Veðurstofa Íslands

Öskufoksmælingar í Drangshlíðardal undir Eyjafjöllum

Þorraþing Veðurfræðifélagsins
Sibylle von Löwis
22. febrúar 2011

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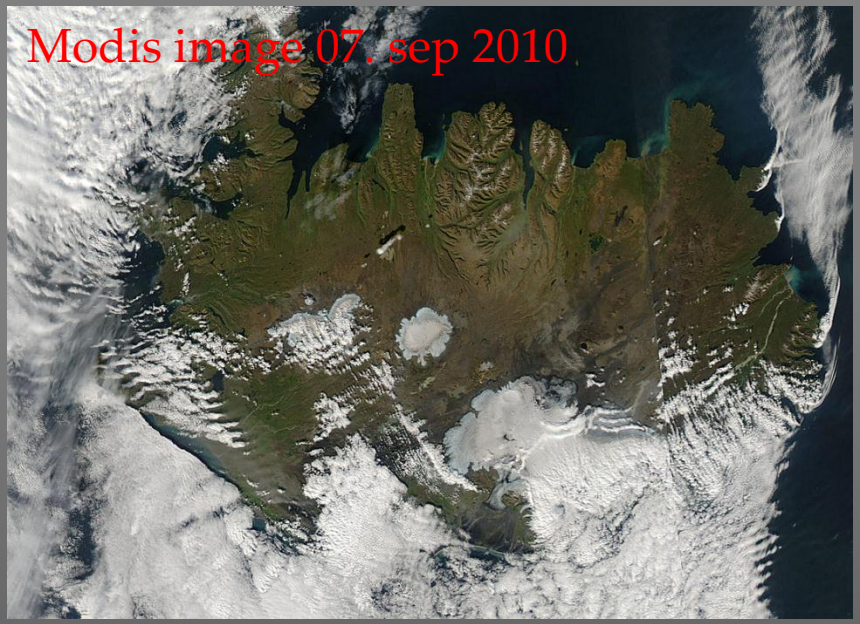
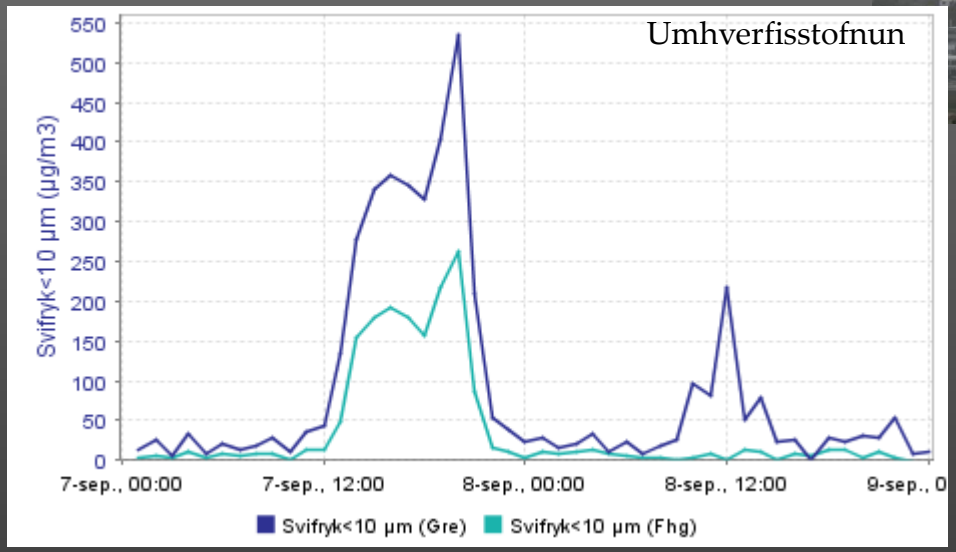
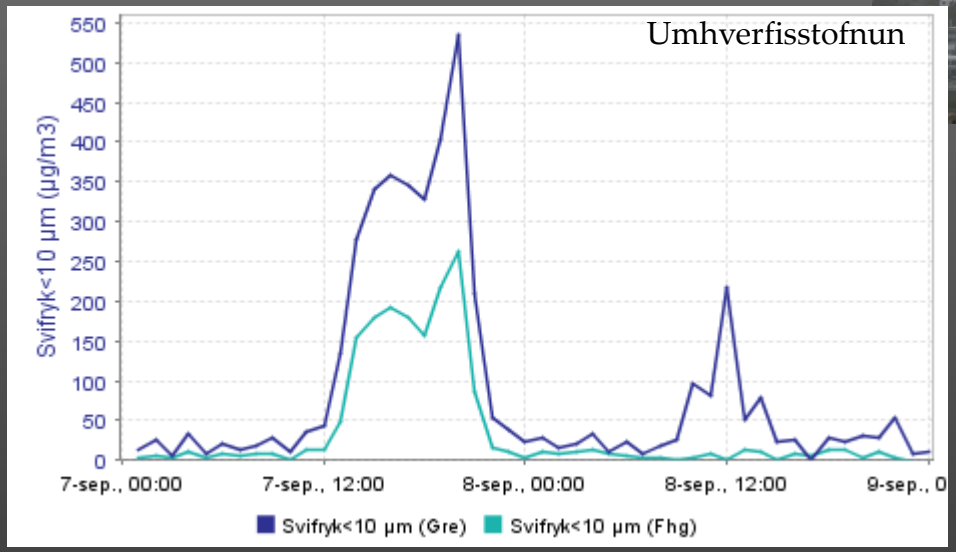
Resuspended Ash





