

Solar Car Elevation Modelling.

The Solar car power consumption varies with both speed and the gradient it is climbing or descending.

Speed.

The minimum speed over a day or leg is simply the distance to be travelled divided by the time allowed. The cruise speed will be higher than this number due to zones where the speed limit is lower than the minimum speed.

The team will be using these numbers, for speed to determine the steady state power consumption at these speeds.

Elevation.

The second variable is elevation.

In order for the team to test and understand the power consumptions climbing and descending, the team require data on the gradients they will encounter on the trip.

Once the gradients are determined, suitable testing roads will be found that enable the team to test and hence understand the power consumption variance due to elevation changes.

This project is to calculate the gradients along the trip Darwin to Adelaide, determining, at minimum;

1. Maximum climb gradient
 - a. Location
 - b. Length
2. Maximum decline gradient
 - a. Location
 - b. Length
3. For each day, make a calculation/formula by which the variances across a day, from flat running, can be determined and the net effect on power consumption modelled.

Data.

In this file is elevation data for the trip Darwin Adelaide. The integrity of the data is unknown and so initial calculation may need to look for data that does not look feasible. E.g. steps in the data numbers that are greater than a road would exhibit.