Royal Netherlands
Meteorological Institute
Ministry of Infrastructure
and Water Management

KNMI-activiteiten Zon Op Water

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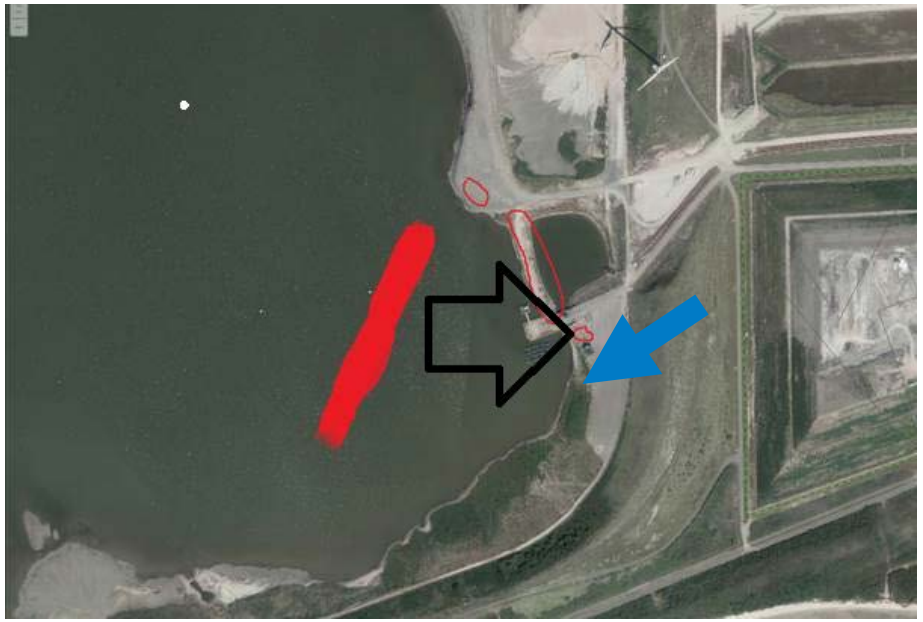
Met dank aan technici KNMI

Overzicht

- Metingen Slufter
  - Meetmast: wind en straling
  - Referentie meetstation Hoek van Holland
  - Events: stormen / rookpluimen
- Metingen straling Nederland
  - Satelliet vs grond
  - Land-zee verschillen

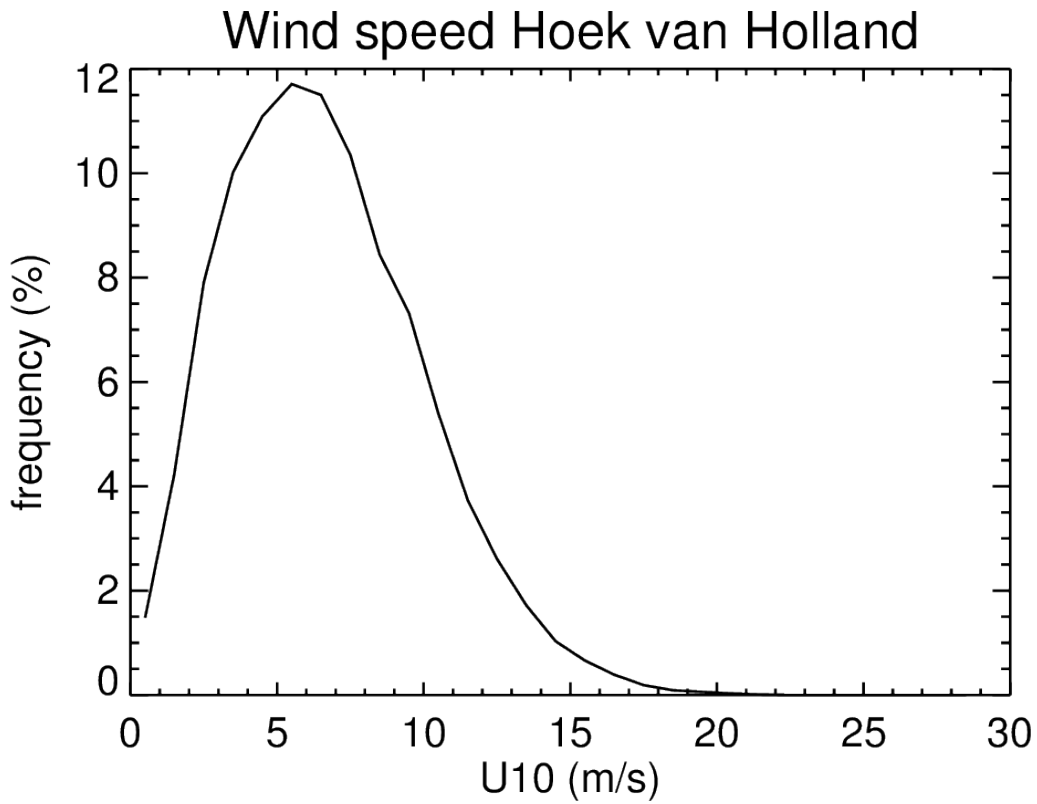
Mobiele mast Slufter

- Eerste metingen: 12 oktober 2017
- Parameters:
  - Windsnelheid, windrichting op 4m hoogte
  - Globale straling



