



INTERNATIONAL HYDROLOGICAL PROGRAMME

**9th IHP Regional Steering Committee
meeting for Southeast Asia and the
Pacific**

Ha Long City, Vietnam, 22 November 2001

FINAL REPORT

**IHP-V | Regional Steering Committee meeting | No. 9
Regional Steering Committee for Southeast Asia and the Pacific
UNESCO Jakarta Office, 2001**

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**The Ninth IHP Regional Steering Committee Meeting
for Southeast Asia and the Pacific**

Ha Long Bay III Hotel, Ha Long City, Vietnam

22 November 2001

Chairman: Dr. Richard Ibbitt (New Zealand)

Secretary: Prof. Kaoru Takara (Japan)

UNESCO Representatives: Mr. Giuseppe Arduino (Jakarta), Mr. Massimiliano Lombardo (Jakarta), Mr. Hans Dencker Thulstrup (Apia)

Countries represented: Australia, Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, New Zealand, Papua New Guinea, Republic of Korea, Thailand, Vietnam

Observers from: Canada, Fiji/Pacific Small Island States, Nepal, Vanuatu, Mekong River Commission and Secretariat of the 3rd World Water Forum

Member Countries not attending: DPR Korea, Philippines

1. OPENING

Mr. Richard Ibbitt, Chairman of the Regional Steering Committee (RSC), opened the meeting at 8:00 a.m.

In his opening remarks, Mr. Ibbitt outlined the excellent work done by the Vietnamese Organising Committee in arranging the IHP events related to this meeting, notably the international symposium and the field trip to the Ha Long Bay World Heritage site. He then encouraged further collaboration and communication among the RSC member countries for the implementation of IHP activities in this region. Concerning the failed attendance of DPR Korea and the Philippines, Mr. Ibbitt invited UNESCO Jakarta to contact once again the representatives of those countries, in order to ensure effective participation in the RSC and more involvement in the IHP activities to be undertaken in the forthcoming phase of the Program.

The agenda of the meeting was amended and then adopted. Mr. Daniell (Australia) was appointed rapporteur.

2. MATTERS ARISING FROM THE PREVIOUS MEETING

Mr. Ibbitt made reference to the Action List from the 8th RSC meeting and asked the relevant representatives to give a brief report on the follow-up of those actions. A brief summary of the responses per action item is reported here below (ref.: action table in the final report of the 8th RSC meeting, page 8):

ACTION	ITEMS	STATUS
1	Prepare to present papers of AP-FRIEND findings at the Hanoi symposium in November 2001.	Completed.
2	Prepare papers for submission to World FRIEND Conference in Cape Town, 2002.	Completed. 4 papers accepted for presentation at the Conference.
3	Supply a list to Mr Pawitan of names and locations of rivers to be supplied for the next Catalogue of Rivers	Completed.
4	Prepare a proposal for a workshop on Steep Slope Water Management in PNG	Dropped. The proposal did not receive enough support by the local counterparts.
5	Organise a workshop on Ecohydrology in Indonesia	Completed. The workshop was held in Cibinong (West Java) from 20 to 22 March 2001.
6	Organise a training course on groundwater contamination in Indonesia	Completed. The training will be held in Bandung (West Java) from 22 to 30 January 2002.
7	Register names and addresses with organisers of the conference and 9 th RSC meeting in Hanoi if planning to attend in October 2001.	Completed.
8	Prepare organisation of International Conference on Urban Hydrology and 10 th RSC meeting in 2002.	In progress. RSC10 will be held in Kuala Lumpur from 17 to 18 October 2002.
9	Prepare meeting for hydrologists/water experts in the Pacific	An IHP training course on <i>Hydrological Data Logging, Management and Interpretation</i> will be held in Townsville, Australia, from 3 to 7 December 2001. The experts' meeting will be a parallel session involving SOPAC and UNESCO Apia.
10	Establish terms of reference for membership of the RSC	To be done following the recent changes in the organizational system of UNESCO field offices, and after the forthcoming 15 th session of the IHP Inter-Governmental Council (Paris, 17-22 June 2002).

3. SECRETARIAT REPORTS

3.1 UNESCO

Mr. Arduino presented the Secretariat Report of UNESCO Jakarta (Annex 3). He encouraged the member countries to develop well thought out proposals to obtain financial funding through UNESCO Jakarta's office for activities within IHP. He then outlined that, following the recent changes in the organizational system of UNESCO's field offices, the Jakarta office will now cover a much larger geographic area, as it will be coordinating and supporting UNESCO Science programmes in cooperation with UNESCO sub-regional and national offices across the Asia-Pacific region.

Mr. Thulstrup spoke on priority issues, programme plans, and IHP activities undertaken in the Pacific Region since the last RSC in November 2000. He stressed in particular the need to ensure that the Pacific sub-region is regularly and formally represented within the RSC and other key IHP fora (see UNESCO Apia report, Annex 4).

3.2 RSC SECRETARY

Mr. Takara commented that there were only a few issues to be reported on following the presentation of the UNESCO Jakarta office report. He complimented the Vietnamese IHP committee for the very successful organisation of the AP-FRIEND Technical Sub Committee (TSC) meeting and the IHP Symposium in Hanoi.

Mr. Takara also commented on the attendance of RSC member countries and observers. He expressed concern on the failed attendance of the Philippines and DPR Korea, which were however formally invited to the meeting. Mr. Arduino stated that UNESCO Jakarta made great efforts to get the delegates from those two countries to participate in the meeting and commented that appropriate steps will be taken to ensure a greater participation in the RSC.

Mr Raj raised the matter that only 3 out of the 14 small island UNESCO member states in the Pacific were being represented at the meeting. Mr. Thulstrup observed that even though there had been a concentration of the RSC activities on the South East Asian countries, the countries of the Pacific appreciated the efforts to integrate them in the regional IHP network. Mr. Ibbitt expressed his wish that the IHP governance committee take into account the changes occurring in the regional network and the constraints on Pacific countries' participation due to the small number of professionals and the difficult logistical arrangements in this part of the region.

The chairman then invited UNESCO Jakarta to review together the composition of the RSC, clarifying which countries are now to be considered as part of the RSC. Mr. Takeuchi commented that the rules for the RSC membership would be changed after the next IHP Intergovernmental Council, where there would also be a decision on a new governance mechanism for the regional IHP. Further discussion on this issue proceeded later, as reported under paragraph 5.

4. PROGRESS OF THE CATALOGUE OF RIVERS

Mr. Ibbitt reported on the progress of the fourth edition of the *Catalogue of Rivers* and gave suggestions on how corrections to previous volumes were to be addressed. Mr. Takara

notified that the Infrastructure Development Institute of Japan was funding the publication of Volume IV, but alternative sources of funding should be sought for the future.

The meeting finally recommended the publication of Volume IV in both printed form and also on CD-ROM disk. Furthermore, it was decided to put as many volumes as possible onto CD-ROM disks as well as on the website of the Regional Humid Tropics Hydrology and Water Resources Centre for Southeast Asia and the Pacific (HTC).

5. REVIEW OF THE RSC

Mr. James raised comments on the need to assess and review the mandate and the achievements of the Regional Steering Committee. The following questions were forwarded to all the participants: what are the successes? Are the objectives still valid? What can be done better and how?

An initial discussion remarked that the effort of the RSC in fostering collaboration amongst member countries has been indeed of great relevance. Mr. Lee outlined valuable achievements such as the organisation of high-level symposia, the implementation of the AP-FRIEND and the publication of the Catalogue of Rivers.

In Mr. Ibbitt's view, the criteria for assessing the RSC should be defined in accordance with the achievement of the objectives indicated at the time of the creation of the RSC. Mr. Takeuchi agreed with this observation, but commented that initially the objectives were limited to only the establishment of a collaborative network for the regional hydrological research. As also agreed by Mr. Lee, it would now be more advisable to develop new criteria for this assessment, as the objectives of the RSC need to be more focussed.

Mr. Ibbitt then asked the country delegations to provide in turn their response to the above questions raised by Mr. James. A synthesis of the responses is summarised here below:

Australia - Forwarded the opinion that the networking and increased communication between countries is to be considered as one of the major benefits gained by the establishment of the RSC.

Cambodia - The RSC was successful in developing relationships between the countries of the region and in promoting meetings that fostered cooperation on an international basis.

China - Expressed high appreciation of the activities carried out by the RSC, that has reached many positive achievements, such as publications, training, and increased regional cooperation.

Indonesia - Mentioned the AP-FRIEND and the Catalogue of Rivers as examples of how the RSC facilitated regional interaction on hydrological research, with the creation of working groups composed by specialists coming from various Asia-Pacific countries.

Japan – The RSC was successful as a “meeting forum”, and for giving impulse to the regional networking on hydrology but from now on its objectives should be extended, giving greater scientific focus on the problems and research priorities in the region. Funding has been a critical issue and therefore it would be also necessary to evaluate how the national governments could contribute to the participation of their scientists in the RSC network.

Republic of Korea – The RSC has been successful but there is still much to do in relation to the improvement of the AP FRIEND.

Lao PDR – Expressed appreciation for the outcomes achieved by the RSC.

Malaysia – The RSC has been successful in evolving from a simple meeting of researchers to become an active forum where it is possible to report on the implementation of the country activities in the water sector as well as to plan future activities to be developed within the IHP.

New Zealand – The RSC has been very positive in developing strengthened networking of the Pacific countries with Southeast Asia.

Papua New Guinea – The major outcomes achieved were the increased networking and exchange of information among countries of the region.

Thailand - The government of Thailand has expressed its appreciation for the activities promoted by the RSC, as it has supported the attendance of country delegates to the regional meetings.

Vietnam – Mentioned the great success achieved in promoting information exchange and hydrological training.

Pacific Islands - It was raised that the on-going activities in the Pacific would have proceeded even without the RSC. However, the RSC offers an opportunity to increase linkages across many countries that have common problems.

UNESCO – UNESCO Apia expressed satisfaction for the progress made in integrating the small island countries of the Pacific into the Asian region. UNESCO Jakarta reinforced the opinion that the RSC was successful in stimulating exchange of information and in strengthening the basis for scientific collaboration on hydrology in the region.

6. IHP GOVERNANCE

Mr. Pratishtananda reported on the request for organising a regional meeting concerning the IHP governance mechanism. He forwarded the recommendations of the ad hoc committee (integrated by India and Thailand) established during the 14th Intergovernmental Council of IHP (Paris, 5-10 June 2000), and stressed the importance of developing specific indicators for the assessment of the RSC, that could measure its accomplishments in terms of regional contribution.

