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INTERNATIONAL CIVIL AVIATION ORGANIZATION

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ESAF/WACAF MET Competency standards
for Aeronautical Meteorological Personnel



WMO Competencies framework for aeronautical MET personnel

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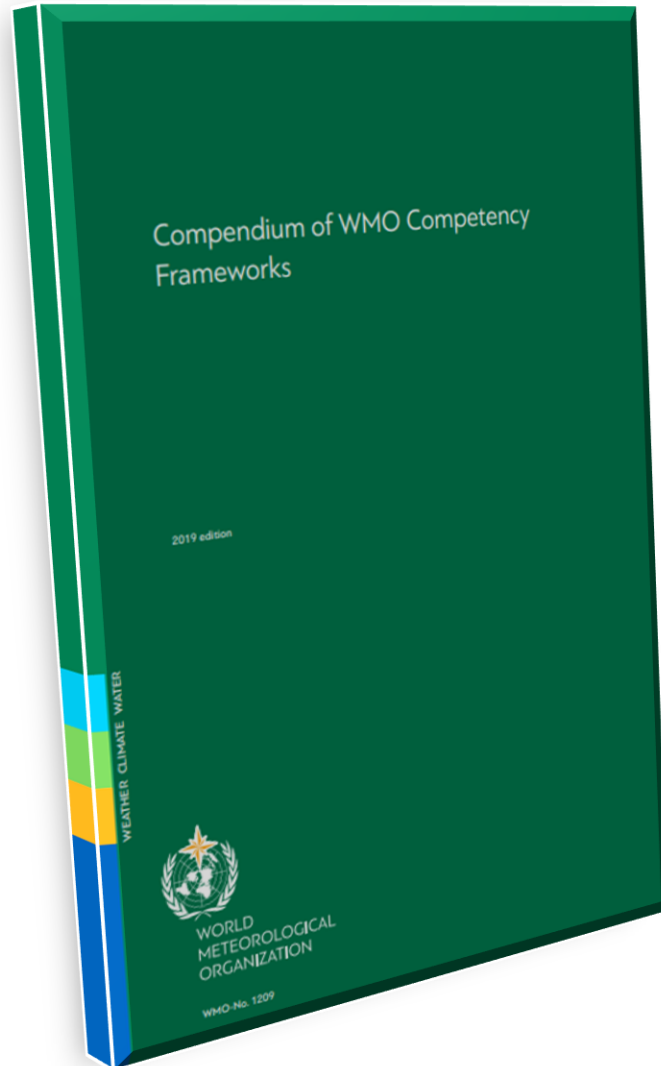
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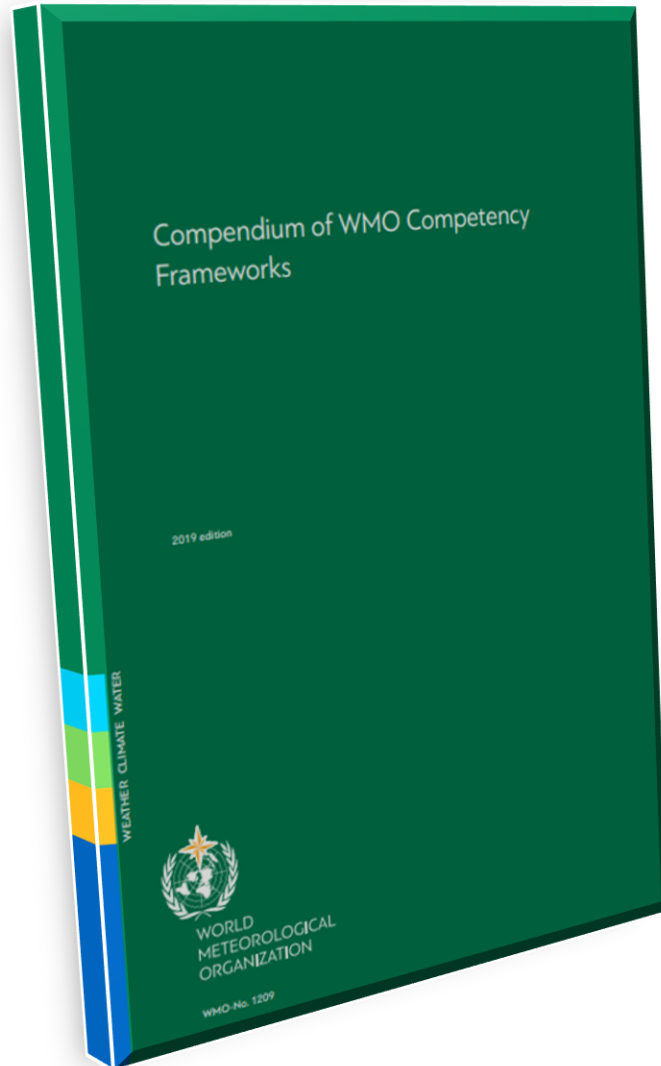


