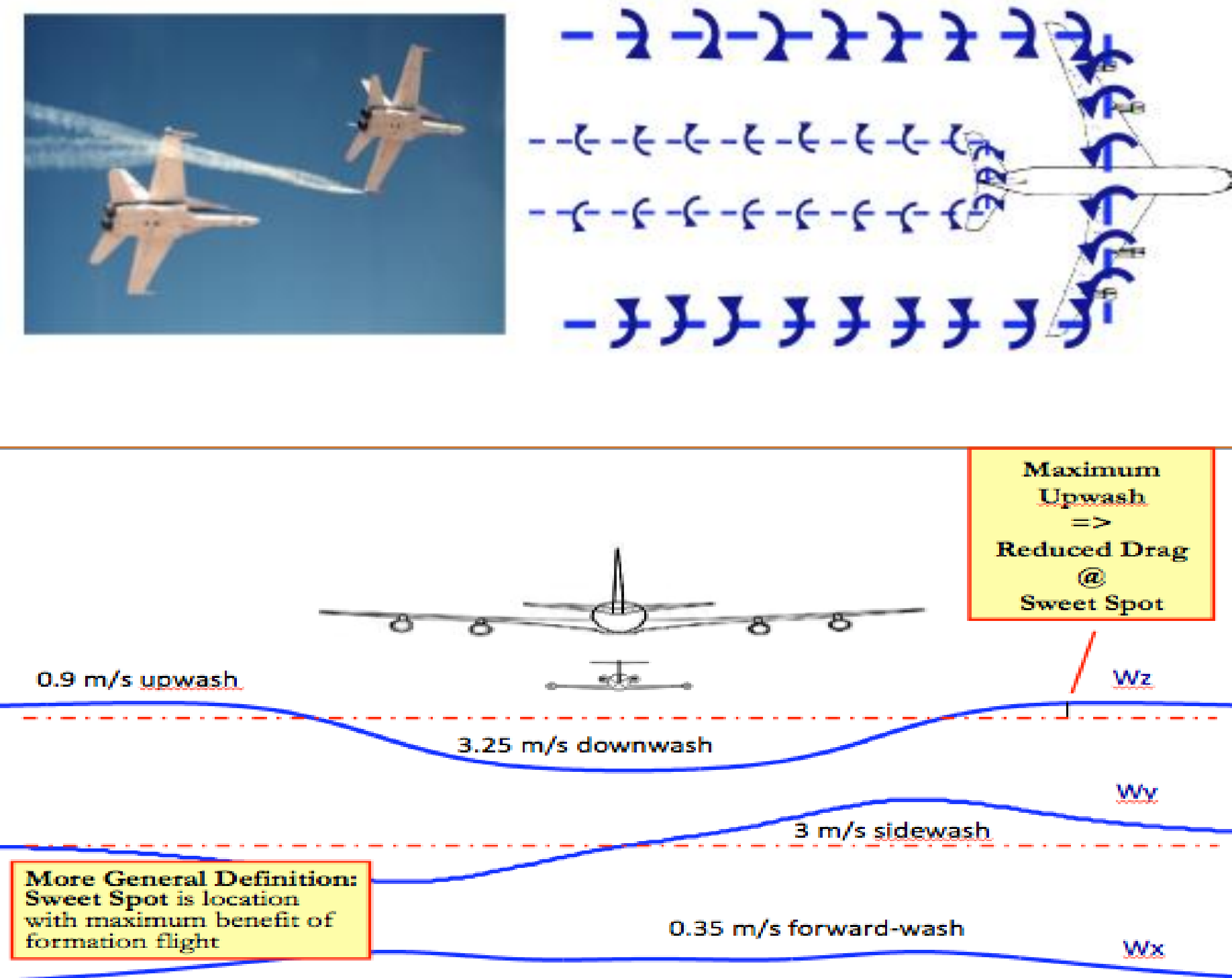


