

## **Background**

Project FRIEND has established close links with WMO’s Commission for Hydrology programme on disaster mitigation on floods. This will be a contribution to the joint UNESCO-WMO-IAHS International Flood Initiative (IFI).

Mapping FRIEND flood activities will help in identifying the action points within IFI.

FRIEND has eight regional groups: Northern Europe, Alpine and Mediterranean-AMHY, Latin America and Caribbean-AMIGO, Southern Africa, West and Central Africa-AOC, Asian Pacific, Hindu Kush Himalayas and the Nile basin group.

Among these, six groups deal with flood issues: Northern Europe, Alpine and Mediterranean-AMHY, Latin America and Caribbean-AMIGO, Asian Pacific, Hindu Kush Himalayas and Nile basin group

## **Alpine and Mediterranean-AMHY**

Within FRIEND-AMHY there are eight (*as reported in general web page of AMHY-FRIEND group: <http://armspark.msem.univ-montp2.fr/amhy/>. For more recent possible change, you should ask to Eric Servat*) research groups. One group works in the field of floods. The name of the research project is: ‘Extreme events’.

Coordinator: E.Ferrari, University of Calabria, Cosenza, Italy.

The main AMHY-FRIEND activities in 2006 and 2007 for “Extreme events” topic was the organization of two international workshops on Hydrological extremes, held at the University of Calabria, in Cosenza (Italy), the first one on 2-4 May 2006 and the second one on 6-7 June 2007.

### **Objectives:**

- To identify features responsible for heavy rains and rare floods over areas at different spatial scales.
- To understand hydrological variability and similarity across time and space.
- To compare the rainfall-runoff dynamics of extreme events in drainage basins with different climatic and morphological features.
- Education and dissemination program on heavy rainfalls modelling

**Scope:** Mediterranean countries

### **Expected outcomes:**

- Scientific reports on the most disastrous (recent) hydrological events, analyzed from both hydrological and meteorological points of view, aiming at a better comprehensive explanation of hydrological extreme events in Mediterranean areas.
- Software packages on frequency analysis of hydrological extremes, based on different statistic and stochastic approaches.

- web page on “Extreme events” topics, spreading scientific information on working groups of AMHY-FRIEND, a multi-media data base, selected references about the topic, scientific appointments, software & tools, and links to related activities).
- Setup of a network of experimental basins of AMHY countries for comparison of rainfall-runoff dynamics.
- Annual workshop on Hydrological extremes to better reach objectives of “Extreme events” topic.
- Short courses on statistic and stochastic modeling of extreme floods and rainfalls.

*N.B. Scientific reports on space distribution of maximum floods across Europe (previously reported as expected outcomes) have been partially obtained mainly as printed contribution of deceased prof. Stanescu.*

### **Time schedules:**

As ongoing proposals risen from the two International Workshop on “Hydrological extremes”, attention of researchers involved in “Extreme events” topic in the next years (2007-08) will be focused on:

- the completion of the web page on “Extreme events” topic *end 2007*
- a final report on recent disastrous hydrological events *summer 2008*
- release of software packages on different aspects of frequency analysis of hydrological extremes *summer 2008*
- Setup of a network of experimental basins and rainfall-runoff analysis *end 2008*
- Annual workshop on Hydrological extremes *annual appointments*
- Short courses on statistic and stochastic modeling of extreme floods and rainfalls (*yet to be implemented*)

### **Methodologies adopted:**

- Analysis of meteorological and hydrological conditions causing extreme rainfall and flood events.
- Statistical and stochastic modeling of heavy precipitation at different time scale (monthly, daily, hourly).
- Regional frequency analysis referred to annual maxima of floods and hourly/daily rainfalls.
- Distributed rainfall-runoff models for flood estimation in ungauged basins.
- comparison of the rainfall-runoff dynamics of concurrent rainfall and flood events in experimental basins of AMHY countries

### **Partners involved:**

- University Departments / Scientific Institutions of national coordinators
- National Institutes for Hydrological/Meteorological Researches
- Civil Protection Divisions

### **Related events:**

Lyon (France), SHF conference *28–29 Jan 2004*  
 Koblenz (Germany), *International Workshop on Hydrological Extremes* *5–8 July 2004*  
 Montpellier (France), HydroSciences, *International Seminar on Climatic and anthropogenic impacts on the variability of water resources* *22-24 Nov 2005*

Ohrid (Macedonia), Balwois Conference 23-26 May 2006  
Cosenza (Italy), *1<sup>st</sup> International Workshop on Hydrological Extremes: “Observing and modeling exceptional floods and rainfalls”* 3-4 May 2006  
Cosenza (Italy), *2<sup>nd</sup> International Workshop on Hydrological Extremes: “Variability in space and time of extreme rainfalls, floods and droughts”* 6-8 June 2007