

Valencia Declaration

Ibero-American Expert Meeting on Hydrometeorological Information and Forecasting Systems

1. Preamble

(a) The Expert Meeting organized by the Instituto Nacional de Meteorología of Spain, the Confederación Hidrográfica del Júcar and the World Meteorological Organization (WMO) in Valencia, Spain, from 29 March to 2 April 2004 brought together 120 participants from 18 Ibero-American countries, Spain and Portugal, bodies responsible for meteorological and hydrological forecasting, river basin organizations, universities, research institutions and private sector companies.

(b) The event was held as part of the International Flood Initiative, which is being promoted at the global level by WMO and has the main objective of improving the capabilities of National Meteorological and Hydrological Services (NMHSs) to provide the timely and accurate services and products required for flood forecasting and warnings, by encouraging close cooperation between them.

2. The Expert Meeting considered that:

(a) Close cooperation between meteorologists and hydrologists and their respective organizations is not only necessary for accurate and timely flood forecasting, but is also beneficial for both communities. When the hydrological community uses meteorological data and forecasts to better define the input parameters of its models, particularly the precipitation field, the meteorological community gains feedback from a fundamental user, thereby enhancing the socio-economic importance of its work.

(b) Accordingly, great efforts are being made in Spain and Portugal as well as in Ibero-American countries, and there have been very good examples of operational benefits and applied research.

(c) Generally speaking, it is recognized that the forecasting systems in Ibero-America need to be strengthened. In the past, systems have been introduced in view of natural disasters or to serve the interests of a specific user, which basically finances implementation costs.

(d) To ensure the viability and success of new projects, there is a recognized need to meet training requirements and maintenance costs for as long as necessary once the project has been completed.

(e) Technical assistance projects on flood forecasting systems which have external funding – which may, or may not, be reimbursed – rarely take into account the very nature of the river basin, the actual capacities of the receiving country or, above all, the sustainability of the project once external support has ended.

(f) Despite the above, institutional difficulties continue to hinder cooperation between Meteorological and Hydrological Services. Even those countries seeking

cooperation have technical difficulties to overcome caused by varying spatial and temporal scales, operational procedures and the academic training of the professional staff at these institutions. Therefore, initiatives such as this Expert Meeting are welcome.

(g) In recent years, deterministic and probabilistic numerical weather models have notably improved precipitation forecast fields, but many improvements could still be made with regard to heavy precipitation events. Furthermore, it should be noted that the subsequent application of statistical and stochastic methods to direct model output improves its quality.

(h) To enable hydrological users to make optimal use of the above-mentioned meteorological information, advice from meteorologists specializing in forecasting would be useful on the following areas: (i) giving added value to model forecasts in the first 24 to 30 hours of the forecast, using knowledge of mesoscale and microscale processes and models and techniques already used; (ii) nowcasting by establishing an appropriate synergy between the various types of information; and (iii) using deterministic and probabilistic precipitation forecast fields.

(i) In regions with complex orography, as are vast areas of Ibero-America, the regionalization of global models improves the ability to determine the spatial and temporal distribution of convective phenomena that produce heavy precipitation events at short intervals.

(j) Considering the quality of the European Centre for Medium-Range Weather Forecasts (ECMWF) model, the Expert Meeting recognized that hydrometeorological forecasting would be improved if all WMO Members, upon request, could access the products of this model.

(k) As regards hydrological models, there was a consensus that no single solution applies to all circumstances. Therefore, models must adapt to the characteristics of each river basin; this results in the need to invest more resources and, for projects based on technical/financial assistance, the need to ensure that assistance is flexible and not determined by commercial interests.

(l) Hydrometeorological information networks and systems are fundamental for producing effective flood warnings, and sound coordination between NMHSs is needed to ensure that these networks and systems are effective.

3. The Expert Meeting made the following recommendations:

(a) As part of the memorandum of understanding on cooperation between the World Meteorological Organization and the Instituto Nacional de Meteorología of Spain, efforts should be made so that Spain's knowledge of hydrometeorological forecasting is shared with Ibero-American NMHSs.

(b) The mechanisms for sharing knowledge between hydrographical confederations in Spain and NHSs in Ibero-America should be strengthened.

(c) Technology transfer should include training activities, technical assistance projects, staff exchanges and other mechanisms, such as seeking sources of funding to carry out these activities.

- (d) The Seventh WMO Long-term Plan should include activities to (i): improve the capacities of NMSs to create meteorological products for flood forecasting, particularly quantitative precipitation forecasting and probabilistic quantitative precipitation forecasting; and (ii) support development and outreach activities between NMSs on effective methods to incorporate probabilistic products into their hydrological forecasting, when possible.
- (e) Programmes should be established that include education and training activities for weather forecasters to provide them with new and extensive knowledge of modern monitoring, prediction and communication tools.
- (f) Technical assistance projects should include equipment maintenance costs for an adequate period, as investment expenditure.
- (g) WMO should take action, with the support of Spain and Portugal, to ensure the free distribution of ECMWF products to Ibero-American NMHSs. Also, this kind of action should be extended to other European agencies in which Spain and Portugal are involved, mainly EUMETSAT.
- (h) The Ibero-American Programme on Science and Technology for Development (CyTED) should include flood forecasting as a thematic network for international cooperation, which will facilitate coordination meetings to establish research projects and applications.
- (i) A policy should be developed to strengthen links between NMHSs and the academic community to optimize the mutual benefits of sharing information, data, studies and research.
- (j) Ibero-American countries should promote their joint national hydrometeorological information systems and networks through the highest level of coordination between NMHSs.

Valencia, Spain, 2 April 2004