

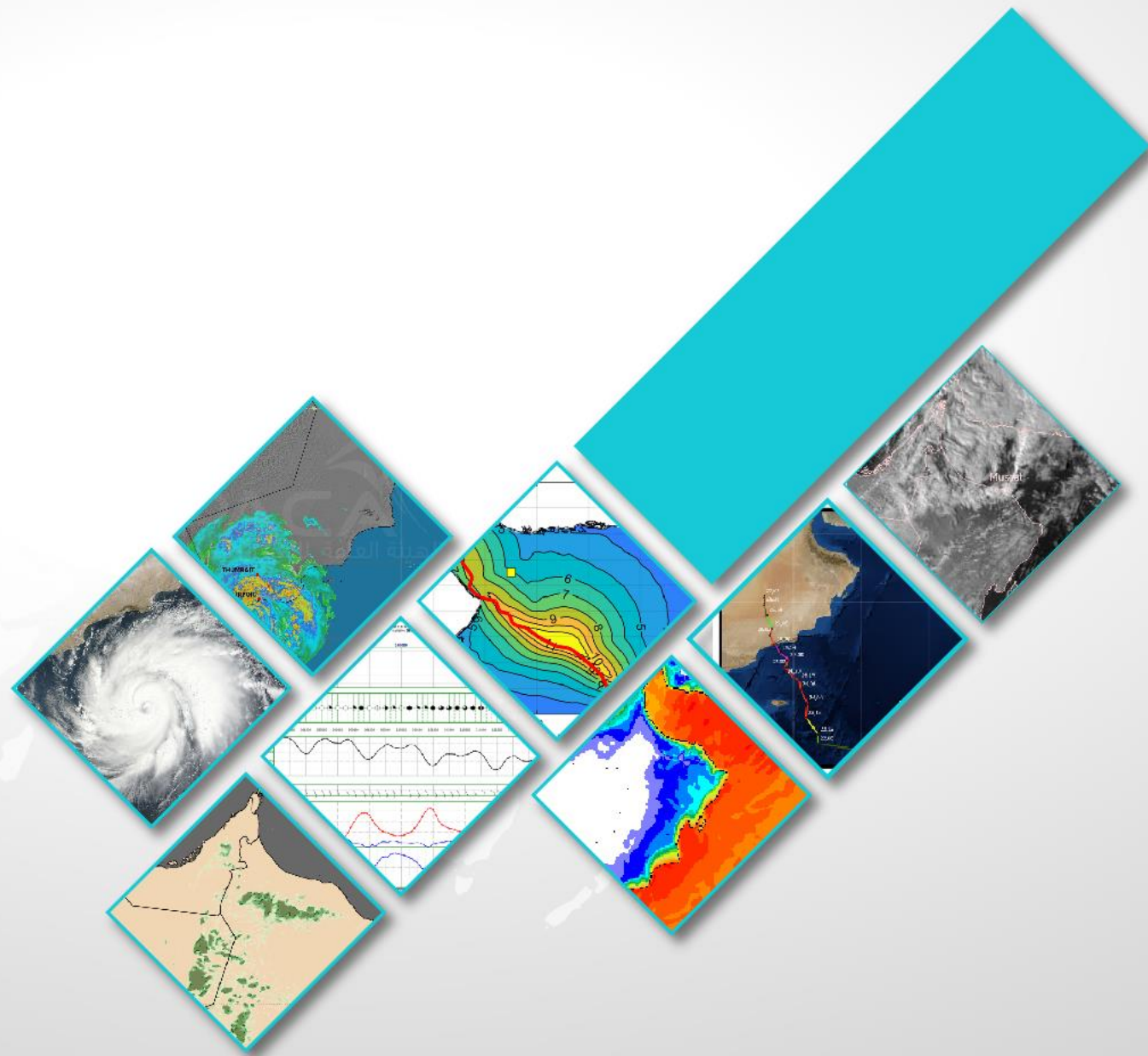


# HEADLINE

## Chart Weather Analysis

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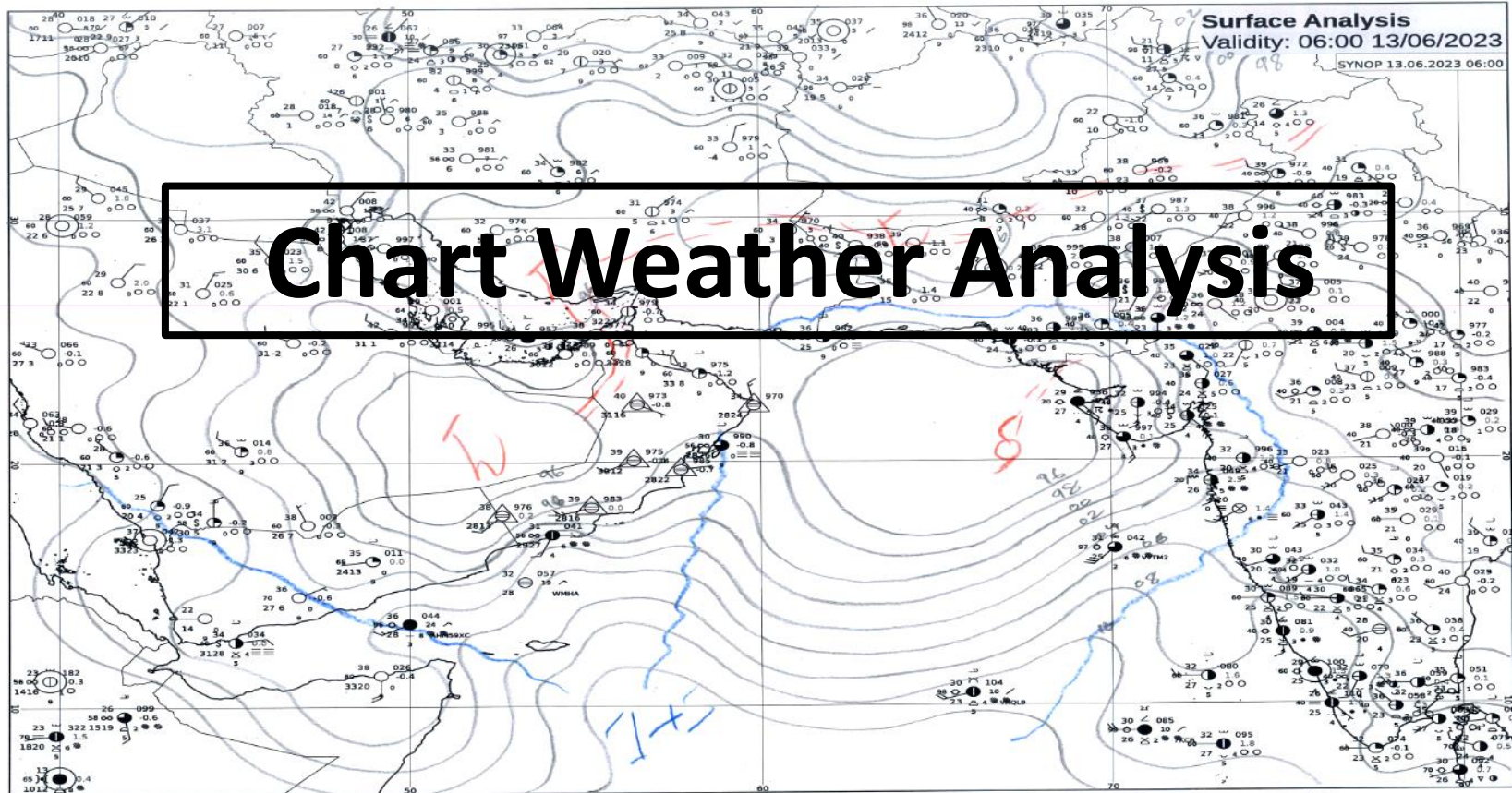
Lecturer: **Ashal Alwaili**



# Content

- **Introduction to analysis chart**
- **Scales of Weather System**
- **Type of synoptic charts**

# Title



# Content

- Introduction to analysis chart
- Scales of Weather System
- Type of synoptic charts





