



Supplement of

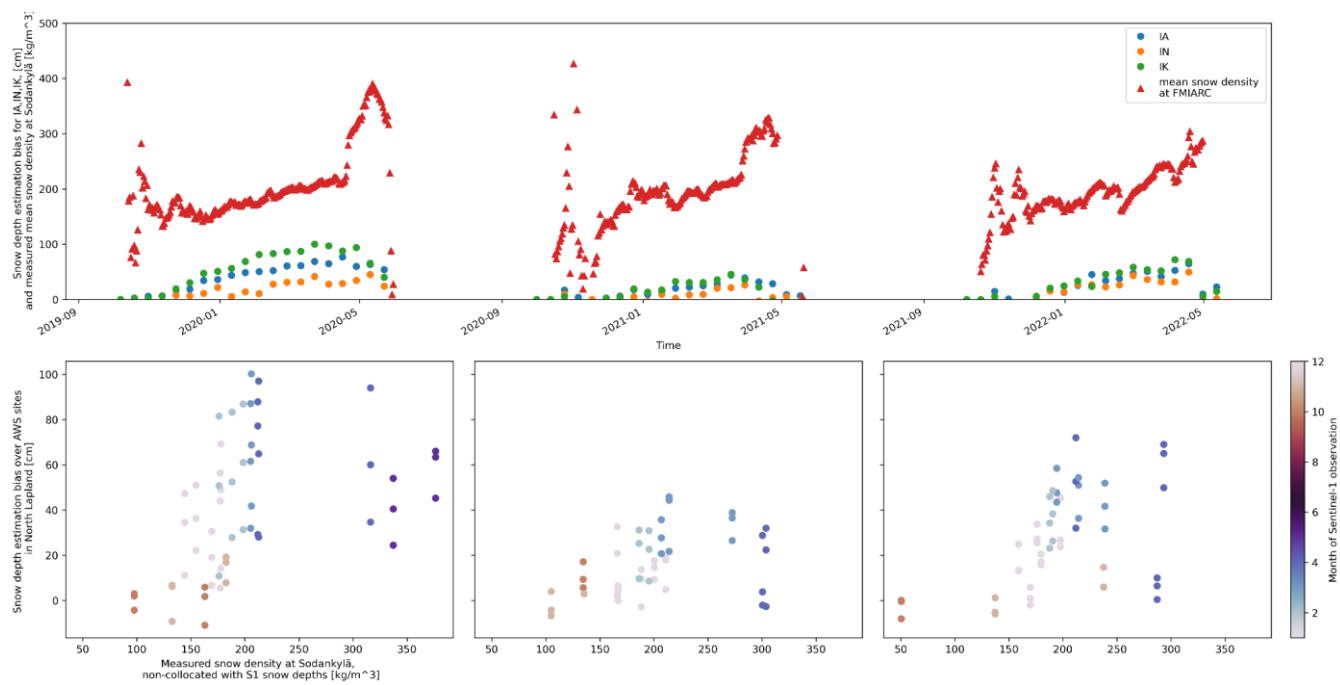
Snow depth derived from Sentinel-1 compared to in situ observations in northern Finland

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1 **Figure S1:** Bias evolution of the snow depth as a function of the days of the year.

