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Rethinking Energy: Earth System Science Approaches

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Message from the Guest Editors

For the past century or more, fossil fuels have dominated not only energy use, but also the way we think about energy systems. Given the finite reserves of fossil fuels (FFs) and their uneven global distribution, in the 1960s and 1970s, high hopes were placed on nuclear power as a successor fuel, but it is now projected to play only a minor role in future energy. With the rising awareness of the climate change problem, renewable energy (RE) sources are increasingly promoted as a key climate mitigation strategy. However, controversy exists as to whether RE sources have a large enough EROI to replace the still-dominant fossil fuels. Because only intermittent RE sources —wind, solar, and perhaps wave energy—have a high technical potential, large-scale energy storage will be needed, which will reduce the overall EROI. Furthermore, although the environmental problems of FFs have long been recognised, there is now increasing recognition of those for RE, as well as requirements for (often scarce) metals, water, and land. This Special Issue aims to explore the energy future from an Earth systems science viewpoint, thus widening the scope of energy research.

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Message from the Editor-in-Chief

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