# MEMORANDUM FOR COOPERATION

**between**

**Institute of Geosciences Energy, Water and Environment (Albania)**

**and**

**Hydrometeorological Institute (Kosovo)**

**and**

**Hydrometeorological Service (Macedonia)**

**and**

**Institute of Hydrometeorology and Seismology (Montenegro)**

**on**

**Cooperation and Data Exchange for Flood Warning in the Drin/Drim – Buna/Bojana River Basin**

The Drin/Drim – Buna/Bojana River Basin has been affected by severall floods over the last years which have impacted upon many people and demonstrated the need for closer cooperation between the states in the basin. The riparian states have therefore taken steps to strengthen cooperation relating to trans-boundary flood warning and management. Key to this cooperation is the exchange of near to real-time hydrometeorological data in order to improve early warning of floods. Recognizing the need to coordinate activities and to exchange the information in real time, the Institute of Geosciences Energy, Water and Environment of Albania, the Institute of Hydrometeorology and Seismology of Montenegro, the Hydrometeorological Service of Macedonia and Kosovo Hydrometeorological Institute (hereinafter referred to as the "Parties"):

## Article 1- Objective

The Objective of this Memorandum for Cooperation , hereinafter called „Memorandum" is to further improve flood early warning systems and trans-boundary flood management in the Drin/Drim – Buna/Bojana River Basin.

## Article 2- Scope

The Memorandum is intended to ensure regular and timely exchange of hydrometeorological data and information between the Parties with a particular focus on the flood early warning.

## Article 3- Definitions

In this Memorandum, unless otherwise stated, all terms are defined in accordance with the WMO/UNESCO International Glossary of Hydrology (WMO, No. 385, 3rd Edition, 2012).
The terms below are defined as:

| | |
|---|---|
| "Data" | Output resulting from the measurement or observation of variables. |
| "Drin Core Group" | An informal body[1] established in 2009 to provide a Forum for coordination among the Parties (water and/or environment competent Ministries of the Drin Riparians-see also Drin MoU) to enable communication and cooperation to facilitate the implementation of the Drin Dialogue. |
| „Drin MoU" | The Memorandum of Understanding for the Management of the Drin Basin was signed by the Ministers responsible for water resources and environmental management of the Riparians in 2011. The strategic shared vision for the management of the Drin Basin forms the content of the Memorandum of Understanding. |
| " Drin/Drim – Buna/Bojana River Basin " | The geographical area determined by the watershed limits of the Drin River and its tributaries, which comprises surface and ground waters, flowing into a common terminus. Sub-Basins consist of the respective geographical areas of each of the following |

[1] The group comprises representatives of the Riparians (Ministries in charge of water resources management and/or environment in Albania, Greece, Kosovo, Macedonia and Montenegro); Prespa Park Management Committee; Lake Ohrid Watershed Committee; Lake Skadar-Shkoder Commission; United Nations Economic Commission for Europe; Global Water Partnership – Mediterranean; and Mediterranean Office for Environment Culture and Sustainable Development.

| | |
|---|---|
| | basins: the Prespa Lakes, Lake Ohrid, Lake Shkoder/Skadar; the Black Drin/Drim River (Crn Drim or Drin i Zi); the White Drin/Drim River (Beli Drim or Drin i Bardhë); the Drin River (Drim or Drini or Drin i madh), and the Buna/Bojana River. |
| "Information" | Result of analysing or integrating data. |
| „The Parties" | The institutions between whom this Memorandum is agreed and signed |
| "The States" | States whose territories include part of the Drin/Drim River Basin. |
| "Data Provider" | Any organisation listed in Annex 1 which provides data or information for exchange under this Memorandum. |
| "Data Receiver" | Any organisation listed in Annex 1 which receives data or information exchanged under this Memorandum. |
| "Redistribution" | Dissemination by a Data Receiver of data or information exchanged under this Memorandum to a third party. |

**Article 4-Framework of data exchange**

Exchange of hydrometeorological data and information within the Drin/Drim River Basin is vital for improved flood risk management and especially early flood warning. The Drin MoU provides under its Article 3 to i) improve the access to comprehensive data and adequate information and to ii) develop cooperation and measures to minimize flooding in the Drin/Drim Basin.