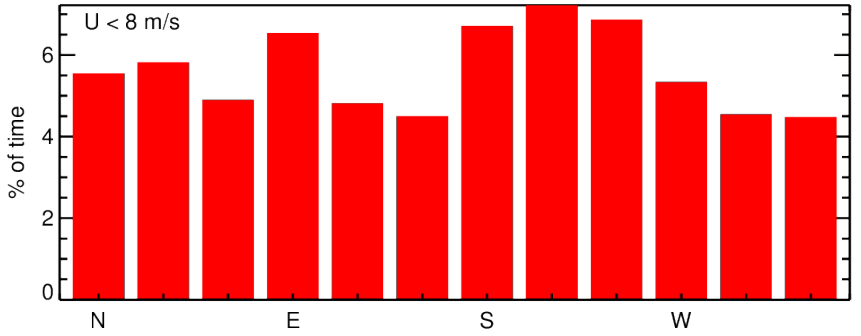
Wind Hoek v Holland

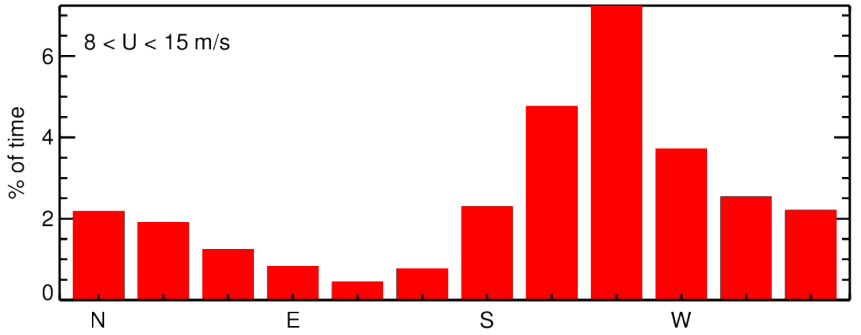
- Klimatologische 10m wind

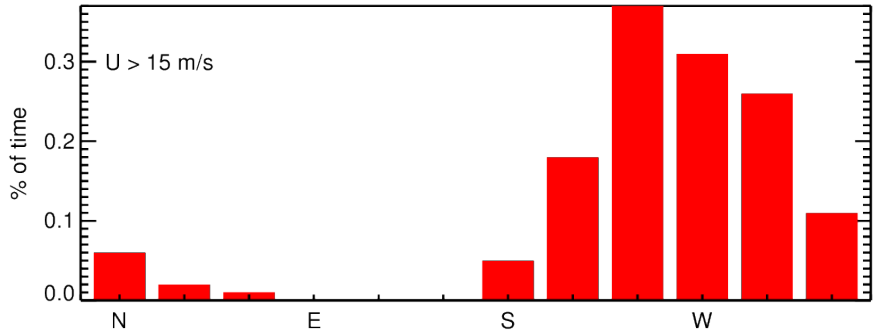


Beaufort 3 4 5 6 7 8

Wind direction Hoek van Holland

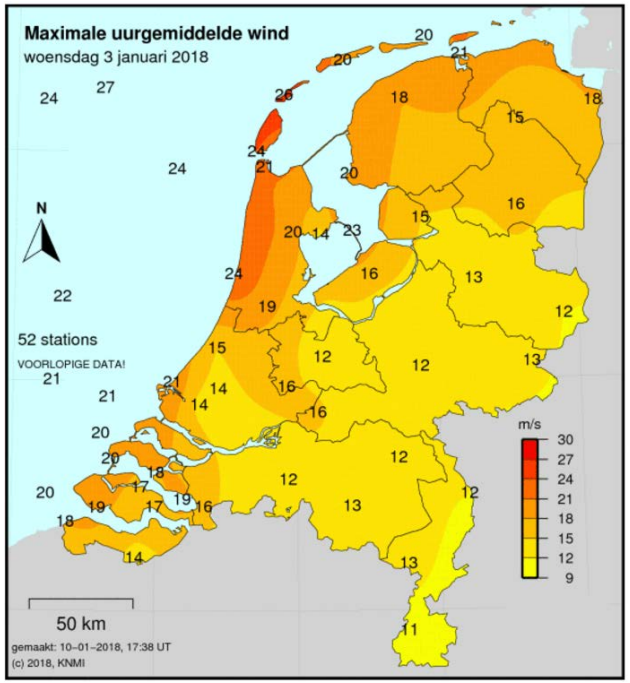


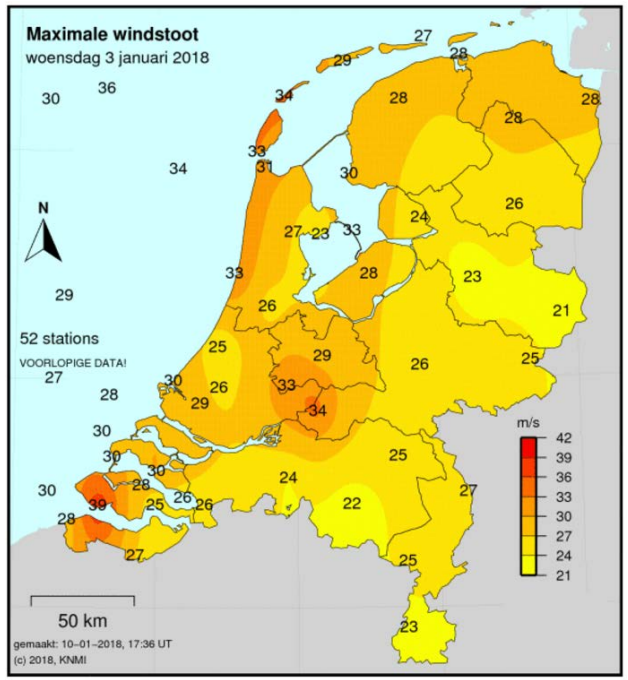




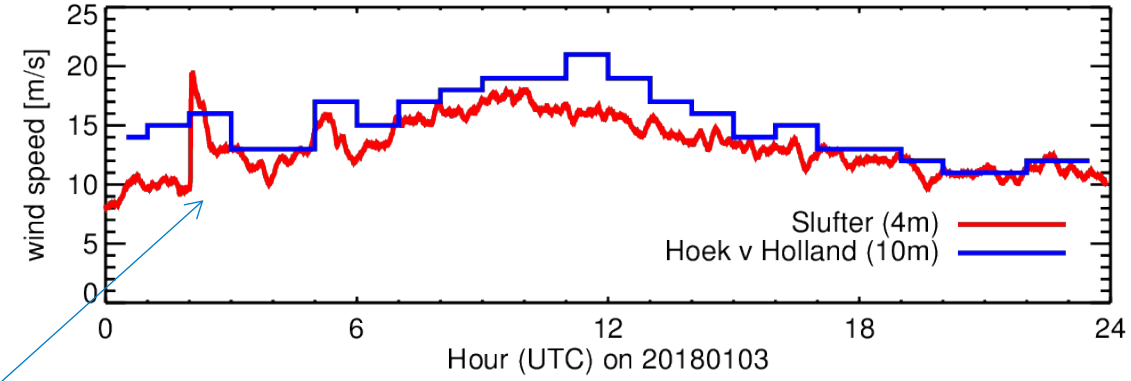
Storm 3 jan. 2018

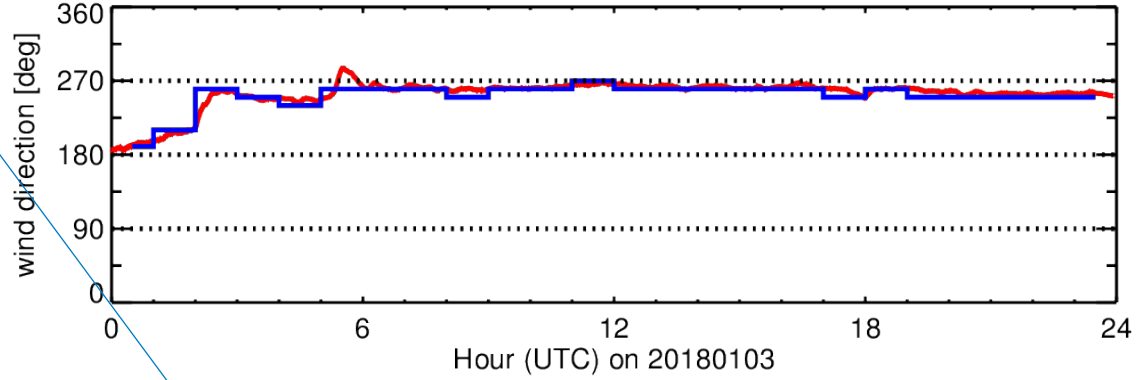
- Max. windsnelheid: 21 m/s (9 bft)
- Max. windstoot: 30 m/s (108 km/u)
- Herhaaltijd ~ 1 jaar
- Zwaartepunt Vlieland

