Terrain corrected snow thickness from GNET

Using GNSS-IR

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NKG 2022

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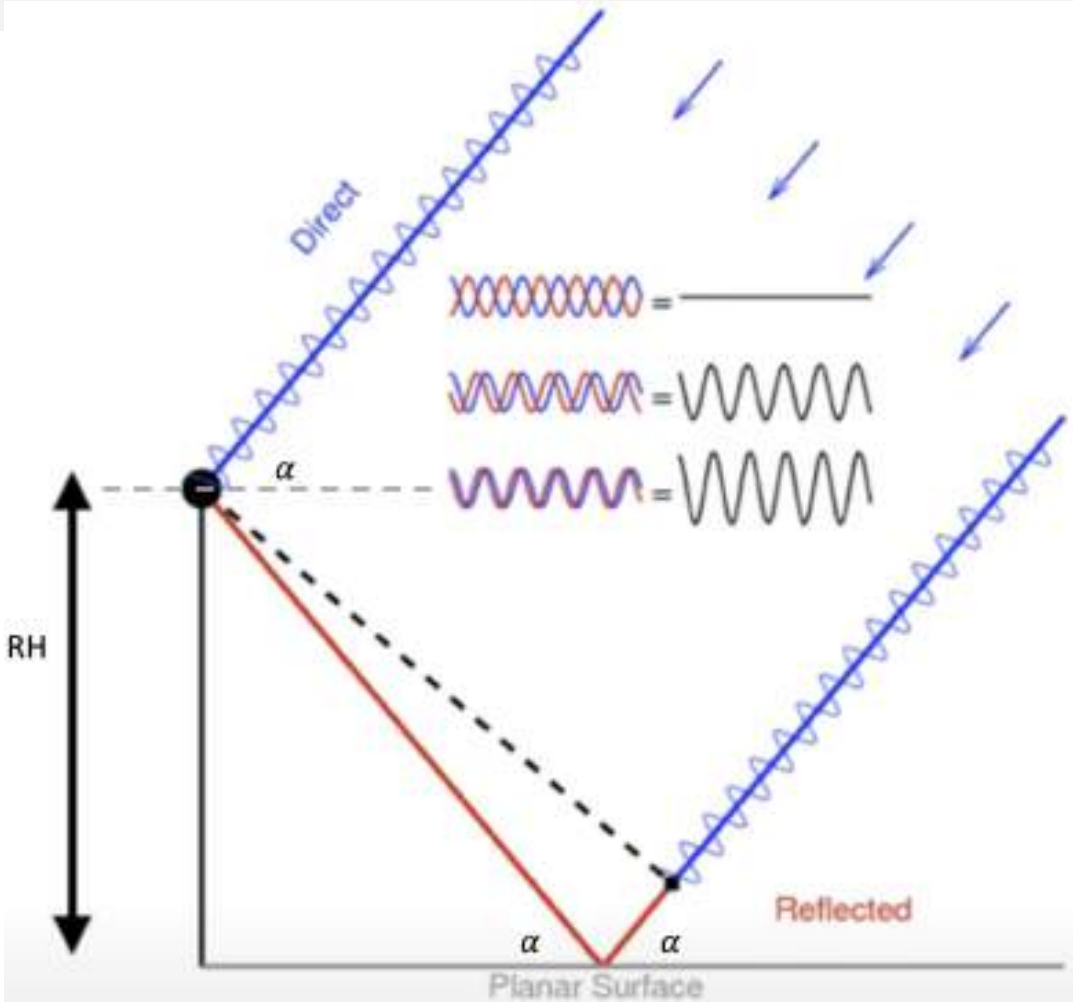
GNSS Interferometric Reflectomerty (GNSS-IR)



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[1] Figures from GitHub (Larson, 2019)

