



**DRONESVIP** | CIVIL AERONAUTICAL  
TRAINING CENTER

---

# AGENDA

- **What is meteorology?**
- **Difference Between Weather and Climate**
- **Different branches of meteorology**
- **Weather data**
- **Aeronautical Meteorology**

---

## WHAT IS METEOROLOGY?



**“Science that studies the Earth's atmosphere, and the phenomena that occur within it”**

---

# DIFFERENCE BETWEEN WEATHER AND CLIMATE



## WHAT IS WEATHER?

It is the state or atmospheric conditions of a place or region, at a given time, taking into account the different meteorological parameters or variables that compose it.

---

# DIFFERENCE BETWEEN WEATHER AND CLIMATE



## WHAT IS CLIMATE?

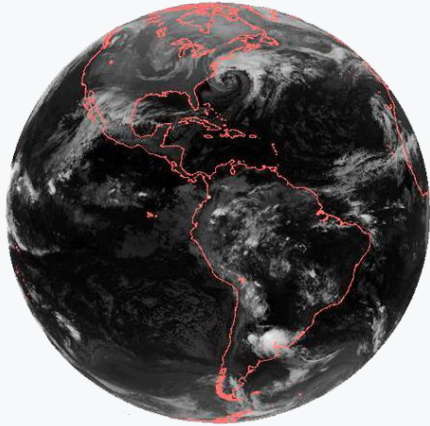
It is the set, at a general level, of the prevailing meteorological conditions of a given place; It is based on data and statistical processing from long periods of records and comprises mean and extreme values, deviations from these means and the reasons associated with these deviations.

An aerial topographic map of a region, likely in the Mediterranean or Middle East, showing terrain with various elevations. The map uses a color scale where darker blues represent lower elevations and yellows, oranges, and reds represent higher elevations. A semi-transparent black banner is overlaid horizontally across the middle of the image.

# DIFFERENT BRANCHES

---

# SYNOPTIC METEOROLOGY



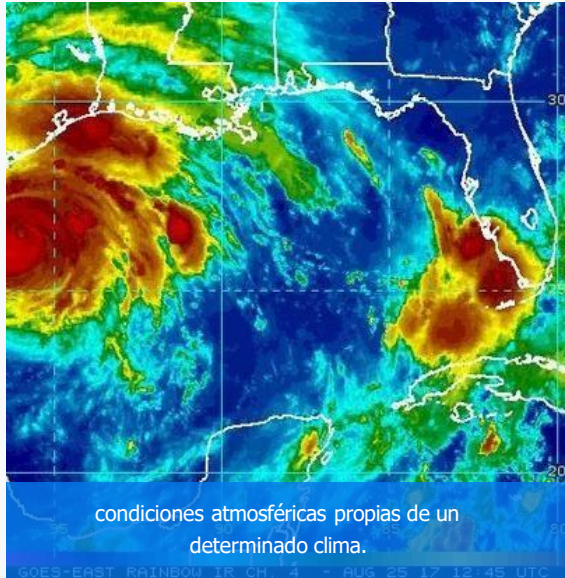
General weather forecast, severe weather alerts, aeronautical and maritime meteorology, etc.

## IT IS RESPONSIBLE FOR:

To study the meteorological conditions and phenomena that take place in the atmosphere, in real time, based in observations made at the global or regional level, with the aim of predicting the state of the weather or future meteorological conditions.

*Sub-activities: General weather forecast, severe weather alerts, aeronautical meteorology, maritime meteorology, etc.*

# CLIMATOLOGY



## DEFINITION:

Science dedicated to the study of climates in relation to their characteristics, variations, distribution, types and possible determining causes.

*"It uses statistical tools to determine the central values, particularly the Mean or Average of the different meteorological variables with which climates can be classified."*

---

# AGROMETEOROLOGY



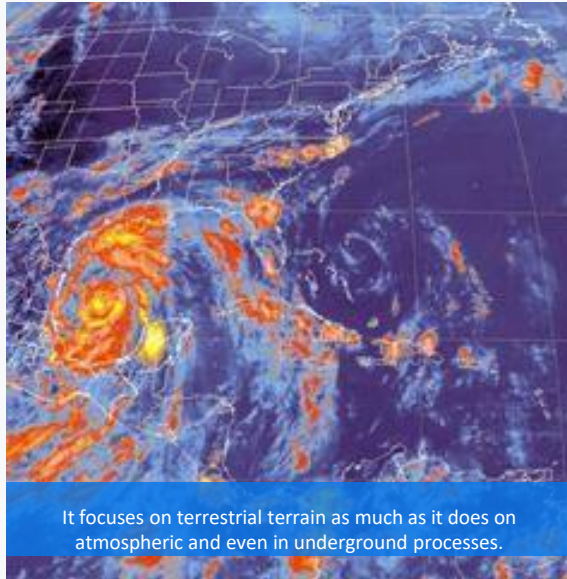
Measuring device. Weather station.

## DEFINITION:

Branch of meteorology dedicated to the study of meteorological and climatic elements, as well as their influence on agricultural activities.

---

# HIDROMETEOROLOGY



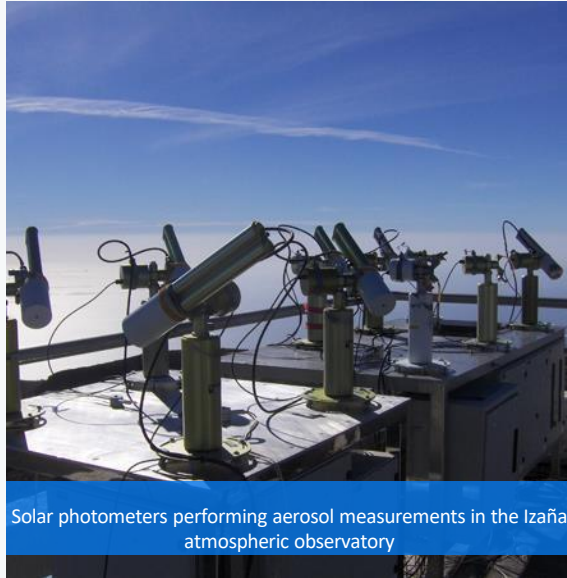
## DEFINITION:

Branch of meteorology dedicated to the study of meteorological and climatic elements, and their impact on the water resources (river, lake, maritime).