Mr. Takeuchi reminded the meeting of UNESCO Headquarters' request to set up adequate "Terms of Reference and Criteria for Assessment" of the Regional IHP Meetings (Mr. Szollosi-Nagy's letter of 5 June 2001, ref: SC/WATER/542) was previously forwarded to each of the IHP National Committees. Mr. Takeuchi remarked that there was no response from the IHP-NCs; therefore he invited the IHP country representatives to respond to the above letter, sending the information requested.

Mr. Takeuchi also observed that if the IHP regional meetings were to be replaced by a regional intergovernmental council, as suggested by some countries, then the funding for its activities should be directly provided from each of the participating countries, and not from UNESCO Jakarta or other organisations. Mr. Takeuchi added that this issue would be more extensively discussed in Paris, on the occasion of the next IHP Intergovernmental Council (i.e. the 15th session, Paris, 17-22 June 2002).

7. PRESENTATION OF THE THIRD WORLD WATER FORUM

Mr. Masato Toyama distributed the First Announcement for the 3rd World Water Forum (Japan, 16-23 March 2003) and delivered a PowerPoint presentation about the event, highlighting the issues that will be discussed on that occasion. He reminded the meeting that the first edition of UNESCO's *World Water Development Report*, one of the outcomes of the World Water Assessment Programme, would be presented at the Forum.

Mr. Toyama encouraged the participants of the meeting to contribute to the Forum, for which a large and diversified participation is expected.

8. COUNTRY REPORTS

The official Country Reports are attached in Annex 4. The following verbal comments were made by the delegates and observers during the meeting:

Vanuatu

Mr. Christopher Ioan commented that Vanuatu has no IHP National Committee but recently the government established a national water committee for the development of communication and interaction among the various water sectors. He also mentioned Vanuatu's contribution to the development of the "Catchment and Communities Project", which would be implemented within the IHP-VI and another project whose objective is to collect hydrological information on the effects of mining.

Mekong River Commission

Mr. Nguyen Tat Dac thanked the RSC for the opportunity to participate as an observer in this meeting and highlighted a project concerned with the development of a website involving all the countries carrying out data collection activities in the Mekong River Basin.

9. MAIN OUTCOMES OF THE AP-FRIEND TSC MEETING AND PREPARATION FOR THE 4TH FRIEND CONFERENCE

Mr. Takeuchi reviewed the issues and summarised the outcomes of the TSC meeting held in Hanoi on November 18. He proposed that as soon as possible a meeting of the AP FRIEND working group coordinators be organised, to finalise the first phase of the project and plan the forthcoming one, to be started between 2002 and 2003.

Mr. Takeuchi reported that the TSC meeting agreed to prepare a comprehensive final report of the first phase of AP FRIEND, to be published and distributed before the 10th RSC meeting. This report will draw upon the Asia-Pacific chapter included in the proceedings of the forthcoming global FRIEND conference, but it will be also integrated with the description of the outcomes of other research activities carried out within the development of AP FRIEND phase 1.

The meeting of the working group coordinators would be probably held in April (location to be decided), and will be probably followed by an editorial meeting in June, for the preparation of the final report on the first phase of AP FRIEND. Mr. Takeuchi proposed that UNESCO Jakarta provide partial funding for the organisation of April's meeting.

The 4th FRIEND General Conference will be held in Cape Town from 18 to 22 March 2002. Mr. Takeuchi reported that 4 papers from the Asia-Pacific Region were accepted for presentation, but at present only two of the researchers can guarantee their participation, as the funding for the travel expenses still remains to be found for the other two.

Mr. Ibbitt emphasized the need to design the future IHP initiatives in accordance to the country requirements, but reminded that those should be consistent with the new plan of action for IHP (IHP-VI). Mr. Takeuchi pointed out that just a few countries from this region had clearly outlined their plans for IHP-VI. Mr. Lombardo also encouraged all countries to design their future IHP activities in accordance with the plan set out for IHP-VI. He proposed to the IHP delegates that they prepare country plans for IHP-VI based on the template used by

the Australia's National Committee; in addition, he invited the countries to highlight one specific priority to be followed up for each of the themes of IHP-VI. Those plans should then be sent as official documents to the UNESCO Jakarta Office, in order to identify common research priorities of the region and to establish joint initiatives. UNESCO Jakarta could then edit an official document for the Asia-Pacific region, outlining the common strategies of action within the implementation of IHP-VI, and finally forward it to the UNESCO Headquarters. The participants of the meeting expressed general agreement with this proposal and it was then decided to establish the 31st of December 2001 as the deadline for the presentation of the IHP-VI country plans, except for the Pacific small islands states who will have time until the 31st of January 2002.

10. ELECTION OF THE NEW CHAIRPERSON OF THE RSC

Mr. Keizrul Abdullah, who had previously indicated his willingness to be nominated as the next Chairman, was then nominated by Mr. Ibbitt and seconded by Mr. Takeuchi. Mr. Keizrul Abdullah was declared elected with acclamation and will be Chairman of the RSC until the end of 2003.

11. ANY OTHER BUSINESS

Mr. Raj proposed increased collaboration with WMO, by inviting a WMO delegate to attend as an observer at the future meetings.

Mr. Mohd Nor recommended use of the Internet mailing list established by the HTC as a virtual forum to advance the discussion on the various issues to be tackled for the next phase of IHP.

Mr. Takeuchi and Mr. Takara observed that the tenth anniversary of the RSC falls in 2003 and that this should be celebrated in some special way. Mr. Takara also proposed to create a small working group to organise a special panel at the World Water Forum, which would highlight the regional outcomes in hydrological research. It was finally agreed that Mr. Takara would forward a specific proposal to the Japanese IHP committee, in order to hold the 11th RSC meeting (in 2003) in Japan.

12. CLOSING

China proposed a vote of thanks to the outgoing chairman Mr. Richard Ibbitt, who was then applauded by all the participants.

The meeting closed at 3:00 pm.

13. FOLLOW UP

ACTION ITEMS	BY WHOM	WHEN
1. Encourage greater participation of the	UNESCO Jakarta	ASAP

ACTION ITEMS	BY WHOM	WHEN
Philippines and DPR-Korea in the RSC		
2. Respond to Mr. Szollosi-Nagy's letter of 5 June 2001 (Ref.: SC/WATER/542) related to Terms of Reference for Regional IHP Meetings and governance mechanism	All IHP National Committees	By mid December 2001
3. Review RSC membership	UNESCO Jakarta	After the IHP Inter-Governmental Conference (June 2002)
4. Organise a meeting of AP FRIEND Working group coordinators for the finalization of project's phase 1	Takeuchi, AP FRIEND Working Groups coordinators, UNESCO Jakarta	Proposed for April 2002
5. Prepare a final report of the 1 st phase of AP-FRIEND	AP FRIEND working groups	By June 2002
6. Send to UNESCO Jakarta the table of the potential country contribution for IHP-VI, together with missing country reports in soft copy	All IHP National Committees	By end of December 2001 (SE Asia); by end of January 2002 (Pacific Small Island Countries)
7. Integrate potential country contributions for IHP VI in a single regional document to be submitted for consideration of UNESCO Headquarters	UNESCO Jakarta	By June 2002 (for the IHP-IGC Conference)
8. Proposal for contribution of the RSC to the 3 rd World Water Forum	Takara	ASAP in 2002
9. Proposal to the Japanese IHP National Committee for holding RSC11 in Japan in 2003	Takara	ASAP in 2002

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**PARTICIPANTS, 9TH MEETING OF THE IHP
REGIONAL STEERING COMMITTEE FOR
SOUTHEAST ASIA AND THE PACIFIC**

IHP-RSC Country delegations

Australia:	Mr. Trevor Daniell (Rapporteur) Mr. Ross James
Cambodia	Mr. Mao Hak
China:	Ms Zhu Xiaoyuan Mr. Liu Heng Mr. Amithirigala Jayawardena
Indonesia:	Mr. Jan Sopaheluwakan Ms Gadis Sri Haryani Mr. Joesron Loebis
Japan:	Mr. Kaoru Takara (RSC Secretary) Mr. Kuniyoshi Takeuchi Mr. Zongxue Xu Mr. So Kazama Mr. Shigeru Ogawa
Lao PDR:	Mr. Khanthong Soukhathammavong
Malaysia:	Mr. Keizrul bin Abdullah Mr. Mohammed Nor bin Mohd. Desa
New Zealand:	Mr. Richard Ibbitt (RSC Chairman) Mr. Bob Curry
Papua New Guinea:	Mr. Maino Virobo
Thailand:	Mr. Suravuth Pratishtananda Mr. Somchai Nai-anant
Vietnam:	Mr. Tran Thuc Mr. Le Van Sanh
Republic of Korea:	Mr. Soontak Lee

Observers

Canada:	Mr. Van T.V. Nguyen
Pacific Small Islands:	Mr. Rishi Raj (representative delegate, from Fiji)
Mekong Secretariat:	Mr. Tes Sopharith Mr. Nguyen Tat Dac
Nepal:	Mr. Raghunat Jha
Vanuatu:	Mr. Christopher Ioan
3 rd World Water Forum:	Mr. Masato Toyama
UNESCO	Mr. Giuseppe Arduino (Jakarta) Mr. Massimiliano Lombardo (Jakarta) Mr. Hans D. Thulstrup (Apia)

**AGENDA, 9TH MEETING OF THE IHP
REGIONAL STEERING COMMITTEE FOR
SOUTHEAST ASIA AND THE PACIFIC**

- 1) Minutes of the last RSC meeting (20 November 2000, Christchurch, New Zealand)
- 2) Matters arising
- 3) Secretariat reports
- 4) Progress on the Catalogue of Rivers
- 5) Review of the RSC – (how effective is it - what are its goals and objectives, have they been met and what values does the RSC add to the projects it manages?)
- 6) IHP Governance - response to request from Paris
- 7) Presentation on the 3rd World Water Forum
- 8) Country reports – each country to prepare a written copy and give a brief presentation of the highlights.
- 9) Preparations for and attendance at the Cape Town meeting – who is going, what are they presenting etc.
- 10) Planning for IHP-VI: what will the RSC contribute?
- 11) Election of the new RSC Chairman
- 12) Any other business

**9th IHP Regional Steering Committee Meeting for
Southeast Asia and the Pacific – Ha Long City, Vietnam, 22 November 2001**

**UNESCO JAKARTA OFFICE
Secretariat Report**

1. Activities carried out since the last Regional Steering Committee Meeting

1.1 The 8th IHP Regional Steering Committee Meeting

The 8th IHP Regional Steering Committee (RSC) Meeting of the IHP for Southeast Asia and Pacific (SEAP) was held in Christchurch, New Zealand, on November 20, 2000. Eleven member countries of the region were officially represented at the Meeting, namely: Australia, China, Indonesia, Japan, Lao PDR, Republic of Korea, Malaysia, New Zealand, Papua New Guinea, Thailand and Vietnam; Cambodia, the Philippines and DPR Korea, which are also part of the RSC, were not represented. The South Pacific Applied Geosciences Commission (SOPAC), as well as two other countries from the Asian Region - Mongolia and Myanmar - and five from the Pacific Region - Cook Islands, Kiribati, Niue, Tonga and Vanuatu - attended the Meeting as observers, for the first time ever since the establishment of the RSC for SEAP.

