Supplementary Material
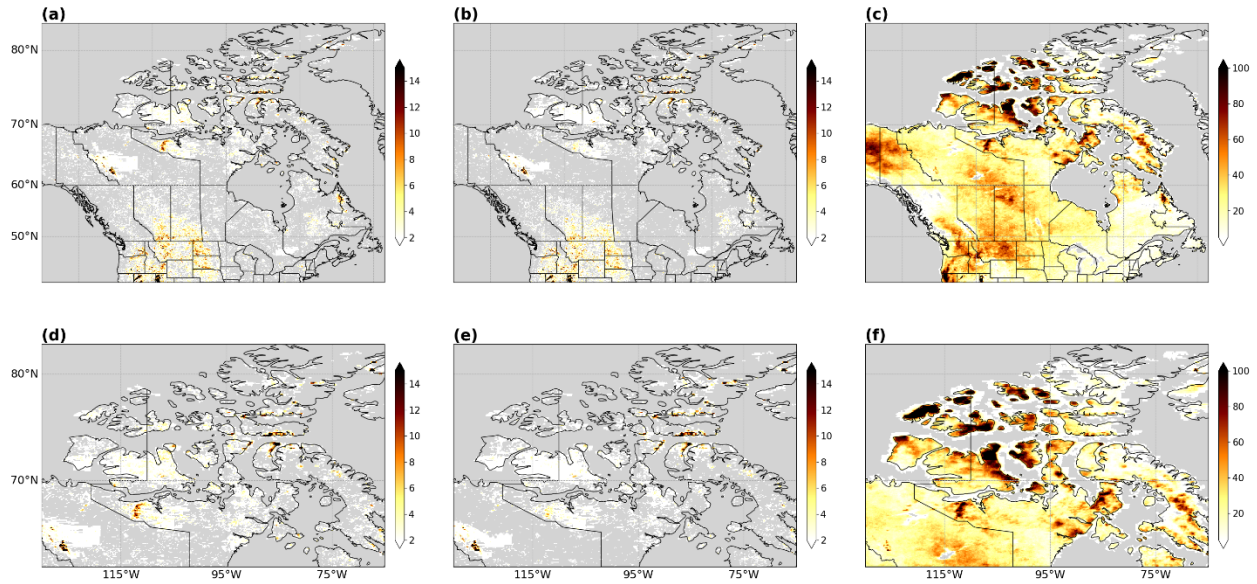
Figure SM1. a) Frequency of Occurrence (FoO) of DOD$_{PG16}$ > 1. **b)** FoO DOD$_{B16}$ > 1. **c)** FoO AOD > 1. **d-f)** as a-c but zoomed in to better highlight northern DOD hotspots. All quality levels included.
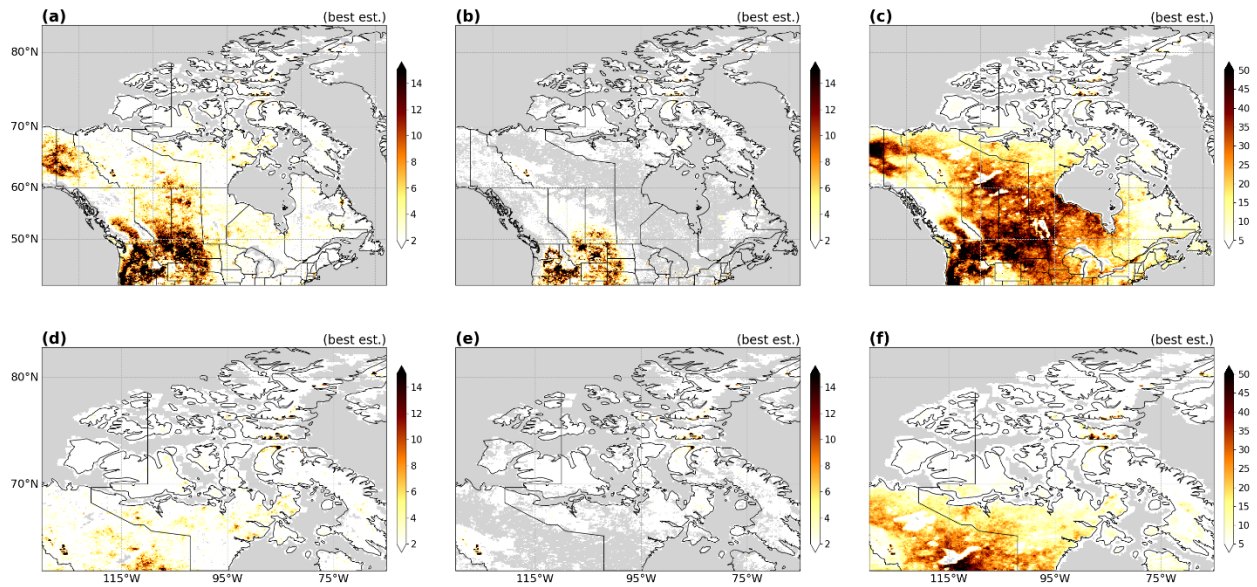
Figure SM2. a) Frequency of Occurrence (FoO) of DOD$_{PG16}$ > 0.5, using data screened for "best estimate" quality flag. **b)** FoO DOD$_{B16}$ > 0.5, using data screened for "best estimate" quality flag. **c)** FoO AOD > 0.5, using data screened for "best estimate" quality flag. **d-f)** as a-c but zoomed in to better highlight northern DOD hotspots.