*"Hydrometeorology is a climatic science that is often confused with hydrology or is taken as a branch of it. In many other cases it is also considered a branch of meteorological sciences oriented to hydrology."*

---

# ENVIROMENT



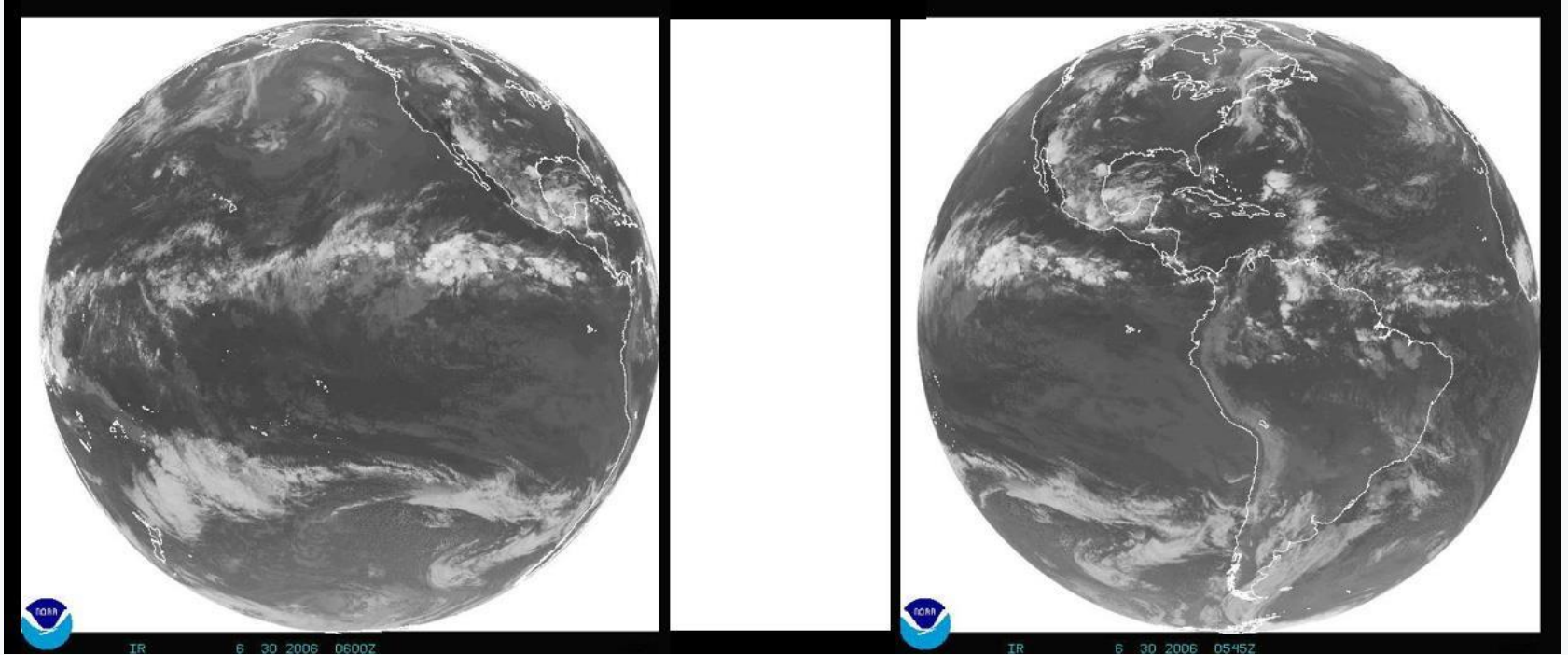
## IT IS RESPONSIBLE FOR:

Monitoring and evaluation of elements such as: Radiation (solar and terrestrial), Ozone, Air pollution, etc.

*"Human activities in many cases are highly polluting and promote the modification of the environment, and this inexorably leads to a negative impact on the natural balance between the Earth and the atmosphere"*