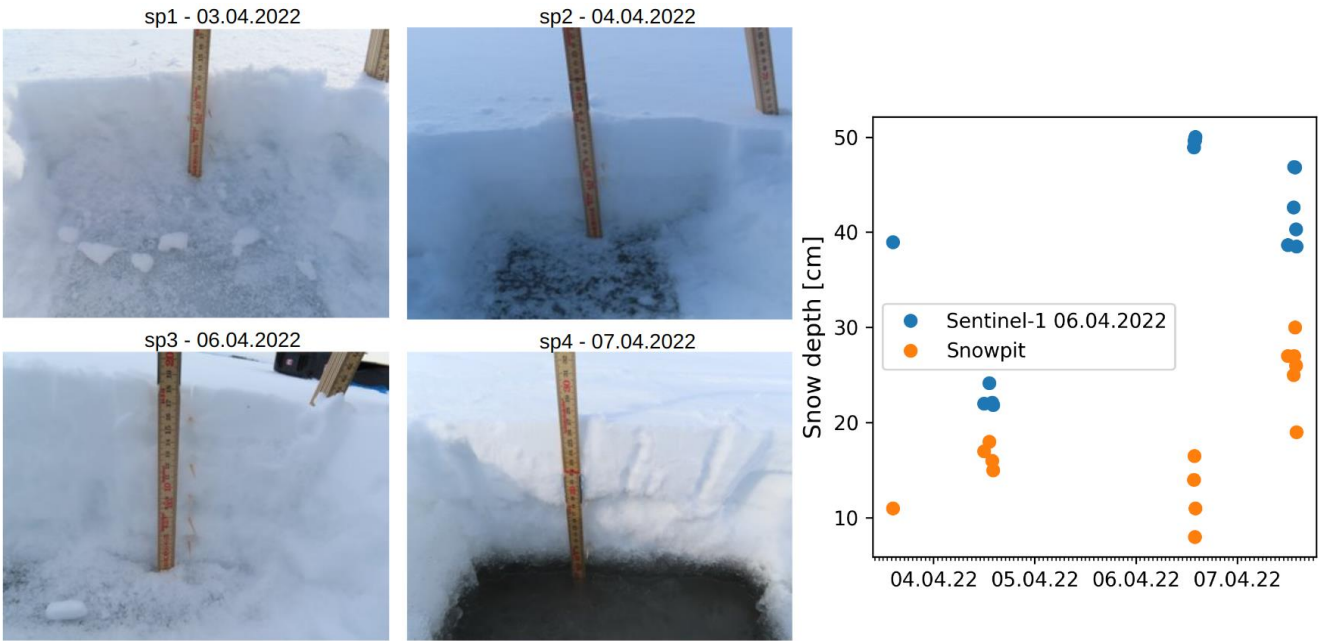


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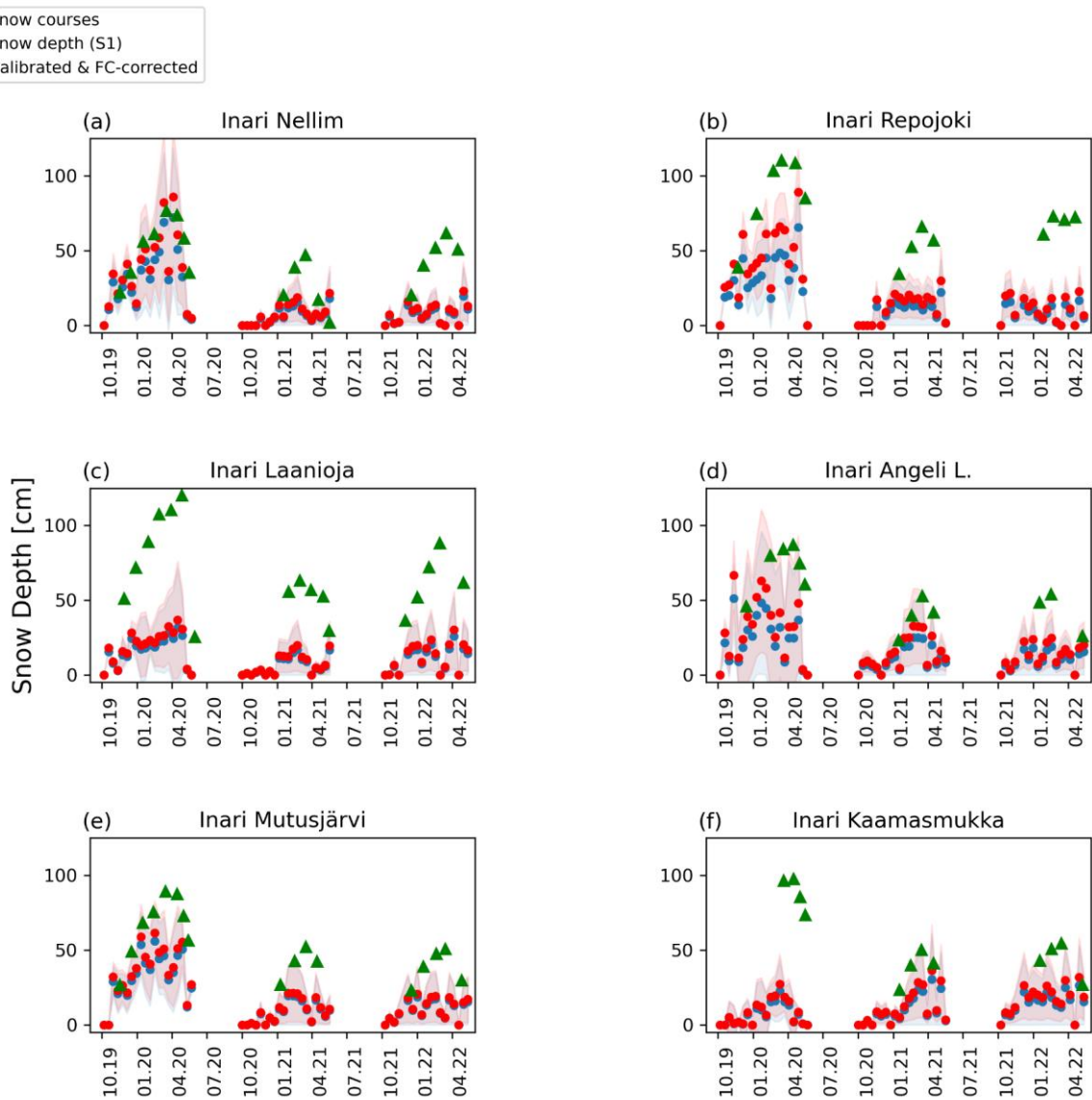
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Figure S2: In situ measurements of snow depths from the snow pits (sp1 to sp4) compared to Sentinel-1 estimative at the same locations.