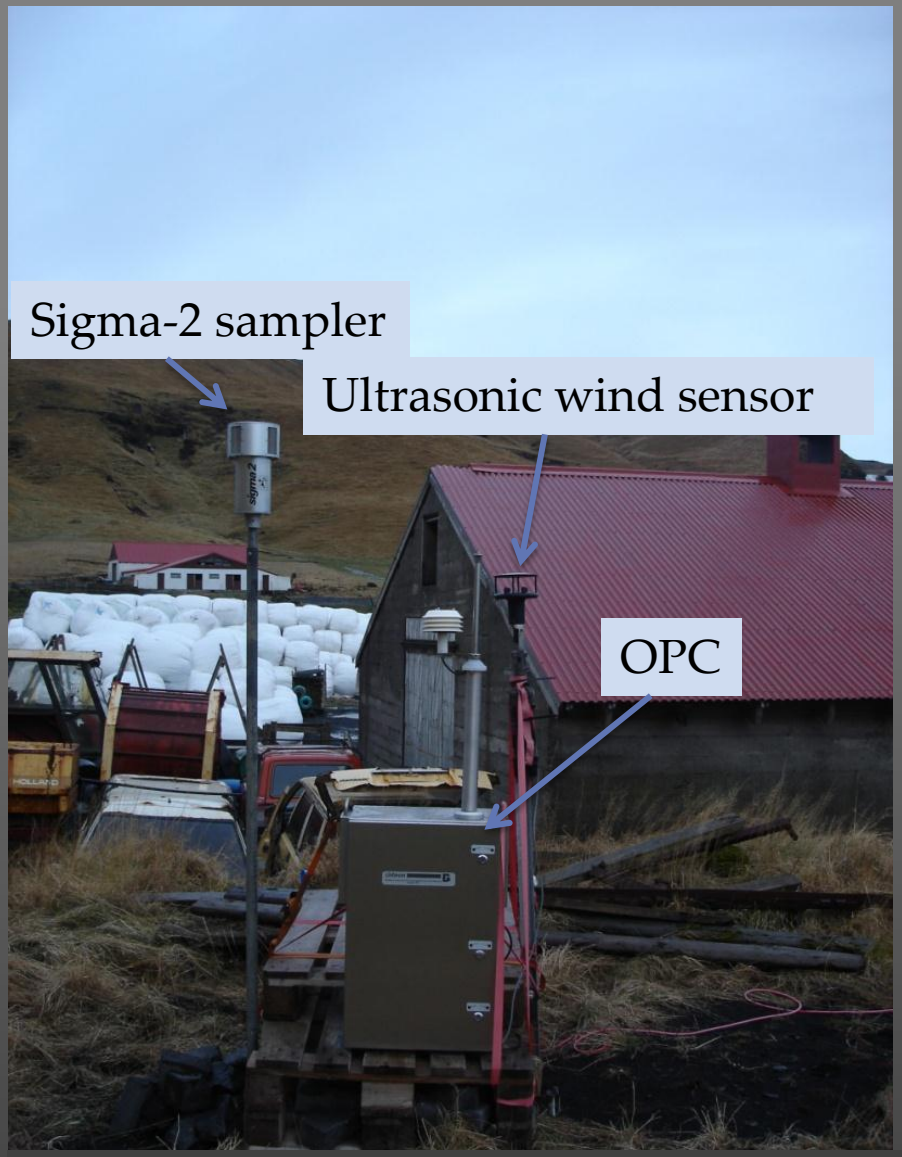
Time series of PM10 hourly means at Grensásvegur (Gre) and Húsdýragarður (Fhg)