The World Meteorological Organization[2] encourages its Members to provide on a free and unrestricted basis[3] those hydrological data and products which are necessary for the provision of services in support of the protection of life and property and for the well-being of all peoples. Its Resolution 25 recognises the right of Governments to choose the manner by which, and the extent to which, they make hydrological data and products available domestically and internationally.

**Article 5 – Data and Information to be Exchanged**

The Parties to this Memorandum express their will and commitment to exchange all available data and information covered by Article 6 of this Memorandum.

**Article 6- Data and stations covered by the Memorandum**

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[2] Resolution 25 (Cg-XIII)– „Exchange of Hydrological Data and Products", and Resolution 40 (Cg-XII) – „Policy and Practice for the Exchange of Meteorological and Related Data and Products" of the World Meteorological Organization

[3] "Free and unrestricted" means non-discriminatory and without charge. "Without charge", in the context of this resolution means at no more than the cost of reproduction and delivery, without charge for the data and the product themselves.

The data and information to be shared listed in Annexes 2 & 3 shall be regarded as the minimum required. The exchange of additional data between Parties is encouraged.

**Article 7 Exceptions to the Memorandum**

The Memorandum recognises that some Parties do not currently collect all of the data and information listed in Annex 2 for all stations included and listed in the Annex 3.

Where data is not currently collected the relevant Party will consider whether extension of current monitoring, data collection and processing would be possible in order to supply such data and information in future.

When a Data Provider is unable to make data for one or more stations available for exchange, the data provider will inform all other Parties (data receivers) and take nessesary measures to ensure that data is provided again as soon as possible.

**Article 8- Exchange Procedures**

All Parties will make the data and information listed in Annexes 2 & 3 available to the other Parties.
The data and information covered by this Memorandum will be transferred electronically in a format mutually agreed previously by the Technical Working Group as defined in Article 14.

**Article 9- Exchange procedure of Data not covered under Article 6**

The Parties may lodge a request for exchange of information not covered under Annex 3 (for example historic data) to the Data Provider.
The Requests of the Parties should be addressed to the relevant named focal point as outlined in Article 14.
Requests should precisely and unambiguously define what data or information is required and by when, including details of the parameter, time period, reporting interval and monitoring station required.
The intended use of the data or information should be defined in the request and if the supplied data or information is subsequently to be used for other purposes than expressed, new permission should be sought from the Data Provider.
The Data Provider will respond to all requests within 15 days of receiving a written request for data or information, providing details on when and how the data or information will be provided or otherwise outlining the reasons why it cannot be provided.
The Data Provider is expected to supply the data within a maximum of 30 days of receiving a written request.

## Article 10- Quality Control

Data Providers agree to make efforts to maintain and improve the quality and consistency of data and information being transferred, through the use of quality control procedures.
The Data Provider will inform the Data Receiver in case where data and information exchanged has not undergone full quality control and it is considered to be provisional.
Appropriate use of data and information exchanged under this Memorandum is the responsibility of the Data Receiver. The Data Provider accepts no liability for any loss or damage, cost or claims arising directly or indirectly from their use.

## Article 11- Use and redistribution

The provision of data or information under this Memorandum confers only a right for the Data Receiver to use it to fulfill the objective of this Memorandum (see Article 1).
Each Party has the right to use all data and information under this Memorandum for executing their official duties.
Data Receivers must not redistribute data or information exchanged under this Memorandum to any third party without the prior agreement or consent of the Data Provider. Ownership of the data or information will not be transferred and shall remain with the Data Provider. In any publications, reports or products arising from use of the data or information, the Data Receiver undertakes to acknowledge the Data Provider as the Source.

