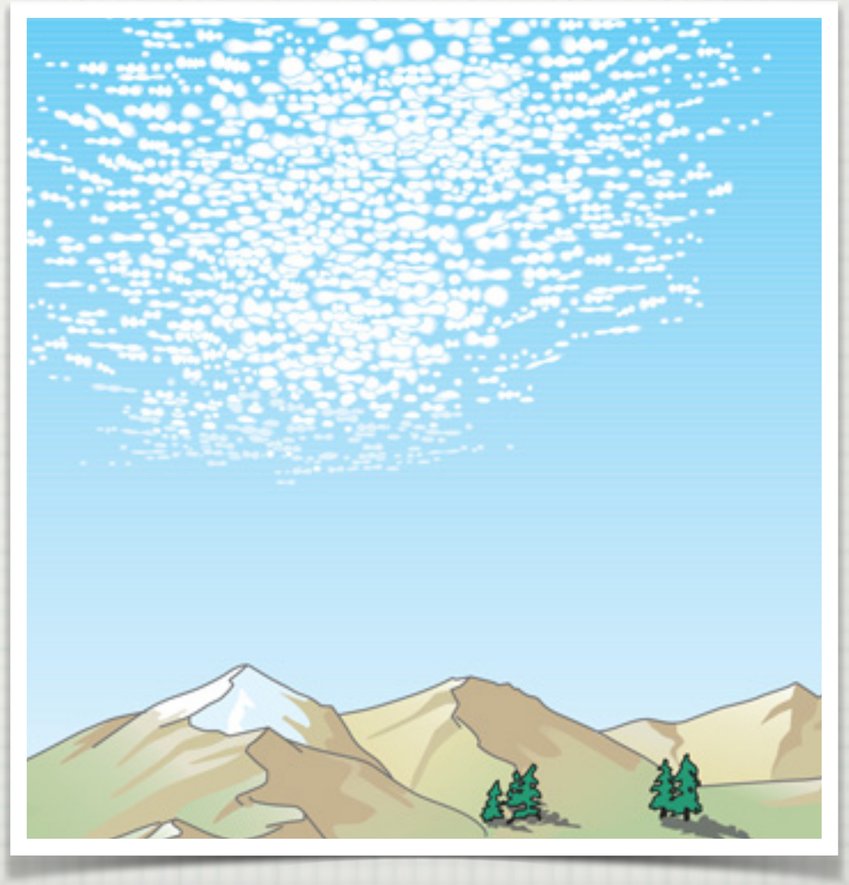
- CIRROSTRATUS CLOUDS:
  - HIGH LEVEL CLOUDS
  - NEARLY TRANSPARENT
  - PRODUCES A HALO AROUND THE SUN
  - MADE OF ICE CRYSTALS



CIRROSTRATUS

ATMOSPHERIC VARIABLES

- CIRROCUMULUS CLOUDS:
  - HIGH LEVEL CLOUDS
  - APPEAR AS WHITE PATCHES OF SMALL CELLS OR RIPPLES
  - MADE OF ICE CRYSTALS



