

# JAA ATPL Eđitimi

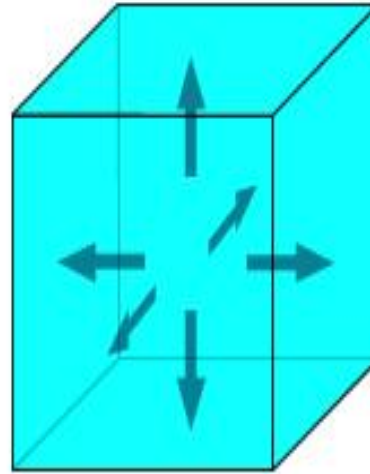
(METEOROLOJİ)

Ibrahim CAMALAN  
Meteoroloji Mühendisi

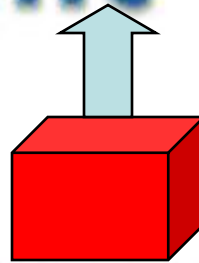
2012

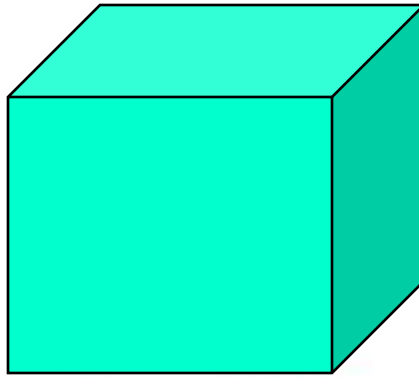
Adyabatik İşlemler;

- Adyabatik ısınma
- Adyabatik soğuma

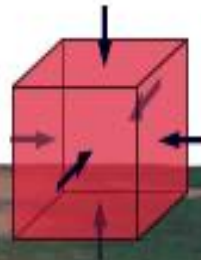
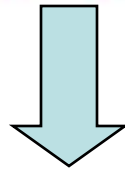


# Adiabatic Cooling





# Adiabatic Warming



Continue

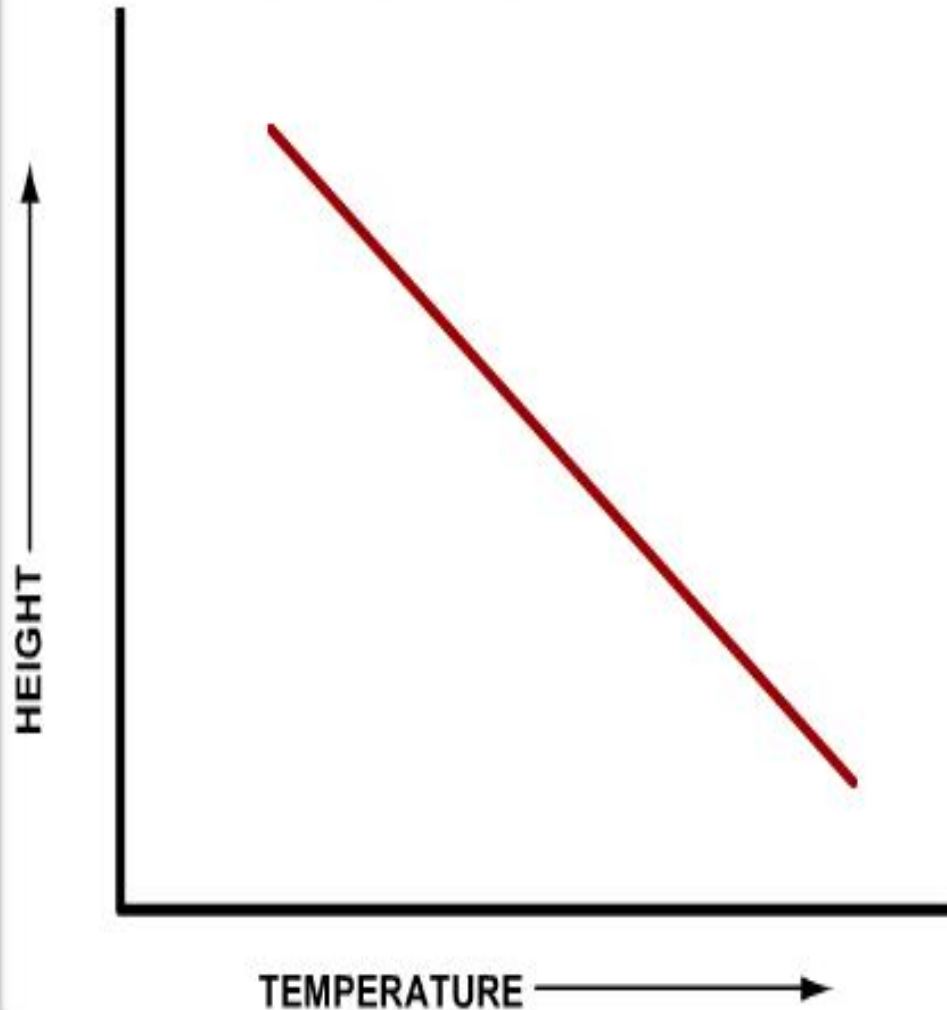
## Lapse Rate ve Adyabatik İşlemler;

- Çevresel (Environmental) Lapse Rate (ELR)
- Kuru (Dry) Adyabatik Lapse Rate (DALR)
- Nem veya Doymuş (Saturated) Adyabatik Lapse Rate (SALR)
- Dew point Lapse Rate (DLR)

**Unsaturated Air:**

**3°C/1000 ft**

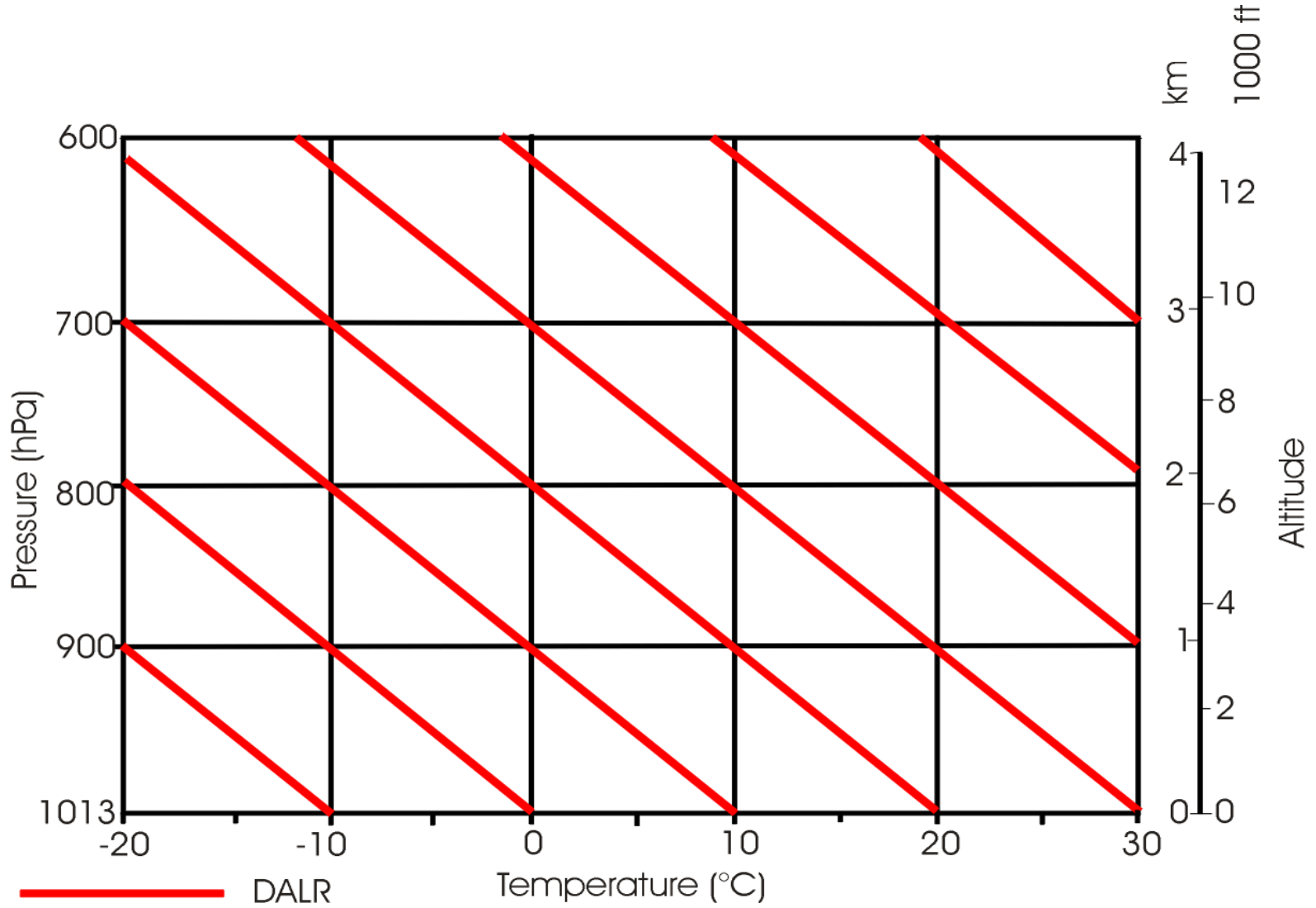
**(or 1°C/100m)**

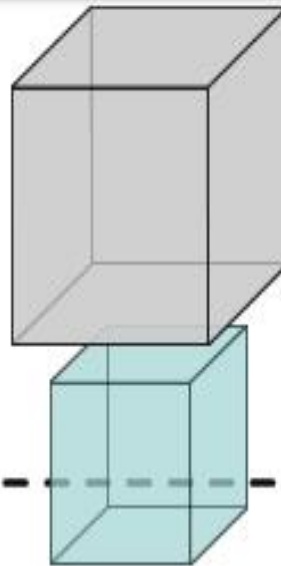


**Dry Adiabatic  
Lapse Rate**

# Dry (Kuru) Adyabatik Lapse Rate

3.0°C/1000 ft - 1.0°C/100m

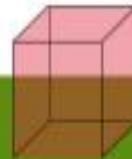
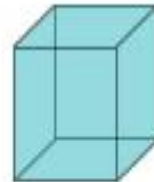