# WEATHER SCALES

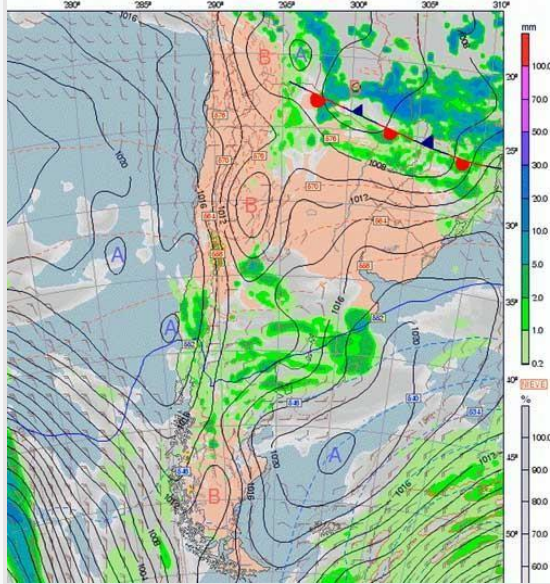
## GLOBAL (PLANETARY) SCALE



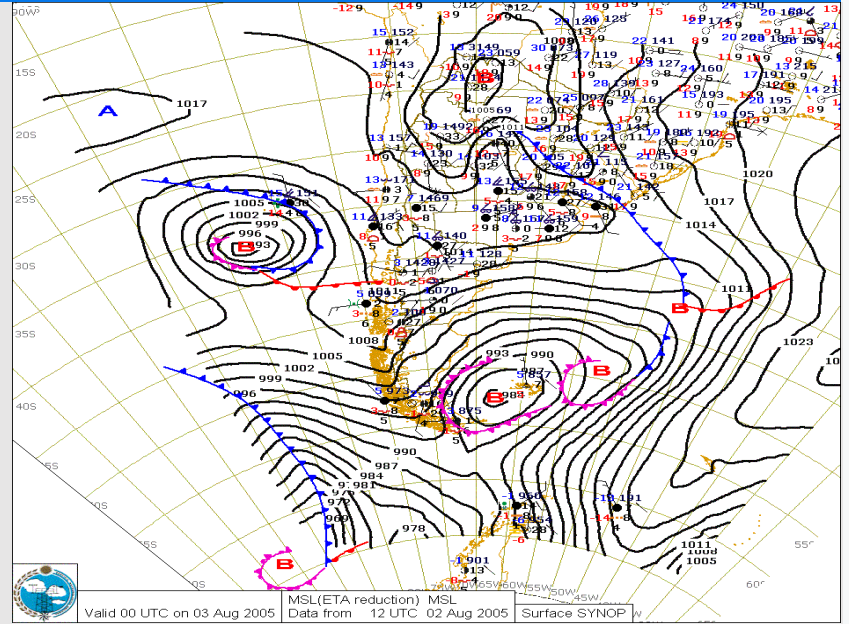
# WEATHER SCLAE

## SURFACE WEATHER CHART

Modelo GFS Jue 02/11/2017, 00 UTC. Pronóstico para el Dom 05/11/2017, 18 UTC (H+90)  
Pres. niv. mar (hPa) | Viento a 10m > 10 Nudos | Nubosidad | 6 H Prec. | Espesor 500-1000 hPa (dam)