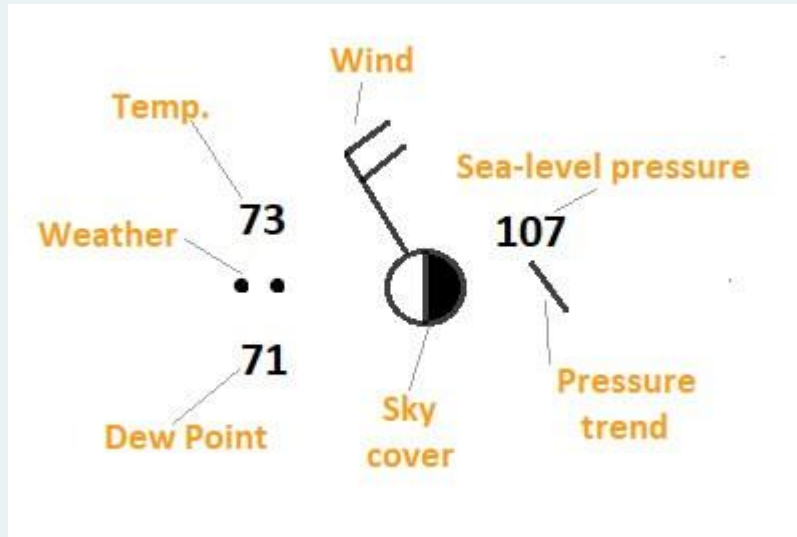
# Introduction to analysis chart

- **Definitions of weather chart. (meteorology) a map showing the principal meteorological elements at a given time and over an extended region.**
- **Elements (Temperature, wind , Pressure, cloud and rainfall) are given as numbers and symbols**
- **Level chart**

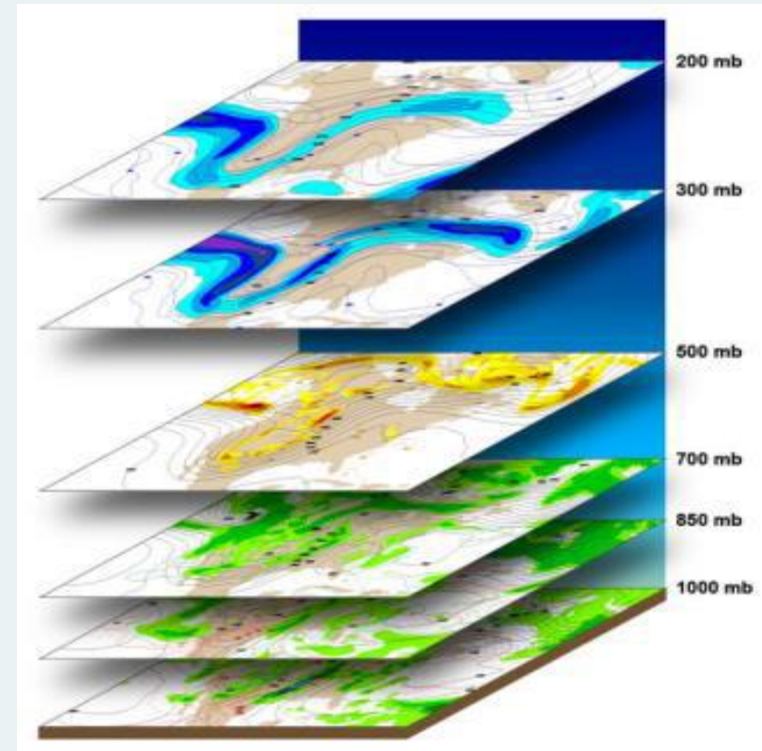


# Introduction to analysis chart

## Elements



## level chart



# Scales of Weather System

Type of scale	Horizontal extension	Vertical extension	Time period	Examples:
Micro Scale	Less than 1Km	Up to 10 meters	Few minutes	Formation of dew, small eddy currents, and industrial smoke.
meso scale	1Km to 100Km	1 to 10Kms	Few hours to one day	Thunder storm, dust storm, fog, squall lines, land breeze, and sea breeze.
Synoptic scale	100Km to 1000Km	Few to 10Kms	Few days	Low-pressure, High-pressure areas, troughs, ridges. depressions, cyclones.
Planetary scale:	> 1000Kms	> 10Kms	Large number of days	Blocking highs, IT.C.Z, Monsoon Trough, etc



# Examples of Scales Weather System



Some examples of micro scale are turbulent flow (updrafts and downdrafts).

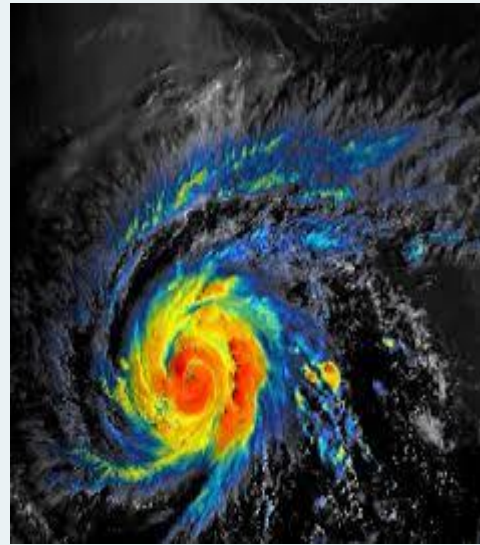
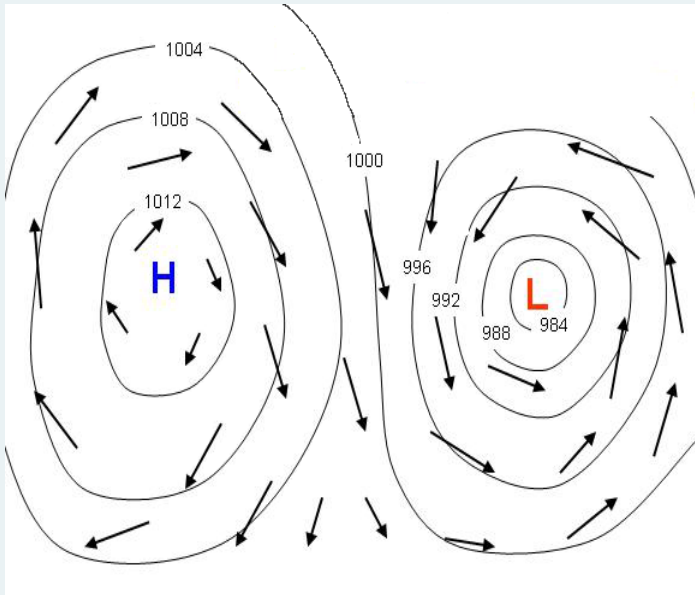


Some examples of mesoscale are fog and Thunder storm





# Examples of Scales Weather System



Some examples of Synoptic scale are low pressure, high pressure and Cyclone

examples of Planetary scale



# synoptic charts

- A variety of synoptic charts are used for studying both surface and upper air weather report
- Analysis for same line is called Iso



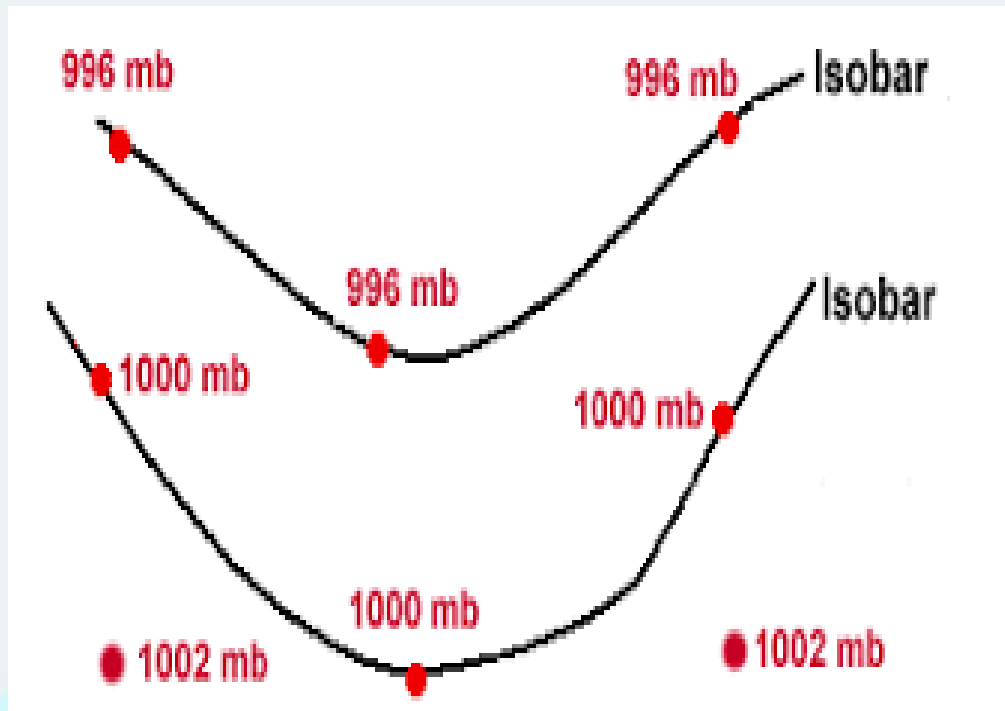
# Scalar Analysis

- .Isobar: A line passing through equal values of pressure
- Isotherm: A line passing through equal values of temperature
- Isotach: A line passing through equal values of wind speed.
- Contours: A line passing through equal values of heights

