Supplemental Material

1 Experimental Result Tables

Table 1 Comparison of different stages of fusion for the proposed adaptive fusion approach. The results are given as mean and standard deviation over five runs. The different stages seam to be beneficial for different types of distributional uncertainty. Considering the high standard deviation on the results of some test settings, we decided to use the approach with fusion after the fourth block for the comparison against the baselines.

Data Set	Metric			Stage of Adaptive Fusion						
			Fusion Stage 1	Fusion Stage 2	Fusion Stage 3	Fusion Stage 4	Fusion Stage 5			
	F1 (micro)	↑	0.76±0.01	0.76±0.00	$0.77{\pm}0.00$	$0.77{\pm}0.00$	0.76±0.00			
Testing	F1 (macro)	↑	0.71 ± 0.01	0.71 ± 0.01	$0.72 {\pm} 0.00$	$0.72 {\pm} 0.01$	0.71 ± 0.01			
	F1 (sample)	↑	0.77 ± 0.01	0.77 ± 0.00	0.78 ± 0.00	0.78 ± 0.00	0.77 ± 0.00			
	F2 (micro)	\uparrow	0.75 ± 0.00	0.75 ± 0.00	0.75 ± 0.01	$0.76 {\pm} 0.00$	0.74 ± 0.00			
	F2 (macro)	\uparrow	$0.68 {\pm} 0.01$	0.70 ± 0.01	$0.69 {\pm} 0.01$	$0.71 {\pm} 0.01$	$0.68 {\pm} 0.01$			
	F2 (sample)	↑	$0.77 {\pm} 0.00$	0.77 ± 0.00	$0.77 {\pm} 0.01$	$0.77 {\pm} 0.00$	0.76 ± 0.00			
	F1 (micro)	\uparrow	0.75 ± 0.01	0.75 ± 0.01	$0.76 {\pm} 0.01$	$0.76 {\pm} 0.01$	0.75 ± 0.01			
	F1 (macro)	↑	0.62 ± 0.02	0.63 ± 0.02	0.63 ± 0.04	$0.64 {\pm} 0.02$	0.60 ± 0.02			
Cloudy	F1 (sample)	↑	0.75 ± 0.01	0.75 ± 0.01	$0.76 {\pm} 0.01$	$0.76 {\pm} 0.01$	0.75 ± 0.00			
Cloudy	F2 (micro)	↑	0.73 ± 0.02	0.73 ± 0.02	$0.74 {\pm} 0.02$	$0.74 {\pm} 0.01$	0.72 ± 0.01			
	F2 (macro)	↑	0.58 ± 0.03	0.60 ± 0.02	0.60 ± 0.04	$0.61 {\pm} 0.03$	0.56 ± 0.02			
	F2 (sample)	↑	0.75 ± 0.02	0.75 ± 0.01	0.75 ± 0.02	$0.76 {\pm} 0.01$	0.74 ± 0.01			
	F1 (micro)	1	$0.71 {\pm} 0.02$	0.66 ± 0.05	0.69 ± 0.02	0.67 ± 0.03	0.67 ± 0.02			
	F1 (macro)	↑	$0.47{\pm}0.02$	0.41 ± 0.03	0.43 ± 0.02	$0.41 {\pm} 0.01$	0.43 ± 0.02			
Cloudy	F1 (sample)	↑	0.71 ± 0.02	0.65 ± 0.07	0.69 ± 0.03	0.67 ± 0.03	0.67 ± 0.03			
Handpicked	F2 (micro)	↑	0.70 ± 0.03	0.63 ± 0.07	0.67 ± 0.03	$0.65 {\pm} 0.03$	0.63 ± 0.03			
	F2 (macro)	↑	$0.45{\pm}0.02$	0.40 ± 0.04	0.41 ± 0.02	0.40 ± 0.02	0.40 ± 0.02			
	F2 (sample)	↑	0.71 ± 0.03	$0.65 {\pm} 0.08$	0.68 ± 0.03	0.67 ± 0.03	0.66 ± 0.03			
