



**Prince Sultan Bin Abdulaziz
International Prize for Water**



**5th Award - 2012
General Information and Invitation for
Nominations**



HRH Prince Sultan Bin Abdulaziz

The Prize is an undertaking that reflects brightly on Saudi Arabia's continued efforts and constructive work on behalf of humanity. There can be no doubt that the Prize, by honoring creative scientists, gives recognition to the contributions they are making to protect one of our most precious resources. Whether it is for their work in water conservation, quality-control, minimizing pollution, or some other worthy endeavor, honoring these researchers is an inspiration for scientists to give their utmost in developing ever-better research methods and capabilities.

A stylized, handwritten signature in blue ink, likely belonging to HRH Prince Sultan Bin Abdulaziz. The signature is fluid and cursive, with a long horizontal stroke extending to the right.



Introduction

On 21 October 2002, His Royal Highness Prince Sultan Bin Abdulaziz – Crown Prince, Deputy Prime Minister, Minister of Defense and Aviation and Inspector General – announced in Riyadh that nominations were being accepted for a new global Prize to be awarded biannually: the "Prince Sultan Bin Abdulaziz International Prize for Water" (PSIPW).

The Prize Council, headed by His Royal Highness Prince Khalid Bin Sultan Bin Abdulaziz, includes leading scholars from around the world. The General Secretariat of the Prize is headquartered in the Prince Sultan Research Center for Environment, Water and Desert, at King Saud University in Riyadh, Saudi Arabia.

This internationally acclaimed scientific prize has proven to be one of Saudi Arabia's key contributions to water-related issues on a global scale, issues which represent some of the world's most pressing humanitarian, economic and political concerns. The Prize reflects the true image of a nation committed to the environment. It represents a call to the people of the world – a call for international responsibility.

Dr. Abdulmalek A. Al Alshaikh
PSIPW General Secretary



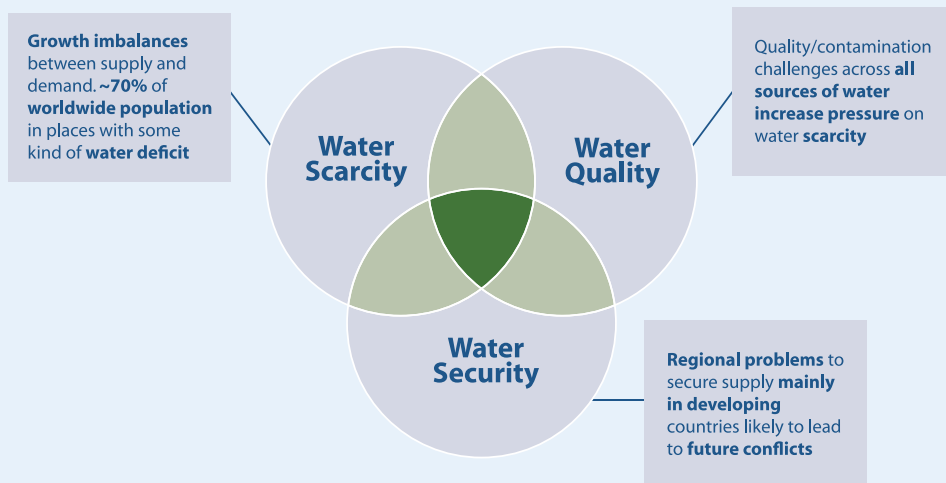
Goals of the Prize

PSIPW aims to give recognition to the efforts that scientists, inventors and research organizations around the world are making in water related fields. PSIPW acknowledges exceptional and innovative work which contributes to the sustainable availability of potable water and the alleviation of the escalating global problem of water scarcity.

For this reason, PSIPW awards a suite of five bi-annual prizes, covering the entire water research landscape.