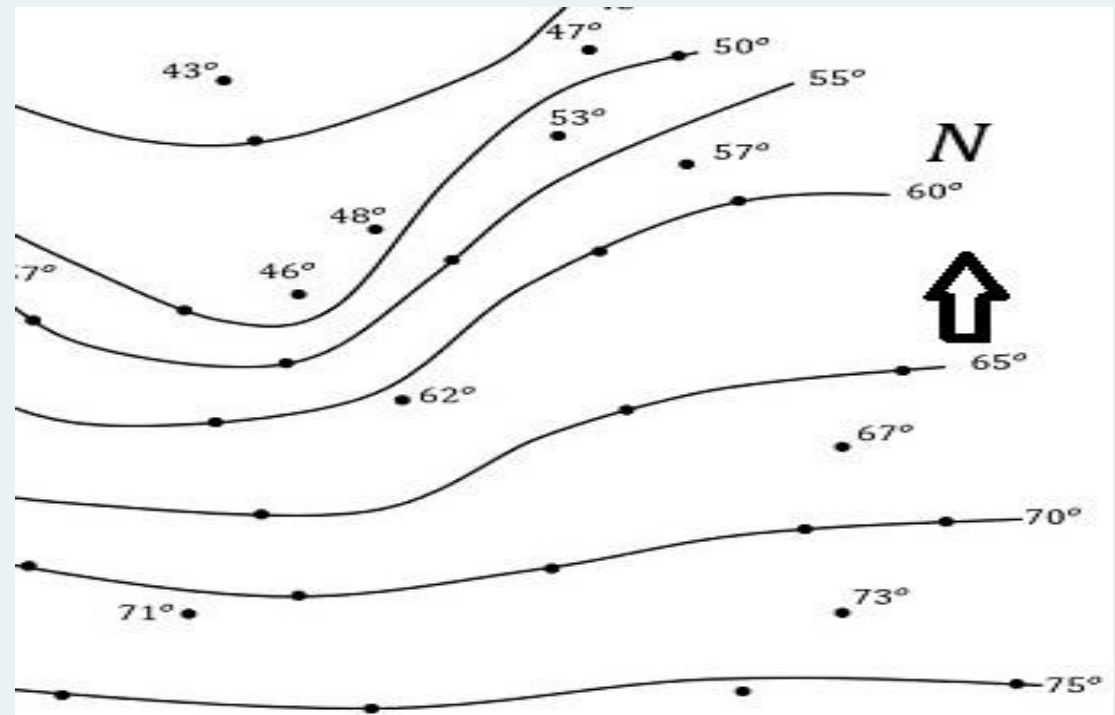


# Scalar Analysis

## Isobar



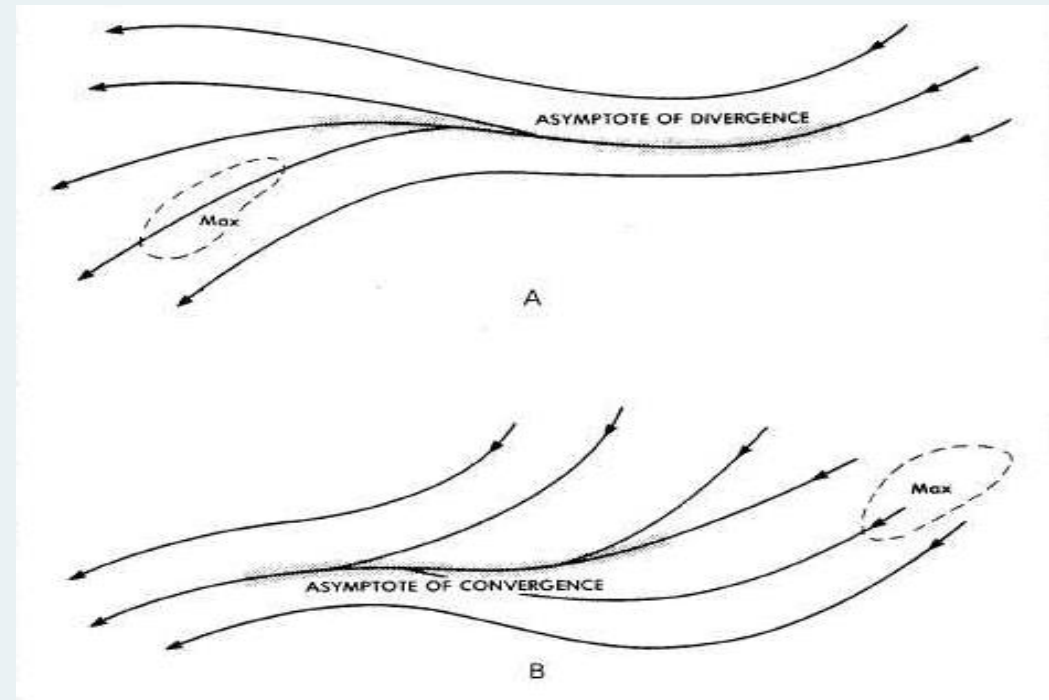
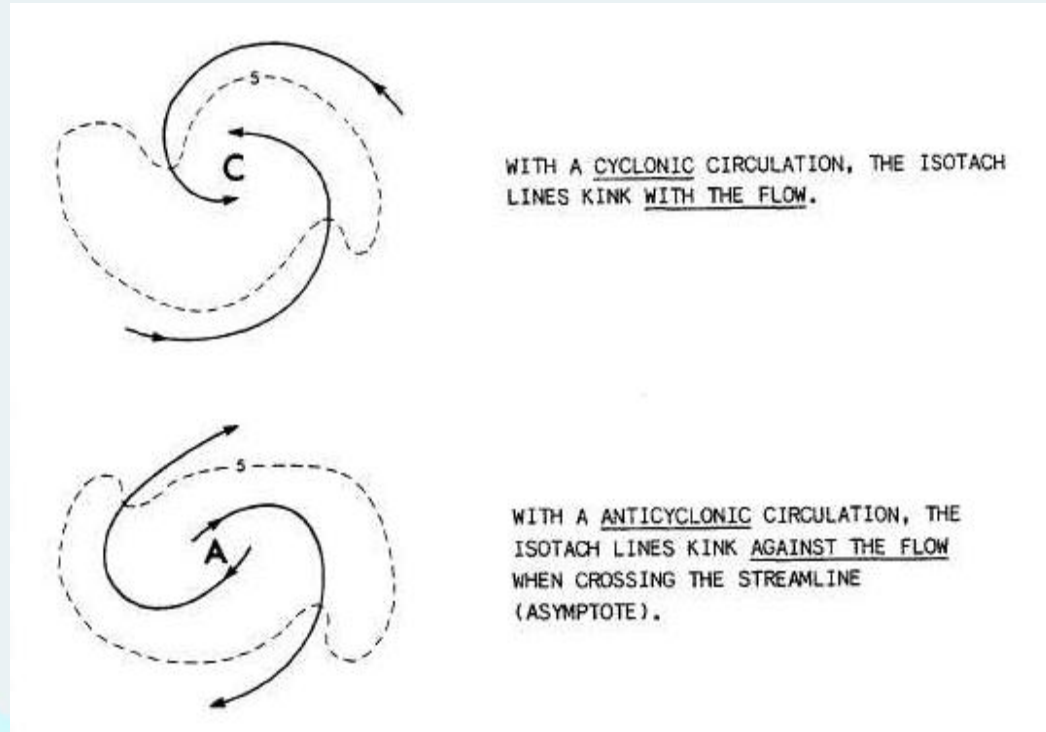
## Isotherm





