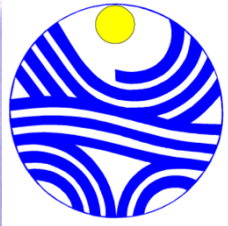
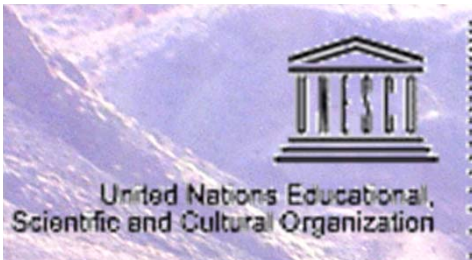


MEDFRIEND

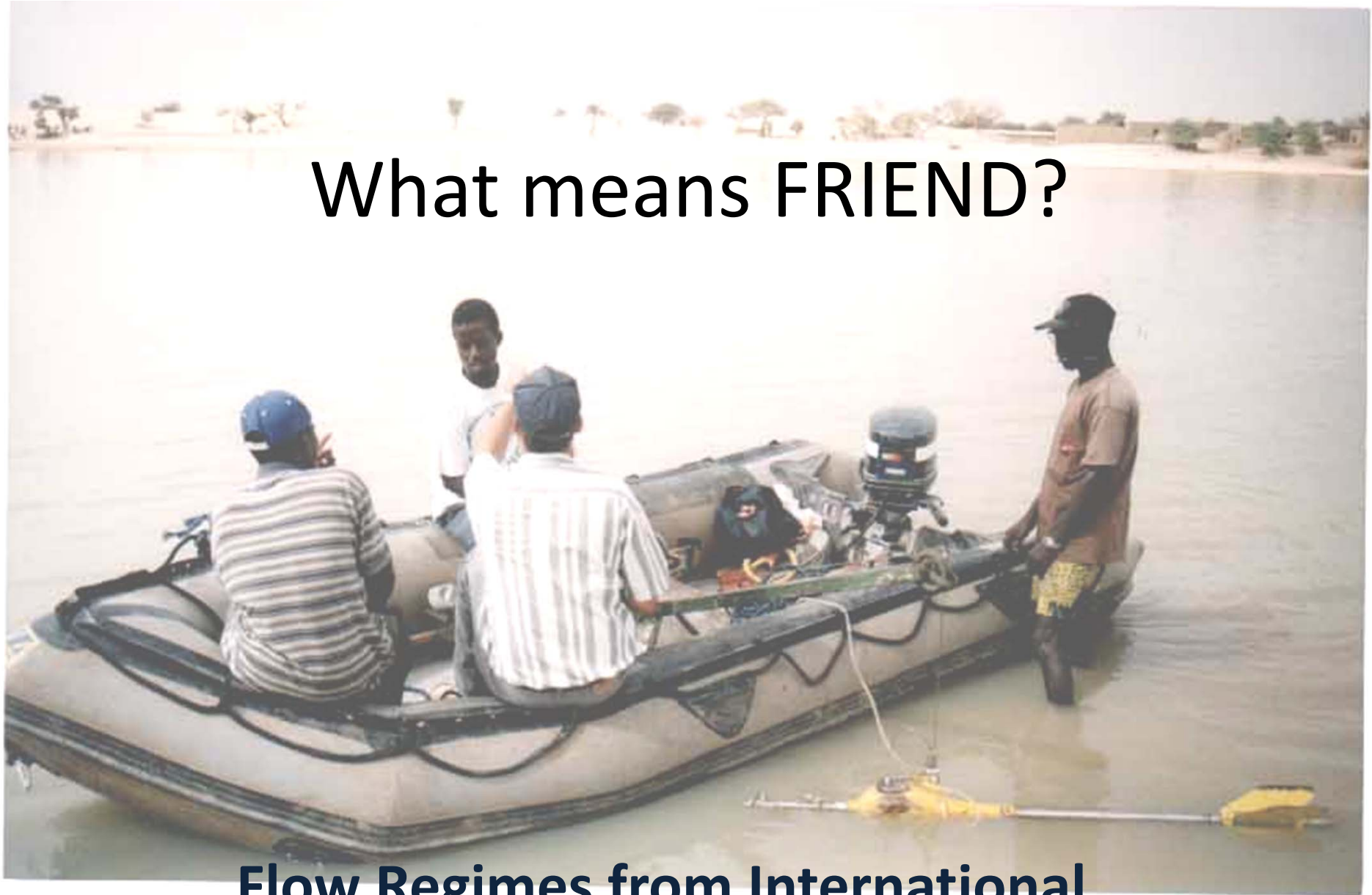
UNESCO Initiative
International Hydrological Program
Network of Mediterranean hydrologists



Thanks to the University of Calabria for inviting us and hosting the 4th workshop on Extreme Events of the FRIEND project in the Mediterranean

This is the most active group in the MEDFRIEND network, with connexions with other groups

What means FRIEND?