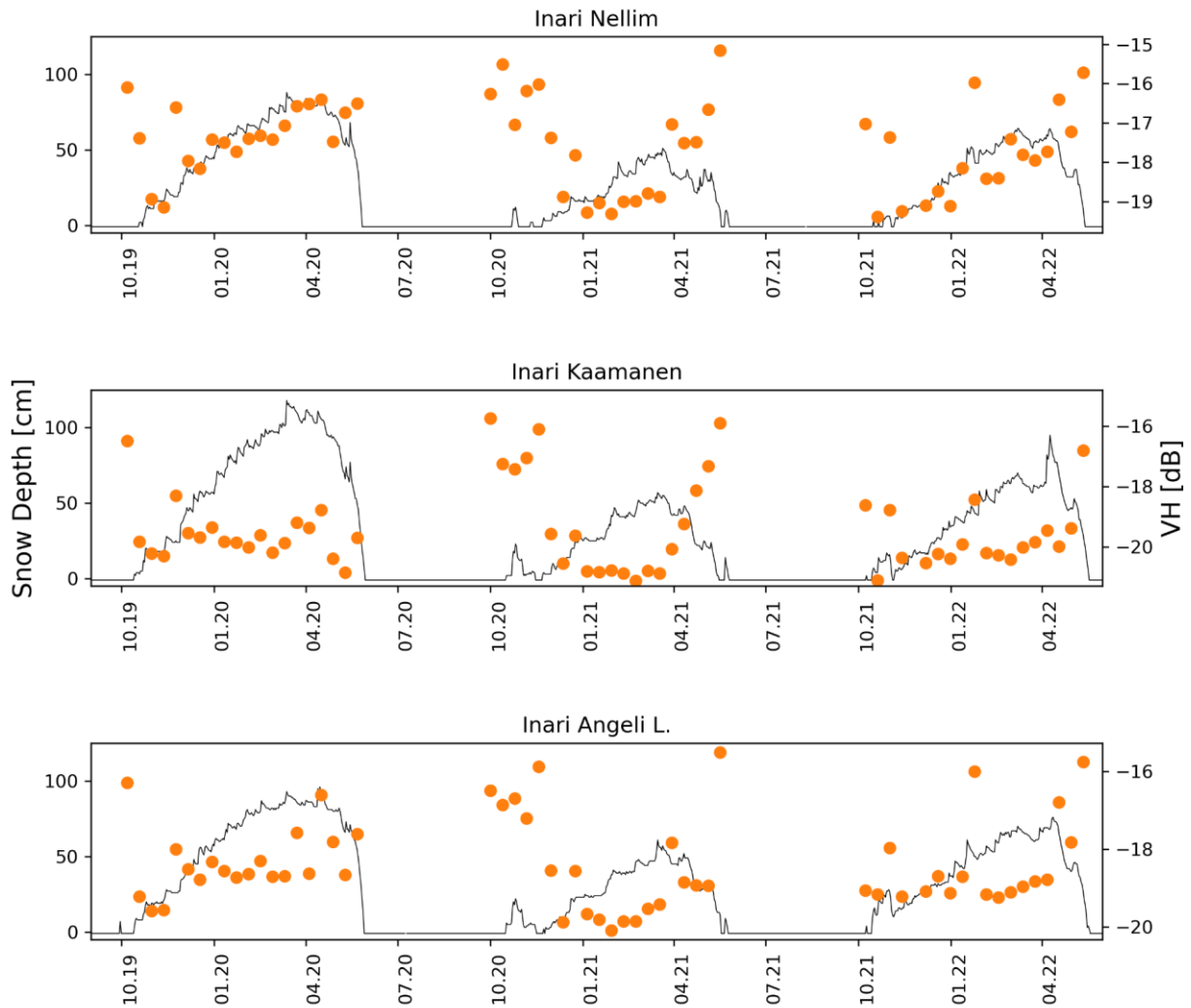
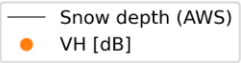