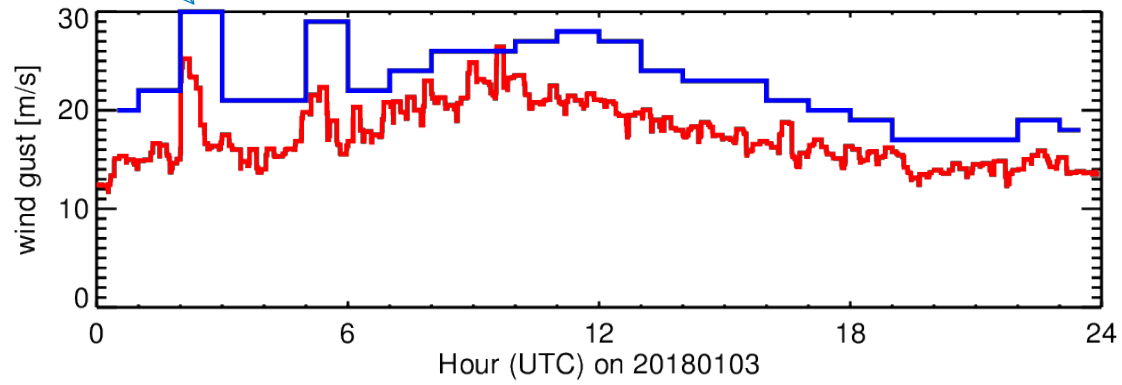




koufront

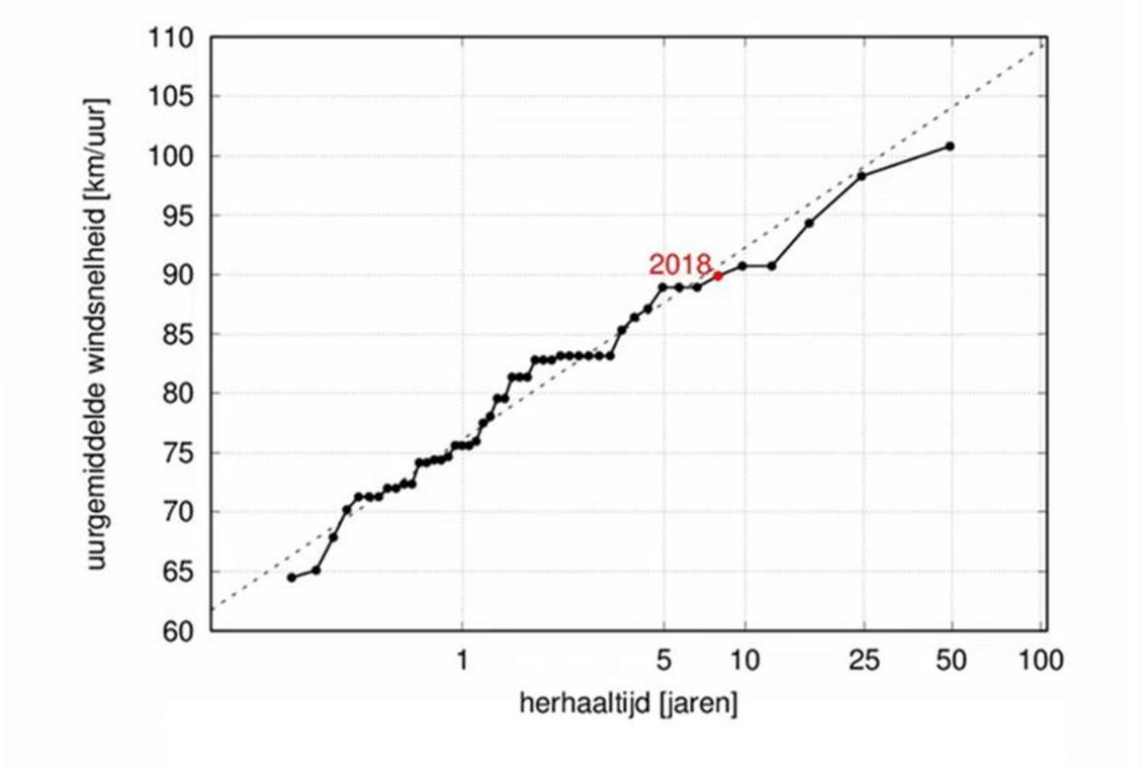


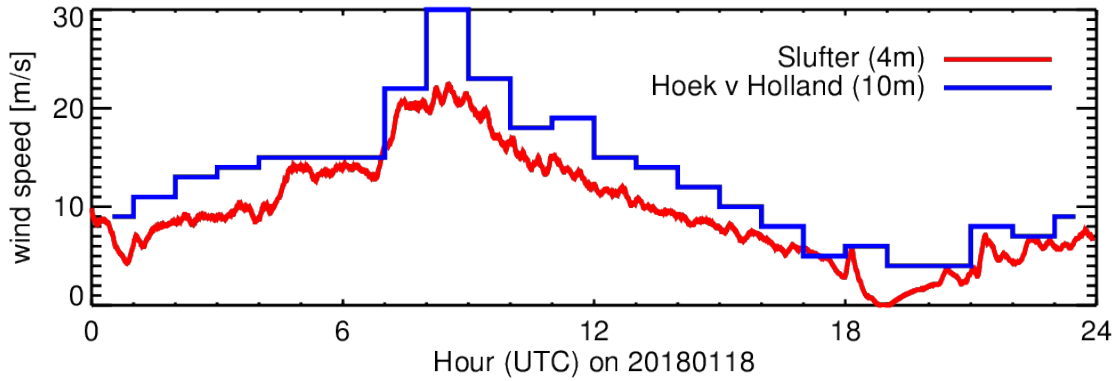


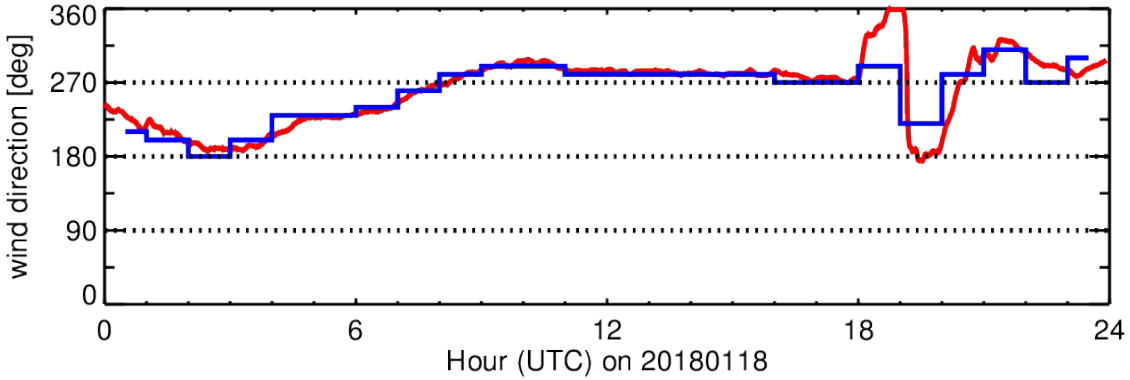


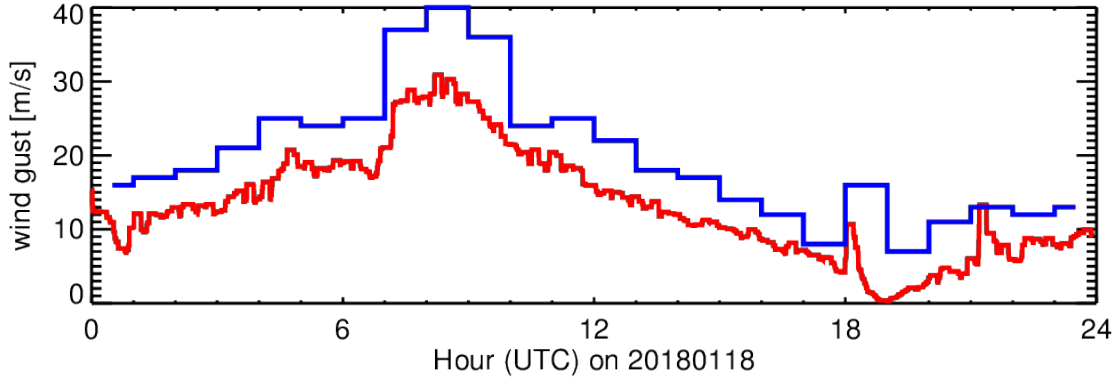
Storm 18 jan. 2018

- Max. windsnelheid: 30 m/s (11 bft)
- Max. windstoot: 40 m/s (144 km/u)
- Herhaaltijd ~ 8 jaar