CIRROCUMULUS CLOUDS

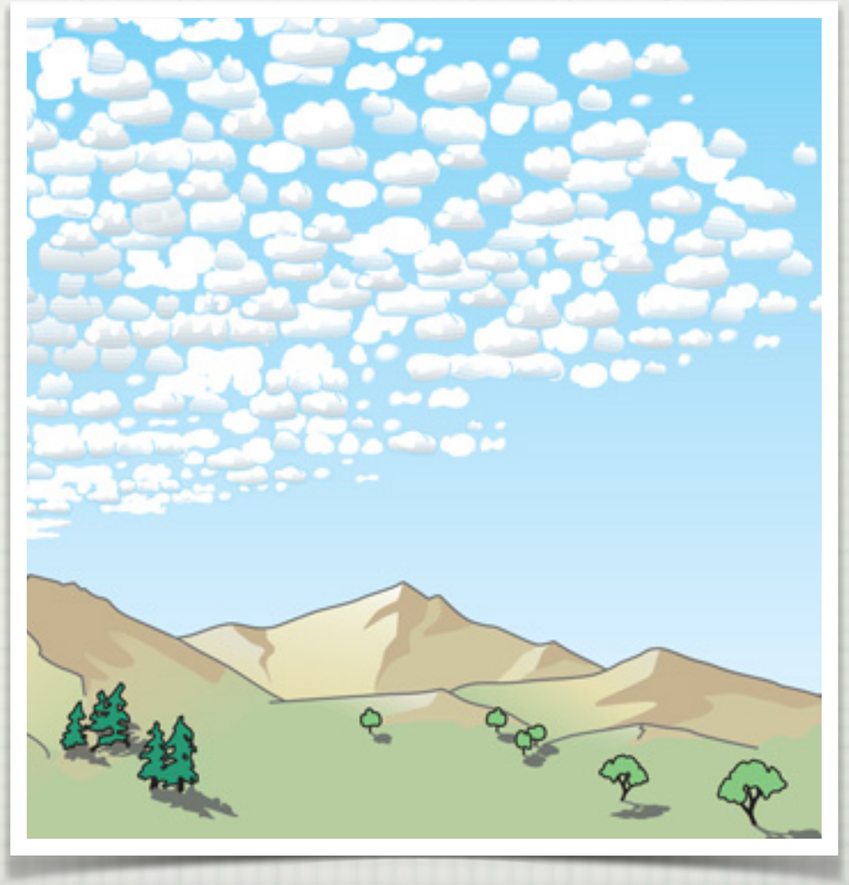
ATMOSPHERIC VARIABLES

- ALTOSTRATUS CLOUDS:
  - MID-LEVEL CLOUDS
  - PRECEDES RAIN
  - SUN SEEN AS IF SHINING THROUGH GLAZED GLASS

ALTOSTRATUS CLOUDS

ATMOSPHERIC VARIABLES

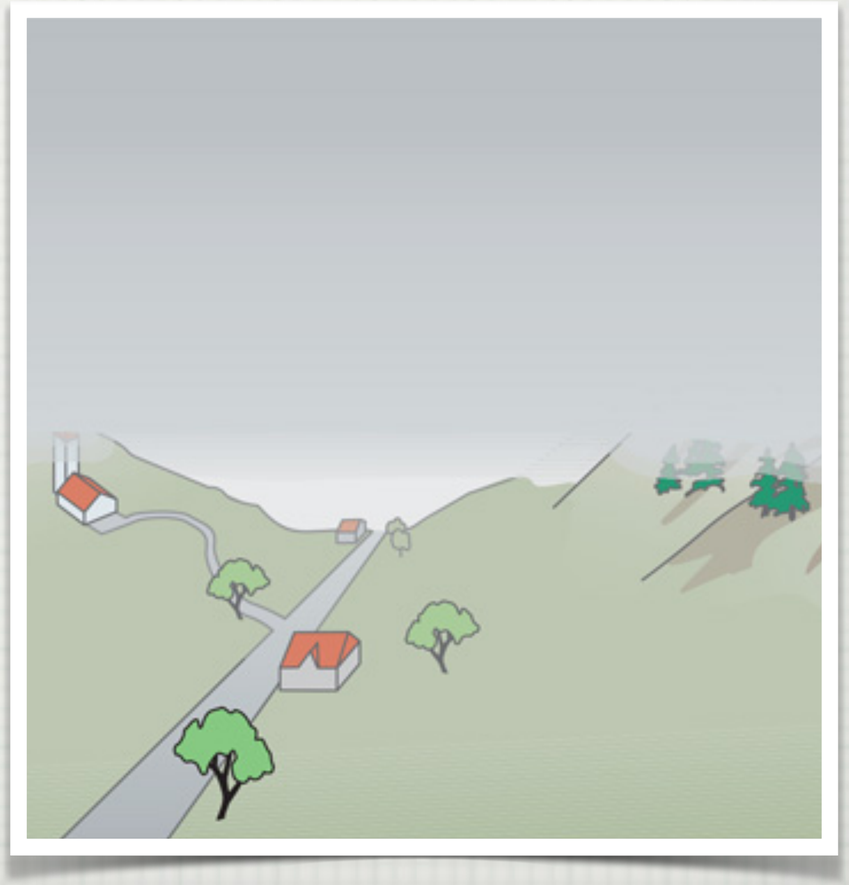