	F1 (micro)	1	$0.78 {\pm} 0.01$	$0.78 {\pm} 0.01$	0.78 ± 0.02	$0.78 {\pm} 0.01$	0.73 ± 0.01			
	F1 (macró)	†	0.52 ± 0.03	0.52 ± 0.03	$0.51 {\pm} 0.04$	$0.53 {\pm} 0.02$	0.47 ± 0.03			
Snow	F1 (samplé)	†	0.77 ± 0.01	0.77 ± 0.02	$0.78 {\pm} 0.02$	$0.78 {\pm} 0.01$	0.72 ± 0.01			
and Ice	F2 (micro)	<u>†</u>	0.77 ± 0.03	0.78 ± 0.02	0.77 ± 0.03	$0.79 {\pm} 0.01$	0.70 ± 0.02			
	F2 (macró)	<u>†</u>	0.49 ± 0.04	0.50 ± 0.02	0.49 ± 0.05	$0.51 {\pm} 0.01$	0.43 ± 0.03			
	F2 (samplé)	<u>†</u>	0.78 ± 0.03	0.78 ± 0.02	0.78 ± 0.02	$0.79 {\pm} 0.01$	0.71 ± 0.02			
	F1 (micro)	<u></u>	$0.76 {\pm} 0.01$	0.76 ± 0.00	0.76 ± 0.00	0.76 ± 0.00	0.74±0.00			
	F1 (macró)	†	0.70 ± 0.01	0.71 ± 0.00	0.70 ± 0.01	$0.72 {\pm} 0.00$	0.68 ± 0.00			
Optical	F1 (sample)	↑	$0.77{\pm}0.01$	0.77 ± 0.00	$0.77 {\pm} 0.00$	$0.77 {\pm} 0.00$	0.75 ± 0.00			
Only	F2 (micro)	†	0.74 ± 0.01	$0.75 {\pm} 0.00$	0.74 ± 0.01	$0.75 {\pm} 0.01$	0.71 ± 0.01			
	F2 (macró)	†	$0.68 {\pm} 0.01$	$0.69 {\pm} 0.01$	$0.68 {\pm} 0.01$	$0.69 {\pm} 0.00$	0.63 ± 0.00			
	F2 (samplé)	†	0.76 ± 0.01	0.76 ± 0.00	0.76 ± 0.01	$0.77 {\pm} 0.00$	0.73 ± 0.01			
	F1 (micro)	<u></u>	$0.69{\pm}0.01$	0.67 ± 0.03	$0.69{\pm}0.02$	$0.68 {\pm} 0.01$	0.67 ± 0.01			
	F1 (macró)	†	$0.60 {\pm} 0.01$	0.59 ± 0.04	$0.60 {\pm} 0.02$	$0.60 {\pm} 0.01$	$0.56 {\pm} 0.01$			
SAR	F1 (samplé)	†	$0.70 {\pm} 0.01$	0.68 ± 0.03	$0.70 {\pm} 0.02$	$0.69 {\pm} 0.01$	$0.68 {\pm} 0.01$			
Only	F2 (micro)	†	$0.67{\pm}0.01$	0.65 ± 0.03	$0.67{\pm}0.03$	$0.66 {\pm} 0.01$	$0.63 {\pm} 0.01$			
-	F2 (macró)	†	$0.57{\pm}0.02$	$0.56 {\pm} 0.05$	$0.57{\pm}0.03$	$0.57 {\pm} 0.01$	0.52 ± 0.02			
	F2 (samplé)	†	$0.69 {\pm} 0.01$	0.67 ± 0.03	$0.69 {\pm} 0.03$	$0.68 {\pm} 0.01$	$0.65 {\pm} 0.01$			
	F1 (micro)	<u></u>	0.49 ± 0.12	0.57 ± 0.11	0.63 ± 0.09	$0.61 {\pm} 0.07$	$0.66{\pm}0.01$			
	F1 (macró)	†	$0.36 {\pm} 0.12$	$0.46 {\pm} 0.12$	$0.52 {\pm} 0.11$	$0.52 {\pm} 0.08$	$0.54 {\pm} 0.03$			
Optical Corrupted	F1 (sample)	↑	0.47 ± 0.13	$0.56 {\pm} 0.11$	$0.62 {\pm} 0.10$	$0.61 {\pm} 0.07$	$0.66 {\pm} 0.02$			
	F2 (micro)	↑	0.43 ± 0.12	0.53 ± 0.10	0.59 ± 0.09	0.58 ± 0.07	$0.62 {\pm} 0.02$			
	F2 (macró)	†	$0.32 {\pm} 0.11$	0.43 ± 0.10	0.48 ± 0.10	0.49 ± 0.08	$0.50 {\pm} 0.03$			
	F2 (samplé)	†	0.44 ± 0.13	$0.54 {\pm} 0.11$	$0.60 {\pm} 0.10$	0.60 ± 0.08	$0.64{\pm}0.02$			