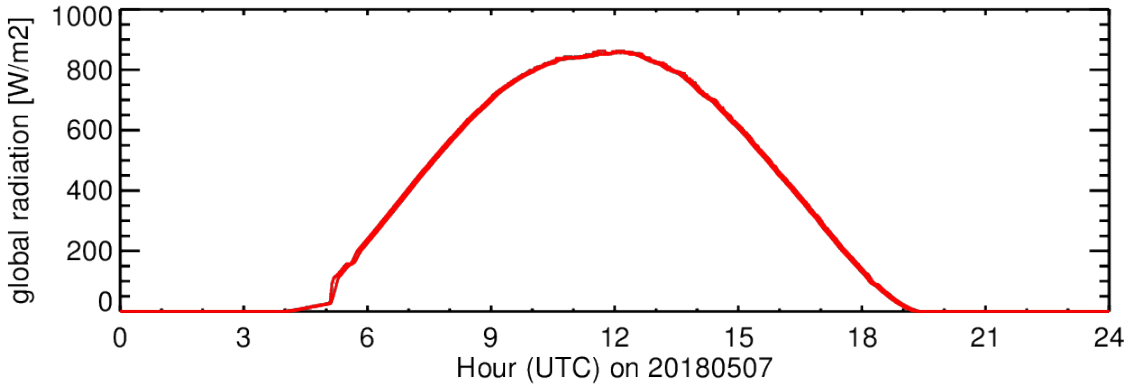


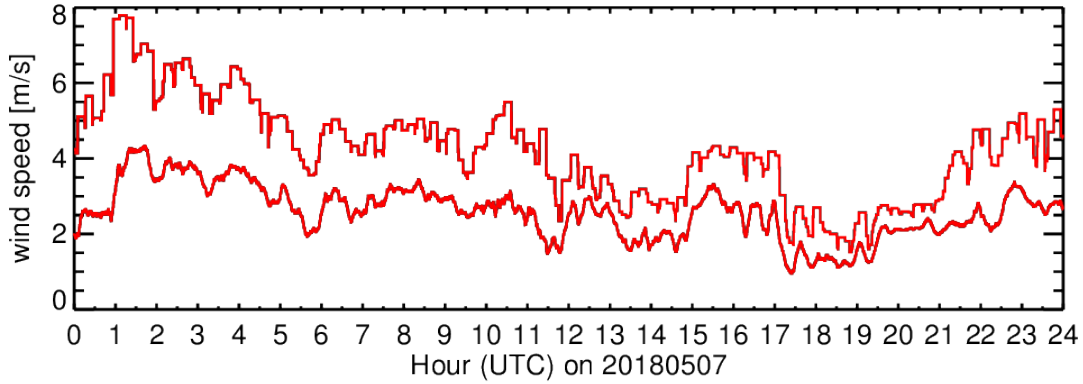


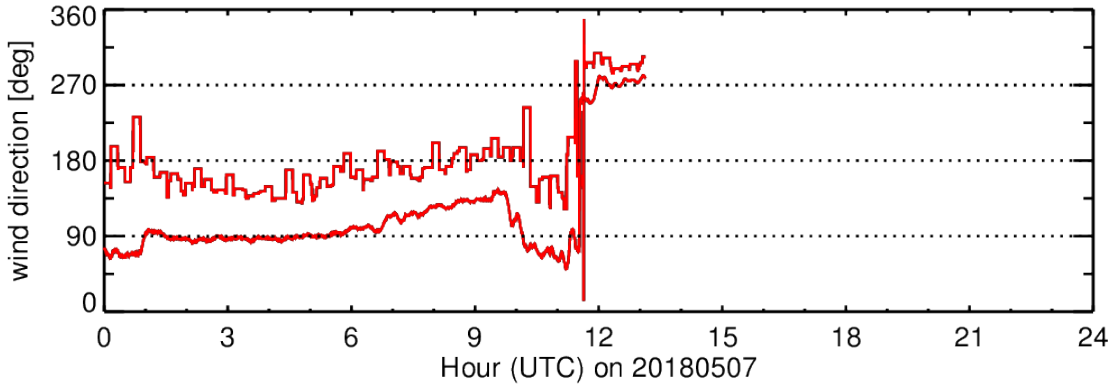


Windvaan kapot
7 mei 2018

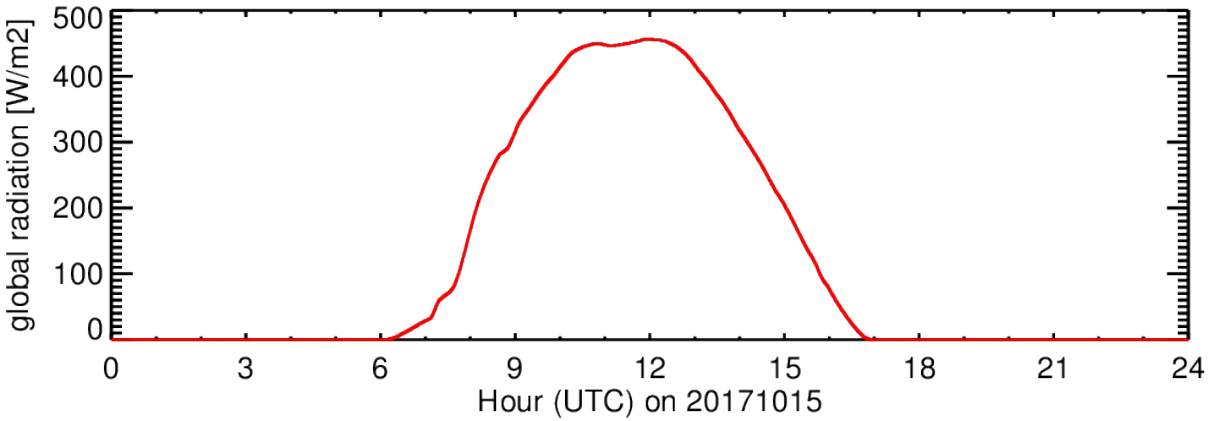
- 13:30u: klap met onbekende oorzaak
- 15u: einde meting windrichting
- Windsnelheid en globale straling worden nog wel gemeten
- Vervanging: vandaag