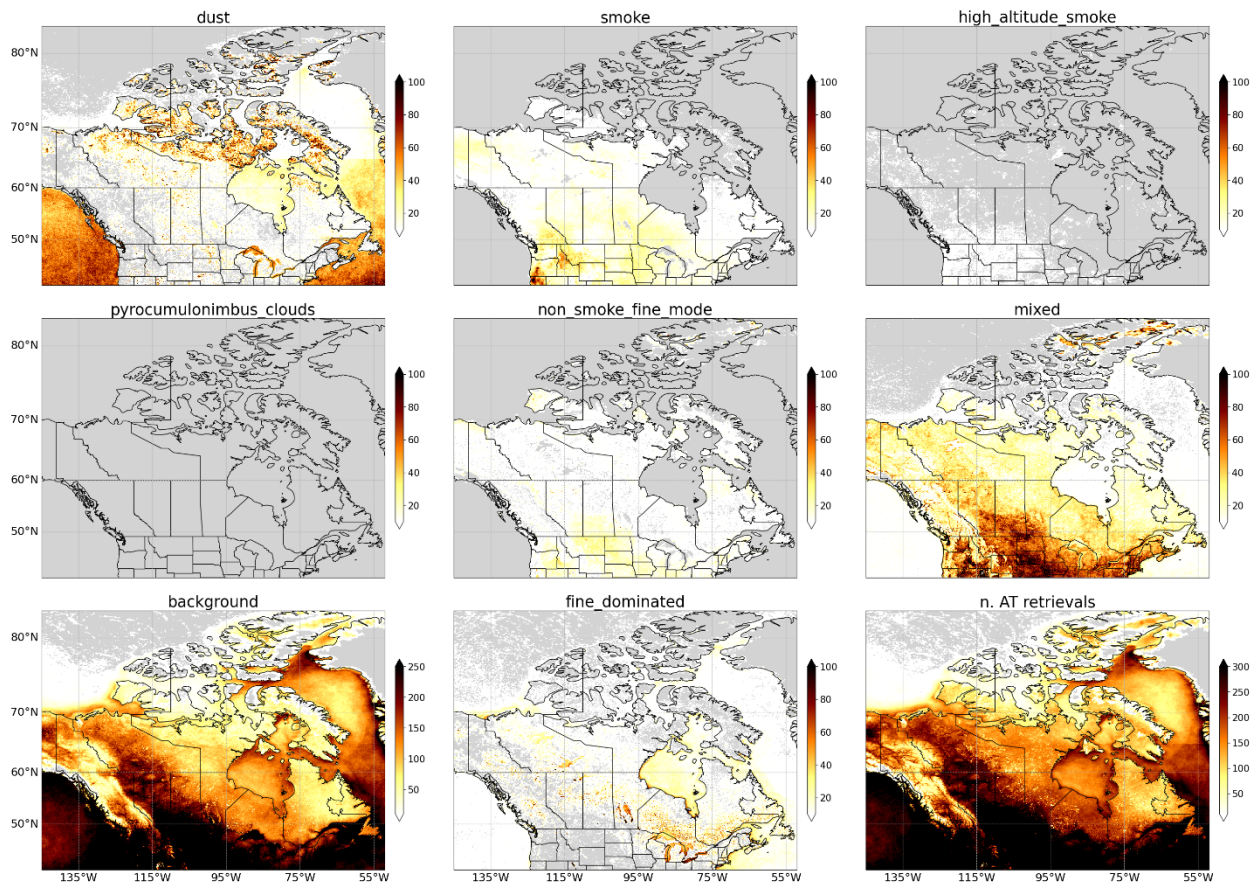
Figure SM3a. Frequency of Occurrence (FoO) of VIIRS aerosol type (AT) classifications, for the period 2020 – 2022 inclusive. AT is given in the title of each panel. Bottom right panel shows the total number of AT retrievals available. Note the different colour scales used for AT = "background" and number of AT retrievals.

