

# The Jordan Journal of Earth and Environmental Sciences (JJEEES)

JJEEES is an international peer-reviewed research journal, issued by the Deanship of Academic Research and Graduate Studies, the Hashemite University, in corporation with, the Jordanian Scientific Research Support Fund, the Ministry of Higher Education and Scientific Research.

## EDITORIAL BOARD

### Editor-in-Chief

**Professor Eid A. Al-Tarazi**  
The Hashemite University

### Editorial board

- **Professor Sameh H. Gharaibeh**  
Yarmouk University
- **Professor Ghaleb H. Jarrar**  
University of Jordan
- **Professor Anwar G. Jiries**  
Mu'tah University
- **Professor Issa M. Makhlouf**  
The Hashemite University
- **Professor Najib M. Abuo Karaki**  
University of Jordan
- **Professor Nizar S. Abu-Jaber**  
German-Jordan University
- **Professor Rafie A. Shinaq**  
Yarmouk University
- **Professor Ahmad A. Al-Malabeh**  
The Hashemite University

## THE INTERNATIONAL ADVISORY BOARD

- **Prof. Sayed Abdul Rahman**  
Cairo University, Egypt
- **Prof. Abdullah Al-Amri**  
King Saud University, Saudi Arabia
- **Prof. Waleed Al-Zubair**  
Arabian Gulf University, Bahrain
- **Prof. Ute Austermann-Haun**  
Fachhochschule Lippe und Hoexter, Germany
- **Prof. Ibrahim Banat**  
University of Ulster, UK.
- **Prof. Matthias Barjenbruch**  
Technisch Universität Berlin, Germany
- **Prof. Mohamed Boukhary**  
Ain Shams University, Egypt
- **Prof. Mohammad El-Sharkawy**  
Cairo University, Egypt
- **Prof. Venugopalan Ittekot**  
Center for Tropical Marine Ecology, Bremen, Germany
- **Prof. Christopher Kendall**  
University of North Carolina, U.S.A.
- **Prof. Elias Salameh**  
University of Jordan, Jordan
- **Prof. V. Subramanian**  
Jawaharlal Nehru University, India
- **Prof. Omar Rimawy**  
University of Jordan, Jordan
- **Prof. Hakam Mustafa**  
Yarmouk University, Jordan
- **Dr. Michael Crosby**  
The National Science Board, National Science Foundation, Virginia, U.S.A.
- **Dr. Brian Turner**  
Durham University, U.K.
- **Dr. Friedhelm Krupp**  
Senckenberg Research Institute and Natural History Museum, Germany
- **Dr. Richard Lim**  
University of Technology, Australia

## EDITORIAL BOARD SUPPORT TEAM

### Language Editor

Dr.Qusai Al-Debyan

### Publishing Layout

Obada Al-Smadi

## SUBMISSION ADDRESS:

Professor **Eid A. Al-Tarazi**  
Deanship of Academic Research and Higher Studies  
Hashemite University, P.O. Box 150458, Postal Code 13115, Zarqa, Jordan.  
Phone: +962-5-3903333 ext.4229  
E-Mail: jjees@hu.edu.jo