

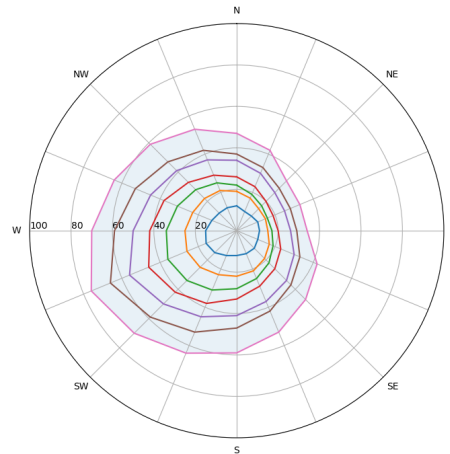
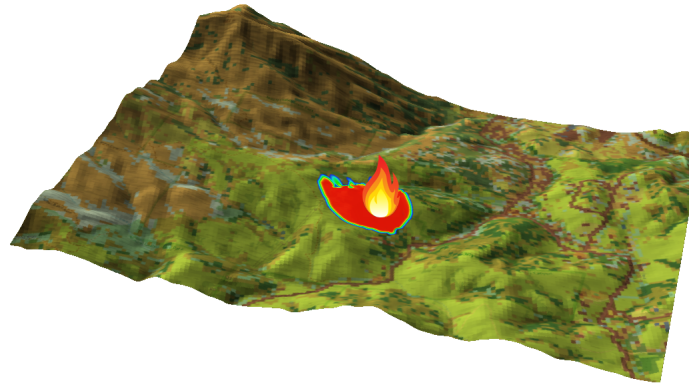
Validation of wildfire models using historical data and FDS

Background

The modelling of wildfires is a topic of significant research interest, with many different developed models designed to address various scales.

The spread of wildland fires spanning large areas in FDS is predicted by the Level Set approach, with the assumption that a surface fire spreads from a point under certain wind, slope, and vegetation conditions. For that, the open-source plugin `qgis2fds` is designed to export terrains and landuse from the QGIS geographic information system to FDS.

This thesis should evaluate the accuracy of the Level Set Method, by qualitatively comparing the simulation results to the observed flame spread in well-documented wildland fire events. The aim is to identify and analyse differences between computer simulations and real-world fire behaviour, contributing to the enhancement of wildfire modelling.



Main Steps

Steps:

1. Research on well documented wildfire incidents.
2. Create initial FDS setup with all collected environmental data and post-processing devices.
3. Run FDS Level Set simulations on different scales and cell sizes.
4. Evaluation of the simulations results.

Tools

- FDS
- QGIS (QGIS2FDS)

Requirements

- High motivation
- Interest in CFD and Fire Simulation