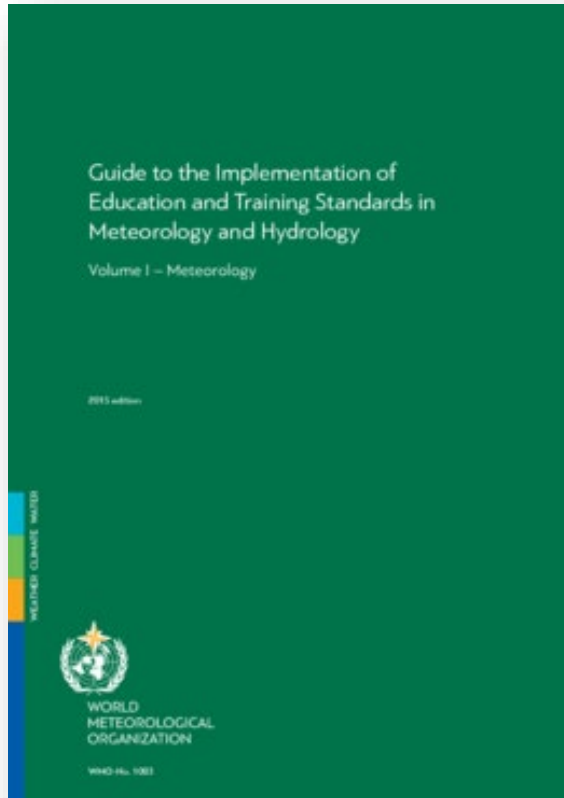


Review of Basic Instructional Packages (BIPs)



WMO-No. 1083

- The BIP-M and BIP-MT guide curricula world-wide in both universities and professional training departments of NMHSs.
- WMO-No. 1083 contains the BIP-M and BIP-MT.
- The WMO-No. 1083 replaced the publication WMO-No. 258 in accordance with Resolution 32 (Cg-16) in 2011.
- The BIP-M is an international standard qualification, enforced by ICAO, for all aeronautical meteorological forecasters.
- The BIP-M and BIP-MT are recommended practices for operational staff working for all WMO Members.
- A new review of the BIP-M and MT was requested in 2018 with the Resolution 32 (EC-70), in response to significant changes in the work of NMHSs.
- The review process began with a meeting in Geneva, in December 2018.
- Although the pandemic slowed progress, the revised drafts were out for wide review since 1 February 2021.
- The core Expert Team completed the review in November 2021 by taking into account all comments made by many different groups.
- Approval and publication is expected after approval of Executive Council in 2022.

BIP Version 258 to 1083 (2011)

The main changes to 1083 were on the levels –
Class IV-I were replaced with:

- a) Meteorologists (M) and
- b) Meteorological Technicians (MT)

The curriculum of the meteorologist were significantly updated while the curriculum of the Meteorological Technicians were changed but not significantly.

Version 1083 of 2022

- To keep abreast with the newest development and with changes experienced in the different careers, it was necessary to update the 2011 version to reflect the changing world we all are living in.
- As stated, the kickoff meeting was in December 2018 and two groups were created under the co-leadership of Chris Webster and Winifred Jordaan, under guidance of WMO ETR.
- Chris looked after the group updating the BIP-M and Winifred after the group updating the BIP-MT.
- The BIP-M group consisted out of the Team Leader: Steve Callaghan (UK) and members, Somenath Dutta, (India), Kevin Scharfenberg, USA, Peter Odjugo (Nigeria), Mick Pope (Australia), Yao Xiuping (China) and Isabelle Beau (France) and additional input from Bob Riddaway and the University of Reading.
- The BIP-MT group consisted out of the team Leader: Colleen Rae (SA) and members Diakaria Kone (Niger), Moira Doyle (Argentina), John Peters (Barbados), Noer Nurhayati (Indonesia) and Anna Timofeeva (Russia).
- Quite a few drafts were sent out for input to the wider community.



BIP-M

- The BIP-M is an international standard qualification, enforced by ICAO, for all aeronautical meteorological forecasters.
- In terms of emphasis, one thing is to continue the work started in the last major revision of BIP-M, in writing learning outcomes much more in terms of higher-level cognitive functions and being clearer on how professional meteorologists need to be able to think and solve problems, while reducing emphasis on lower level (recognise/remember/understand) outcomes.
- The other thing is being much clearer about what is regulatory (WMO 49,) (WMO- No. 49 Vol I - Appendix A) versus what is guidance or suggested ways of meeting the regulatory outcomes, and also being clearer about member states and institutions responsibility to tailor the detailed outcomes to their needs. We've also worked on the outcomes around such things as uncertainty and ensembles, impact-based forecasting, etc to reflect trends in the world.

