University Oldenburg

Wind Physics Measurement Project

Exercise 1 - Handling and preprocessing of measurement data

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Contents

1 Importing Data into Matlab

For the first task we used the Matlab function readtable() to import the data. We decided to preprocess the data first before saving to the file.

2 Marking invalid data

For the invalid data we used the function NaN(). Matlab checks if there is any invalid Data and replaces it with NaN.

```
raw_data(raw_data==-999) = NaN(size(raw_data(raw_data==-999)));
```

3 Generating continuous time axis

To avoid gaps in the time axis we first converted our time t with datenum() to an numeric value. The numeric values represents elapsed time in units of days. After that we multiplied with $24\frac{h}{d} * 3600\frac{s}{h}$ to convert days to seconds. Next, we created the continuous time axis, by initializing a vector starting with t(1) and ending with t(end). As stepsize we used 1 second. Now we filled our new vector with NaN values and overwrote the file with our existing data.

```
disp('Creating␣continous␣time␣axis')
tnew=[t(1):1:t(end)]';
data_pp = NaN(length(tnew),10);
disp('Writing␣preprocessed␣Data...')
for i = 1:length(raw_data(:,1))
    data_pp(t(i)-t(1)+1, :) = raw_data(i, :);
end
time = (1:length(data_pp))';
data_pp = [time, data_pp];
save('data_pp.mat', 'data_pp', 'raw_data');
clear;
```

4 Computing 10min means and stddev

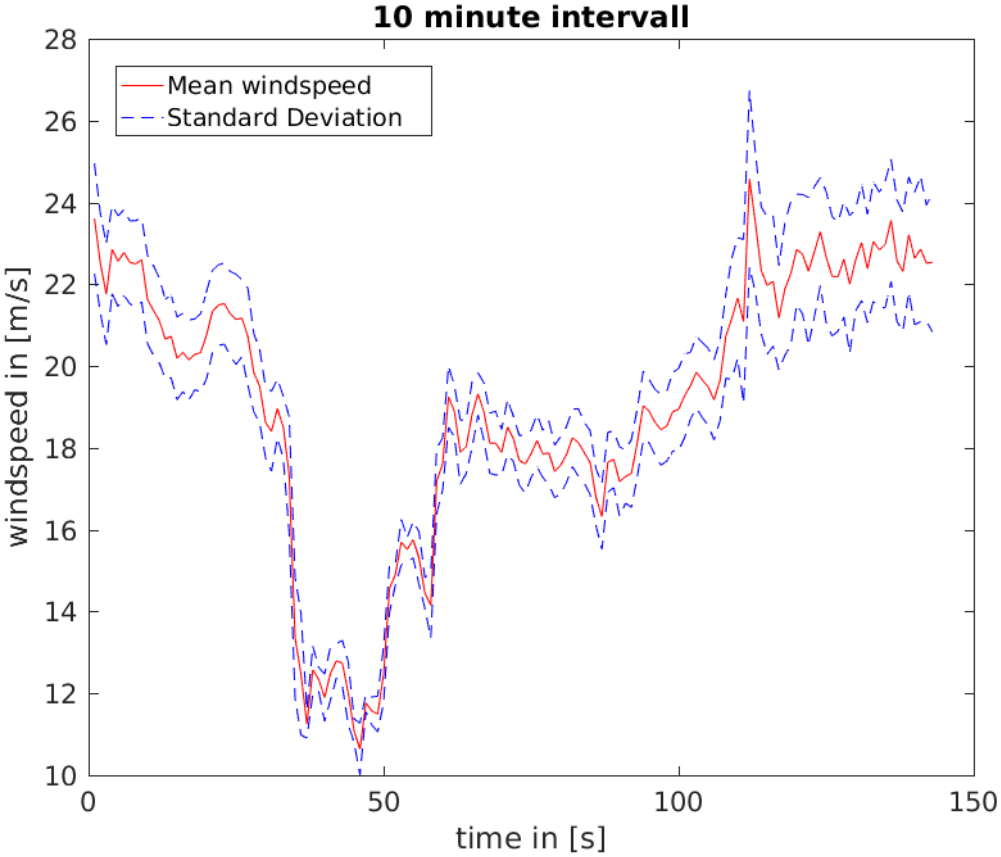

Figure 1: 10 minute intervalls