

What are the implications of climate change in the Faroe Islands?

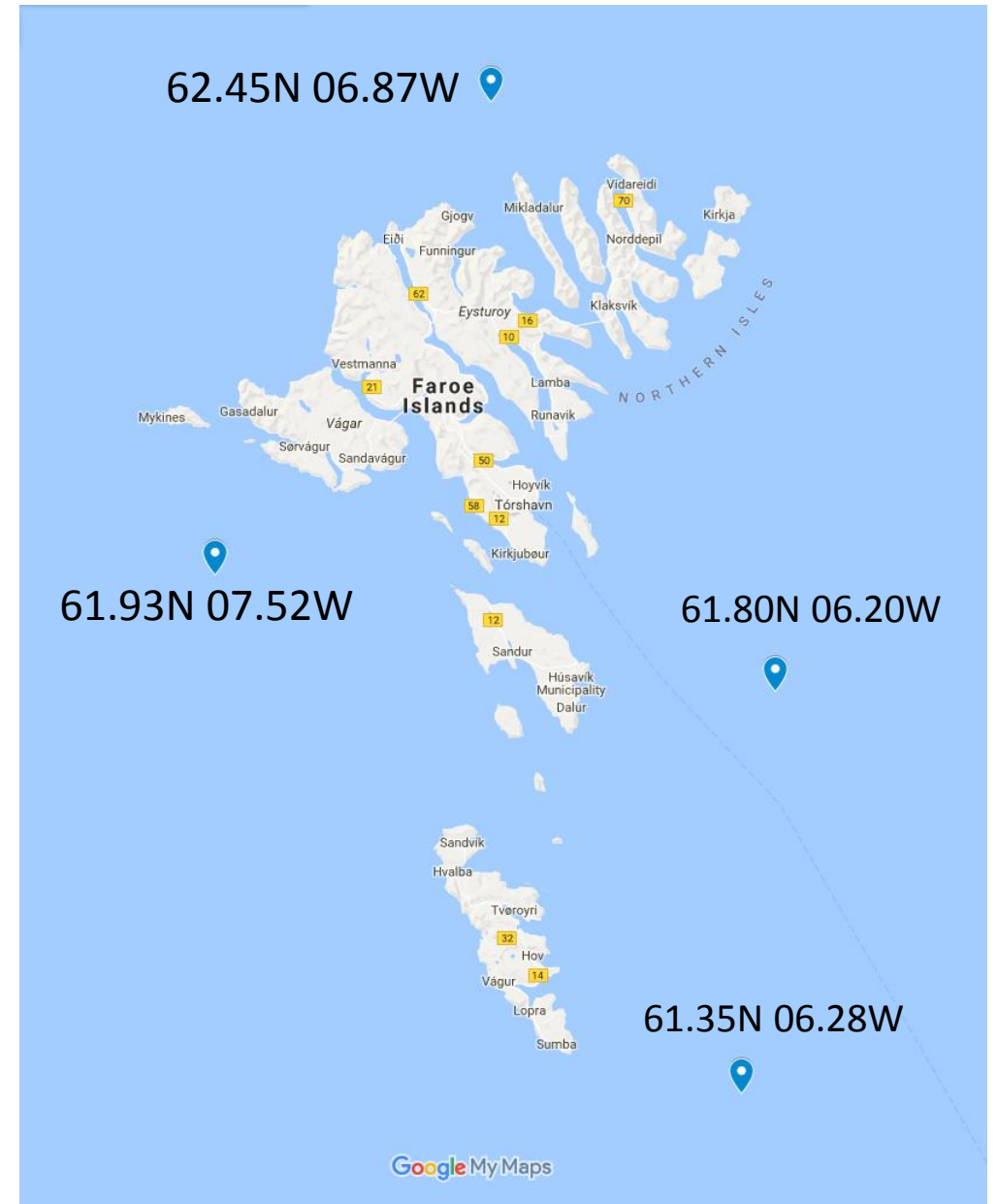
- an analysis of modelled wind data

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Introduction

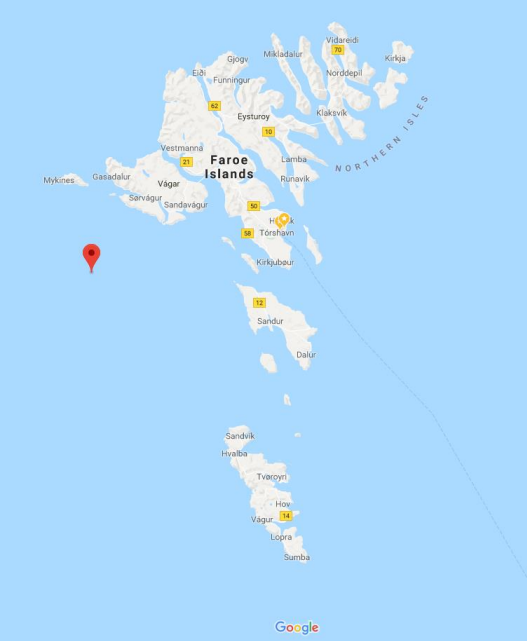
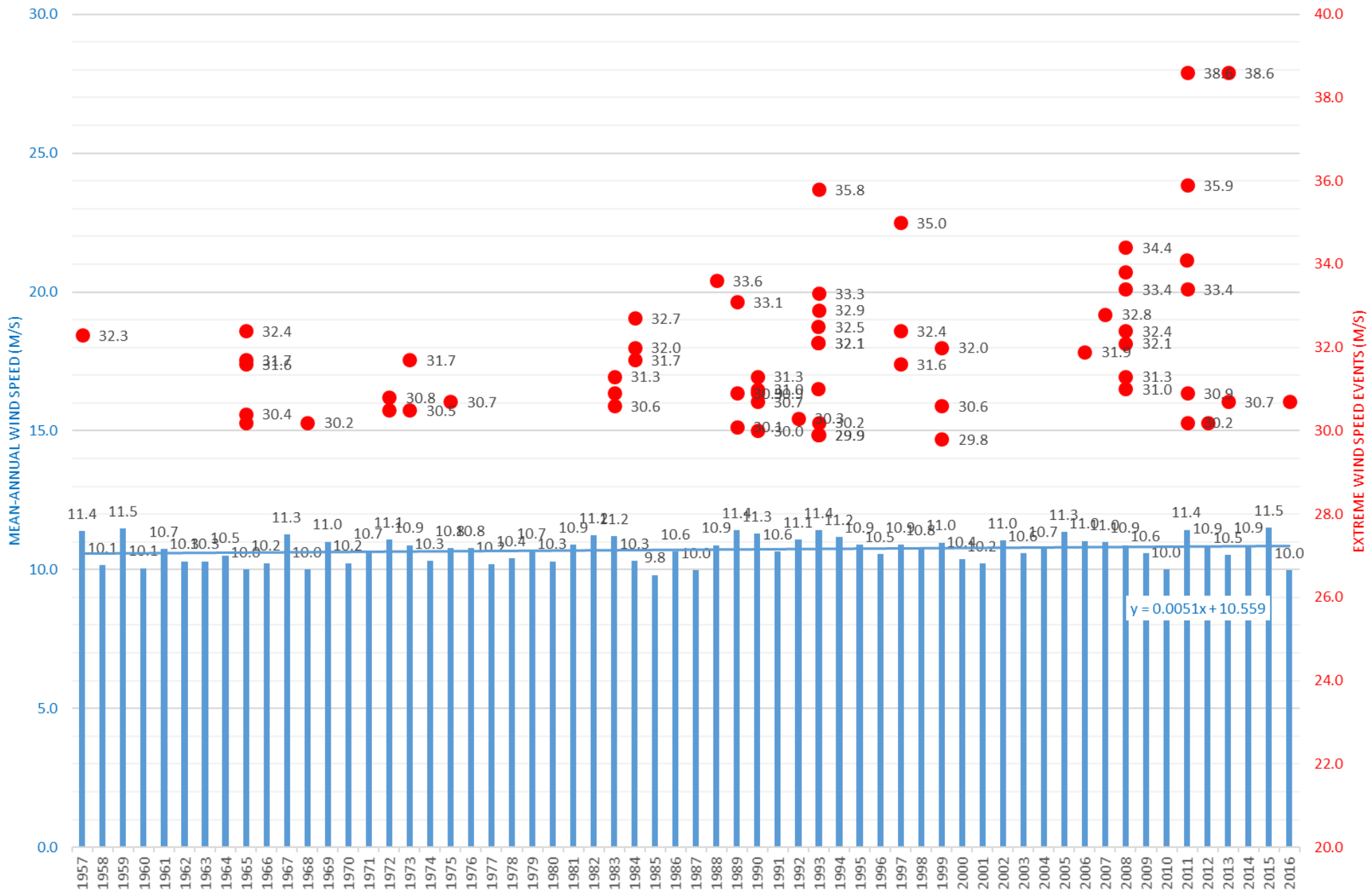
- Climate change has various impacts on different places around the globe.
- Rising sea level is happening worldwide, but is mainly causing troubles in low-land areas.
- Cloud bursts and floodings are recurrent problems in some places, causing danger to life as well as massive material destruction.
- Heat waves are spreading to areas where they rarely occurred before.
- But what do we know about impacts from climate change in the Faroe Islands?
 - Do we have data? Yes some – both direct measurements and modelled data.
- This presentation focuses on **extreme winds** and is mostly based on modelled data.

