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## **Ecohydrological approach, an asset for the FRIEND network - Advantages of cross-sharing events between FRIEND and ECOHYDROLOY program**

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# **Ecohydrological approach, an asset for the FRIEND network**

*Advantages of cross-sharing events  
between FRIEND and ECOHYDROLOY program*

Orange Didier (IRD), Pascal Breil (IRSTEA)  
and Giuseppe Arduino (UNESCO)





United Nations  
Educational, Scientific and  
Cultural Organization



International  
Hydrological  
Programme

# IHP-VIII 2014-2021

<http://ecohydrology-ihp.org/demosites/>



## **8th Global FRIEND-Water Conference**

### **Hydrological Processes and Water Security in a Changing World**

Beijing, China, November 6–9, 2018

FRIEND-Water (Flow Regime from International Experimental and Network Data) is an expert network of the UNESCO International Hydrological Programme (UNESCO-IHP). It aims at generating a new understanding of regional hydrology and multi-scale hydrological processes. FRIEND-Water investigates long-term variations and changes in hydrological regimes and parameters. FRIEND-Water's R&D activities are vital for water resources management, socio-economic development, securing livelihoods, environmental protection and impact assessment of global change on hydrological processes, including climate change and human activities. FRIEND-Water contributes to investigating regional water resources, hydrological extremes, global change and the hydrological cycle, water education and capacity building. FRIEND-Water interacts with many national and international projects and initiatives, e.g. ISI, IDI, IFI, G-WADI, ISARM, IIWQ, GRAPHIC, and WMO/GWP's IDMP, etc. FRIEND conferences take place every four years. The 8th Global FRIEND-Water Conference will be held in Beijing, China in 2018.