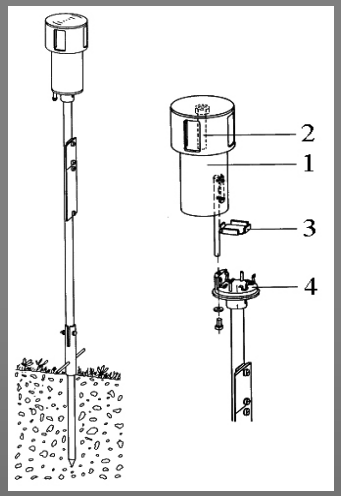
Resuspended Ash



Time series of PM10 hourly means at Grensásvegur (Gre) and Húsdýragarður (Fhg)

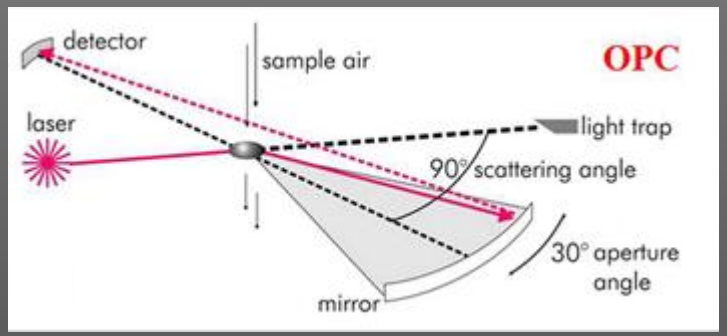
Instrumentation





Sigma-2 passive sampler
1 sampling head
2 opening slots for air flow
3 carrier with collection plate
4 sampling head with retainer

* Benoît Sittler, Inst. f. Landespflege, Uni. Freiburg, Germany; Volker Dietze, DWD