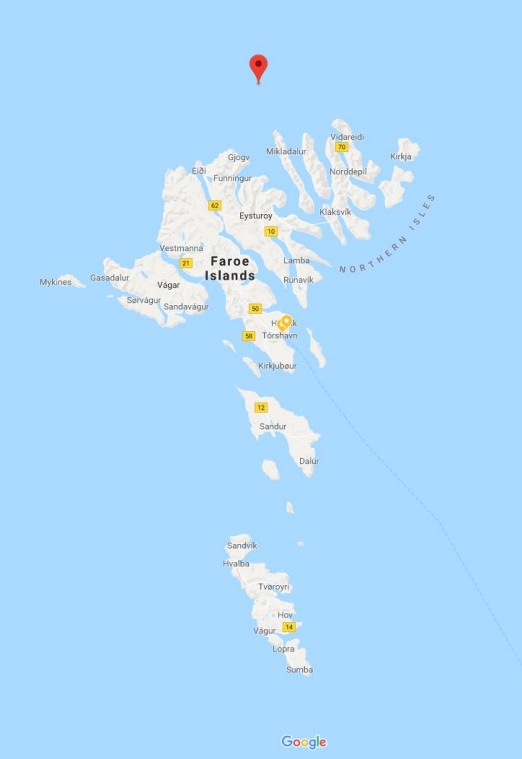
- Norwegian Reanalysis Archive (NORA10): Modelled weather data.
- 4 positions around the Faroe Islands.
- Time span: 1/9/1957-31/10/2016 (i.e. ~60 years).
- ~18 M 'registrations'.
- This presentation focuses on wind:
 1. Mean annual wind
 2. Extreme wind events (≥ 25 m/s)
 3. Most common wind directions



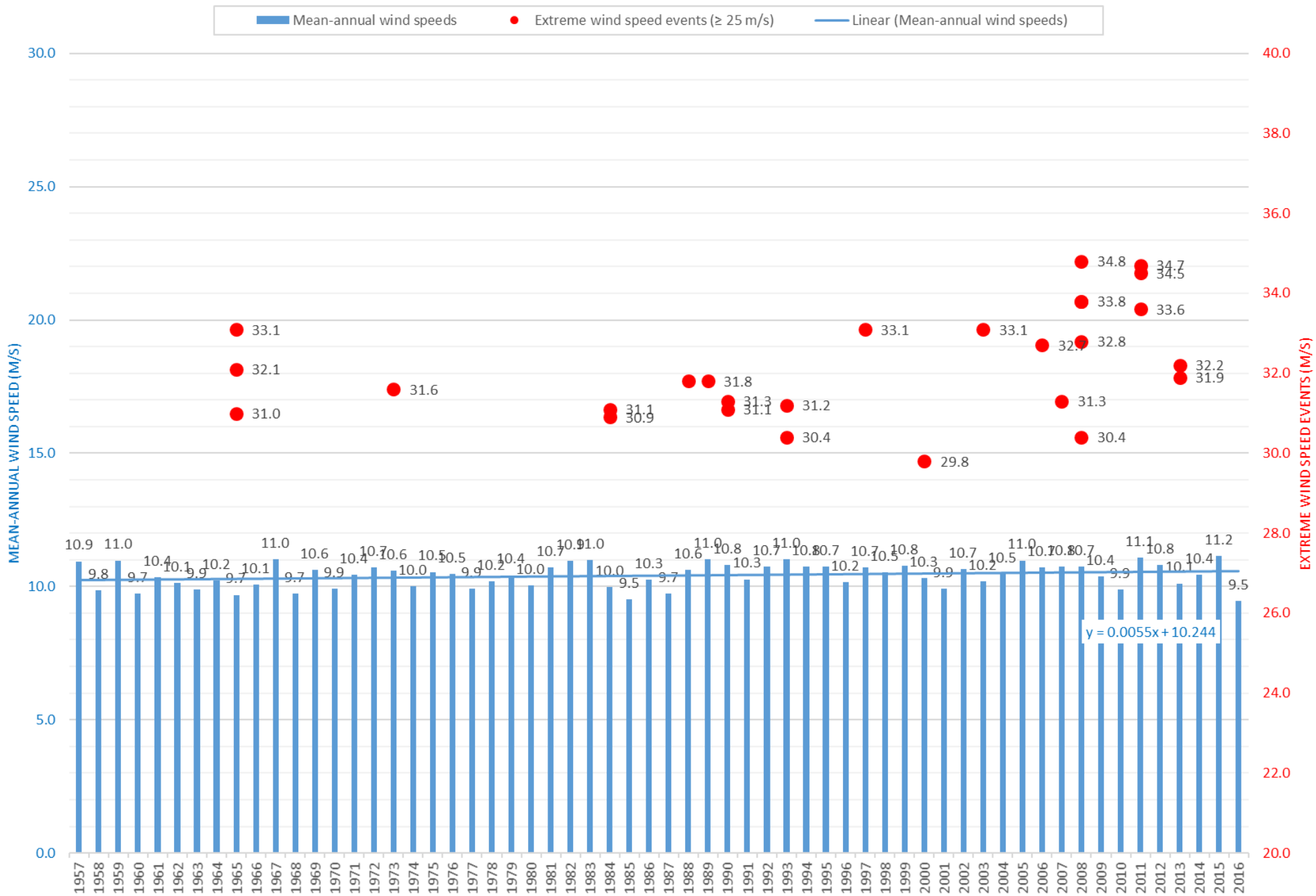
Wind chart 1/9/1957-31/10/2016 (Nora10 61.93N 07.52W)