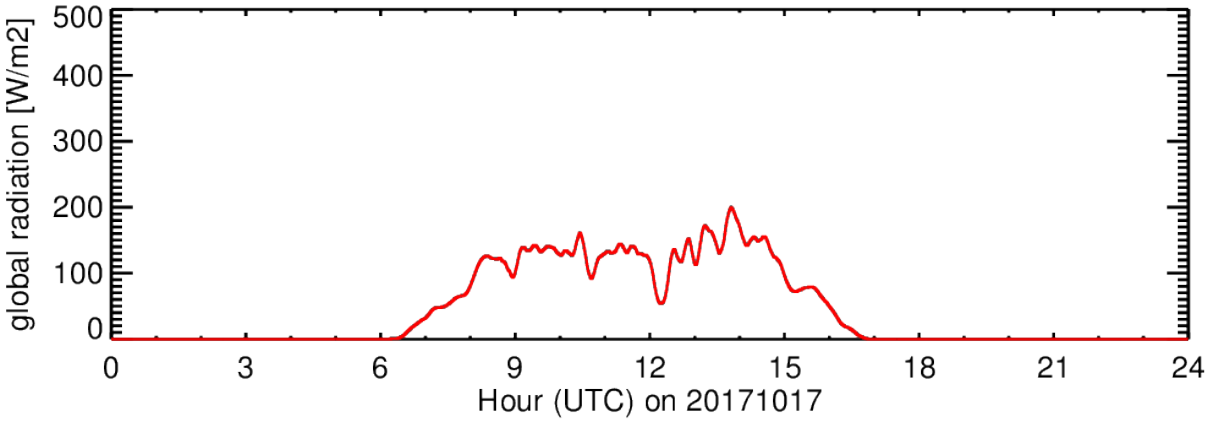


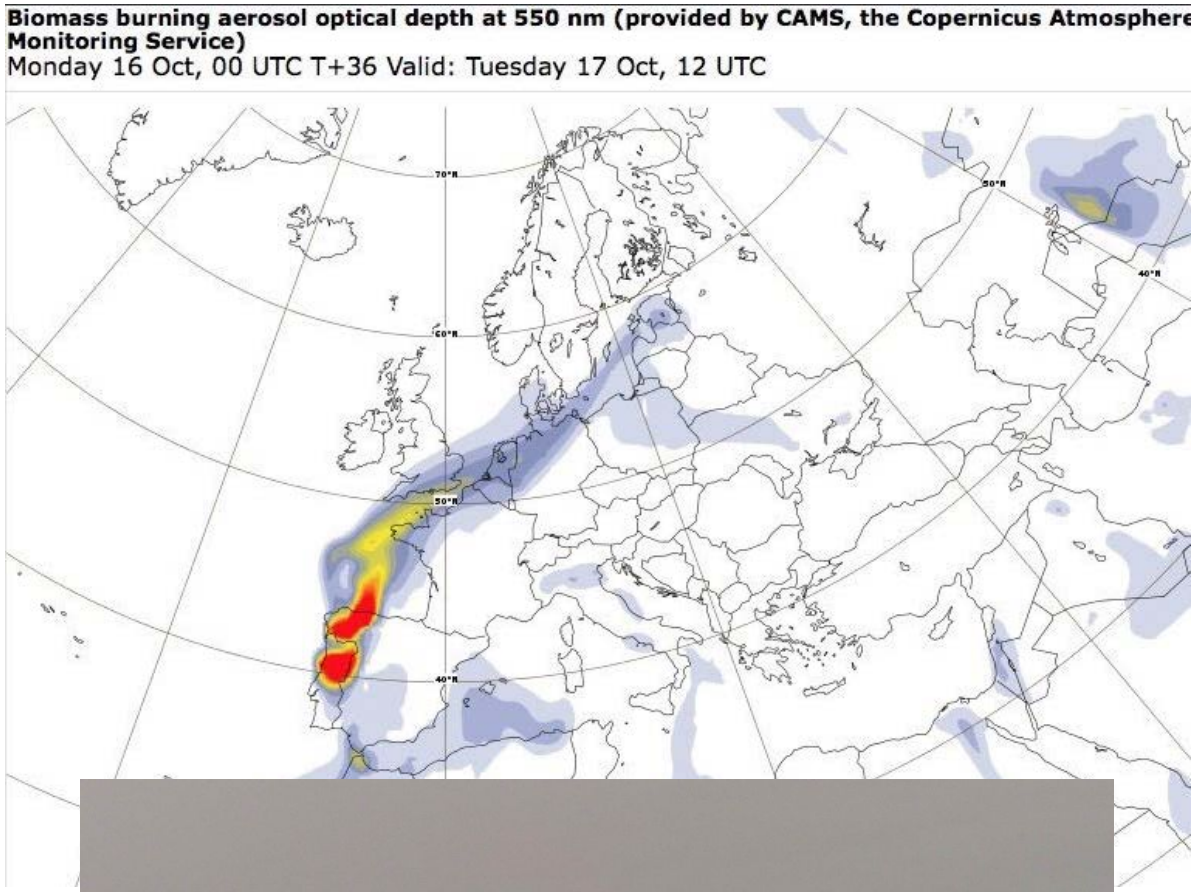




Bosbranden Portugal 17 okt. 2017





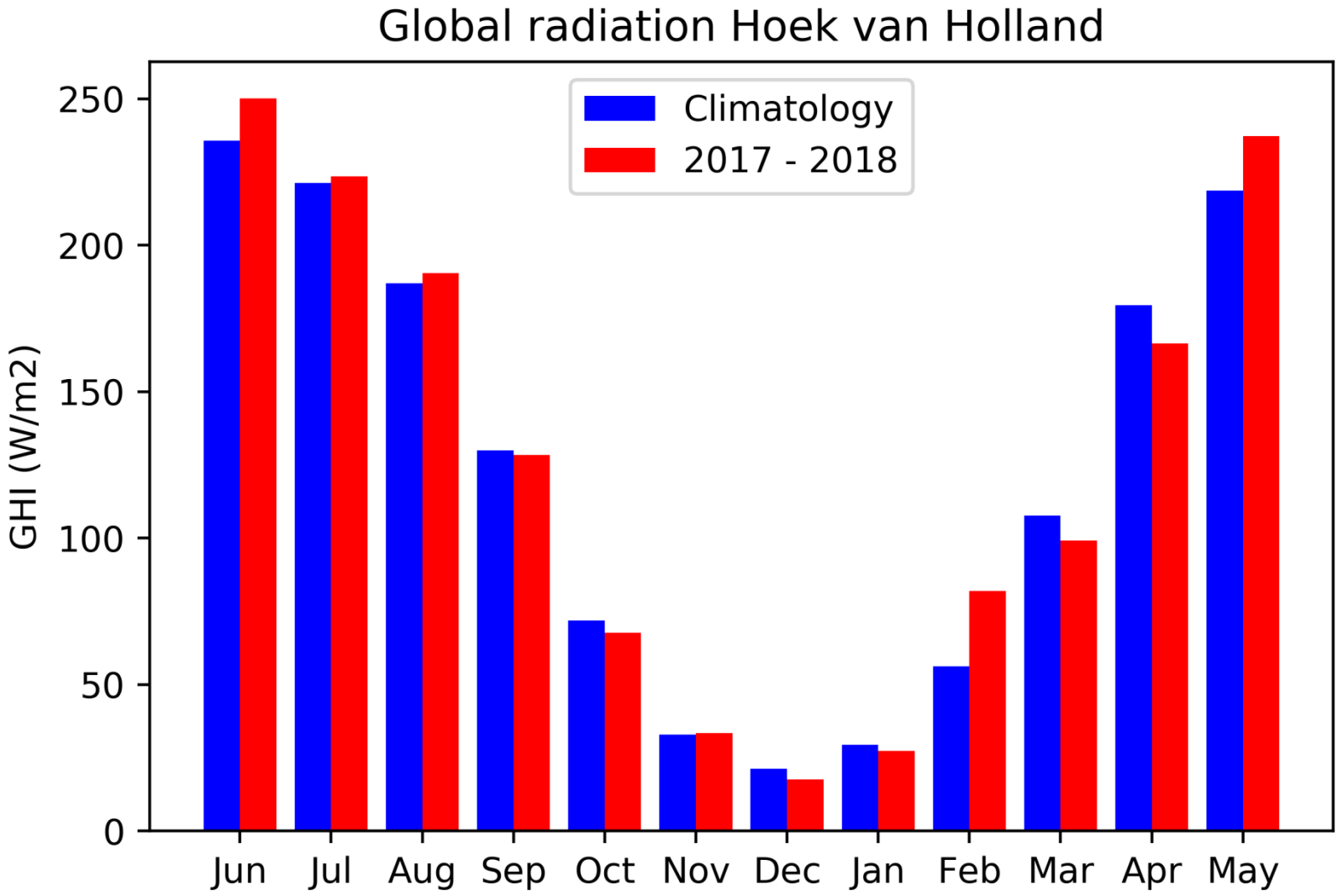


KNMI-meetnet

- Pyranometers (globale straling) op 32 stations

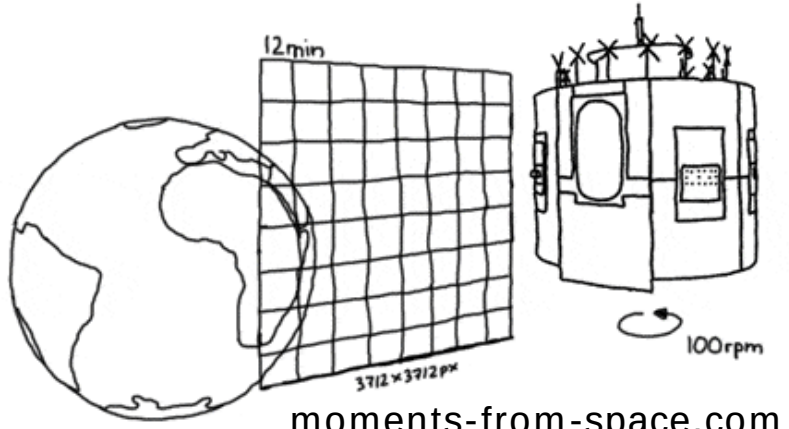
