

Special Issue

Exploring the Role of Differential Equations in Climate Modeling

Message from the Guest Editor

Ordinary and partial differential equations play a central role in all areas of science and engineering where the fundamental laws of physics are used, and climate modeling is one of them. This Special Issue focuses on new developments in analysis, modeling, and computational techniques using differential equations in climate and weather phenomena. Climate and weather dynamics involve a hierarchy of scales, ranging from processes associated with phase changes that occur on the scales of micro-meters and milliseconds to planetary and inter-annual as well as decadal climatic fluctuations, such as the El Niño–Southern oscillation and the Pacific Decadal oscillation. The sheer existence of climate and weather variations stems from the persistence of a large variety of external drivers, such as gravitational, Coriolis, and centrifugal forces due to celestial motions, and the incidence of solar light, which is modulated by the diurnal and seasonal cycles. When combined with the extraordinary nature of fluids and fluid-like layers that cover the Earth's surface...

Guest Editor

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Message from the Editor-in-Chief

Mathematics permeates all kinds of academic worlds and is a fountain flowing with innovative development. The journal *AppliedMath*, publishing high-quality refereed papers discussing various aspects of applied mathematics, is dedicated to promoting the integration of mathematics with applied disciplines to cultivate a profitable frontier of mathematics. The journal highlights articles devoted to the mathematical treatment of questions and phenomena arising in physics, chemistry, biology, medicine, pharmacy, engineering, information science, social sciences, and humanities. One of the missions of this journal is to serve scientists by quickly announcing the seeds of significant mathematical breakthroughs in science and technology.

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