**Saturated Adiabatic  
Lapse Rate**

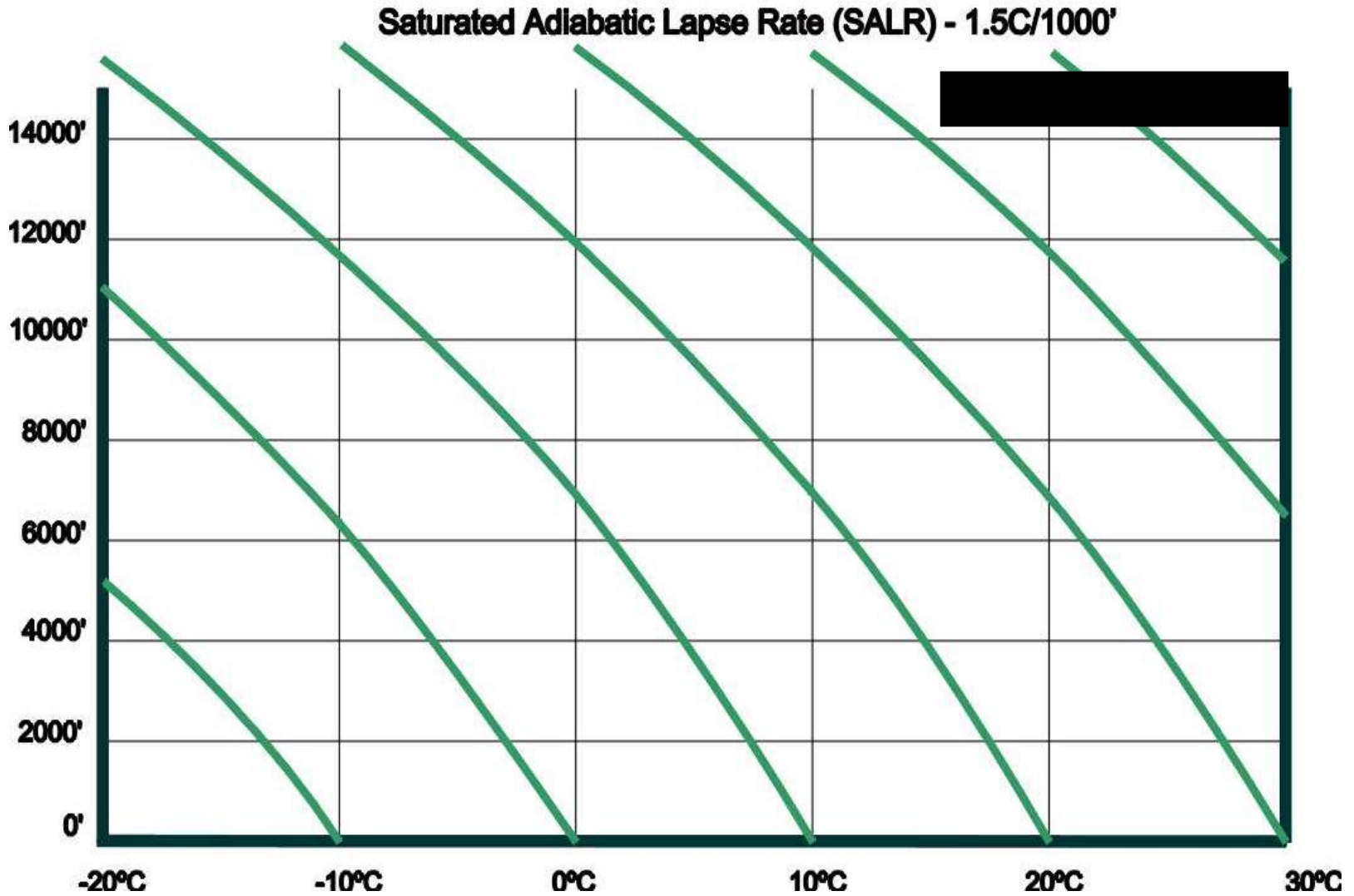
$$= 1.8^{\circ}\text{C}/1000\text{ft}$$
$$(0.6^{\circ}\text{C}/100\text{m})$$