The Meeting was held in conjunction with the International Symposium *Fresh Perspectives on Hydrology and Water Resources in Southeast Asia and the Pacific*, organised by the Hydrological, Meteorological and Limnological Societies of New Zealand. The Symposium gathered hundreds of international delegates and researchers, providing them with the opportunity to address various hydrological issues in an integrated and multidisciplinary way.

The principal issues discussed at the 8th RSC Meeting for SEAP included:

- a) *the procedures for the election of the next RSC Chairperson and Secretary*: it was decided that the chairpersons should be elected on odd numbered years and the secretaries on even numbered years; therefore, the new chairperson of the RSC-SEAP will be appointed during the 9th RSC Meeting.
- b) *the organisation of the forthcoming RSC Meetings*: it was decided that the 9th RSC Meeting would be held in Hanoi during November 2001 and that the 10th RSC Meeting would be held in Kuala Lumpur, Malaysia, during October 2002;
- c) *the review of the activities undertaken by the member countries within the IHP-RSC framework and by some of the countries attending as observers*;
- d) *the activities within AP FRIEND, in particular*: the activities carried out by the five working groups, the Asian Pacific Water Archive, the presentation of the third volume of the Catalogue of the Rivers for Southeast Asia and the Pacific and the preparation of the fourth volume;
- e) *the organisation of various regional IHP events (international meetings, workshops, training courses, symposia and scientific conferences related to freshwater issues), such as*: a workshop on Steep Slope Water Management in Papua New Guinea; a workshop on ecohydrology and one on groundwater contamination in Indonesia; the International Conference on Urban Hydrology, to be held in Kuala Lumpur in 2002, in conjunction with the 10th RSC Meeting; a meeting for hydrologists and water experts of the Pacific Region;
- f) *the regional preparations for the Global FRIEND Meeting (Cape Town, 2002)*;
- g) *the “Hydrology for Environment, Life and Policy” programme (HELP)*;
- h) *the 14th Session of the Intergovernmental Council of the IHP (Paris, 5-10 June 2000)*.

1.2 *Asian Pacific Flow Regimes from International and Experimental Network Data (AP FRIEND)*

- a) *Asian Pacific Water Archive*: a significant upgrade of the Central Node in the Regional Humid Tropics Hydrology and Water Resources Center for Southeast Asia and the Pacific in Kuala Lumpur (HTC KL) was carried out during July 2001. Within the inter-institutional co-operation between UNESCO and the HTC, Mr. Ross James from Australia, as a consultant for the UNESCO Jakarta Office, undertook a technical review of the structure and functioning of the Water Archive and operated some critical interventions. In particular, a new software package (PERL), was installed, which will provide easier access, retrieval and download of the data stored within the Central Node as well as in the country nodes interconnected through the world wide web, therefore improving provision and exchange of the hydrological data. The website and homepage of the Archive were also improved, and are now available in a new URL (<http://htc.moa.my/apfriend/wa>). Further improvements of the Water Archive will be sought in the near future.
- b) *Catalogue of the Rivers for Southeast Asia and the Pacific*: the publication of the fourth volume is expected for early 2002; UNESCO Jakarta will provide financial support through the contribution of the Japanese Funds in Trust. The new volume will report on the hydrological and meteorological data regarding 22 rivers of the region. The regional mandate of UNESCO Jakarta Office in Science and Technology was recently extended to the whole Asia-Pacific Region. As an effect of this change, further important developments are expected for the preparation of the fifth volume of the Catalogue, as several countries from the Asia Pacific Region will be involved in the AP FRIEND network.

1.3 *Workshops, training courses and symposia*

1.3.1 Asia Pacific Workshop on Ecohydrology, Cibinong-Bogor, Indonesia, 20-22 March 2001

This regional workshop, which initially was scheduled for November 2000, was finally held in March 2001. The Indonesian Institute of Sciences (LIPI) organised this workshop with the aim to promote a better transfer of the hydrological research findings into national development policies. Financial support was provided through the UNESCO Participation Programme.

The workshop helped to pursue a more holistic approach to freshwater issues, through the endorsement of the “ecohydrology concept” at the higher levels of policy planning in the public and private sector. The UNESCO Jakarta would publish the proceedings of this workshop in early 2002.

The organisation of a similar workshop, to be held in Indonesia in 2002, is currently being discussed. The planned workshop would be more focussed on issues related to the industrial production, following the great interest expressed by various representatives of national and international private companies based in Indonesia and in other countries of the region.

1.3.2 IHP Training Courses financially supported by the Japanese Funds in Trust (JFIT)

The theme of the 11th IHP Training Course funded by UNESCO and the Japanese Fund in Trust was ‘*Hydrogen and Oxygen Isotopes in Hydrology*’. The course was held in different venues in Japan (Nagoya, Kusatsu, Chiba, Yokohama and Tokyo) from 9 to 22 September 2001 and included lectures and practical experience on various aspects related to the application of isotopes in hydrological research. The UNESCO Jakarta provided

sponsorship through MONBUSHO's (Japanese Ministry of Education, Sports, Science and Culture, now referred as MEXT) JFIT for six participants coming from different countries of the region, namely: Cambodia, Indonesia, Malaysia, New Zealand, Thailand and Vietnam. The next IHP training course is scheduled for 2003.

1.3.3 Computer-Aided Workshop on Groundwater Contamination (Bandung, West Java, Indonesia)

This workshop is being organised by UNESCO Jakarta and the Indonesian Institute of Sciences (LIPI) in collaboration with the IHP National Committees of Germany (OHP) and Indonesia; financial funding is provided by both UNESCO and OHP.

The main purpose of the workshop, open to participants from the Southeast Asian region, is to increase the knowledge and awareness on the vulnerability of groundwater to contamination, by means of analytical and numerical modelling of aquifers.

The workshop was previously scheduled for the period from 1 to 9 November 2001. Due to the unsafe and unpredictable situation in Indonesia following the events occurred in Afghanistan, it was decided to postpone it to the period 22 to 30 January 2002.

1.3.4 UNESCO-IHP Hydrological Data Logging, Management and Interpretation Course

The James Cook University and the National Institute of Water and Atmospheric Research (NIWA), together with the UNESCO Apia Office, have organised this training course with financial support from IHP, within the general framework of IHP-V theme 8 (Transfer of Knowledge, Information and Technology). The training course aims to provide selected participants from the Southeast Asia-Pacific region with hands-on training in hydrological data logging and computer-based data management using different instruments and software.

Theoretical and computer-based sessions of the training course will be held at the James Cook University Campus in Townsville (Queensland, Australia) from 3 to 7 December 2001. The training course will furthermore include one full day of fieldwork at the Wyrura catchment area, near Cairns.

The UNESCO Jakarta Office has undertaken to fund the travel and attendance costs of 6 participants from the region at this event. The total number of participants at the training course is expected to be 10, with the remaining four coming from Pacific countries.

1.3.5 Travel grants

The UNESCO Jakarta Office provided travel grants to two scientists of the region in order to allow their participation in the international symposium "*Frontiers in urban water management: deadlock or hope?*", held in Marseille, France, from 18 to 20 June 2001. This symposium, jointly organised by UNESCO and the "Academie de l'Eau de France", represented the culmination of the activities related to the theme "Integrated Urban Water Management", included in the plan for IHP-V (1996-2001).

1.4 *Inter-sectoral activities within the Jakarta Office*

The Hydrology Unit and the Coastal Zones and Small Islands Programme (CSI) Unit in the UNESCO Office in Jakarta are closely co-operating for the implementation of various initiatives in the framework of the Jakarta Bay Project; in accordance with the IHP-V activities of theme 2, (project 2.4 "Comprehensive assessment of the surficial eco-hydrological processes"). In particular, UNESCO Jakarta has provided financial support to

the Indonesian Institute of Sciences (LIPI) for carrying out a research project on the Ciliwung River basin. The aim of this project is to develop a multi-scale evaluation (in time and space) of the global impact induced by the changes in the river's water quality in order to create reliable knowledge basis for supporting decision-makers in the elaboration of appropriate environmental policies. The results of the chemical and biological water analyses conducted by LIPI will be integrated with the interpretation of socio-economical data collected in previous researches by other Indonesian institutions, hence placing the basis for further projects to be implemented by UNESCO Jakarta. The final data will also be included in a forthcoming issue of the "Catalogue of rivers for Southeast Asia and the Pacific".

2. General IHP Events

2.1 Resolutions approved at the 31st Session of the UNESCO General Conference:

- a) Composition of the Intergovernmental Council (IGC) – The General Conference elected 14 Member States in order to fill the vacant seats of the IHP Intergovernmental Council, namely: Cuba, Ethiopia, Iran, Italy, Japan, Jordan, Malawi, Panama, Republic of Korea, Romania, Saudi Arabia, Sri Lanka, Sweden and Switzerland.
- b) The General Conference approved the proposed establishments of the following partner institutions: the *Institute for Water Education*, established in Delft (The Netherlands) through a MoU between UNESCO and IHE (International Institute for Infrastructural, Hydraulic and Environmental Engineering); the Regional Centre on Urban Water Management in Tehran (Iran); the Regional Centre for Training and Water Studies of Arid and Semi-arid Zones in Cairo (Egypt).

