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July 22,2011
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More Rain for the Town of „Norden“

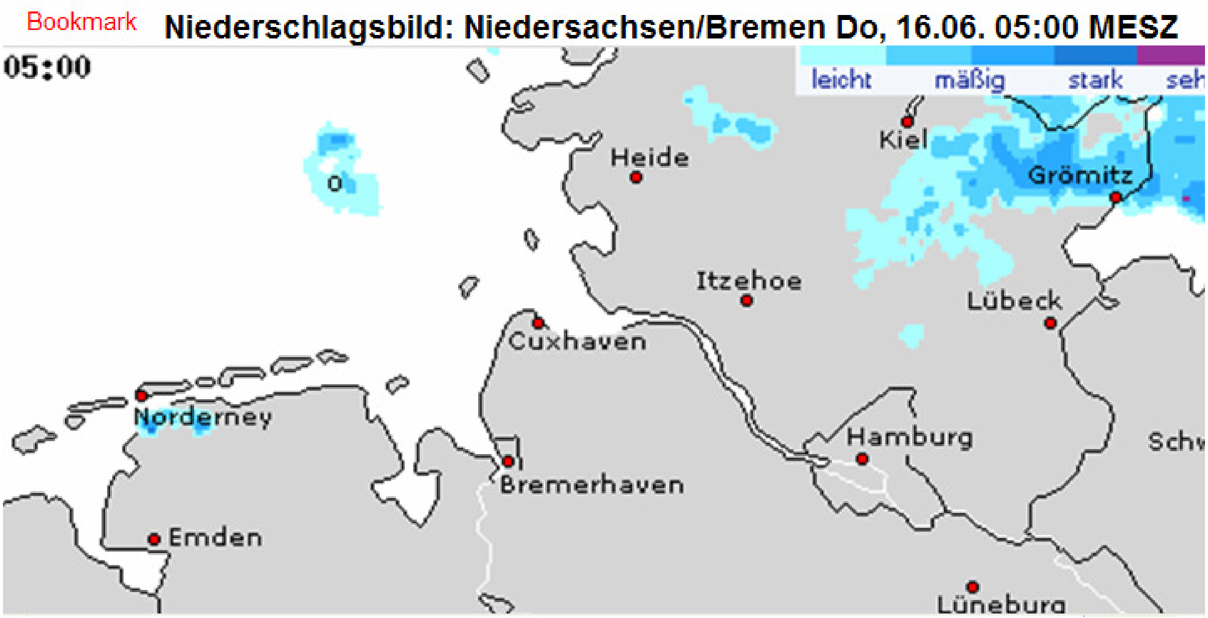
For a number of years I am a member of the google groups “geoengineering” and “climateintervention”.

Because I am a hobby meteorologist – no wonder - I “make my own weather”. Before I get on my bicycle to go to the tennis court, I check the local rain radar to learn whether I need to take also my indoor shoes with me or not.

About four weeks ago I realised, that on that map there were two points close to the town of “Norden” (Ostfriesland, Germany) where there was rain whereas no rain was in the 100km surrounding. Because this was not just one time I started regular observations. I realised that this situation appeared relatively often and it was not just by chance that it would happen just here.