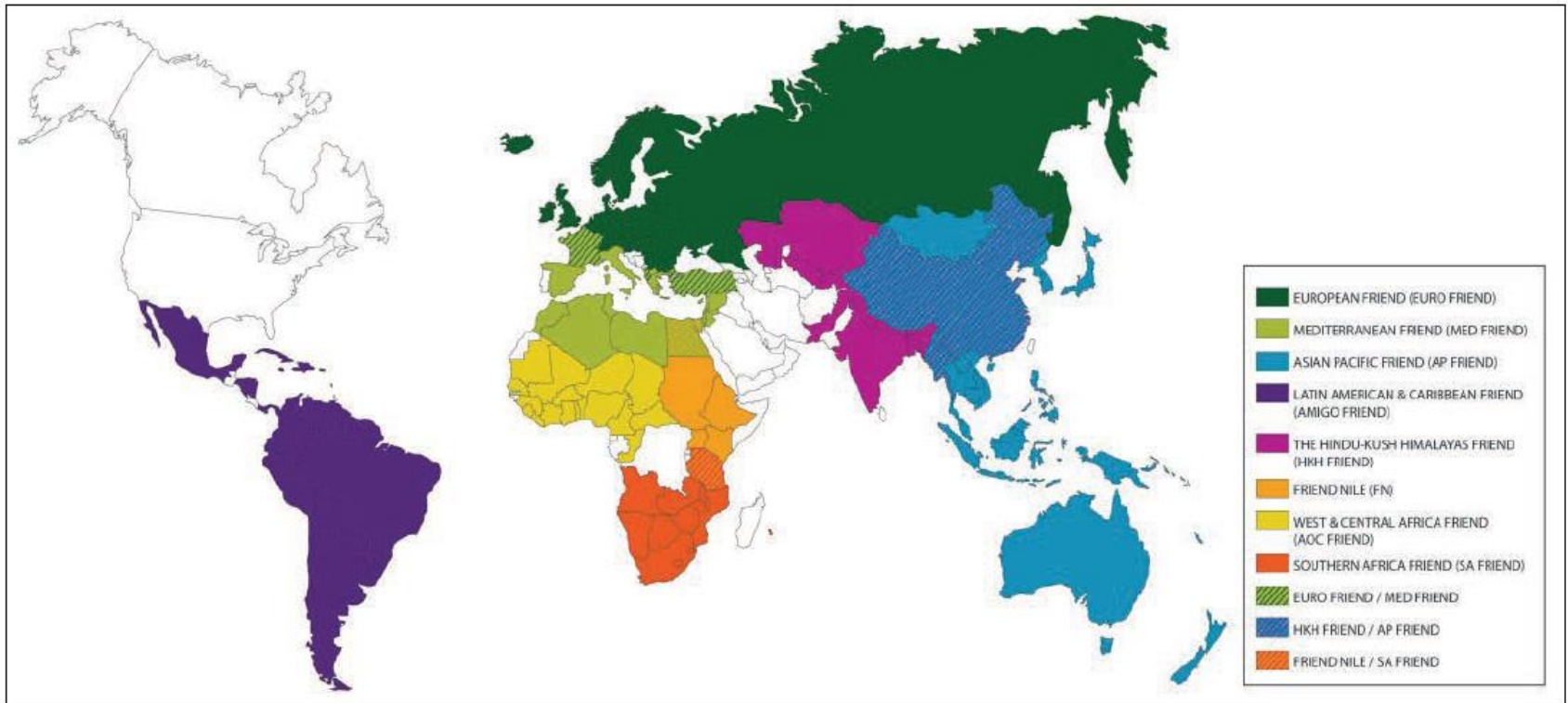


Fig. 1 FRIEND-Water Regional Groups and their geographical coverage.

# Proposal

## Capacity building on ecologically sustainable flood and drought management within UNESCO FRIEND programme

January 2016

*This document was prepared by S. Demuth, B. Radojevic & P. Breil. It was planned to present this proposal to the intergovernmental council of this period. It was not presented due to the fact that Siegfried was leaving his position from Unesco.*

*Part of the supporting material is now available:*

- *Training Guidelines on Integrated Flood and Drought Management, Biljana Radojevic, November 2015*
- *Training course on flood risk assessment, Biljana Radojevic and Pascal Breil, January 2017*



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# Workshop on “Collaboration between FRIEND & EcoHydrology networks”

*International Conference FRIEND-Water, 6-8  
November 2018, Beijing*



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# Conclusions of the EH- FRIEND workshop

1. There are expectations for IHP9 to develop problem solving approach like it is done in EH;
2. A large agreement on joint-collaborative work between FRIEND and EH;
3. Regional hydrology and flow regime characterization can emphasize the comprehension and role of the hydrological template that regulates ecohydrological functioning.
4. Nowadays, ecological and societal based approaches for watershed management including ecohydrology and socio-hydrology should be precised;
5. This governance will match with the IHP9 seeking for problem solving approaches (PSA) and nature base solution (NBS).





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# First proposals for actions

**For IHP8 (i.e. from 2019) : Cross invitation between FRIEND & EH symposium** to participate dedicated sessions during their conferences ; contribute training – master classes, including field trips for tangible problem analysis. Possible rapid actions have been cited:

- A common session and a common fieldtrip during the next FRIEND-Nile conference at Khartoum in Oct 2019;
- A common session in the next EH international conference in Oct 2020 in Faro (Portugal).

**Promoting EERB (Experimental Eco-River-Basin sites)**, which would be a joint experimental research river basin as a demosite, between EH program and FRIEND where Ecohydrologists and Hydrologists, amongst other disciplines, could make effective the experience gained, to demonstrate from the field on how an appropriate land and water management, in combination with eco-engineered solutions, would contribute to the water security objectives, and behind the Well-being, the Food production, the Climate mitigation and adaptation, the Biodiversity enhancement, the Human Health, the sustainable resilience ... Some future EERB possible demosités have been cited:

- On the Medjerda Basin, Tunisia, to deal with the continuum continental to coastal area in term of sediment fluxes (contact: O. Amrouni and G. Mahé);
- On the Sine-Saloum Basin, Senegal, to deal with the agroforestry in arid to contribute to food production and groundwater recharge (contact: W. Faye and D. Orange);
- In China from Guoqing Wang (??).