**Flow Regimes from International
Experimental and Network Data**

Goals

- **Set in place a research network in hydrology**
- **Promote themes oriented toward Development, in the aim of a regional approach of hydrology**
- **Allow a centralisation of the information in an inter-states database**
- **Organise regional trainings for tools (Statistics, GIS, Data processing, Remote-sensing, etc...)**
- **Promote scientific exchanges**

Fonctionning

- **A steering committee once a year**
- **Research themes coordinated and animated by Institutions**
- **A data base managed and animated by an Institution**
- **Members registered individually**
- **Organisation of events (workshops, training courses) to which UNESCO can give some financial help, but which must be part of an existing research program, and supported by other funders**

FRIEND Project

- Federative project in the domain of regional hydrology
- Many FRIEND projects in the world



2009 Recent reorganization of FRIEND groups



Med-FRIEND
(previously AMHY)

8 regional groups
+ Mesopotamian

ESTABLISHED FRIEND PROJECTS

- | | |
|--|---|
|  European Friend (EURO FRIEND) |  West & Central Africa Friend (AOC FRIEND) |
|  Mediterranean Friend (MED FRIEND) |  Southern Africa Friend (SA FRIEND) |
|  Asian Pacific Friend (AP FRIEND) |  EURO Friend / MED Friend |
|  Latin American & Caribbean Friend (AMIGO FRIEND) |  HKH Friend / AP Friend |
|  The Hindu-Kush Himalayas Friend (HINDI FRIEND) |  Friend Nile / SA Friend |
|  Friend Nile (FN) | |



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MEDFRIEND

- The FRIEND AMHY project was launched in 1991.
- The FRIEND AMHY project has changed to MED FRIEND project in January 2009.



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Slovenia

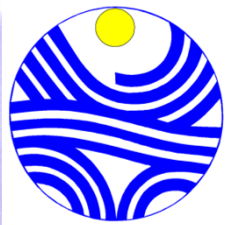


18 countries





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5 research themes + database

- Database *Jean-François Boyer , France*
- Extreme events *Ennio Ferrari, Italie*
- Erosion & Solid Transport *Benina Touaibia, Algérie*
- Evaluation of the impact of global change on hydrological regimes and water resources *Gil Mahe, France/Maroc*
- Karstic Hydrogeology *Michel Bakalowicz, France*
- Coastal EcoHydrology *Maria Snoussi, Maroc*



Organisation
des Nations Unies
pour l'éducation,
la science et la culture

En partenariat



Programme
hydrologique
international

MED FRIEND

New
Web
site

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PRESENTATION

738x765

FRIEND est un programme de recherche collaborative internationale visant à développer, par l'échange de données, les connaissances et les techniques au niveau régional et une meilleure compréhension de la variabilité hydrologique et les similitudes temporelles et spatiales. La connaissance avancée des processus hydrologiques et les régimes d'écoulement acquise grâce à FRIEND contribue à améliorer les méthodes applicables à la planification des ressources en eau et de gestion. FRIEND est un programme transversal qui interagit avec l'ensemble des cinq thèmes de l'AMHY.

738x765

Les aspects scientifiques des projets FRIEND comprennent des recherches dans le domaine des étiages, inondations, variabilité des régimes, de modélisation pluie/débit, des processus d'écoulement, transport des sédiments, la neige et la fonte des glaciers et les impacts du climat et de l'utilisation des terres.

FRIEND fournit également un appui aux chercheurs et aux personnels opérationnels des services hydrologiques dans les pays en développement, contribuant ainsi à accroître leur capacité et de gérer leurs propres ressources nationales en eau. Il contribue ainsi à l'objectif d'offrir un approvisionnement fiable en eau propre et potable à la population pauvre du monde.