WMO ↔ Competency Framework



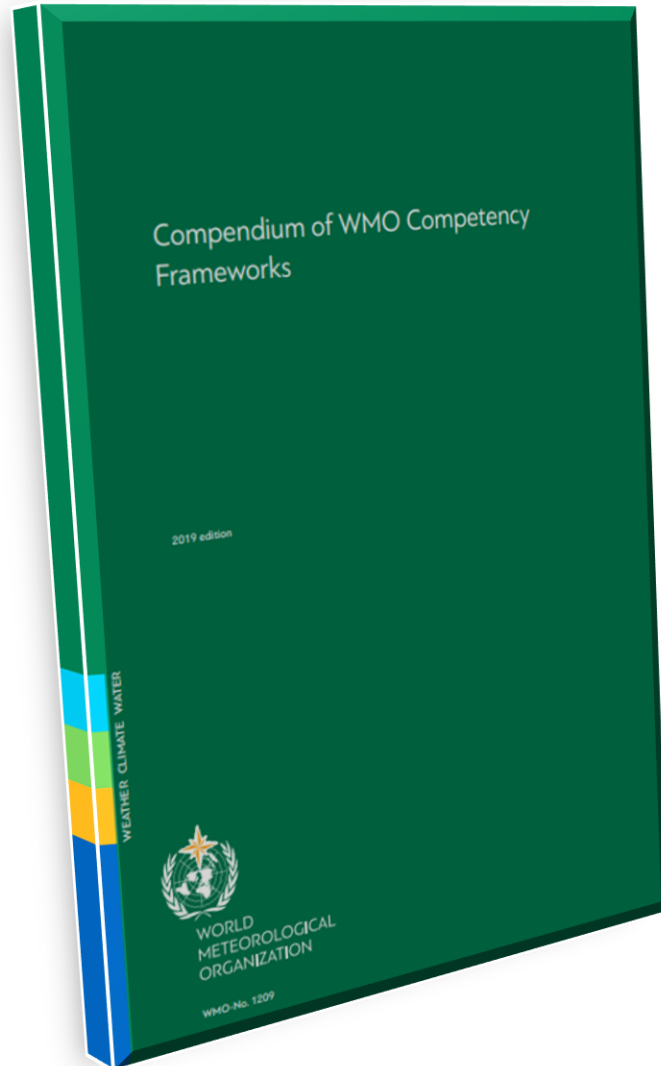
- The mission of WMO is to facilitate worldwide cooperation in weather and other environmental matters through
 - the exchange of data, information and services, standardization, research and training.
- The Eighteenth World Meteorological Congress embraced this mission when it approved a strategic plan
 - with a set of long - term goals, among which
 - “Close the capacity gap in weather, climate, hydrological and related environmental services.”

