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Plata Basin Hydrometeorological Forecasting and Early Warning System: Consultation Meeting

Brasilia, Brazil 21-25, May 2018



Draft Final Report

May 2018

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Plata Basin Hydrometeorological Forecasting and Early Warning System: Consultation Meeting

Brasilia, Brazil 21-25, May 2018

1. Background

At the Joint Meeting of the RA III Working Groups, held in Asuncion from 4 to 6 October 2017, the Working Groups on Hydrology and Water Resources (WG-HWR) and on Infrastructure and Technological Development (WG-ITD), having appreciated the offer of the United States Agency for International Development/Office of U.S. Federal Disaster Assistance (USAID/OFDA) to support the establishment of a hydrometeorological forecasting and warning system in La Plata Basin through products generated by the Flash Flood Guidance System (FFGS), proposed that a meeting be held between hydrological and meteorological forecasters from the Basin countries and representatives of the Hydrologic Research Center (HRC), WMO and USAID/OFDA to clarify concepts and establish details of an implementation plan for the initiative that will be presented to the Permanent Representatives of the countries concerned with recommendations for their approval.

Brazil offered to host the meeting at the National Institute of Meteorology (INMET) headquarters in Brasilia, from 21 to 25 May 2018. Each basin country, namely Argentina, Bolivia, Brazil, Paraguay and Uruguay, were represented by participants with experience in meteorological forecasting, hydrological forecasting and support infrastructure. Representatives from USAID/OFDA, HRC, WMO, and the Commission for Hydrology (CHy) also participated. The list of participants is provided in Annex 1.

Participating experts from each country were asked to provide a short description of the status of their hydrological and meteorological forecasting systems, as well as of the status of related infrastructure. HRC experts were also requested to present information on the Flash Flood Guidance System and, in particular, on its products as well as the System's additional modules that could be of interest for the Basin. Moreover, the vice-president of the Commission for Hydrology, Mr Silvano Pecora, was invited to participate and to present on the current status of the implementation of the WIGOS/WHOS-Plata project. The agenda for the meeting is provided in Annex 2, while all presentations provided at the meeting are available on the WMO website (www.wmo.int)¹.

The major outcome from the meeting are captured in Section 2 of the report. The Table of Contents for the proposed activities was also agreed upon by meeting participants and is contained in Annex 3. The intent is that these conclusions, including the draft Table of Contents, will be presented to the Seventeenth Meeting of Regional Association III (RA III – 17) to be held in November 2018 in Santiago de Chile.

¹ The cited material for the Plata Basin Hydrometeorological Forecasting and Early Warning System: Consultation Meeting can be located by referring to the following page: <http://www.wmo.int/pages/prog/hwrrp/flood/ffi/plata-basin.php>

2. Conclusions from the Consultative Meeting

1. The participants, after thanking INMET for the excellent organization of the meeting and its warm hospitality, agreed that the development and application of a Hydrometeorological Forecasting and Early Warning System in the Plata Basin (PROHMSAT-Plata) would significantly improve the capabilities of the National Meteorological and Hydrological Services (NMHSs) of Argentina, Bolivia, Brazil, Paraguay, and Uruguay to generate timely and accurate warnings on risks associated with floods, which would contribute to the reduction of disaster risk, would save lives and reduce material damages.

They also agreed that the project WIGOS/WHOS-Plata (formerly known as WIGOS-SAS/CP) and PROHMSAT-Plata will contribute significantly to the exchange of meteorological and hydrological data and products and reduce the vulnerability of the region to hydrometeorological threats, especially flash floods and fluvial, by developing and implementing the WIGOS/WHOS-Plata with elements and features of the Flash Flood Guidance System (FFGS) to strengthen national and Basin capacities to develop more accurate and timely warnings.

Therefore, the participants reiterated their thanks to USAID/OFDA for this timely initiative and for offering to finance both projects.

2. The participants agreed that the official name of the two projects combined in this initiative would be "Plata Programme", and that this name would be used in all documents and communications.

3. The WIGOS/WHOS-Plata is being executed, and it is expected that it will be operational by December 2019. The PROMSHAT-Plata will begin in January 2019 with a duration of three years. The WIGOS/WHOS-Plata will provide data and product infrastructure necessary for the proper functioning of PROMSHAT-Plata.

