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THERMAL: Sampling Atmospheric Convection Using Paragliders

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Atmospheric convection is responsible for turbulent transport of heat, moisture, and momentum and fuels the convective cloud formation. Due to lack of observations, numerical prediction models treat convection using sometimes inadequately constrained parametrization schemes. Observations of atmospheric convection to further constrain these parameterisations are notoriously difficult to obtain due to the intermittent, localized, and turbulent character of convection. However, every day, hundreds of paragliding, hang gliding, and gliding pilots probe the convective boundary layer in hope of finding the best convective thermals. They spend years learning the art of finding and flying in the convective air, while they proudly share their flight tracks online. In this presentation we show how tracks of these engineless aircrafts can be used to sample atmospheric convection. We showcase a dataset from a paragliding championship to classify convection. We elaborate on how the international databases can be used to characterize atmospheric convection and aid building parametrizations based on machine learning.