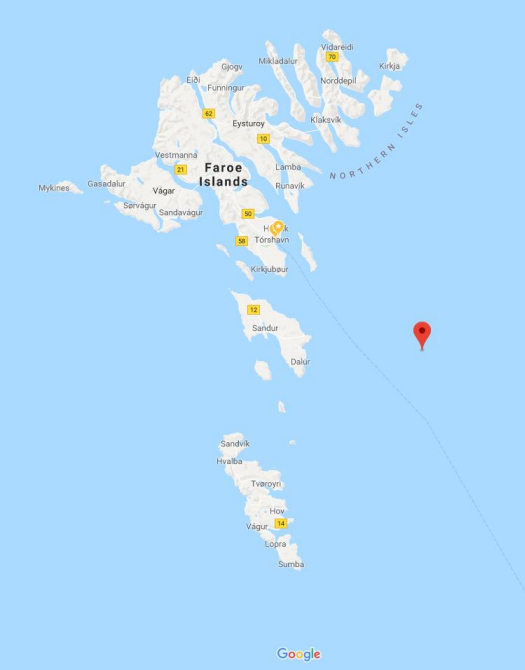
■ Mean-annual wind speeds
 ● Extreme wind speed events (≥ 25 m/s)
 — Linear (Mean-annual wind speeds)



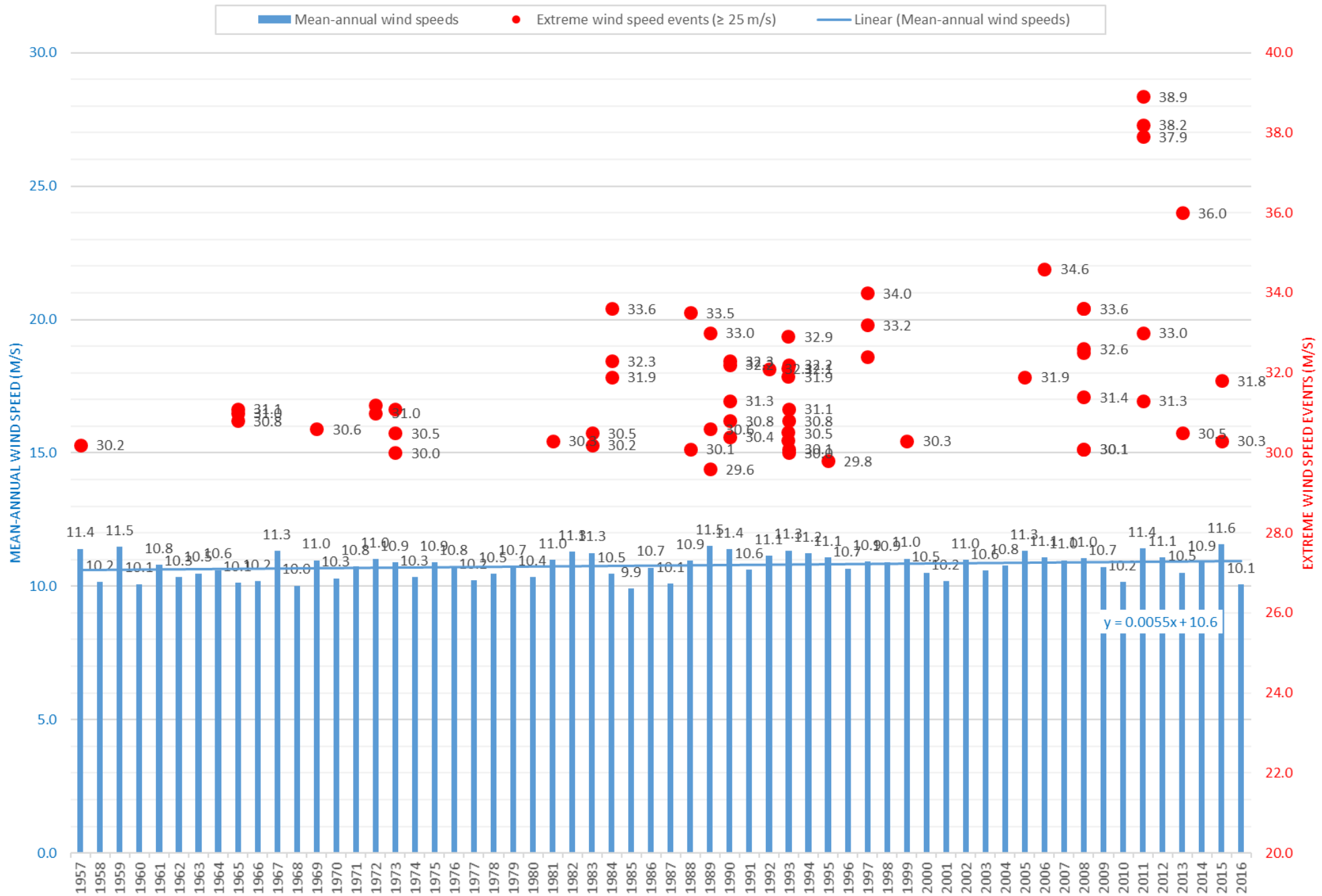


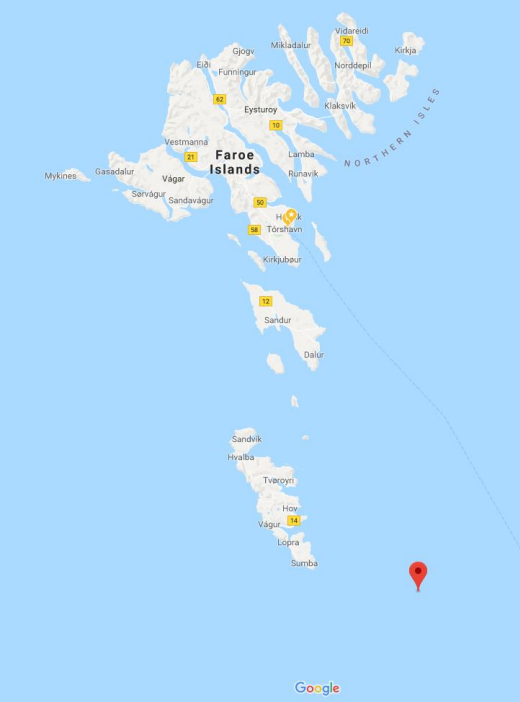
Wind chart 1/9/1957-31/10/2016 (Nora10 62.45N 06.87W)