**Release of latent heat  
reduces the rate of  
cooling of the air**

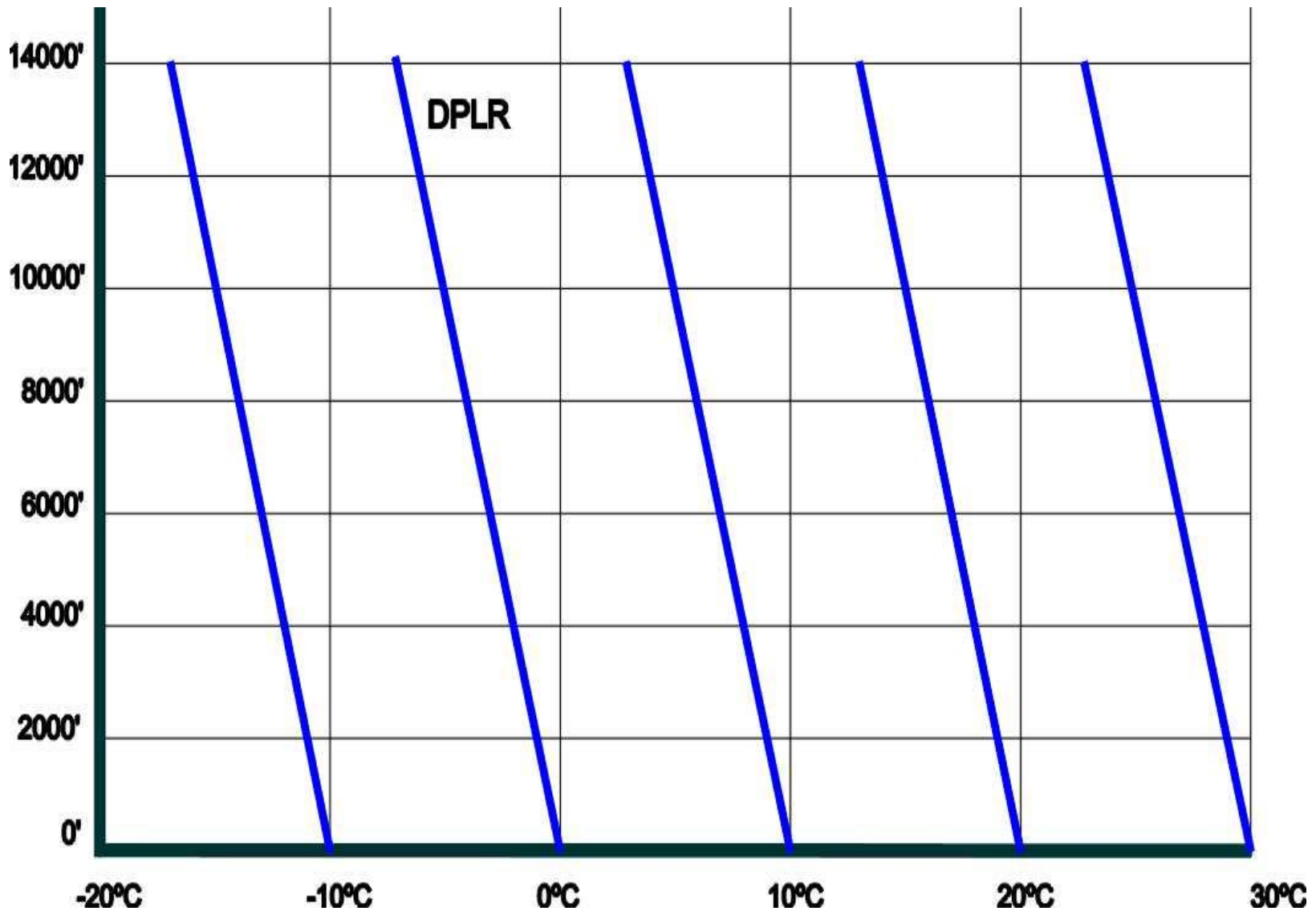


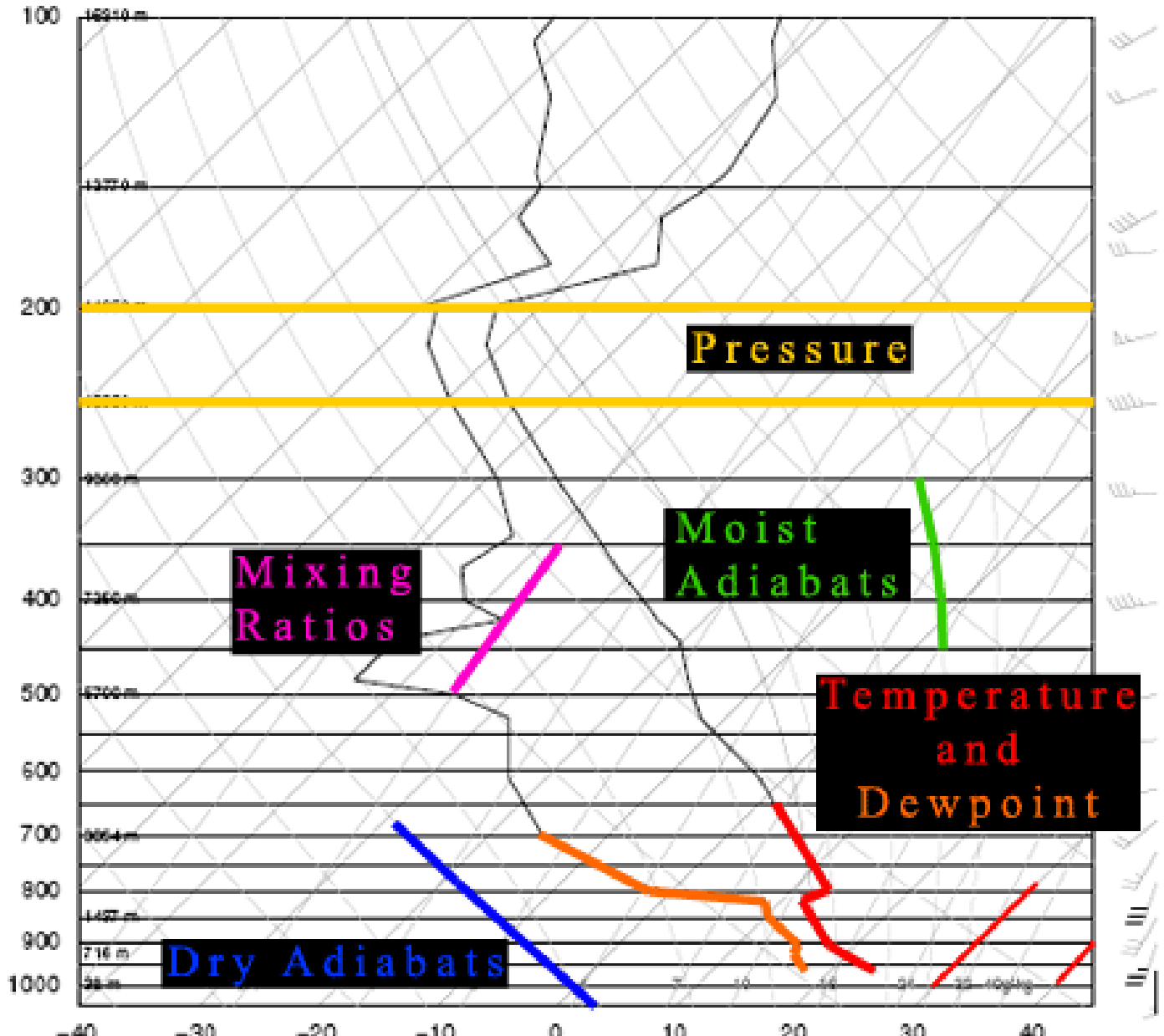


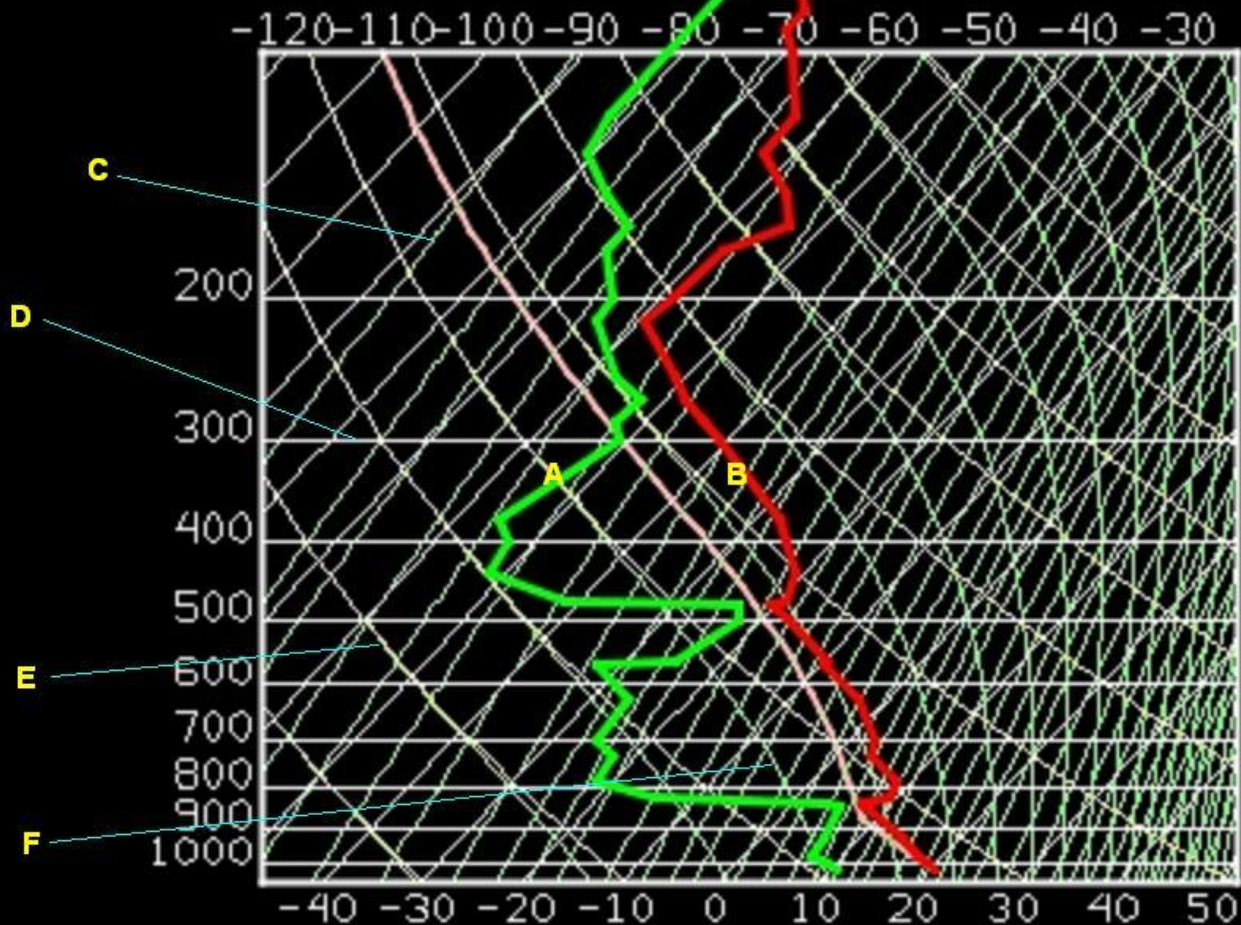
Saturated (Doymuş) Adyabatik Lapse Rate  
1.8°C/1000 feet – 0.6°C/100 m



Dew Point (İşba) Lapse Rate  
 $0.5^{\circ}\text{C}/1000\text{ ft} - 0.13^{\circ}\text{C}/100\text{m}$