Le programme a été lancé en 1991. Le Cemagref (La Recherche pour l'Ingénierie de l'Agriculture et de l'Environnement) à Lyon France a accueilli le projet FRIEND AMHY jusqu'en décembre 1998. En 1999 la coordination a été reprise par L'IRD Montpellier, France



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• Database

Jean-François Boyer , France





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DATA

Pays : [TUNISIA](#)

Choisissez un type de station

Sélectionnez le type de données ▾

Liste des stations de type **Station pluviometrique**

Code	Nom
6072000	KELIBIA
6074000	MONASTIR-SKANES
6076000	TOZEUR
6076900	DJERBA MELLITA

Stations : 1 4 / 4



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DATA

Description de la station

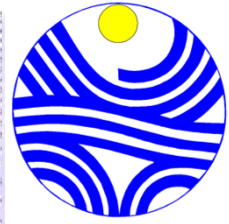
Code	6072000	Nom	KELIBIA	Type	Station pluviometrique
Longitude	11,08	Latitude	36,85	Altitude	29
Rivière	inconnu	Bassin	non défini	Pays	TUNISIA
Commentaire	AMHY				



[Voir les méta-données](#)

Les séries chronologiques

Nom	Date début	Date fin	Unité		
Monthly temperature at KELIBIA	01/01/1981	01/10/1990	degres celsius	MD	



- The Extreme Events (Ennio Ferrari, University of Calabria) project focus on statistical and stochastic analyses of extreme events at different temporal and spatial scales in the Mediterranean area.
- The main objective is to interpret the frequency and magnitude of heavy rainfall and floods over large areas. Special attention is paid to:
 - Recent disastrous hydrological events, which are analyzed through a regional approach of heavy tailed probability distributions,
 - Analysis of variability of hydrological extremes in the light of climatic change,
 - A database of extreme events,
 - Experimental basins.
- **Publication of 3 books, proceedings of the 3 first workshops organized by the group in Cosenza, Italy**



• Erosion and Solid Transport, Benina Touaibia (ENSH, Blida, Algeria) are crucial subjects in the Mediterranean Basin countries. Main research topics are :

- Estimation of the silting up and the sedimentation of dams,
- Solid transport inland and in coastal zones,
- Quantification of erosion and sediment transport,
- Management techniques for preservation of water and soil,
- “Devasement” and impact on environment.



Flow Regimes and Water Resources: Assessment of Global Changes, Gil Mahé, IRD/HSM - Morocco

- This theme aims to work on global change scenarios with a focus on hydrological changes and the consequences of these on available water resources.
- Changes in land-use/land cover have a huge impact on both erosion and surface flow and water resources.
- Special attention will be paid to:
 - Relationships between surface flow variability and groundwater resources,
 - Increasing rainfall/runoff efficiency by taking into account data from spatial sources.



Karstic Hydrogeology, Michel Bakalowicz, CNRS, France

- The project on karstic aquifer hydrogeology studies water transfer in these complex hydro systems.
- Karst aquifers represent a major socio-economic issue in the Mediterranean basin because they provide freshwater resources for 50% of the population.
- The scientific reasoning, combines structural, hydrodynamic and geochemical approaches.
- The evaluation of the effects of both human activities and climatic changes includes both hydrologic (floods) and hydro-chemical risk (seawater intrusions and pollution among other).



Coastal EcoHydrology, Maria Snoussi, University Mohamed V, Rabat, Morocco

- In the Mediterranean area the coasts are densely inhabited.
- They also concentrate many touristic and economic infrastructures.
- Unfortunately the water quality and the coastal ecosystems suffer from this dense activity.
- The numerous dams built in the inland have also a great impact on water and sediment fluxes to the sea, increasing the impacts on the coastal areas.
- The river systems must be studied from the upper basin to the sea, with all environmental impacts



Recent Activities

- Organisation of a workshop in Rabat, December 2009
 - Main topic : Flow regimes and water resources: assessment of global changes
 - 30 people
 - Western Mediterranean
 - Support: UNESCO, Univ. Mohamed V Rabat, French Cooperation, Plan Bleu, IRD, HSM