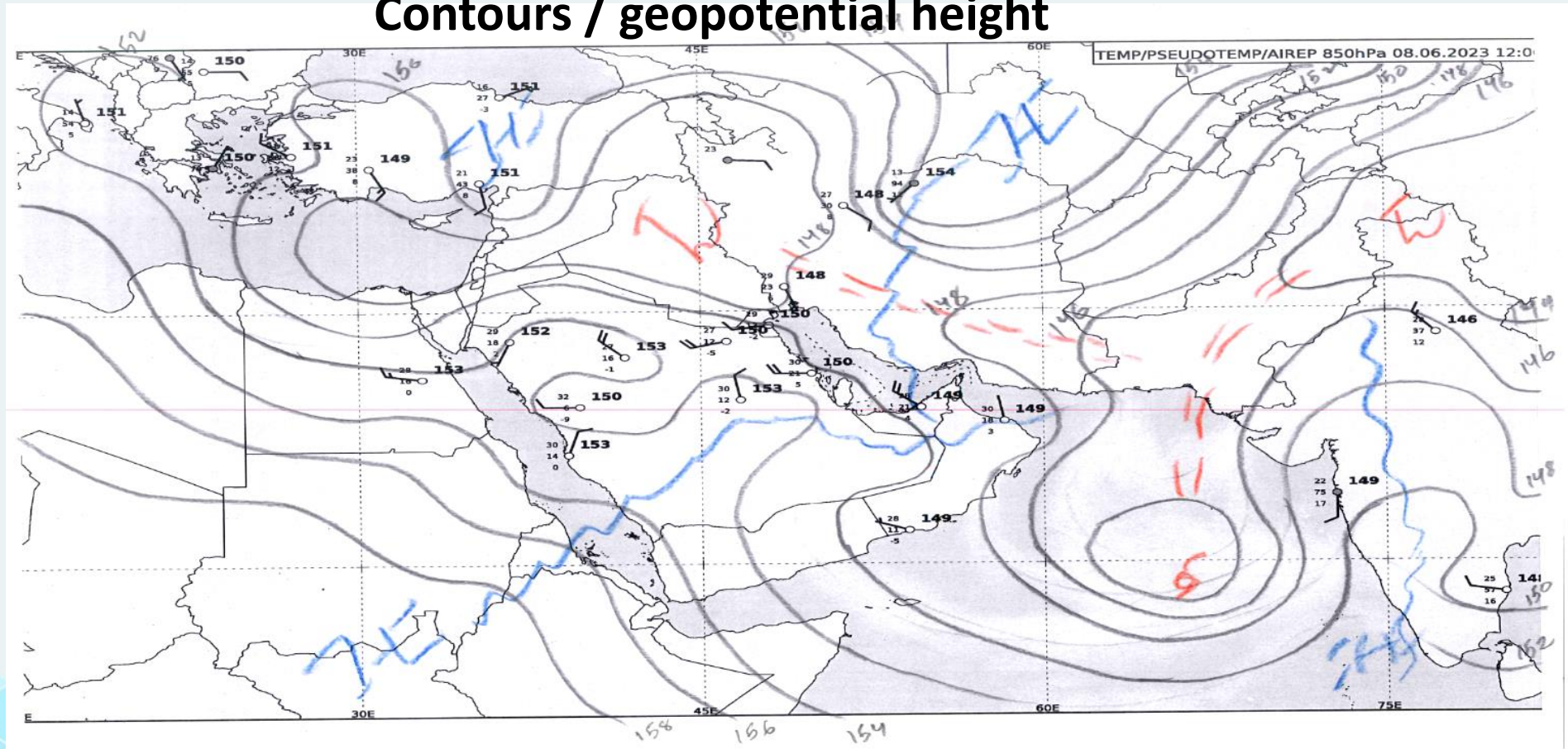
# Scalar Analysis

## Isotach



# Scalar Analysis

## Contours / geopotential height



# Surface Chart

- **THE SURFACE CHART**
- **WHAT TO LOOK FOR:**
  - (1) Advections
  - (2) Fronts
  - (3) Pressure
  - (4) Convergence and divergence
  - (5) Temperature and moisture gradients



# Surface and upper air chart

- **Low-pressure area:**

1. Closed isobar with lowest pressure at the centre.
2. As we move away from the centre, pressure increases in all the directions.
3. Winds blow around low in anticlockwise rotation in northern hemisphere and clockwise rotation in southern hemisphere.
4. Low-pressure area is associated with positive vorticity, convergence, and upward motion of air.
5. In association with low clouds and rainfall occurs.
6. On charts low-pressure is marked as L in red colour.





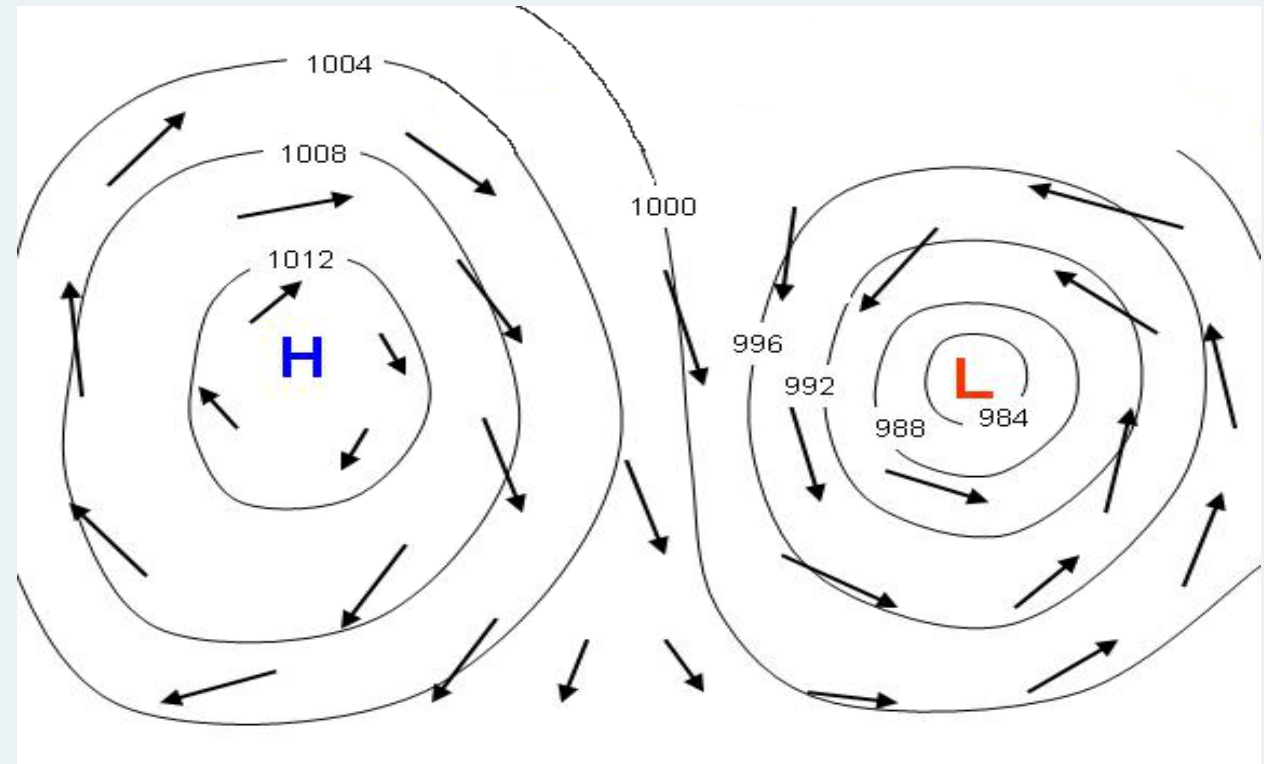
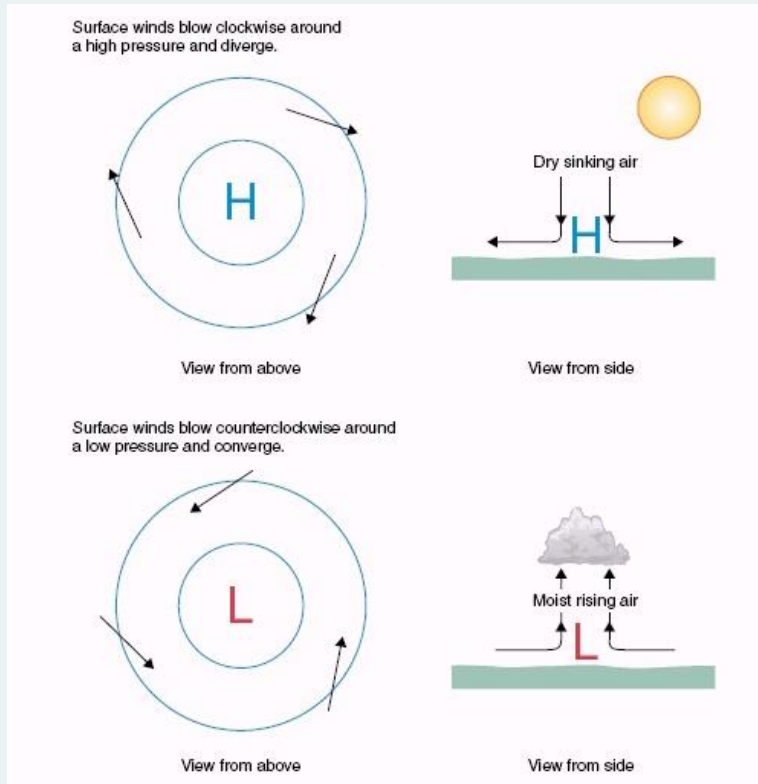
# Surface and upper air chart

