

Preliminary tests with backscattering simulated with PARMIO

Lise Kilic

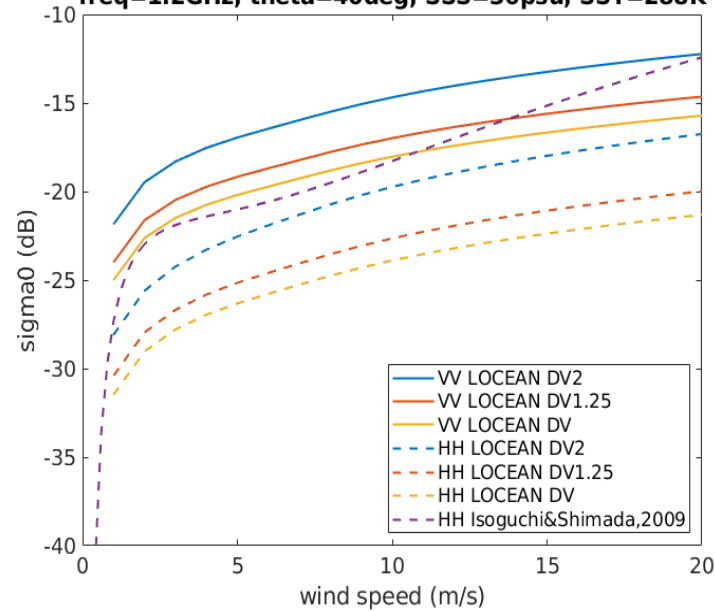
Reminder from a previous meeting

- We compared the reference model simulations with geophysical model functions (GMFs) at L, C and Ku-bands.
- Tests with different wave spectrums, cut-off numbers, and amplitude coefficients of the wave spectrum of Durden&Vesecky have been done.
- Note that in the passive mode we use the reference model with Durden&Vesecky wave spectrum with an amplitude coefficient of 1.25 and a cut-off wave number of $k/4$.