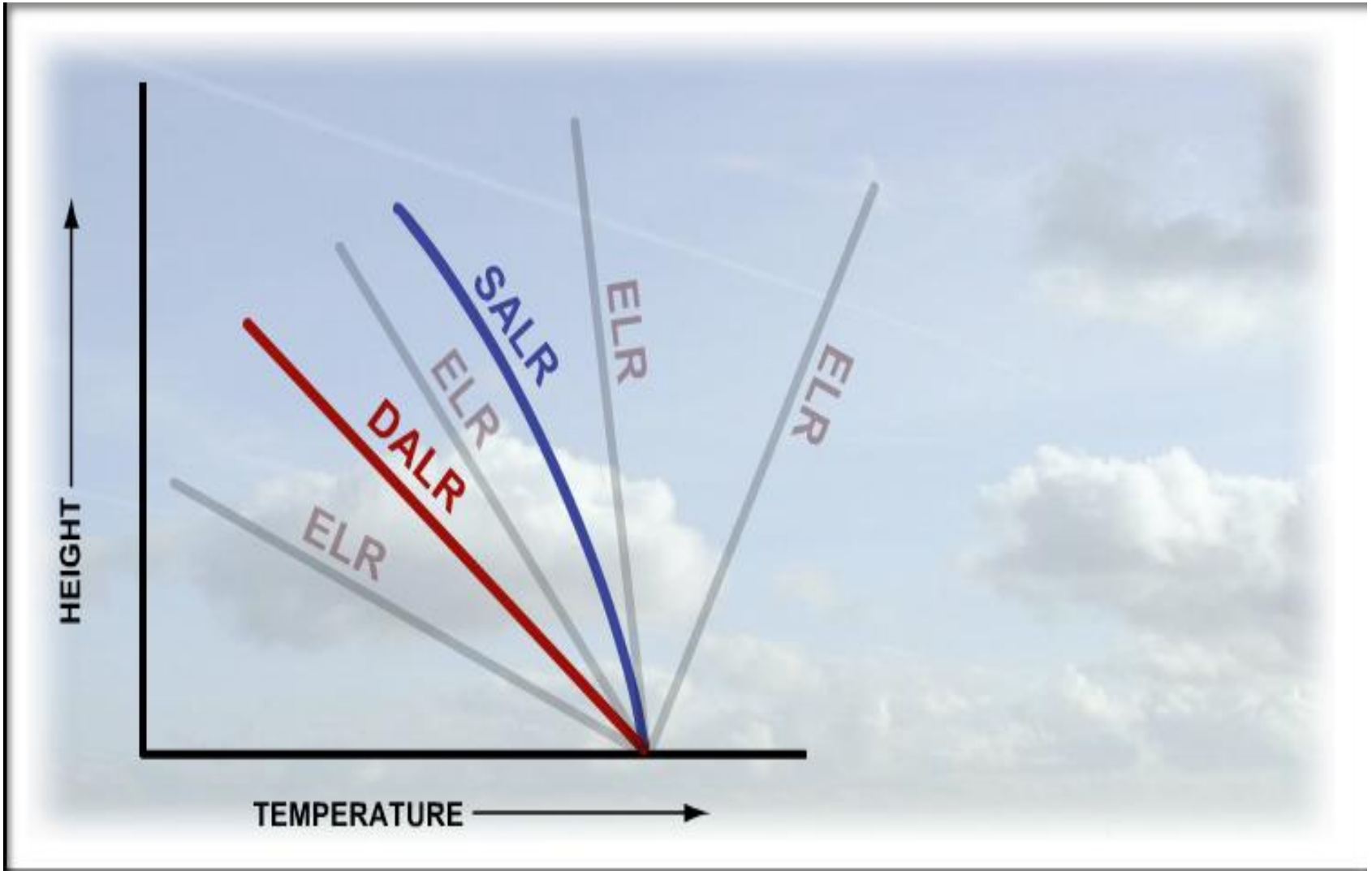




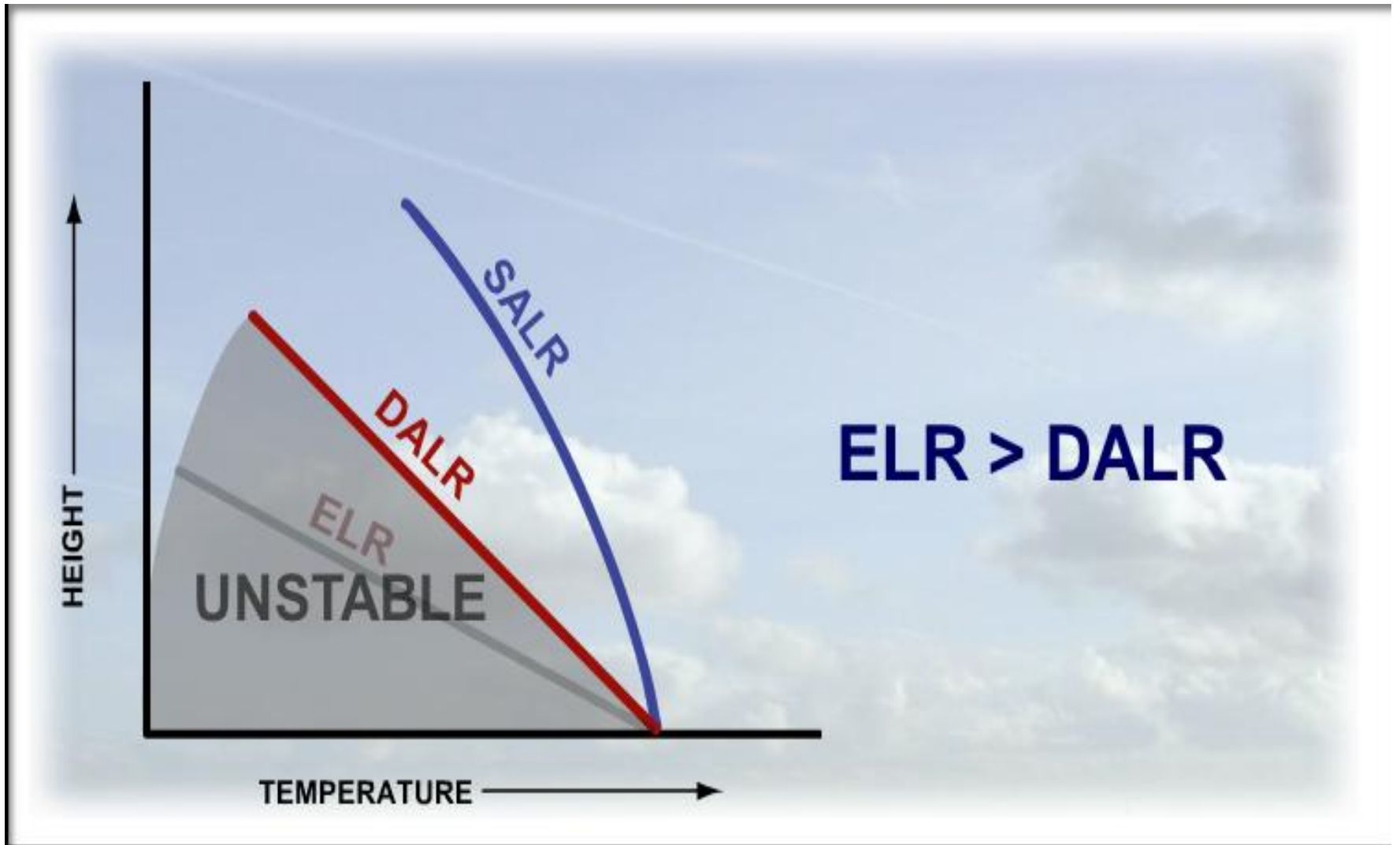
## **Kararlılık – Kararsızlık;**

- **Sıcaklık**
- **Nem durumu**



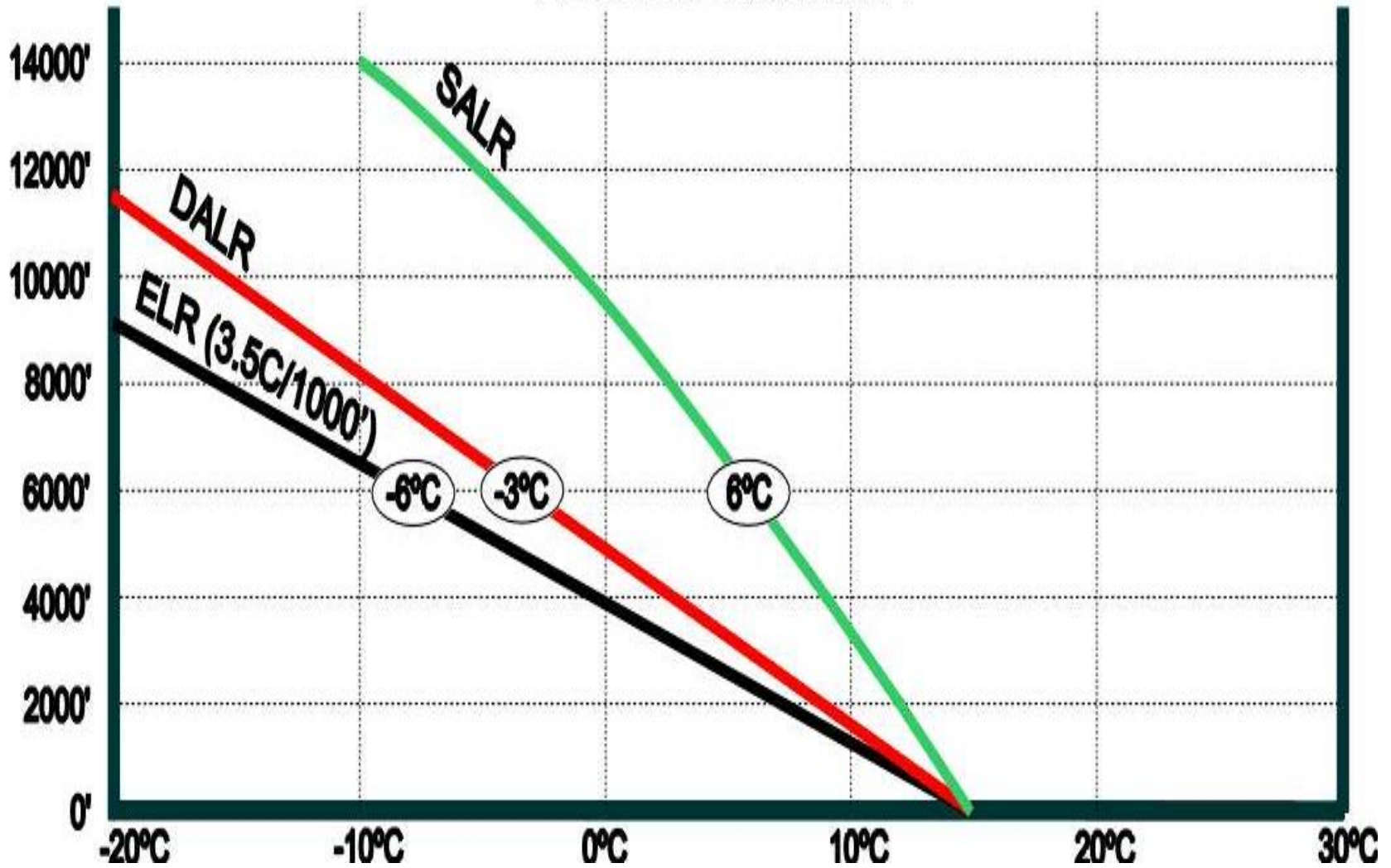


# Mutlak Kararsızlık

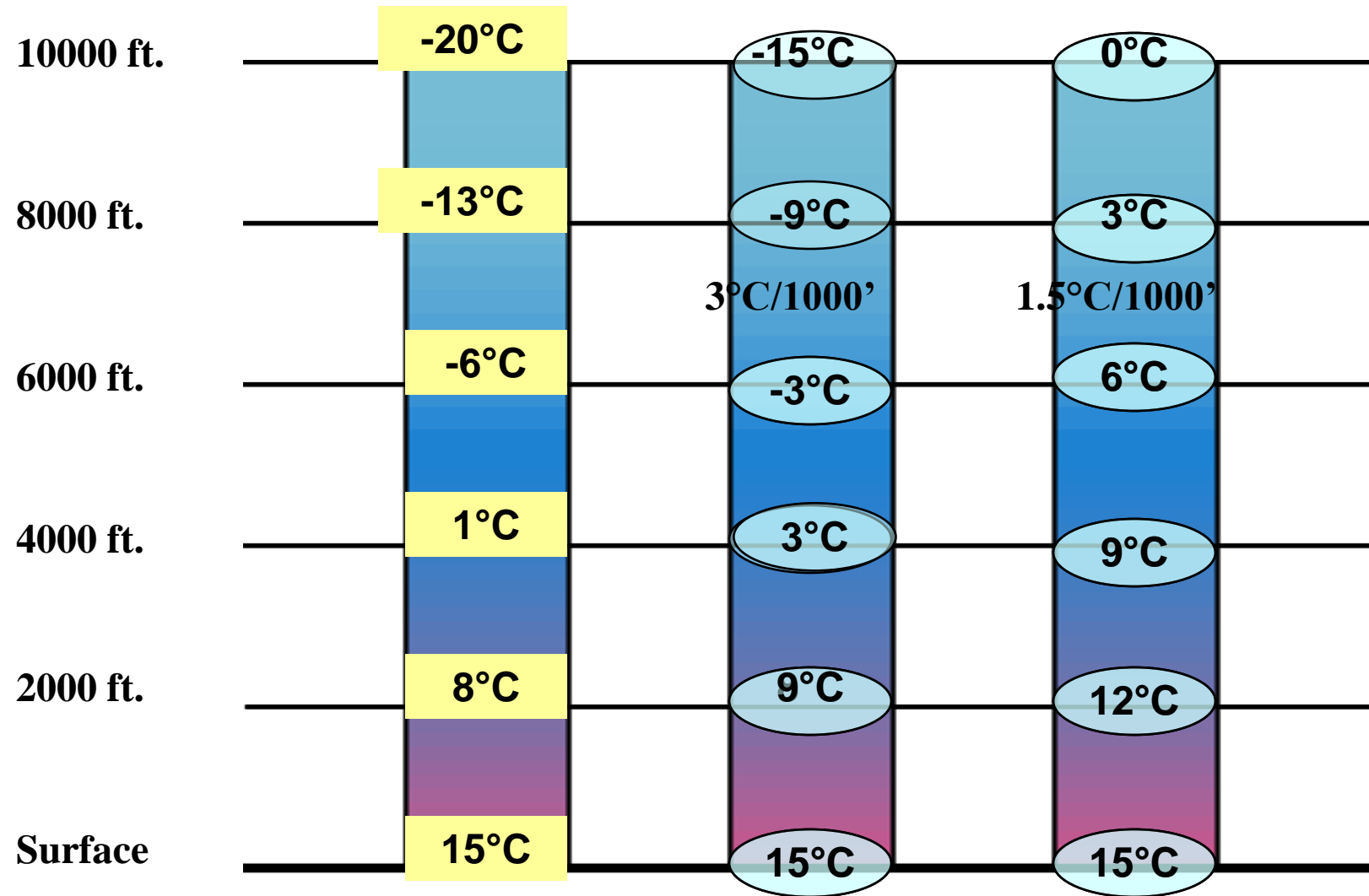




# ABSOLUTE INSTABILITY



Absolute Instability