Recent Activities

- Organisation of the FRIEND International Conference, in Fez Morocco, by the Faculty of Sciences and Techniques Sidi Mohammed Ben Abdellah of Fes, in partnership with HSM Montpellier
- October 2010
- Edition of an IAHS Redbook

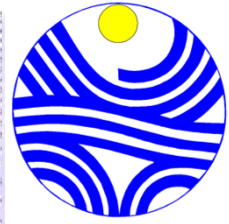
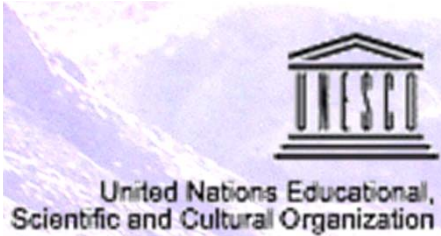


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- Special Issue of the Journal “Secheresse”
about MEDFRIEND

- Dec. 2010
- 10 papers from the Rabat Conference



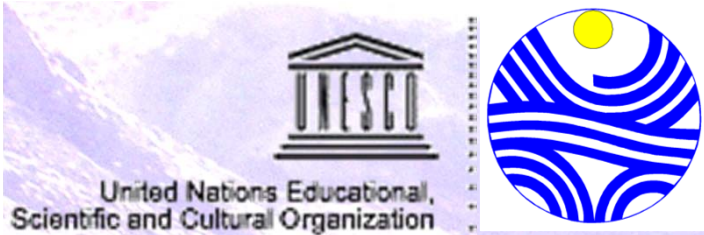
- Workshop in Algiers 7-8 June

« Relationships between Human activities, Erosion and Solid transport: a spatial perspective »

Co-sponsored and organised by the SIGMED research program (AUF funding)

65 participants

25 papers in 2 special issues in : Journal of Water Sciences and Journal de l'Eau et de l'Environnement de l'ENSH, + a group of papers in HSJ



•Future activities

•2011

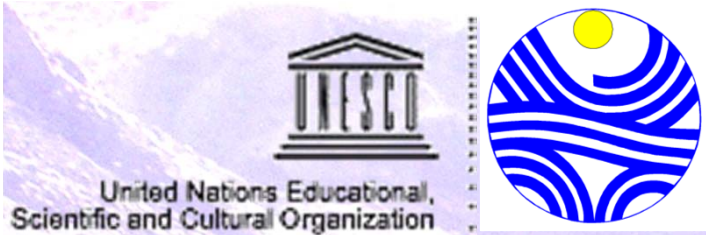
- 4th workshop of the group « **Hydrological Extremes** » at University of Calabria (E. Ferrari) September 2011

•2012

- Two Training courses in Rabat

- « GIS applied to Hydrology , Claudine Dieulin, IRD/HSM»
- « River modelling of floods, Christophe Bouvier and Yves Trambly, IRD/HSM »

- Workshop on Coastal Ecohydrology in Tunis, in May/June in the frame of the START program. Small workshop, mainly dedicated to the program participants, but open to a few other people, no call. Under the scientific coordination of Maria Snoussi from Morocco. First meeting of a new network



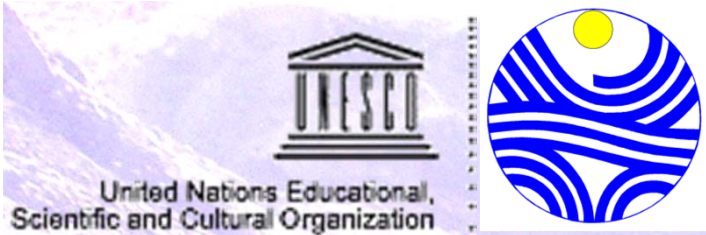
- **Future activities**

- 2012 (continued)

- In preparation between Algeria (B. Touaibia), Morocco (G. Mahe) and Turkey (H. Aksoy), a workshop in Istanbul end of 2012, on the theme of « **hydrological modelling of the solid transports** »

- 2013

- « Water resources: assessment of global changes » second edition, in Rabat, Morocco. Focused on the impact of LUCC on river and sediment regimes. Co-sponsored by the SIGMED project (AUF)



- **Future activities**

- Discussions ongoing with the University of Meknes, Morocco, for the organisation of a workshop about karstic Hydrogeology.

- And what else ?.....;

- Workshops

- Trainings

- Special issues

- Books

-



Thank you for attention

