

# American Journal of Science

Established in 1818 by Benjamin Silliman  
AN INTERNATIONAL EARTH SCIENCE JOURNAL

## EDITORS

C. PAGE CHAMBERLAIN  
STANFORD, CALIFORNIA

DANNY M. RYE  
NEW HAVEN, CONNECTICUT

## ASSOCIATE EDITORS

TO SERVE UNTIL JANUARY 1, 2016

ETHAN F. BAXTER  
BOSTON, MASSACHUSETTS  
MARK T. BRANDON  
NEW HAVEN, CONNECTICUT  
JOHN M. FERRY  
BALTIMORE, MARYLAND  
JOHN I. GARVER  
SCHENECTADY, NEW YORK

DENNIS K. BIRD  
STANFORD, CALIFORNIA  
BARB DUTROW  
BATON ROUGE, LOUISIANA  
GRANT GARVEN  
MEDFORD, MASSACHUSETTS  
JEFFREY J. PARK  
NEW HAVEN, CONNECTICUT

JONATHAN PAYNE  
STANFORD, CALIFORNIA

TO SERVE UNTIL JANUARY 1, 2016

JAY J. AGUE  
NEW HAVEN, CONNECTICUT  
WILLIAM H. CASEY  
DAVIS, CALIFORNIA  
JAMES CONNOLLY  
ZÜRICH, SWITZERLAND  
RICHARD J. WALKER  
COLLEGE PARK, MARYLAND  
SIMON WILDE  
PERTH, AUSTRALIA

EDWARD W. BOLTON  
NEW HAVEN, CONNECTICUT  
PETER CAWOOD  
ST. ANDREWS, SCOTLAND, UK  
TIMOTHY W. LYONS  
RIVERSIDE, CALIFORNIA  
JOSHUA WEST  
LOS ANGELES, CALIFORNIA  
ROBERT WINTSCH  
BLOOMINGTON, INDIANA

TO SERVE UNTIL JANUARY 1, 2017

PAUL AHARON  
TUSCALOOSA, ALABAMA  
ANDREAS LUTTGE  
HOUSTON, TEXAS  
ANDREAS MULCH  
FRANKFURT, GERMANY  
CHRISTOPHER POULSEN  
ANN ARBOR, MICHIGAN  
ZACHARY SHARP  
ALBUQUERQUE, NEW MEXICO

PHILIP D. GINGERICH  
ANN ARBOR, MICHIGAN  
KATE MAHER  
STANFORD, CALIFORNIA  
STEPHEN PORTER  
SEATTLE, WASHINGTON  
STEVEN M. STANLEY  
HONOLULU, HAWAII  
JOHN W. VALLEY  
MADISON, WISCONSIN

TO SERVE UNTIL JANUARY 1, 2018

ROBERT A. BERNER  
NEW HAVEN, CONNECTICUT  
DONALD E. CANFIELD  
ODENSE, DENMARK  
DAVID A.D. EVANS  
NEW HAVEN, CONNECTICUT  
MARK PAGANI  
NEW HAVEN, CONNECTICUT  
PETER REINERS  
TUCSON, ARIZONA

RUTH E. BLAKE  
NEW HAVEN, CONNECTICUT  
DARREL S. COWAN  
SEATTLE, WASHINGTON  
MARK GHIORSO  
SEATTLE, WASHINGTON  
FRANK J. PAZZAGLIA  
BETHLEHEM, PENNSYLVANIA  
SEAN WILLETT  
ZÜRICH, SWITZERLAND

FRIEDHELM VON BLANKENBURG  
POTSDAM, GERMANY