

# COMET Module Requirement

WPC International Desks (NWS/NOAA)

Each student must complete **seven (7)** COMET Modules as part of WMO certification by the penultimate week of the training. It is required that one module is completed for each of the following categories:

## SOUTH AMERICAN DESK

1. Climatology
2. Numerical Weather Prediction
3. Public support
4. Satellite
5. Synoptic Meteorology
6. South American Meteorology
7. Tropical Meteorology

## TROPICAL DESK

1. Climatology
2. Numerical Weather Prediction
3. Public support
4. Satellite
5. Synoptic Meteorology
6. Tropical Meteorology
7. Tropical Meteorology

**Module access:** From any PC/laptop via <https://www.meted.ucar.edu/>. The COMET website requires the creation of a free account and requires names of supervisors. You can refer Michel Davison or Jose Galvez for this.

**Grade for Certification:** The desks require 70%. In case of not reaching 70%, the module can be repeated as many times as desired until the passing grade is reached.

**Submission of information to the instructors:** The certificate with the grade must be sent via email to both instructors.

## Module List per Category

The modules marked (†) are considered relevant to the training. However, any module from the category can be chosen.

### 1. Climatology (Climatología)

- Climate Change and Regional Impacts
- Climate Change and Extreme Weather
- Climatology for the Operational Forecaster
- The El Niño-Southern Oscillation (ENSO) Cycle
- †ENSO and Beyond
- MJO, Equatorial Waves, and Tropical Cyclogenesis
- Introduction to Climatology
- Monitoring the Climate System with Satellites
- Introduction to Climate Models
- Introduction to Statistics for Climatology
- The Amazon Rain Forest and Climate Change
- †The Madden-Julian Oscillation Life Cycle
- The Role of the MJO in Oceanic and Atmospheric Variability
- Understanding Drought
- Using Climatological Products in Common Operations



## **2. Numerical Weather Prediction (Predicción Numérica)**

- [Effective Use of High-Resolution Models](#)
- [Effective Use of NWP in the Forecast Process: Introduction](#)
- [How Satellite Observations Impact NWP](#)
- [How Models Produce Precipitation and Clouds - version 2](#)
- [Intelligent Use of Model-Derived Products - version 2](#)
- [Model Fundamentals - version 2](#)
- [†Operational Models Matrix: Characteristics of Operational NWP Models](#)
- [Preparing to Evaluate NWP Models](#)
- [Ten Common NWP Misconceptions](#)

## **3. Public Support (Apoyo al público)**

- [†Anticipating Hazardous Weather and Community Risk, 2nd Edition](#)
- [Community Hurricane Preparedness, 2nd Edition](#)
- [Customer Impacts: Forecasting Fog and Low Stratus](#)
- [†Flash Flood Processes](#)
- [Hurricane Strike](#)
- [The Impact of Weather on Air Traffic Management](#)

## **4. Satellite (Satélite)**

- [†Basics of Visible and Infrared Remote Sensing](#)
- [Creating Meteorological Products from Satellite Data](#)
- [†Feature Identification Using Environmental Satellites](#)
- [†Multispectral Satellite Applications: RGB Products Explained](#)
- [†Polar Satellite Products for the Operational Forecaster: Microwave Analysis of Tropical Cyclones](#)
- [Satellite Feature Identification: Blocking Patterns](#)
- [†Satellite Feature Identification: Cyclogenesis](#)
- [Satellite Feature Identification: Conveyor Belts](#)
- [Volcanic Ash: Observation Tools and Dispersion Models](#)
- [Volcanic Ash: Introduction](#)
- [Volcanic Ash: Volcanism](#)
- [†Vorticity Maxima and Comma Patterns](#)
- [Vorticity Minima and Anticomma Patterns](#)
- [WMO Regional Satellite Workshop](#)

## **5. Synoptic Meteorology (Meteorología Sinóptica)**

- [†A Convective Storm Matrix: Buoyancy/Shear Dependencies](#)
- [Dynamically Forced Fog](#)
- [EUMeTrain's Synoptic Textbook](#)
- [EUMeTrain's Manual of Synoptic Satellite Meteorology](#)
- [†Flash Flood Processes: International Edition](#)
- [Flood Forecasting Case Study: International Edition](#)
- [†Isentropic Analysis](#)
- [†Jet Streams](#)
- [†Jet Streak Circulations](#)
- [†Mesoscale Convective Systems: Squall Lines and Bow Echoes](#)
- [Nighttime Radiation and Cooling of the Lower Atmosphere](#)
- [Principles of Convection I: Buoyancy and CAPE](#)

- Principles of Convection III: Shear and Convective Storms
- Quantitative Precipitation Forecasting Overview
- S-290 Unit 5: Temperature and Relative Humidity Relationships
- †Should Synopticians Worry About Climate?
- Skew-T Mastery
- Synoptic Weather Considerations: Forecasting Fog and Low Stratus
- Thermally-forced Circulation I: Sea Breezes
- Thermally-forced Circulation II: Mountain/Valley Breezes
- †Tropical Mesoscale Convective Systems

## **6. South America Meteorology (Meteorología de Sudamérica)**

- Antarctica: Challenging Forecasts for a Challenging Environment
- VLab's Conceptual Models for Southern Hemisphere
- †Tropical-Extratropical Air Mass Interactions in South America

## **7. Tropical Meteorology (Meteorología Tropical)**

- †African Easterly Waves
- †Conceptual Models of Tropical Waves
- Introduction to Tropical Meteorology, 2nd Edition, Chapter 1: Introduction
- Introduction to Tropical Meteorology, 2nd Edition, Chapter 2: Tropical Remote Sensing Applications
- †Introduction to Tropical Meteorology, 2nd Edition, Chapter 3: Global Circulation
- Introduction to Tropical Meteorology, 2nd Edition, Chapter 4: Tropical Variability
- Introduction to Tropical Meteorology, 2nd Edition, Chapter 5: The Distribution of Moisture and Precipitation
- †Introduction to Tropical Meteorology, 2nd Edition: Chapter 7: Synoptic and Mesoscale Systems
- †Introduction to Tropical Meteorology, 2nd Edition, Chapter 8: Tropical Cyclones
- Introduction to Tropical Meteorology, 2nd Edition, Chapter 9: Observations, Analysis, and Prediction
- Topics in Tropical Meteorology
- Tropical Cyclone Intensity Analysis
- Tropical Mesoscale and Local Circulations
- †Tropical Severe Local Storms

## **Others: Aviation**

- Atmospheric Dust
- Basic Terminal Forecast Strategies
- Forecasting Dust Storms - Version 2
- Forecasting Aviation Icing: Icing Type and Severity
- Fog: Its Processes and Impacts to Aviation and Aviation Forecasting
- Fog and Stratus Forecast Approaches
- Forecasting Radiation Fog
- Gap Winds
- Local Influences on Fog and Low Stratus
- Low-Level Coastal Jets
- Mountain Waves and Downslope Winds
- Radiation Fog
- Topics in Precipitation Type Forecasting

- Tropical Fog: A Look at Fog That Impacts Aviation in Guyana
- Volcanic Ash: Impacts to Aviation, Climate, Maritime Operations, and Society
- West Coast Fog
- Writing Effective TAFs
- Writing Effective TAFs in the Caribbean
- Writing TAFs for Convective Weather, 2nd Edition
- Writing TAFS for Ceilings and Visibility
- Writing TAFs for Winds and LLWS

**Others: Radar**

- Caribbean Radar Cases
- Caribbean Radar Products
- Satellite Feature Identification: Atmospheric Rivers
- Radar Signatures for Severe Convective Weather
- Weather Radar Fundamentals