WMO ↔ Competency Framework



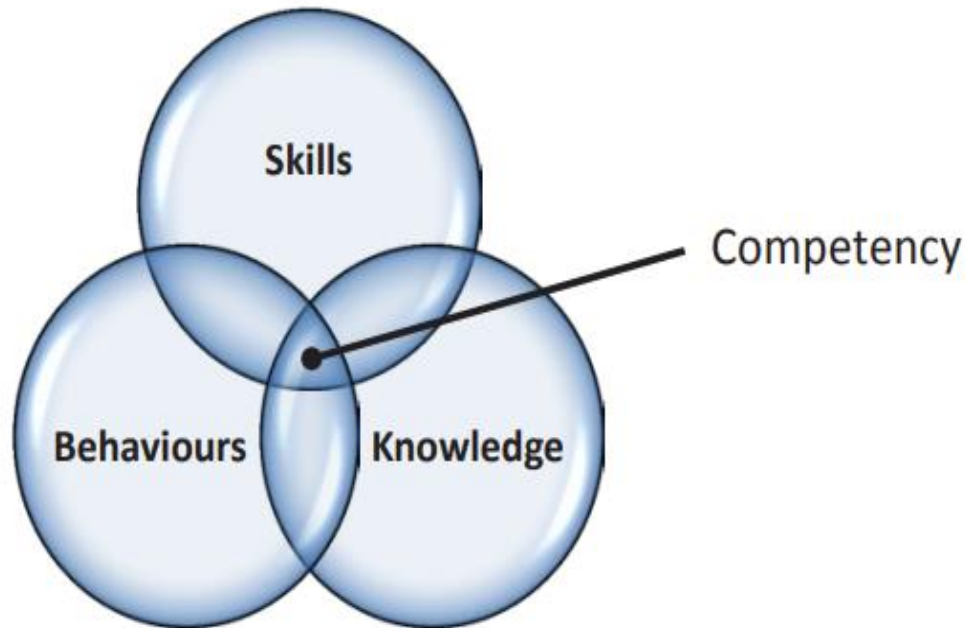
- With respect to this goal, one of the strategic objectives is
 - to develop and sustain the core competencies and expertise required for effective service delivery
 - through education and training programmes focused on standards and recommendations.

WMO ↔ Competency Framework



- WMO Competency frameworks are established to define the standards and recommended practices.
 - They describe the critical job skills and knowledge required of operational personnel.
- By doing so, they provide assessment criteria regarding readiness to perform service delivery tasks, and
 - help training providers offer impactful learning opportunities.
- The first competency requirements to be implemented were the Aeronautical Meteorological Forecaster competency requirements on 1 December 2013.

What is Competency?



