

# **WORLD CONFERENCE ON HIGHER EDUCATION**

## **Higher Education in the Twenty-first Century**

### **Vision and Action**

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## **VOLUME V – PLENARY**

### **The World Meteorological Organization (WMO)**

Note1: To meet UNESCO publishing standards, some editing of papers has been required.

Note2: Authors are responsible for the choice and the presentation of the facts contained in signed articles and for the opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization.

**Speech of Dr Ion Drăghici  
Representative of the WMO**

***Education and Training Meteorological Personnel, New Challenges and Opportunities***

**1. Introduction**

Some 30-40 years ago, several developing countries were just establishing or consolidating their National Meteorological Services (NMS). In this context, Member countries requested the World Meteorological Organization (WMO) to prepare some *Guidelines for the Education and Training of Meteorological Personnel*. Published in 1969 as WMO-No. 258, those guidelines contained:

- a four-tier system for the classification of meteorological personnel according to: specific requirements in the initial education and training; and generic job duties;
- detailed curricula for each personnel class, both at job-entry and specialist-level.

Over the years, the “WMO Classification and Curricula” have reached a large audience, so that even in 1997, according to Members’ replies to a specific Questionnaire, the publication (third edition, 1984) was still used, as a *basic reference* in a number of NMSs. However, several other replies pointed to the need for reviewing this publication. The general context, the basic assumptions and the main outcome of the *substantive revision* of WMO-No. 258 are briefly described in the following sections.

**2. *Meteorology– science and profession: a rapidly evolving domain***

During the past decade, Meteorology, as an applied physical science, has undertaken important advancements resulting from an improved understanding of the coupled land-ocean-atmosphere system and the ongoing revolution in information technology. More specific achievements and emerging prospects include:

- significant improvement in the accuracy and the range of forecasts, as a result of progress in numerical weather prediction and in weather observing and data collection-processing systems, including rapid dissemination of the information;
- enlargement in the scope of the meteorological research and development, particularly with regard to seasonal forecasting; and more comprehensive climate assessment and modelling, including exploration of future scenarios;
- increasing capability of industry and commerce to make use of, and respond to, meteorological information in a timely fashion; and a considerable diversification of users’ needs for tailored products and services.

Given these (and other) developments, today’s meteorology provides us with the capability to *monitor* the varying behaviour of the atmosphere, oceans, and inland waters and *use* the resulting information to advantage; it also enables us to be *warned* of related dangers that can threaten us. Obviously, such achievements are rewarding signals of the ongoing accelerated maturing of Meteorology as a science and as a profession. Yet, formidable new challenges and opportunities, particularly in the field of climate monitoring and prediction, are already on the horizon.

**3. *Refocusing meteorological education and training***

The new economic, social and political patterns evolving now in many parts of the world will probably not only give rise to new demands, but also bring sweeping changes in many facets of the meteorological

*profession.* Meteorological education and training will also require considerable changes in the methods, tools and attitudes, in particular:

- redirecting the initial professional instruction from teaching objectives to learning outcomes and focusing the subsequent qualification more to proven job-competency rather than to formal training attestations or certificates;
- the ever-increasing importance of career-long continuing education and training to maintain and enhance competency in a world of rapid scientific advancements, technological changes, and socio-economic challenges; and
- the promise of distance learning technology to timely deliver education and training even in remote places; also the rapidly expanding opportunities for self-training.

It is in this general context that the traditional WMO classification of meteorological personnel and the associated curricula are currently being revised.

#### **4. New Trusts of the WMO “Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology”**

The new fourth edition of the WMO-No. 258 is aimed at providing reference guidelines, which, in general, should be:

- *applicable in an international context*, in particular in planning international training events and in assessing candidates for those events; and
- *adaptable to a national context*, in particular in National Meteorological and Hydrological Services (NMHS) in developing countries.

Two main *categories of personnel* (professionals and technicians) are defined at the job-entry level, in close connection with the completion of an initial Basic Instruction Package (BIP) addressing *Core Curricula in Meteorology*, separately at professional and technical level. Within each category of personnel, *career progressions* are assumed function of: successful completion of specialized/refresher training modules, increased experience, and demonstrated competence – from job-entry to mid- and possibly senior-level.

Five broad areas of specialization in Meteorology were defined, in close relationship with identified archetype operational jobs: general forecaster, nowcaster, climatologist, applied meteorologist and meteorological technologist. Requirements for the basic competencies, mandatory instruction and principal jobs (archetype and allied jobs) were specified for each Area of Specialization. To facilitate regular curricula updating with respect to the expanding-emerging jobs, a separate set of loose-leaf pages will be produced, and distributed to the WMO Members, every four-five years. In addition, these pages, and selected bibliographic references will be listed under the WEB pages of the WMO Virtual Training Library.

#### **5. Final remarks**

The new edition of WMO-No. 258 will be released in 2000, and it is hoped that it will:

- provide an international framework for common understanding of the basic qualification required of individuals performing operational meteorological functions;
- facilitate the development of reference syllabi for the education and training of the personnel concerned; and
- assist the NMHS of individual countries in designing personnel categorization system suited to their particular needs and training programmes applicable to their categorization, structure and needs.

The new WMO Classification system, approved by the WMO Executive Council at its fiftieth session (June 1998) will be effective from 1<sup>st</sup> January 2001. The actual implementation is expected to be gradual, in recognition that some NMHS may require a transition period of a few years, but should be completed not later than 2005.