15
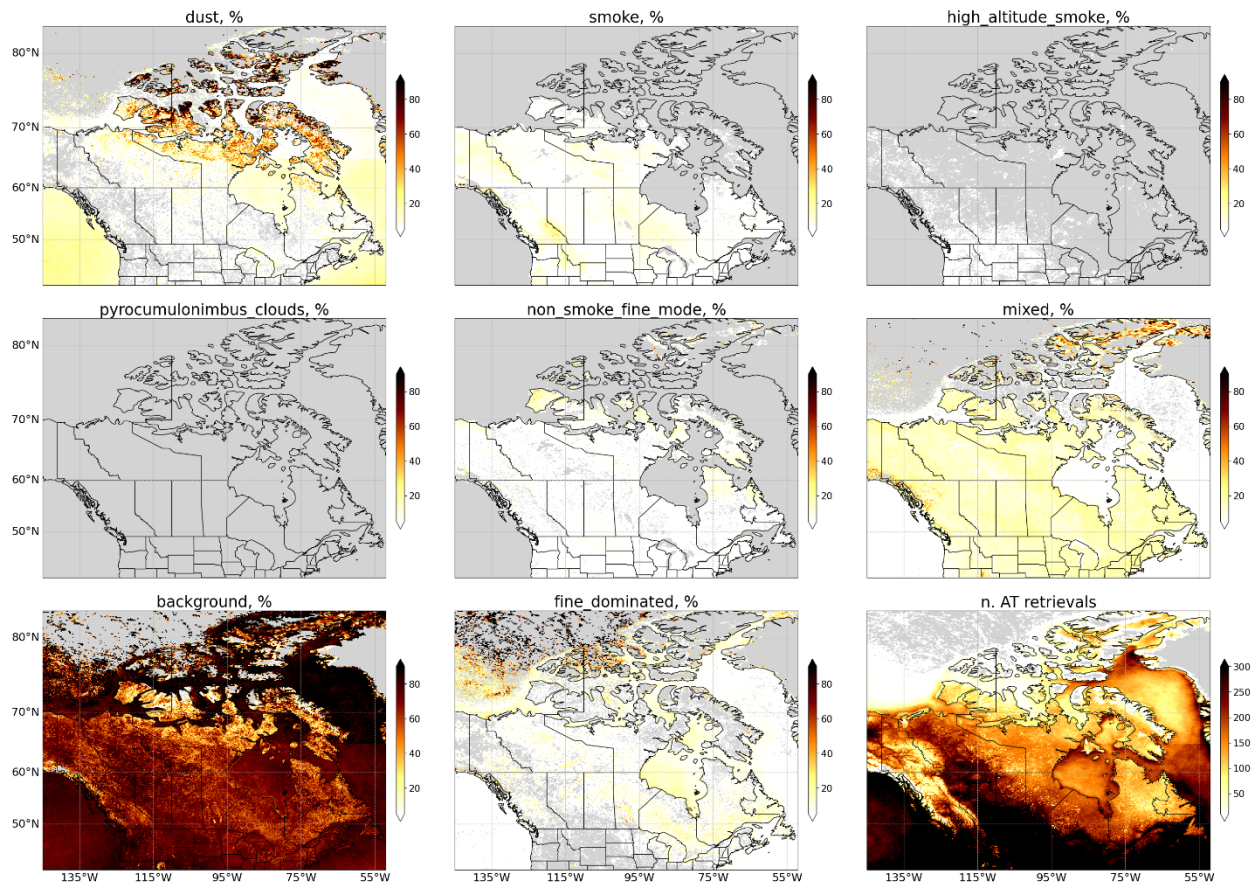
Figure SM3b. Frequency of Occurrence (FoO) of VIIRS aerosol type (AT) classifications, expressed as a percentage with respect to the total number of AT retrievals available, for the period 2020 – 2022 inclusive. AT is given in the title of each panel. Bottom right panel shows the total number of AT retrievals available (note the different colour scale used for this panel).