GNSS-IR

Y. Georgiadou and A. Kleusberg (1988)

multipath frequency

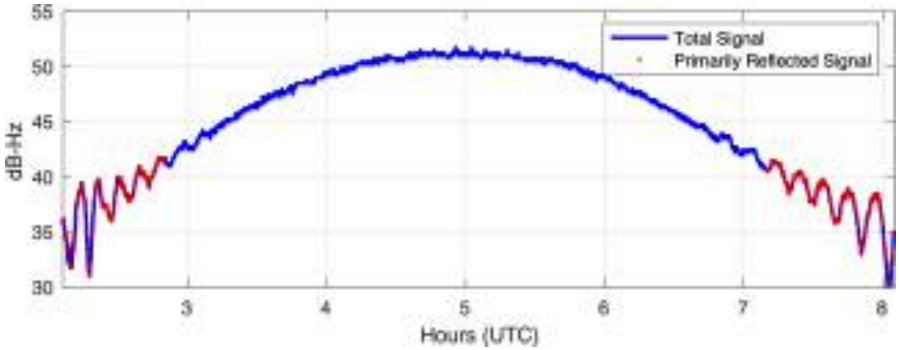
$$f_\Psi = \frac{2 \cdot \mathrm{RH}}{\lambda} \cos(\alpha) \cdot \frac{\mathrm{d}\alpha}{\mathrm{d}t}$$

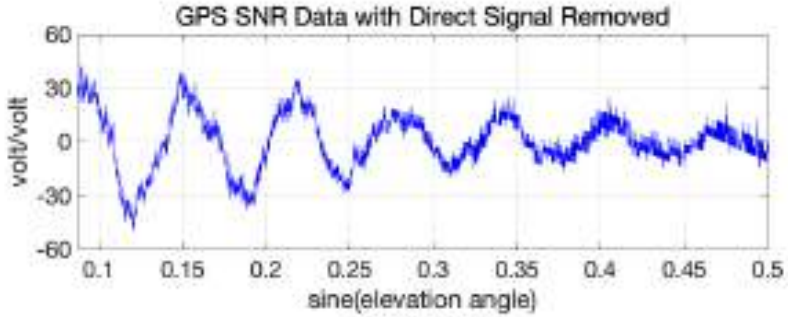
Penina Axelrad (2005)

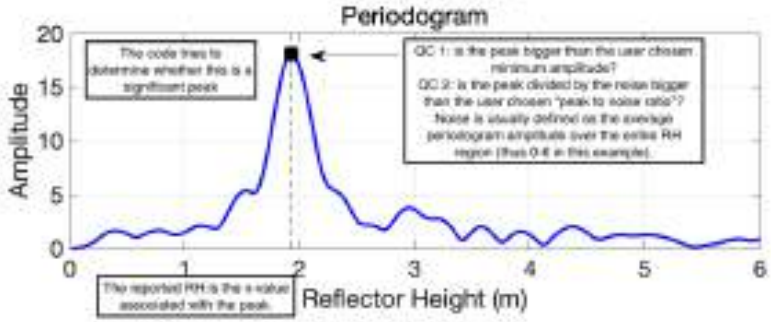
the frequency extracted from SNR data is representative of the reflector height

$$\alpha => \sin(\alpha)$$

$$f_\Psi = 2\mathrm{RH}/\lambda$$







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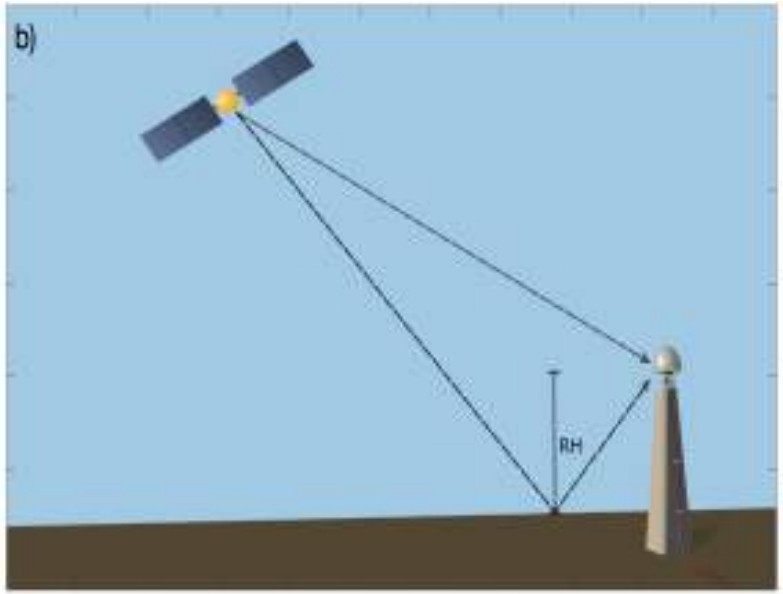
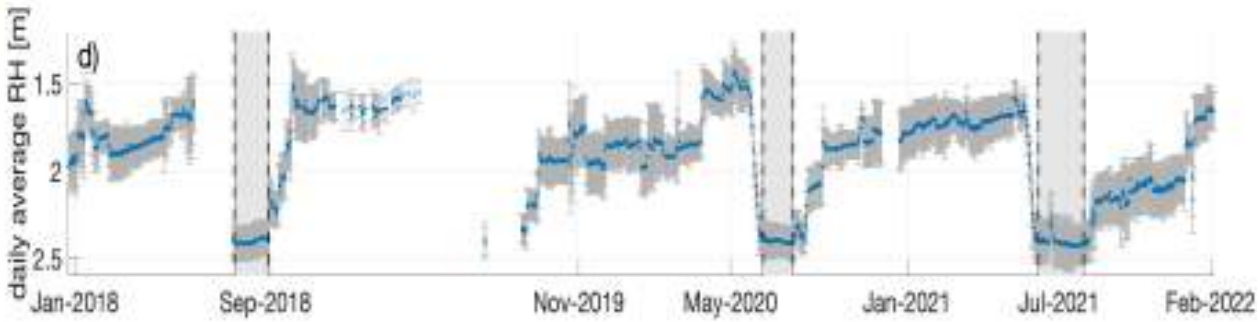
[1] Figures from GitHub (Larson, 2019)