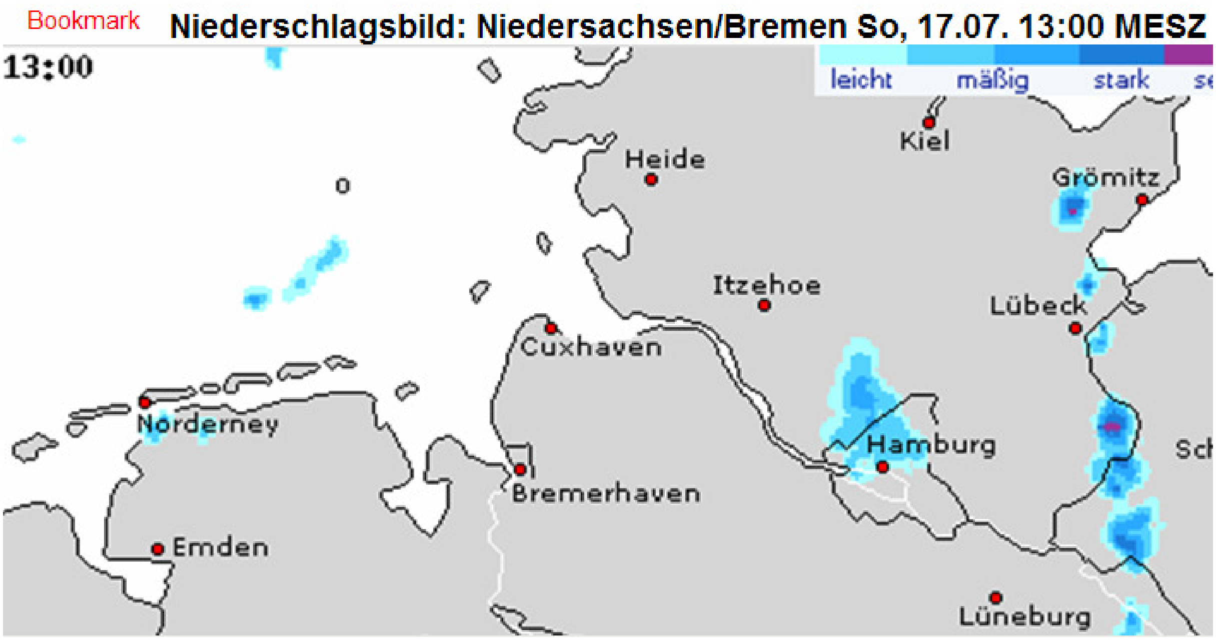
Here are the details:
The internet address of my “rain radar” is: http://www.wetteronline.de/radar/dldldnief.htm

On Thursday, June 16, 2011 I found this situation:



“Norderney” is the name of the little island where the red dot is given. The town of “Norden” on that map is directly where the “o” of “Norderney” is written. Also the “e” is a spot for “special” rain.

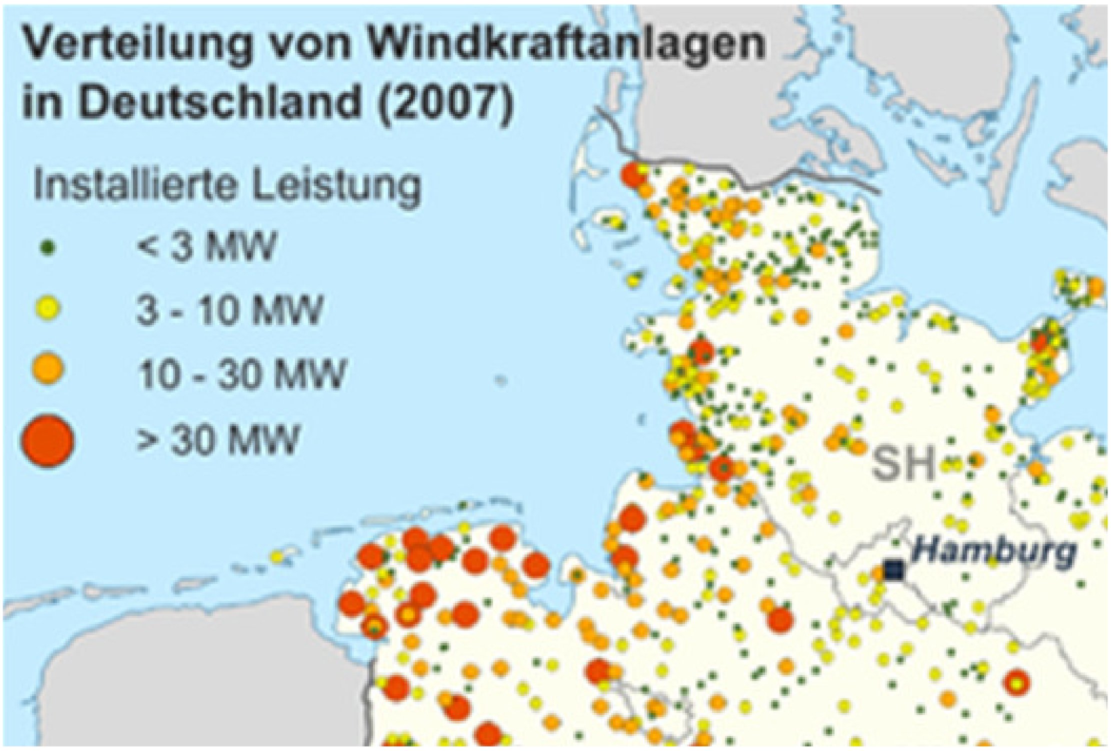
On Sunday, July 17, 2011 this situation would persist for more than 4 hours – only rain in “Norden”.



