

**Objectives of Trip to Jordan (November and December, 2004)**  
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The objectives of my trip to Jordan and Syria have two components:

1. To conduct a six-month post evaluation for the workshop (**Sustainable Water Resources Management: the Role of Proxy Records in Understanding Drought and its influence on Reclaimed Water Resources**) that was conducted during the period of July 11-15, 2004. Long term retention and utilization is the best measure of a workshop's effectiveness. It is important to measure the participants' long-term use of the information conveyed during the workshop, both for the attendees and the sponsors. This provides a measure of the lasting value of the workshop to the participants. Therefore, evaluation by those who were involved will provide an overall content assessment and training assessment to see if the needs of the participants, sponsors, and other workshop-supporters have been properly met.
2. To perform a survey interview of significant institutions and individuals concerned with Jordanian water resource utilization and sustainability. The question of sustainability goes to the heart of the Sustainable Development of Drylands Project's long-term goals and the goals of the government of Jordan and USAID. Insufficient knowledge exists as to the levels of concern and commitment by key institutions in Jordan to prepare for inevitable future droughts. The knowledge delivered during the workshop in July needs to be continued and expanded upon. The proposed survey will be the logical extension of the initial effort and lead to a systematic understanding of the capabilities, levels of interest and eventual commitment by the key institutions to work on Jordanian preparation for drought research, planning and management.

### **Six-Month Post Evaluation**

On December 12, 2004, I conducted the six-month post evaluation for the workshop at the Hashemite University (See Appendix I). Three of the participants did not attend the evaluation. The results of the evaluation indicate that the trainees still have positive feelings about the workshop entitled "Sustainable Water Resources Management: the Role of Proxy Records in Understanding Drought and its Influence on Reclaimed Water Resources". The responses to the three different questions were:

**Identify 3 areas of the workshop that you feel have had the most long-term value in your professional work. (Please explain why.)**

The three areas that the participants identified as having the most long-term value in their professional life were:

- Dendroclimatology and its role in understanding drought frequency, intensity, and distribution for several centuries.
- Fieldwork and Laboratory exercises.
- The applications of dendrochronology and the different case studies that were presented in the course

**How are you using the ideas and techniques in your work?**

All of them indicated that they have not started using the techniques in their work, but they are planning to use them in the following areas:

- To study drought characteristics.
- To study earthquakes.
- To study the relationship between climate and human history

**Do you have any additional comments or suggestions, such as workshops addressing related topics, other institutions should be included in the workshops, or collaborative research among the participating institutions, etc?**

All of them responded as follows:

- More workshops in Jordan and USA for a longer period that focus on the applications of dendrochronology are needed.
- Develop a collaborative project with the University of Arizona, the Laboratory of Tree-Ring Research to study drought events and to study the problem of desertification in Jordan.
- More students should be involved in the future workshops.

**Survey on Water Resource Utilization and Sustainability**

During this trip to Syria and Jordan, I met with different Institutes. They are:

1. ICARDA (International Center for Agricultural Research in the Dry Areas, Aleppo-Syria)
2. IPGRI (International Plant Resources Institute, Aleppo-Syria)
3. BRDC (Badia Research Development Center, Amman-Jordan)
4. QRACEST (Rania Al Abdullah Center for Environmental Sciences and Technology, Irbid, Jordan) at JUST (Jordan University of Science and Technology)
5. Yarmouk University

6. IEES (Institute of Earth and Environmental Sciences) at Al al-Bayt University, Mafraq- Jordan
7. WERSC (Water & Environment Research & Study Center) at the University of Jordan, Amman-Jordan
8. RSCN (The Royal Society for the Conservation of Nature, Amman-Jordan).
9. NCARTT (National Center for Agriculture Research and Technology Transfer, Amman-Jordan)
10. FNRE (Faculty of Natural Resources and Environment) at Hashemite University, Zarqa-Jordan

In their surveys (Appendix II), all these institutes considered drought and water shortages as the most important problems facing Jordan and the surrounding countries. They also considered that establishing a drought center in Jordan to do research, planning, and management to be a main priority for Jordan and the region. They believe strongly in the importance of the involvement of the surrounding countries in establishing the center.