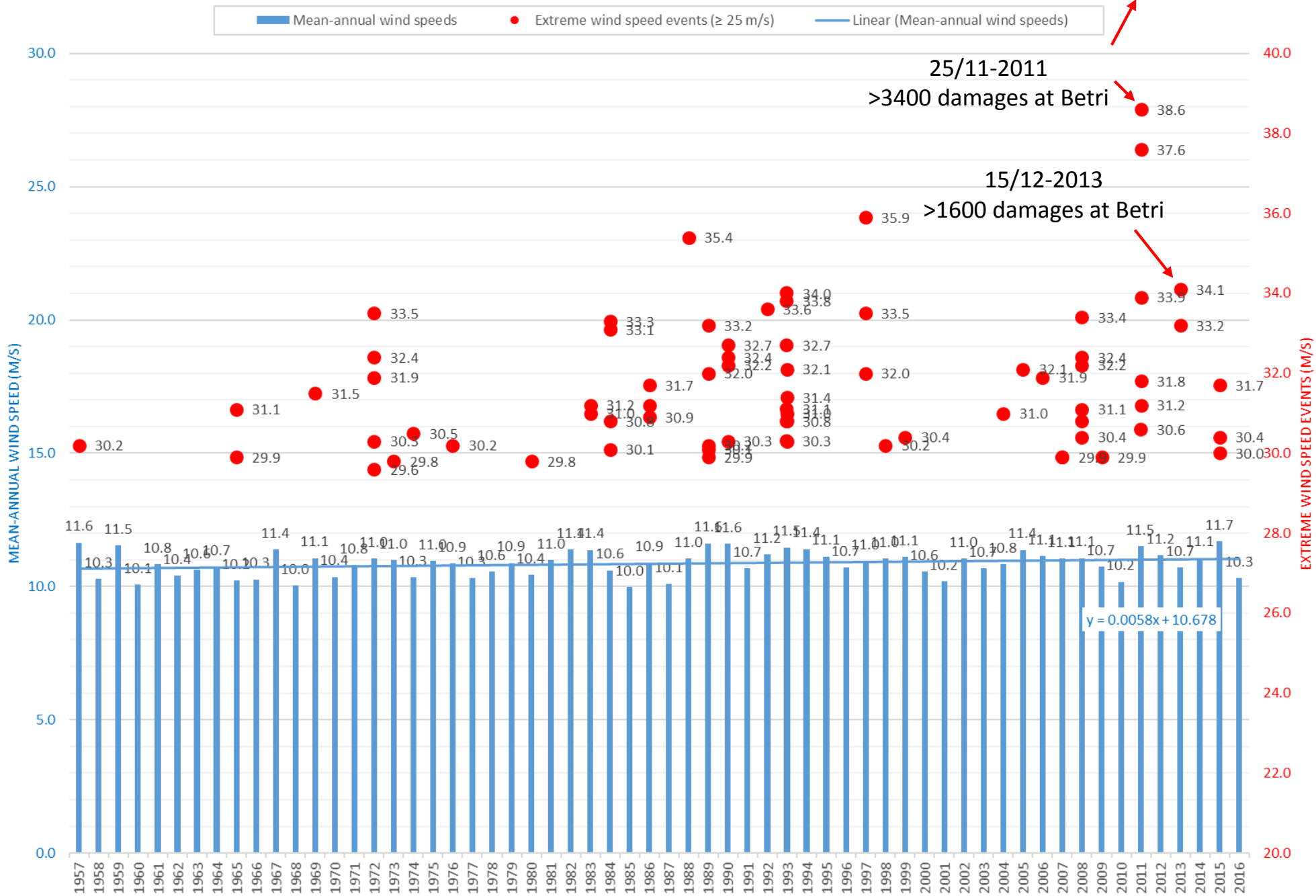


Wind chart 1/9/1957-31/10/2016 (Nora10 61.80N 06.20W)



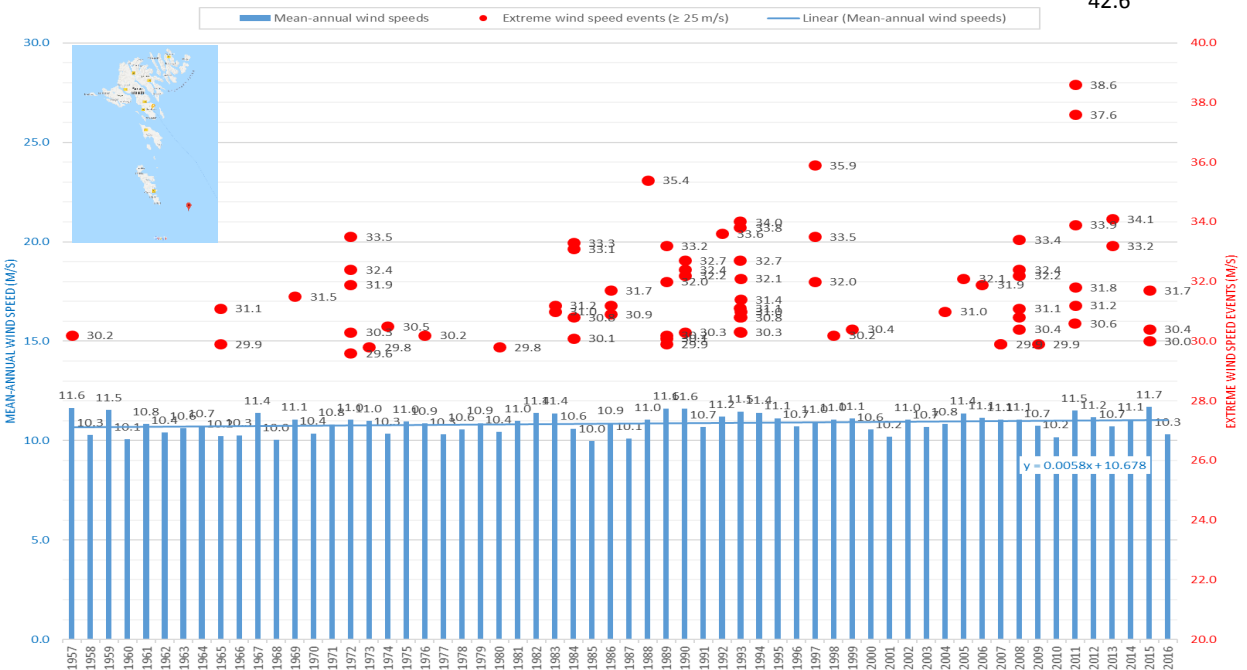


Wind chart 1/9/1957-31/10/2016 (Nora10 61.35N 06.28W)

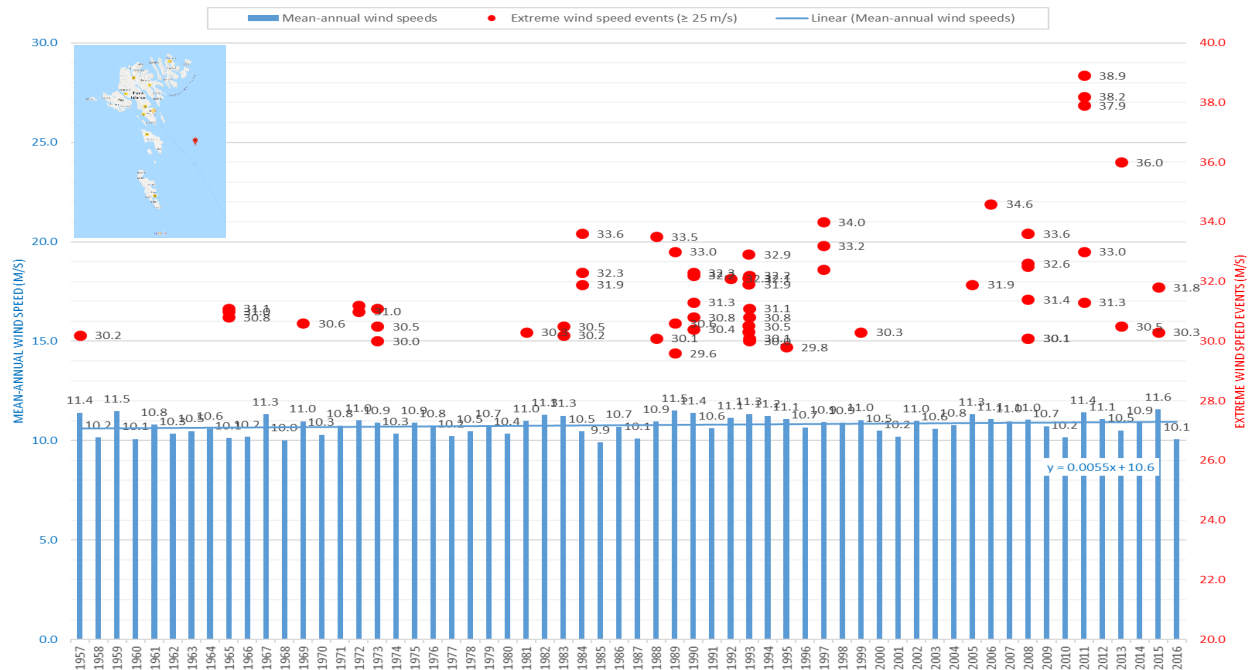


Wind chart 1/9/1957-31/10/2016 (Nora10 61.35N 06.28W)