When I went to elementary school some 60 years ago, I was told that rain would be started by rising air at the mountains of “Teutoburger Wald” that place where “Armin” defeated the Romans. At that point of time my teacher could not settle my question, why it rains over flat country and over the sea.

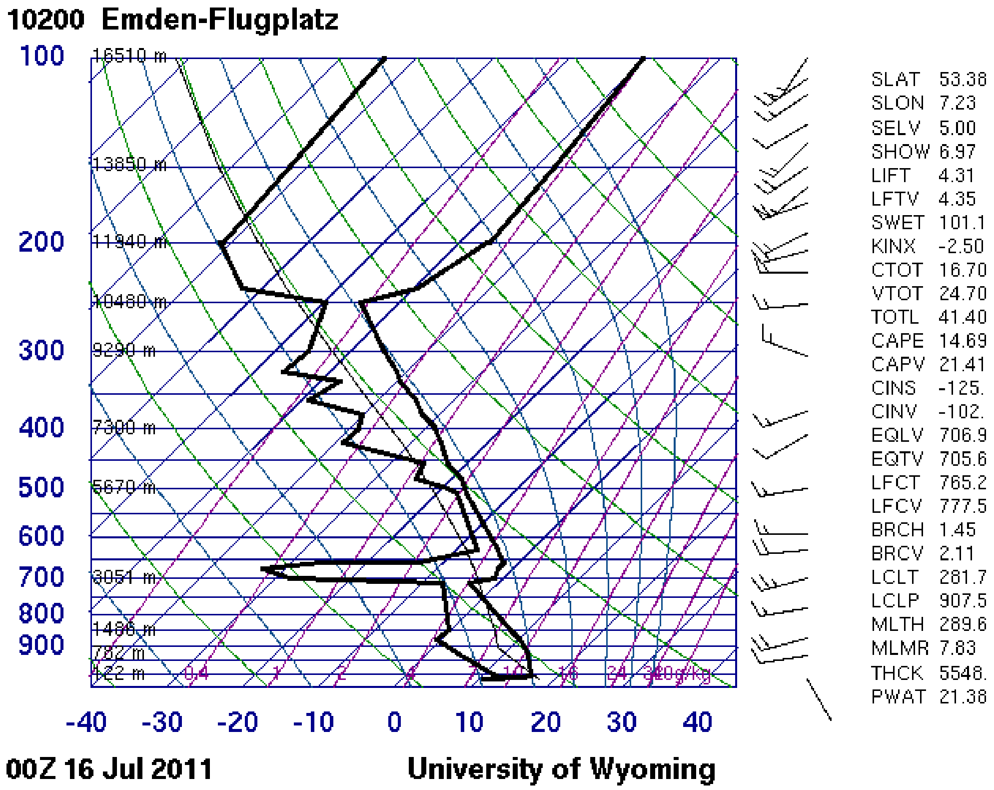
After studying engineering with lots of physics, fluid mechanics and especially thermodynamics, I learned that rising air is needed, to start rain – and this may be generated in several ways – even artificially.