2.2 The new phase of IHP (IHP-VI, 2002-2007)

The current phase of IHP, '*Hydrology and water resources development in a vulnerable environment*' (IHP-V), is ending this year. The sixth phase of IHP (IHP-VI), '*Water interactions: systems at risk and social challenges*', that will cover the activities from 2002 to 2007, is articulated in five new themes as follows:

- Theme 1: Global changes and water resources
- Theme 2: Integrated watershed and aquifer dynamics
- Theme 3: Land habitat hydrology
- Theme 4: Water and society
- Theme 5: Water education and training

These themes are fully integrated with the new working plan of UNESCO's Science Program for the biennium 2002-2003 (31 C5), which is composed of three "Main Lines of Action" (MLA), as follows:

- MLA 1: Water resources and related ecosystems: assessments and sustainable management at different scales
- MLA 2: Water interactions and security
- MLA 3: Land-water interactions: towards sustainable management

The MLA 1 includes programme actions under the IHP-VI themes number 1, 2 and 3, while the MLA 2 includes the IHP-VI themes 4 and 5. The MLA 3 is a transdisciplinary plan to be undertaken jointly with UNESCO's ecological programme "Man and the Biosphere"

(MAB) which will specifically address the complex matters related to ecohydrology and land-water-climate interactions.

A multidisciplinary and integrated approach to all aspects related to water resources research and management will be also maintained through the final implementation of the ‘Hydrology for Environment, Life and Policy’ programme (HELP), and through the planning of specific initiatives in relation with the ‘World Water Assessment Programme’, led by UNESCO in co-operation with a large number of international organisations.

3. Publications since November 2000

1. IHP-Regional Steering Committee for South East Asia and the Pacific. *8th Regional Steering Committee Meeting for Southeast Asia and Pacific, Christchurch, New Zealand, 20 November 2000*. Final Report. UNESCO Jakarta Office, December 2000. Final report of the previous Regional Steering Committee Meeting for Southeast Asia and Pacific, which includes the Country Reports presented in that occasion by the IHP National Committees of the region.
2. Mosley, M.P. (Ed.). *Fresh Perspectives on Hydrology and Water Resources in Southeast Asia and the Pacific*, Christchurch, New Zealand, 21-24 November 2000. Proceedings. IHP-V Technical Documents in Hydrology No.7. UNESCO Jakarta Office, 2001. Proceedings of the international symposium held in conjunction with the 8th IHP-RSC Meeting (Christchurch, 21-24 November 2000) and jointly organised by the RSC-SEAP and the Hydrological, Meteorological and Limnological Societies of New Zealand. The volume contains 37 full papers presented during the symposium.
3. Hehanussa, P.E. and Haryani, G.S. (Eds.). *Kamus Limnology (Perairan Darat)*. Glossary of limnological terms in Indonesian, published in September 2001. UNESCO Jakarta provided financial support and technical assistance to this initiative carried out by the Indonesian National Committee for IHP and the Indonesian Institute of Sciences. It contains 1500 limnological terms in Indonesian, with quick reference in English, and it is based upon the “International Glossary of Hydrology” published by UNESCO and WMO in 1992.

4. Contact references

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UNESCO Apia Office Report

1. Activities carried out since last Regional Steering Committee meeting

1.1 Meeting of the Pacific Focal Group For Water Resources: Priority Issues In Water Resources, Canterbury University, Christchurch, New Zealand 20 November 2000

Representatives of Pacific Island Nations (Cook Islands, Republic of Kiribati, Papua New Guinea, Niue, Kingdom of Tonga, and Vanuatu) met at Canterbury University, Christchurch, New Zealand 20 November 2000 on the occasion of the 8th UNESCO IHP Regional Steering Committee (RSC) Meeting for the Asia-Pacific Region. The meeting pointed out that membership of RSC was guaranteed for nations in the region through the establishment of an IHP National Committee. Because of the limited number of water resource specialists in small island nations, this effectively excludes the Pacific sub-region from RSC membership. Small island nation representatives therefore considered the formation of a Pacific Focal Group for Water Resources that would be facilitated by SOPAC and UNESCO Apia Office and serve as a linkage between the RSC and the sub-region.

There was general agreement with the proposition and it was suggested that the meetings of the Focal Group could be held in conjunction with SOPAC's annual sessions, although it was suggested that meetings of the Focal Group should only be held every two years. It was noted that meetings in 1994 and 1997 had identified priority water resource issues for the region. Island nations at the 1997 meeting had ranked water resources projects. Highest priority was assigned to projects on catchments and communities, groundwater recharge and groundwater pollution by sanitation. An additional ENSO workshop in September 1999 had identified drought assessment in the Pacific as an additional priority. It was agreed to develop further these projects and particularly the catchment and communities project, which would focus on the impacts of mining on catchments in Vanuatu.

Notably, the meeting and subsequent report (see publications below) served to update the prioritisation of research topics of key interest to the Pacific sub-region and make these available in an approachable format with a view towards the identification of priorities under IHP-VI.

UNESCO Apia funded and facilitated in cooperation with SOPAC (and with financial assistance from UNESCO Jakarta / Monbusho for two participants) the participation and travel of delegates from six Pacific island countries at the IHP Regional Steering Committee and the above Focal Group meeting.

1.2 Proposal development

UNESCO Apia contributed to the elaboration of an interagency WMO-SOPAC-UNESCO regional hydrology training strategy, which is currently undergoing revision and circulation with donors in the sub-region. UNESCO Apia's efforts in hydrological training and capacity building – a significant aspect of the office's work under IHP – is expected to fully interlink with this new interagency initiative in the next biennium.

1.3 Training courses

UNESCO Apia funded and co-organized with NIWA (New Zealand) and James Cook University (Australia) a Hydrological Data Logging, Management and Interpretation Training Course held at the James Cook University, Townsville, Australia 3-7 December 2001. The training course targeted technical and scientific staff of national water science agencies, and sought to improve skills and capacities in working with Campbell and Unidata solid state loggers, as well as the TIDEDA hydrological database software, all in common usage throughout the Southeast Asian and Pacific nations. Four days were devoted to hands-on training whilst the fifth and final day involved a field trip to the nearby research catchments at Babinda. In addition to providing organizational back up and funding of the training course itself, UNESCO Apia funded the attendance of participants from four Pacific Island nations, while UNESCO Jakarta participants from six SE Asia nations (including PNG). All participants had been suggested by co-organizing partner NIWA, and had been approved by their respective national authorities to attend the course. This approach ensured that the technically capable applicants most in need of the training were admitted to the training course.

2. General IHP events and planning for next biennium

2.1 IHP-VI 2002-2007

The sixth phase of IHP will begin in 2002 under the heading *Water Interactions: Systems at Risk and Social Challenges*. The Sub-Regional Pacific National Commissions Consultation organized by UNESCO Apia in Nadi, Fiji, during 21-24 August 2001 identified *capacity building for research, monitoring and community management of freshwater resources* as the highest priority for action under the first IHP-VI biennium 2002-2003. This prioritisation is both in line with the five new themes under IHP-VI, and with the three main lines of action identified in UNESCO's approved programme and budget for the 2002-2003 biennium, the 31 C/5.

Identified in the *Focus on the Pacific* document as a key priority area for UNESCO in the region, activities under IHP targeting tropical hydrology issues – in particular groundwater and catchment area monitoring, assessment and management – have received high priority from UNESCO Apia since the office's establishment. An actively utilized MoU exists between UNESCO Apia and the Water Unit of SOPAC providing scientific and technical backstopping for a solid programme that has also built upon further close cooperation with - and scientific input from - national and regional universities, research institutes, private sector organizations, and individual scientists in Australia and New Zealand.

In brief, the following core activities are expected over the 2002-2003 biennium as recommended by the Nadi consultation in cooperation with the Regional Science Adviser, UNESCO Apia Office.

2002: Consultancy to elaborate project design for Vanuatu catchments and communities project

2002: Initiation of first (pilot) phase of Vanuatu Catchments and Communities project

2002: Participatory research and training activity in Kiribati and Tonga as follow-up to groundwater recharge and pollution studies (first stage in the development of a regional low-lying coral island assistance strategy)

2003: Joint training and research activities elaborated with SOPAC Water Unit in the context of SOPAC/UNESCO/WMO hydrological training strategy

2003: Preparation of a Technical Document in Hydrology on the initial phase of the Vanuatu Catchments and Communities project

It is expected that the approach employed in the furthering of the Vanuatu Catchments and Communities project will serve to link this activity to the interregional *Hydrology for Life, Environment and Policy* (HELP) initiative. UNESCO Apia will also support where possible Pacific activities under the *World Water Assessment Programme* and related action.

3. Publications since November 2000

Crennan, L.: Integration of social and technical science in groundwater monitoring and management. Groundwater pollution study on Lifuka, Ha'apai, Tonga and Recharge study on Bonriki, South Tarawa, Kiribati, Technical Documents in Hydrology No. 43. UNESCO, 2001.

White, I; Overmars, M; and Thulstrup, H. (eds.): Report On UNESCO International Hydrological Programme Pacific Focal Group For Water Resources: Priority Issues In Water Resources. Final report of the meeting of Pacific island delegates at the Asia-Pacific IHP Regional Steering Committee meeting, Canterbury University, Christchurch New Zealand 20 November 2000. SOPAC/ANU/UNESCO Apia, 2001.

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ASIAN PACIFIC FRIEND TECHNICAL SUB-COMMITTEE MEETING

Sofitel Plaza Hotel, Hanoi, Vietnam
18 November 2001

Minutes

Attended by: (Sub-committee Members and Observers)	Rapporteur: Mr. Ross James
Kuniyoshi Takeuchi (Japan) (Chairperson)	Raghunath Jha (Nepal)
Giuseppe Arduino (UNESCO Jakarta)	Susumu Funada (Japan)
Massimiliano Lombardo (UNESCO Jakarta)	Amithirigala Jayawardena (China)
Hans Thulstrup (UNESCO Apia)	Venkatesh Raghavan (Japan)
Tran Thuc (Vietnam)	Srikantha Herath (Japan)
Le Vanh Sang (Vietnam)	So Kazama (Japan)
Somchai Nai-anant (Thailand)	Zongxue Xu (Japan)
Suravuth Pratishthananda (Thailand)	Jan Sopaheluwakan (Indonesia)
Naphakhun Somsin (Thailand)	Gadis Sri Haryani (Indonesia)
Maino Virobo (Papua New Guinea)	Joesron Loebis (Indonesia)
Robert Curry (New Zealand)	Xiaoyuan Zhu (China)
Richard Ibbitt (New Zealand)	Liu Heng (China)
Mohamed Nor (Malaysia)	Mao Hak (Cambodia)
Soontak Lee (Republic of Korea)	Trevor Daniell (Australia)
Takara Kaoru (Japan)	Ross James (Australia)
Khamthong Soukhathammavong (Laos)	