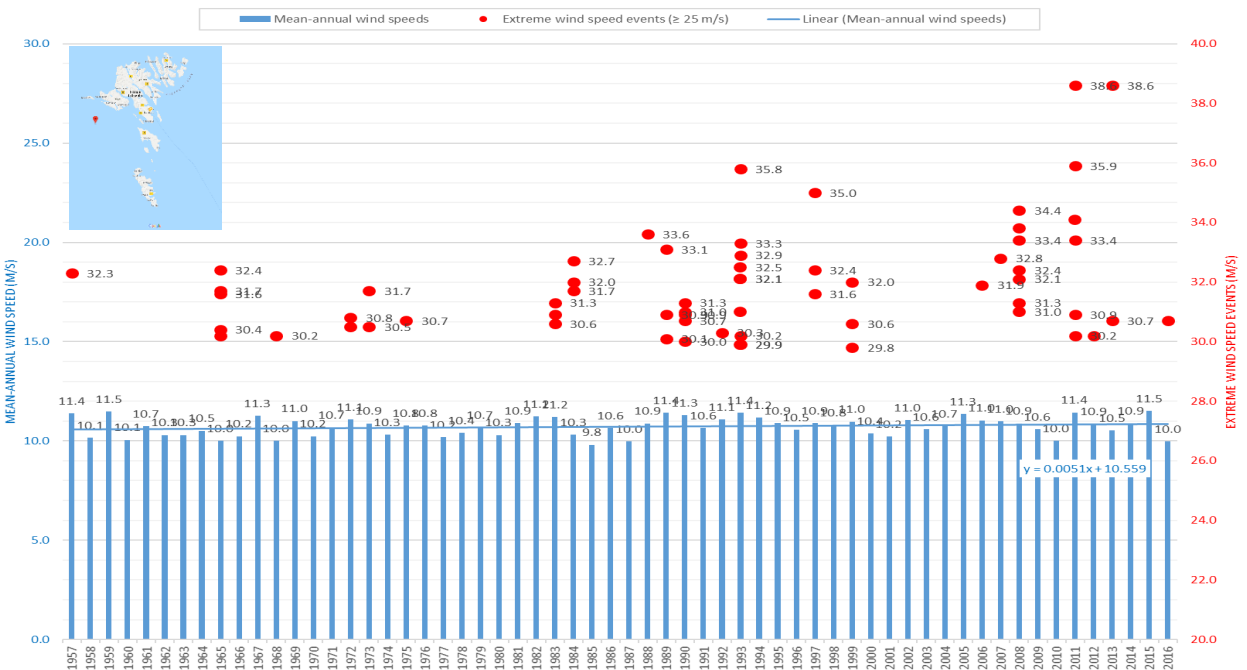
42.6



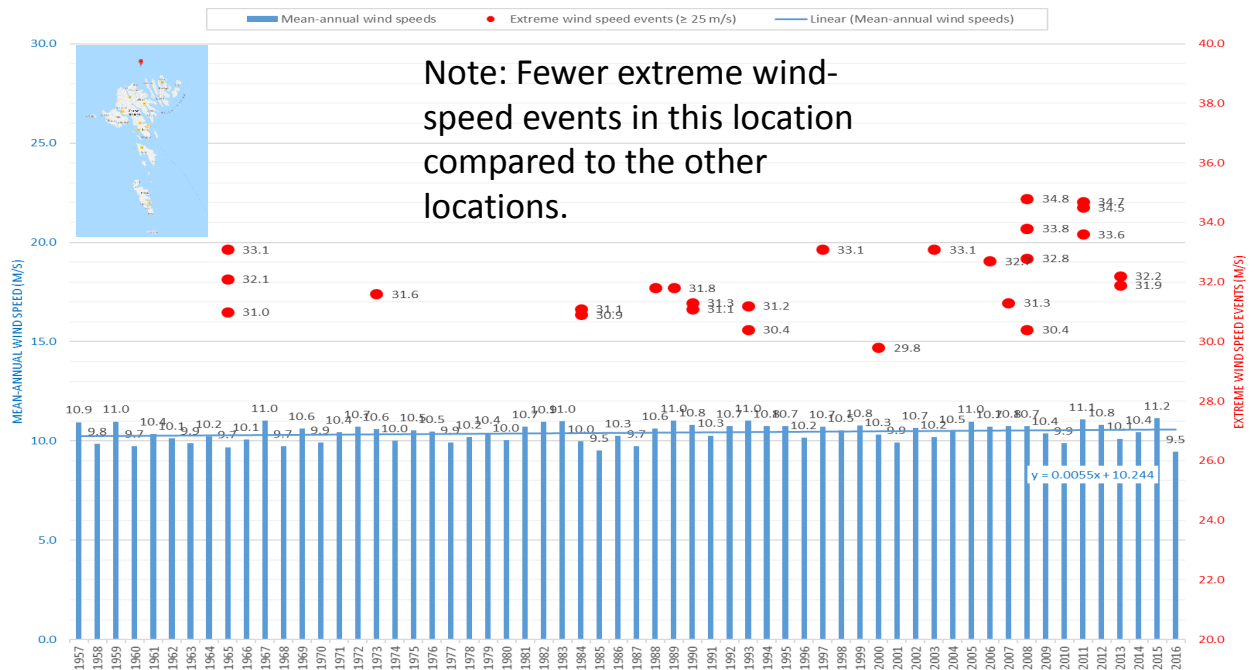
Wind chart 1/9/1957-31/10/2016 (Nora10 61.80N 06.20W)



