

**6th Award - 2014  
General Information and Invitation  
for Nominations**



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



**HRH Prince Sultan Bin Abdulaziz**  
(1930 - 2011)

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 blue ink signature in Arabic script, which reads "سليمان بن عبدالعزيز" (Sultan bin Abdulaziz).





## **Introduction**

On 21 October 2002, His Royal Highness Prince Sultan Bin Abdulaziz – Saudi Arabia's former 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".

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

This internationally acclaimed scientific prize, which in 2012 celebrated its 10th anniversary, 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.

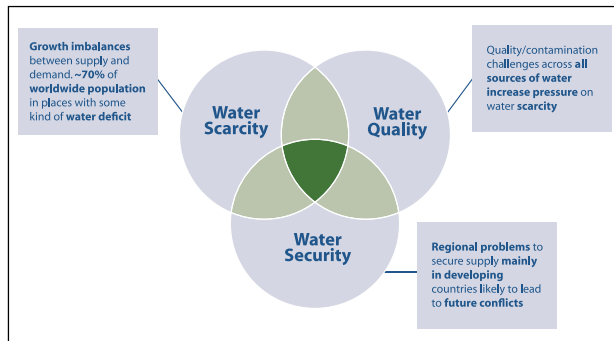
Dr. Abdulmalek A. Al Alshaikh  
PSIPW General Secretary



## Goals of the Prize

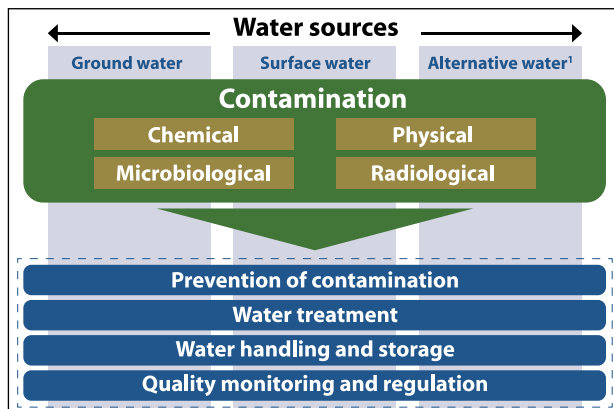
PSIPW aims to give recognition to the efforts that scientists, inventors and research organizations around the world are making in water related fields. PSIPW acknowledges exceptional and innovative work that contributes to the sustainable availability of potable water and the alleviation of the escalating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

For this reason, PSIPW awards a suite of five bi-annual prizes, covering the entire water research landscape. In this way, 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 much be addressed effectively if we are to achieve the goal of sustainable water resources management.

We must find ways to maximize our benefit from surface water, groundwater, and alternative water resources (like desalinated water and wastewater). We must effectively manage these 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.

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

|  |   |
|--|---|
| <p><b>Surface Water Prize</b></p> <ul style="list-style-type: none"> <li>Water Harvesting</li> <li>Rain &amp; Runoff Water Modeling</li> <li>Effects of Global Warming on Precipitation</li> <li>Flood Mitigation &amp; Control</li> <li>Evaporation &amp; Transpiration</li> <li>Sedimentation Control in Surface Water Systems</li> </ul> <p>And all other topics related to surface water</p> | <p><b>Groundwater Prize</b></p> <ul style="list-style-type: none"> <li>Groundwater Recharge</li> <li>Groundwater Exploration &amp; Assessment</li> <li>Groundwater Contamination</li> <li>Aquifer Characteristics</li> <li>Pumping Tests</li> </ul> <p>And all other topics related to groundwater</p>  |
| <p><b>Alternative Water Resources Prize</b></p> <ul style="list-style-type: none"> <li>Desalination</li> <li>Wastewater Treatment</li> <li>Water Reclamation, Purification &amp; Recycling</li> <li>Innovative Water Production Methods</li> <li>Cloud Seeding</li> <li>Fog &amp; Dew</li> </ul> <p>And all other topics related to alternative water resources</p>                              | <p><b>Water Management &amp; Protection Prize</b></p> <ul style="list-style-type: none"> <li>Integrated Water Resources Management (IWRM)</li> <li>Water Conservation</li> <li>Water Demand Management</li> <li>Water Pollution Control</li> <li>Sustainability of Water Resources</li> </ul> <p>And all other topics related to the management and protection of water resources</p> |



## Nomination Process

Nominations for all five Prizes are made online through an electronic application form available on the PSIPW website. All required documentation and works to be submitted are uploaded by way of the same form.