10 **Figure S3:** Snow depth variation between 2019 and 2022. The green triangles are the snow course measurements, the blue
 11 dots represent the snow depth variation estimated from the S1 images before the correction done due the calibration and forest
 12 cover (FC) attenuation. Corrected values are represented by the red dots. The uncertainty ranges are represented by the light
 13 blue and red shading.

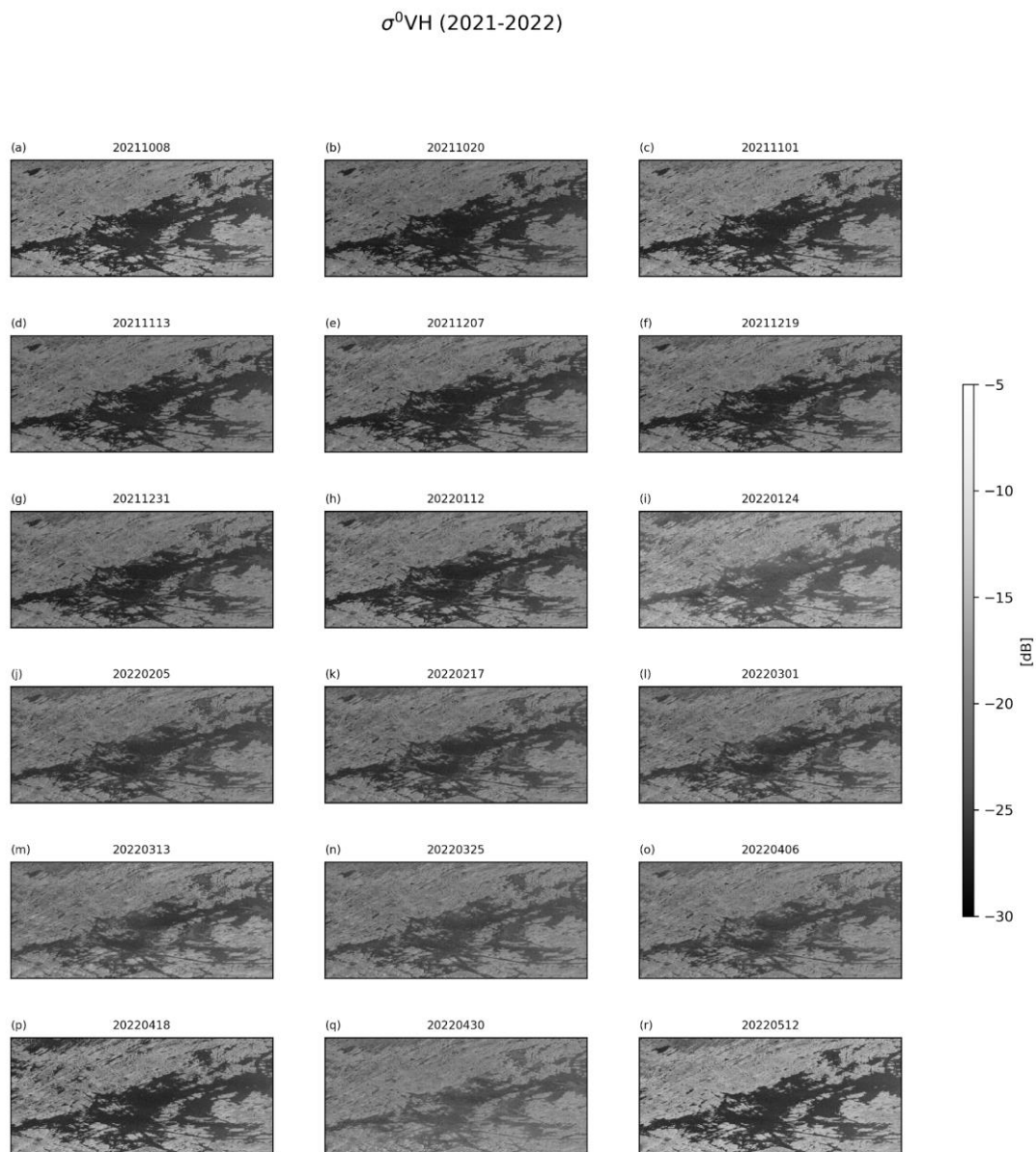


20 (a)