NORD





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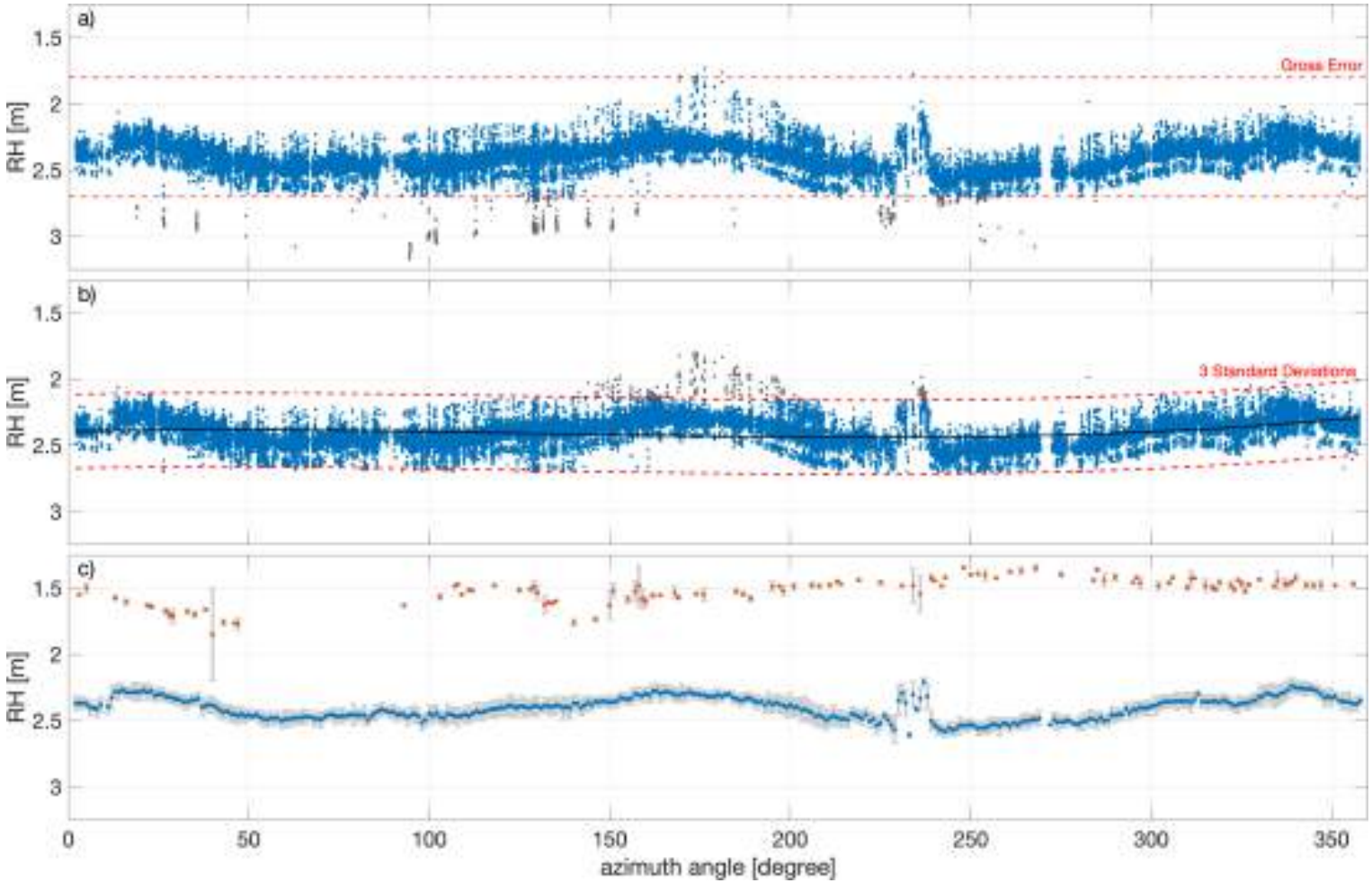
NORD - Terrain correction