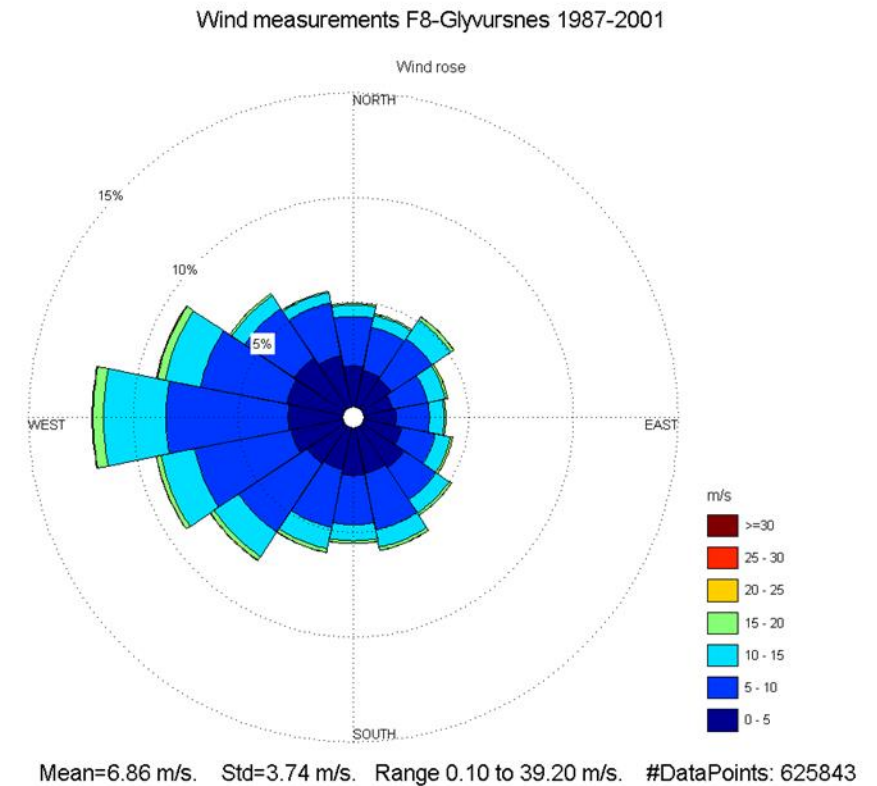
Wind chart 1/9/1957-31/10/2016 (Nora10 61.93N 07.52W)



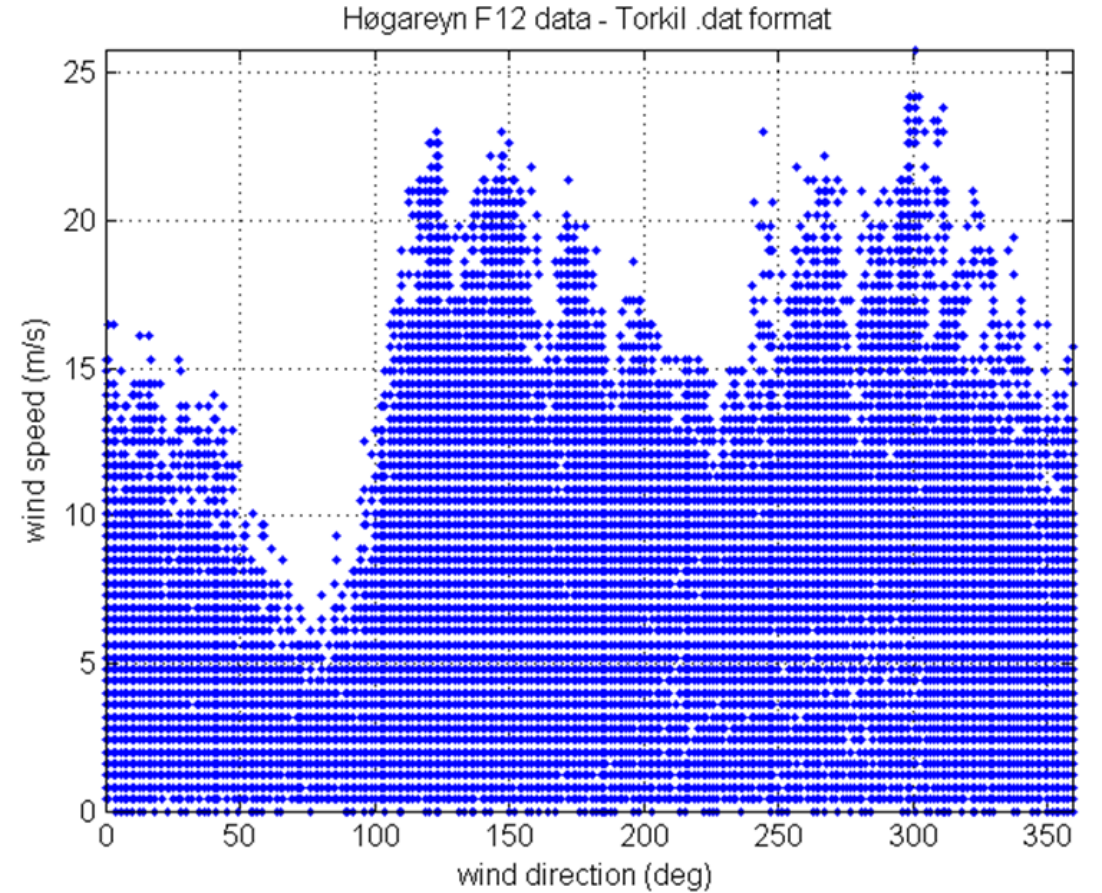
Wind chart 1/9/1957-31/10/2016 (Nora10 62.45N 06.87W)



Wind measurements at Glyvursnes 1987-2001 (LV)



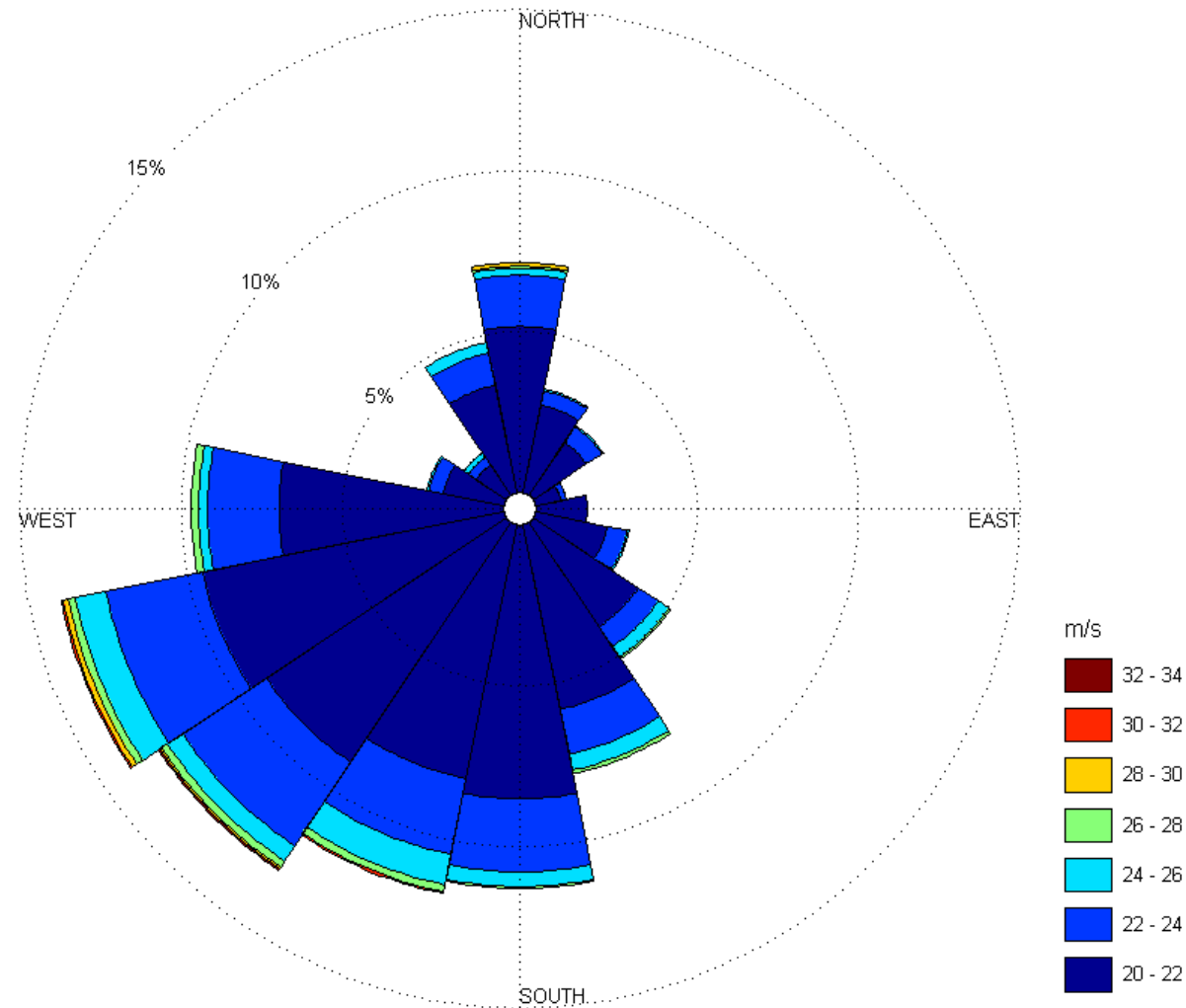
Wind measurements at Høgareyn 2009-2016 (LV)