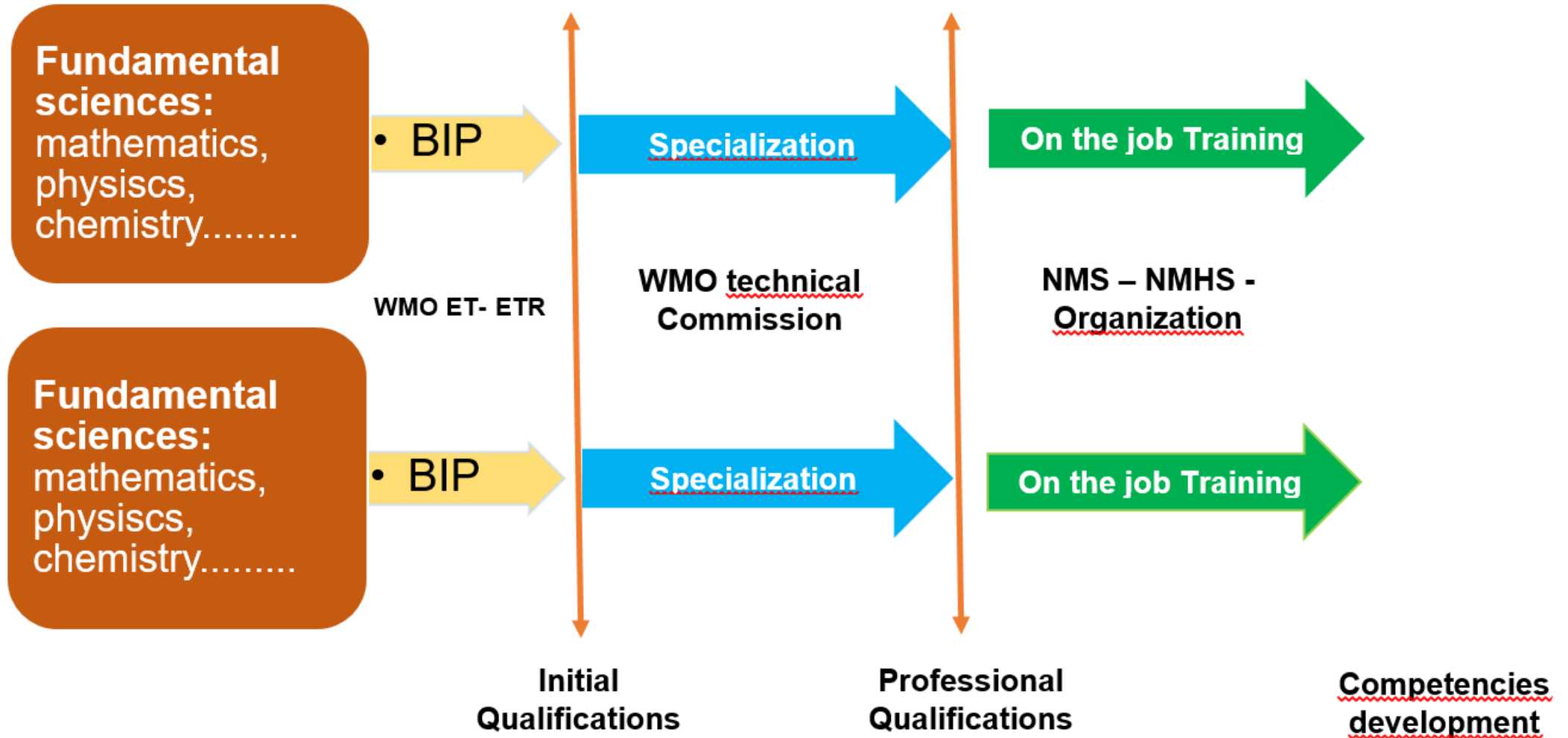
- WMO *Technical Regulations, Vol I*, defines competency as
 - the **knowledge, skills and behaviours required** to perform specific tasks in the fulfilment of a job responsibility.
- Acquiring competency in a specific area will require
 - ongoing job-specific education and training throughout an individual's career.

What is Competency?



- Competency describes **what should be done** but not **how to do it** and as such,
 - the statement should not contain detail technical and institutional aspects.
- The statement should start with a **verb that designates an action to accomplish** by the person or the group.

Qualifications – Competencies



Qualifications – Competencies

Qualification:

- The minimum core knowledge, usually acquired through education, required to enter a profession. **(WMO n°49 Vol I)**

Competency:

- The knowledge, skills and behaviours required to perform specific tasks in the fulfilment of a job responsibility. **(WMO n°49 Vol I)**

