FLIGHT PATH OPTIMISATION

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Project Report

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1 MOTIVATION AND IMPLEMENTATION

1.1 INTRODUCTION

In this project we are going to find the optimal path for a solar powered airplane [1]. During the flight of the plane's electrical engines drain power from it's battery. While in flight solar panels on the plane's wings generate electric energy. However clouds may block the sun's rays from reaching the panels. In addition the suns intensity increases when flying closer to the earth's equator. In order to keep as much energy in the planes batteries as possible the flight path has to be optimized.

1.2 PROBLEM FORMULATION AND ANALYSIS

In the optimization process we use randomly generated weather data and sun data corresponding to a flight between 48° and 50° latitude.

1.3 OPTIMISATION ALGORITHM DESCRIPTION

1 Like the one from http://www.solarimpulse.com/

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RESULTS

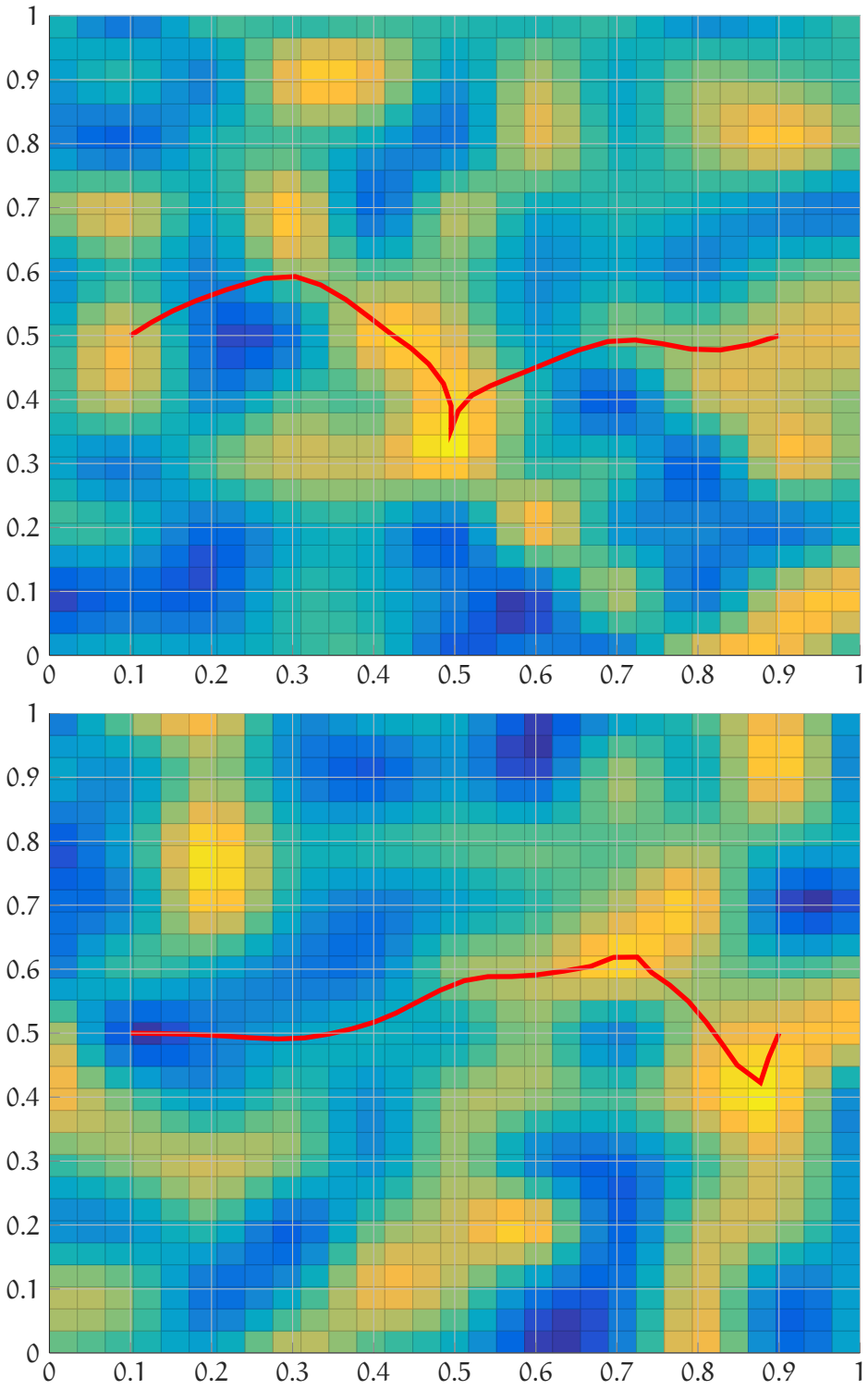

Figure 1: Optimized flight paths from the coordinates 0.1,0.5 to 0.9,0.5, with different weather data.