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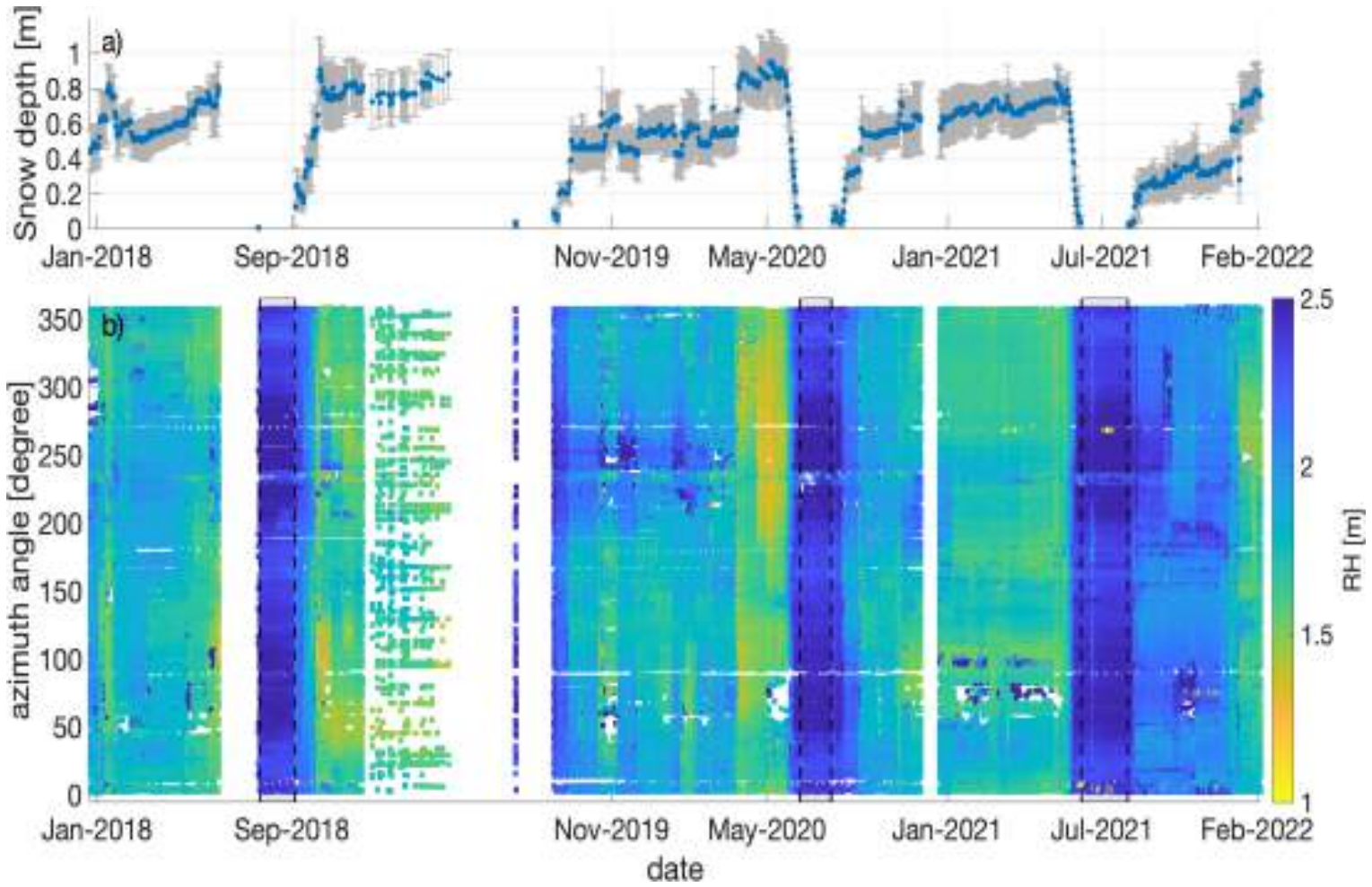
NORD - Snow thickness