Once a user has registered to the site, he or she can log in at any time and complete the application process at his or her leisure up to the 31 December 2013 nomination deadline. All documentation can be uploaded in PDF format during this timeframe at the user's convenience.

The screenshot shows the website interface for the Prince Sultan Bin Abdulaziz International Prize for Water. At the top, there is a logo on the left and a portrait of Prince Sultan Bin Abdulaziz on the right. Below the header, there is a navigation menu with links for 'Current Award', '5th Award', '4th Award', '3rd Award', '2nd Award', and '1st Award'. The main content area is titled 'Please Select the Appropriate Nomination Form' and contains two columns of nomination options:

| Creativity Prize |  | Specialized Prize |   |
|------------------|--|-------------------|---|
| Value :          | €250,000   | Value :           | €175,000  |
| Nominators:      | Individuals, university departments, research institutes, companies, water organizations and agencies. | Nominators:       | only individuals  |
| Candidates :     | Individual researchers/researchers   | Candidates :      | Individual researchers, research teams, water organizations                                 |
| Eligible Works:  | published research papers, technical books, and registered patents within the past 8 years.            | Eligible Works:   | published research papers, technical books, and registered patents within the past 8 years. |

Below the table, there are instructions for each prize type:

Select the **Creativity Prize** if you represent a university, university department, or other water-related organization and wish to nominate the innovative work of a working individual or research team. The nominee may or may not be an employee or affiliate of your organization. However, please know that as a representative of your organization, you may not nominate yourself to this Prize.

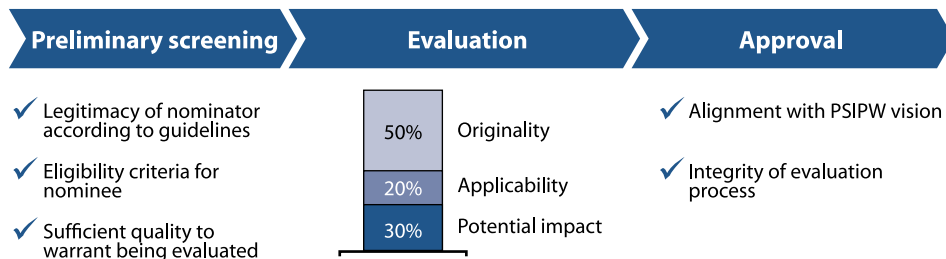
Select the **Specialized Prize** if you are an individual or member of a research team and you wish to nominate your own innovative work relating to the Fields of Surface Water, Groundwater, Alternative Water Resources, or Water Remediation & Protection.

At the bottom of the page, there is a copyright notice: Copyright © 2013 Prince Sultan Bin Abdulaziz International Prize for Water. All Rights Reserved.



## Evaluation of Nominated Works

Nominations are evaluated to determine their originality, potential impact, and applicability. Special consideration is given to how a 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 are made online through an electronic application form that is available on the PSIPW website. All required documentation and submitted works are uploaded by way of the same form. Mail-in applications are not accepted.
2. In the event that a team of individuals are being nominated, all team members (up to five) 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 as well as individuals may 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. A work published in another language must be submitted in the original language accompanied by a full translation or a translation of the parts of the work that are to be considered for the Prize. If a partial English translation is provided, then only that portion of the work will be considered for assessment.

