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Abstract for an Invited Paper
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Extreme events, tail statistics, and large deviation theory in geophysical flows

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The talk will give an overview of analytical and numerical methods that have been recently introduced to characterize the pathway, rate, and likelihood of rare but important events observed in the context of geophysical flows. These methods build on large deviation theory, which indicates that the way such events occur is often predictable and offers way to compute them via solution of an optimization problem for their most likely path. These concepts and ideas will be illustrated via examples ranging from transitions between metastable patterns in atmospheric flows to rogue waves.