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A central challenge in managing today's commercial en route air traffic is the task of routing the aircraft in the presence of adverse weather. Such weather can make regions of the airspace unusable, so all affected flights must be re-routed. Today this task is carried out by conference and negotiation between human air traffic controllers (ATC) responsible for the involved sectors of the airspace. One can argue that, in so doing, ATC try to solve an optimization problem without giving it a precise quantitative formulation. Such a formulation gives the mathematical machinery for constructing and verifying algorithms that are aimed at solving the problem. This paper contributes one such formulation and a corresponding algorithm. The algorithm addresses weather uncertainty and has closed form, which allows transparent analysis of correctness, realism, and computational costs.