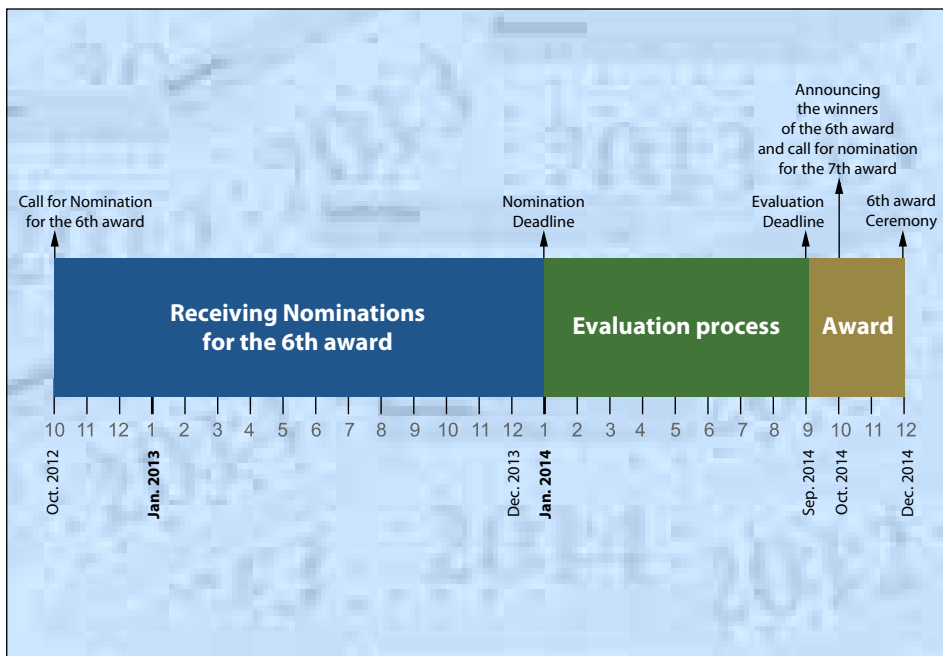
9. A nominee may only be nominated for one of the five Prizes during the same award period.

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

- October 2012: Call for nominations to the Prize and opening of the online application form for the 6th award.
- 31 December 2013: Deadline for receiving nominations.
- January-September 2014: The evaluation process.
- October 2014: The Prize Council announces the winners of the 6th Award and calls for nominations to the 7th award.
- December 2014: The awards ceremony for the 6th 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.
2. The Prize supports the research programs of the Prince Sultan Institute for Environmental, Water and Desert Research 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 has established the International 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. Visit the portal at: <http://water-portal.com>



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.

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.



United Nations' Committee on the Peaceful Uses of Outer Space

10. The Prize serves on the Arab Water Council's Board of Governors. It also provides support for some of the 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 sponsors and participates in a number of international conferences and exhibitions around the world. It presents seminars at some of these conferences, as well as independently, to facilitate meetings between participating scholars in order to foster the exchange of ideas.



Prize Day in Buenos Aires, Argentina



Aquatech - Amsterdam, The Netherlands







Dialogue de Paris 2, France



IWRA World Water Congress - Brazil





**Prizewinners for the 5th  
Award (2012)**

**Creativity Prize: The team led by Dr. Ashok Gadgil (University of California Berkeley, USA ).**



The prize is awarded to Dr. Gadgil and his team of researchers for developing an innovative and effective method of treating the arsenic contamination of groundwater using electrocoagulation.

The team led by Dr. Ashok Gadgil has produced an exemplary work of fundamental and applied science which runs the complete course from initial research to functioning prototype, while addressing one of the most serious drinking water problems confronting the human population in developing countries. Suffice it to say that 1 in 5 of all adult deaths in Bangladesh are presently due to chronic arsenic poisoning.

Arsenic pollution of groundwater is a widespread problem in the deltaic sediments around the globe. Millions of people suffer from latent arsenic poisoning, culminating in many dangerous diseases, including cancer. There has long been a need for a simple and inexpensive method of treating arsenic contaminated water, which will save millions of people from arsenic poisoning and related health problems.

The possible impact of the method developed by the group – the best and most cost-effective method available to date – is huge. Even though the group’s research draws on a previously known electrocoagulation process, its scientific and practical value is high. It is not sufficient to just establish that electrochemical reactions can precipitate arsenic. It is equally important to establish the stability of the precipitate and its behaviour under different electrolysis conditions and with other ions present. The team has carried out this evaluation in a careful and comprehensive way using advanced synchrotron-based X-ray characterization techniques (EXAFS). They have also considered the disposal of wastes. They have exhibited creativity by transforming this scientific knowledge successfully into an easy-to-understand and easy-to-operate, locally affordable technology.