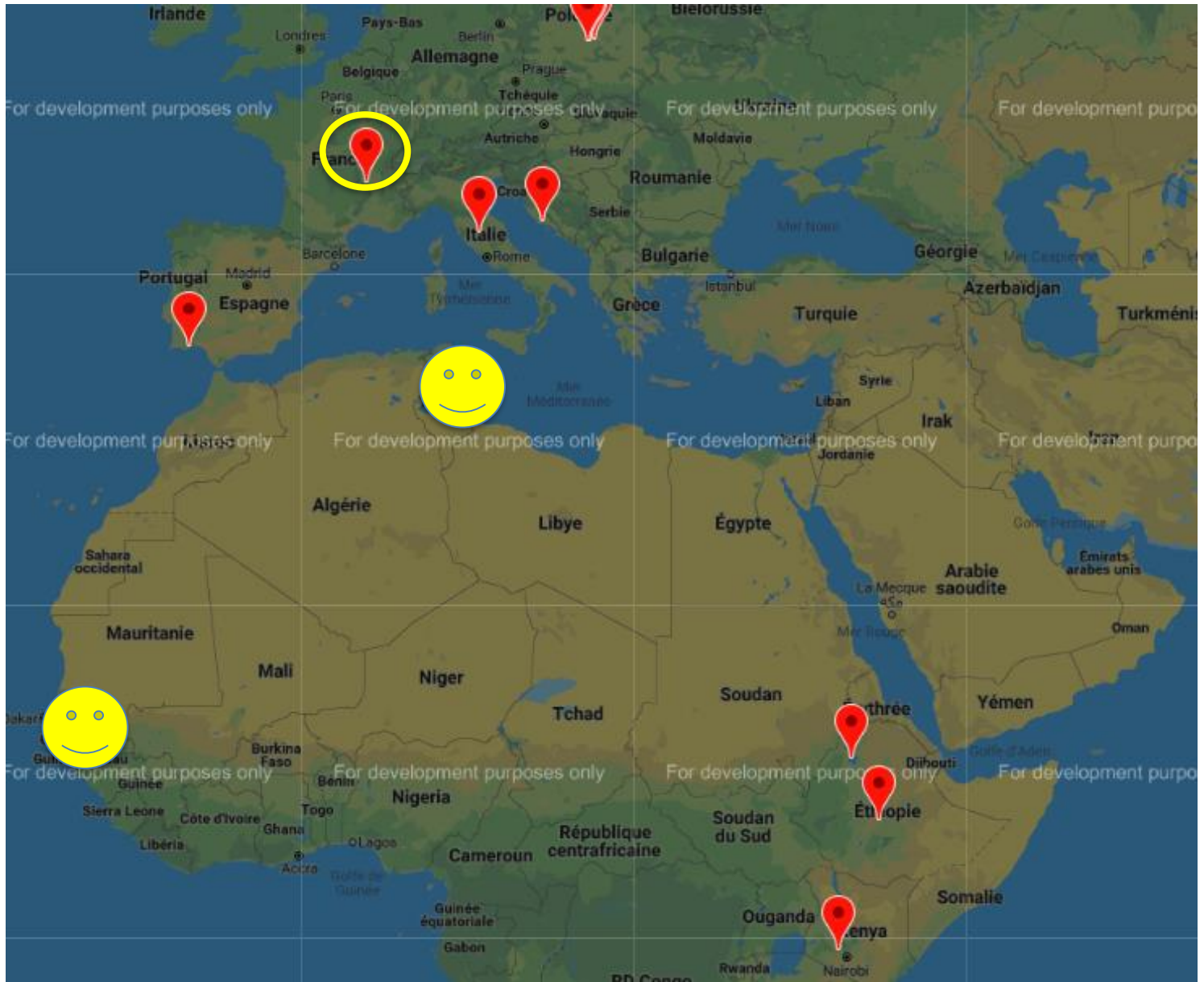
**A cycle of FRIEND-EH joint-seminars** each 4 years is under question ?