## Synoptic Scale: Days / From 200 to 3000

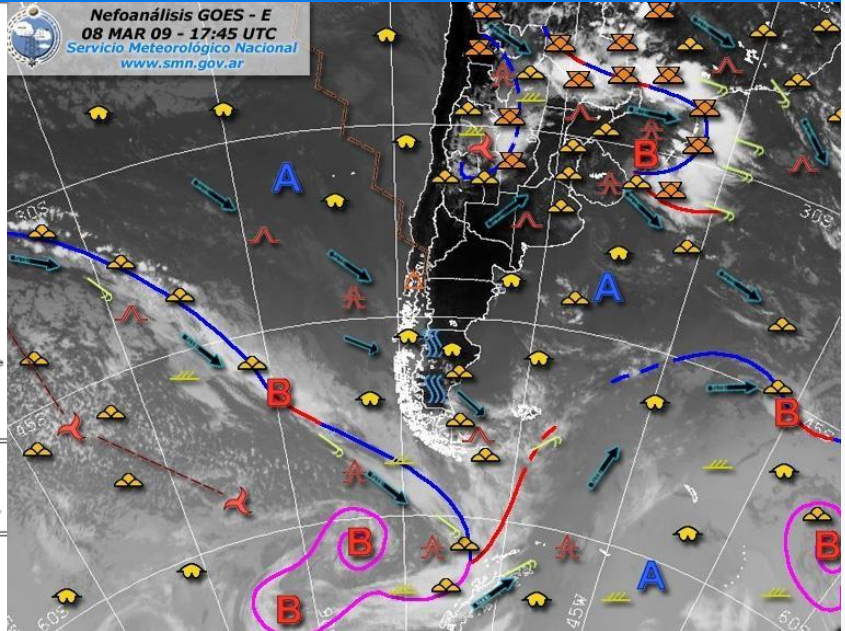


# WEATHER SCLAE

## NEFOANALYSIS

## Synoptic Scale: Days / From 200 to 3000

<b>Cloud Coverage</b> 	<b>Wind Speed</b> 	<b>Cloud Types</b> <p><b>High Elevation</b></p> <ul style="list-style-type: none"> <li>Scattered Cirrus</li> <li>Dense Cirrus</li> <li>Cirrostratus</li> <li>Heavy Cirrostratus</li> <li>Cirrus &amp; Cirrostratus</li> </ul> <p><b>Middle Elevation</b></p> <ul style="list-style-type: none"> <li>Thin Altostratus</li> <li>Thick Altostratus</li> <li>Thin Altitocumulus</li> <li>Heavy Altitocumulus</li> </ul> <p><b>Low Elevation</b></p> <ul style="list-style-type: none"> <li>Fair Weather Cumulus</li> <li>Developing Cumulus</li> <li>Cumulonimbus</li> <li>Cirrocumulus</li> <li>Nimbostratus</li> <li>Stratus</li> <li>Fractostratus</li> </ul>	<b>Weather Conditions</b> <p><b>INTERMITTENT</b></p> <table border="0"> <tr> <td>Rain</td> <td>•</td> <td>••</td> <td>•••</td> </tr> <tr> <td>Snow</td> <td>*</td> <td>**</td> <td>***</td> </tr> <tr> <td>Drizzle</td> <td>•</td> <td>••</td> <td>•••</td> </tr> </table> <p><b>STEADY</b></p> <table border="0"> <tr> <td>Rain</td> <td>**</td> <td>**•</td> <td>**••</td> </tr> <tr> <td>Snow</td> <td>**</td> <td>**•</td> <td>**••</td> </tr> <tr> <td>Drizzle</td> <td>**</td> <td>**•</td> <td>**••</td> </tr> </table> <p><b>THUNDERSTORMS</b></p> <table border="0"> <tr> <td>Rain</td> <td>⚡</td> <td>⚡</td> <td>⚡</td> </tr> <tr> <td>Snow</td> <td>⚡</td> <td>⚡</td> <td>⚡</td> </tr> <tr> <td>Hail</td> <td>⚡</td> <td>⚡</td> <td>⚡</td> </tr> </table> <p> </p>	Rain	•	••	•••	Snow	*	**	***	Drizzle	•	••	•••	Rain	**	**•	**••	Snow	**	**•	**••	Drizzle	**	**•	**••	Rain	⚡	⚡	⚡	Snow	⚡	⚡	⚡	Hail	⚡	⚡	⚡
Rain	•	••	•••																																				
Snow	*	**	***																																				
Drizzle	•	••	•••																																				
Rain	**	**•	**••																																				
Snow	**	**•	**••																																				
Drizzle	**	**•	**••																																				
Rain	⚡	⚡	⚡																																				
Snow	⚡	⚡	⚡																																				
Hail	⚡	⚡	⚡																																				
<b>Wind Direction</b> <p>Wind comes FROM the direction of the arrow.</p>	<b>Fronts</b> <p>Warm</p> <p>Cold</p> <p>Stationary</p> <p>Occluded</p> <p>Warm (Aloft)</p> <p>Cold (Aloft)</p>																																						
<b>Air Pressure</b> <p>H High</p> <p>L Low</p>	<b>MISC. SKY COVER</b> <p>Haze</p> <p>Smoke</p> <p>Dust/Sand</p> <p>Fog in Patches</p> <p>Light Fog</p> <p>Heavy Fog</p>	<b>SHOWERS</b> <p>Slight Rain</p> <p>Moderate/Heavy Rain</p> <p>Violent Rain</p> <p>Sleet/Hail</p> <p>Slight Snow</p> <p>Moderate/Heavy Snow</p>																																					
<b>Barometric Tendency</b> <p>Increase in Air Pressure over Last 3 Hours</p> <p>Rising, then Falling</p> <p>Rising, then Steady</p> <p>Rising, Steady</p> <p>Falling, then Rising</p> <p>Steady</p> <p>Decrease in Air Pressure over last 3 Hours</p> <p>Falling, then Rising</p> <p>Falling, then Steady</p> <p>Falling, Steady</p> <p>Rising, then Falling</p>																																							

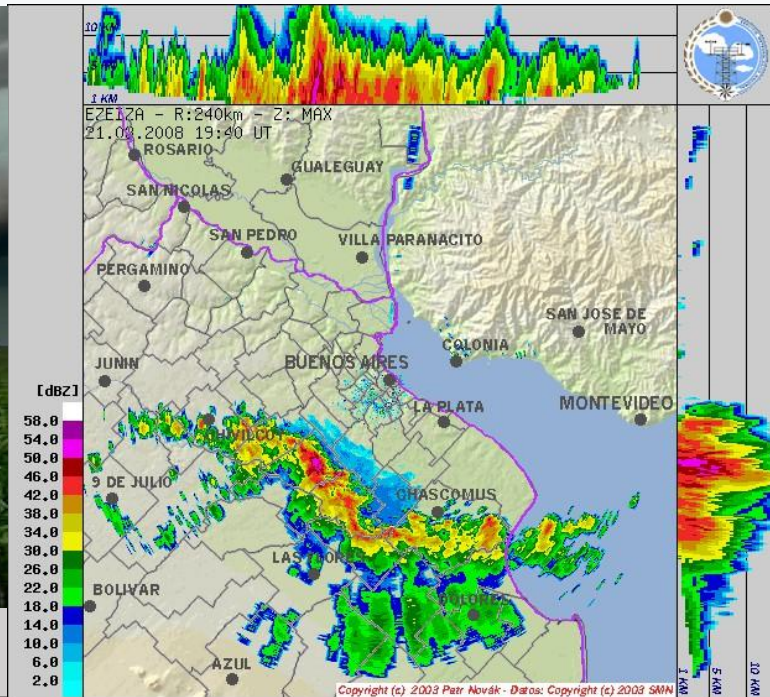


# WEATHER SCLAE

Meso scale: Hours / from 10 to 250 km.



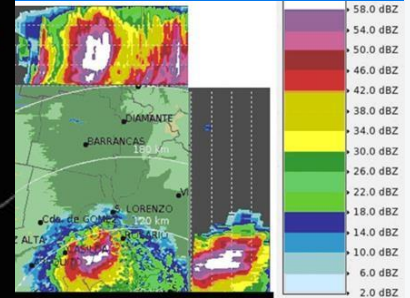
Squall Line



# WEATHER SCLAE

CB / Supercell

Micro Scale: Hours / 2.5-25km



An aerial view of a landscape, likely a river valley, rendered in a false-color or thermal map style. The colors range from deep blues and purples (representing cooler temperatures or water) to bright yellows, oranges, and reds (representing warmer temperatures or vegetation). A prominent river or waterway winds through the center of the image. The surrounding land is divided into irregular shapes, possibly fields or different types of terrain.

# WEATHER DATA

---

# PLATAFORMAS DE OBSERVACIÓN



## **SURFACE WEATHER STATIONS**

(Synoptic, Aeronautical, Climatological, Agrometeorological, etc.)



## **HIGH ALTITUDE WEATHER STATIONS:**

(Radio polls).



## **VESSELS IN NAVIGATION AND BUOYS**

(fixed and adrift).



## **METEOROLOGICAL SATELLITES**

(Geostationary and Polar Orbits).