**Environmental lapse Rate**  
**3.5°C/1000' (ELR)**

**Dry Adiabatic Lapse Rate (DALR)**

**Saturated Adiabatic Lapse Rate (SALR)**

ELR FEET

+8° 3000

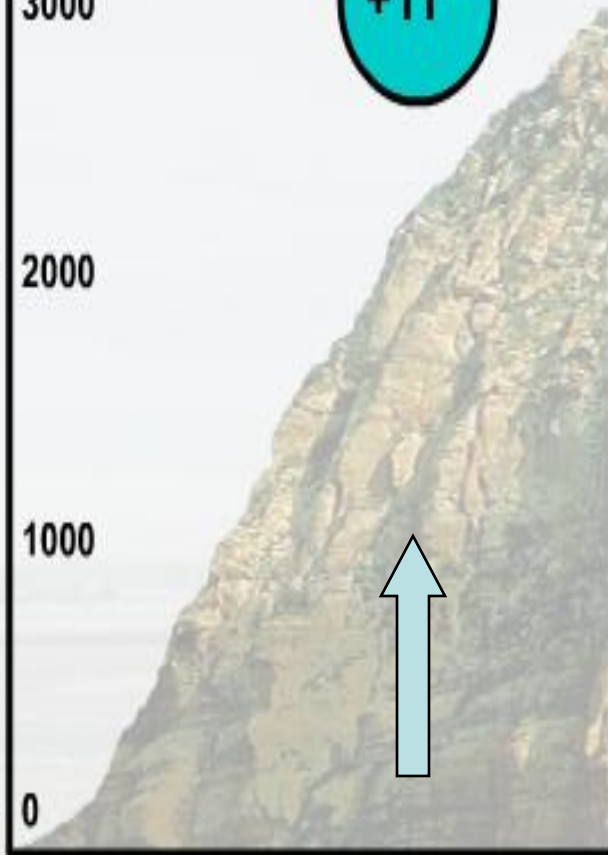
+12° 2000

+16° 1000

+20° 0

WARMER THAN  
THE ELR

+11°



LIFTED DRY AIR

ELR FEET

+8° 3000

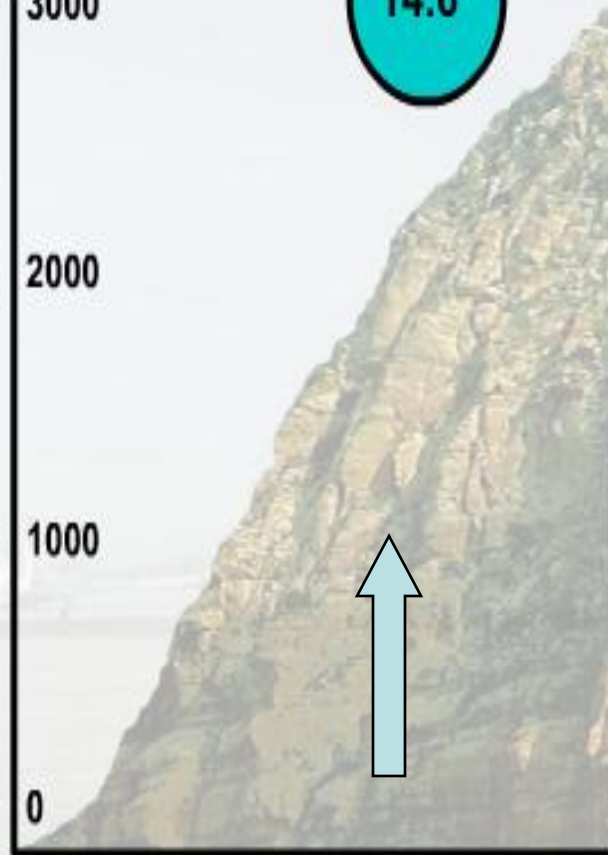
+12° 2000

+16° 1000

+20° 0

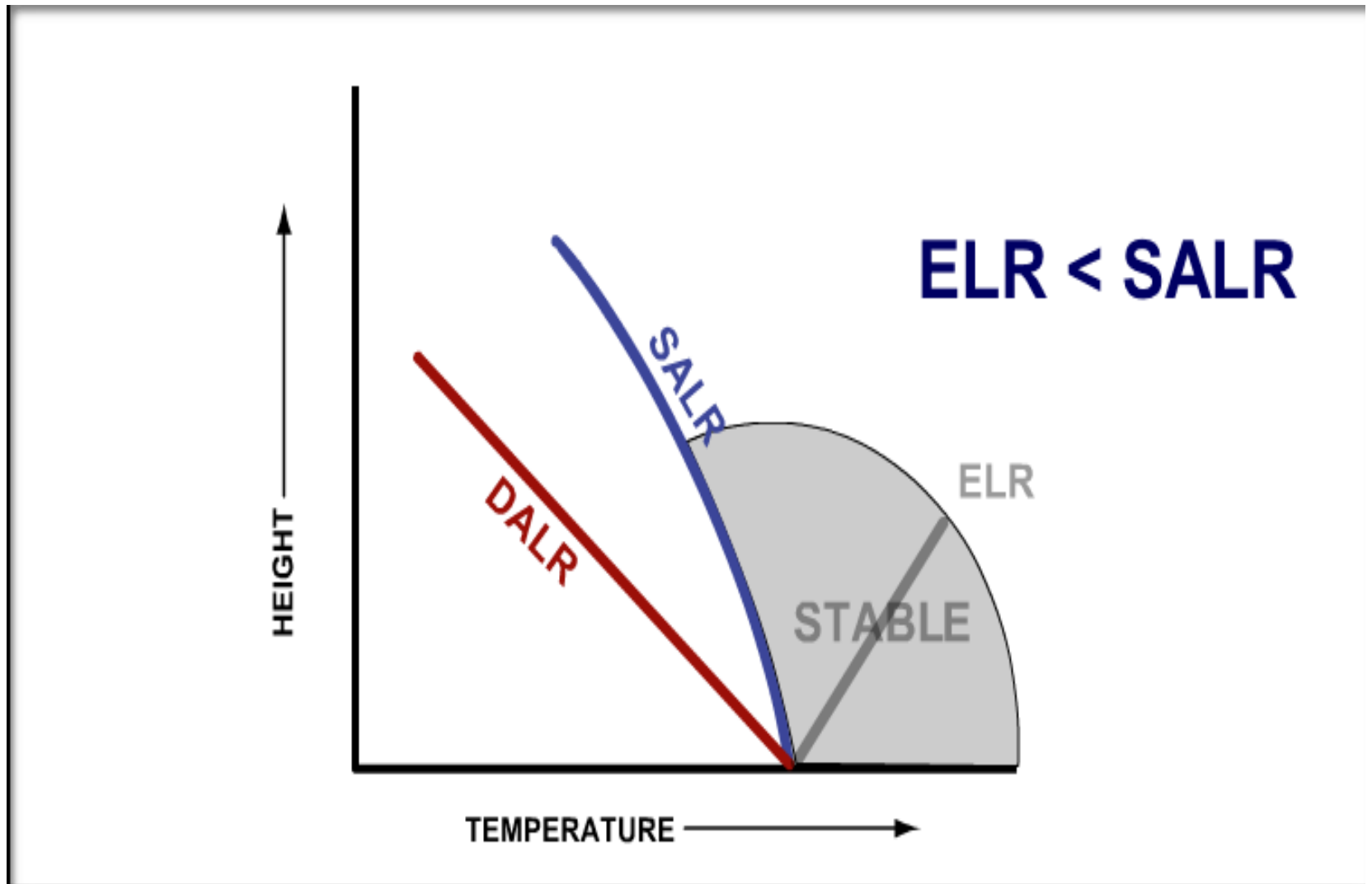