- ALTOCUMULUS CLOUDS:
  - MID-LEVEL CLOUDS
  - ROUNDED MASSES OR PARALLEL BANDS



ALTOCUMULUS CLOUDS

ATMOSPHERIC VARIABLES

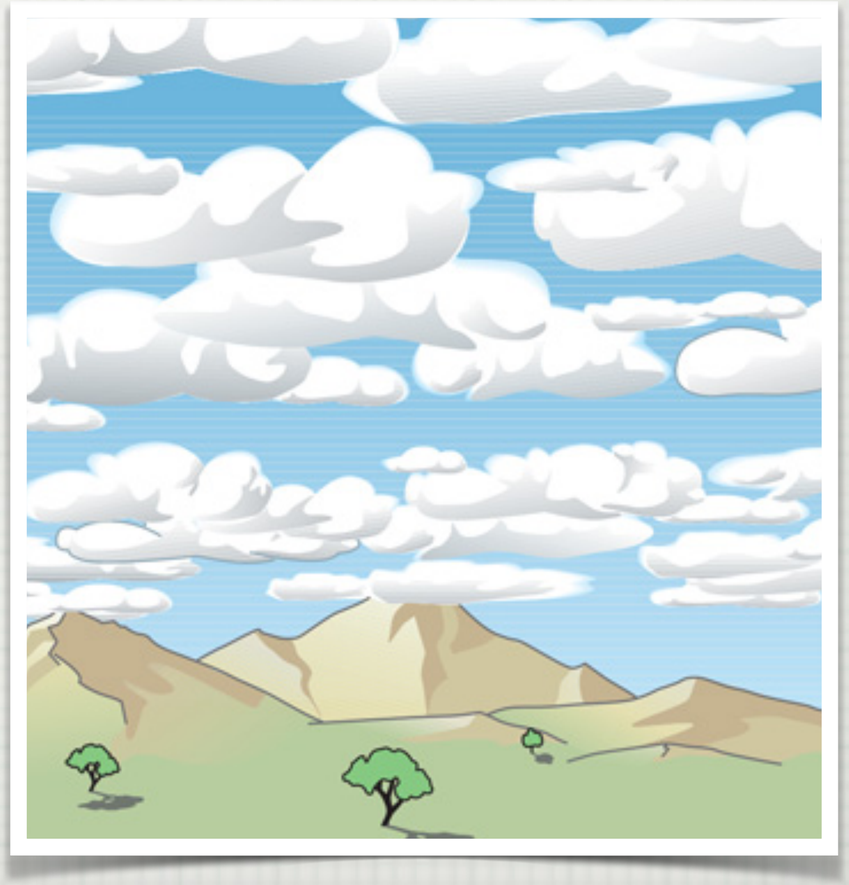
- STRATUS CLOUDS:
  - LOW LEVEL CLOUDS
  - FREQUENTLY COVERS MOST OF THE SKY AND MAY PRODUCE LIGHT PRECIPITATION