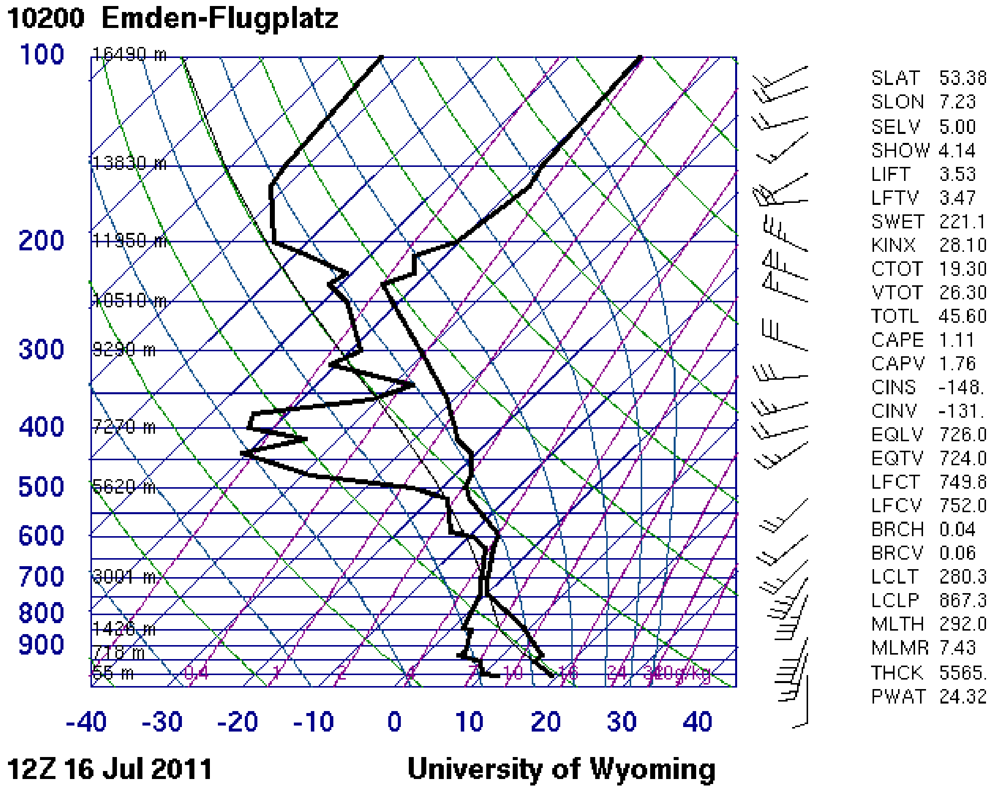
So I started to look at the special situation in “Norden”. Here we are in the area of highest wind farm density in Germany. There are a number of real big ones (5MW).
http://it-material.de/2010/04/verteilung-von-windkraftanlagen-in-deutschland-2007-2/



Of course the case “only rain in “Norden” needs special weather conditions. There is a sounding station on the little air port of “Emden”. The sounding may be retrieved on internet page: http://weather.uwyo.edu/upperair/sounding.html station number 10200

A situation like this one below – it is very labile – the local effect of a wind generator may create enough air to be shifted upwards to start a rain event.





Station information and sounding indices July16, 2011 12Z

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                              Station number: 10200
                            Observation time: 110716/1200
                            Station latitude: 53.38
                           Station longitude: 7.23
                           Station elevation: 5.0
                             Showalter index: 4.14
                                Lifted index: 3.53
    LIFT computed using virtual temperature: 3.47
                                 SWEAT index: 221.14
                                     K index: 28.10
                          Cross totals index: 19.30
                       Vertical totals index: 26.30
                         Totals totals index: 45.60
      Convective Available Potential Energy: 1.11
             CAPE using virtual temperature: 1.76
                      Convective Inhibition: -148.23
             CINS using virtual temperature: -131.97
                          Equilibrum Level: 726.05
 Equilibrum Level using virtual temperature: 724.02
                    Level of Free Convection: 749.82
             LFCT using virtual temperature: 752.04
                      Bulk Richardson Number: 0.04
           Bulk Richardson Number using CAPV: 0.06
  Temp [K] of the Lifted Condensation Level: 280.38
Pres [hPa] of the Lifted Condensation Level: 867.35
     Mean mixed layer potential temperature: 292.02
              Mean mixed layer mixing ratio: 7.43
              1000 hPa to 500 hPa thickness: 5565.00
Precipitable water [mm] for entire sounding: 24.32
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All this does not happen by chance!

On July 16, 2011 the situation close to “Norden” was such, that there was rain from 3:00MESZ till 8:30MESZ (5 ½ hours) locally. There was almost no rain in the surrounding.

The local night temperatures were not sufficient to create the necessary updrafts to initiate rainfall.

Mountains and special heat sources are not found close to “Norden”.

Nearby wind farms may create the necessary updraft to create rain in case the moisture laden air at higher altitudes is coming over “Ley Bay” south-west of “Norden”. If it is labile for initiation rain will fall.

I will keep watching and I am very interested about comments.

Juergen Michele

PS:
In case of aridity it may be advantageous to have more rain.
But “Ostfriesland” has usually enough of it.