Finally, the analysis of societal implementation is convincing, going for a community approach rather than an individual application in each household.

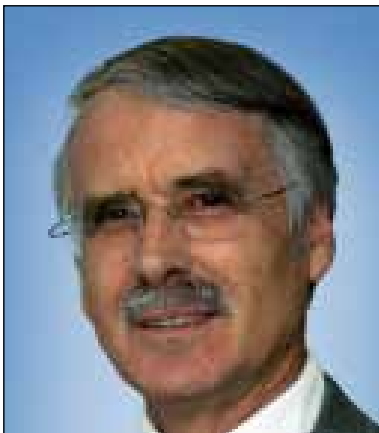


This excludes errors in operation and guarantees achieving economies of scale. The required voltage of 3 V can be provided by photovoltaic cells. The estimated price of safe groundwater at 4 US cents per 10 litres is comparatively low and acceptable even for the very poor.

Team members are: Dr. Susan Addy, UCB; Dr. Robert Kostecki, LBNL; Professor Joyashree Roy, Jadavpur University, Kolkata; and Case van Genuchten, UCB.



**Surface Water Prize: The team led by Dr. Kevin Trenberth (National Center for Atmospheric Research, USA).**



The prize is awarded to Dr. Trenberth and his team, which includes Dr. Aiguo Dai, for ground-breaking work that provides a powerful estimate of the effects of climate change on the global hydrological cycle, with a clear explanation of the global water budget.

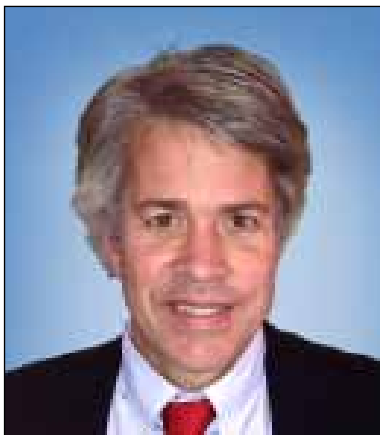
If we are going to talk about hydrology in the 21st century, and the challenges hydrologists face, clearly the overwhelming challenge is to understand hydrologic variability, and the likely impact on hydrology of anticipated climate change. Dr. Kevin Trenberth and his team have made a unique contribution through the investigation of climate variability and trends in the past, and through the use of models and other creative efforts to reconstruct river discharge into the oceans across the planet for almost 1000 river basins. They use climate models to understand likely changes in the future and the uncertainty associated with those predictions,

and explain their findings using such popular indicators as the Palmer drought index. As a result, they have provided an exemplary account of the global water budget that is being used in textbooks and encyclopedias.

They have made pioneering contributions to understanding the past with real data, and evaluating future prospects within the context of what we know of the global climate and hydrology. They have provided a much better understanding of hydrologic responses to climate change, which in turn will provide tremendous guidance for future planning.



**Groundwater Prize: The team led by Dr. Charles Franklin Harvey (Massachusetts Institute of Technology, USA).**



The prize is awarded to Dr. Harvey and his team, which includes Dr. Abu Borhan Mohammad Badruzzaman, for developing a complete diagnostic and conceptual model for understanding and preventing the arsenic contamination of groundwater.

Dr. Harvey and his team have followed one of the most important groundwater contamination cases known, the arsenic contamination of the groundwater in the Ganges Delta in Bangladesh. This contamination was recognized some

20 years ago, and Harvey and his group began early on to investigate the case. His specific, original approach soon made clear that dissolved organic carbon was one of the main causes, and he started to address the carbon sources. Step by step, his research led to a more and more complex view



of the mobilization and deposition of arsenic in a complex aquifer system, influenced by different land use activities, like rice field irrigation and sewage disposal. At each step, his investigation led to more and more detail, solving part of the puzzle and raising more detailed questions, which in turn led to further, more detailed research.

Dr. Harvey and his group give an excellent example of the application of scientific methods to solve a specific problem, following the issue for more than 10 years until arriving at a plausible, yet stunning result, which not only answers a major puzzle in groundwater hydrology, but more generally demonstrates that complex natural systems can be understood.