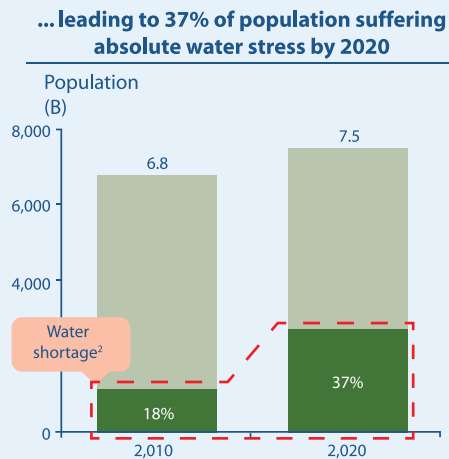
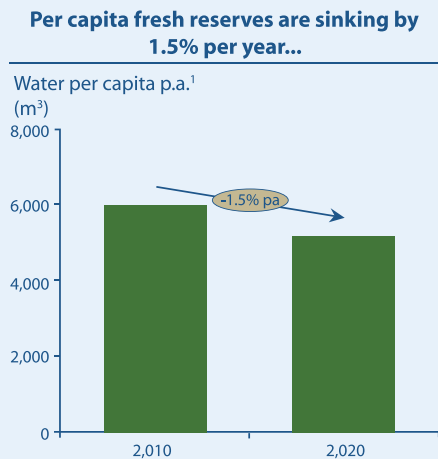
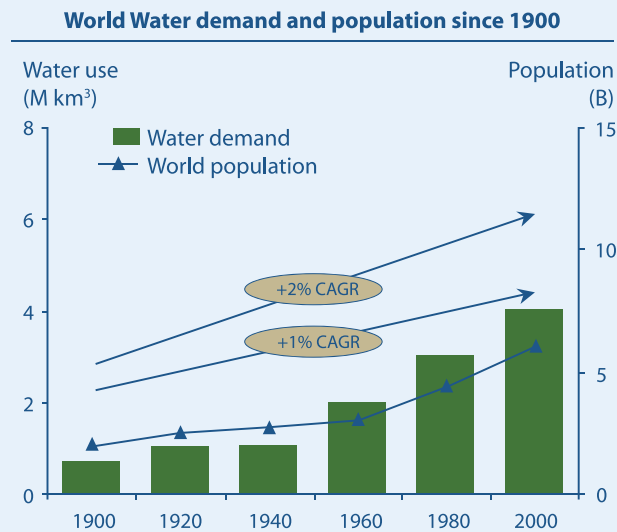
The Water Landscape

Through its five distinctive Prizes, PSIPW encourages research to find solutions to the various water-related challenges facing the world today.

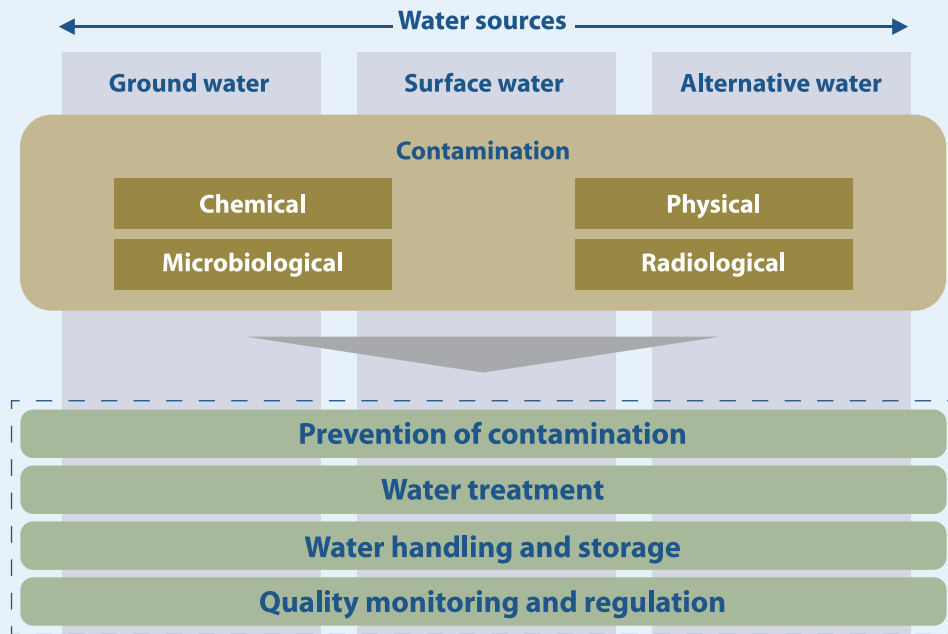


There are three major water challenges. There is widespread and growing water scarcity, greater vulnerability of water to contamination, and the threat or regional conflicts over water in the developing world. All three problems must be addressed effectively if we are to achieve the goal of sustainable water resources management.

