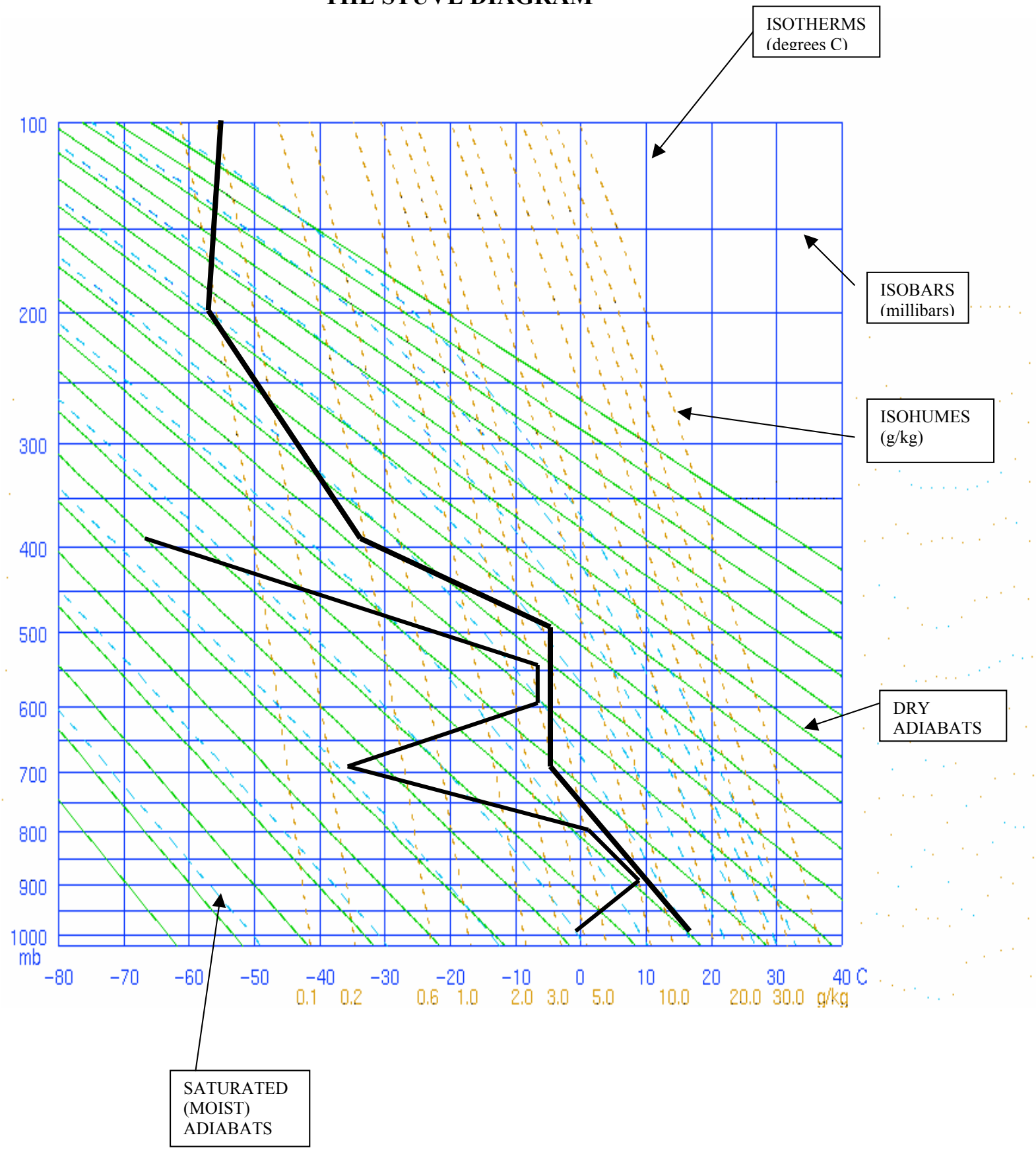
THE STUVE DIAGRAM



GRAPH VARIABLES:

x-axis: → Temperature (in degrees Celsius) [linear scale]

→ Water Vapor Mixing Ratio (in grams per kilogram) [non-linear scale]
(this is a type of humidity measurement)

y-axis: → Pressure Level (millibars) [non-linear scale]
(note that the pressure values increase "downward")

→ Elevation (in meters) [near-linear scale]
(not shown in this picture)

ATMOSPHERIC HUMIDITY:

The curve on the right → environmental air temperatures (T)
The curve on the left → environmental dew point temperatures (T_d)

Atmospheric layers displaying the most relatively humid characteristics:

→ 900-800 mb,

→ 600-550 mb

(the closer T & T_d are together, the closer to saturation)

Also, the tropopause (the boundary between the troposphere & the stratosphere) is shown to be at about 200 mb. This is the height in the very high levels of the atmosphere where the environmental lapse rate starts becoming permanently isothermal or even shows evidence of a temperature inversion.

ATMOSPHERIC STABILITY:

To determine a layer's stability, look at the environmental temperature profile (not the dew point profile) and compare its lapse rate with that of the closest dry adiabat and saturated adiabat in the Stuve diagram.

