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

Asian Pacific-FRIEND

Plan for Design Flood Determination APFRIEND Phase II

1 PREAMBLE

There was agreement that a plan be developed and illustrative examples from each country on Design Flood Determination as discussed at the workshop in KL in June 2005. In the following Sections such a plan has been developed and Actions from individual coutries listed. It is necessary that interested researchers and government agencies be identified for each country.

Action: Each Participating Country to supply names of researchers and organisations before August 31st, 2007 to Trevor Daniell (trevord@civeng.adelaide.edu.au) .

Following the Workshop on IFDs a steering panel of three members should be established to progress the actions listed.

Action: Establishment of a steering panel of three members by 30th September 2007

2 DESIGN FLOOD

At the workshop the Philippines, Australia, Rep. of Korea and Malaysia participated in this group to address the following points:

1. Developing a process for design flood analysis including flood frequency analysis and development of flood hydrographs through runoff models;
2. Regional processes that were applicable to design flood estimation (eg Flood frequency analysis);

3. Quality control of data; and
4. Software and techniques that could be exchanged.

2.1.1 Concerning points 1 and 2 the following table was prepared

Type of catchment	**Location**	**Small catch. <100 km^2**	**Medium catch. > 100 ÷ <500**	**Large catch. > 500 km^2**
Gauged	Rural	Probabilistic Rm. If data available then flood Frequency analysis	Rm-R/R If data available then flood Frequency analysis	Full R/R model If data available then flood Frequency analysis
	Urban	Probabilistic Rm If data available then flood Frequency analysis	Rm-R/R	Full R/R model
Ungauged	Rural	Regionalised/empirical Method If data available then flood Frequency analysis	Rainfall/Runoff with regional Rainfall design and Index Flood Method	Rainfall/Runoff with regional Rainfall design and Index Flood Method
	Urban	Regional Rainfall and rational method If data available then flood Frequency analysis	Rainfall/Runoff with regional Rainfall design	Rainfall/Runoff with regional Rainfall design

Legend Rm Runoff modelling, -R/R Rainfall Runoff Modelling

2.1.2 Processes for flood design estimation and quality control

Type	**Data**	**Series of data to be used**	**Improving fit of peak data**	**Choice of Probability distribution**
Gauged	- Observed WL (peak levels, historic information) - observed flows Watch out for land use changes, stationarity of records	Selection of annual series or partial series or POT (selection to ensure of independent events)	- Historical information, - Outlier data (censoring low flow data) Non homogenity/mixed distribution (eg IPO + IPO-)	- GEV - Log Normal, - LP III, - Generalised Pareto - Exponential, - P III Etc.

2.1.3 Regionalisation

Flow Index method – choice between Mean Q and Median Q $Q_t/Q_{mean\ median} = \psi_t$
Regression Method - regionalise parameters of probability distribution a function of drainage area, annual mean rainfall, slope, length of channel and other parameters.

3 PLAN OF ACTIVITIES FOR DESIGN FLOOD DETERMINATION

Extensive use will be made of the data in the Catalogue of Rivers. If further data is required then individual countries will be approached for that data.

3.1 Flood Frequency methods employed

Sets of data from the Catalogue of Rivers need to be further extended using the latest Catalogue of Rivers and perhaps GRDC Data.

Each country is to give the preferred distriburtions that are used in their country and the reasons for their adoption. If differen regions/prefectures use different methods then these should be supplied.
Software that can be made available for performing flood frequency analyses should also be listed as per section 4.

This data is really required as soon as possible.
A draft Paper by Kuczera and Franks on the latest thinking in Australia has been was supplied. If other countries have publications similar to this could they be supplied for disemination.

Action: Each Participating Country to supply.

3.2 Flood Flow Determinations by Runoff Routing Methods

The transfer of Design Rainfalls into Design Flows is paramount to the design flood Process outlined in the Tables above. What techniques are used in individual countries and is there a preferred technique.that is applied across all provincial governments. Are there guidelines on the use of different rainfall runoff routing methods for countirs in the region. Relevant publications outlining the methods can be sent to Trevor Daniell (Australia) either as pdfs or word documents or in paper form and he will pdf them and send them to participants of the workshoop.

Action: Each Participating Country to supply

4 SOFTWARE AVAILABILITY

All countries to list software availabie including websites for design flood analysis in their countries. If the software has to be requested from a government department then please state. Some software will be part of data archiving packages such as Tideda, Hydsra etc.
If countries have software that is available please indicate how it might be accessed.

Action: Each Participating Country to supply

5 REVIEW OF ACTIONS TO BE UNDERTAKEN

The work of APFRIEND phase 1 will be built upon by preparing a review of the methods outlined in the Tables in Section 2. Information is needed in each of the areas of flood determination. As an example of Regional Methods employed an Australian example has was attached for participating countries to note. If there are many techniques for a particular country then just give relevant publications and if possible pdf the publication or paper.

The panel will need initially to undertake the following tasks:

- collation of the material received for each of the areas;
- examination of the data available in the Catalogue of Rivers;
- assembling data for further processing; and
- collation of appropriate software.

Action: Each Participating Country and Researcher to Supply

Partners involved: Members of the IHP Regional Steering Committee of SE Asia and the Pacific

Related events:

IFD Workshop in Kuala Lumpur, Malaysia	6–7 June 2005
RSC Meeting in Philippines	Nov 2007