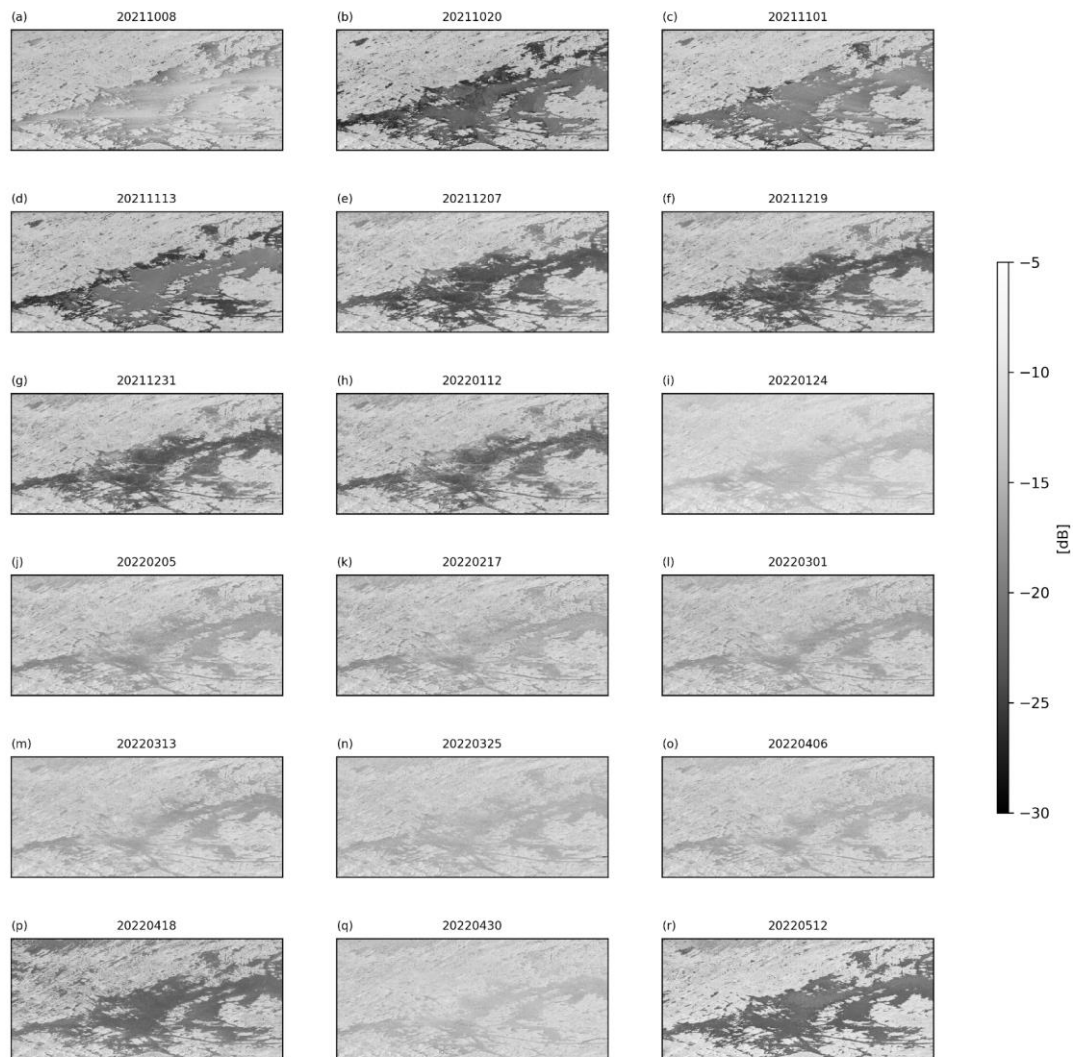


26 **Figure S5:** Backscatter σ^0 from VH and VV polarisations from Sentinel-1 images between 8th November 2021 and 12th May
 27 2022.



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σ^0_{VV} (2021-2022)



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	Sentinel-1 scenes names
Season 2019–2020	S1A_IW_SLC__1SDV_20191007T044755_20191007T044822_029348_035610_BDD8.tif
	S1A_IW_SLC__1SDV_20191019T044755_20191019T044822_029523_035C15_1155.tif
	S1A_IW_SLC__1SDV_20191031T044755_20191031T044822_029698_03622A_DD6C.tif
	S1A_IW_SLC__1SDV_20191112T044755_20191112T044822_029873_03684A_F1FA.tif
	S1A_IW_SLC__1SDV_20191124T044755_20191124T044822_030048_036E5B_64B0.tif
	S1A_IW_SLC__1SDV_20191206T044755_20191206T044822_030223_03746B_256E.tif
	S1A_IW_SLC__1SDV_20191218T044754_20191218T044821_030398_037A78_1FB2.tif
	S1A_IW_SLC__1SDV_20191230T044754_20191230T044821_030573_038079_E3DD.tif
	S1A_IW_SLC__1SDV_20200111T044753_20200111T044820_030748_038687_C332.tif
	S1A_IW_SLC__1SDV_20200123T044753_20200123T044820_030923_038CAD_3902.tif
	S1A_IW_SLC__1SDV_20200204T044752_20200204T044819_031098_0392D5_77CD.tif
	S1A_IW_SLC__1SDV_20200216T044752_20200216T044819_031273_0398DF_6F36.tif
	S1A_IW_SLC__1SDV_20200228T044752_20200228T044819_031448_039EDE_2B46.tif