- Geen stralingsmetingen boven zee …

Straling Slufter afgelopen jaar



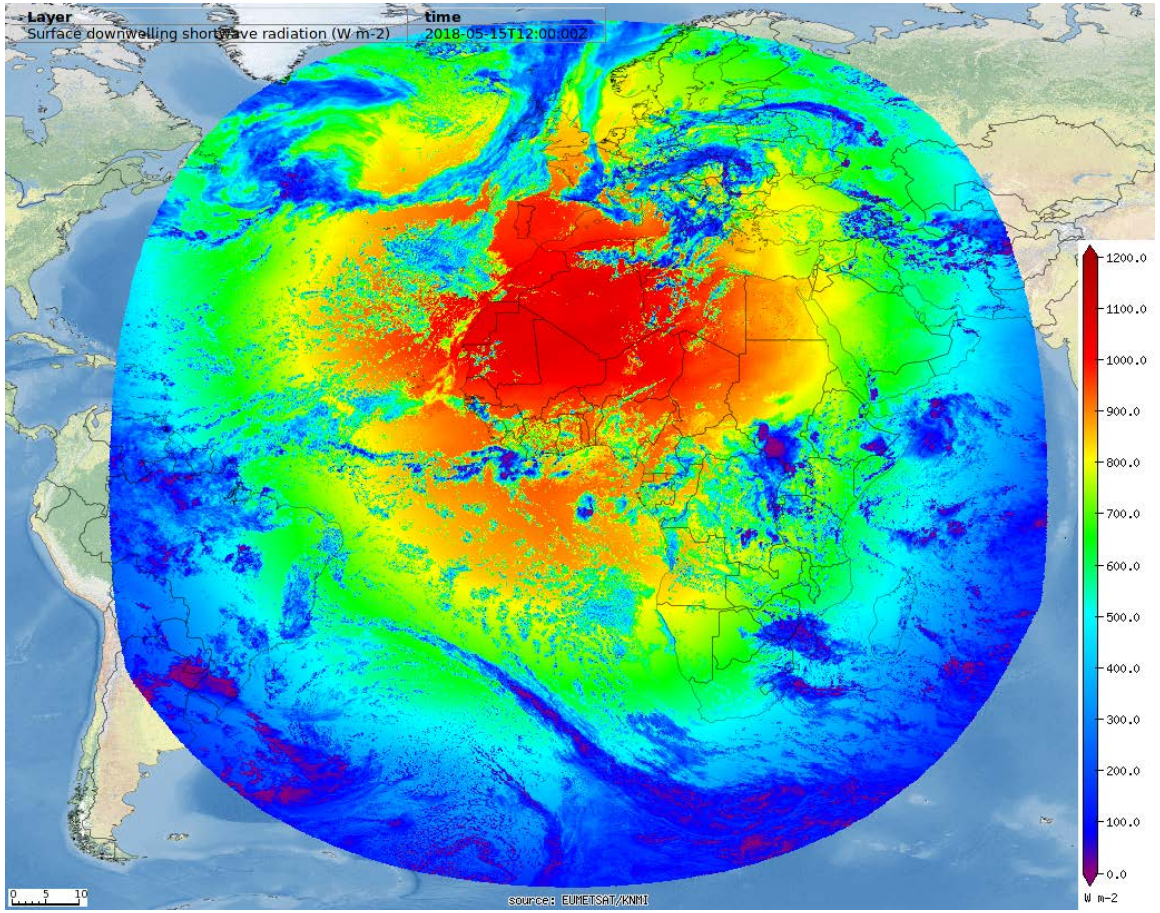
Satellietmetingen

- Meteosat-SEVIRI
- Geostationair
- 12 spectrale kanalen
- Resolutie: ~ 4 x 7 km boven NL
- Frequentie: 15 min



