

Issues of Operational Hydrology in Ukraine in the Context of WMO Strategy and Organizational Arrangements for Hydrology and Water Resources

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INTRODUCTION.

Over the past few years, the World Meteorological Organization has organized a number of landmark events that addressed the development of activities in the field of hydrology and water resources at national, regional and international levels. The decisions taken at these events largely relate to the hydrological activity in Ukraine both in a broad sense (practice, science and education ones) and in its specific area, namely, the operational hydrology.

PURPOSE of this presentation is to consider the current state and directions for the development of operational hydrology in Ukraine in the context of WMO recent initiatives.

RESULTS. *Recent initiatives of WMO.* The following ongoing activities have been identified to achieve Long-term Ambitions: 1) quality Management Framework - Hydrology and its further implementation with the aim of promoting a stronger culture of compliance and quality assurance; 2) assessment of performance of flow measurement instruments and techniques: the development of software to assist Hydrological Services to assess the uncertainty of discharge measuring; 3) the HydroHub: implementation of HYCOS components according to countries priorities under new WHYCOS framework; 4) hydrological data operational and management: the implementation of WMO WHYCOS Phase II; 5) the WMO Flood Forecasting Initiatives and hydrological contributions to disasters risk management; 6) WMO Global Hydrological Status and Outlook System which is aimed to produce regular analyses of current national hydrological conditions complimented by forward looking assessment of how the water situation may change over sub-seasonal and seasonal time scales; 7) WMO Strategy for Capacity Development and Water Resources Management; 8) the World Water Data Initiative which is aimed to promote strategies to improve water information.

Present status of operational hydrology in Ukraine. According to the Ukrainian legislation issues of operational hydrology belong to a competence of the State Hydrometeorological Service (SHMS), which is under a management of the State Emergency Service of Ukraine. The hydrological and related meteorological information, forecasts and warnings of SHMS are widely used by the different water -dependent sectors of the national economy. It should be say that combining meteorological and hydrological activities into one state body facilitates an interaction of meteorologists and hydrologists, which has a positive impact on the quality of hydrometeorological services provided to end - users. In addition the measurement of quantitative and qualitative variables of water resources is also performed by: the State Agency of Water Resources (on water reclamation systems); higher educational institutions (in a process of training specialists - hydrologists). These institutions use a methodology of measuring hydrological variables used by the Hydrometeorological Service.

There are a number of logistical, technological and financial problems in activities of the Hydrometeorological Service, some of which are systemic and long-lasting. Logistical problems complicate the management of the Hydrometeorological Service, especially in cases that require urgent solutions. Technological and financial ones stand in a way of upgrading all segments of activity - from primary observations up to providing end-users with products and services.

The Hydrometeorological Service has taken measures to overcome existing difficulties in its activity. The State Target Program of Material and Technical Development of the National Hydrometeorological Service for the Period 2022 - 2024 was approved by the Government of the country. It is also in a process of completing a development of the investment Project with manufacturers of hydrometeorological equipment from the United States. The measures to be taken within the Program and the Project are considered in the presentation.

Participation in WMO initiatives. The Hydrometeorological Service is interested to participate in all WMO hydrological initiatives as, on the one hand, it hopes to gain a new knowledge and a good experience from international partners, and, on the other hand, it will be able to present achievements of Ukrainian scientists in hydrological researches and equipment manufacturers in development and production of hydrological technologies. Some of these researches and technologies have gained recognition outside Ukraine. The publication addresses in detail the following issues: a) in which areas of WMO hydrological activities Ukraine plans to participate; b) what knowledge and practical experience the Ukrainian scientific and practical hydrology can gain from participation in these WMO initiatives; c) what scientific and technical achievements the Ukrainian scientists and manufacturers can offer to international partners.

In order to get the maximum possible benefit from the participation in the WMO Action Plan, the Hydrometeorological Service in a cooperation with key users of hydrological products from public and private sectors, as well as from scientific and educational institutions are going to submit necessary activities in a form of the Task Program of Measures lasting up to 3 years. The Program will consist of the following principal large sections: a) *regulation actions* - an elaboration of regulation acts which regulate issues of collaboration of the Hydrometeorological Service with other governmental agencies and organizations as well as with the private sector in the area of operational hydrology; b) *institutional arrangements* - organizational actions which should be undertaken by the Hydrometeorological Service to improve its activities in different areas of operational hydrology; c) *scientific and technological development* - actions which will strength a scientific support and technological level of all segments of hydrometeorological activities - from hydrometric measures up to providing end-users with products and services; d) *international collaboration*: actions which should be taken on national, regional and international levels to strength collaboration with other hydrometeorological services of Europe and with WMO in frames of implementation of join projects in the area of operational hydrology.