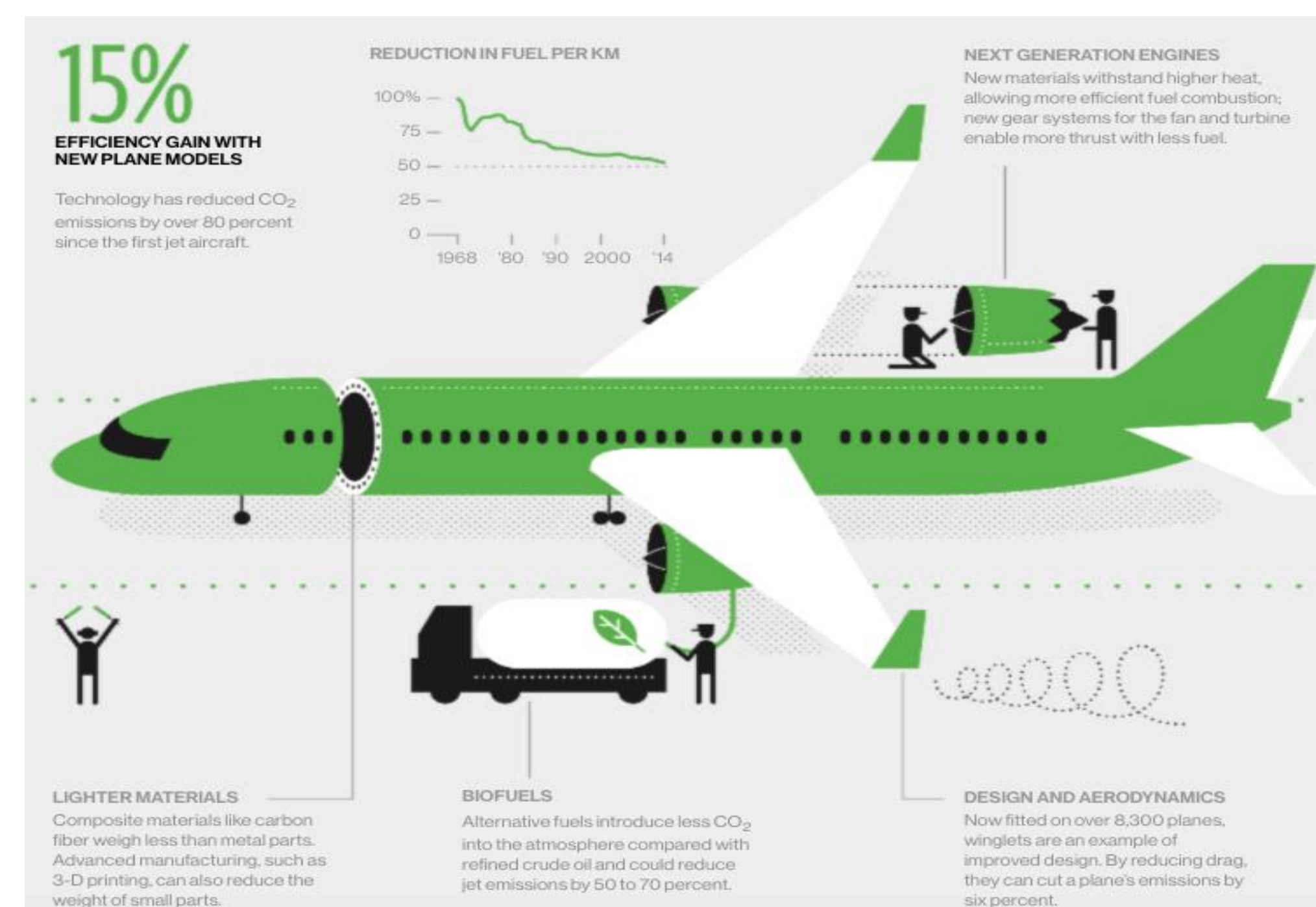
# Where Should It Fly?