4. In principle, participants agreed on the following fundamental elements of the Plata Programme:

- NMHSs must provide the necessary data for hydrometeorological forecasting to the WIGOS/WHOS, whose central server resides in the GISC Brasilia in INMET.
- On the aforementioned data and on products derived from satellites and radar data, a standardized quality control will be carried out through the pre-processing module of the FFGS.
- A platform will be established to promote the integrated hydrological modeling of the various national models and of at least one model that covers the whole basin, selected according to the principles of the Commission for Hydrology (CHy) for operational hydrological forecasting.
- A Regional Virtual Center will be established with one or more countries in charge of managing it, possibly following the simple and successful organizational model of CRC-SAS.
- The PROMHSAT-Plata will have a central server and at least one backup server in operational organizations working 24/7, with the ability to maintain and operate it in terms of both IT and technical contents.
- The products and services of greatest interest in support of hydrometeorological forecasting in the basin are: a) Quantitative Precipitation Estimation (QPE) for the entire basin using telemetric observations, satellite and radar data at the highest possible resolution; b) Spatial distribution of soil moisture; c) Numerical meteorological modelling products such as Quantitative Precipitation Forecast (QPF), temperature, etc... derived from the COSMO model and from other available sources; d) web services to make available each countries' hydrological numerical forecasts.
- The products mentioned in a), b) and c) in the previous point will be stored for the purpose of post-processing and modelling.
- By mid-2019, a prototype will be developed for one or more products that will serve as a basis for the detailed planning for the continuation of the system's implementation. Possible products are: a) a real-time map of spatial precipitation in the basin and b) multi-model forecasts in some places where countries currently issue hydrological forecasts, adding the model used in the FFGS to the national model used in each case.

- The final system should consist of: a) the pre-processing module of the FFGS (for quality control including telemetric observations, satellite and radar data at the highest possible resolution), b) the FFGS extensible and scalable hydrological routing module, c) the basic FFGS adapted to the needs of the different geographical areas of the basin exposed to flash floods, as long as the necessary data exist.
- In addition, provided availability of funds, it would be desirable to add the following modules in order of priority: a) seasonal and sub-seasonal forecasting of runoff and flow; b) prediction of landslide occurrence; and c) urban flash floods warnings.
- The cumulative precipitation and other numerical prediction products of the COSMO model for the Plata Basin will be made available (immediately). Each country may also have the meteorological model (or models) of their choice on the platform.
- Approximately two thirds of the funds available for the PROHMSAT-Plata should be earmarked for development and the remaining third for the strengthening of the capacities of participating countries (for example, through training).
- The PROHMSAT-Plata Steering Group will consist of 10 focal points (one meteorologist and one hydrologist per country to be appointed by the Permanent Representative and the Hydrological Adviser of each country), of which 2 will be coordinators - one appointed by the Working Group in Hydrology and another by the Working Group in Infrastructure/Meteorology of RA III. In principle these designations must be made immediately after the start of the project and will be valid for its duration.

5. Based on the points listed above, a proposal of activities and work plan of the PROHMSAT-Plata will be prepared, whose table of contents is presented as Annex 3. This proposal will be presented at the 17th meeting of RA III to be held in November 2018 in Santiago, Chile. It is recommended that the Permanent Representatives of the five countries of the basin with WMO, if they approve these conclusions and recommendations, document their commitment to contribute to the Plata Programme in the Final Report of that meeting.

6. The participants recognized that the incorporation of local data and information such as operational policies and data from major reservoirs were necessary to improve the system's reliability, accuracy and effectiveness regarding the provision of early warnings of flooding. To this end, it was agreed to request participants that will be attending the WIGOS/WHOS-Plata IT workshop of September 2018 to bring to the meeting a progress report on the availability of such data and information as well as any possible restrictions on their use imposed by their respective country.

7. The three stages for the implementation of PROHMSAT-Plata will be the following:

- I – *Preparation of the proposal mentioned in point 5*
Responsible: participants of this meeting under the coordination of the WMO Secretariat and with the support of CHy and HRC.
Period: June – October 2018
- II - *Project implementation*
Responsible: The Project Steering Group defined in point 4
Period: January 2019 - December 2021.
- III - *Sustainability of the project*
Responsible: according to the governance scheme to be decided in stage II.
Period: from January 2022 onwards

8. The participants noted that WMO will be responsible for the overall coordination of the project and will provide the necessary support for the activities leading to the successful implementation of the project. This includes, inter alia, the development and provision of the necessary training

programmes that may be carried out by the NMHSs, WMO Regional Training Centres, HRC, CHy, WMO Secretariat, or any combination of them.

9. The participants indicated that coordination with the *Project to Develop a Forecasting and Early Warning System of Extreme Hydrometeorological Events in South America (Regional Association III)*, currently under consideration for possible implementation in the Region, would be very beneficial.

10. It was agreed that the Regional Office for the Americas of the WMO will ensure the overall coordination for the preparation of PROHMSAT-Plata's proposed activities and work plan.