Since 1900, water demand has been increasing twice as fast as the human population. As a result, per capita fresh water reserves are now shrinking at a rate of 1.5% a year, leading to a situation where over a third of humanity will be living under water-stressed circumstances by 2020.



We must find ways to maximize our benefit from three water sources: surface water, groundwater, and alternative water resources (like desalinated water). We must effectively manage these water resources and protect them from contamination.



Description & Value of the Prizes

PSIPW is an international award judged by leading scientists from around the world. Five prizes are bestowed on a bi-annual basis.

First, there is the **Creativity Prize**. Worth US\$ 266,000, the Creativity Prize is by nomination only. Universities, university departments, research institutes, companies, and agencies can nominate individuals and teams of researchers for this Prize. The Creativity Prize is awarded to an innovator or pioneer for scientific work that can rightly be considered a breakthrough in any water-related field. The work might be a body of research, an invention, or a new patented technology.

Then there are four **Specialized Prizes**, each worth US\$ 133,000. Researchers, research teams, and organizations nominate themselves for these Prizes:

- **Surface Water Prize** – covering every aspect of the study and development of surface water resources.
- **Groundwater Prize** – covering every aspect of the study and development of groundwater resources.
- **Alternative Water Resources Prize** – covering desalination, wastewater treatment, and other nontraditional sources of water.
- **Water Management & Protection Prize** – covering the use, management, and protection of water resources.

Each Prize is accompanied by a distinctive trophy and certificate.

Award: Creativity Prize	Value: \$266,000
Nominators:	universities, university departments, research institutes, companies, water organizations and agencies
Candidates:	individual researchers, research teams
Eligible Works:	published research papers, published books and registered patents within the past 5 years
Award: Specialized Prizes	Value: \$133,000
Nominators:	self-nomination
Candidates:	individual researchers, research teams, water organizations
Eligible Works:	published research papers, published books and registered patents within the past 5 years

Prize Topics

Creativity Prize:

The **Creativity Prize** is open to pioneering and innovative research in any water-related field. The work should provide an original solution which is useful to society. It should contribute to development and social upliftment while being practical, environmentally friendly, and cost-effective.



Specialized Prizes:

Each of the four **Specialized Prizes** is dedicated to the wide range of research topics that fall within its scope. Nominations are open to all innovative and current research that is relevant to one of our four Prizes, which together cover the entire water research landscape. Some of the many topics that are relevant to each Prize are as follows:

Surface Water Prize	Groundwater Prize
Water Harvesting Rain & Runoff Water Modeling Effects of Global Warming on Precipitation Flood Mitigation & Control Evaporation & Transpiration Sedimentation Control in Surface Water Systems And all other topics related to surface water	Groundwater Recharge Groundwater Exploration & Assessment Groundwater Contamination Aquifer Characteristics Pumping Tests And all other topics related to groundwater
Alternative Water Resources Prize	Water Management & Protection Prize
Desalination Wastewater Treatment Water Reclamation, Purification & Recycling Innovative Water Production Methods Cloud Seeding Fog & Dew And all other topics related to alternative water resources	Integrated Water Resources Management (IWRM) Water Conservation Water Demand Management Water Pollution Control Sustainability of Water Resources Irrigation Water Management & Conservation And all other topics related to the management and protection of water resources

PSIPW welcomes nominations for all of its Prizes that employ GIS, remote sensing, and other current technologies to provide innovative solutions to water-related problems.