1. Agenda

1. *Welcome by the LOC and the AP FRIEND Chairman (Prof. Takeuchi Kuniyoshi)*
2. *Adoption of the Agenda*
3. *Report of the Chairman*
 - *FICGG at Maastricht (24 July, 2001)*
 - *IHP 31st Bureau of Meteorology*
 - *The 4th FRIEND Conference in Cape Town and APF contribution to the conference report*
4. *Report of the RSC Secretary (Prof. Kaoru Takara)*
 - *AP FRIEND funding*
 - *Catalogue of Rivers (Richard Ibbitt)*
 - *Other Business*
5. *Report from others*
6. *Report of the Working Groups: Achievements and Problems*
 - *Working Group 1: Dr Mohamed Nor and Mr. Ross James*
 - *Working Group 2: Prof. Kuniyoshi Takeuchi*
 - *Working Group 3: Prof. Soontak Lee*
 - *Working Group 4: Prof. Kaoru Takara*
 - *Working Group 5: Mr. Somchai Nai-Anant*
7. *Plan for the next phase*
 - *IHP-VI (2002-2007), Help Plans (Prof. Kaoru Takara)*

- *APF plan for 2002-2007*
- *Working Group 1: Dr Mohamed Nor and Mr. Ross James*
- *Working Group 2: Prof. Takeuchi Kuniyoshi*
- *Working Group 3: Prof. Soontak Lee*
- *Working Group 4: Prof. Kaoru Takara*
- *Working Group 5: Mr. Somchai Nai-Anant*
- *Possible Collaborative Research for 2002-2007*

8. *Other Business*

2. **Welcome**

The Chairperson of the Vietnamese Organising Committee, Mr. Tran Thuc described the arrangements for the meeting and conference. The Chairperson of Asian Pacific FRIEND (APF) Technical Sub-Committee (TSC), Mr. Takeuchi, opened the meeting at 9:00 am by thanking the local organising committee for their arrangements and welcoming all participants, especially those who had travelled considerable distance to the meeting. Participants were invited to introduce themselves to the meeting.

Mr. Ross James was selected as Rapporteur.

3. **Adoption of the Agenda and review of the minutes of the previous meeting**

The Chairman advised that the meeting would need to be completed by 3:15 p.m. in order to enable participants to attend the official reception ceremony.

Discussion of the draft Agenda highlighted that some items overlapped with the Agenda for the Regional Steering Committee (RSC) meeting and were more appropriately dealt with at that meeting; consequently, the revised agenda, as given above, was adopted.

Results of action items from the previous meeting are as follows.

1. *Email intention and then send abstract for Cape Town conference March 18-22, 2002, by November 30th, 2000.*

Mr. Ibbitt advised that an extension for the submission of papers for the FRIEND 2002 conference was requested and that 4 papers had been accepted.

2. *Request for countries to confirm creation of country nodes and provision of time series data.*

Item to be discussed under Agenda Item 6.

3. *Ensure all APF email list is up to date and send notification to all AP FRIEND members by 28th November 2000.*

Action completed. The email list system does not receive a lot of use and efforts should be made to encourage its use. The problem of virus transmission via the email list was seen as a possible reason for its lack of use. It was recognised that the virus problem was separate from the email list and was something that had to be guarded against by the individual user.

Mr. Thulstrup requested that information be forwarded by fax and post, as email is often not widely available in island countries. Mr. Moh'd Nor was requested to regularly update and distribute the contact list to members.

4. *Discuss the possible inclusion of projects from Indonesia and Vietnam in WG 5 and progress WG.*

Mr. Suravuth Pratishtananda informed the meeting that Mr. Kasem Chunkao (WG 5 Coordinator) had forwarded an abstract for a paper on "Human Adjustment Models" for the FRIEND 2002 conference. Mr. Takeuchi advised that, unfortunately due to a mix-up, the abstract was not submitted and that it was now too late. Mr. Ibbitt informed the meeting that Mr. Kasem had resigned as Coordinator of WG 5. Due to this resignation no progress has been made on inclusion of projects from Vietnam and Indonesia into the WG. It was agreed that Mr. Kasem Chunkao be requested to complete the paper as a more complete record of the results of the WG.

5. *WG Chairman to prepare two pages for Chapter 7—Global Friend Report 31 January 2001.*

The material was received and the chapter for the report drafted.

6. *Submit Proposals to Jakarta for travel for activities for AP FRIEND.*

Partly completed.

4. Report of the Chairman

Mr. Takeuchi briefly reported on the following items.

FRIEND Intergroup Coordination Committee (FIGCC)

Mr. Takeuchi described his attendance at the FIGCC meeting at Maastricht, the Netherlands on 24 July 2001 and highlighted items from the meeting minutes (distributed at the TSC meeting).

Mr. Takeuchi advised that he has agreed to distribute copies of the Catalogue of Rivers volumes to each of the Global FRIEND Coordinators.

Mr. Alan Gustard has resigned as Global FRIEND Chairperson and Mr. Eric Servat from AMHY FRIEND was elected as his replacement.

IHP 31st Bureau

FRIEND and the global Isotopes Program are major IHP crosscutting programs for IHP-VI. HELP is also a major crosscutting program but involves other organisations other than UNESCO, such as World Meteorological Organisation.

The IHP budget has seen a 50 percent increase due to the increasing importance of water issues but unfortunately the FRIEND budget has been frozen in real terms.

4th FRIEND Conference, Cape Town 2002 and APF contribution to report

The APF report for the conference has been drafted and will be included as Chapter 7 of the Conference report. The report will be published as an IAHS red book.

The deadline for requests of financial support for the attendance at the conference was the end of September. Mr. Moh'd Nor said that the funds available were limited and that his request for support had failed.

5. Report of the RSC Secretary

Funding

Mr. Takara described the changes in funding arrangements within Japan and that MEXT (Ministry for Education, Culture, Sports, Science and Technology) has replaced

MONBUSHO. Mr. Ikebuchi, Mr. Takeuchi and Mr. Takara have received funds for scientific research. These funds are available for varying periods of years; however, stricter conditions must now be applied to their use. Examples of areas of research supported by the funds are ungauged catchments and rainfall-runoff modeling, carried out by Japanese researchers. Some of those funds will still be available for use by APF.

The cost of publishing Catalogue of Rivers Vol. 4 will be met from IDI in Japan. However, funds for publishing future volumes will not be available from this source.

Mr. Arduino informed the meeting that some of the Funds In Trust (FIT) provided by Japan in previous years were still held in Jakarta. He requested advice on how these funds should be used. Mr. Takeuchi advised that the FIT funds should be used for RSC activities.

Appreciation was expressed for the funds provided by the Japanese Government over the years. Mr. Takeuchi stressed that, as the funds now being made available had much stricter conditions on their use and were primarily for Japanese researchers, additional funds need to be sought from within countries in the region and other sources such as APN or ADB.

Catalogue of Rivers

Volume 4 of the Catalogue of Rivers will have descriptions for 25 basins from 8 or 9 countries. Problems have been encountered in editing the files provided by the countries and this has slowed the publication. It is planned to publish the volume as both hardcopy and on CD-ROM and this should be completed during March 2002. A more detailed report will be presented at the RSC meeting.

Mr. Jayawardena inquired about the data sharing policy of APF and stressed that the data needs for research projects were considerably more extensive than the monthly data that was generally made available to the Water Archive for the Catalogue of Rivers basins. Mr. James agreed and advised that, whenever possible, daily data were placed in the Water Archive; he also commented that unfortunately this was often difficult to obtain and he urged countries to consider making daily data available wherever possible.

6. Reports from Others

Mr. Xu was responsible for drafting most of the APF chapter for the 4th FRIEND report. At Mr. Takeuchi's request, Mr. Xu described the sections of the chapter, the source of the information included and the meaning and origin of the Figures included.

Mr. Soontak Lee disagreed with some of the statements made during the meeting, such as saying that the preparation of the chapter signified the completion of the first phase of APF. Mr. Lee argued that the information in the chapter did not adequately cover the projects carried out by all APF Working Groups and that there was still a part of activities to be completed by some of the Working Groups.

During a discussion involving many meeting participants, it was agreed that further work is required to complete Phase 1 of APF as described in the initial science plan and that, therefore, a much more comprehensive final report should be produced. This report, which should include a recommended plan for the next phase, will signal the end of Phase 1. The question of what scientific output has been achieved as a result of the APF research was raised during the discussion but was not answered in any detail.

Mr. Takeuchi agreed to remain as Chairperson of the TSC with responsibility for finalising the Phase 1 report. Mr. Takeuchi felt that a new person with enthusiasm and more time to devote should be identified to take responsibility for preparing a plan for the next phase. It was agreed that such a plan should be prepared in parallel with the preparation of the Phase 1 report and presented to the RSC for consideration. Further discussion on the Phase 1 report and future plans is included under Item 7.

Mr. Takeuchi referred to the *UNESCO/Keizo Obuchi Research Fellowships Program*, which is described in one of the documents distributed at the meeting, and urged APF researchers to consider applying.

7. Working Group Reports: achievements and problems

Working 1: Establishment of Asian Pacific Water Archive

The activities of the WG are detailed in a report distributed at the meeting and were briefly summarised by Mr. James. The major activity was a substantial upgrade of the web software used at the Central Node of the Water archive to increase information about data that is available and to improve access to the data. Mr. James strongly urged both countries and individual researchers to make data available to the Water Archive so that the archive can become a credible source of data in support of hydrological research in the region.

During the discussion, the country representatives were urged to forward the details of any known web addresses of their country that provided access to data and/or information relevant to APF research programs. These links can be included in the various nodes of the Water Archive.

The following summarises the discussion on the current plans by countries to make available data and information on the Internet either by establishing a Water Archive country node or by other projects in the country.

Country	Plan	By when
New Zealand	All NZ hydrological data will be accessible on the Internet.	June 2002
Papua New Guinea	Plans underway to establish a node but there are concerns about installation and maintenance costs.	Mar-Apr 2002
Thailand	3-4 agencies responsible for hydrological data. Now working on a common format.	Mid 2002
Vietnam	Do not propose to establish a node. Data will be provided to Central Node	
Republic of Korea	There are plans to establish a country node.	
Cambodia	Do not plan to establish a country node but require instructions on preparation of data so that it can be forwarded to central Node	
Indonesia	There are plans to prepare a country node. It may be possible to link to the Department of Public Works for surface water data.	
China	Currently available on an IHP page on the Internet. Plan to make a node available with link to the Bureau of Hydrology for data. It is now Chinese policy to publish data and let these available for	End 2002

Country	Plan	By when
	general use.	

Working Group 2: Rainfall-Runoff Models

The WG had nothing to report beyond the information in the draft of the Cape Town report distributed at the meeting.