## **WEATHER RADARS**



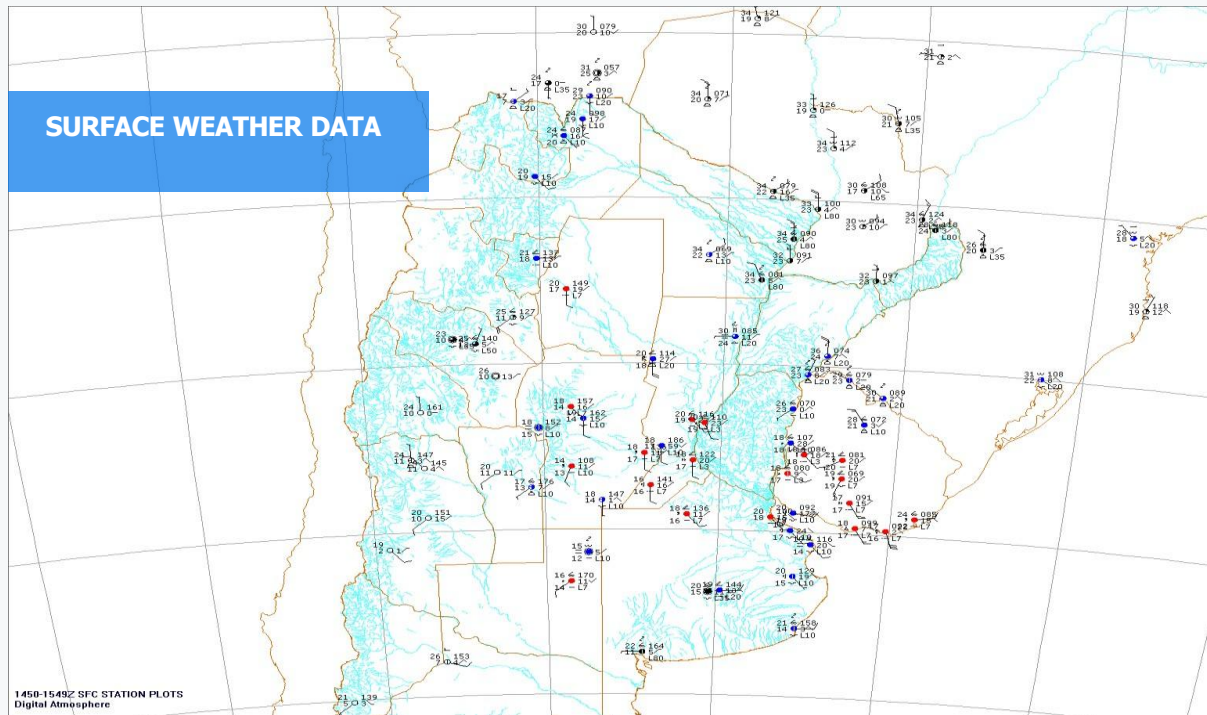
## **DATA FROM AIRCRAFT**

(AIREP / AMDAR)

# SURFACE WEATHER STATIONS



# SURFACE WEATHER STATIONS



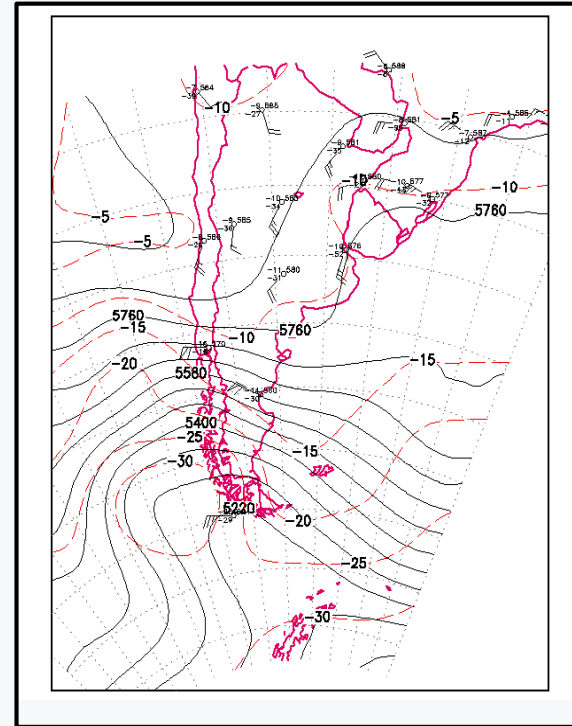
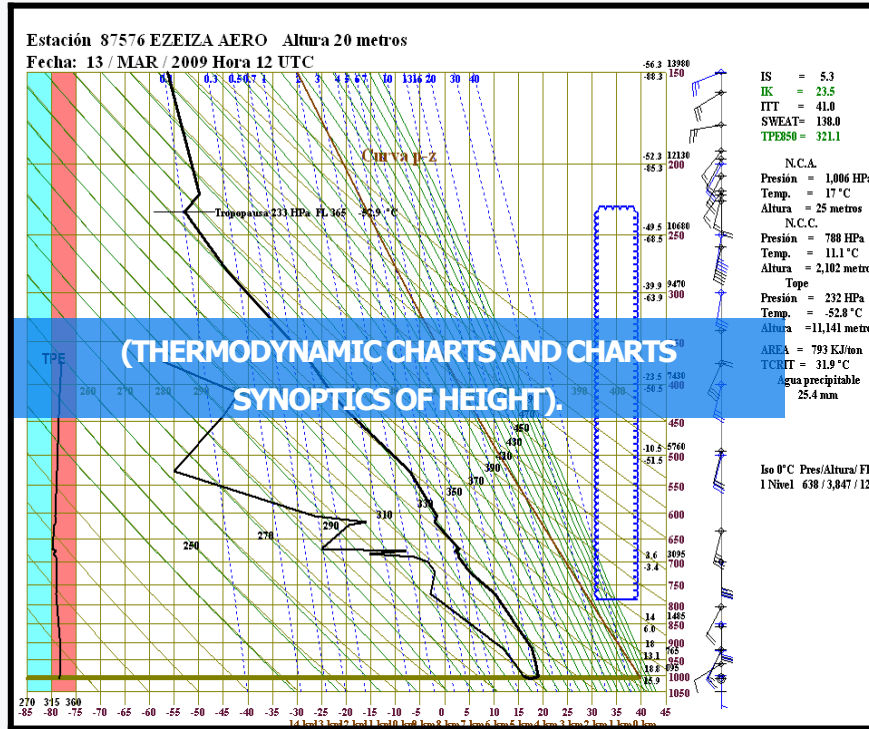
# HIGH-ALTITUDE WEATHER STATIONS (RADIO POLLS)