## Article 12- Charges

Data and information exchanged as specified under Annex 2 & 3 is done so freely and without charge.

## Article 13- Dispute

The Parties shall resolve disputes over the interpretation or implementation of provisions within this Memorandum by means of joint negotiations, consultations and agreements. In case of any differences in translation, the English version will be valid.

## Article 14- Technical Working Group

Each Party will appoint one Focal Point to form a Technical Working Group when the Memorandum enters into force.
The Technical Working Group should meet at least annually in order to review activities, suggest amendments under the Memorandum (including updates of the Annexes) and agree on joint initiatives in regards to trans-boundary flood risk management.
The meetings will be called by the current chair of the Technical Working Group.

The Technical Working Group will be chaired on a rotating basis for one year starting with the date the Memorandum comes into effect.

**Article 15- Further Cooperation**

Further closer cooperation in regards to flood risk management and in particular in flood forecasting and flood early warning is hereby agreed between the Parties.
This collaboration supports widening the scope of cooperation between the Parties and the Drin Core Group.

**Article 16- Amendments and additions to the Memorandum**

Amendments and additions to the Memorandum must be agreed by all Parties. Annexes 2 and 3 will be reviewed and where necessary updated anually by the Technical Working Group.

**Article 17- Effectiveness and Termination**

This Memorandum of Cooperation is concluded for an indefinite period and shall enter into force on the date of its signing and shall cease to have effect one month after the submission of a written request for cancellation of the Memorandum, for the Party which has notified in writing the other Parties of its intention to cancel the memorandum cooperation.

**Article 18-List of Annexes**

The Annexes to this Memorandum shall constitute an integral part thereof. The Annexes are as follows:

Annex 1-Parties/Institutions/Organisations
Annex 2- Parameters to be exchanged
Annex 3- List of monitoring stations

**Article 19- Final Provisions**

Each Party shall keep one copy of the Memorandum.
In faith whereof the undersigned, duly authorized representatives, have signed this Memorandum on behalf of their respective institutions.
This Memorandum is signed in four originals, one for each Party, in the English language, each copy having equal validity.

The Memorandum will be translated into Albanian, Macedonian and Montenegrin.

*On behalf of*

**Institute of Geosciences, Energy, Water and Environment (Albania)**
PhD Fatos Hoxhaj, Director

Fatos Hoxhaj

At 15 Nov. '16, on Kosovë

*On behalf of*

**Hydrometeorological Institute (Kosovo)**
MSc Letafete Latifi, Director

At KOSOVO, on 15.11.2016

*On behalf of*

**Hydrometeorological Service (Macedonia)**
MSc Oliver Romevski, Director

Oliver Romevski

At 15.11.2016, on Kosovo

*On behalf of*
**Institute of Hydrometeorology and Seismology (Montenegro)**
MSc Luka Mitrović, Director

At PODGORICA, on 16-NOV-2016.

**Annex 1: Organisations - Parties:**

| State | Name of organisation | Abbreviation |
|---|---|---|
| Albania | Institute of Geosciences, Energy, Water and Environment (Albania) | IGEWE |
| Kosovo | Hydrometeorological Institute (Kosovo) | KHMI |
| Macedonia | Hydrometeorological Service (Macedonia) | HMSM |
| Montenegro | Institute of Hydrometeorology and Seismology (Montenegro) | IHMS |

**Annex 2: Parameters to be exchanged**

| Parameter | | Temporal Resolution (Statistic) | Units | Frequency of exchange |
|---|---|---|---|---|
| P1 | Water Stage | hourly | Cm | Constant- near real-time |
| P2 | River Discharge | hourly | $m^3 s^{-1}$ | Constant- near real-time |
| P3 | Water Temperature | hourly | °C | Constant- near real-time |
| P4 | Precipitation | hourly | mm | Constant- near real-time |
| P5 | Air Temperature | hourly | °C | Constant- near real-time |
| P6 | Relative Humidity | hourly | % | Constant- near real-time |
| P7 | Wind (Speed and Direction) | hourly | m/s deg. | Constant- near real-time |
| P8 | Snow Depth | hourly | cm | Constant- near real-time |
| P9 | Evaporation | hourly | mm | Constant- near real-time |
| P10 | Solar Radiation | hourly | $J m^{-2}$ | Constant- near real-time |
| P11 | Atmospheric Pressure | hourly | hPa | Constant- near real-time |