Working Group 3: Statistical and Stochastic Models

Mr. Soontak Lee stressed the need for long term recording periods for this research. Individual researchers are undertaking the research and a number of papers will be presented at the IHP symposium over the following 2 days. Mr. Lee advised that it would be necessary to hold a Working Group meeting to bring together the research results and prepare a summary report. This should be completed by mid 2002.

Working Group 4: Frequency Analysis Models

The activities of the WG were summarised by Mr. Takara with the aid of a Powerpoint presentation. Activities included a number of papers presented at conferences and workshops (2 papers in FRIEND 2002, Cape Town), the preparation of the extreme value data set (HEAP), the collection of additional Indonesian data for inclusion in HEAP and the completion of a questionnaire distributed to WG members.

The HEAP database contains extreme maximum and minimum discharges and precipitation totals as annual series, peaks over a threshold and historical records for basins in the Catalogue of Rivers. The data are held in a relational database, with a map front end for river selection, and the system is intended to become part of the APF Water Archive.

Working Group 5: Human Adjustment Models

A report of activities was not available however Mr. Suravuth Pratishtananda will request Mr. Kasem Chunkao to prepare a full paper based on the paper abstract that was discussed under Agenda Item 2 above.

8. Plans for the next phase of AP FRIEND

This Item was introduced by Mr. Takara, who briefly reminded to the meeting the background of the project, which spreads across the previous IHP phases, commencing with the International Hydrological Decade (1965-74) and finishing with the planned IHP-VI (2002-2007). As IHP-VI includes FRIEND as a cross-cutting program, APF will need to consider all themes in its plans for the next phase. The region will also need to decide how to deal with the other crosscutting IHP project, HELP (Hydrology for the Environment, Life and Policy).

Mr. Takara referred to the evaluation criteria included in the AP FRIEND science plan (IHP-V Technical Documents in Hydrology No 2, Jakarta), arguing that this will need to be used to assess the current projects; he also highlighted the need to develop new criteria to evaluate the outcomes of projects in the next phase of research.

Mr. Takeuchi referred to a review report of FRIEND (distributed at the meeting) carried out by Dr John Rodda for DFID, UK. While the report is focused on criteria for UK support for FRIEND, the recommendations are relevant to APF planning. Recommendations of particular relevance are: the need to have appropriate indicators for evaluation, establishment

of improved links to other groups and policy makers and to more clearly demonstrate its value for the reduction of poverty and improving the lives of poor people.

Each Working Group provided a brief outline of possible future activities the group could undertake as follows.

Working Group 1: Establishment of Asian Pacific Water Archive

Further work on the Water Archive in the next phase of APF is dependant on the archive being assessed as being a worthwhile resource for the region. Future developments should include the following:

- Increasing data holdings with more useful data for hydrological research, such as daily data.
- Increasing reliability of the Central Node and quality of data through training of HTC staff in computer systems administration and data quality control procedures.
- Providing more extensive support for the country nodes.
- Developing an online system of metadata about networks, data bases, reports and other hydrological information available in the region.

A number of participants pointed out that many of the Internet based information sources in the region are in the language of the host country. This will make it more difficult for users to get useful information from the metadata lists.

Working Group 2: Rainfall-Runoff Models

As a result of stricter conditions on the use of the MEXT funding (discussed earlier in the Agenda) possible project areas that could be included in the next phase are:

- Hydrological prediction for ungauged catchments such as follow-up to the Global Precipitation Mission and the Earth Simulator projects.
- Development of techniques to compensate for the decline of surface observation networks.
- Implementation of technologies available now, such as remote sensing, regional models nested in global models and remote monitoring of river and reservoir water levels.

Mr. Srikantha Herath described in more detail a research proposal for the Mekong Basin that has received MEXT funding. The proposal includes a number of collaborative projects with the Vietnamese Hydrometeorological Service and other Vietnamese institutions that will be carried out over a number of years. The projects include collection of water infrastructure information and comparison of hydrological models.

Working Group 3: Statistical and Stochastic Models

Completion of the current research program by mid 2002 is the highest priority. Possible future areas of research will then be considered.

Working Group 4: Frequency Analysis Models

Any future research program by the working group should include:

- More collaboration among members and the inclusion of additional members.
- Preparation of papers for symposia and workshops.
- Enhancement of the extreme-value dataset HEAP and the possible inclusion of model source code as a knowledge base.
- Collection of extreme-value data from the region.
- Contributions to the 5th International FRIEND conference (in 2006?).

Working Group 5: Human Adjustment Models

No information was presented.

Considerable discussion ensued on the priorities of completing work associated with the current research program and preparing a comprehensive report versus the need to begin preparation of a proposal for a research program for the next phase that was consistent with IHP-VI themes.

It was agreed that a high priority is the completion of a comprehensive report of the Phase 1 research. This should be completed and published for distribution before the next RSC meeting. A Working Group meeting will be held in April 2002 to assemble the draft document from material previously prepared by the WG Co-ordinators. A second editorial meeting may be required to finalise the document. The proposed timetable is presented below.

Date	Event
Nov 2001	9th RSC meeting
Mar 2002	Friend 2002, Cape Town
April 2002	Working Group Meeting to assemble APF Phase 1 report
Mid 2002	Editorial meeting (only if necessary) Final editing of APF Phase 1 report
By Oct 2002	Phase 2 issues to be considered by RSC Future of TSC? Proposed research themes? Work program preparation meetings?
Sep-Oct 2002	Publish Phase 1 report
Oct 2002	10th RSC meeting in Kuala Lumpur

It was agreed that while the TSC could prepare proposals for the APF Phase 2 Research Program, the responsibility for determining the future of the TSC, the final details of the Research Program and how it should be managed, rested with the RSC.

Mr. Ibbitt and Mr. Suravuth Pratishtananda proposed the appointment of a deputy for the TSC Chairperson in order to provide assistance with the work to be carried out from now up to the RSC10 in Kuala Lumpur. The existing Chairperson (Mr. Takeuchi) would be responsible for finalising the Phase 1 report and the deputy (or Chairperson assistant) would be responsible for managing the parallel preparation of the proposal for the Phase 2 program, to be considered by the RSC.

The meeting prepared the following description of duties for the Chairperson of any future TSC responsible for implementing the APF Research Program.

TSC Chairperson responsibilities: (needs a Secretary?)

- Plan next phase of research
- Maintain awareness of projects being undertaken in the next phase of research
- Must be committed and able to dedicate time
- Seek funding for research projects
- Ensure coordination of WGs
- Ensure the preparation of progress reports
- Maintain awareness of international activities related to APF research
- Attend Cape Town conferences and FIGCC meetings

Mr. Le Van Sanh commented that the duties were quite extensive and would require considerable commitment from someone.

The TSC Chairperson closed the meeting by thanking the participants for their contributions throughout the meeting and thanked the Vietnamese IHP Organising Committee for their excellent organization of the venue and meeting.

The meeting closed at 3:15 p.m.

9. Follow-up

ACTION ITEMS	BY WHOM
1. Working Group 5 paper to be prepared based on abstract prepared for FRIEND 2002 conference.	Kasem Chunkao (via Suravuth Pratishtananda)
2. APF contact details to be regularly updated and distributed.	Moh'd Nor
3. Distribute copies of Catalogue of Rivers volume to Global FRIEND Coordinators.	Takeuchi
4. Send data preparation Guidelines to Cambodia.	James
5. Provide guidelines to WG Coordinators on content and format and request input for APF Phase 1 report	Takeuchi
6. Arrange April 2002 Working Group meeting	Takeuchi/Takara
7. Prepare a comprehensive report of APF Phase 1 before RSC 10	Takeuchi (with assistance of all the working groups)

**FIFTH COORDINATION COMMITTEE MEETING
OF THE REGIONAL HUMID TROPICS HYDROLOGY
AND WATER RESOURCES CENTRE
FOR SOUTHEAST ASIA AND THE PACIFIC**

Sofitel Plaza Hotel
Hanoi, Vietnam, 20 November 2001

Minutes

1. Participants (members and observers)

PARTICIPANT	ORGANIZATION
1. Mr. Keizrul Abdullah (<i>Chairman</i>)	IHP Malaysia Department of Irrigation and Drainage (DID), Malaysia
2. Mr. Mohammed Nor bin Mohammed Desa (<i>Secretary</i>)	Regional Humid Tropics Hydrology and Water Resources Centre for Southeast Asia and The Pacific (HTC) Kuala Lumpur, Malaysia
3. Mr. M. Lombardo (<i>Rapporteur</i>)	UNESCO Jakarta
4. Mr. Trevor Daniell	IHP Australia
5. Mr. Ross James	IHP Australia
6. Mr. Mao Hak	IHP Cambodia
7. Ms Zhu Xiaoyuan	IHP China
8. Mr. Liu Heng	IHP China
9. Mrs. Gadis Sri Haryani	IHP Indonesia
10. Mr. Jan Sopaheluwakan	IHP Indonesia
11. Mr. Joesron Loebis	IHP Indonesia
12. Mr. Kuniyoshi Takeuchi	IHP Japan
13. Mr. Kaoru Takara	IHP Japan
14. Mr. Soontak Lee	IHP Republic of Korea
15. Mr. R. Ibbitt	IHP New Zealand
16. Mr. R. Curry	IHP New Zealand
17. Mr. Maino Virobo	IHP Papua New Guinea
18. Mr. Rishi Raj	IHP Pacific Small Islands
19. Mr. Tran Thuc	IHP Vietnam
20. Mr. S. Kazama	Tohoku University, Japan
21. Mr. Z. Xu	Yamanashi University, Japan
22. Mr. V.T.V. Nguyen	Mc Gill University, Canada
23. Mr. Hans Thulstrup	UNESCO Apia
24. Mr. G. Arduino	UNESCO Jakarta

2. Opening by the Chairperson

The meeting was opened at 16.45 by the Chairman, Mr. Abdullah, who welcomed all the participants.

3. Election of Rapporteur

Mr. Lombardo, representative from the UNESCO Jakarta Office, was elected as rapporteur of the meeting.

4. Adoption of the Agenda

The provisional Agenda (contained in a report previously prepared by the HTC and handed out to the participants at the opening of this meeting) was adopted without alteration.

