**Statistical Engineering Internship**

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Air traffic demand is predicted to increase by 2 to 3% per year over the next 20 years, which will lead to increased delays, fuel costs, noise pollution, and greenhouse gas emissions if the current air transportation system is not modified. As the number of commercial flights greatly increase, conditions at busy terminals often lead to inefficient arrivals. NASA is collaborating with the Federal Aviation Administration (FAA) and other industry partners to develop advanced technologies for the Next Generation Air Transportation System (NextGen). Interval Management (IM), Traffic Management Advisor with Terminal Metering (TMA-TM) and Controller Managed Spaced (CMS) are technologies largely developed by NASA to in attempt to combat the problem of inefficient arrivals. The goal of IM is to efficiently manage spacing between aircraft. IM avionics uses both ground crew and flight deck entered data to calculate the airspeed an aircraft crew should fly to achieve or maintain a specific spacing behind a lead aircraft.

NASA's first Air Traffic Management Technology Demonstration (ATD-1) implemented these three technologies in order to operationally demonstrate an integrated arrival management concept that uses performance-based navigation and accelerate the transfer of NASA scheduling and spacing technologies to the FAA. This project went through many research phases including human in the loop experiments as well as a flight test.


During the summer I worked at NASA's Langley Research Center as a statistical engineering intern and looked at the speed changes that occurred during this flight test. Speed changes were a frequent complaint from the crews who flew with the technology. Increased speed changes add to the workload of the crew at an already overwhelming time of the flight. Unnecessary speed changes undermine the usefulness of the technology so minimization of them is a priority.