	S1A_IW_SLC__1SDV_20200311T044752_20200311T044819_031623_03A4F3_6B66.tif
	S1A_IW_SLC__1SDV_20200323T044752_20200323T044819_031798_03AB20_08D0.tif
	S1A_IW_SLC__1SDV_20200404T044752_20200404T044819_031973_03B148_D2B4.tif
	S1A_IW_SLC__1SDV_20200416T044753_20200416T044820_032148_03B76D_8D8C.tif
	S1A_IW_SLC__1SDV_20200428T044753_20200428T044820_032323_03BD91_C1E6.tif
	S1A_IW_SLC__1SDV_20200510T044754_20200510T044821_032498_03C376_7D5D.tif
	S1A_IW_SLC__1SDV_20200522T044755_20200522T044822_032673_03C8C4_4203.tif
Season 2020–2021	S1A_IW_SLC__1SDV_20201001T044802_20201001T044829_034598_040729_AEC3.tif
	S1A_IW_SLC__1SDV_20201013T044802_20201013T044829_034773_040D44_6213.tif
	S1A_IW_SLC__1SDV_20201025T044802_20201025T044829_034948_041356_0BA9.tif
	S1A_IW_SLC__1SDV_20201106T044802_20201106T044829_035123_041956_4C11.tif
	S1A_IW_SLC__1SDV_20201118T044802_20201118T044828_035298_041F7A_F1EA.tif
	S1A_IW_SLC__1SDV_20201130T044801_20201130T044828_035473_042581_BA52.tif
	S1A_IW_SLC__1SDV_20201212T044801_20201212T044828_035648_042B82_A1D1.tif
	S1A_IW_SLC__1SDV_20201224T044800_20201224T044827_035823_043186_C4A1.tif
	S1A_IW_SLC__1SDV_20210105T044759_20210105T044826_035998_04379A_75AB.tif
	S1A_IW_SLC__1SDV_20210117T044759_20210117T044826_036173_043DBE_FB99.tif
	S1A_IW_SLC__1SDV_20210129T044759_20210129T044826_036348_0443DB_DCD3.tif