WARMER THAN  
THE ELR

14.6°

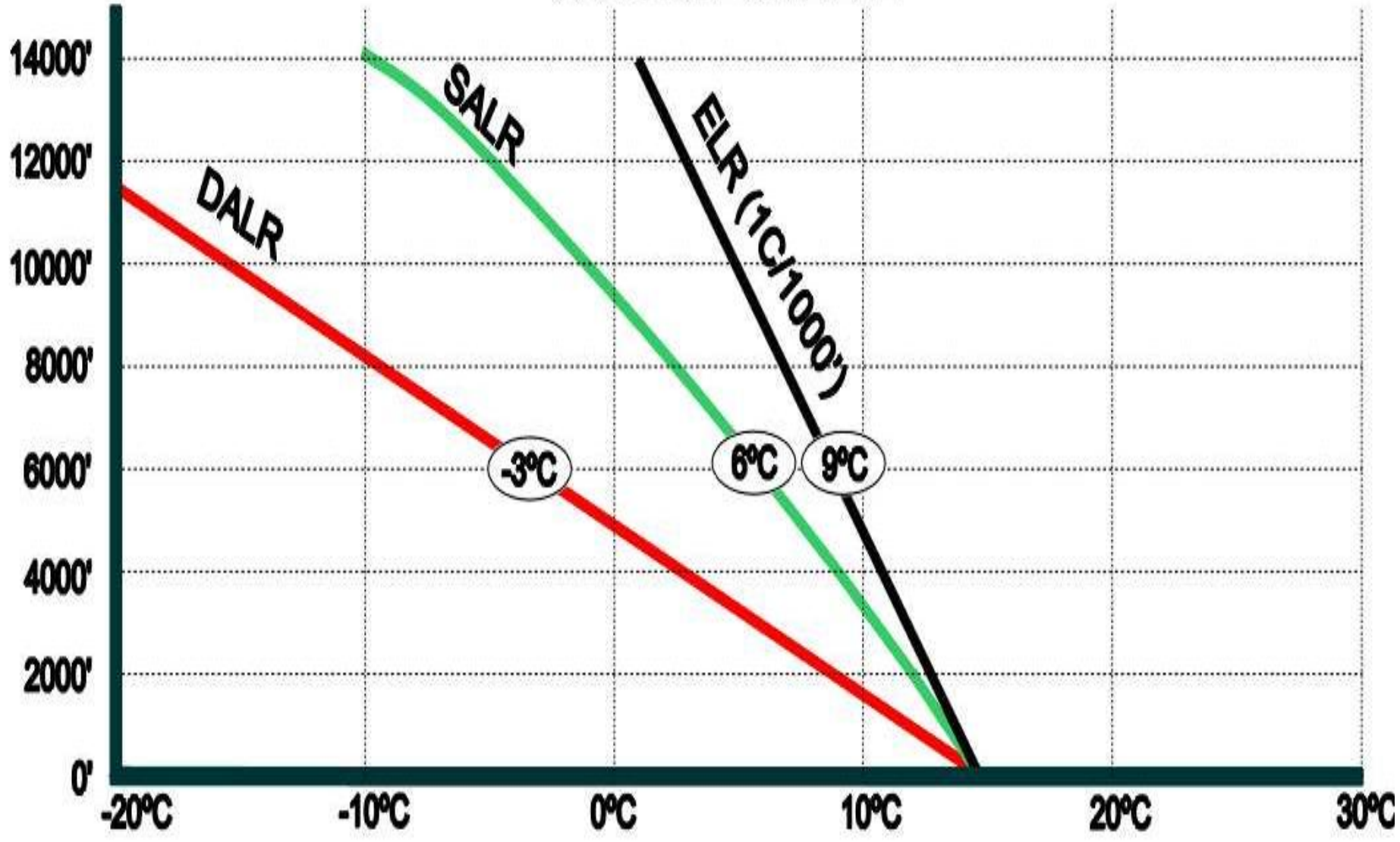


LIFTED SATURATED AIR

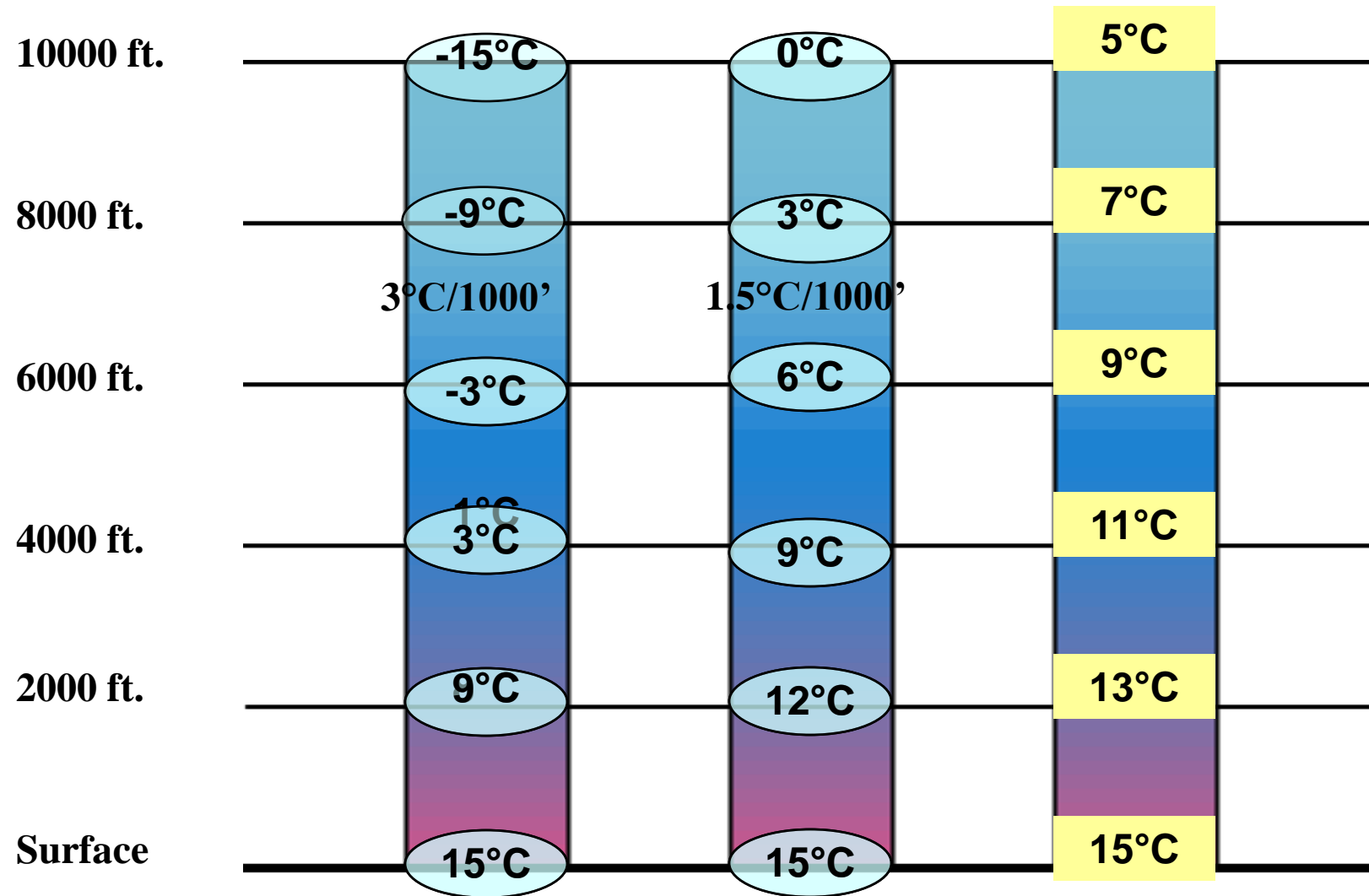
# Mutlak Kararlılık



# ABSOLUTE STABILITY



Absolute Stability



**Dry Adiabatic Lapse Rate (DALR)**

**Saturated Adiabatic Lapse Rate (SALR)**

**Environmental Lapse Rate (ELR)**



ELR FEET

+17° 3000

+18° 2000

+19° 1000