Competencies standards – Recommended Practices

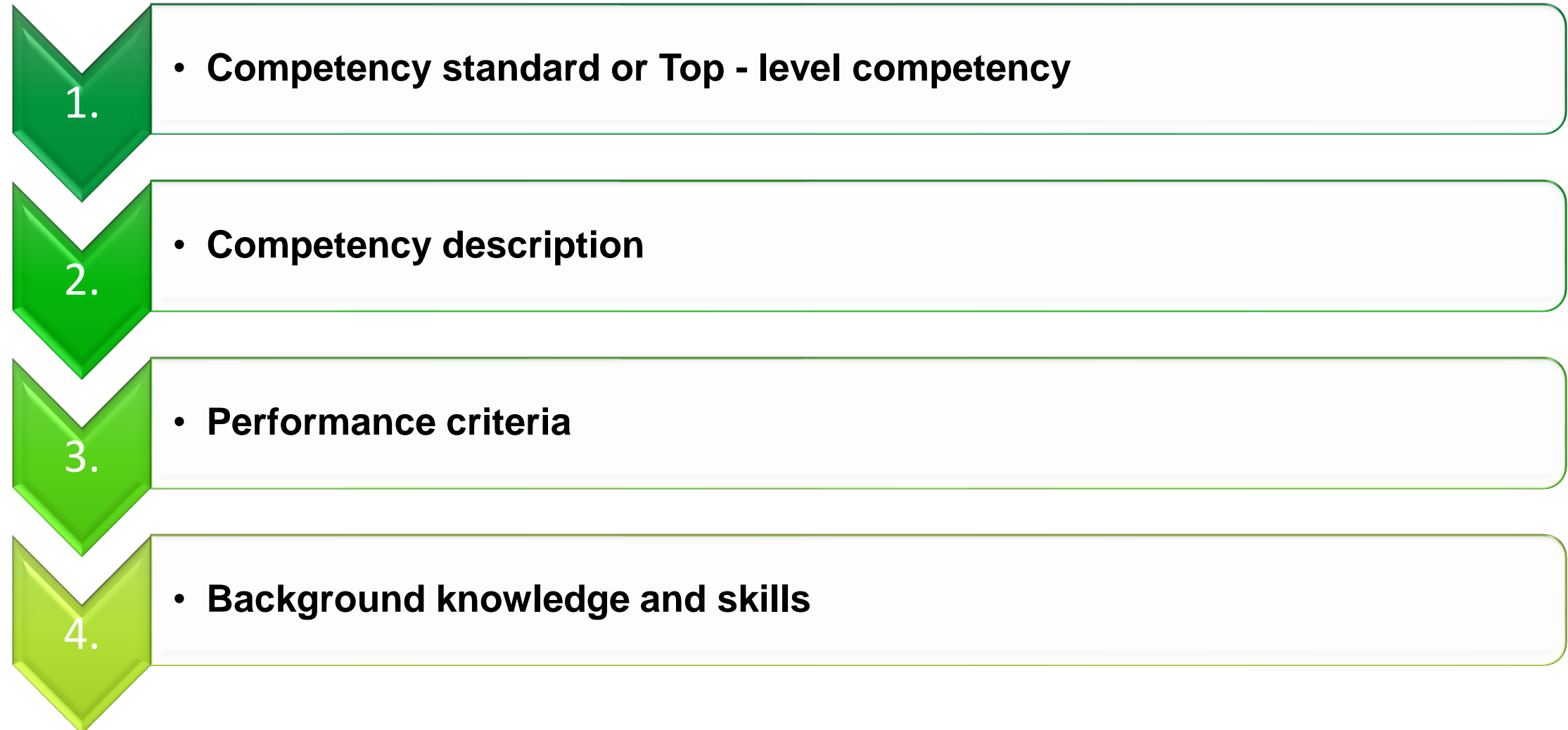
Competencies standards

- Competencies are referred to as « standards » in fields subjected to strict international regulations such as aeronautical meteorology.
- WMO developed and inserted in the Technical Regulation, competencies related with sectors in which international harmonization and standardization are considered important.

Recommended Practices

- The required competencies are rather regarded as recommended in fields where harmonization is desirable and beneficial to members.