5. Report of the 4th Co-ordination Committee (CC) Meeting

The Director of the HTC reviewed the report of the 4th Co-ordination Committee Meeting held in Christchurch, New Zealand, on November 21, 2000, on the occasion of the 8th IHP-RSC Meeting for Southeast Asia and the Pacific. The status of the actions that were to be followed-up is briefly presented per item here below.

a) Website of the HTC

Mr. Mohd Nor said that the download times for the HTC newsletter should not be included on the webpage, as they greatly depend on the conditions of the Internet connection. However, he offered to make a text only version available for those wishing to minimize the download times.

b) Mailing list of the HTC-AP FRIEND

The current mailing list will continue to be maintained at the HTC. Alternative mailing lists could be available in the *Yahoo! E-Groups*.

Mr. Mohd Nor also encouraged the participants to use the mailing list as much as possible.

c) Proceedings of the Regional Conference on Hydrology and Environment of Small Islands

Mr. Mohd Nor apologized for the delay in the preparation of the above-mentioned publication and promised to send it as soon as possible to the South Pacific Applied Geosciences Commission (SOPAC) for further distribution and circulation.

d) Organization of regional training courses and workshops

The proposed training course “Water Resources Management in Developing Countries”, to be held in 2001, cannot be supported by the Swedish Government, as Malaysia is not included in the list of developing countries to be financially supported by that government. Mr. Mohd Nor commented that the Swedish Government, as well as other donor institutions, are more inclined to provide financial support for such initiatives if there are specific requests coming from developing countries.

Mr. Nguyen remarked the key-role of the HTC as a regional institution, and stressed the need to support capacity-building initiatives. The Member Countries should be encouraged to provide their feedback for the preparation of training courses and workshops to be organized by the HTC, and these proposals should be specifically tailored to the regional needs. Mr. Keizrul and other participants agreed with this observation, suggesting that the HTC could elaborate a specific questionnaire to be circulated to the Member Countries; this questionnaire could serve as a tool for the HTC to elaborate specific proposals to be submitted to the potential donors. In this regard, Mr. Nguyen commented that if the UNESCO Jakarta is involved in providing support to these efforts, then there could be greater possibilities of success when approaching the donors. Mr. Arduino stressed that, for the development of such initiatives, the UNESCO Jakarta should receive well-designed "concept-proposals" from the HTC or other concerned institutions.

In respect to the organization of a regional training course on detection of trends and changes in hydrological data, suggested by Mr. M. Bonell (UNESCO Headquarters, Paris) during the previous HTC CC Meeting (in Christchurch, 2000), Mr. Arduino said that the UNESCO Jakarta has not yet received a specific feedback from the UNESCO Headquarters. The UNESCO Jakarta will look after this proposal for the next biennial working-plan (2002-2003).

e) *Scientific researches on the impacts of forestry on water ecosystems*

Mr. Mohd Nor stated that the ICRAF and the IC-SEA/BIOTROP were not contacted. He pointed out that there was not enough interest by the countries of the region for the implementation of such researches. This action, therefore, will not be carried forward.

f) *HTC as clearinghouse for technical hydrological information in the region*

Mr. Mohd Nor stressed that the HTC is willing to collaborate with any institution or scientists in the region. He also drew attention on the UNESCO/Keizo Obushi Fellowship Programme (circular attached to the HTC report). Mr. Mohd Nor pointed out that this was an opportunity offered to young scientists working in institutions located in developing countries of the region to receive a relevant fellowship for undertaking research projects in the environmental area.

g) *Assistance to the AP FRIEND Working Group 5*

Mr. Mohd Nor said that the collaboration with Prof. Chunkao (coordinator of the working group) has been interrupted since a long time. Furthermore, no relevant developments were achieved by this group after the last CC meeting. Mr. Takeuchi observed that Prof. Chunkao has already expressed his intention to resign his mandate as coordinator of this group.

6. Report by the Director of the HTC

6.1 Progress report concerning recent activities involving the HTC

Mr. Mohd Nor presented a "progress report" of the activities carried out by the HTC after the 4th CC meeting (from 2000 to 2001). This report was included in the document handed out to the participants of the present meeting.

Various participants raised comments on two issues in particular:

- a) the Water Archive It was commonly agreed that the AP FRIEND Water Archive, now upgraded after the technical review operated by Mr. Ross James (financially supported by

the UNESCO Jakarta), could be much more enriched with hydrological data and descriptive information concerning the water resources area in general. The data and information contained in the scientific papers presented at this last Symposium could be used for this purpose. Another possible future development of the Water Archive is the inclusion of meta-data.

- b) Co-operation of the HTC with the Member Countries through the Regional Steering Committee of the IHP

Mr. Mohd Nor observed that the cooperation with the Member Countries should be reinforced, but remarked on the difficulty of obtaining financial funding for the development of regional collaborative research. Mr. Mohd Nor also said that the HTC recognizes the importance of developing such initiatives and requested the UNESCO Jakarta Office to provide assistance on this matter, helping to promote a greater involvement of the Member Countries.

Mr. Keizrul suggested the on-line publication, in HTC's website, of the scientific papers (in PDF format) presented during the IHP Symposia and a possible linkage to UNESCO's official website. Mr. Arduino commented that it would be probably more advisable to include a list of the publications available, with indication of where to obtain them (the majority could be available through the Jakarta Office, but some are available only in the UNESCO Headquarters). Commenting on this possibility, Mr. Nguyen suggested inclusion in the website of only the titles of the publications and the extended abstracts, as the full publication of the papers of the symposia (in many cases not available in digital format) could be costly in time and money. Mr. Keizrul expressed agreement with this proposal.

Mr Soontak Lee expressed his concern regarding the use of UNESCO publications on websites other than the UNESCO official website. Mr. Arduino replied that probably this would not represent a problem, but he promised to verify with HQs.

Mr. Takeuchi, expressing agreement with the proposal of including full downloadable versions of the papers in HTC's website, suggested limiting this effort only to the most recent symposia. Other participants inquired on the maximum capacity available at the HTC server, considering that the new material added to the website could occupy a large space. The HTC will look into this issue.

6.2 Comments on the discussion notes concerning the visit by Dr. Stephen Hill, Director of the UNESCO Jakarta Office

Mr. Mohd Nor presented the brief notes concerning the above meeting (attached in HTC's Report). He particularly highlighted some issues discussed with Dr. Hill, as briefly reported here under:

- a) International Conference on Urban Hydrology

Mr. Mohd Nor made reference to the brochure previously distributed to the participants. He stated that the HTC has officially requested the UNESCO Jakarta Office to provide partial financial support for the organization of the above-mentioned conference, to be held in October 2002, in conjunction with the 10th IHP RSC Meeting, which will take place in Kuala Lumpur.

- b) CC Meeting of the HTC

Mr. Mohd Nor requested UNESCO Jakarta to provide an additional financial allocation to the HTC in order to enable an additional officer of the Center to attend this meeting, working as a “resource person”. Mr. Daniell asked Mr. Mohd Nor to clarify why such an officer was needed. Mr. Mohd Nor and Mr. Keizrul commented that this person could help in looking after the organization of the CC meeting and, provide support for the technical issues concerned.

c) Reference Directory on Hydrology Experts

Mr. Mohd Nor mentioned the intention of the HTC to set up such a directory, which could include many hydrologists from the region. He agreed with the observation expressed by Mr. Hill, who indicated that this project should be elaborated in accordance with the Member Countries, and that it should be carefully designed in order to function as a platform which could really add value to regional cooperation. Mr. Mohd Nor further asked UNESCO Jakarta to provide financial support in order to enable the collaboration of a technical consultant for the development of this initiative.

7. Future direction of the HTC Kuala Lumpur

Mr. Mohd Nor asked the participants to provide their opinions on the above matter.

Mr. Takeuchi commented that during the last session of the IHP Bureau (the 31st, held in Paris in September 2001) - which he attended as representative of the region - the success achieved by the CATHALAC, regional centre of the Latin and Caribbean region was stressed, while it was remarked that the performance of the HTC is not so successful. Therefore, Mr. Takeuchi encouraged the Director of the HTC to strengthen the collaboration and enrich the discussion with the UNESCO Jakarta Office for the implementation of the future activities to be coordinated by the HTC. In regard to the Keizo Obuchi fellowships, he invited UNESCO Jakarta and the HTC to disseminate the announcement in the region. Mr. Takeuchi also pointed out the necessity of the HTC to take a more pro-active action in fostering the co-operation with the regional institutions.

Mr. Arduino commented that the UNESCO Jakarta Office is willing to increase its collaboration with the HTC, but pointed out that the HTC should prepare specific proposals for collaboration, with an indication of outstanding objectives. In support of this opinion, Mr. Arduino mentioned that the cooperation with the HTC had recently been strengthened, after the improvement of the Water Archive, which was made possible by means of a clear working plan, designed in collaboration with the Center and the consultant.

Mr. Lombardo invited the HTC to elaborate proposals on the basis of the plan for the sixth phase of the IHP, in order to allow the development of future regional activities to be coordinated by the HTC in co-operation with the Member States.

Mr. Soontak Lee, observing that the HTC is mostly committed to develop activities within the framework of the urban hydrology, commented that the mandate of the Center is not limited to this area and solicited the HTC to strengthen its action in relation to other relevant themes.

Mr. Lombardo further pointed out the previous comments expressed by Mr. Takeuchi and Mr. Arduino, stressing that the HTC should seek collaboration with the UNESCO Jakarta Office for adopting a more pro-active attitude and providing concrete proposals to be followed up by joint action.

8. Closure of the meeting

The Chairman summarized some outcomes of the discussion. He expressed his hope that the Center could be soon considered as being highly successful and warmly asked all the participants to co-operate in achieving this goal. In particular, he agreed on the importance of elaborating the future activities in accordance with the plans for the IHP-VI, and called upon the HTC to identify common areas of regional scientific collaboration in the water sector.

Finally, the Chairman thanked the participants for their attendance and co-operation.

The meeting closed at, approximately, 18:30.

AD INTERIM IHP PACIFIC FOCAL GROUP MEETING

Halong Hotel 3
Ha Long City, Vietnam, 21 November 2001

Minutes

Attended by:	Australia	Trevor Daniell
		Ross James
	Fiji	Rishi Raj
	New Zealand	Bob Curry (Rapporteur)
		Richard Ibbitt
	Papua New Guinea	Maino Virobo
	Vanuatu	Christopher Ioan
	UNESCO Apia	Hans Thulstrup (Chairman)
	UNESCO Jakarta	Giuseppe Arduino
	Massimiliano Lombardo	

The Agenda (Appendix 1) was distributed on 20 November and the meeting commenced on 21 November at 1800 hrs

1. Introduction

Mr. Thulstrup welcomed those present and gave a brief introduction to the meeting, recapping the outcome of discussions at the UNESCO Asia-Pacific IHP RSC meeting in Christchurch, New Zealand on 20 November 2000 regarding possible modalities of Pacific small island state representation on the RSC. He highlighted the issue of RSC membership being restricted to those countries that have a National IHP Committee, effectively excluding most small-island nations in the Pacific due to their limited human, financial and infrastructure resources. At Christchurch, the Pacific delegates had expressed the need for an alternative form of Pacific participation, and a Pacific Focal Group was proposed.