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## Motivation



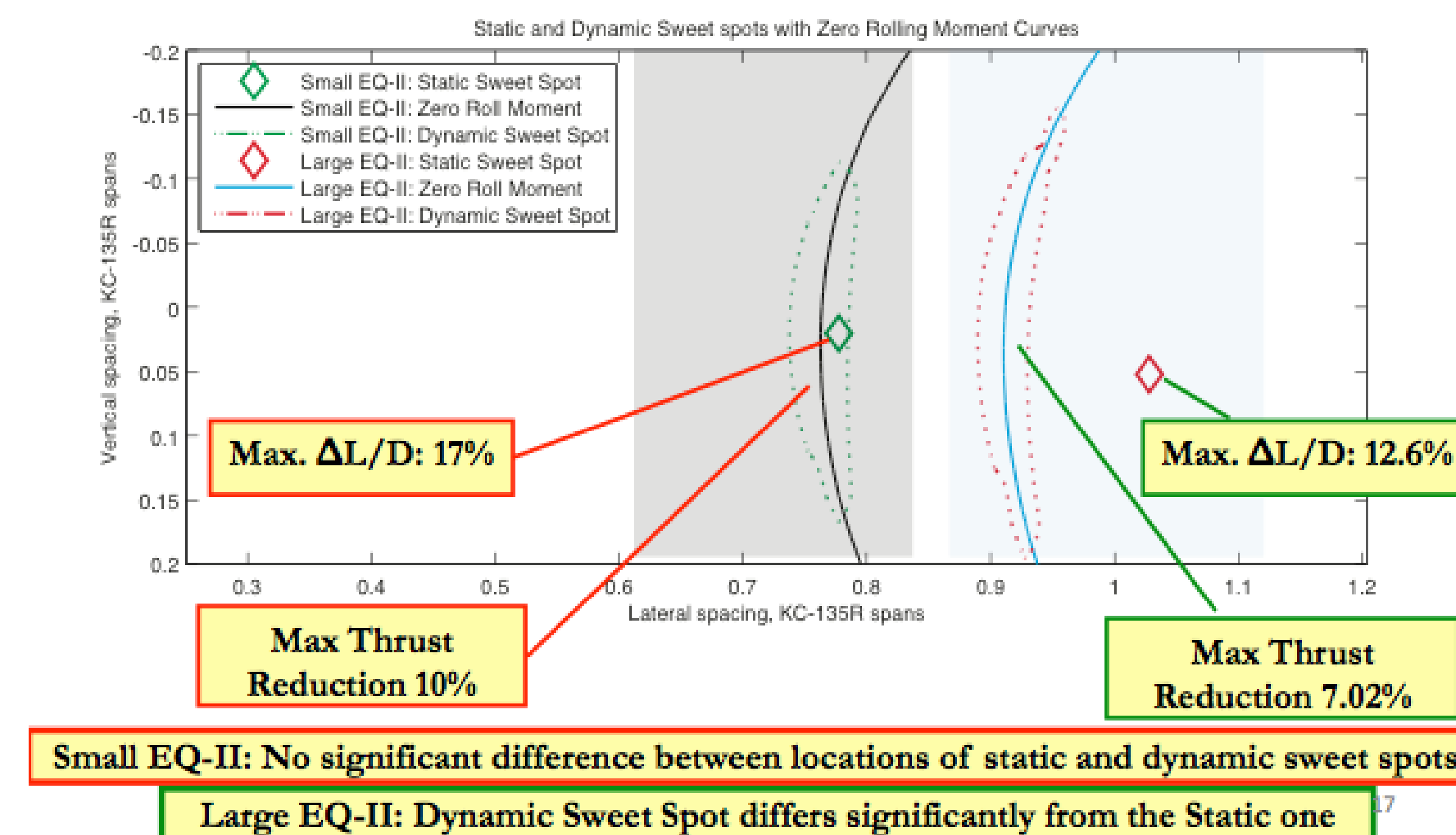
In 2017, U.S. airlines consumed approximately **17.3** billion gallons of fuel at **\$1.69** a gallon.



<https://www.nationalgeographic.com/environment/urban-expeditions/transportation/green-aviation1/>

**Formation flight can reduce fuel usage by up to 10% for future and EXISTING aircraft!**

## Challenge



Location of sweet spot depends on the sizes of the aircraft in the formation.

**Online control schemes to find the sweet spot are not fuel efficient.**

## Approach

Determine relationship between sweet spot and relative aircraft size for implementation by commercial airliners.

For any pair of aircraft, this relationship will define where the trail should fly relative to the lead.

## Deliverables

- Aircraft simulation model - MATLAB/Simulink
- Scaling methodology for aircraft
- Empirical relationship between aircraft size and sweet spot location
- Validation with formation flight results in literature (flight tests and simulation)

## Resources

FTE: 0.5

Procurement: \$24K