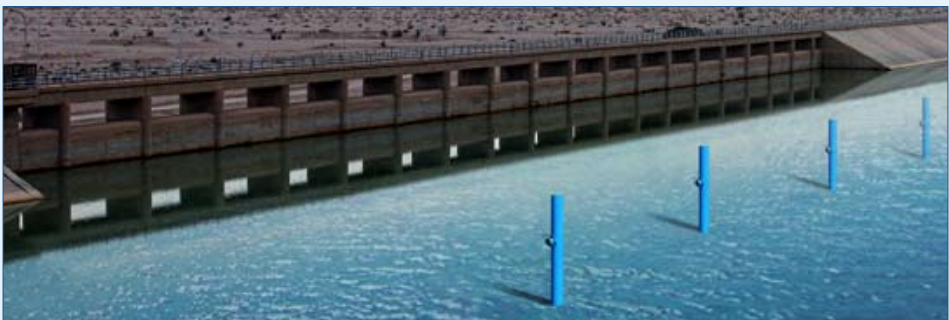
Surface Water



Groundwater



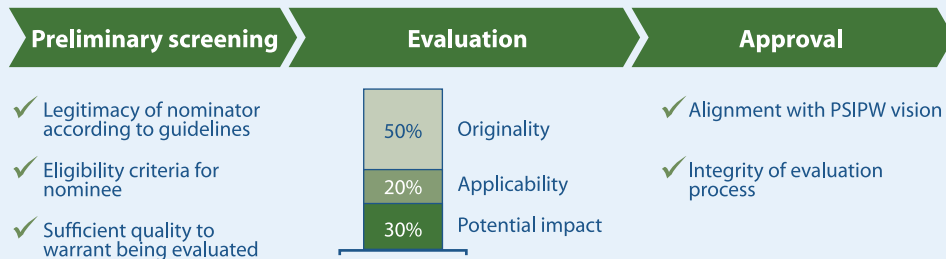
Alternative Water Resources



Water Management & Protection

Evaluation of Nominated Works

Nominations are evaluated to determine their originality, potential impact, and applicability. Special consideration is given to how the nominated work contributes to its field of research and its usefulness to society, particularly with respect to development and solving problems on an international level.



Three committees are dedicated to the evaluation of nominations for each of the five Prizes:

1. Preliminary Screening Committee
2. Referee Committee
3. Selection Committee

The Prize places great emphasis on enlisting the participation of leading scientists from around the world to act as judges on these committees.



General Conditions for Nominations

1. All nominations for the 5th Award of the Prize are to be made online through an electronic application form that is available on the PSIPW website. All required documentation and submitted works will be uploaded by way of the same form. No mail-in applications will be accepted.
2. In the event that a team of individuals are being nominated, all team members must be named at the time of application and one member must be specified as their representative. Groups of people working on the same project may not be nominated separately. They must be nominated as a group with a single nomination form.
3. A university, institution, or government agency is not eligible to be nominated for the **Creativity Prize**. The nominee must be an individual or group of individuals. Organizations can nominate themselves for one of the four **Specialized Prizes**.
4. Nominations for the **Creativity Prize** must be made by a university, institution, or government agency on behalf of individuals or teams of researchers. Individuals may not nominate themselves or others for the Creativity Prize. Nominations for the **Specialized Prizes** are by direct self-nomination.
5. The work or works being considered for the nomination must have been completed no more than five (5) years prior to the nomination deadline for the current Prize.
6. Published research papers, published books, and registered patents may be submitted for consideration. Unpublished works and unregistered patents are ineligible for the Prize.
7. No more than five (5) distinct works may be submitted. Multiple works should not be collected together and submitted as a single work.
8. Works will be reviewed and judged in English. If the work being nominated was originally published in a language other than English, it must be submitted in the original language accompanied by a full translation or by a translation of the parts of the work that are to be considered for the Prize. If a partial English translation is provided for a work submitted in another language, then only that portion of the work which is translated will be considered for assessment.

9. A nominee can only be nominated for one of the five Prizes during the same award.

10. The work being nominated must not have previously been a recipient of any other international prize. (However, it may have been the recipient of local or regional prizes.)

11. Members of the PSIPW committees and their immediate relatives may not be nominated for the Prize.

Prize Calendar

- Early 2011: Call for nominations to the Prize and opening of the online application form for the 5th award.
- 31 January 2012: Deadline for receiving nominations.
- February-September 2012: The evaluation process.
- November 2012: The Prize Council announces the winners of the 5th Award and calls for nominations to the 6th award.
- December 2012: The awards ceremony for the 5th Award.