**Plata Basin Hydrometeorological Forecasting and Early Warning System:
Consultation Meeting**

(Brasilia, Brazil 21-25, May 2018)

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Plata Basin Hydrometeorological Forecasting and Early Warning System

CONSULTATION MEETING
Brasilia, Brazil, 21-25 May 2018

Final Agenda

Day 1, May 21

- 08:30–09:00 Registration
- 09:00–09:30 Opening of the Meeting (INMET, WMO)
- 09:30–10:00 Purposes of the meeting (WMO, USAID)
- 10:00–10:15 Perspectives from the US National Weather Service (USNWS)
- 10:15–10:45 Introduction of participants
- 10:45-11:15 Break**
- 11:15-11:30 Organization of the sessions (WMO)
- 11:30-12:00 History/perspectives on the Plata Basin hydrometeorological forecasting and early warning systems (J Arimatea, S Alcoz)
- 12:00-13:00 Country presentations on meteorology (no more than 15 minutes and 5 slides per country)
- Observing networks, including radar
 - NWP (coverage, resolution, forecast lead time)
 - Meteorological products most useful for flood forecasting
 - Dissemination approaches and linkages with Disaster Management Agencies
- 13:00-14:00 Lunch**
- 14:00-14:15 Country presentations on meteorology (continued)
- 14:15-14:45 Discussion on meteorology presentations and capabilities
- Strengths and weaknesses from the Plata basin perspective
- 14:45-15:15 Country presentations on hydrology (no more than 15 minutes and 5 slides per country)
- Hydrometric networks
 - Operational hydrological models (basins covered, hydrological models used, use made of meteorological products, forecast lead times)
 - Meteorological products most useful for flood forecasting
- 15:15-15:45 Break**
- 15:45-16:30 Country presentations on hydrology (continued)
- 16:30-17:00 Discussion on hydrology presentations and capabilities
- Strengths and weaknesses from the Plata basin perspective

Day 2, May 22

09:00-10:15 Country presentations on infrastructure (no more than 15 minutes and 5 slides per country)

- Computing and internet capacities
- Server and data management capabilities
- Research and development in meteorology and hydrology

10:15-10:45 Discussion on infrastructure presentations and capabilities

- Strengths and weaknesses from the Plata basin perspective

10:45-11:15 Break

11:15-12:15 Discussion: A basin perspective

- Overview of strengths and weaknesses
- Prioritization and solutions

12:15-13:00 WIGOS/WHOS-Plata (S Pecora)

- Brief introduction to WHOS
- WHOS-Plata description and characteristics
- Discussion

13:00-14:00 Lunch

14:00-14:30 Visit of GISC Brasilia facilities (TBC)

14:30-15:15 WHOS-Plata (continued)

15:15-15:45 Break

15:45-17:00 FFGS Presentations (HRC)

- Basis of FFGS design, functionalities, and products
- Regional Implementation Approach

Day 3, May 23

09:00-10:45 FFGS Presentations (continued) (HRC)

- Detailed presentation on additional functionalities and products of FFGS that might be useful for the Plata Basin

10:45-11:15 Break

11:15-13:00 FFGS Presentations (continued) (HRC)

- Current FFGS data ingest and quality control: Design and examples

13:00-14:00 Lunch

14:00-15:15 FFGS Presentations (continued) (HRC)

- Product creation, sample interfaces for forecasters and precipitation input adjustment procedures

15:15-15:45 Break

- 15:45-17:00 FFGS Presentations (continued) (HRC)
- How can the FFGS and its products be used to help do riverine forecasting
 - Utility of various products for use in external models
 - Use of the “extensible and scalable routing component”

Day 4, May 24

- 09:00-10:15 CHy activities for flood forecasting (WMO)
- Guidelines for assessing national capabilities for E2E EWS
 - Accessing interoperable technologies (platforms and models)

- 10:15-10:45 Discussion: “Putting the pieces together” for the Plata Basin
- How to link FFGS (its products) to WHOS?
 - How to link possible hydrological models to WHOS?

10:45-11:15 Break

- 11:15-13:00 Discussion: “Putting the pieces together” (continued)
- What Plata Basin hydrological modelling is needed?
 - What meteorological products are needed for flood forecasting and how to get them?
 - What infrastructure improvements are needed?
 - What pieces are missing?

13:00-14:00 Lunch

- 14:00-15:15 Overview of possible path forward
- Agreement on take away messages from discussion “Putting the pieces together”
 - General direction on bringing the pieces together: what pieces and how
 - Governance model
 - Distribution of responsibilities

15:15-15:45 Break

- 15:15-17:00 Preparation of the outline of the proposal
- Governance
 - Project description/content
 - Principles
 - Overview of approaches
 - Key pieces/topics for inclusion
 - What needs to be developed and how
 - Which organizations are to be involved and on what
 - Budget proposal

Day 5, May 25

09:00-10:45 Preparation of the outline of the proposal (continued)

10:45-11:15 Break

11:15-13:00 Preparation of the outline of the proposal (continued):

- Work plan
- Implementation steps

13:00-14:00 Lunch

14:00-15:15 Discussion on the conclusions and recommendations of the meeting

15:15-15:45 Break

15:45-16:45 Approval of the conclusions and recommendations of the meeting

16:45-17:00 Final remarks and closing of the meeting

-----End of Meeting-----

**PROHMSAT-Plata's Proposed Activities and Work Plan
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- 1. Background**
- 2. Project objectives**
- 3. Description and content of the project**
 - Key components and topics to be included**
 - Desirable components**
- 4. Governance**
- 5. Principles**
- 6. Organizations involved**
- 7. Project evaluation methods**
- 8. Budget proposal**
- 9. Timeline**