## Annex 3: List of monitoring stations included

| State | River | Station | Station ID | Latitude / Longitude | Parameter | | | | | | | | | | | Data Provider |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P 1 | P 2 | P 3 | P 4 | P 5 | P 6 | P 7 | P 8 | P 9 | P 10 | P 11 | |
| AL | Drini i Zi | Kovashica | | 41.5967 : 20.4412 | X | x | | x | | | | | | | | IGEWE |
| AL | Drin i Zi | Skavica | | 41.9237 : 20.3540 | X | x | | x | | | | | | | | IGEWE |
| AL | Drin | Fierzë Dam | | 42.2489 : 20.0444 | X | x | | x | | | | | | | | IGEWE |
| AL | Valbonë | Dragobi | | 42.4300 : 19.9938 | X | x | | x | | | | | | | | IGEWE |
| AL | Valbonë | Gri | | 42.3163 : 20.0579 | X | x | | | | | | | | | | IGEWE |
| AL | Drin | Koman Dam | | 42.1078 : 19.8257 | x | x | | | | | | | | | | IGEWE |
| AL | Drin | Vau i Dejës Dam | | 42.0151 : 19.6359 | x | x | | | | | | | | | | IGEWE |
| AL | Kiri | Ura e Mesit | | 42.1141 : 19.5751 | x | x | | x | | | | | | | | IGEWE |
| AL | Drin | Bahcallek | | 42.0426 : 19.4921 | x | x | | x | | | | | | | | IGEWE |
| AL | Cijevna | Tamare | | 42.4554 : 19.5603 | x | x | | x | | | | | | | | IGEWE |
| AL | Lake Shkodra | Shirokë | | 42.0596 : 19.4547 | x | | x | | | | | | | | | IGEWE |
| AL | Buna | Liqeni i Shkodres | | 42.0506 : 19.4920 | x | x | | x | | | | | | | | IGEWE |
| AL | Buna | Fabrika Cimentos | | 42.0393 : 19.4827 | x | x | | x | | | | | | | | IGEWE |
| AL | Buna | Dajç | | 41.9855 : 19.4151 | x | x | x | | | | | | | | | IGEWE |
| AL | Drini i Zi | Shupenzë | | 41.5423 : 20.4181 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Drini i Zi | Peshkopi | | 41.6812 : 20.4197 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Drini i Zi | Fushë Lurë | | 41.8086 : 20.2283 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Drini i Zi | Kukës | | 42.0399 : 20.4158 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Drini i Zi | Krumë | | 42.1992 : 20.4236 | | | | x | x | | | | | | | IGEWE |
| AL | Valbonë | Cërrnicë | | 42.3549 : 20.0790 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Drin | Theth | | 42.4056 : 19.7644 | | | | x | x | | | | | | | IGEWE |
| AL | Drin | Pukë | | 42.0498 : 19.9005 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Lake Shkodra | Bogë | | 42.3970 : 19.6410 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Lake Shkodra | Rapsh | | 42.4016 : 19.4939 | | | | x | x | x | x | | | x | x | IGEWE |
| AL | Buna | F. Paqes | | 42.0514 : 19.4886 | | | | x | x | x | x | | | x | x | IGEWE |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MK | Golema Reka | Resen | 60575 | 41.08862 : 21.02195 | x | x | x | x | x | | | | | | | HMSM |
| MK | Lake Ohrid | Ohrid | 60016 | 41.11172 : 20.79773 | x | | x | | x | | | | | | | HMSM |