+20° 0

+11°



LIFTED DRY AIR

ELR FEET

+17° 3000

+18° 2000

+19° 1000

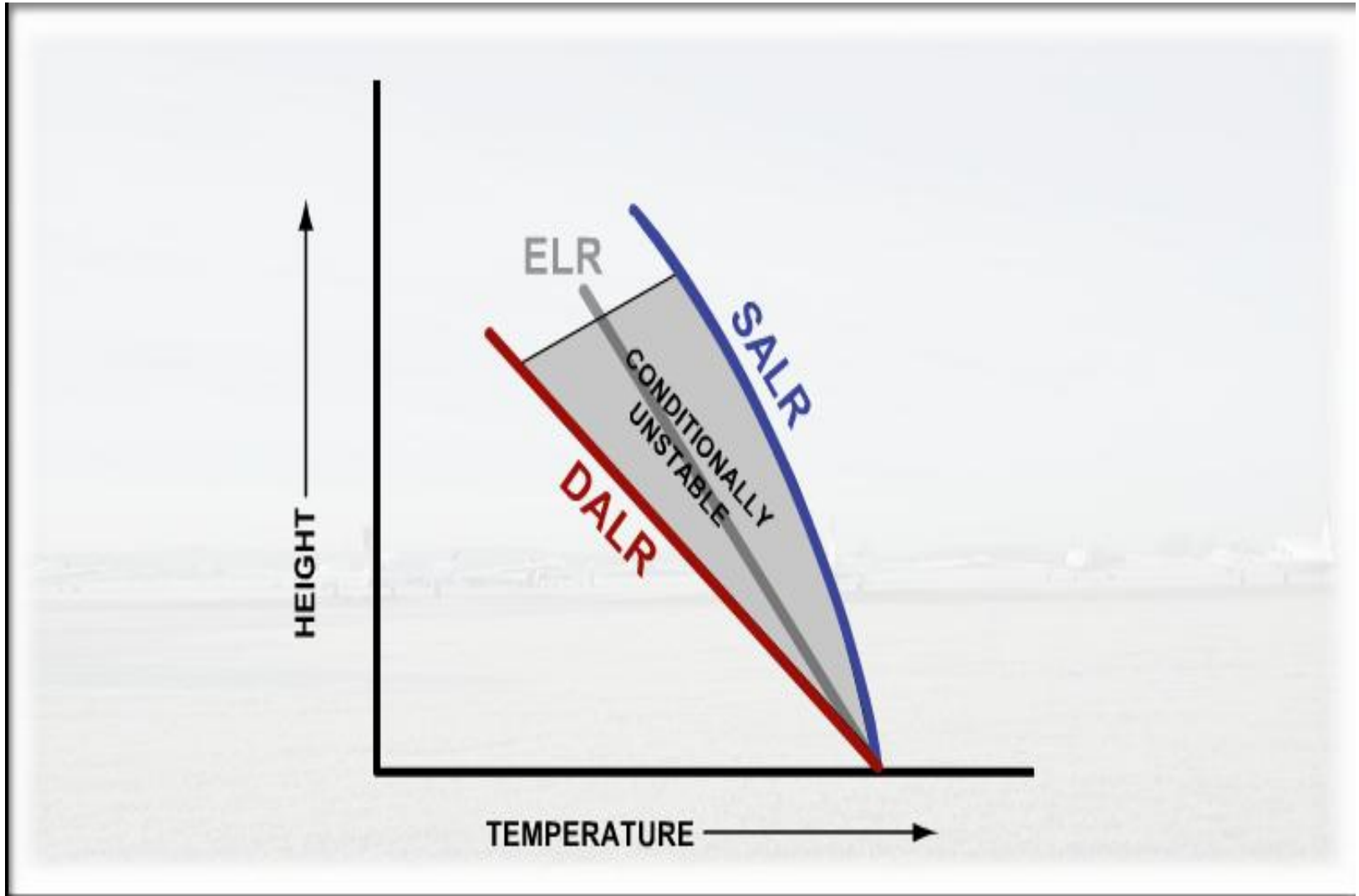
+20° 0

+14.6°



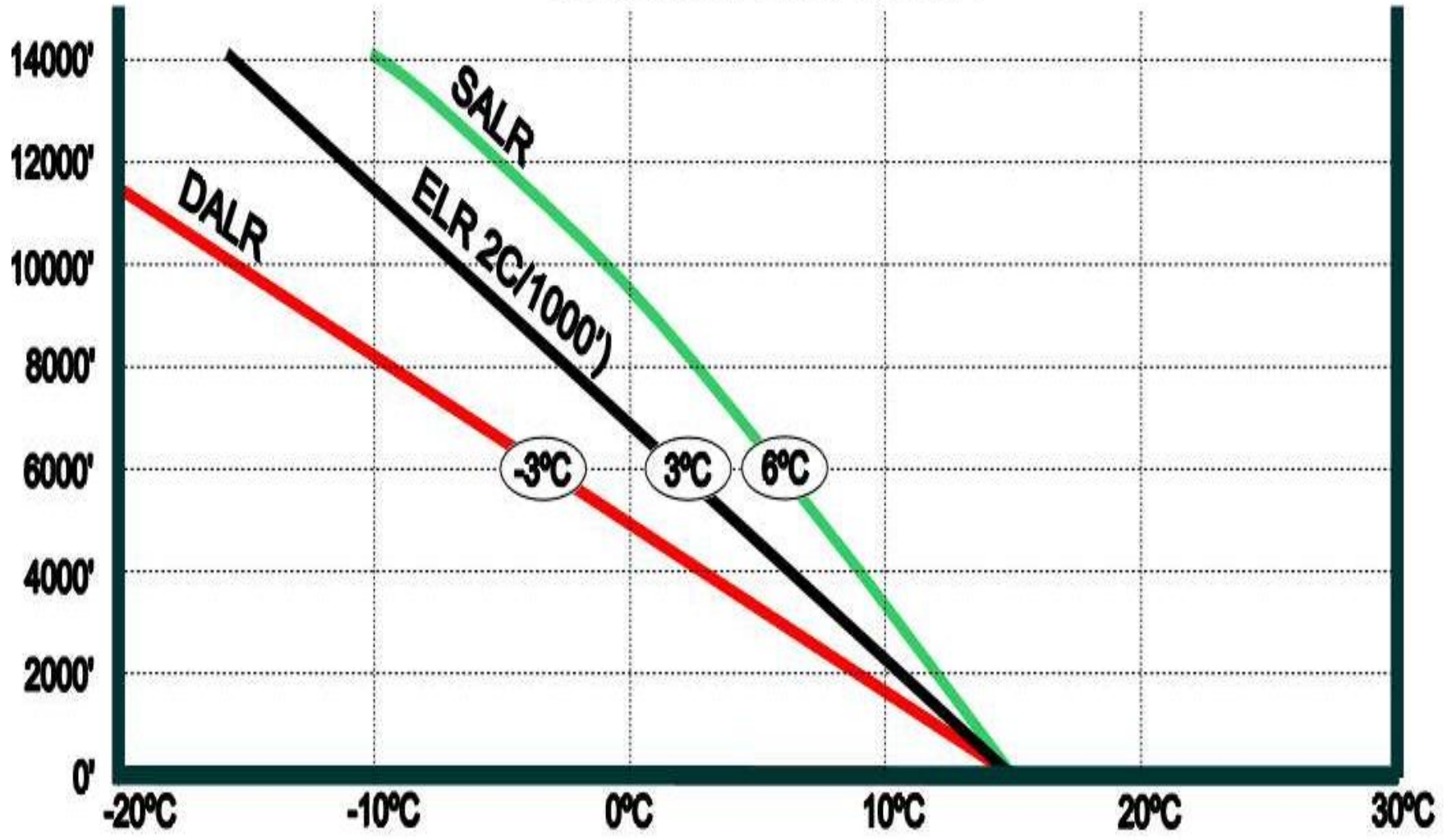
LIFTED SATURATED AIR

# Şarta Bağlı Kararsızlık

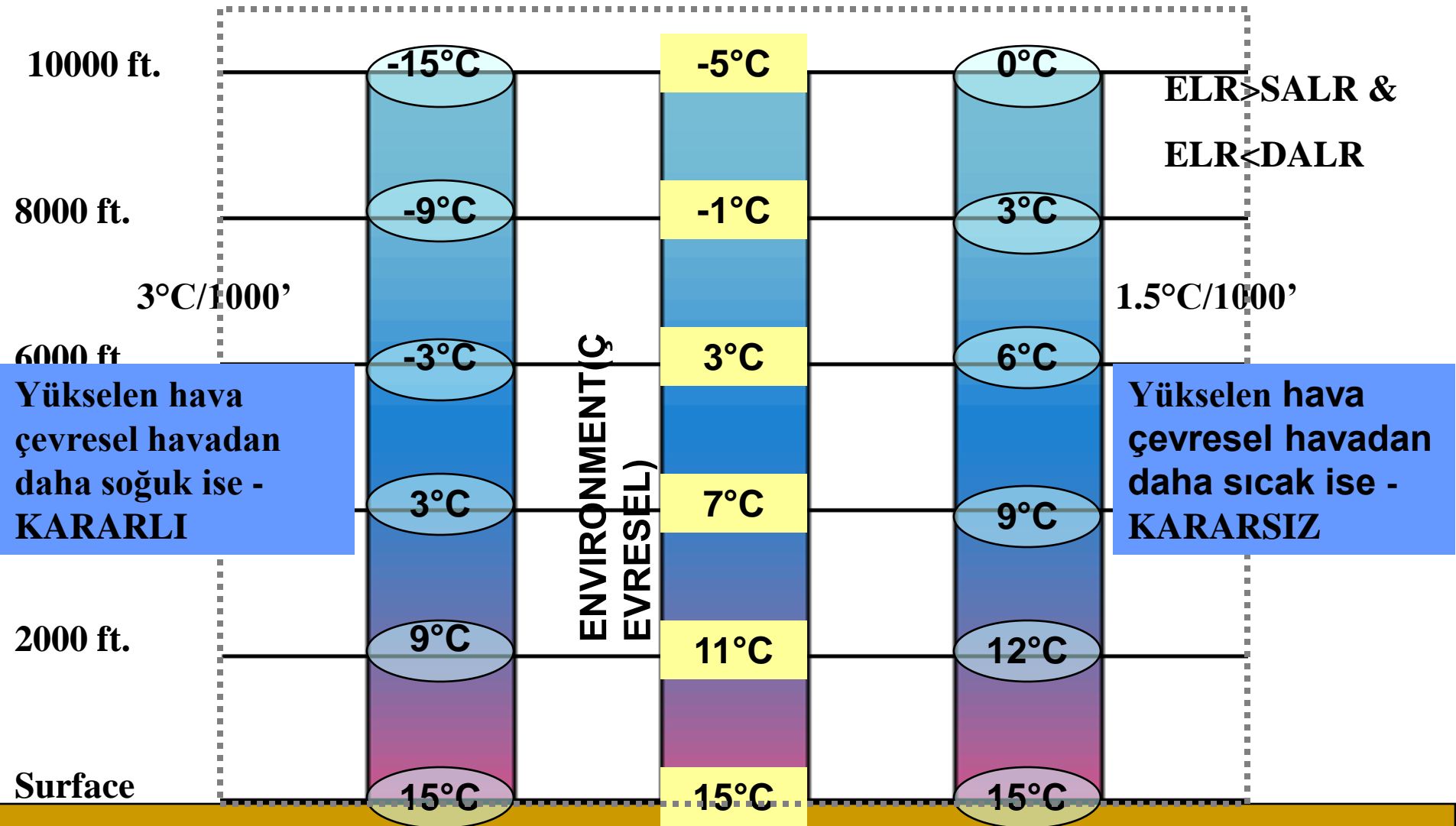




# CONDITIONAL INSTABILITY



# Conditional Instability



Dry Adiabatic Lapse Rate (DALR)