**Alternative Water Resources Prize: Dr. Mohamed Khayet Souhaimi (University Complutense of Madrid, Spain).**



The prize is awarded to Dr. Khayet for his work in pioneering and promoting membrane distillation for water recovery using alternative renewable energy sources.

Dr. Khayet is at the forefront of promoting membrane distillation, a process that is relevant both for water recovery from alternative sources (not only seawater but also concentrates from industrial production) as well as for energy-friendly separation processes (membrane distillation can be used with waste heat, for example). His work is not only



novel, but also very creative and even visionary since he was one of the pioneers in this process that has now gained worldwide interest.

The practicality and implementation value of Dr. Khayet's research is equally high. The process that he has studied and promoted in all its theoretical and experimental aspects (from membrane synthesis to implementation) has now been scaled up and is being used for large-scale applications in Singapore and elsewhere. In many other countries, plans for using this or related processes are mushrooming.



**Water Management & Protection Prize: Dr. Damià Barceló (Catalan Institute for Water Research, Spain).**



The prize is awarded to Dr. Barcelo for work at the leading edge of water science in understanding the effect of pharmaceuticals in the water environment, developing new methods for future risk assessment and management of emerging contaminants, and the investigation of water quality in intensively-used basins.

Dr. Barceló's research demonstrates that a broad spectrum of pharmaceuticals are widespread pollutants in aquatic environments and shows that wastewater treatment plant outlets are major contributors to the problem. At the same time, his work shows how the final treatment steps in treatment plants can



considerably reduce the load of pharmaceutical pollutants in outlets prior to their release, paving the way for more effective treatment processes to control the adverse impact of pharmaceutical pollutants.

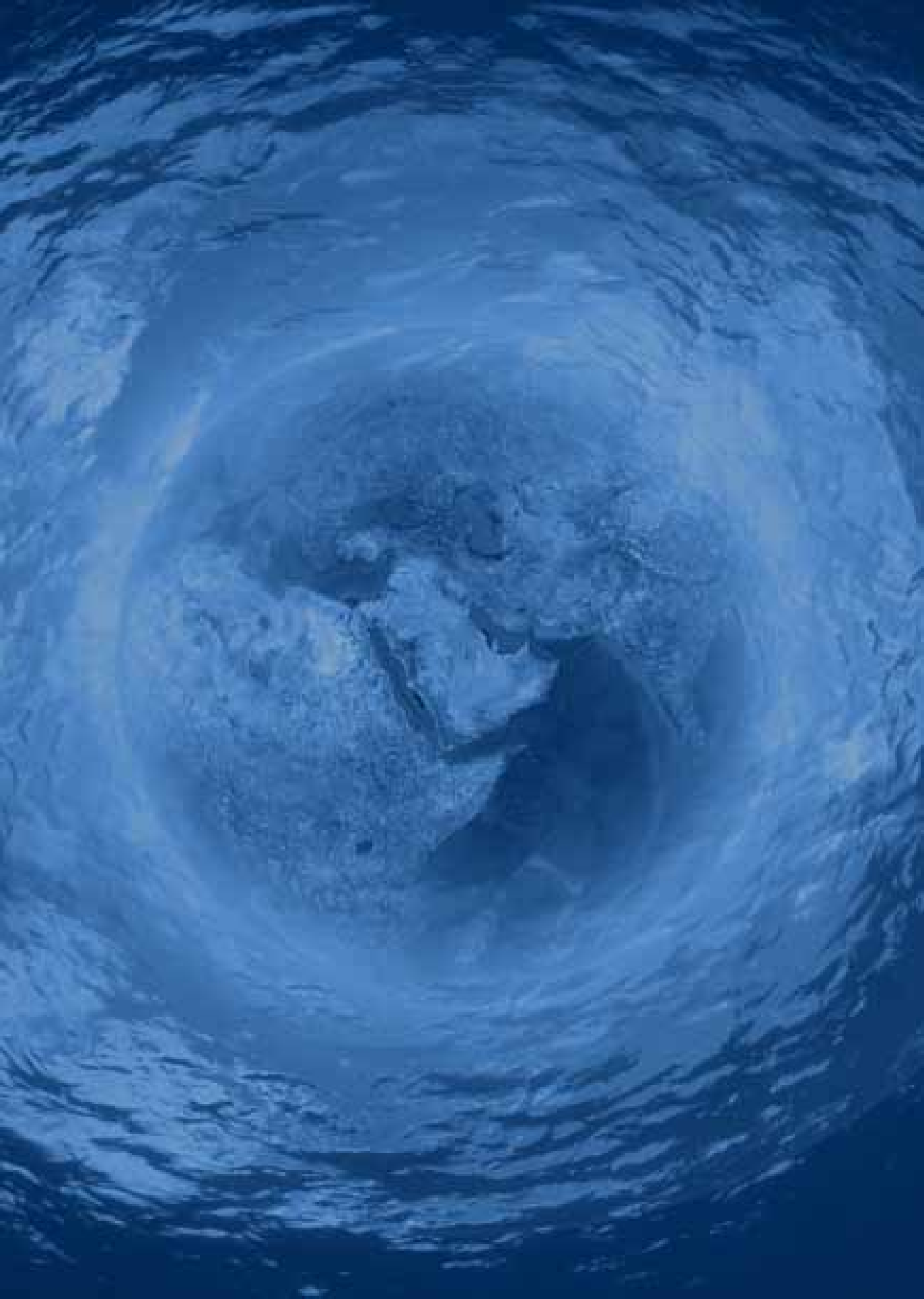
Using novel approaches, he was also able to demonstrate the presence of several pharmaceuticals, including ibuprofen, ketoprofen, diclofenac, ofloxacin and azithromycin in sewage sludge, revealing that some pharmaceutical compounds are not removed or are poorly removed by conventional activated sludge wastewater treatment.