Backscattering as a function of OWS

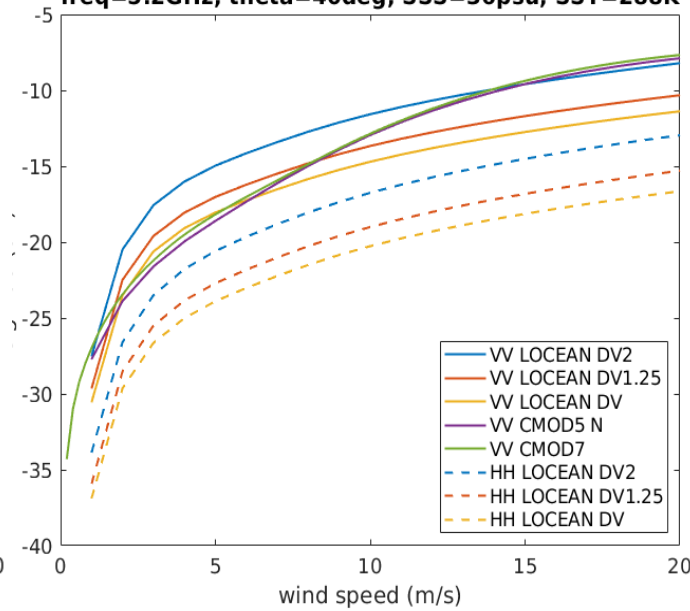
L-band

freq=1.2GHz, theta=40deg, SSS=36psu, SST=288K



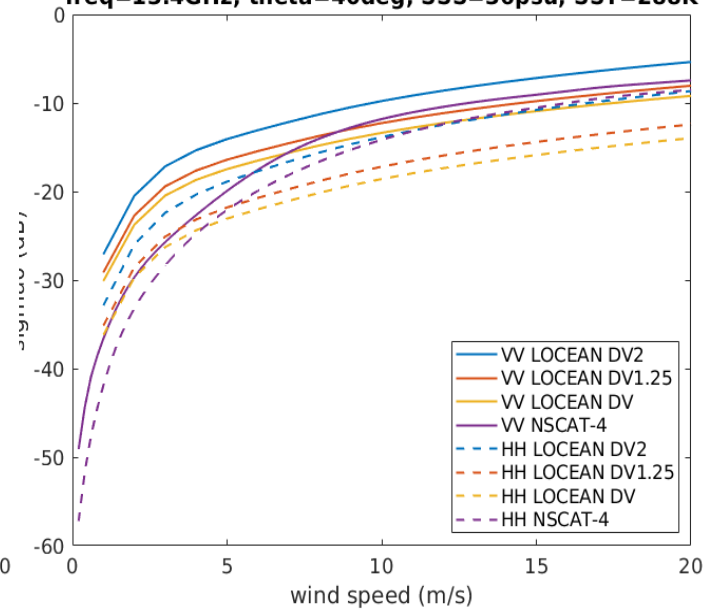
C-band

freq=5.2GHz, theta=40deg, SSS=36psu, SST=288K



Ku-band

freq=13.4GHz, theta=40deg, SSS=36psu, SST=288K

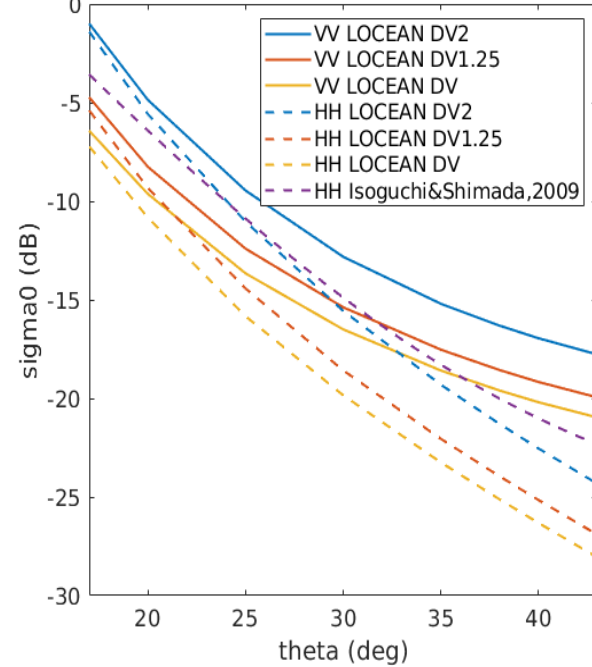


- Results calculated at L, C and Ku-band
- Inconsistency in the wind speed dependence for low winds between the model and the GMFs.