## RADIO SOUNDER LAUNCHES



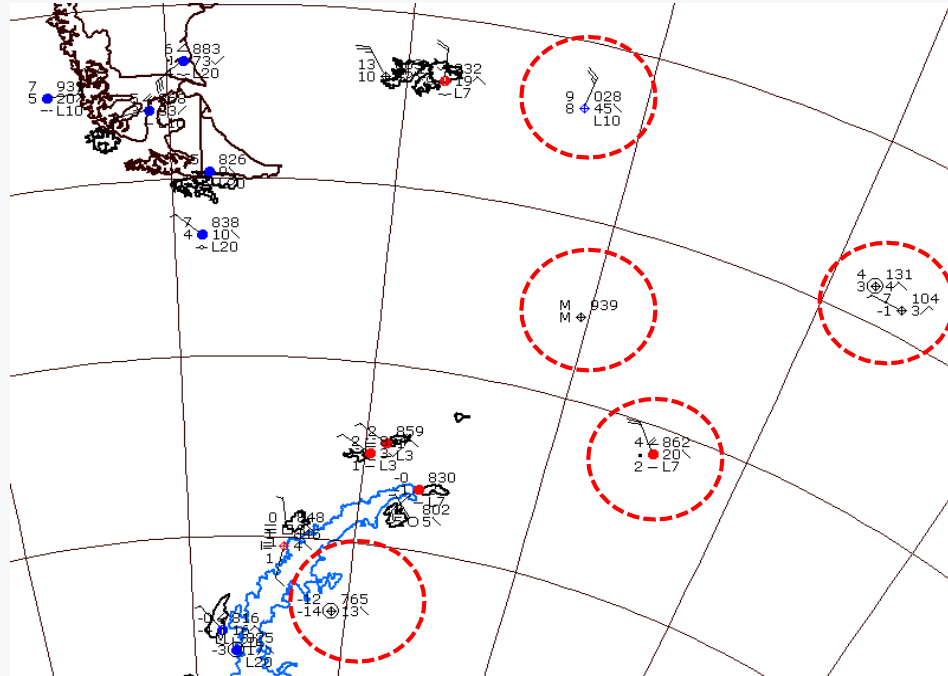
# HIGH-ALTITUDE WEATHER STATIONS (RADIO POLLS)



# VESSELS IN NAVIGATION AND BUOYS (FIXED AND DRIFTING)

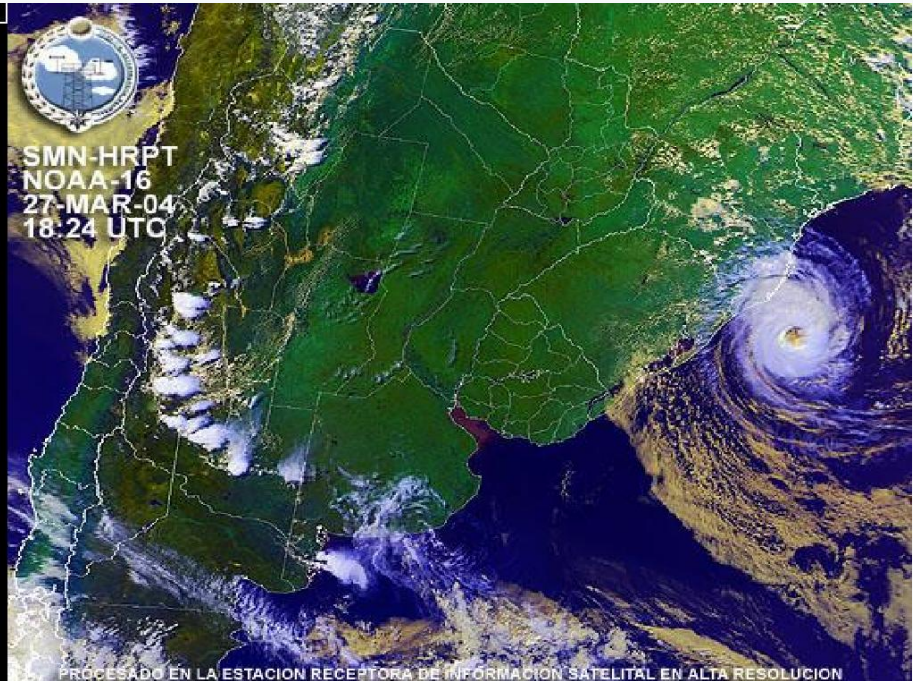
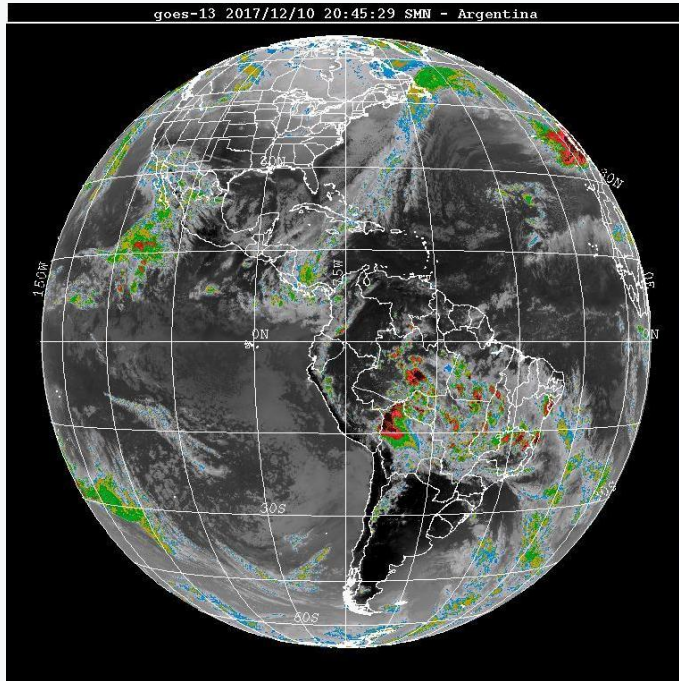