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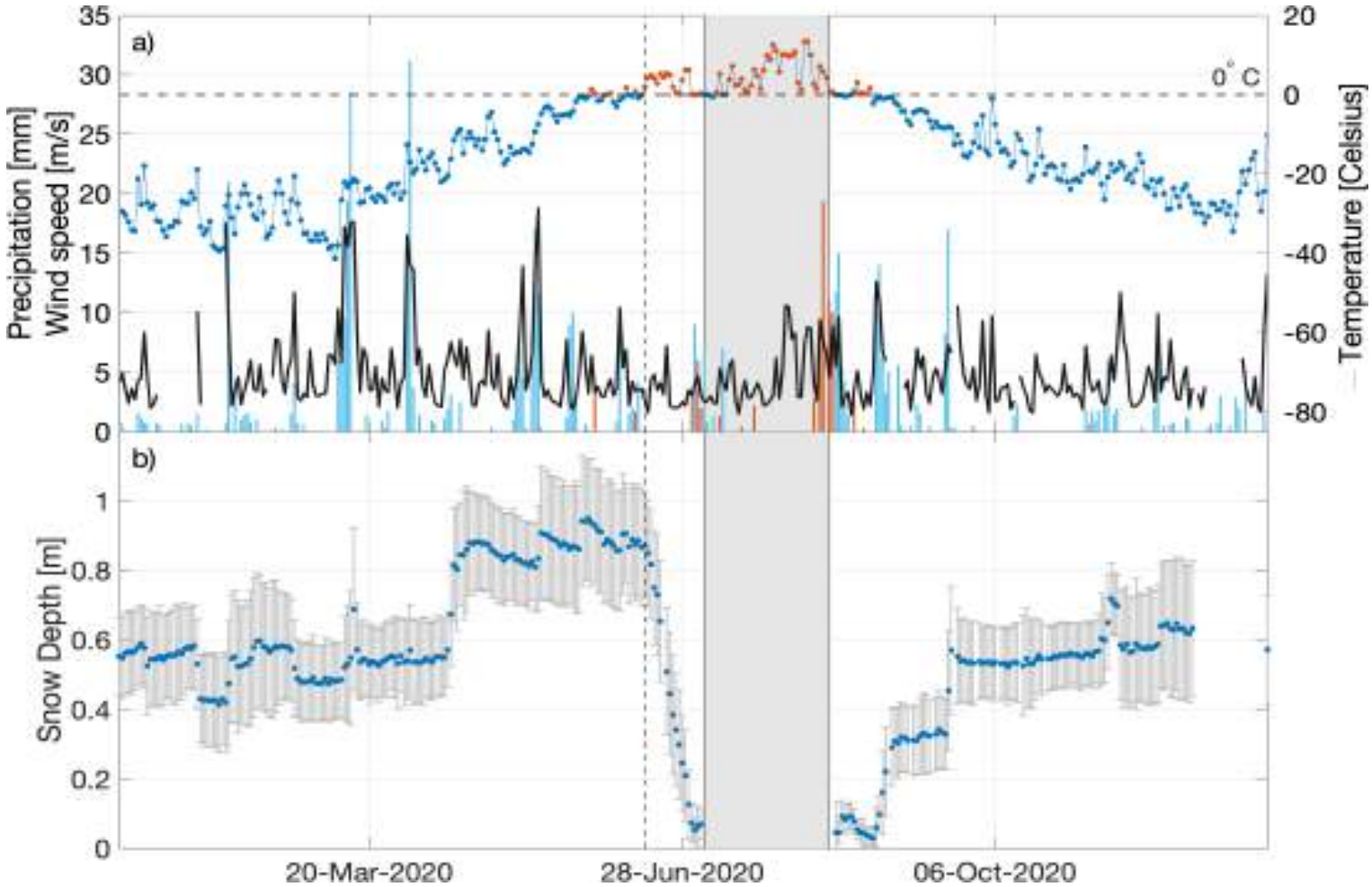
NORD - Validation