All these agencies are willing to contribute either their expertise (BRDC, RSCN, WERSC, QRACEST, NCARTT, ICARDA), equipment (IEES, WERSC, ICARDA), facilities (BRDC, NCARTT, FNRE, WERSC, ICARDA), financial support (ICARDA), and joint research projects, seminars, workshops and conferences (IEES).

These institutes and I strongly agree that water is a critical factor in the Middle East. The question of water sustainability goes to the heart of the Sustainable Development of Drylands Project's long-term goals and the goals of the governments of Jordan, surrounding countries, and USAID. Insufficient knowledge exists as to the levels of concern and commitment by key institutions in Jordan and surrounding countries to prepare for inevitable future droughts. This survey was the logical extension of the initial effort and led to a systematic understanding of the capabilities, levels of interest and eventual commitments by the key institutions to work in Jordan and neighboring countries and to prepare for drought research, planning and management.

Finally, shared water resources are the lifeblood of Middle Eastern countries. In this region where strife is endemic, competition over scarce water supplies looms as the next potential flash point for all countries sharing this resource. If a sustained drought were to occur in the Middle East, deadly confrontations would almost certainly result given the current lack of knowledge, planning, and political structures sufficiently developed to cooperate during such a crisis. Water resources in this dryland region are insufficient now to support its rapidly growing population. In these countries people are competing for shrinking water resources with efforts to expand agricultural and industrial development. Additionally, human activities in this dry environment can lead to further degradation of the natural resource base and eventually exacerbate desertification, which will alter hydrologic cycles and amplify the effects of any drought.

**APPENIX I.**

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**Workshop Sustainable Water Resources Management: the Role of Proxy Records in Understanding Drought and its Influence on Reclaimed Water Resources**

(July 11-15, 2004)

Jordan Project Component

Sustainable Development of Drylands Project

IALC-The University of Arizona, Tucson, AZ

**Six-Month Post Workshop evaluation**

Identify 3 areas of the workshop that you feel have had the most long-term value in your professional work. (Please explain why.)

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_

How are you using the ideas and techniques in your work?

Do you have any additional comments or suggestions, such as workshops addressing related topics, other institutions should be included in the workshops, or collaborative research among the participating institutions, etc?

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Thank you.

## APPENDIX II.

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### **Survey Sheet for the Need of Drought Research, Planning, and Management in Jordan Jordan Project Component Sustainable Development of Drylands Project IALC-The University of Arizona, Tucson, AZ**

1. Name of your institution:
2. Address of your institution:
3. How would define the major goals and objectives of your institution?
4. In your opinion, what are the major issues and concerns that Jordan faces in the areas of water and natural resources?

5. Do you feel that the availability of water resources is an important issue facing Jordan on local and/or regional levels?

Yes

No

6. Do you consider drought to be one of the major issues facing Jordan on local and/or regional levels?

Yes

No

7. On a scale of 1 through 5 (with **1** being the least critical and **5** being the most critical), how do you rate the importance of drought and water shortage problems in Jordan?

1      2      3      4      5

8. Are there any specific suggestions or recommendations you would like to make regarding ways to reduce problems of drought and water shortages in Jordan?

9. Do you think that treated wastewater plays or can play an important in supplying the water needs faced by the agricultural sector?

Yes

No

10. Do you think that establishing a regional drought center in Jordan would be of significant benefit in addressing Jordan, and the region's, water and natural resource issues?

Yes

No

11. On a scale of from 1 through 5 (with **1** being the least strongly and **5** being the most strongly), how strongly do you feel that it is important to develop such a regional drought center.

1      2      3      4      5

12. If such a center were to be established in Jordan what will be your Institute's contribution to establishing a drought center (You can select more than 1).

a. Facilities    b. Expertise    c. Financial Support    d. Equipment

e. Other (Please specify)

13. If such a center were to be established in Jordan, which other countries do you think should be involved in the process?

14. Referring to the previous question, are there any research institutions or universities in those countries that you think could play an important role in the project?