



F1 CFD: How did we get into this mess and how do we get out of it?

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A brief history of aerodynamics in Formula 1 (F1) is given, focusing on the drivers that led to unsustainable expenditure and the draconian restriction that followed. The impact of changing business models within the sport is considered and how this led to an uncontrolled growth bubble and final 'burst' in the financial crisis of 2007.

The essence of the Aerodynamic Test Restrictions (ATR) is reviewed and how these have shaped the developments in experimental and computation aerodynamics in F1. Although not intended, the ATR has benefited experimental techniques but hindered CFD analysis. The drivers for this process are discussed.

Finally, the challenge for CFD to replace the wind tunnel in F1 is considered and what changes are needed in F1 regulations and CFD technology. Replacing the wind tunnel with CFD is not a stated objective of F1, but the natural process of 'computation replacing experiment' is unusually slow in the F1 industry.