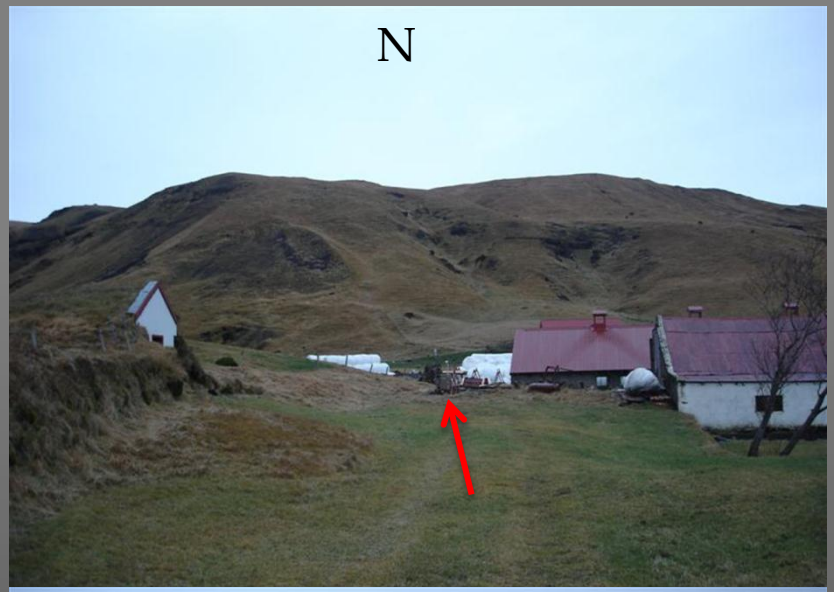


* J. Spielvogel, Grimm Aerosol Technik, Ainring, Germany

- OPC – Optical Particle Counter
- Measured size range: 0.25 – 32 µm
- TPC – Total particle number concentration (cm^{-3})

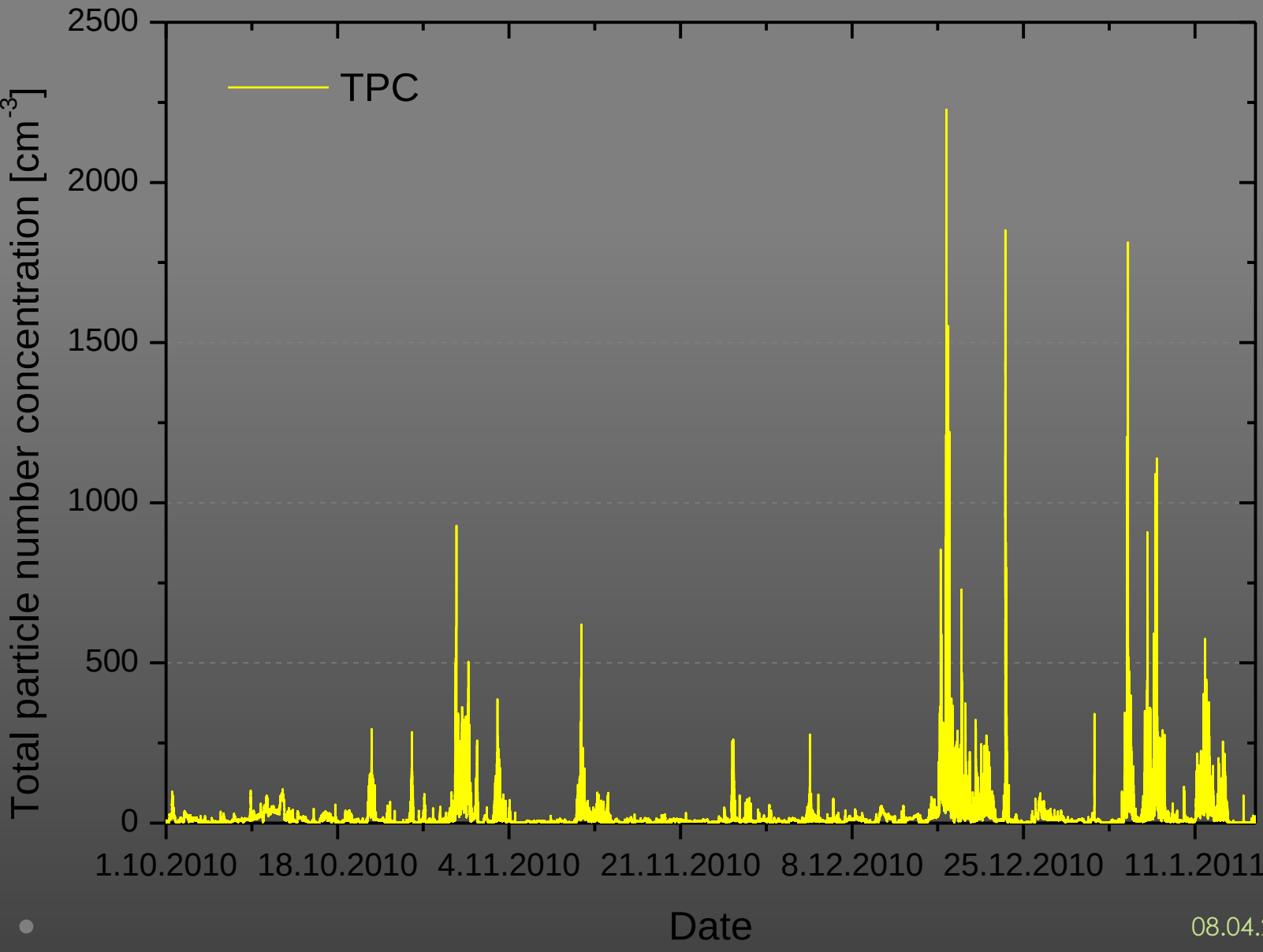
Sigma-2 measurements in cooperation with V. Dietze (German Meteorological Service)
OPC measurements in cooperation with K. Weber (University of Applied Science, Dusseldorf)