BIP-MT

- The main focus that must be recognised is that there is only ONE instruction package for meteorological technicians and that is the BIP-MT which replaced the Class II, Class III and Class IV in 2011.
- The BIP-MT underwent a more vigorous change after the collation of results from the survey that was sent out early in 2019.
- The final layout consists of the Prerequisite topics of Mathematics and Physics that are needed before undergoing the Mandatory topics which encompass the old complementary and general meteorological topics.
- This is then followed by Selective Specialization topics which address the various meteorological technician competencies as formalised in the Compendium of WMO Competency Frameworks (WMO-No.1209).

BIP-MT

Prerequisite topics

- Mathematics
- Physics



Mandatory topics

- Basic Geography and Oceanography
- Basic Hydrology
- Basic Physical and Dynamic Meteorology
- Basic Synoptic and Mesoscale Meteorology
- Global and Local Climatology
- Cloud Formation
- Meteorological parameters, instruments and methods of observation
- Climate Data Quality Control

Professional learning outcomes

- Communication skills
- Information technology

Selective Specialization topics

- General Meteorological Technician
- Aeronautical Meteorological Observer
- Meteorological Instrument Technician
- Air Quality Instrument Technician
- Marine Meteorological Observer
- Specialist Climate Data Controller



Public/marine forecasting technician

As stated in WMO 1209, it is recommended that public weather service forecasters and marine weather forecasters should have successfully completed the BIP-M (or parts thereof) as defined in Technical Regulations (WMO-No.49) Volume 1, part V and Appendix A: “Basic Instruction Packages”.

Non-BIP-MT topics

- Hydrometeorological Technician
- Agrometeorological Technician



Content list of 1083 version 2022/3

PART I. INTRODUCTION

1. The BIPs in context

2. Main changes to this edition

- A hierarchy of learning outcomes
- Reducing barriers to access
- Making the BIPs meet national needs
- Influencing best practice in teaching, learning, and assessment
- Future-proofing the BIPs
- Review process of the BIP-M and BIP-MT

Content

3. Transitioning to this edition
4. Purpose and nature of the BIP-M and BIP-MT
5. Meeting the needs of the meteorological community
6. Structure of the BIP-M and BIP-MT
 - The learning outcomes-based approach
 - Defining learning outcomes
7. Design of teaching & learning, and assessment activities
8. Curriculum design
9. Inclusive teaching and assessment
10. Case studies in the application of the BIPs
 - Application of the BIP-M
 - Application of the BIP-MT
11. The BIPs at later stages of a career

PART II. BASIC INSTRUCTION PACKAGE FOR METEOROLOGISTS

1. Interpretation
2. Overarching learning outcomes
3. Pre-requisite mathematics and physics
4. Mandatory Topics
 - Physical meteorology
 - Dynamic meteorology
 - Weather systems and services
 - Climate science and services
5. Professional learning outcomes
 - Management skills
 - Communication skills
 - Information technology
 - Research skills
 - The historical and scientific context of meteorology
6. Selective Specializations

PART III. BASIC INSTRUCTION PACKAGE FOR METEOROLOGICAL TECHNICIANS

1. Interpretation
2. Overarching learning outcomes
3. Pre-requisite mathematics and physics
4. Mandatory Topics
 - Basic Geography and Oceanography
 - Basic Hydrology
 - Basic Physical and Dynamic Meteorology
 - Basic Synoptic and Mesoscale Meteorology
 - Global and Local Climatology
 - Meteorological parameters, instruments and methods of observation
 - Climate Data Quality Control

PART III. BASIC INSTRUCTION PACKAGE FOR METEOROLOGICAL TECHNICIANS

5. Professional learning outcomes

- Communication skills
- Information technology

6. Selective Specializations

- General Meteorological Technician
- Aeronautical Meteorological Observer
- Meteorological Instrument Technician
- Air Quality Instrument Technician
- Marine Meteorological Observer
- Specialist Climate Data Controller
- Hydrometeorological Technician
- Agrometeorological Technician
- Public/marine forecasting technician