	S1A_IW_SLC__1SDV_20210210T044758_20210210T044825_036523_0449EF_0CFC.tif
	S1A_IW_SLC__1SDV_20210222T044758_20210222T044825_036698_04500B_CF84.tif
	S1A_IW_SLC__1SDV_20210306T044758_20210306T044825_036873_04561A_4149.tif
	S1A_IW_SLC__1SDV_20210318T044758_20210318T044825_037048_045C36_0446.tif
	S1A_IW_SLC__1SDV_20210330T044758_20210330T044825_037223_046245_474D.tif
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	S1A_IW_SLC__1SDV_20210505T044800_20210505T044827_037748_04747C_B769.tif
	S1A_IW_SLC__1SDV_20210517T044800_20210517T044827_037923_0479C0_9BA9.tif
Season 2021–2022	S1A_IW_SLC__1SDV_20211008T044805_20211008T044832_040023_04BCCC_67B0.tif
	S1A_IW_SLC__1SDV_20211020T044805_20211020T044832_040198_04C2E7_C550.tif
	S1A_IW_SLC__1SDV_20211101T044805_20211101T044832_040373_04C8F4_E56E.tif
	S1A_IW_SLC__1SDV_20211113T044805_20211113T044832_040548_04CF12_9C4E.tif
	S1A_IW_SLC__1SDV_20211207T044804_20211207T044831_040898_04DB35_5580.tif
	S1A_IW_SLC__1SDV_20211219T044803_20211219T044830_041073_04E11E_4CAC.tif
	S1A_IW_SLC__1SDV_20211231T044802_20211231T044829_041248_04E6E8_6629.tif
	S1A_IW_SLC__1SDV_20220112T044802_20220112T044829_041423_04ECDC_BFE6.tif
	S1A_IW_SLC__1SDV_20220124T044801_20220124T044828_041598_04F2AC_C9C4.tif
	S1A_IW_SLC__1SDV_20220205T044801_20220205T044828_041773_04F8A7_5B61.tif
	S1A_IW_SLC__1SDV_20220217T044801_20220217T044828_041948_04FEC3_FF8E.tif
	S1A_IW_SLC__1SDV_20220301T044801_20220301T044828_042123_0504C2_9F84.tif
	S1A_IW_SLC__1SDV_20220313T044801_20220313T044828_042298_050AB5_EEB4.tif
	S1A_IW_SLC__1SDV_20220325T044801_20220325T044828_042473_0510A6_B4D3.tif
	S1A_IW_SLC__1SDV_20220406T044801_20220406T044828_042648_051694_2956.tif
	S1A_IW_SLC__1SDV_20220418T044802_20220418T044829_042823_051C71_BBA7.tif
	S1A_IW_SLC__1SDV_20220430T044802_20220430T044829_042998_052230_B61A.tif
	S1A_IW_SLC__1SDV_20220512T044803_20220512T044830_043173_0527F2_0BF5.tif

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