Developing the academic training offer by connecting masters from different universities, and by sharing PhDs Both IRD and IRSTEA are involved in projects of international collaborations between universities. This is the place to develop graduate level in EcoHydrology. On its side UNESCO can acknowledge this contribution in the form of chairs or UnitWin projects. These inter-universities projects will contribute and strengthen the educational component of the coming IHP9.

# Some ideas for FRIEND – ECOHYDROLOGY collaboration

1. To promote side-event of the other network inside the regular workshop
  - A side-event ECOHYDROLOGY at FRIEND-AOC Cotonou, November 2020
  - A side-event FRIEND at ECOHYDROLOGY Faro, September 2020
2. To have a twin-workshop FRIEND+ECOHYDROLOGY (each 4 years)
  - With FRIEND-AsiaPaific at Hanoi, mid-March / mid-April 2021
3. To share demosites

➤ 3 shared demosités between ECOHYDROLOGY and FRIEND



# CONCLUSION

## FRIEND – ECOHYDROLOGY collaboration possibilities

1. To promote side-event of the other network inside the regular workshop
  - A side-event ECOHYDROLOGY at FRIEND-AOC Cotonou, November 2020
  - A side-event FRIEND at ECOHYDROLOGY Faro, September 2020
2. To have a twin-workshop FRIEND+ECOHYDROLOGY (each 4 years)
  - With FRIEND-AsiaPaific at Hanoi, February 2021
3. To share some demosites
  - To join the existing demosite of Lyon
  - To create two new demosites: one in Byzerte (Tunisia), one in Saint-Louis (Senegal)

# Proposal

## Capacity building on ecologically sustainable flood and drought management within UNESCO FRIEND programme

January 2016

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### **13 Work plan**

The activities for the assignment consist of different parts: lecture material development, conducting courses, practical exercises conducting, exchange workshops conducting and technical material development. The international conferences regularly organized, by the

FRIEND and EcoHydrology programs should include aside events with a training opportunity in the aim to more integrate the two communities and to offer to interested participants this possibility over one or two days in the same place.

Target groups are: Post- graduate students holding MSc degrees in environmental and natural sciences, PhD students with the training and degree in water sciences, Water professionals, and water authority's representatives.

## 12 Outcomes

•The outcome of the project will be e-learning material on integrated management of floods and droughts with based on EcoHdrology approach as a contribution to UNESCO FRIEND project.

As the outcome of the capacity building, participants should have understanding of:

- How flood and drought areas are delineated;
- How flood and drought intensities, severity and frequency are determined;
- What factors affect flood and drought and how the scale and frequency of a future extreme event is estimated?
- How conduct a risk analysis?
- How EcoHdrology approach can improve flood and drought management?
- How the visible and hidden ecosystem services, can help mitigate the effects of flood and drought events in a watershed;
- How from the common knowledge on ecosystem functioning and from GIS-based models it is possible to identify hot spots of natural metabolism in a watershed;
- How the role of Hot spots of metabolism can be used or enhanced to mitigate the effects of drought and flood events on ecosystem services;
- How from the demonstration sites' experience developed in the EcoHdrology program, it can be designed EcoHydrological solutions for protecting the water resource against flood and drought effects like pollution, algal blooms and soil water depletion;
- How to use modeling techniques to estimate severity of hydrological extremes?
- How the analysis of flood risk can be visualized and used for flood risk management?

Participants will enlarge their knowledge how to manage floods and droughts in an integrated manner and to preserve and use the ecosystem services.