Using new analytical approaches for nanotechnology residue assessment capable of achieving sensitivities in the low ng/L range, Dr. Barcelo was the first to report on the occurrence of fullerenes in suspended solids of wastewater effluents.

His research has far-reaching applications, extending beyond water management. In one pioneering study, Dr. Barcelo, for the first time, reported on the widespread occurrence of compounds such as cocaine, benzoylecgonine, ephedrine and ecstasy residues along the Ebro River basin (NE Spain). By evaluating the contribution of sewage treatment plants (STPs) effluents to the presence of these chemicals in natural surface waters, he was able to back calculate drug usage at the community level in the main urban areas of the investigated river basin. This unique forensic approach provided an extrapolation of the consumption data for the area studied, and exposed a total annual consumption of illegal drugs in the order of 36 tons, which would translate into 1100 million Euros on the black market.

These studies are at the leading edge of their field and contribute significantly to our understanding of pharmaceuticals in the water environment, their impact and potential management strategies.





**Prizewinners  
(2004-2010)**

## Winners for the 4th Award (2010)

### **Creativity Prize**

- Dr. Marek Zreda (University of Arizona) & Dr. Darin Desilets (Sandia National Laboratory, USA): for the development of the cosmic ray probe which, for the first time, measures soil moisture content and snow pack thickness over an area of tens of hectares.
- Dr. Ignacio Rodriguez-Iturbe (Princeton University) and Dr. Andrea Rinaldo (École Polytechnique Fédérale de Lausan, Switzerland): for developing the field of Ecohydrology.

### **Alternative Water Resources Prize**

- Dr. Bart Van der Bruggen (Katholieke Universiteit, Leuven): for the use of nano-filtration membranes to approach zero wastewater discharge in industrial water recycling.

### **Water Management & Protection Prize**

- Dr. Soroosh Sorooshian (University of California, Irvine): for the development and refinement of the PERSIANN model using artificial neural networks to estimate precipitation from remotely sensed data.



## Winners for the 3rd Award (2008)

### Surface Water Prize

- Dr. Chih Ted Yang of Colorado State University (USA): for significant contributions to the understanding of sediment transport and river hydraulics, particularly through the development of the Unit Stream Power Equation.