STRATUS CLOUDS

ATMOSPHERIC VARIABLES

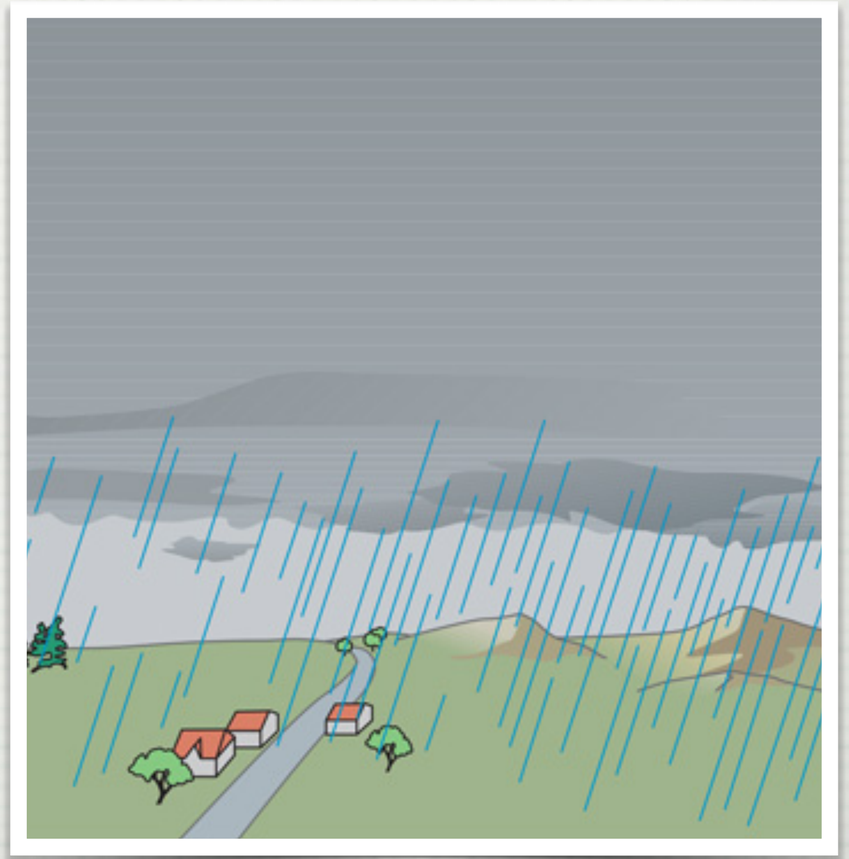
- STRATOCUMULUS CLOUDS:
  - LOW LEVEL CLOUDS
  - MAY APPEAR AS ROUNDED MASSES WITH BREAKS OF CLEAR SKY



STRATOCUMULUS CLOUDS

ATMOSPHERIC VARIABLES

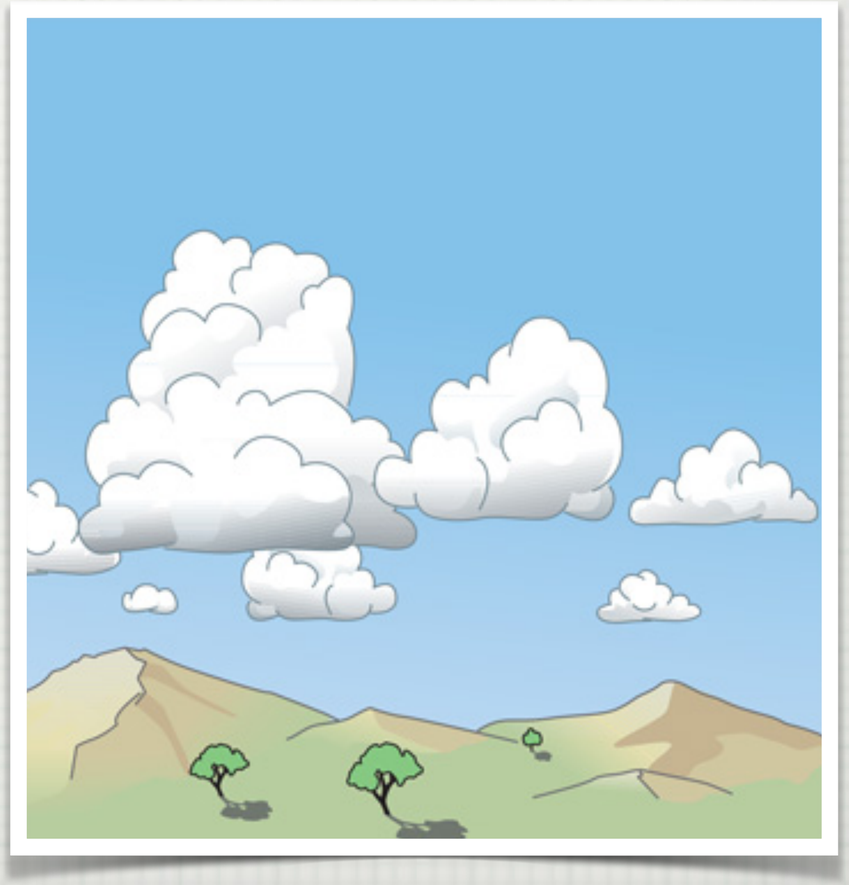
- NIMBOSTRATUS CLOUDS:
  - LOW LEVEL CLOUDS
  - LOW AND DARK CLOUDS WITH NO SUN
  - ACCOMPANIED BY PRECIPITATION