## **8th Global FRIEND-Water Conference**

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## FRIEND-Water 2018: 8th Global FRIEND-Water Conference

November 6-9, 2018. Beijing, China



### Hydrological Processes and Water Security in a Changing World

On behalf of China National Committee of the International Hydrological Programme (IHP) from the United Nations Educational, Scientific and Cultural Organization (UNESCO), we sincerely invite you to join the 8<sup>th</sup> Global FRIEND-Water (Flow Regime from International Experimental and Network Data) Conference which will be held in Beijing, China, from November 6<sup>th</sup> to 9<sup>th</sup>, 2018.

The 8th conference will focus on the theme of **hydrological processes and water security in a changing world**, under which eight sessions will cover the topics including:

- Hydrological observations under the changing environment and scarcity.
- River regimes and hydrological extremes under the changing environment.
- Simulation and prediction of surface water and groundwater processes under the impact of human activities.
- Urban hydrology and sponge city.
- Multi-objective water resources allocation and operation.
- Integrated watershed management including eco-hydrology and socio-hydrology.
- Water quality and sediment transport including coastal hydrology: changes under climate change and human activities.
- River health and ecological baseflow under changing environment.

Experts, scholars, and representatives of international organizations will be gathering in Beijing in its most beautiful season autumn to share their wisdom and experience through extensive discussion. A post conference technical tour will be arranged to visit some water related projects and facilities of Beijing. We believe that this conference will bring you an unforgettable memory.

*International Conference FRIEND-Water, 6-8 November 2018, Beijing*

## **Minutes of the side-event on “Collaboration between FRIEND and EcoHydrology networks”**

*Beijing, Nov. 8<sup>th</sup> 2018*

Animation: D. Orange (IRD, FR); P. Breil (IRSTEA, FR); M. Albaracin (Ingeraleza, EQ)

UNESCO officials: A. Amani; Ph. Pypaert; A. Szollosi-Nagy

+ 27 persons attended the side-event.

## Conclusion

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- A large agreement on joint-collaborative work between FRIEND and EH.
- Regional hydrology and flow regime characterization can emphasize the comprehension and role of the hydrological template that regulates ecohydrological functioning. Nowadays, ecological and societal based approaches for watershed management including ecohydrology and socio-hydrology should be precised.
- This governance will match with the IHP9 seeking for problem solving approaches (PSA) and nature base solution (NBS).

### ***How to do:***

- by creating opportunities for cross working activities between FRIEND and EH;
- by increasing the offer for EH training at different levels.

### ***Some ideas:***

- **For IHP8 (i.e. from 2019) : Cross invitation between FRIEND & EH symposium** to participate dedicated sessions during their conferences ; contribute training – master classes, including field trips for tangible problem analysis. Possible rapid actions have been cited:
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- **Promoting EERB (Experimental Eco-River-Basin sites)**, which would be a joint experimental research river basin as a demosite, between EH program and FRIEND where Ecohydrologists and Hydrologists, amongst other disciplines, could make effective the experience gained, to demonstrate from the field on how an appropriate land and water management, in combination with eco-engineered solutions, would contribute to the water security objectives, and behind the Well-being, the Food production, the Climate mitigation and adaptation, the Biodiversity enhancement, the Human Health, the sustainable resilience ... Some future EERB possible demossites have been cited:
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  - ???
- **A cycle of FRIEND-EH joint-seminars** each 4 years is under question ?
- **Developing the academic education** offer by connecting masters from different universities, and by sharing PhDs:
  - Both IRD and IRSTEA are involved in projects of international collaborations between universities. This is the place to develop graduate level in EcoHydrology. On its side UNESCO can acknowledge this contribution in the form of chairs or UnitWin projects. These inter-universities projects will contribute and strengthen the educational component of the coming IHP9.