- **High-pressure area:**

1. Closed isobar with highest pressure at the centre.
2. The pressure at the centre of high is highest and as we move away from the centre, pressure decreases in all directions.
3. Winds blow around high in clockwise rotation in northern hemisphere and in anticlockwise rotation in southern hemisphere.



# Low-pressure area and High-pressure area:



# Surface and upper air chart

- **A Trough of Low Pressure Low-level** convergence may be associated with the ascent of air in a depression or trough. If the air is moist and unstable, clouds and precipitation may occur.
  1. A trough line is a line where pressures are minimum along the line.
  2. As we move away from the trough line, the pressures will increase on both sides of trough line.
  3. Trough line need not be a straight line; it can be curved also.
  4. The winds change abruptly in anticlockwise rotation in northern hemisphere and clockwise rotation in southern hemisphere.
  5. Trough line is associated with positive vorticity and convergence.
  6. Trough line is associated with clouds and weather.
  7. Trough line is marked as = = ===== line in red pencil on charts.



# Surface and upper air chart

- **A Ridge of High Pressure**

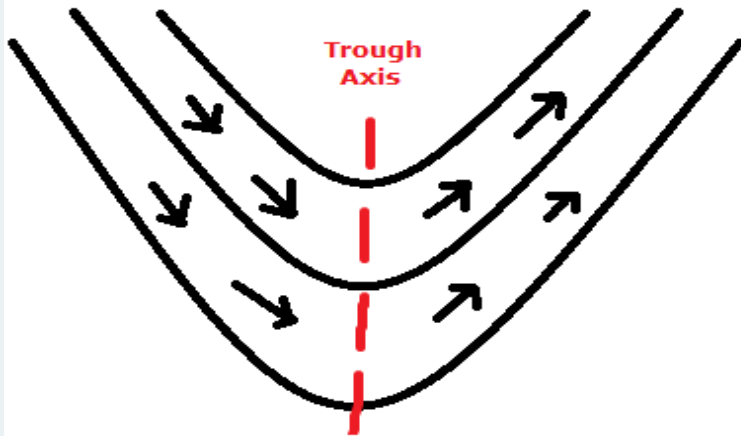
1. It is a line along which pressures is maximum.
2. As we move away from the ridge, line pressure decreases on both sides of ridgeline.
3. Ridgeline need not be a straight line; it can be a curved line also.
4. The winds change abruptly in a clockwise direction along the ridge in the northern hemisphere.
5. Ridgeline is associated with negative vorticity and divergence.
6. Ridge is associated with cloud free fair weather.
7. A ridgeline is marked as a zigzag (N) line in blue colour on charts



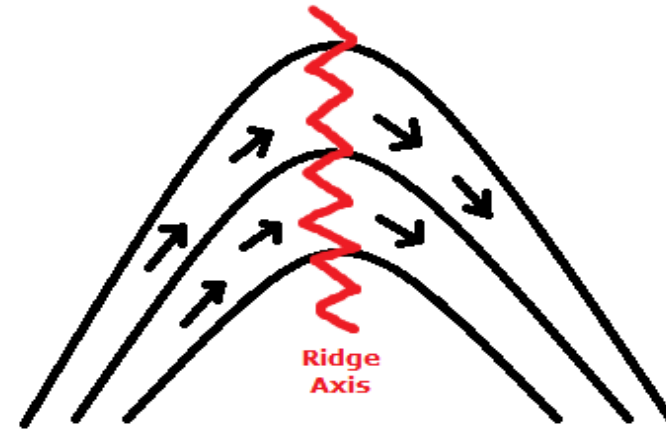


# Trough and Ridge

## Trough vs. Ridge



**TROUGH**

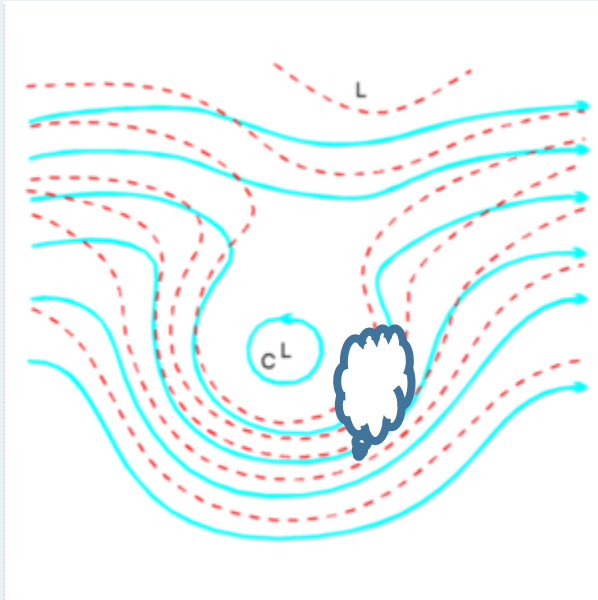


**RIDGE**

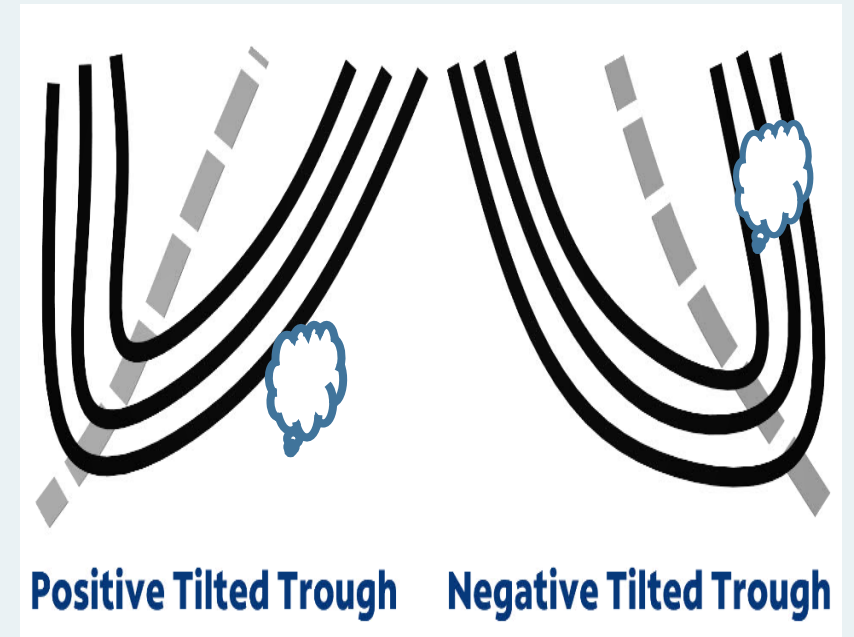
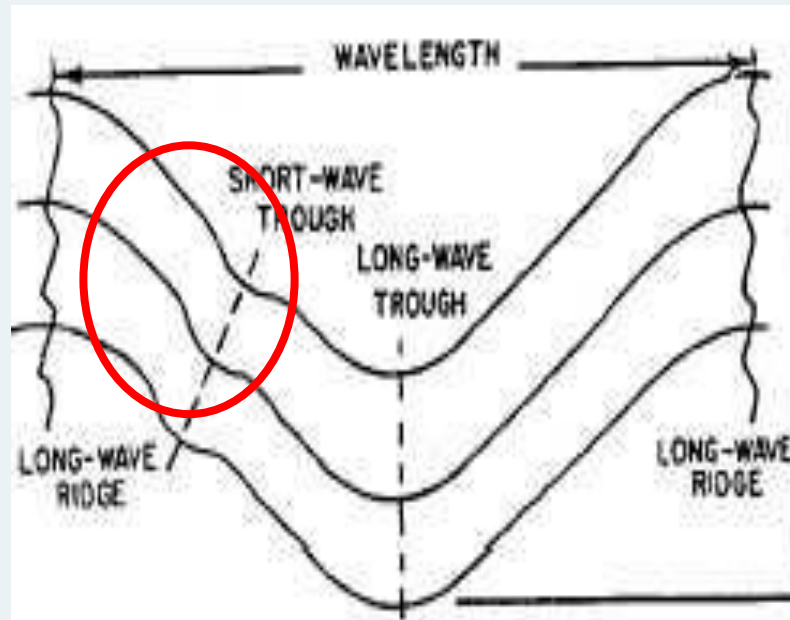