20
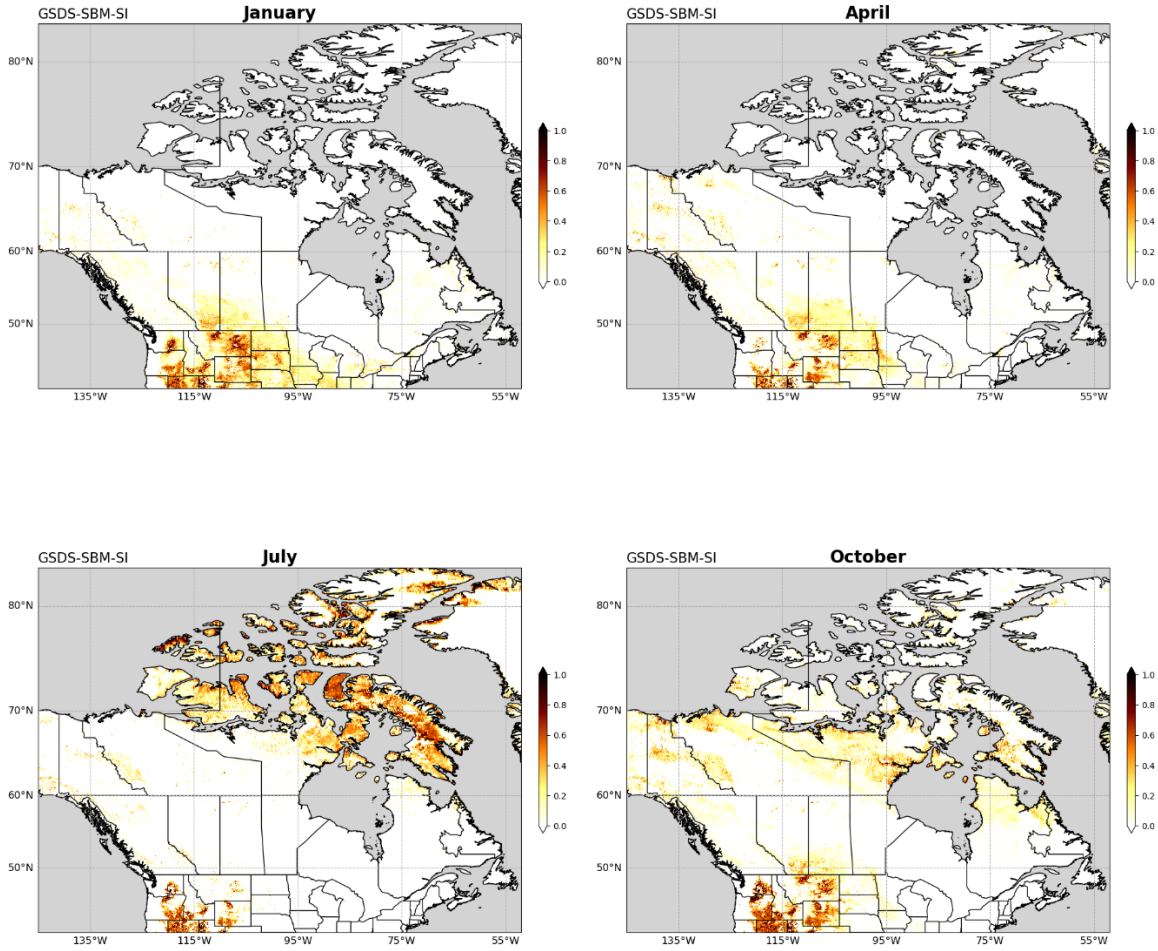
Figure SM4. Source intensity (SI) from the G-SDS-SBM dataset for January, April, July, and October.

25