Modelled data (Nora10)

East buoy location at 10m height

Wind rose from NORA10-DNMI hindcast



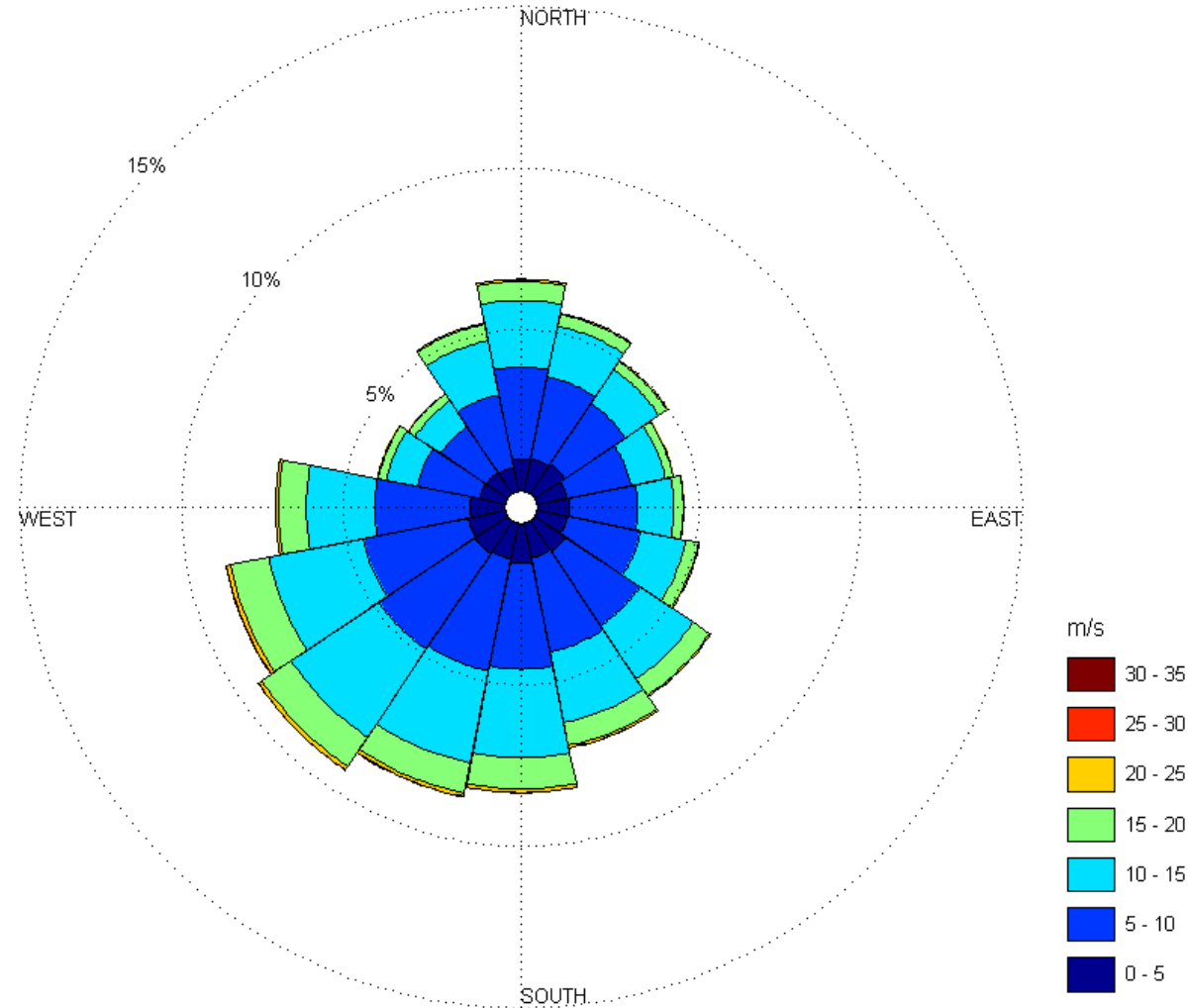
Range: 20.00-32.10
m/s (i.e. 'extreme'
wind events).

Mean=21.49 m/s. Std=1.49 m/s. Range 20.00 to 32.10 m/s. #DataPoints: 1763

Modelled data (Nora10)

