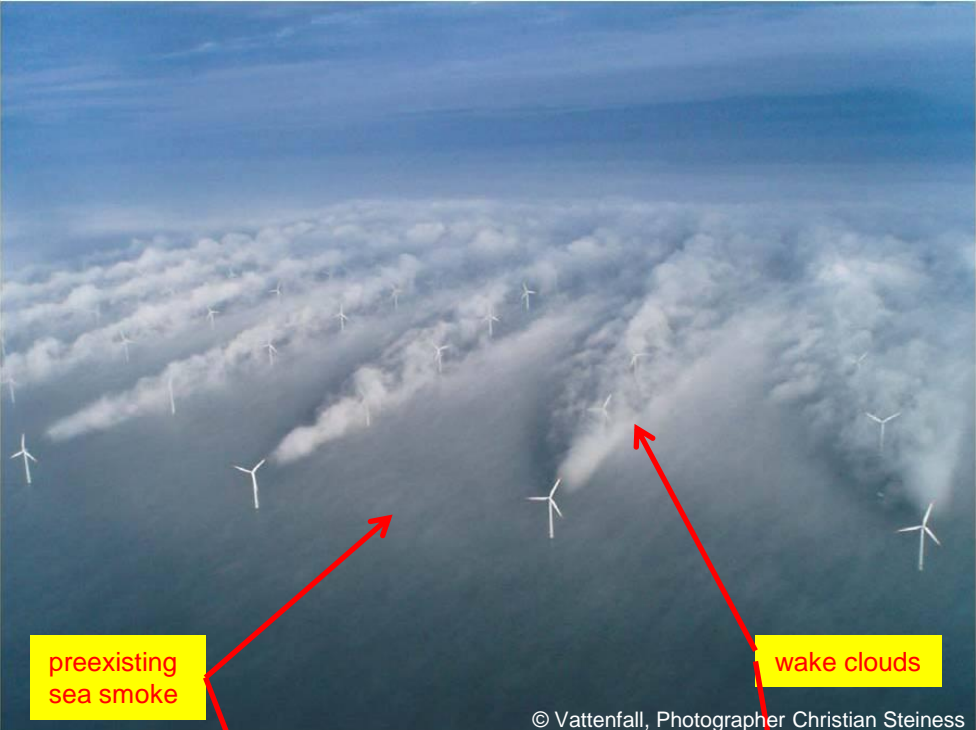


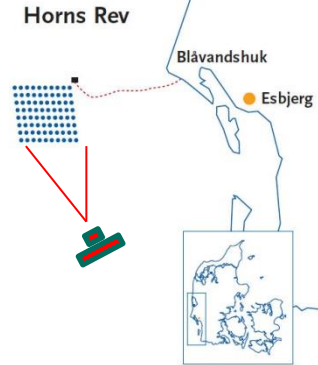
# Meteorological Explanation of Wake Clouds at Horns Rev

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On February 12, 2008 wake clouds have been observed at Horns Rev 1 wind farm behind the turbines. These clouds are explained here as mixing fog.



**Weather Observations:**

+5°C directly over the water and -1°C in the air several 10 m above. Rel. humidity 99% in both air masses.

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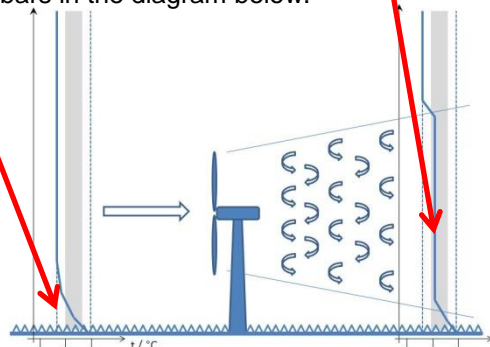
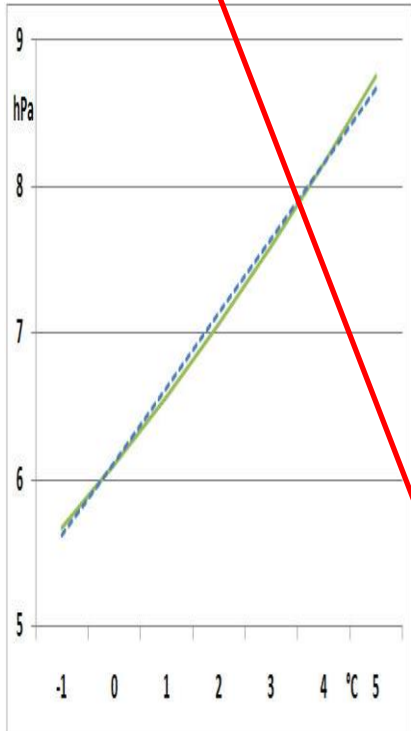
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Dependence of saturation water vapour pressure on temperature (Magnus' formula):

$$E(t) = 6.107 \cdot 10^a t^{(b+t)}$$

(full concave line in the left diagram). Mixing takes place along straight lines. Over-saturation (→ fog) occurs where the dashed line is above the full line in the left diagram. The temperature range for this oversaturation is marked by the vertical grey bars in the diagram below.



Below is an Alpine analogue : cloud banners behind mountain crests.



For further details see: Emeis, S., 2010: Meteorological explanation of wake clouds at Horns Rev wind farm. DEWI Magazine 37, 52-55.