PREFACE

One of the purposes of the World Meteorological Organization (WMO) is to coordinate the activities of its Members in the generation of data and information on weather, climate and water, according to internationally agreed standards. With this in mind, each session of the World Meteorological Congress adopts Technical Regulations which lay down the meteorological practices and procedures to be followed by WMO Members. The Technical Regulations are supplemented by a number of Manuals and Guides which describe in more detail the practices and procedures. Manuals contain standard and recommended practices that Members are required and urged to follow, respectively. Guides, such as this one, contain practices that Members are invited to follow or implement in establishing and conducting their arrangements for compliance with the Technical Regulations, and in otherwise developing meteorological and hydrological services in their respective countries. Whereas the regulatory material (Technical Regulations and Manuals) describe what is to be done and who is to do it, the purpose of the Guides is to provide information on how best to do it.

The implementation of the WMO Integrated Global Observing System (WIGOS) relies on the standardization of meteorological and related observations, aiming at uniformity in the practices and procedures employed worldwide and at better accuracy of the observations. The uniform, traceable and high-quality observational data represent an essential input for most WMO applications, such as climate monitoring, nowcasting and severe weather forecasting, thereby facilitating the improvement of the well-being of societies of all nations.

The first edition of the Guide to Meteorological Instruments and Methods of Observation (WMO-No. 8) was published in 1954 and consisted of twelve chapters. Since then, standardization has remained a key concern of the Commission for Instruments and Methods of Observation (CIMO) activities. The Commission continuously reviews the contents of the Guide and ensures that its regular update incorporates modern guidance material which reflects the rapid development of technologies and their implementation in the field of meteorological instruments and methods of observation.

This Guide is a key resource that provides a description of most instruments, systems and techniques in regular use, from the simplest to the most complex and sophisticated, but does not attempt to deal with methods and instruments used only for research. The purpose of the Guide is to provide best practices, procedures and the basic capabilities of instruments and systems for assisting National Meteorological and Hydrological Services and other interested users operating observing systems in the preparation of their manuals and procedures to meet their specific needs for measurements and observations. The Guide intentionally restricts standardization to the essential requirements only, and confines recommendations to the general features most common to various configurations of a given instrument or measurement system, thus enabling wide areas for further development. The Guide is the authoritative reference for all matters related to instrumentation and methods of observation in the context of WIGOS.

This persistent work of experts has resulted in the 2014 edition of the Guide, which was approved by CIMO at its sixteenth session, held in Saint Petersburg, Russian Federation, in July 2014. In addition to almost all chapters being updated, the new edition includes a number of fully revised chapters and an extensive new part on space-based observations. The important impact of the recent Minamata Convention on Mercury of the United Nations Environment Programme in regard to mercury-based instruments is particularly highlighted in the relevant chapters.

The current Guide consists of 38 chapters distributed over the following four parts: Measurement of Meteorological Variables, Observing Systems, Space-based Observations, and Quality Assurance and Management of Observing Systems.
In the process of updating the CIMO Guide, WMO has benefited from the excellent collaboration that took place between CIMO and the Commission for Atmospheric Sciences, the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, the Commission for Basic Systems and the Global Climate Observing System, which provided significant contributions to the new edition of the Guide.

On behalf of the World Meteorological Organization, I would like to take the opportunity to express my sincere gratitude to CIMO and to all involved experts, whose tremendous efforts have enabled the publication of this new edition.

(Petteri Taalas)
Secretary-General