Anatomy of a WMO competency framework



Anatomy of a WMO competency framework

Top-level competencies

- Statements that represent the overarching competency to be demonstrated by the individual or group
- These statements are sometimes referred to as units of competency
- Top-level competencies are included as international regulations in *Technical Regulations* (WMO n° 49), Vol I

Competency description and Performance criteria

- It further elaborates on the Top-level statement by providing more complete information.
- Performance criteria are also called performance components

Knowledge and skills

- The requisite background knowledge and skills for the competency

To be customized according to regional and local variations

Regional variations

AMF Competency standard

- Locally agreed and documented criteria and thresholds;
- The range of weather phenomena;
- Risk assessment and estimation of forecast uncertainties;
- Types and use of forecast guidance;
- Designated offices responsible for advice on volcanic ash, tropical cyclones and other phenomena;
- Regional and local regulations;
- Boundaries of forecast areas;
- Extent, scope and exclusions of quality management system implementation;
- Communication language(s);
- Communication technology for forecast and warning transmission, and for weather briefing

AMO Competency standard

- The range of significant weather phenomena;
- Extent of automation of observing and sensing systems;
- Thresholds for significant weather changes;
- Local climatology;
- Extent, scope and exclusions of quality management system implementation;
- Regional regulations;
- Communication language (s);
- Available communication technologies.

Standard Competencies of Aeronautical Meteorological Forecaster (WMO n°49 Vol I Part V)

- Members **shall ensure** that for the area and airspace of responsibility, given the impact of meteorological phenomena and parameters on aviation operations, and in compliance with the aviation user requirements, international regulations and local procedures and priorities, an aeronautical meteorological forecaster is able to:
 1. Analyse and monitor continually the weather situation;
 2. Forecast aeronautical meteorological phenomena and parameters;
 3. Warn of hazardous phenomena;
 4. Ensure the quality of meteorological information and services;
 5. Communicate meteorological information to internal and external users.

Competency 1: Analyse and monitor continually the weather situation (WMO n°1209 §2.2.1)

- **Competency description:**
- Observations and forecasts of weather parameters and significant weather phenomena are continually monitored
 - during hours of operation to determine the need for issuance, cancellation or amendment / update of
 - forecasts,
 - warnings, and
 - alerts according to documented thresholds and regulations.

Competency 1: Analyse and monitor continually the weather situation (WMO n°1209 §2.2.1)

▪ Performance criteria:

1. Analyse and diagnose the weather situation as required in forecast, warning and alert preparation;
2. Monitor weather parameters and evolving significant weather phenomena, and validate current forecasts, warnings and alerts based on these parameters;
3. Appraise the need for amendments to forecasts and updates of warnings and alerts against documented criteria and thresholds.

Competency 1: Analyse and monitor continually the weather situation (WMO n°1209 §2.2.1)

▪ Background knowledge and skills:

- Mechanisms generating different types of clouds and precipitation, and local mechanisms enhancing cloud and precipitation;
- Topographic influences on cloud, precipitation, fog and visibility, in typical wind and moisture regimes;
- Interpretation of Satellite, lidar, Radar, wind profiler and NWP products and observed parameters;
- The international Standard Atmosphere;
- Aeronautical weather monitoring and observing technologies;
- Common terms relevant to aeronautical meteorology;
- ICAO location indicators and / or WMO synoptic stations numbers

Standard Competencies of Aeronautical Meteorological Observer (WMO n°49 Vol I Part V)

- Members **shall ensure** that for the area and airspace of responsibility, given the impact of meteorological phenomena and parameters on aviation operations, and in compliance with the aviation user requirements, international regulations and local procedures and priorities, an aeronautical meteorological observer is able to:
 1. Monitor continually the weather situation;
 2. Observe and record aeronautical meteorological phenomena and parameters;
 3. Ensure the quality of system performance and meteorological information;
 4. Communicate meteorological information to internal and external users.

Competency 1: Monitor continually the weather situation (WMO n°1209 §2.2.1)

▪ Competency description:

Weather phenomena and parameters are continually monitored during hours of operation to

- identify the significant and evolving weather phenomena that are affecting or will likely affect the area of responsibility (typically the aerodrome and its vicinity).