NIMBOSTRATUS CLOUDS

ATMOSPHERIC VARIABLES

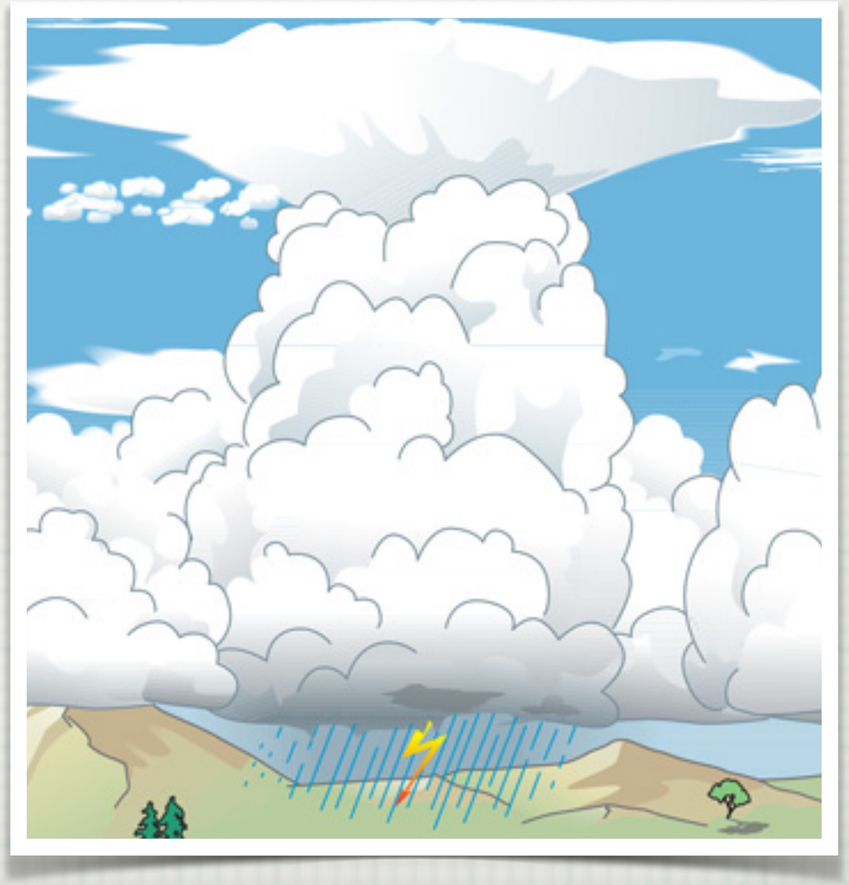
- CUMULUS CLOUDS:
  - VERTICALLY DEVELOPED
  - FORM ON CLEAR DAYS AND APPEAR AS COTTON