moments-from-space.com

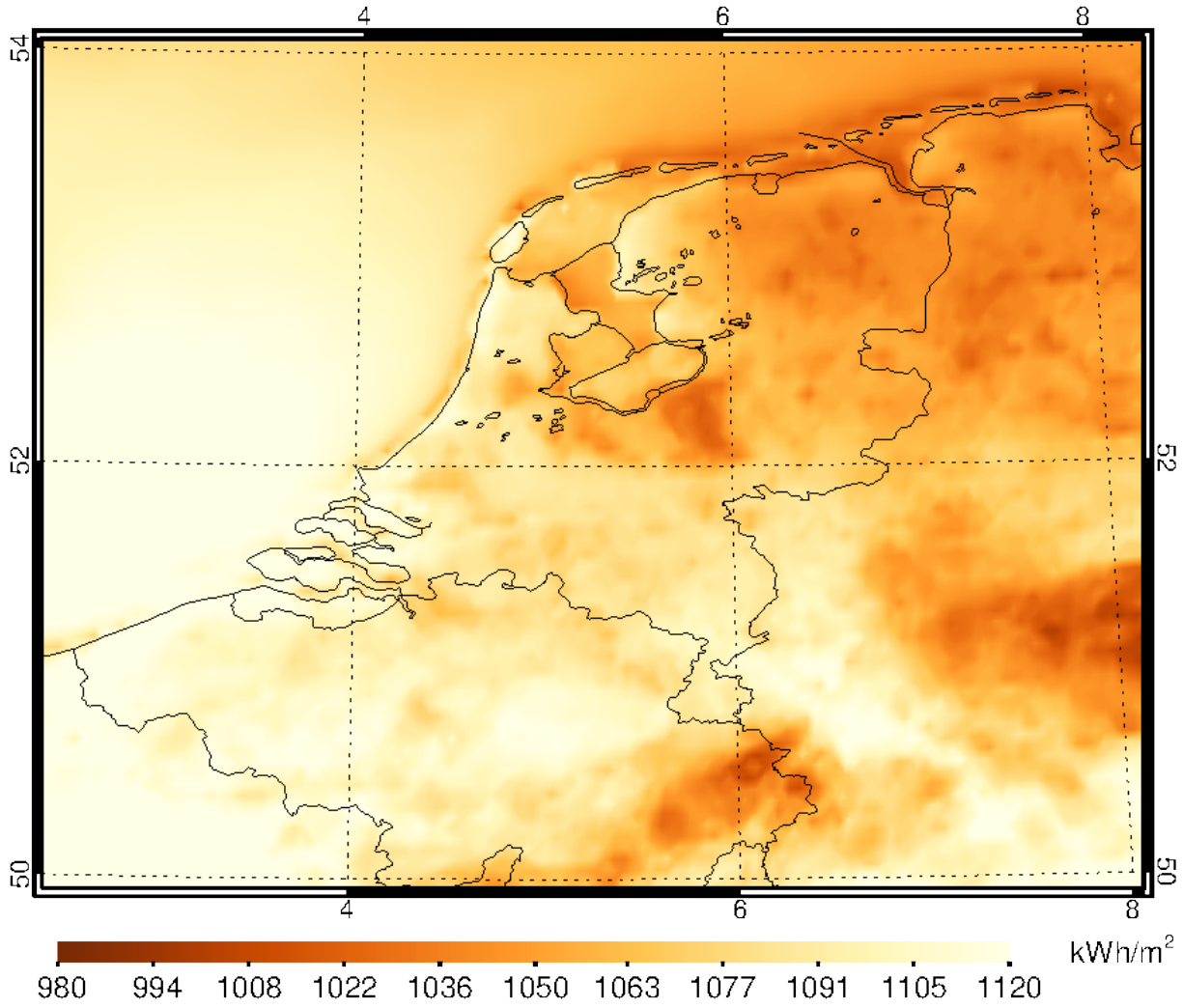
http://msgcpp.knmi.nl



Satellietmetingen

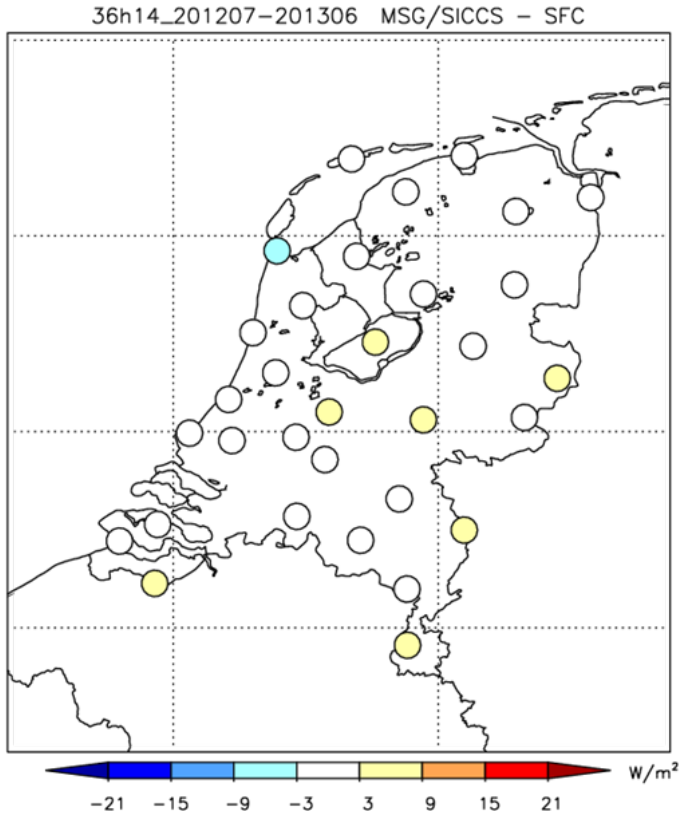
- Uit ruwe Meteosat-SEVIRI metingen kan instraling aan de grond worden afgeleid:
  - Globaal
  - Direct
  - Diffuus

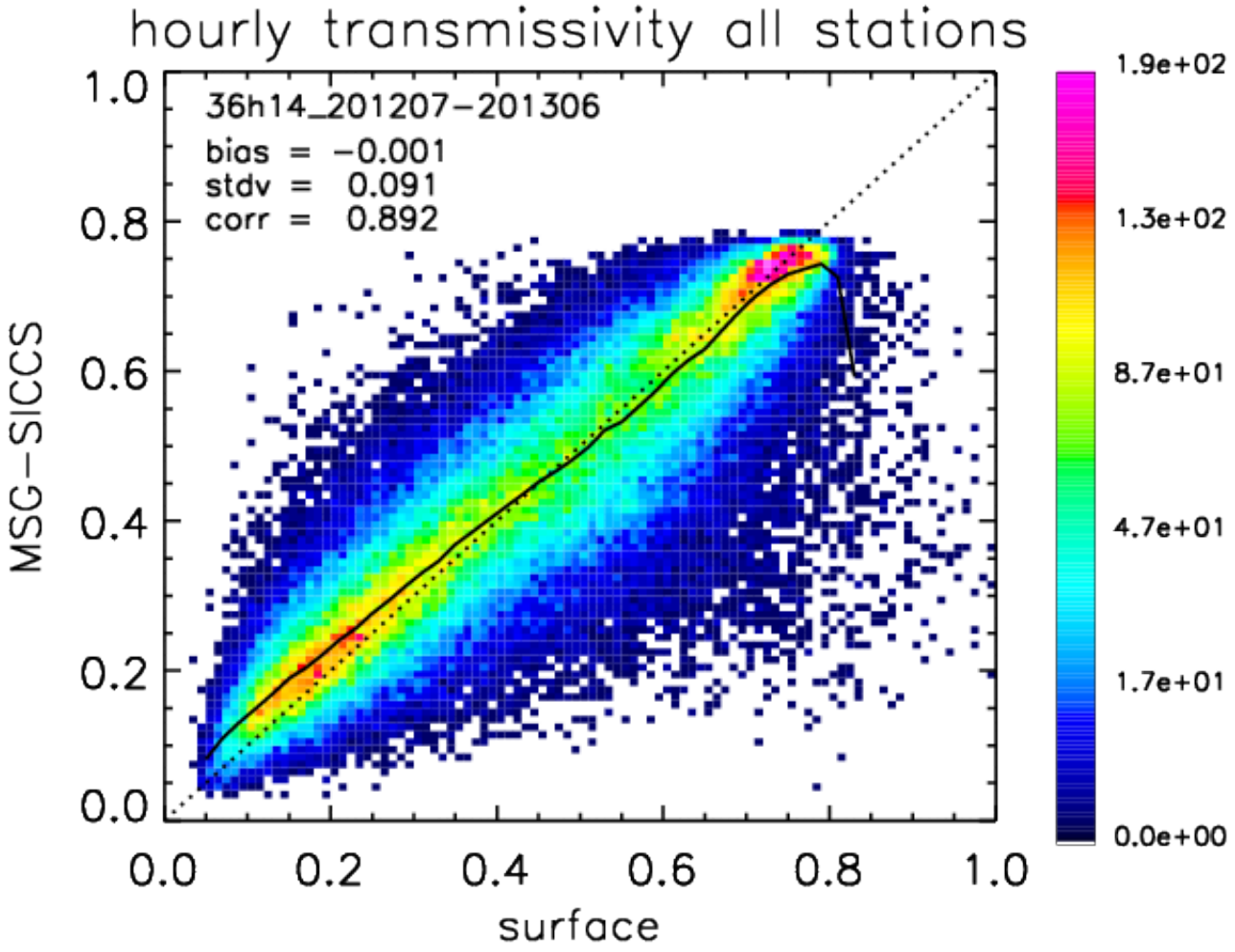
Jaarlijkse globale straling van 2005 t/m 2017