# Types of Troughs

- Cutt of low Trough



Short wave Trough



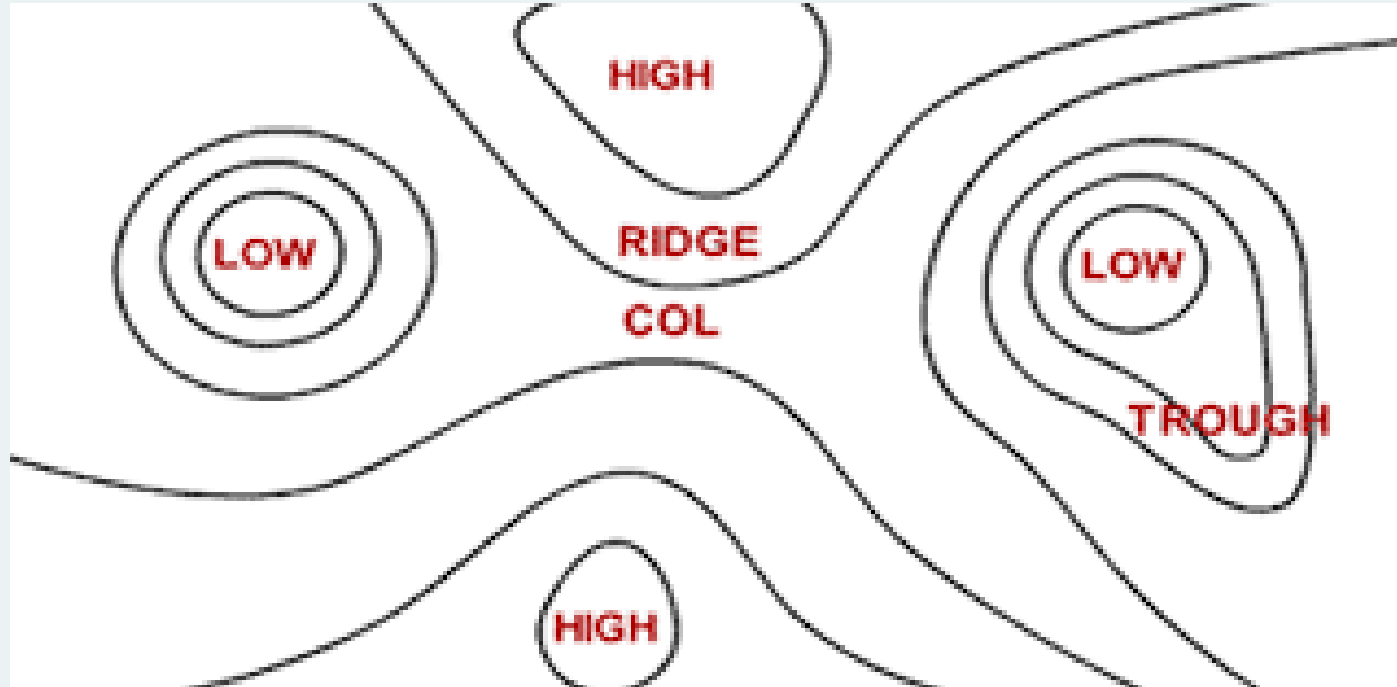
# Surface and upper air chart

## COL REGION:

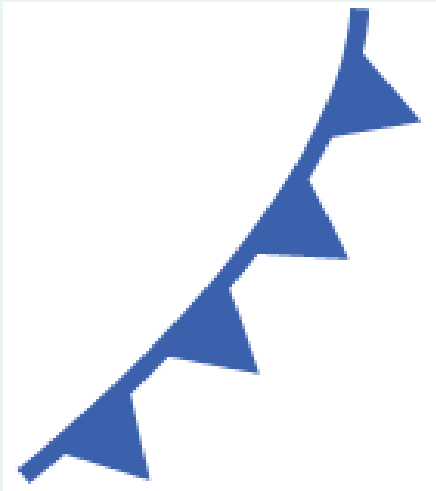
1. Col region is a region of intersection between a trough line and ridgeline.
2. It is a region between two highs and two lows.
3. Near the centre of the col region, the pressure gradient is weak; so winds are weak, light, and variable.
4. Normally pressure systems remain stationary in the col regions.



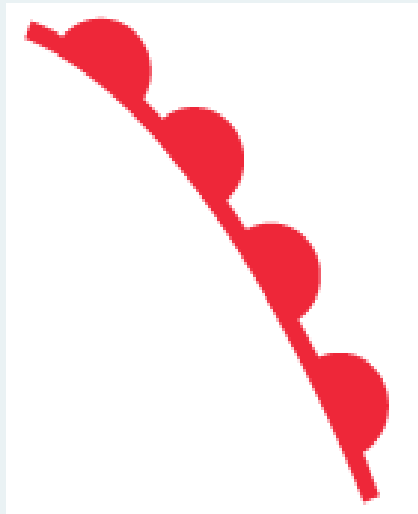
# COL REGION:



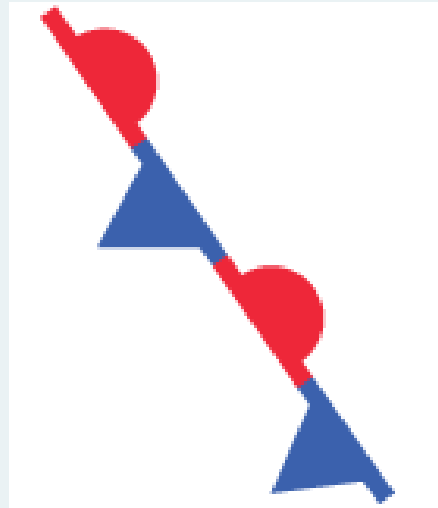
# Frontal systems



Cold Front



Warm Front



Stationary Front

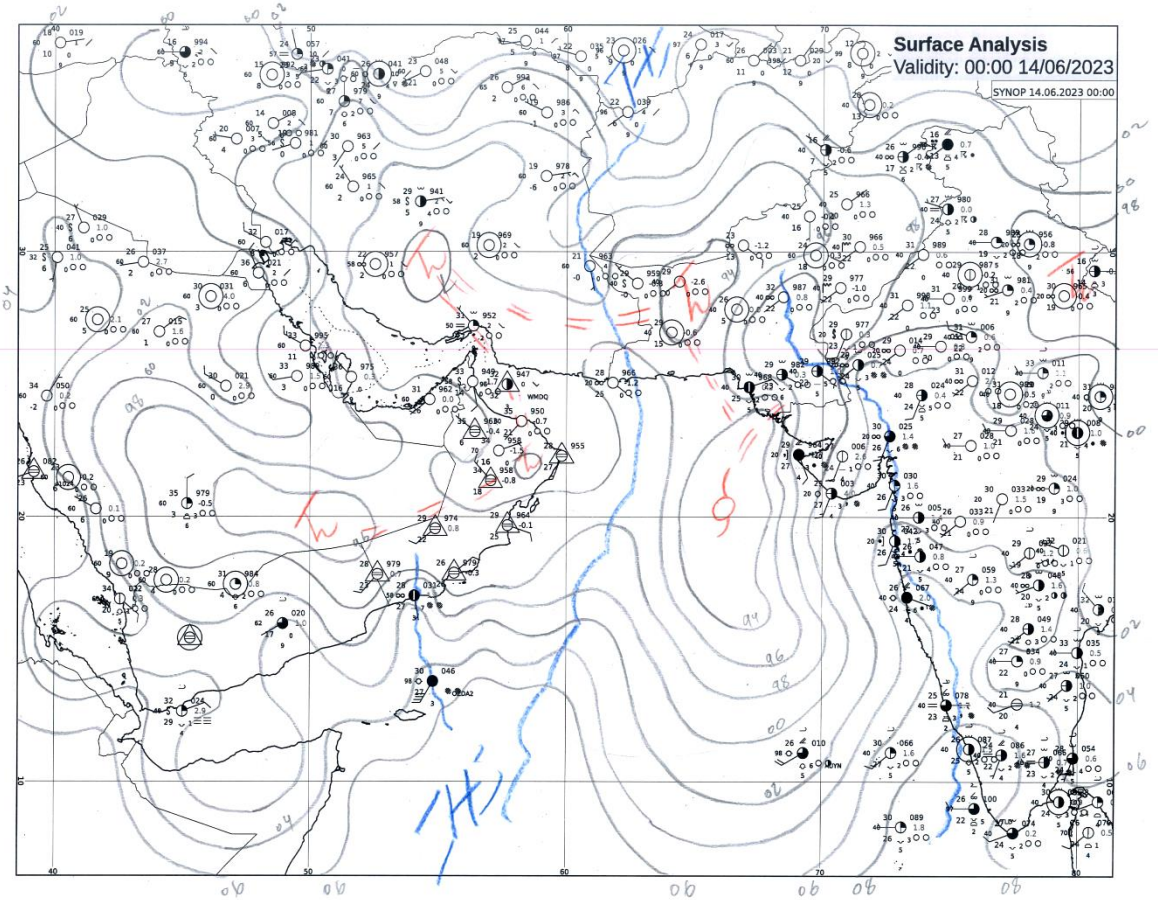
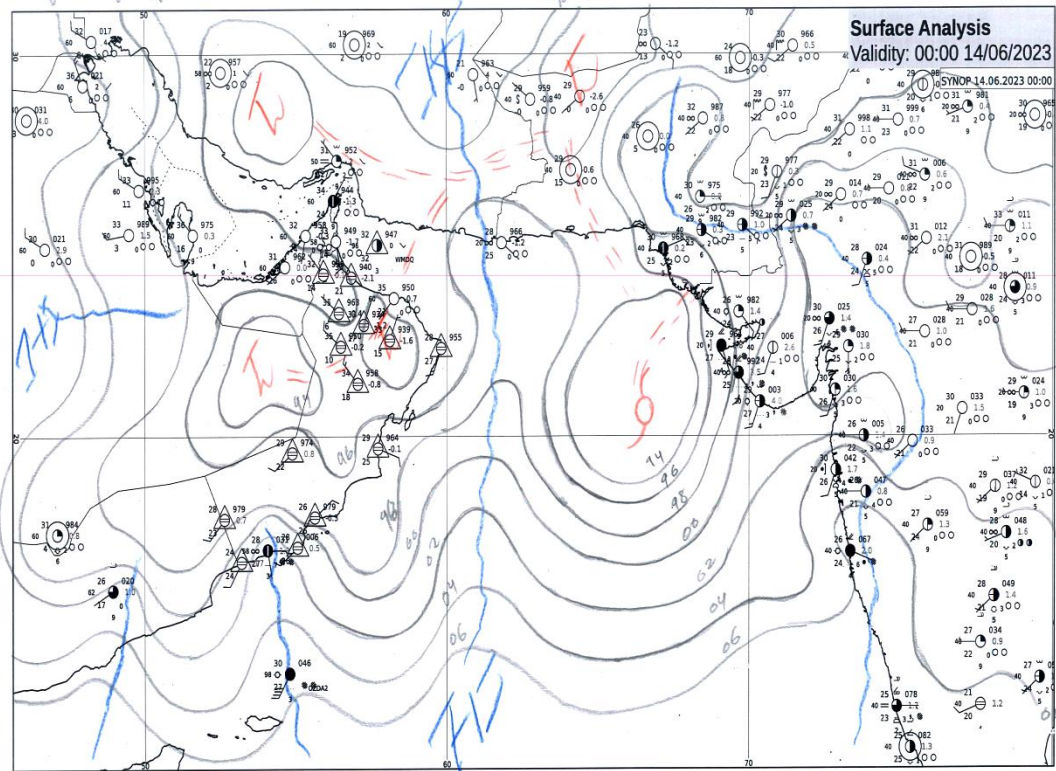


Occluded Front





# Chart Analysis



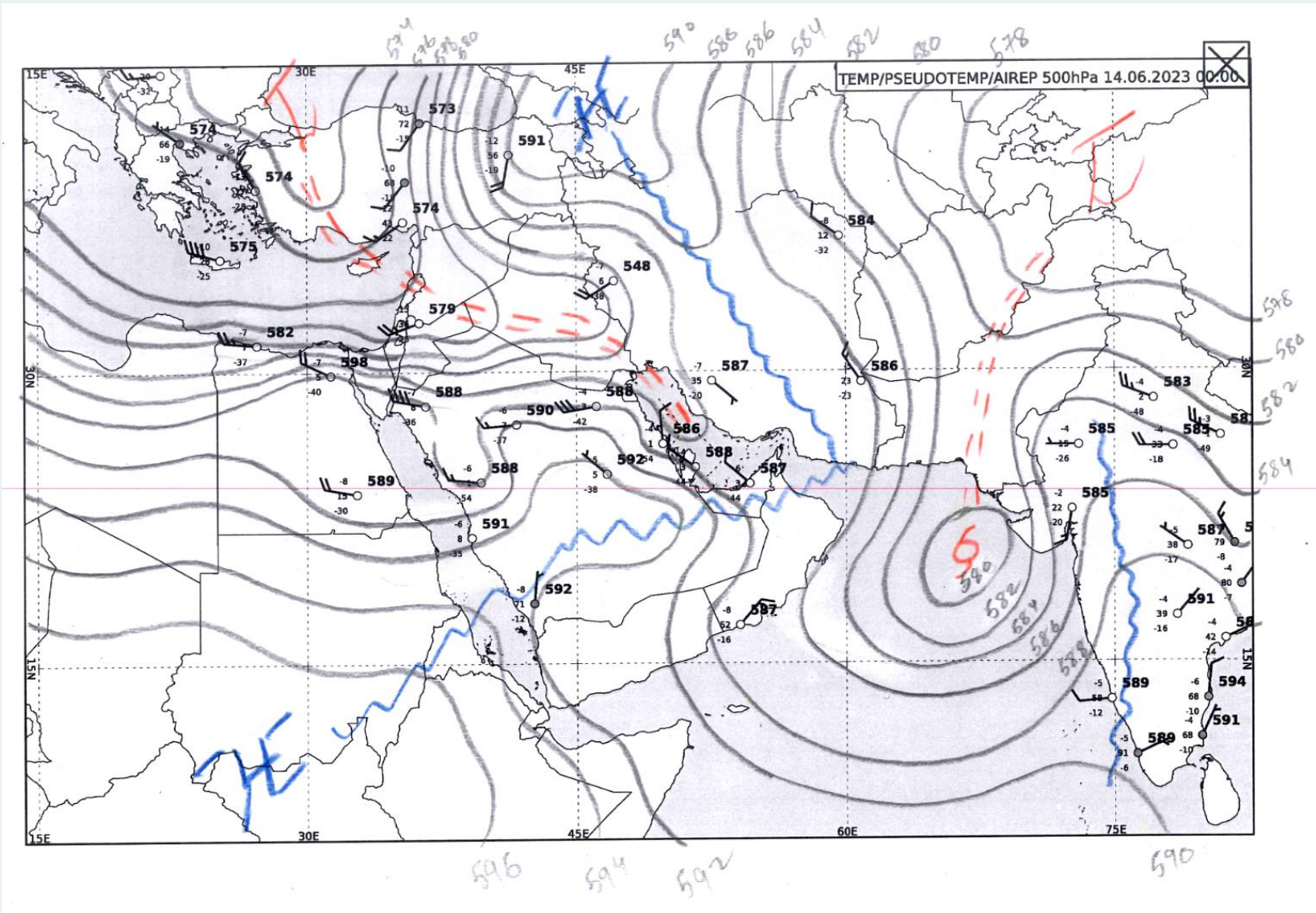
# Spacing between lines

- **For Surface The plotting is every tow mb. (1000 then 1002.....)**
- **For Upper air every tow meter.**