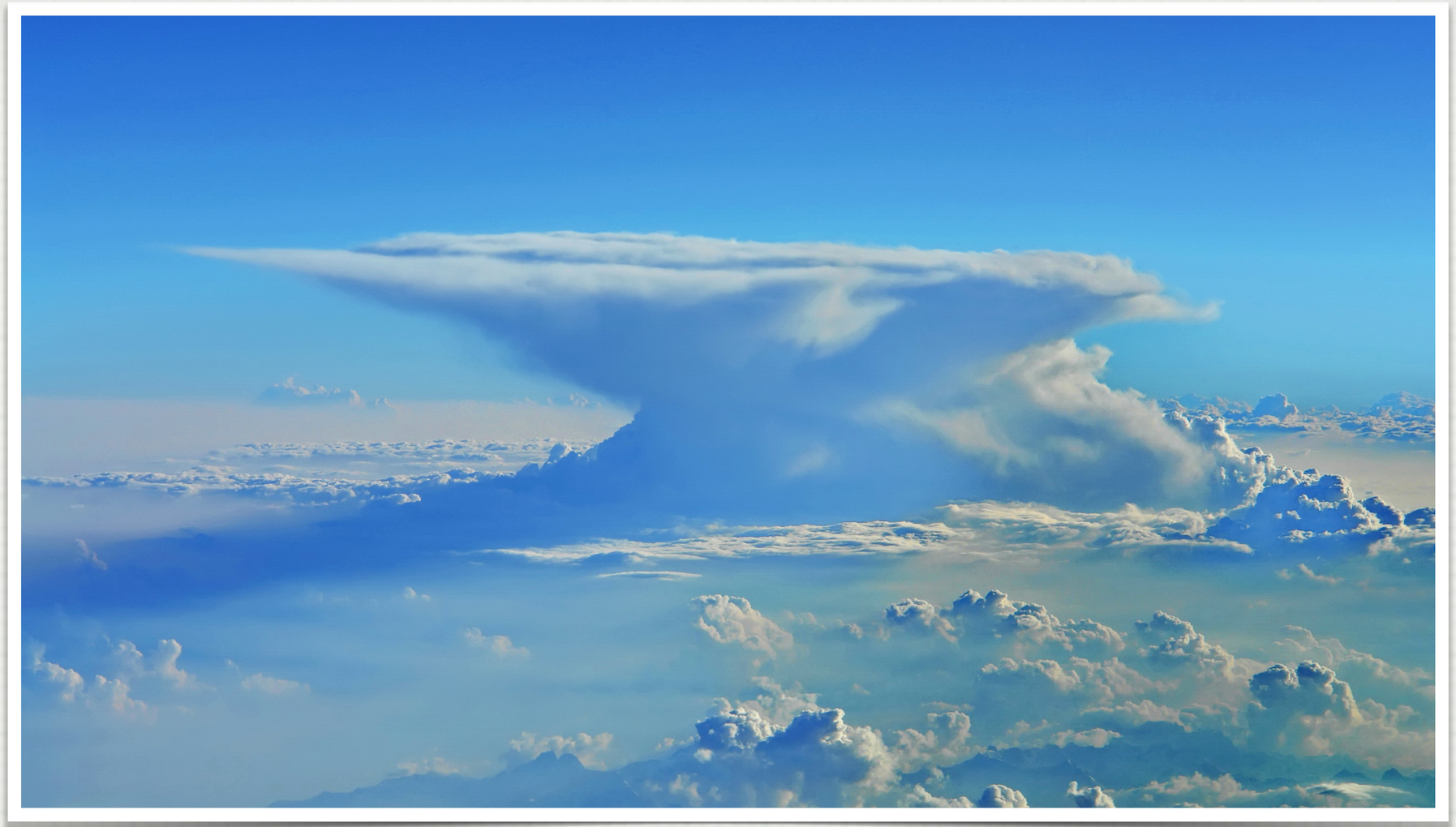


CUMULUS CLOUDS

ATMOSPHERIC VARIABLES

- CUMULONIMBUS CLOUDS:
  - VERTICALLY DEVELOPED
  - SOURCE OF LIGHTNING, THUNDER AND HAIL

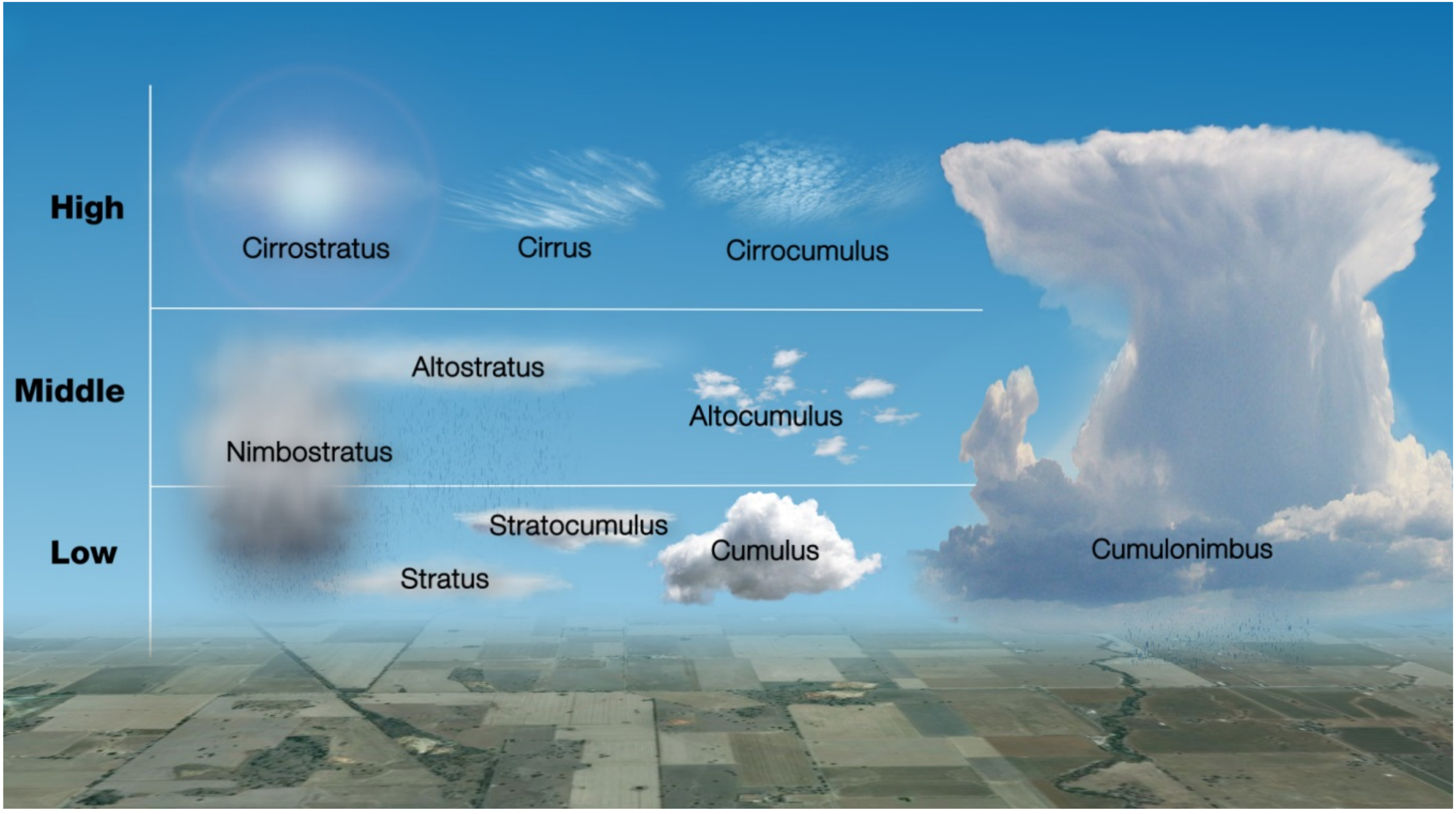




CUMULONIMBUS CLOUDS

CUMULONIMBUS CLOUDS

CUMULONIMBUS CLOUDS


High
Middle
Low
Cirrostratus
Cirrus
Cirrocumulus
Altostratus
Altocumulus
Nimbostratus
Stratocumulus
Cumulus
Cumulonimbus
Stratus