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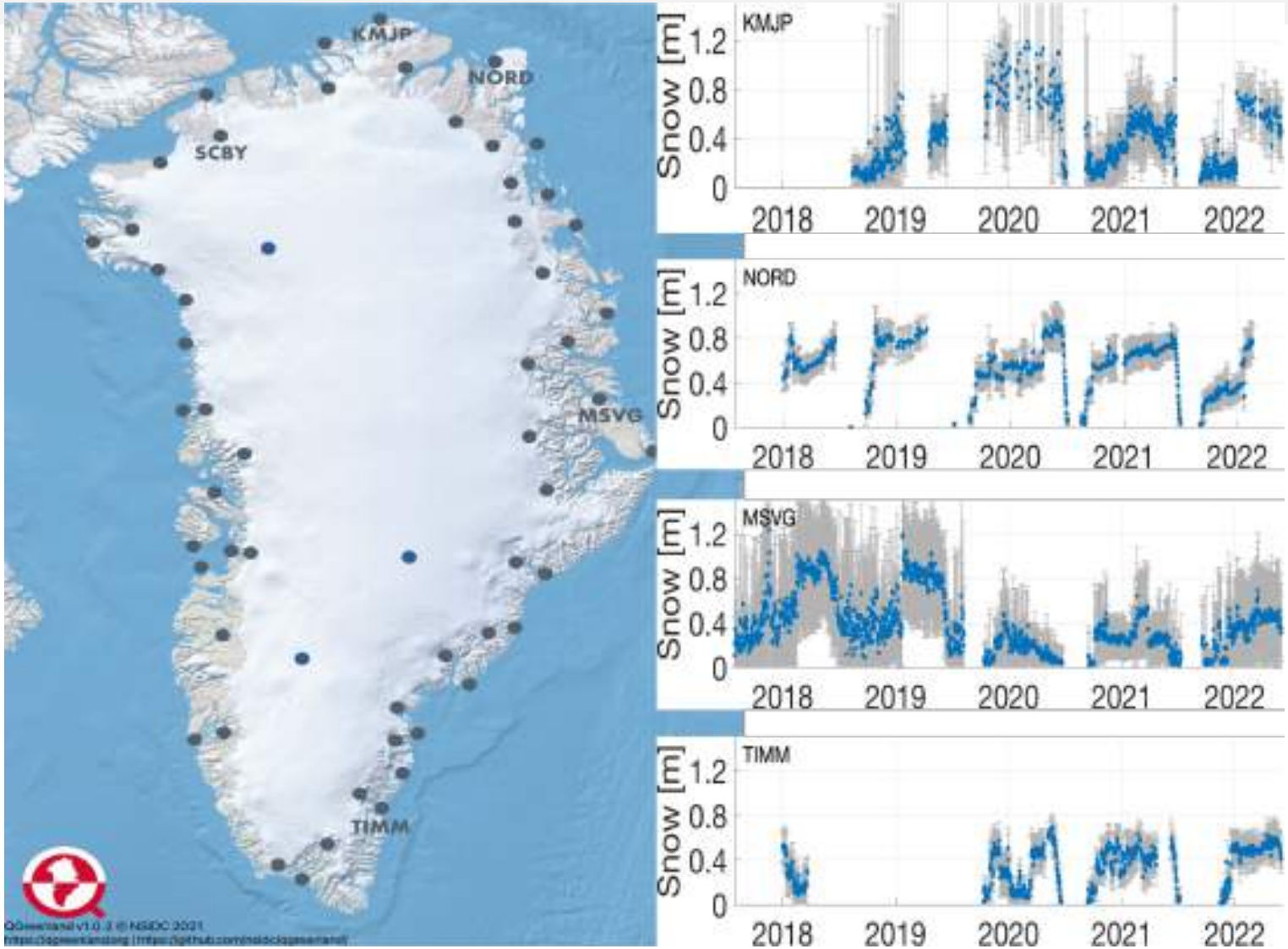
GNSS-IR processed GNET



