Improving Antarctic Fog Forecasting using Data Analytics

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Antarctic fog formation is a relatively understudied phenomenon that is a frequent obstacle to aviators and other operational and research functions around the continent. It is anecdotally one of the most challenging types of weather to forecast around the Ross Island area and is a common reason for mission delays. Utilizing several years of manual and automated observed data at Williams and Phoenix airfields, this project examines utilizing data analysis to improve fog forecasting capabilities. The project investigates current fog forecasting rules-of-thumb and evaluates the historical performance based on airfield observation data. It explores the use of various machine-learning techniques to derive patterns, identify key variables, and develop tools from historical airfield fog observations to predict future fog formation at Williams and Phoenix airfields.