Although still not formally launched, the meeting generally accepted that those present were representative of a rotational ad-hoc Interim IHP Pacific Focal Group, the establishment of which had been agreed upon at the Christchurch meeting. At the same time, it was noted that the ad-hoc format would not ensure adequate Pacific participation in Asia-Pacific IHP activities in the long term, and that a firmer format should be sought.

2. Report by UNESCO Apia on Pacific Activities

The following initiatives undertaken since the last RSC meeting (Christchurch, New Zealand, 20 November 2000) were reported:

- UNESCO funded and co-organized a *Hydrological Data Logging, Management and Interpretation Training Course* to be held at the James Cook University, Townsville, Australia 3-7 December 2001. The training course, targeted to technical and scientific staff, was designed to improve their skills and capacities in working with Campbell and Unidata solid state loggers, as well as with the TIDEDA hydrological database software, commonly used throughout the nations of SE Asia and the Pacific. Four days will be devoted to hands-on training whilst on the fifth and final day the group of participants

will undertake a field trip to the nearby research catchments at Babinda. UNESCO Apia will fund the attendance of participants from four Pacific Island nations, while UNESCO Jakarta will fund participants from six SE Asia nations (including PNG). All participants had been suggested by co-organizing partner NIWA and had been approved by their respective national authorities to attend the Workshop. Mr. Mike Bonell and Mr. Arduino from UNESCO Paris and Jakarta, respectively, will also attend the workshop.

- A **WMO - SOPAC - UNESCO Regional Hydrological Training Programme for Small Island Countries in the Pacific**, originally prepared by Mr. Paul Mosley and Mr. Raj, was submitted through SOPAC in mid-2001 to AusAid and NZODA for funding. The training proposal suggests annual one-month hydrological training course sessions to be held over 3 consecutive years. While no firm response from donors has been received to date, Mr. Raj reported that there was a strong likelihood of the programme being funded by AusAid next year, with a proposed course commencement in October 2002.
- Mr. Raj advised the meeting of the **Pacific HYCOS** (Hydrological Cycle Observing System) programme submitted to WMO Geneva by Mosley & Mr. Raj. He suggested that IHP build links with WMO in the context of the GCOS (Global Climate Observing System) programme in the region, and stressed the need to stress such links through the Meteorology representatives in each country. Mr. Raj further advised the group that ADB might have substantial funding available in support of such activities. The meeting noted that Mr. Raj's association with WMO was most valuable in ensuring that WMO – IHP activities were appropriately co-ordinated in the Pacific.
- Mr. Thulstrup advised the group of the publication in mid-2001 of the final IHP Technical Document in Hydrology to arise from the Tonga-Kiribati groundwater research activities, **Technical Documents in Hydrology No. 43: Integration of social and technical science in groundwater monitoring and management. Groundwater pollution study on Lifuka, Ha'apai, Tonga and Recharge study on Bonriki, South Tarawa, Kiribati**”, by Dr. Leonie Crennan.
- Mr. Thulstrup recapped the progress on the three high priority research projects as identified at IHP-SOPAC workshops in Honiara (1994), Suva (1997) and Christchurch (2000) – **the Atoll Groundwater Recharge (Tonga), the Groundwater Pollution by Sanitation (Kiribati) and the Catchment & Communities (Vanuatu) projects**, stating that research had been completed and papers prepared on the two groundwater projects; however that the high volcanic island catchment and communities project had not progressed due to a range of well-documented issues, however that the project document was currently being redesigned. The Vanuatu Government Department of Geology, Mines & Water Resources, through Canadian volunteer hydrologist Jan Fraansen, have prepared a Project Profile and budget for a revised Catchment & Communities Project which is currently with the Vanuatu Department of Economic & Social Development for donor funding (Appendix 2). Part of this Catchment & Communities project specifies the use of NIWA's SHMAK system to allow communities to evaluate the health of their rivers and streams, but this system, which currently assesses stream health from invertebrate populations in temperate climates, requires validation for tropical waters. Consequently a Catchment & Communities Sub Project proposal was prepared by NIWA (Appendix 3) and forwarded to UNESCO Apia for funding.

3. Preliminary Plans for Pacific IHP Activities during 2002-2003

- Mr. Thulstrup advised that UNESCO Apia wished to proceed immediately to finalize a project document for the **Catchment & Communities Project**, and that both the Vanuatu Government Catchment & Communities Project proposal and Catchment & Communities Sub Project had been discussed extensively with Mr Bonell, UNESCO Paris. Mr. Bonell has suggested that UNESCO contract an independent consultant to review the proposals

and project concepts put forward to date, and then to make qualified recommendations to UNESCO on project design upon which to initiate implementation. Mr. Bonell further suggested that a Vanuatu Catchments & Communities project might be seen as an initial initiative towards the establishment of a Pacific HELP basin. Mr. Raj suggested the involvement of USP students for hydrometric monitoring, while Mr. Daniell warned of the data quality problems experienced in Australia with community based data collection. Mr. Chris Ioan suggested that Mr. Morris Stephen would be attending the Townsville Workshop and could discuss the Catchment & Communities Project with Mr. Bonell and Mr. Thulstrup further at that time. Mr. Thulstrup indicated that the project review and subsequent start-up of implementation could be undertaken early in the New Year.

Action: Mr Thulstrup & Mre Bonell

- Mr. Thulstrup advised UNESCO Apia wished to ensure that the recommendations from the *Kiribati & Tonga groundwater research projects* were followed up. Follow-up action has subsequently been undertaken with the approval by ACIAR (Australia) of the project “Equitable Groundwater Management for the Development of Atolls and Small Islands” to be implemented by the Centre for Resource and Environmental Studies, Australian National University, Canberra, Australia.

4. Pacific Representation in IHP Fora

It was noted that, apart from Australia and New Zealand, PNG is the only Pacific Island country with a National IHP Committee and therefore the only PIC member represented formally represented on the IHP Asia-Pacific RSC.

It was originally proposed at Christchurch that the loosely formed Pacific Focal Group would send one or two representatives from the Group to attend the annual Asia-Pacific RSC meetings together with a facilitator from SOPAC and/or UNESCO Apia Office. This representative would be chosen on a rotational basis so that every nation would eventually attend RSC meetings. However this proposal was not enthusiastically supported by all present, as some delegates were uncomfortable about other nations adequately representing their interests. This outcome lead to the current ad-hoc arrangement.

An alternate solution discussed at Christchurch was to collate and summarise regional activities and prioritise research, development and training projects at annual or biennial SOPAC-facilitated meetings and then have a UNESCO representative and/or a SOPAC facilitator address these regional issues at RSC meetings. The meeting was reminded that at Christchurch Mr. Thulstrup and Mr. Overmars, SOPAC had agreed to draft a proposal for the formation and operation of a UNESCO-SOPAC Pacific Focal Group for Water Resources. In order to further this matter, the meeting agreed that Mr. Thulstrup write to SOPAC to formally suggest that the Water Unit facilitate the coordination of a Pacific Focal Group on Water Resources and work closely with the UNESCO Apia Office for the co-ordination of IHP activities in the Pacific.

Action: Mr Thulstrup

Other solutions to the matter were discussed – among such, the meeting of PIC technical representatives at the SOPAC Annual Session was suggested as a possible Focal Point meeting venue, however Mr. Bob Curry noted that these sessions tend not to be attended by technical water resources staff, and as meeting venues are rotated around the SOPAC member countries, are often held in remote places involving expensive travel costs. Mr. Arduino suggested that technical representatives from each PIC meet at SOPAC in Suva annually and that rotating representatives attend the RSC meetings, such as Mr. Raj was doing presently.

It was noted that substantial elements of hydrological work carried out for the smaller PICs was undertaken by consultants, and that this work should be reported to the RSC alongside

that of national researchers and technicians. Mr. Richard Ibbitt noted that activities of consultants on water resources in the various countries was just as important as work being done by staff of those countries and should be reported. Mr. Ibbitt undertook to remind PIC delegates to include comment on what had been achieved by consultants in their report to the RSC Meeting.

Action: Mr Ibbitt

The meeting noted that PIC's needed to be encouraged to present more papers at symposia - in particular those scientific meetings held in conjunction with the RSC. Mr. Raj stressed that Pacific island researchers both submit and publish internationally, however have not submitted papers to RSC-related symposia as they have been unaware that the possibility to present papers. Was extended to them. UNESCO will work with SOPAC to ensure broader advice to the region on relevant conferences, symposia etc. Mr. Ibbitt suggested that a list of country representative contacts etc. for this purpose could be obtained from the Humid Tropics Centre, however it was noted that not all countries had email facilities, and that even faxes could be unreliable for extended periods (Vanuatu & Solomon Islands). It was noted that country representatives did not always pass on relevant information to their in-country hydrology colleagues and that multiple copies sent to the appropriate individuals in-country was a surer system. Although UNESCO has a list of IHP National Committee members on the Jakarta web site, these were sometimes out of date as countries did not always advise UNESCO of change of personnel and contact details.

Action: all member countries

5. AP FRIEND Small Islands Working Group

Mr. Daniell suggested disbanding the TSC as it no longer served its purpose and forming a Small Islands Working Group on Water Resources in line with IHP – VI objectives. Mr. Curry noted that unlike SE Asia, the Pacific had already identified and prioritised their research needs (ref. 1997 Suva Workshop – Extract pp 6&7 of Report on UNESCO IHP Pacific Focal Group for Water Resources – Priority Issues in Water Resources, Christchurch 20 November 2000 – Appendix 4).

It was noted that although 2 out of 3 of the original research projects had been completed, there were still a number of important research requirements needing to be addressed.

6. Report to RSC

The meeting nominated Mr. Raj as spokesperson for absent PIC's at the RSC, and asked that he report on the discussion of this Interim Pacific Focal Group Meeting to the RSC.

Action: Mr. Raj

Mr. Ibbitt as Chair of the RSC agreed to include in the RSC Meeting a report from Mr Raj on behalf of the PICs

Action: Mr. Ibbitt

7. Closing

The meeting was concluded at 19:30.