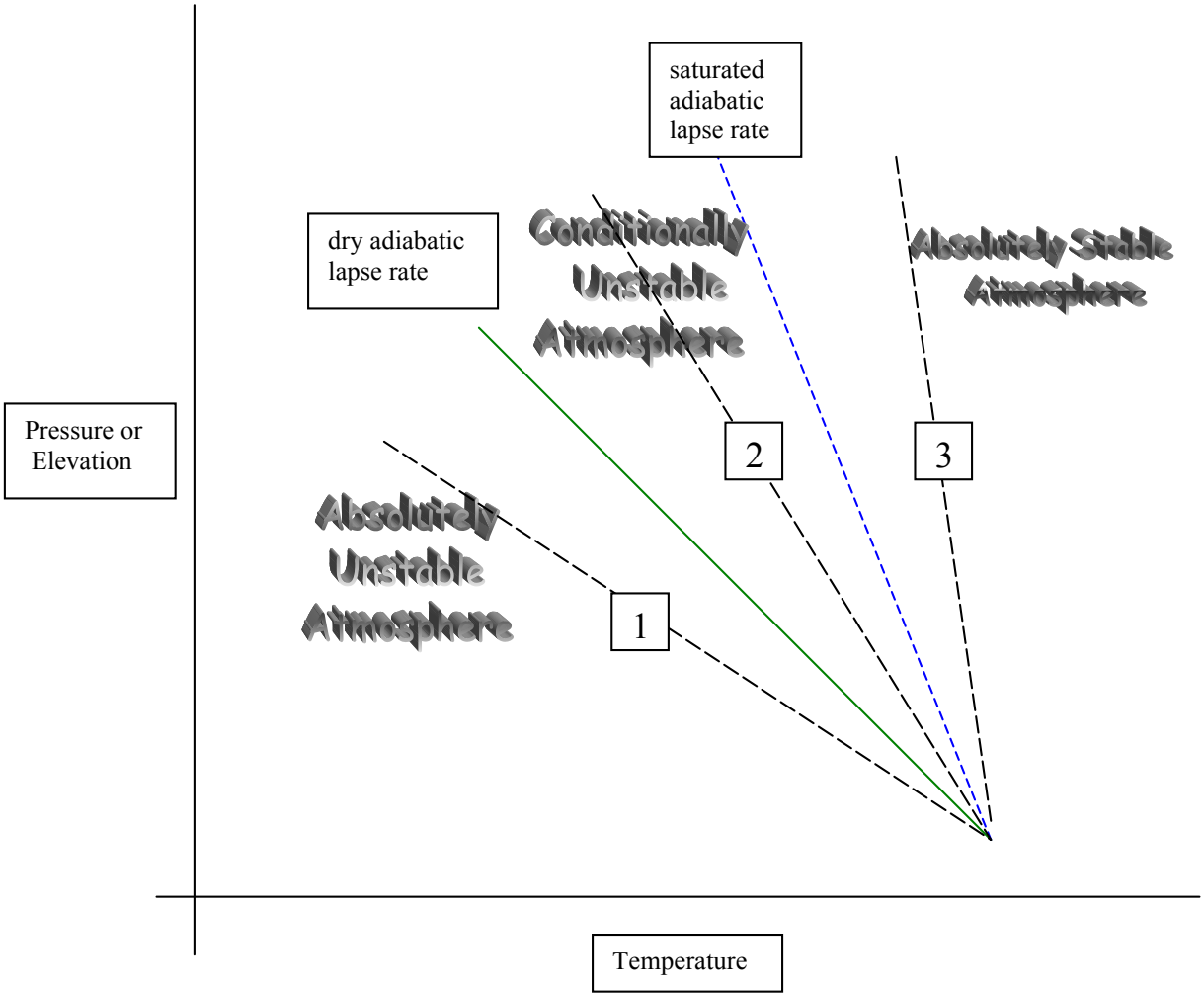
1000-700 mb layer → **conditionally unstable**
(T curve lapse rate lies between the dry adiabatic lapse rate & the saturated adiabatic lapse rate)

700-500 mb layer → **absolutely stable**
(T curve lapse rate < saturated adiabatic lapse rate)
(This layer's T curve shows it to be isothermal; or environmental lapse rate = 0)

500-400 mb layer → **absolutely unstable**
(T curve lapse rate > dry adiabatic lapse rate)

400-200 mb layer → **absolutely stable**
(T curve lapse rate < saturated adiabatic lapse rate)

200-100 mb layer → **absolutely stable**
(T curve lapse rate < saturated adiabatic lapse rate)



Different Environmental Lapse Rates are represented by the dashed black lines.

If the environmental
lapse rate is in "region 1" → atmosphere is "**Absolutely Unstable**"

If the environmental
lapse rate is in "region 2" → atmosphere is "**Conditionally Unstable**"

If the environmental
lapse rate is in "region 3" → atmosphere is "**Absolutely Stable**"