Backscattering as a function of the incidence angle

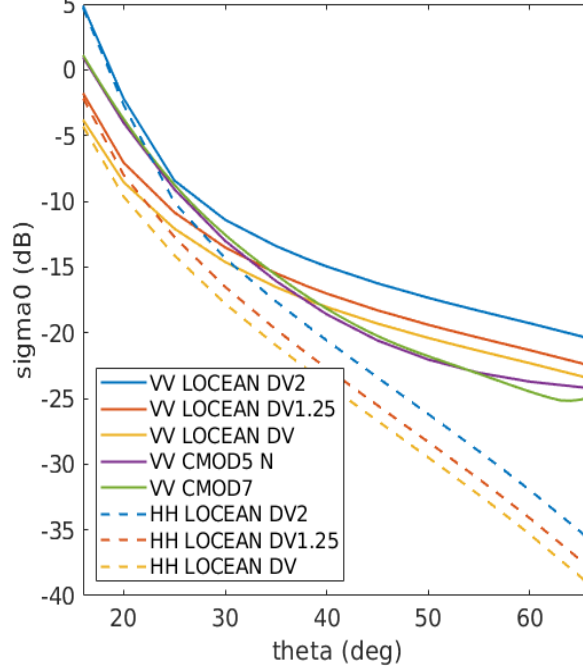
L-band

freq=1.2GHz, OWS=5m/s, SSS=36psu, SST=288K



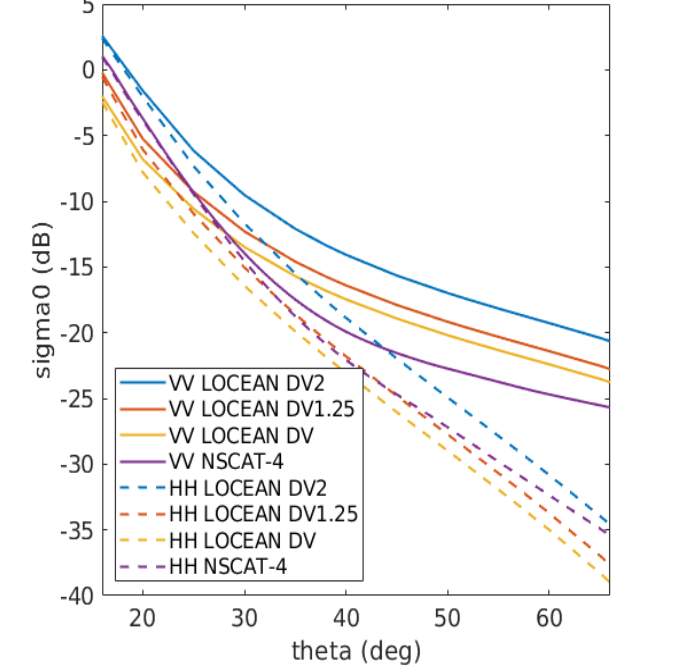
C-band

freq=5.2GHz, OWS=5m/s, SSS=36psu, SST=288K



Ku-band

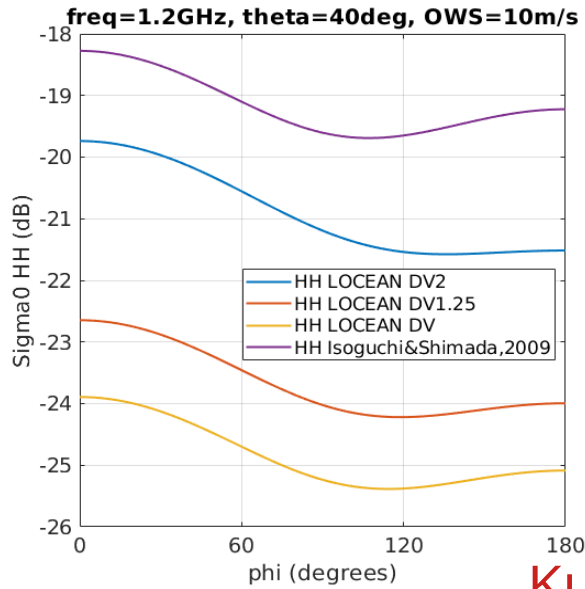
freq=13.4GHz, OWS=5m/s, SSS=36psu, SST=288K



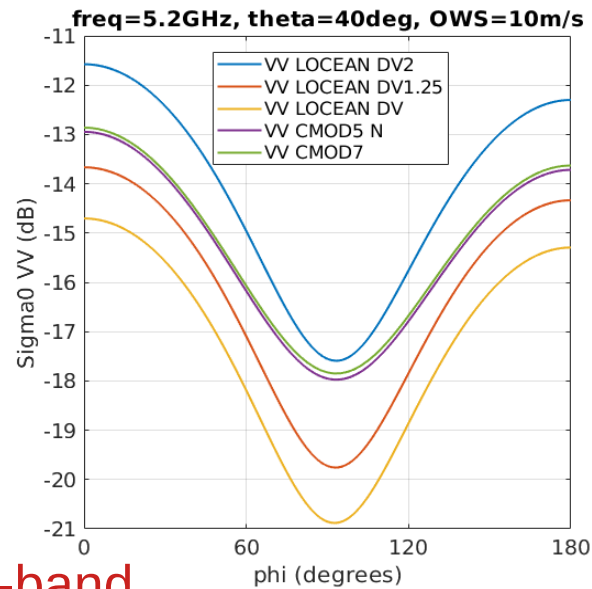
- Isoguchi and Shimada very linear as a function of theta
- Discrepancies between the model and the GMFs.

Backscattering as a function of the wind direction

L-band



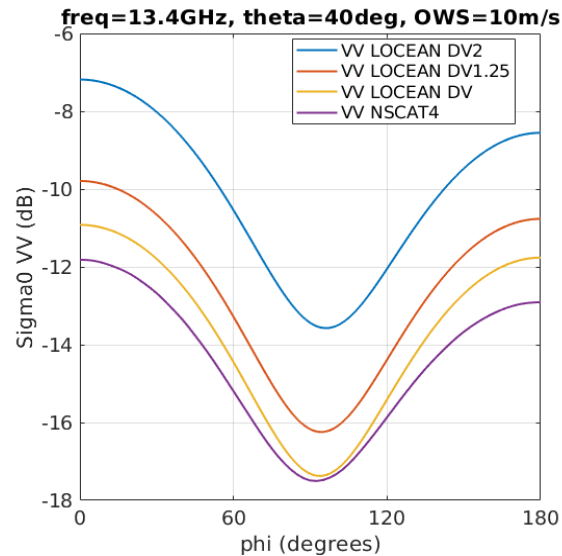
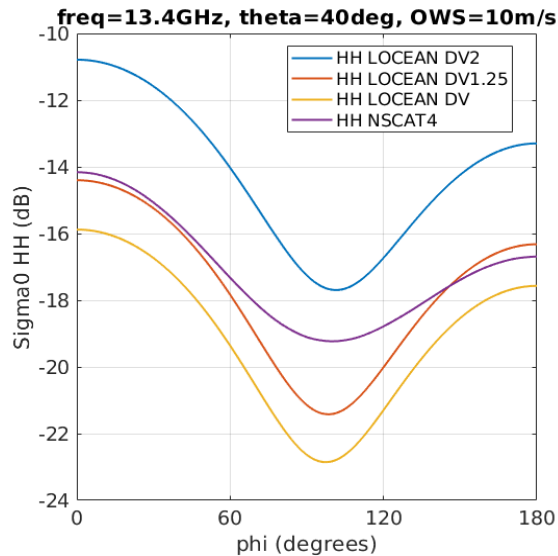
C-band



- Shape of the model simulations as a function of the relative wind direction (phi) looks good.

- The amplitude of the sinusoid with the model is ok for VV but not that good for HH.

Ku-band



Other tests for the backscattering

- Kudryavtsev wave spectrum does not show the good ϕ dependence
- Tests with cut-off number from $k/3$ to $k/4$ have been done. It does not change the results.
- With which parameters of the radiative transfer model can we play to change the dependence (as a function of OWS, θ , ϕ)?