Activities of the Prize

1. The Prize Council holds regular meetings around the world. During each round of the award, two meetings are held in Riyadh, a third in the capital of another Arab country, and a fourth in a non-Arab country. This is to encourage the exchange of ideas and to open channels of cooperation among water specialists.



Prize Council Meeting in Delft, The Netherlands

2. The Prize supports the research programs of the Prince Sultan Research Center for Environment, Water, and Desert at King Saud University, particularly those that relate to water issues. The most important of these programs is King Fahd's Project for Rain and Floodwater Harvesting and Storage in the Kingdom, with which the Prize's experts are directly involved.

3. In conjunction with the United Nations and UNESCO, the Prize is establishing the World Water Portal, which aims to be the largest international database for water research, and which will provide an interactive forum for experts and organizations working in the field.

4. The General Secretariat of the Prize possesses an extensive library which includes, alongside books and journals in water-related fields, all of the research nominated to the Prize throughout its history. This research is made available for the benefit of specialist bodies engaged in research and applied water technologies in coordination with the original researchers.

5. In conjunction with King Saud University and the Saudi Ministry of Water and Electricity, the Prize organizes ICWRAE - the International Conference on Water Resources and Arid Environments, held concurrently with the Prize's awards ceremony. This bi-annual conference addresses four main themes:

- Water Resources
- Water Conservation
- Arid Environments
- Utilization of New Technologies in the Study of Arid Environments and their Natural Resources

The Conference also hosts workshops and seminars on the ministerial level.



ICWRAE Opening Ceremony in Riyadh December 2010

6. The Prize publishes the *International Journal of Water Resources and Arid Environments*. It also produces a number of scientific books and brochures, and prepares articles for publication in specialist journals as well as newspapers.

7. The Prize provides financing and support for the Prince Sultan Bin Abdulaziz International Prize's Chair for Water Research located at King Saud University. The Chair, in turn, supports a number of graduate students of various nationalities engaged in a program of research into rain and floodwater harvesting, for which these students are awarded their Masters and Doctorate degrees. The Chair is supervised by an international panel of distinguished scholars from within and outside of Saudi Arabia.

8. The Prize, in conjunction with the United Nations and various space agencies, organizes the bi-annual International Conference on the Use of Space Technology for Water Management, which to date has been held in Riyadh and Buenos Aires.



1st Intl. Conference on the Use of Space Technology for Water Management

9. The Prize is an observing member of the United Nations' Committee on the Peaceful Uses of Outer Space and participates in its meetings in Vienna.

10. The Prize is a member of the Arab Water Council's Board of Governors, and as such actively participates in all of the Council's meetings and conferences. It also provides support for some of the Arab Water Council's activities.

11. The Prize is undertaking cooperation agreements with various international organizations, particularly the United Nations and UNESCO, and leading water societies.

12. The Prize is a gold-level sponsor of a number of international conferences and exhibitions around the world, sponsoring at least 10 to 15 different conferences and exhibitions during each round of the Prize.



IDA Congress, Canary Islands, Spain



Exhibition in Birmingham, UK

13. The Prize participates in water-related conferences and forums around the world. It presents seminars at these conferences as well as independently under the title "Prize Day". At these international events, the Prize arranges meetings between participating scholars in order to foster the exchange of ideas.



Prize Day in Singapore



Prize Day in Singapore



Prize Day in Delft, The Netherlands



Prize Day in Delft, The Netherlands



Prize Day in Amman, Jordan



Prize Council Meeting In Amman, Jordan



Prizewinners for the 4th Award (2008-2010)



Creativity Prize

The Creativity Prize is being shared by two teams of researchers:



Dr. Marek Zreda



Dr. Darin Desilets

1. The team of Dr. Marek Zreda (University of Arizona) and Dr. Darin Desilets (Sandia National Laboratory, USA).

They are being awarded for their groundbreaking work with the

Cosmic Ray Probe, a technology which uses cosmic-ray neutrons to measure soil moisture content and snow pack thickness over an area of tens of hectares — passively, non-invasively and economically. These measurements provide hydrologists and atmospheric scientists with an entirely new perspective on water near the interface between the ground and the atmosphere, and give water managers, engineers and agriculturalists an invaluable but economical new tool to monitor a critical part of the hydrologic cycle.