Environmental lapse Rate 2°C/1000' (ELR)

Saturated Adiabatic Lapse Rate (SALR)

ELR FEET

+14° 3000

+16° 2000

+18° 1000

+20° 0

LIFTED DRY AIR

ELR FEET

+14° 3000

+16° 2000

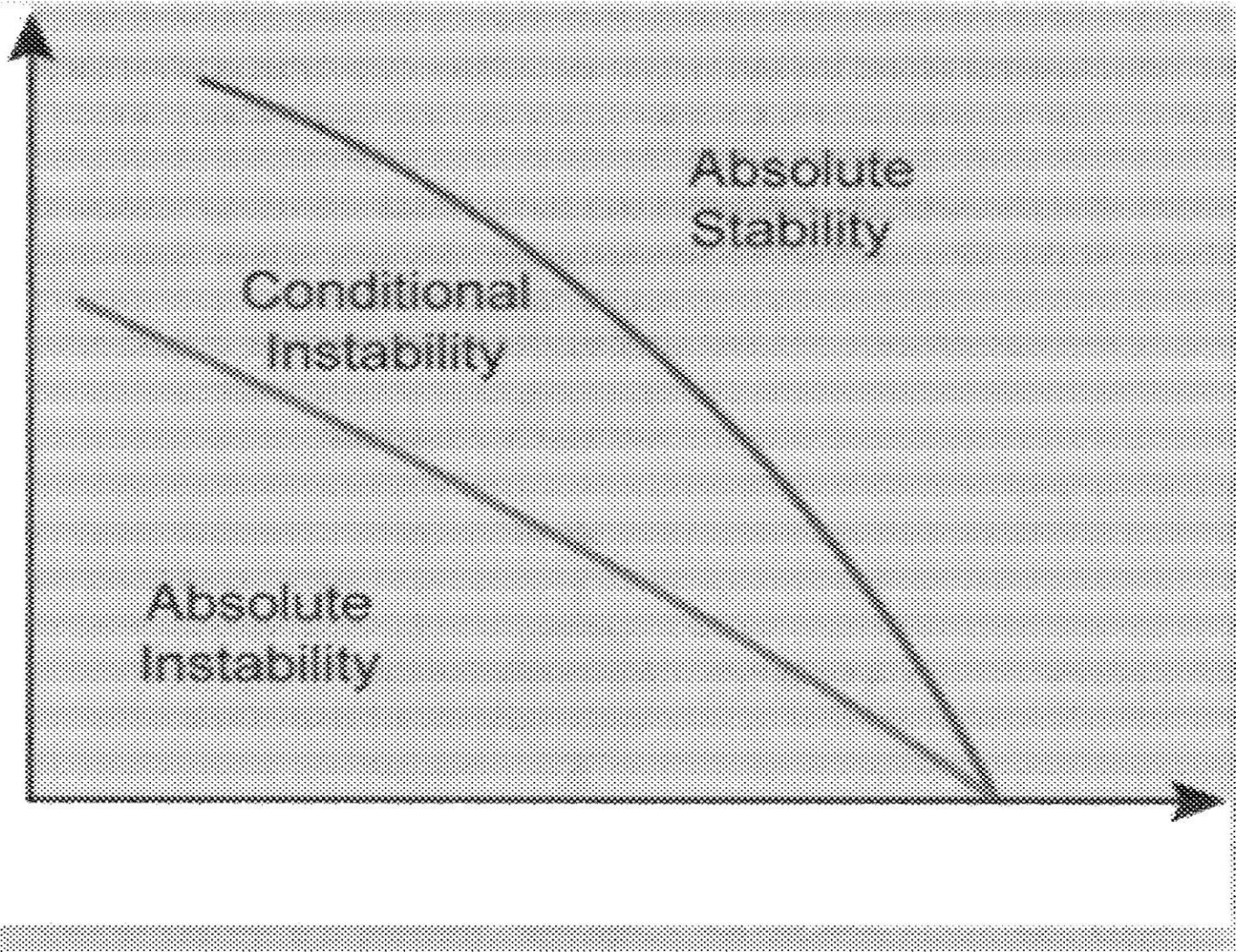
+18° 1000

+20° 0

LIFTED SATURATED AIR

+14.6°

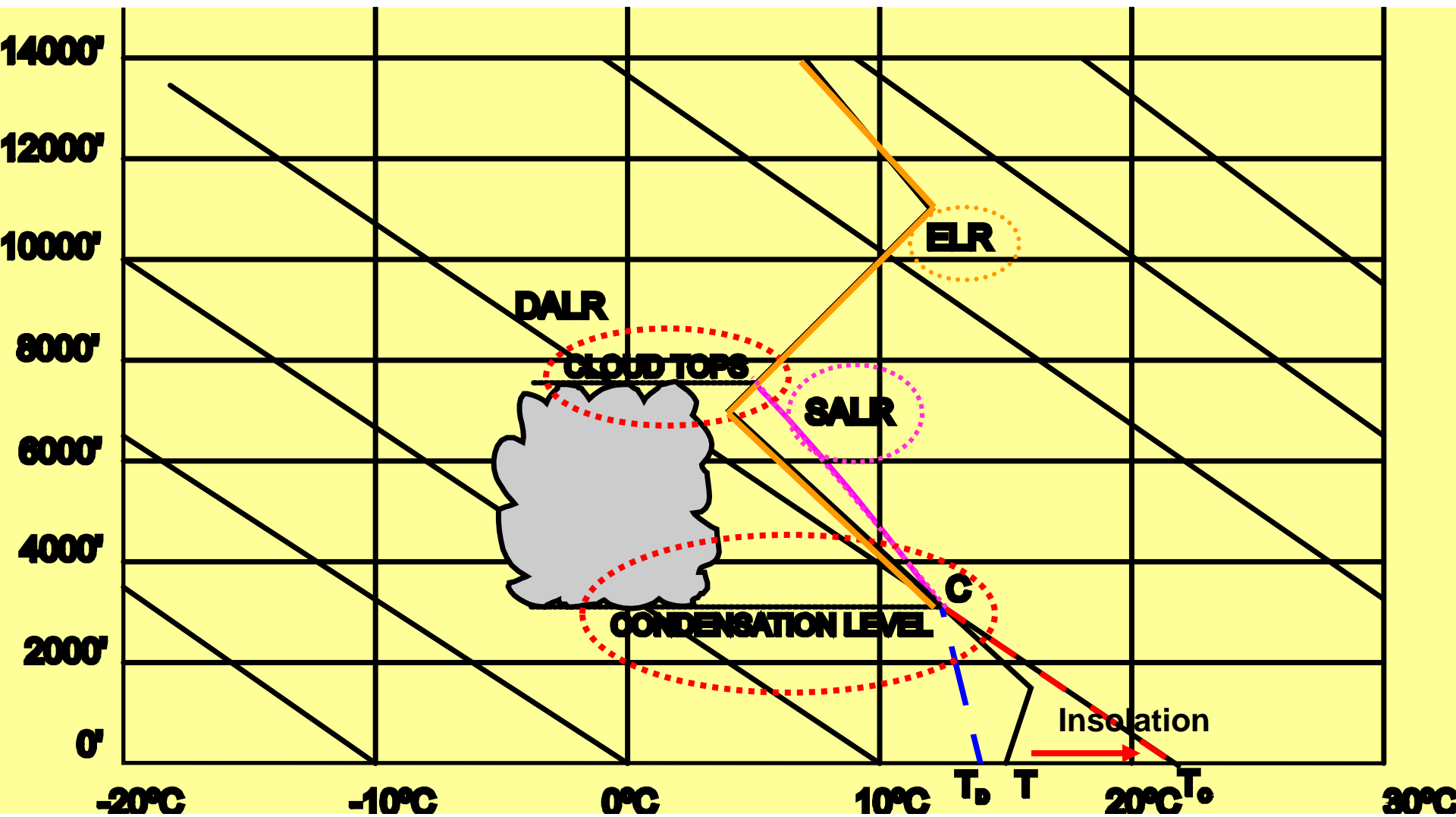




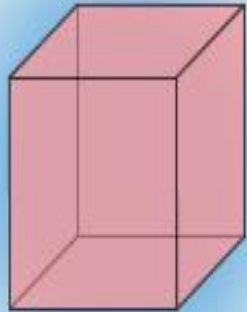


<b>Absolute instability</b>	The ELR is greater than both the SALR and the DALR	$ELR > DALR > SALR$
<b>Conditional instability</b>	The ELR is between the DALR and the SALR	$DALR > ELR > SALR$
<b>Absolute stability</b>	The ELR is less than both the DALR and the SALR	$DALR > SALR > ELR$

	Alteration to the ELR	Alteration to a layer of air giving this result
Increasing stability	Decreasing	Heating of the upper part of the layer or Cooling of the lower part of the layer
Decreasing stability	Increasing	Cooling of the upper part of the layer or Heating of the lower part of the layer



## Kararsız Hava



← Warmer than  
the surrounding air



**Cumulus  
or Cumulonimbus**





**Stratiform**



## Atmosferik Kararlılık ve Kararsızlık

Kararlılık ve Kararsızlık havayı nasıl etkiler;

### **Hava Kararsız ise:**

- Cumuliform tipi bulutlar oluşur
- Sağanak yağmur oluşur yağış anı hariç görüş iyidir

### **Hava Kararlı ise:**

- Stratiform tipi bulutlar oluşur
- Hava genelde iyidir. Görüş sis, pus ve kuru duman nedeniyle kısıtlıdır.