# VESSELS IN NAVIGATION AND BUOYS (FIXED AND DRIFTING)





# METEOROLOGICAL SATELLITES (GEOSTATIONARY AND POLAR ORBITS)



---

# WEATHER RADARS





---

## DATA FROM AIRCRAFT (AIREP / AMDAR)



---

## DATA FROM AIRCRAFT (AIREP / AMDAR)

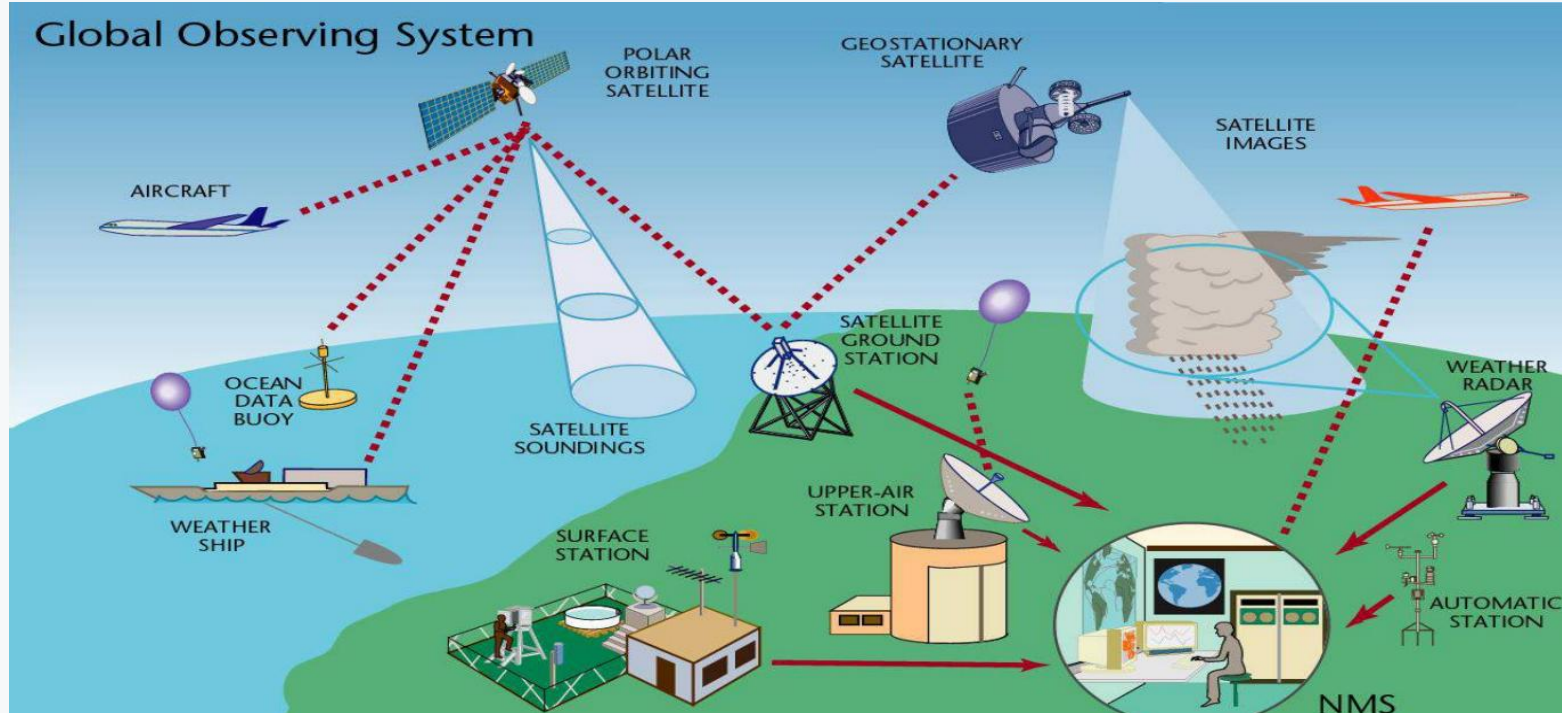
**ARP LAN 603 ALBAL 1050Z F340 MS48 209/54KT TUB LIG=**

