

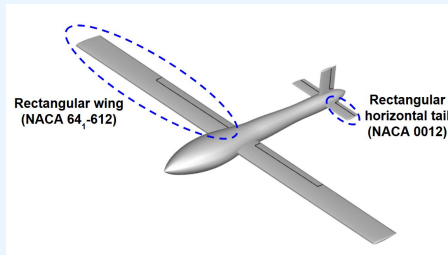
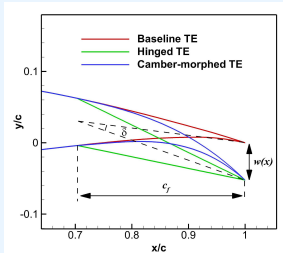
Motivation

Next-generation UAVs require high aerodynamic efficiency and precise trim control. Smooth camber-morphing improves performance but its trim impact remains unexplored.

Objective

Analyze the effect of smooth camber-morphing on aerodynamic and trim characteristics across multiple trim flight conditions, relative to a hinged configuration.

Methodology

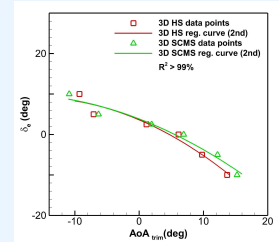
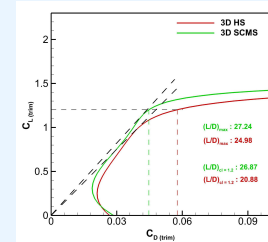
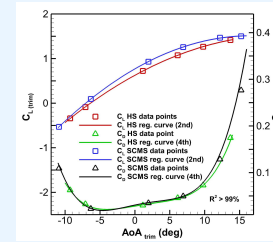


Linear HF & SCMF are designed based on [Jawahar et al.](#), and [Daynes and Weaver](#) respectively.

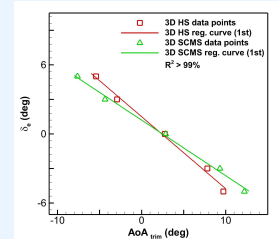
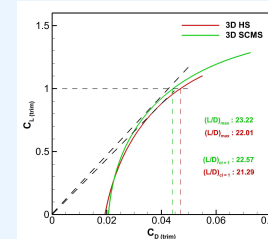
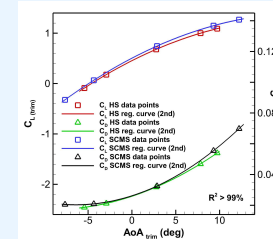
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Results

1. Take-off / Landing



2. Low-speed cruise



Smooth camber morphing achieves trim at lower angle of attack and elevator deflection with reduced drag compared to hinged configurations, though the benefit is smaller in cruise.