Measurement site

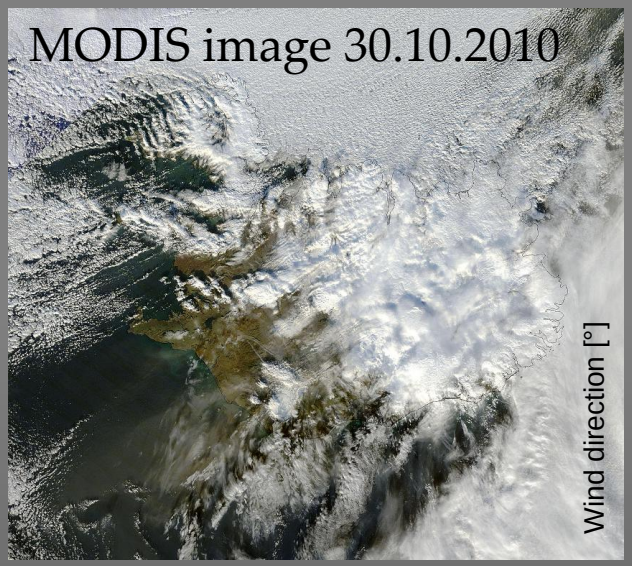


Drangshlíðardalur near Skógar is around 15 km SSE of eruption vent

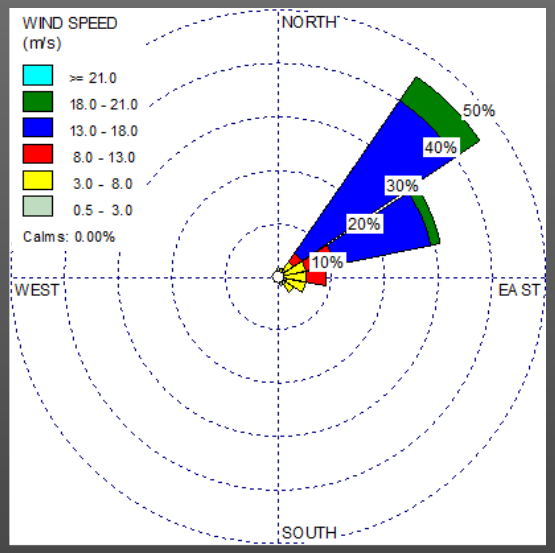
First Results

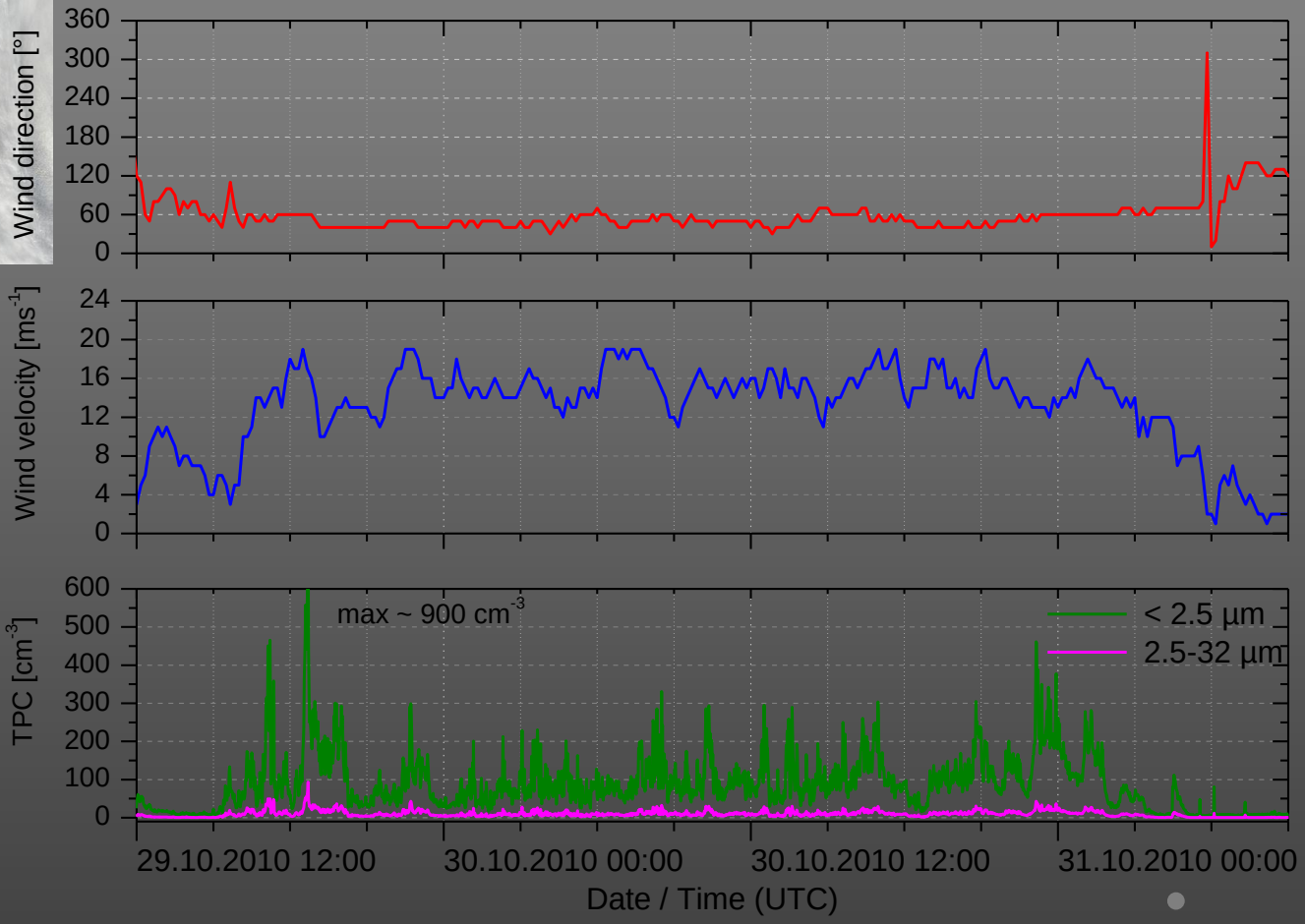


Volcanic aerosol in the atmosphere

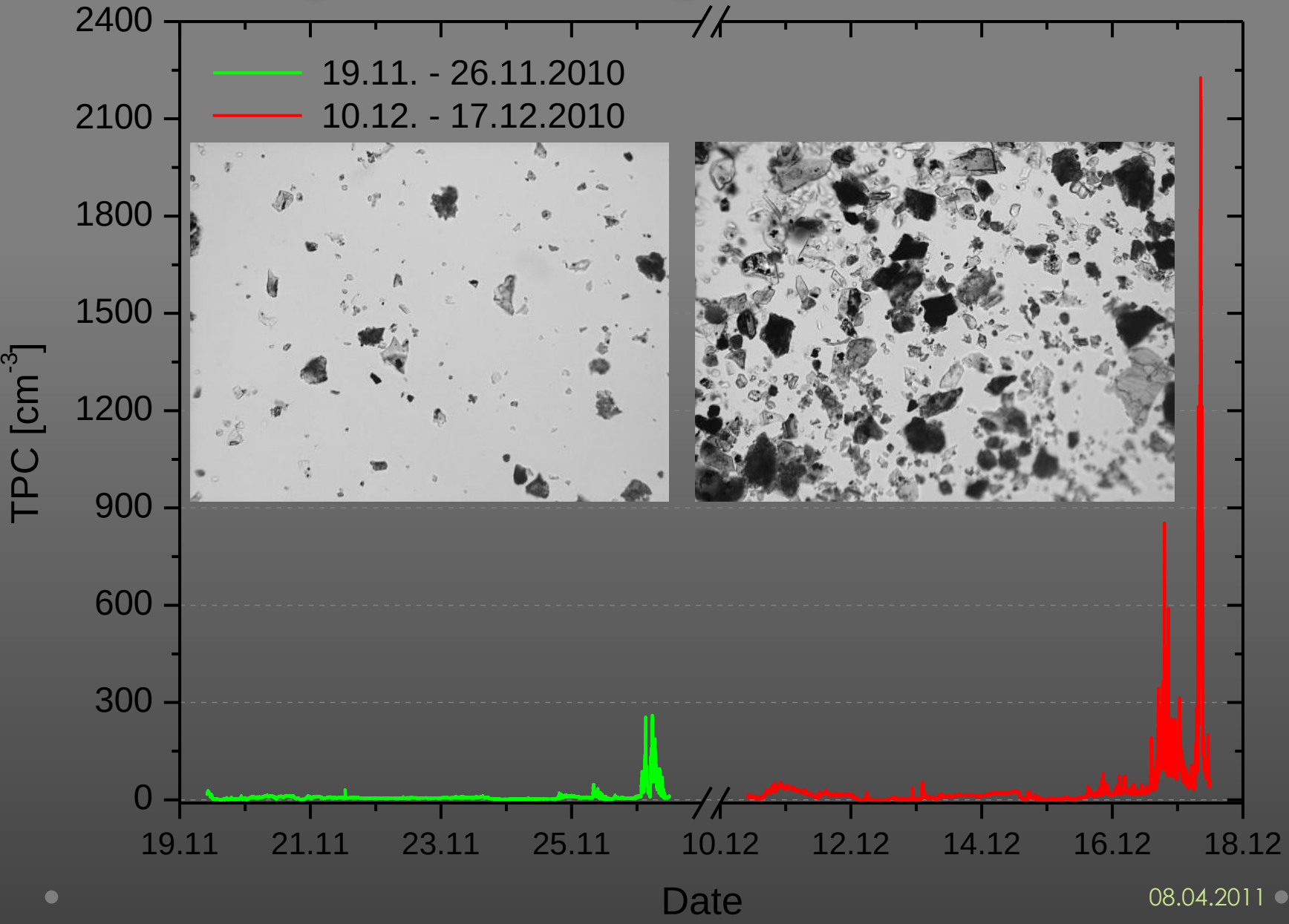


- Resuspended ash and dust spreads over a large area
- Several hundred kilometres away from source, the dust cloud is still visible
- TPCs correspond to wind speed dependent on wind direction





Sigma 2 samples vs. TPC



Öskufok 17. des 2010

Magðalena Jónsdóttir

- Visibility: ~ 0.5 – 1 km
- Mean wind velocity: 15 m/s
- Mean wind direction: North (360°)
- High number concentrations (max ~ 2000 cm^{-3})
- Particle sampling losses because of strong winds
- Impact on health of humans and animals is very likely

08.04.2011

Summary and Future Work

Veðurstofa Íslands

- Resuspension of volcanic ash and sand depends on wind speed and other meteorological conditions
- Because of location of measurement site, high particle number concentrations are only associated with strong northerly winds
- Analysis of data and correlate with meteorological conditions
- Spatial and temporal development of volcanic ash resuspension
- More instruments needed at other locations