Validatie

- Uitstekende overeenkomst satelliet- en grondmetingen





Noordzee

- Validatie met Noors meetstation Ekofisk
- Alleen ongestoorde metingen tussen 11 en 14 UTC
- Verschil satelliet-grondmeting < 0.5%

Univ. Bergen (J.A. Olseth)
Met. Norway (Ø. Godøy)

Land vs zee

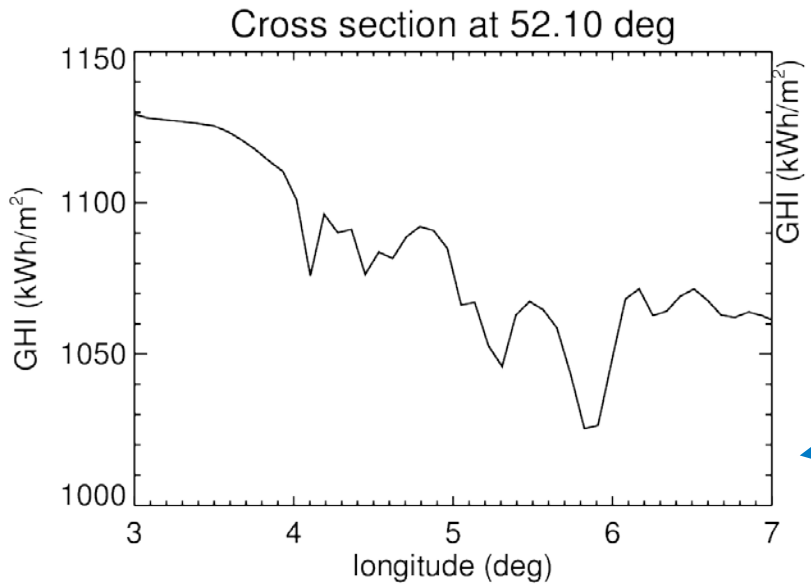
- Meeste straling in mei-juli
- Water Noordzee en IJsselmeer is dan nog relatief koud
- Mogelijke gevolgen:
  - Meer convectieve wolkenvorming boven land dan boven zee
  - Mist boven zee die oplost boven land (zeevlam)

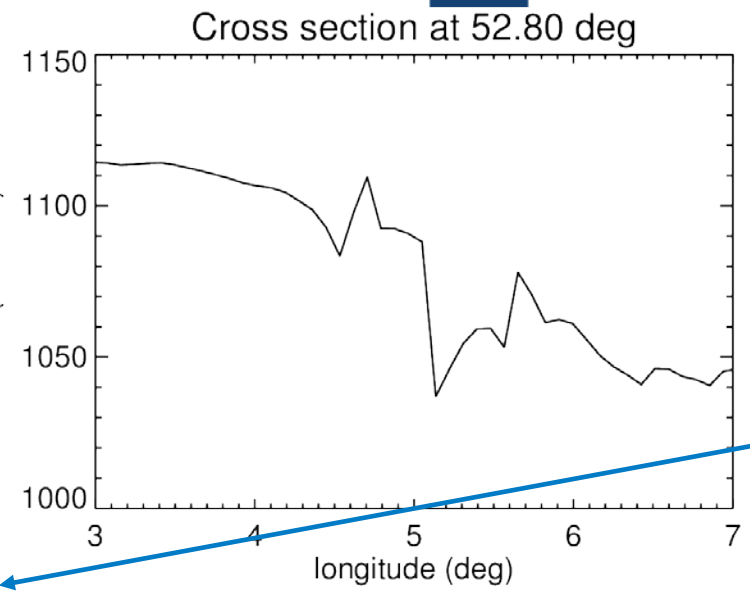
13 juli 2017

6 juli 2004

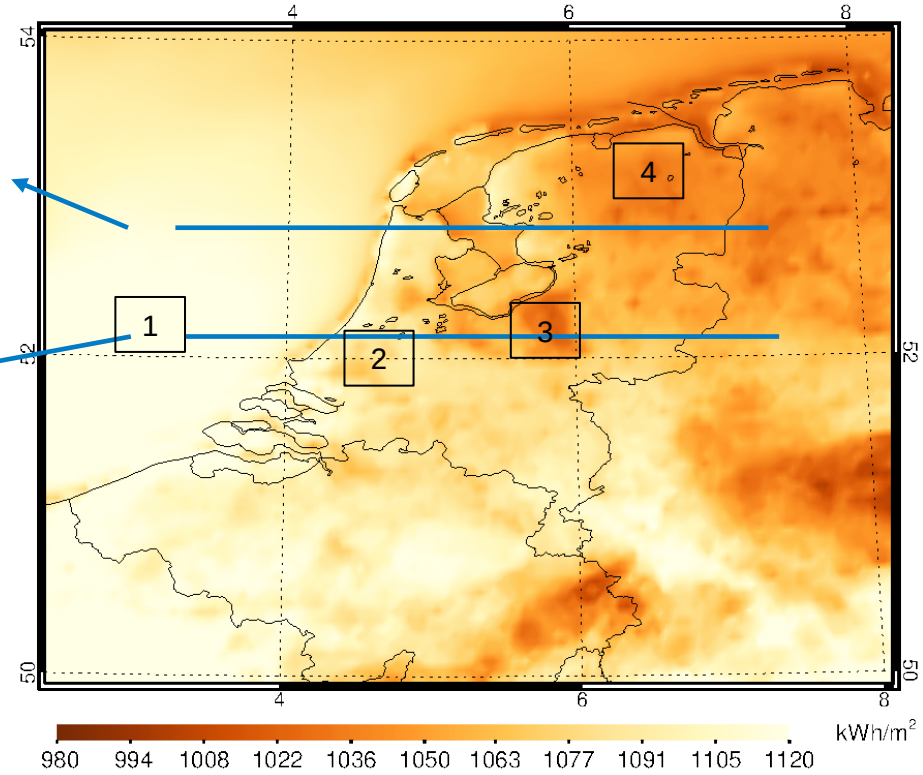
20 mei 2018

Land vs zee





Jaarlijkse globale straling van 2005 t/m 2017



- Artefacten in satellietproduct voor ondiep water:
  - Kust, Wadden, IJsselmeer
- Robuuste resultaten:
  - Noordzee 4-8% meer instraling dan land
  - Veluwe / Utrechtse heuvelrug: meer bewolking en minder instraling

Typische waarden (kWh/m2):

1. Noordzee:	1127
2. Zuid-Holland:	1085 (-4%)
3. Veluwe:	1040 (-8%)
4. Groningen:	1042 (-8%)

Samenvatting

- Mobiele meetmast Slufter geplaatst
  - Metingen wind t.b.v. analyse stormschade
  - Referentiemetingen globale straling
- Metingen straling Nederland
  - Satelliet en grondmeetnet
  - Hogere instraling Noordzee dan land
  - Waarschijnlijk ook IJsselmeer/Wadden

Stralingsverwachting

- Extrapolatie van bewolking uit satellietbeelden en berekening instraling
- Verslaat weermodel in eerste 2-3 uur