East buoy location at 10m height

Wind rose from NORA10-DNMI hindcast

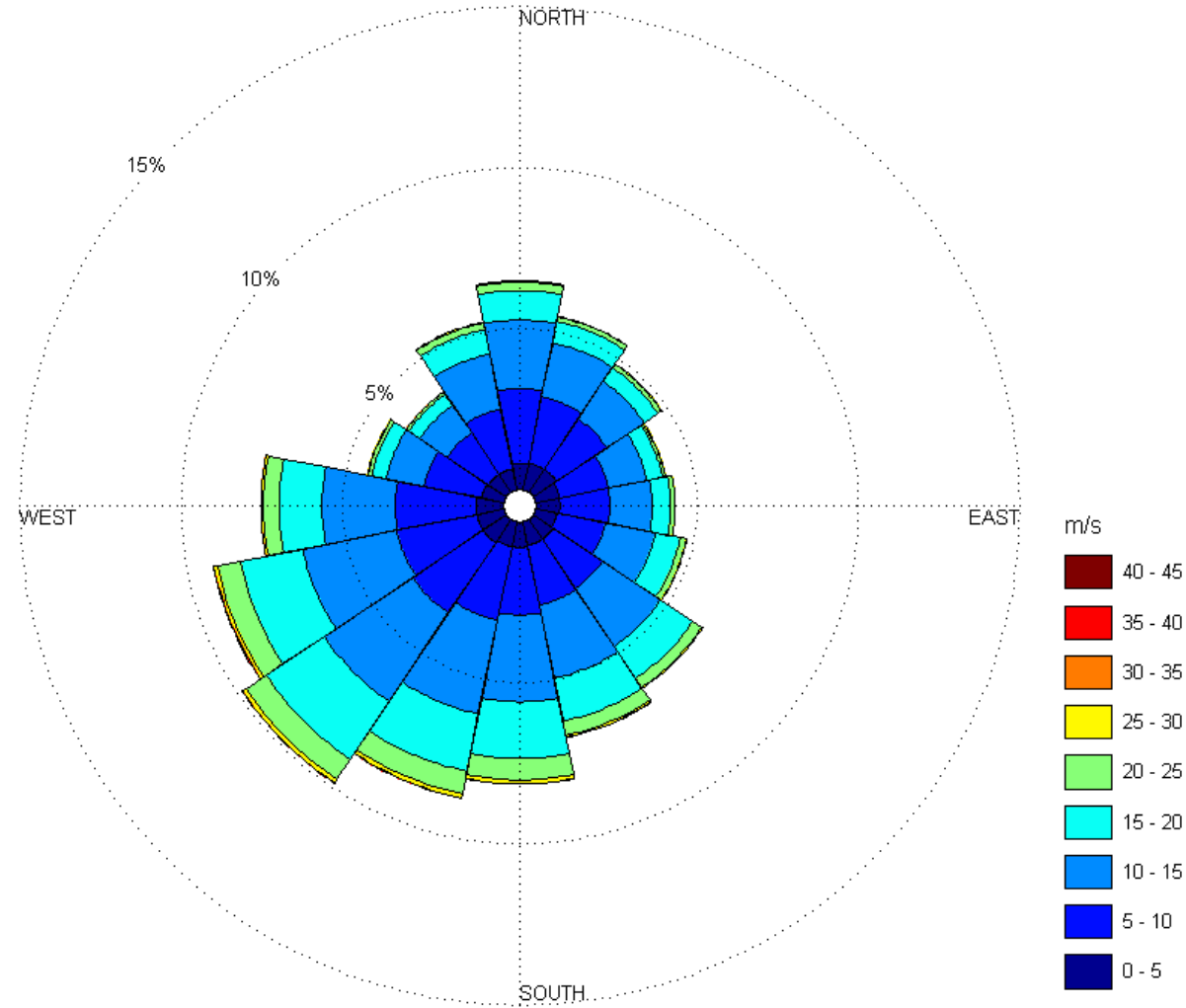


Mean=9.26 m/s. Std=4.27 m/s. Range 0.10 to 32.10 m/s. #DataPoints: 172885

Modelled data (Nora10)

East buoy location at 150m height

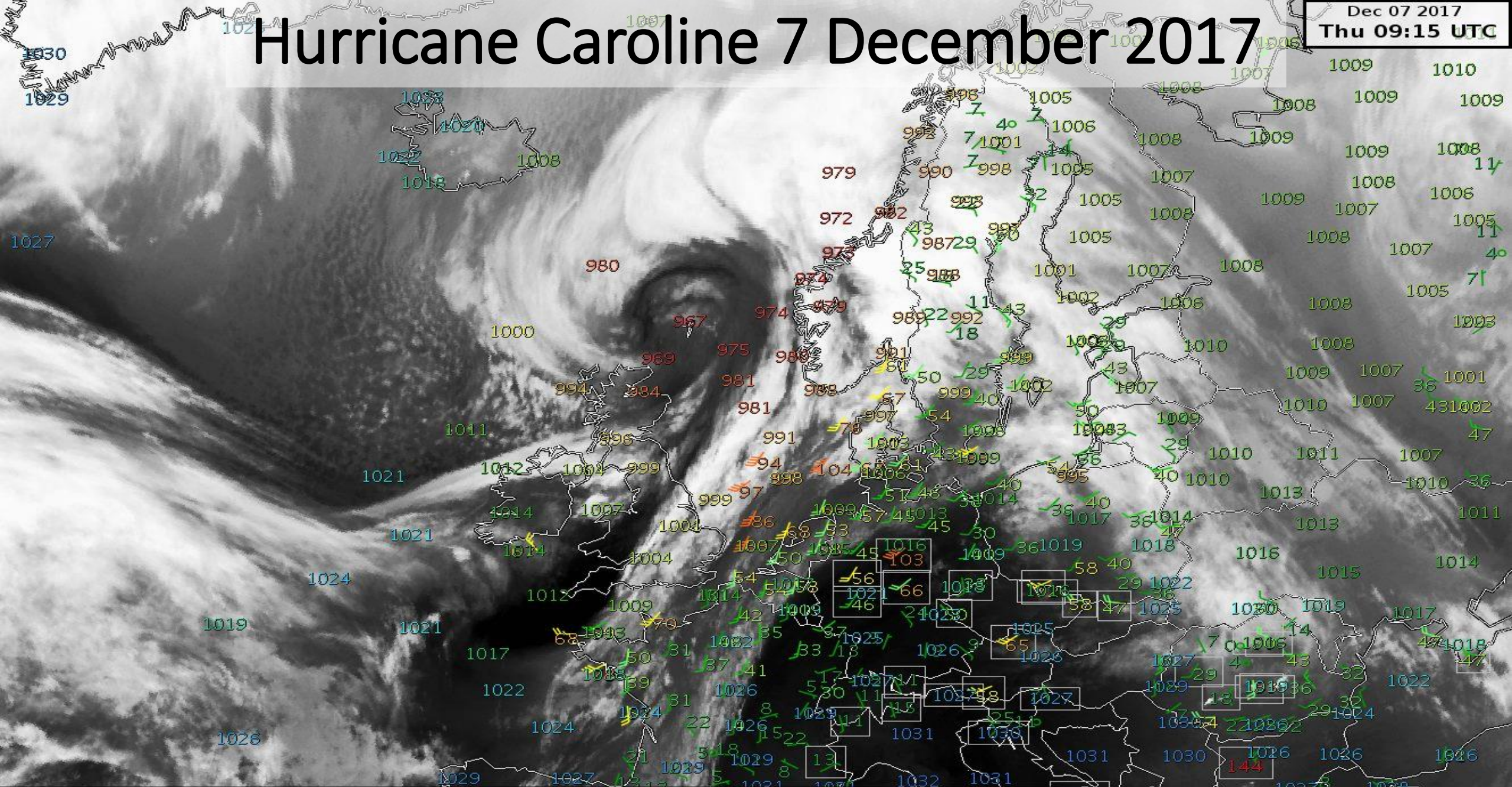
Wind rose from NORA10-DNMI hindcast



Mean=11.16 m/s. Std=5.35 m/s. Range 0.00 to 40.30 m/s. #DataPoints: 172885

Hurricane Caroline 7 December 2017

Dec 07 2017
Thu 09:15 UTC



Surface data	Thu 07.12.17 09:15 UTC [+0/-29min]	QNH in hPa mbar, 212 of 3,777
Surface data	Thu 07.12.17 09:15 UTC [+0/-59min]	Wind speed gust 333, 195 of 1,498
Satellite Data	Thu 07.12.17 09:15 UTC	METEOSAT Africa/Europe - WV 7.3

Source: Severe Weather Europe (SWE)

Norðragøta



Fuglafjórður



Tórshavn



Summary and conclusions

- Climate change is a 'hot' topic in modern debate, but how are the Faroe Islands affected?
- Modelled wind data clearly indicate that we've got stronger winds and harsher storms now than previously, and that these events are occurring at shorter time intervals.
- However, the mean annual wind has changed very little according to these data.
- Next step is to compare the modelled data with real measurements on land in order to get a better picture of the situation.
- A whole lot of weather measurements exist, but these are often scattered and incoherent. Therefore, they need to be processed and interpreted before final and reliable conclusions can be made.
- Additional data from e.g. insurance companies, power companies, and the office of public work may be extremely supportive in this respect.