Until now, techniques for measuring soil water content and snow pack have operated at the point scale (*e.g.* invasive probes inserted into soil or snow) or at the kilometer scale (*e.g.* satellite and airborne remote sensing images). However, many hydrologic processes operate at a scale of tens to hundreds of meters - and it is this critical “blind spot” that the Cosmic Ray Probe reveals.

This new technology can be employed in water supply forecasting and promises to improve the utilization of irrigation water and should have its greatest impact in water scarce regions.

The probe can also be used for predictive weather and climate models by measuring soil water condition, since soil water content is currently a major source of uncertainty in weather and climate forecasts, due largely to a lack of suitable observations.





Dr. Ignacio Rodríguez-Iturbe



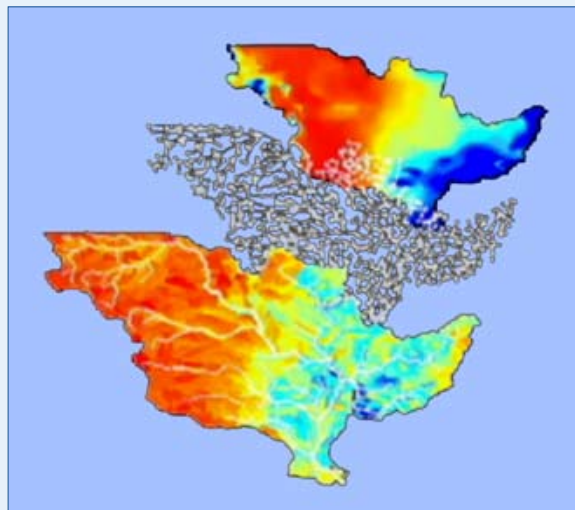
Dr. Andrea Rinaldo

2. The team of Dr. Ignacio Rodríguez-Iturbe (Princeton University, USA) and Dr. Andrea Rinaldo (École Polytechnique Fédérale de Lausan, Switzerland).

They are being awarded for their invention and development of the new field of Ecohydrology, which bridges the gap between the physical and life sciences.

Ecohydrology is a multi-disciplinary research field borrowing from a number of “classic” disciplines (physical sciences; life sciences), yet aiming at a unified picture of water-supported biological dispersion. In practical terms, the new research field presents itself as a comprehensive blend of theory (mathematical modeling), interpretation of past and present biological records, and field experimentation.

The work being awarded represents the joint Princeton-Lausanne research group that was built by the two prizewinners through years of collaboration. Some of their work shows how river networks act as ecological corridors, and how they influence the spread of a water-borne disease like Cholera that still plague society today. Their work facilitates avenues of research into many areas of vital importance for society, especially where the ecological significance of human water use is at issue. Ecohydrology has a wide range of practical applications, from water resources management, to the development of strategies for minimizing the loss of freshwater biodiversity, to the effective control and prevention of water-borne diseases.



Alternative Water Resources Prize



Dr. Bart Van der Bruggen

Dr. Bart Van der Bruggen of the Katholieke Universiteit, Leuven (Belgium)

The topic for the 4th Award of the Alternative (Non-traditional) Water Resources Prize was "Innovative Methods for Water Production from Non-traditional Water Resources". This prize was awarded to Dr. Van der Bruggen for his work in the use of nanofiltration membrane technology for industrial water recycling.

Dr. Van der Bruggen has conducted important work on water recycling, including water recycling situation and principles, and the applications of various membrane technologies in wastewater regeneration. These works have made new contributions to the knowledge and practice of water recycling.