E-Mail from “geoengineering group”

Betreff:	RE: [geo] Wind and wave energies are not renewable after all
Von:	"David Keith" <keith@ucalgary.ca>
Datum:	Mi, 13.07.2011, 03:36
An:	"mmaccrac@comcast.net" <mmaccrac@comcast.net> (mehr)
Cc:	"Geoengineering" <Geoengineering@googlegroups.com>

http://www.atmos-chem-phys.org/10/769/2010/acp-10-769-2010.html

Atmos. Chem. Phys., 10, 769-775, 2010
www.atmos-chem-phys.net/10/769/2010/
doi:10.5194/acp-10-769-2010

Weather response to a large wind turbine array

D. B. Barrie and D. B. Kirk-Davidoff
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Abstract. Electrical generation by wind turbines is increasing rapidly, and has been projected to satisfy 15% of world electric demand by 2030. The extensive installation of wind farms would alter surface roughness and significantly impact the atmospheric circulation due to the additional surface roughness forcing. This forcing could be changed deliberately by adjusting the attitude of the turbine blades with respect to the wind, which would enable the "management" of a large array of wind turbines. Using a General Circulation Model (GCM), we represent a continent-scale wind farm as a distributed array of surface roughness elements. Here we show that initial disturbances caused by a step change in roughness grow within four and a half days such that the flow is altered at synoptic scales. The growth rate of the induced perturbations is largest in regions of high atmospheric instability. For a roughness change imposed over North America, the induced perturbations involve substantial changes in the track and development of cyclones over the North Atlantic, and the magnitude of the perturbations rises above the level of forecast uncertainty.

Final Revised Paper (PDF, 5282 KB)   Discussion Paper (ACPD)

Citation: Barrie, D. B. and Kirk-Davidoff, D. B.: Weather response to a large wind turbine array, Atmos. Chem. Phys., 10, 769-775, doi:10.5194/acp-10-769-2010, 2010.   Bibtex   EndNote   Reference Manager   XML

Congratulations to all „Ostfriesiens“ in the town of „Norden“

So bad it might not come…
http://www.youtube.com/watch?v=qddgbv9hZP0

USA tornadoes and superstorms are triggered here

But more people start to think about the effect of large wind farms.

http://de.wikipedia.org/wiki/Windkraftanlage#Klimatische_Auswirkungen

Klimatische Auswirkungen

Nach einer Studie des Massachusetts Institute of Technology von 2009 [29] ist davon auszugehen, dass mit deutlichen Klimaeffekten zu rechnen wäre, würden 10% der im Jahr 2100 global benötigten Energie durch Windkraft gedeckt. Während an Land mit einer deutlichen Erwärmung zu rechnen sei, wäre auf See von einem gegenteiligen Effekt auszugehen.

http://www.atmos-chem-phys.net/10/2053/2010/acp-10-2053-2010.pdf
Atmos. Chem. Phys., 10, 2053–2061, 2010
www.atmos-chem-phys.net/10/2053/2010/

Potential climatic impacts and reliability of very large-scale wind farms

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Received: 17 August 2009 – Published in Atmos. Chem. Phys. Discuss.: 14 September 2009
Revised: 17 December 2009 – Accepted: 10 February 2010 – Published: 22 February 2010

Abstract. Meeting future world energy needs while addressing climate change requires large-scale deployment of low or zero greenhouse gas (GHG) emission technologies such as wind energy. The widespread availability of wind power has fueled substantial interest in this renewable energy source as one of the needed technologies. For very large-scale utilization of this resource, there are however potential environmental impacts, and also problems arising from its inherent intermittency, in addition to the present need to lower unit costs. To explore some of these issues, we use a threedimensional climate model to simulate the potential climate effects associated with installation of wind-powered generators over vast areas of land or coastal ocean. Using wind turbines to meet 10% or more of global energy demand in 2100, could cause surface warming exceeding 1 _C over land installations. In contrast, surface cooling exceeding 1 _C is computed over ocean installations, but the validity of simulating the impacts of wind turbines by simply increasing the ocean surface drag needs further study. Significant warming or cooling remote from both the land and ocean installations, and alterations of the global distributions of rainfall and clouds also occur. These results are influenced by the competing effects of increases in roughness and decreases in wind speed on near-surface turbulent heat fluxes, the differing nature of land and ocean surface friction, and the dimensions of the installations parallel and perpendicular to the prevailing winds. These results are also dependent on the accuracy of the model used, and the realism of the methods

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