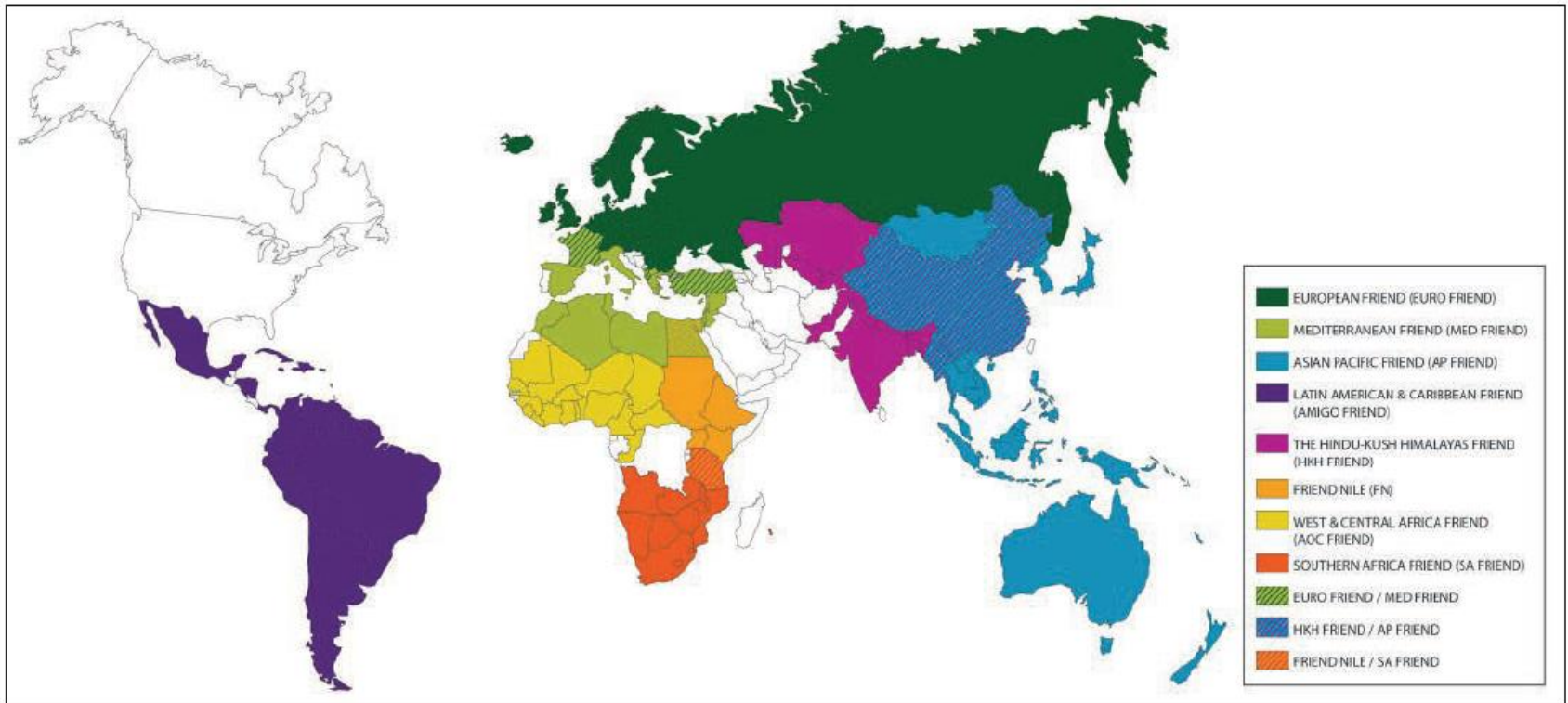


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## **4th FRIEND/IAHS International Conference on the Hydrology of African Large river Basins**

Cotonou, Rep. of Benin from 24 to 28  
November 2020

écohydrologie, biodiversité et qualité de l'eau

Contact : Didier Orange



Habilitation on « Processus et gestion des transferts d'eau et de matières du bassin versant à l'agro-écosystème: écohydrologie et ingénierie écologique ».