Competency 1: Analyse and monitor continually the weather situation (WMO n°1209 §2.2.1)

- Performance criteria:

1. Analyse and describe the current local weather conditions.

Competency 1: Analyse and monitor continually the weather situation (WMO n°1209 §2.2.1)

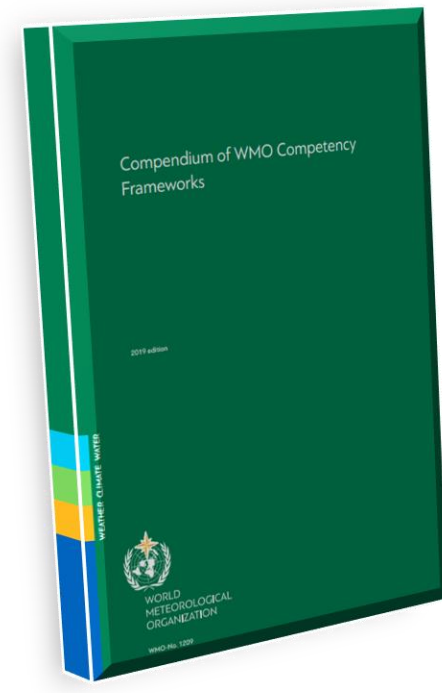
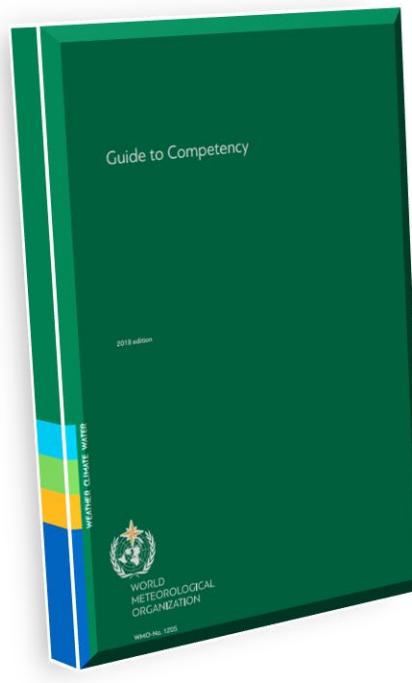
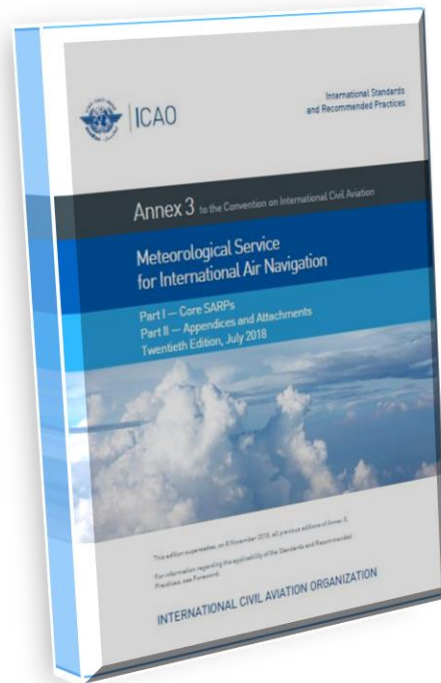
▪ Background knowledge and skills:

- Key characteristics of the troposphere and tropopause;
- Properties of air pressure, temperature, density and water vapour;
- Atmospheric stability, inversions;
- Generation mechanisms of wind;
- Fog and cloud formation and dissipation;
- Precipitation types and intensity;
- The general circulation of the Earth's atmosphere;
- The International Standard Atmosphere (ISA);
- Meteorological hazards to aviation.....

Structure of a standard Competency

Job position \Competencies	Top Level Competency	Second Level Competency	Regional variations	Required Knowledge/Skills	Technical documentation
Aeronautical Meteorological Forecaster	√	√	√	√	√
Aeronautical Meteorological Observer	√	√	√	√	√

References



https://worldweather.wmo.int/tt_cat/philo.php

Competencies standard of Meteorology Personnel



Thank You!