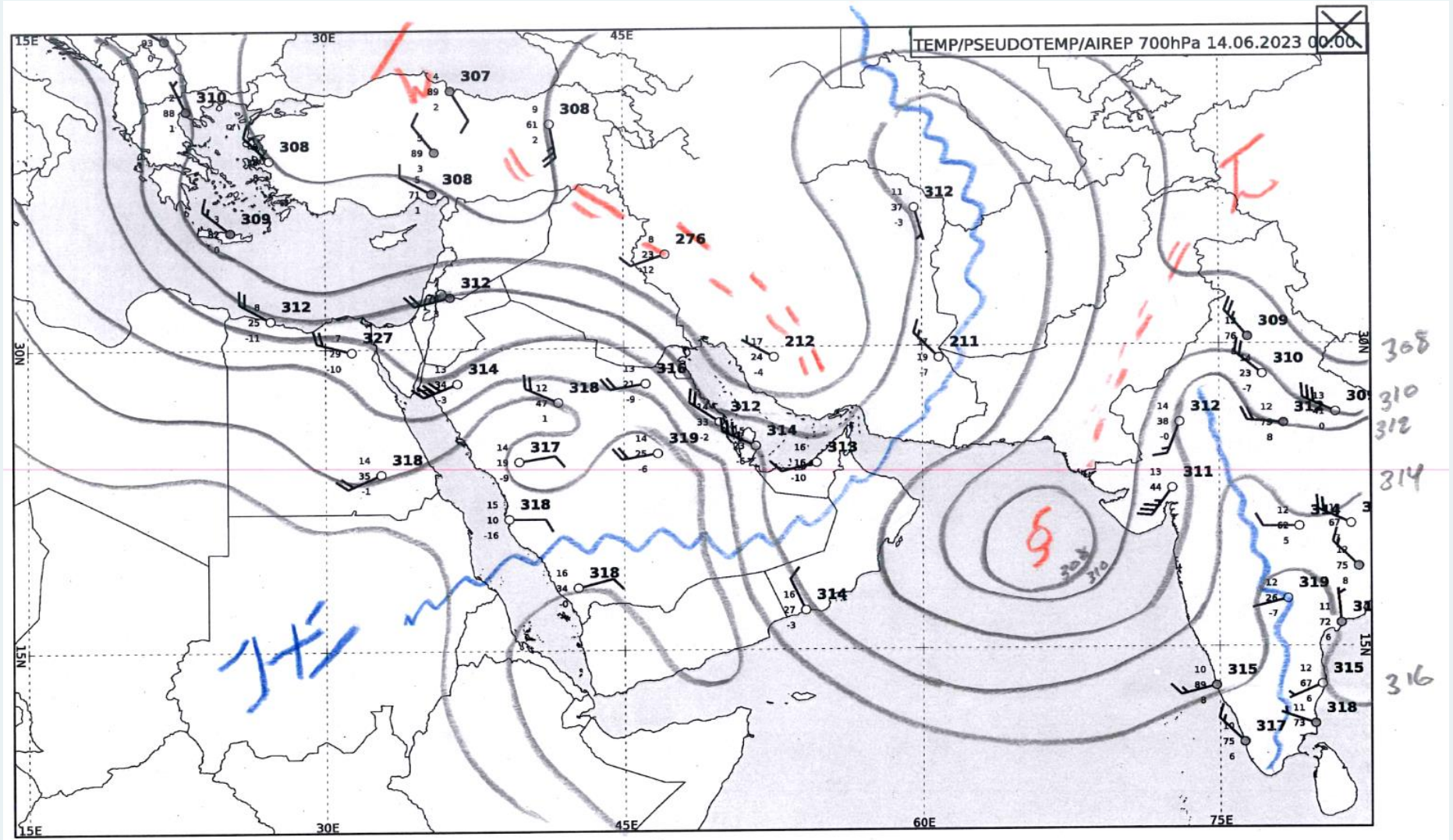


# 500hpa



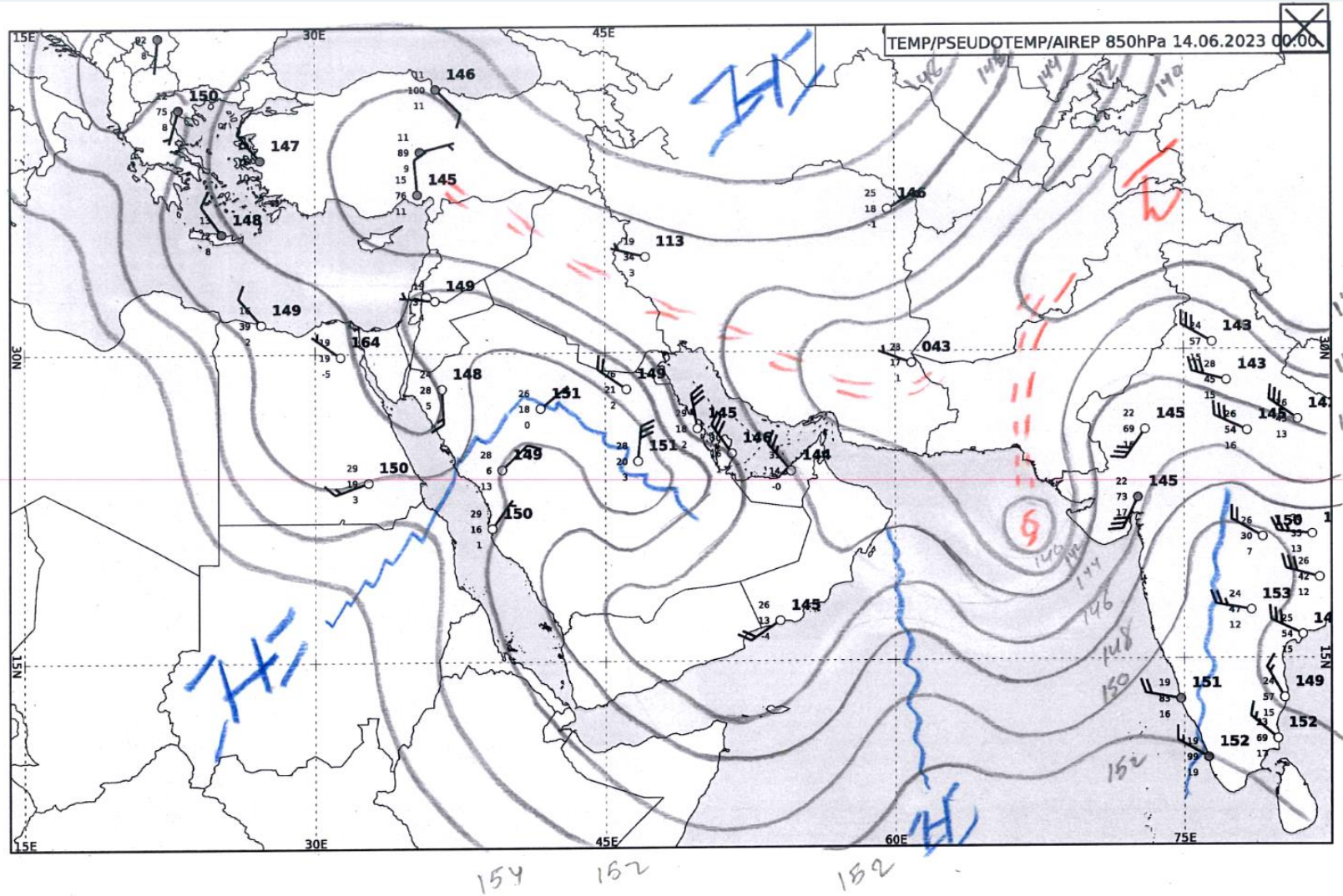


# 700hpa





# 850hpa







# Thank you

Kindly scan this "QR code"  
to evaluate this lectutre

