



## Turbulence, Waves and Transport in Stratified, Rotating Fluid and Plasma Flows

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### Message from the Guest Editor

Dear Colleagues,

The aim of this Special Issue is to gather recent studies on turbulent dynamics and transport properties in fluid and plasma frameworks in the presence of stratification and/or rotation, as well as under the influence of external and self-generated magnetic fields. In these systems, density profiles, rotation axes, and magnetic fields establish preferential directions that break isotropy at some scales, allow for the propagation of waves, and may lead to the creation of helicity and the onset of dynamos. Turbulence thus has to compete with waves, and the interplay between these two energy transfer mechanisms plays a crucial role in determining the transport of momentum, particles, active/passive scalars within the flows, dissipation properties, and in promoting the exchange between kinetic and potential or magnetic energy. Stratified, rotating fluid and plasma flows are the reference physical frameworks of planetary atmospheres and interiors, of the Earth's oceans, of the solar wind, the Sun, and also of those regions where the solar-terrestrial coupling is achieved (magnetosphere and ionosphere).

Dr. Raffaele Marino  
*Guest Editor*





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## Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

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