Dr. Van der Bruggen's research explores the use of a number of different nanofiltration membrane technologies for a wide range of industrial situations as diverse as the textile industry, breweries, and car washes. He also takes up "the challenge of zero discharge" where he explores, within the context of the brewery process, methods for assessing the potential for water re-use directly or after regeneration, with the remaining wastewater included in an overall process scheme aiming at the ambitious goal of zero wastewater discharge.



Water Management and Protection Prize



Dr. Soroosh Sorooshian

Dr. Soroosh Sorooshian of the University of California, Irvine (USA)

The Water Resources Management and Protection Prize, which had the topic of “Remote Sensing and GIS Applications for Water Resources Management”, was awarded to Dr. Sorooshian for his development and refinement of the PERSIANN model to estimate precipitation from satellite remotely sensed data.

PERSIANN is a method that uses artificial neural networks – a form of artificial intelligence – and infrared (GOES IR) and TRMM satellite data to estimate global precipitation.

Dr. Sorooshian not only led the development of this very important precipitation estimation model, but with his team he has continued to improve its predictive ability between 2000 and 2009. This was achieved by applying different methods drawn from AI (e.g., self organizing algorithms), by using new sources to compare and calibrate its estimates (e.g., TRMM and the TOGA experiment), and by adopting new methods in simulating data anticipated sensors (e.g., ABL). He shows not only insight and innovation but also dedication to a mission that is of vital importance to hydrologists and water managers the world over.







Winners for the 3rd Award (2006 - 2008)

Surface Water Prize

Topic: Sedimentation Control in Surface Water Systems

- **Dr. Chih Ted Yang , USA**
-

Groundwater Prize

Topic: Exploration and Assessment of Groundwater

- **Dr. Wolfgang Kinzelbach, Germany**
-

Alternative Water Resources Prize

Topic: Innovative Methods and Systems in Desalination

- **Dr. Abdul Wahab Mohammad, Malaysia (co-winner)**
 - **Saline Water Conversion Corporation, Saudi Arabia (co-winner)**
-

Water Management & Protection Prize

Topic: Water Demand Management in Urban Areas

- **Decision Center for a Desert City, USA (co-winner)**
 - **Dr. Zainuddin Abdul Manan, Malaysia (co-winner)**
-

Winners for the 2nd Award (2004-2006)

Surface Water Prize

Topic: Water Harvesting

No award given due to the lack of nominations which met the required standards and conditions.

Groundwater Prize

Topic: Management of Coastal Aquifers

- **The Water Section, Research Institute of the King Fahd University for Petroleum and Minerals, Saudi Arabia (co-winner)**
 - **Dr. Abdelkader Larabi, Morocco (co-winner)**
-

Alternative Water Resources Prize

Topic: Treatment and Re-use of Wastewater

- **Dr. Abdul Latif Ahmad, Malaysia**
-

Water Resources Management Prize

Topic: Integrated and Sustainable Water Resources Management in Arid and Semi-Arid Regions

- **Dr. Howard S. Wheeler, United Kingdom**
-

Water Resources Protection Prize

Topic: Groundwater Pollution by Urban Activities

- **King Abdulaziz City for Science & Technology, Saudi Arabia**
-

Winners for the 1st Award (2002-2004)

Surface Water Prize

Topic: Effective Flood Control Methods

- **Dr. Jery R. Stedinger, USA**
-

Groundwater Prize

Topic: Artificial Groundwater Recharge

- **Dr. Herman Bouwer, USA**
-

Alternative Water Resources Prize

Topic: Economical Technologies in Seawater Desalination

- **Dr. Hisham Taha Abdulla El Dossouky, Egypt (co-winner)**
 - **Dr. Hisham Ettouney, Egypt (co-winner)**
-

Water Resources Management Prize

Topic: Effective New Techniques for Irrigation Water Conservation

- **King Abdulaziz City for Science & Technology, Saudi Arabia**
-

Water Resources Protection Prize

Topic: Protecting Groundwater From Agricultural Pollutants

No award given due to the lack of nominations which met the required standards and conditions.



Water is life



جائزة الأمير سلطان بن عبدالعزيز العالمية للمياه
Prince Sultan Bin Abdulaziz International Prize for Water



Prince Sultan Bin Abdulaziz International Prize for Water

General Secretariat

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