| MK | Sateska | Botun | 60805 | 41.27658 : 20.78209 | x | x | x | | | | | | | | | HMSM |
| MK | Crn Drim | Ložani | 60020 | 41.22404 : 20.66879 | x | x | x | | | | | | | | | HMSM |
| MK | Crn Drim | Globocica Dam)* | 60025 | 41.33745 : 20.63591 | x | x | x | x | | | | | | | | HMSM |
| MK | Radika | Boškov Most | 60909 | 41.54412 : 20.59919 | x | x | x | | | | | | | | | HMSM |
| MK | Crn Drim | Debar Dam)* | 60029 | 41.49297 : 20.50626 | x | x | x | x | | | | | | | | HMSM |
| MK | Crn Drim | Spilje | 60030 | 41.49297 : 20.50626 | x | x | x | | | | | | | | | HMSM |
| MK | Crn Drim | Ohrid | | 41.11474 : 20.79728 | | | | x | x | x | x | | | x | x | HMSM |
| MK | Sateska | Slivovo | | 41.40431 : 20.84418 | | | | x | x | x | x | x | | | | HMSM |
| MK | Radika | Štirovica | | 41.80719 : 20.61792 | | | | x | x | x | x | x | | | | HMSM |
| MK | Radika | Mavrovo | | 41.70263 : 20.75727 | | | | x | x | x | x | | | x | x | HMSM |
| MK | Radika | Lazaropole | | 41.53738 : 20.69586 | | | | x | x | x | x | | | x | x | HMSM |
| ME | Morača | Pernica | 60115 | 42.7161: 19.3445 | x | x | x | | | | | | | | | IHMS |
| ME | Morača | Zlatica | 60128 | 42.4838: 19.3120 | x | x | x | | | | | | | | | IHMS |
| ME | Zeta | Danilovgrad | 60155 | 42.5544: 19.1122 | x | x | x | | | | | | | | | IHMS |
| ME | Morača | Podgorica | 60160 | 42.4567: 19.2670 | x | x | x | | | | | | | | | IHMS |
| ME | Lake Skadar | Plavnica | 60055 | 42.2711: 19.2060 | x | | x | | | | | | | | | IHMS |
| ME | Lake Skadar | Vranjina | 60060 | 42.2677: 19.1179 | x | | x | | | | | | | | | IHMS |
| ME | Lake Skadar | Ckla | 60080 | 42.0848: 19.3820 | x | | x | | | | | | | | | IHMS |
| ME | Bojana | Fraskanjel | 60010 | 41.9708: 19.3881 | x | | x | | | | | | | | | IHMS |
| ME | Morača | Dragovica Polje | | 42.85: 19.3333 | | | | x | x | x | | | | | | IHMS |
| ME | Morača | Podgorica | 13463 | 42.4333 : 19.2833 | | | | x | x | x | x | | | x | x | IHMS |
| ME | Zeta | Nikšić | 13459 | 42.7667 : 18.9500 | | | | x | x | x | x | | | x | x | IHMS |
| ME | Zeta | Danilovgrad | | 42.5505 : 19.1079 | | | | x | x | x | x | | | x | x | IHMS |
| ME | Lake Skadar | Virpazar | | 42.2333: 19.0833 | | | | x | x | x | | | | | | IHMS |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| XK | Bistriça e Pejës | Rugova | XKRV0103 | 42.66188 : 20.24990 | x | | | | | | | | | | | KHMI |
| XK | Drini I Bardhë | Gjonaj | XKRV0110 | 42.25424 : 20.64922 | x | | | | | | | | | | | KHMI |
| XK | Bistriça e Pejës | Pejë | XKMS0101 | 42.66566 : 20.30511 | | | | x | x | | | | | | | KHMI |
| XK | Eriniku | Junik | XKMS0103 | 42.47856 : 20.27582 | | | | x | x | | | | | | | KHMI |
| XK | Bistrica Prizrenit | Prizren | XKMS0102 | 42.24745 : 20.73547 | | | | x | x | | | | | | | KHMI |