**ARP LXP 750 NEBEG 1125Z F230 MS23 204/24KT CAT MOD=**

**ARS LAN115 SPQU/SPJL VA CLD OBS AT 1158Z FL180/230  
MT UBINAS LOC S1621 W07054=**

**ARP ARG1892 VIE 1416 F360 MS55 204/40 KT ISOL CB NW TOP FL340 =**

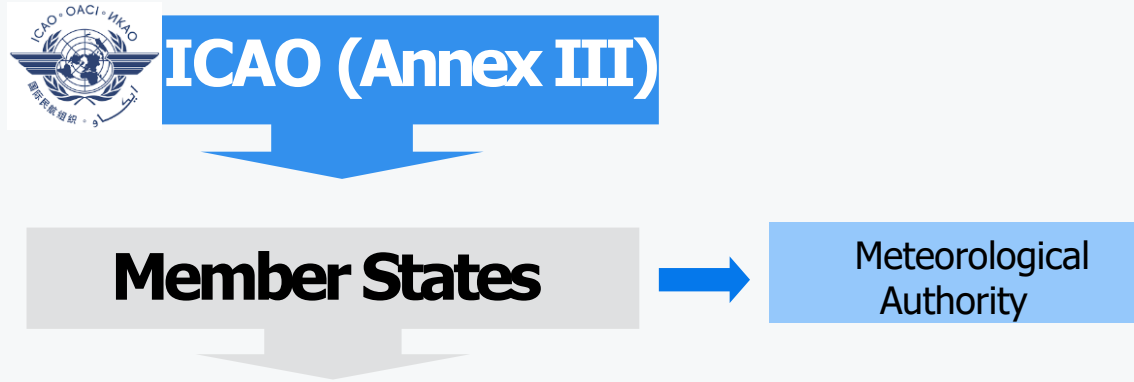
# DISTRIBUTION OF METEOROLOGICAL DATA (OMM - ICAO)





# AERONAUTICAL METEOROLOGY

# AERONAUTICAL METEOROLOGY

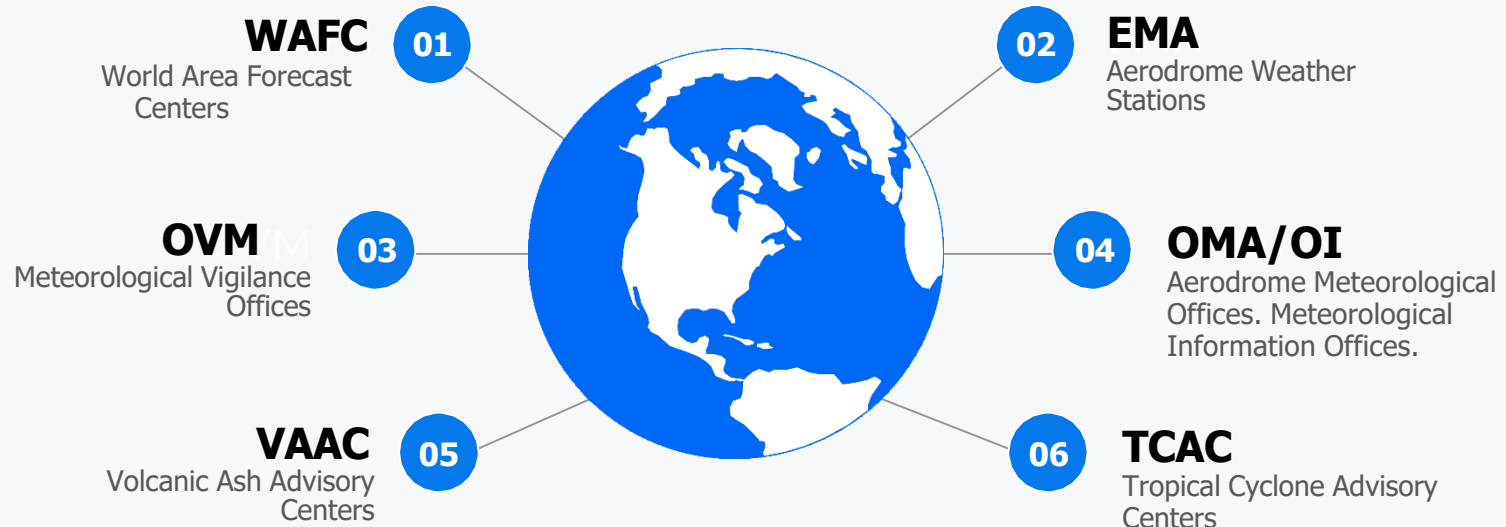


To provide meteorological advice to aeronautical users. The purpose of this service will be to contribute to the **safety, regularity and efficiency** of national and international air navigation.

# AERONAUTICAL METEOROLOGY

## GLOBAL WEATHER BUREAU AND AREA FORECASTING SYSTEM

This System is made up of the following dependencies



---

# AERONAUTICAL METEOROLOGY

## 01 **WAFC:** World Area Forecast Centers.

Generate charts:

**SIGWX:** Significant weather forecast.

**WIND/TEMP:** Wind and temperature forecast for the different flight levels.

## 02 **EMA:** Aerodrome Weather Stations

It generates **METAR** and **SPECI** reports, which give information on the weather conditions that take place at an aerodrome at a given time, thus defining the met conditions. officers of the same.

---

# AERONAUTICAL METEOROLOGY

## 03 **OVM:** Meteorological Vigilance Offices.

Maintains met. About the information region. of flight in its jurisdiction, issues routine and special reports (**TAF, PRONAREAS AND SIGMET**), and provides advice to the different aeronautical users (Briefing, route forecasts, etc.).

## 04 **OMA/OI:** Aerodrome Meteorological Offices. Meteorological Information Offices.

They provide advice to the different aeronautical users (Briefing, route forecasts, etc.). And it provides all kinds of weather information generated by other met centers.

---

# AERONAUTICAL METEOROLOGY

## 05 **VAAC:** Volcanic Ash Advisory Centers.

They provide advice to **OVM** and **ATS** services (through **VAA** reports), on the position, vertical and horizontal extension and actual and predicted displacement of volcanic ash plumes present in the atmosphere.

## 06 **TCAC:** Tropical Cyclone Advisory Centers.

They provide advice to **OVM**, **WAFC** and **ATS** services on the position and predicted displacement of Tropical Cyclones and their associated cloud systems.

---

**QUESTION TIME!**