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GNET snow thickness

Winter maximum average snow thickness				
GNET station	18/19 [m]	19/20 [m]	20/21 [m]	21/22 [m]
NORD	∼0.91	∼0.94	∼0.83	NaN
TIMM	NaN	>0.69	>0.69	∼0.60
MSVG	∼1.05	∼0.48	∼0.55	∼0.50
KMJP	∼0.76	∼1.19	∼0.67	NaN
SCBY	∼0	∼0	∼0	NaN

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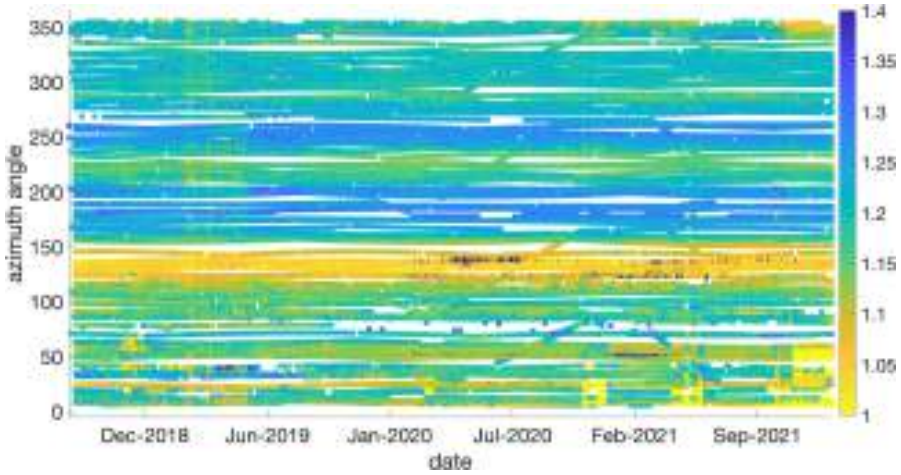
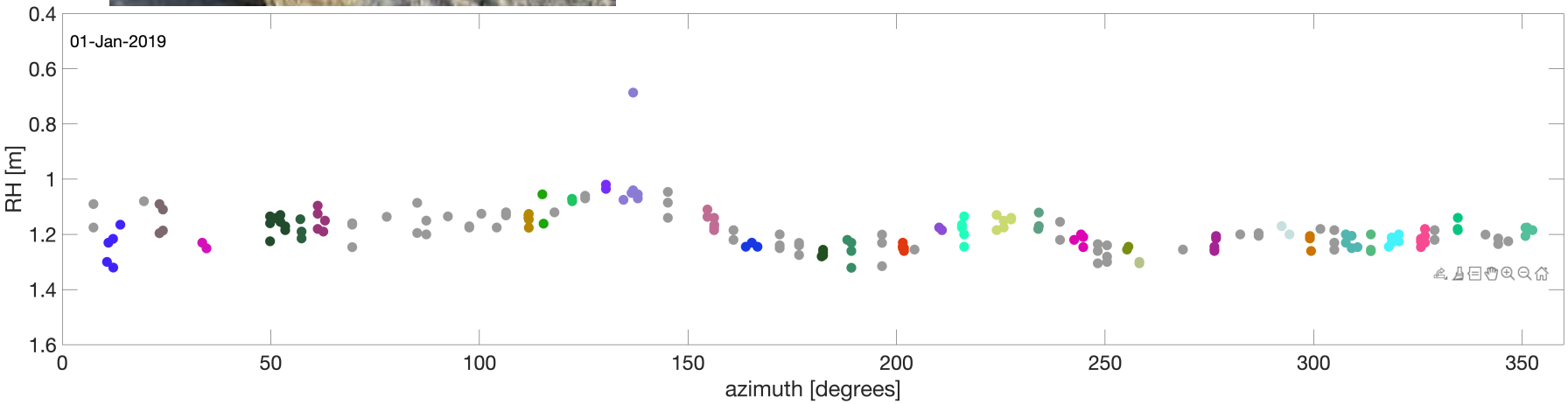
SCBY





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Thank You for Listening!

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