### Groundwater Prize

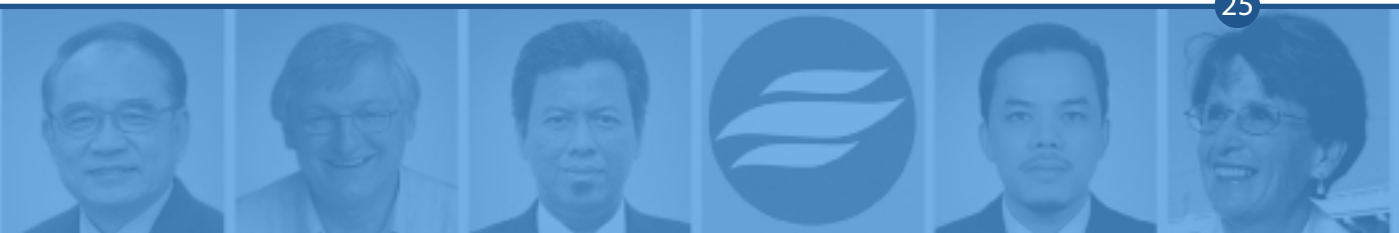
- Dr. Wolfgang Kinzelbach (Swiss Federal Institute of Technology): for developing a new and effective approach to using remote sensing for groundwater modeling by linking spatially widespread remotely-sensed data, including geophysical data, with point surface observations and measurements.

### Alternative Water Resources Prize

- Dr. Abdul Wahab Mohammad (Universiti Kebangsaan, Malaysia) for the development of advanced models for the fundamental characterization of nanofiltration to enhance its use in water desalination.
- Saline Water Conversion Corporation (Saudi Arabia) for developing a nanofiltration pre-treatment for seawater desalination which significantly reduces the scaling and fouling potentials of feed to a reverse osmosis (SWRO) desalination plant, thereby realizing substantially higher recovery rates at lower energy consumption, resulting in a lower cost per cubic meter.

### Water Management & Protection Prize

- Dr. Zainuddin Abd Manan (Universiti Teknologi, Malaysia) for work which extends an established chemical engineering technique (pinch analysis) to water demand management.
- Dr. Patricia Gober & the Decision Center for a Desert City, (Arizona State University, USA) for work at the forefront of integrating physical and social science into a decision support system for enhanced water planning.



## Winners for the 2nd Award (2006)

### Groundwater Prize

- Dr. Abdulkader Larabi (University Mohammed V-Agdal, Morocco): for research into the characterization of seawater intrusion and the development of optimal models for sustainable water management in coastal aquifers.

### Alternative Water Resources Prize

- Dr. Abdul Latif Ahmad (Universiti Sains, Malaysia): for using membrane separation technology coupled with chemical physical pretreatment to achieve a cost-effective method for treating palm oil mill effluent (POME) with zero discharge.

### Water Management Prize

- Dr. Howard S. Wheeler (Imperial College, London): for developing suitable modeling tools for effective water resources management in arid and semi arid areas.

### Water Protection Prize

- King Abdulaziz City for Science and Technology (KACST): for research into using ion exchange resins for nitrate removal from water.

## Winners for the 1st Award (2004)

### Surface Water Prize

- Dr. Jerry R. Stedinger (Cornell University): for developing a statistical framework for understanding and interpreting hydrologic and flood data, including historical and regional information, so that flood risk management and flood control projects can effectively address the risk of floods.

### Groundwater Prize

- Dr. Herman Bouwer: for developing effective design and management criteria for the artificial recharge of groundwater, including the Bouwer and Rice slug test for measuring hydraulic conductivities of aquifers, and improved cylinder infiltrometer procedures.

### Alternative Water Resources Prize

- Dr. Hisham Taha El Dossouky & Dr. Hisham Ettouney: for developing economical technologies for seawater desalination.

### Water Management Prize

- King Abdulaziz City for Science and Technology (KACST) for the innovative use of soil moisture sensors, automatic weather stations, and remote controlled tensiometers to achieve water conservation by automatic scheduling.

*Notes: (1) The Creativity Prize was first awarded during the 4th Award . (2) The Water Management Prize and the Water Protection Prize were offered separately in the 1st and 2nd Awards, and were combined into a single prize during the 3rd Award. (3) The awarding of prizes depends on the quality and suitability of nominations. Therefore, even though five prizes have always been on offer, some prizes were not bestowed during particular PSIPW award cycles.*







**Water is life**





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

General Secretariat  
**Prince Sultan Institute for Environmental,  
Water & Desert Research**  
King Saud University

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