	F1 (micro)	\uparrow	0.32±0.04	0.45±0.13	0.45±0.15	0.49 ± 0.14	$0.54{\pm}0.10$			
	F1 (macro)	<u>†</u>	0.17 ± 0.02	0.30 ± 0.16	0.32 ± 0.17	$0.36 {\pm} 0.16$	$0.39 {\pm} 0.15$			
SAR	F1 (sample)	<u>†</u>	0.30 ± 0.05	0.43 ± 0.14	0.42 ± 0.16	0.47 ± 0.15	$0.55{\pm}0.10$			
Corrupted	F2 (micro)	<u> </u>	0.31 ± 0.05	0.41 ± 0.12	0.41 ± 0.15	0.45 ± 0.14	$0.48 {\pm} 0.11$			
	F2 (macro)	†	0.20 ± 0.02	0.31 ± 0.14	0.32 ± 0.14	$0.37{\pm}0.15$	$0.37{\pm}0.13$			
	F2 (sample)	†	0.30 ± 0.05	0.41 ± 0.14	0.40 ± 0.16	0.45 ± 0.15	0.51 ± 0.11			
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Table 2 Evaluation of the proposed method and the baseline approaches on different test settings. The results are given as mean and standard deviation over five runs. Based on the results in Table 1 we use the fusion stage 4 for the proposed approaches. For the Optical Only and for the SAR Only approaches only the results with available data is listed, for the Baseline fusion approaches, the missing modalities are masked out with zeros.

Data Set	Metric					Approach			
			Baseline Fusion (early)	Baseline Fusion (late)	Embrace Net	Optical Only	SAR Only	Non- Adaptive Fusion (proposed)	Adaptive Fusion (proposed)
	F1 Score (micro)	↑	$0.77 {\pm} 0.00$	$0.76 {\pm} 0.01$	$0.76 {\pm} 0.01$	$0.76 {\pm} 0.01$	$0.71 {\pm} 0.01$	$0.77{\pm}0.00$	$0.77{\pm}0.00$
	F1 Score (macro)	↑	0.72 ± 0.01	0.71 ± 0.01	0.72 ± 0.01	0.71 ± 0.00	0.63 ± 0.01	0.73±0.00	0.72 ± 0.01
Testing -	F1 Score (sample) F2 Score (micro)	↑ ↑	0.77 ± 0.00 0.75 ± 0.00	0.77 ± 0.01 0.75 ± 0.00	$0.77{\pm}0.01$ $0.75{\pm}0.01$	0.77 ± 0.01 0.75 ± 0.00	0.71 ± 0.01 0.69 ± 0.01	$0.78 {\pm} 0.00 \ 0.76 {\pm} 0.00$	$0.78{\pm}0.00\ 0.76{\pm}0.00$
	F2 Score (macro)	†	0.70 ± 0.01	0.69 ± 0.01	0.70 ± 0.01	0.69 ± 0.00	0.61 ± 0.01	0.72 ± 0.00	0.71 ± 0.01
	F2 Score (samplé)	1	0.77 ± 0.00	0.76 ± 0.00	0.77 ± 0.01	0.77 ± 0.00	0.71 ± 0.01	$0.78 {\pm} 0.00$	0.77±0.00
	Avg. Entropy		0.30 ± 0.03	0.29±0.04	0.31 ± 0.02	0.29±0.04	0.36 ± 0.03	0.31 ± 0.02	0.34 ± 0.02
	Calibration Error F1 Score (micro)	<u>↓</u>	0.02 ± 0.01 0.72 ± 0.01	0.03 ± 0.02 0.71 ± 0.01	0.02 ± 0.01 0.71 ± 0.01	0.03 ± 0.02 0.71 ± 0.00	0.03 ± 0.02 0.73 ± 0.01	0.02 ± 0.01 0.75 ± 0.01	$\frac{0.02 \pm 0.00}{0.76 \pm 0.01}$
	F1 Score (macro)	<u></u>	0.61 ± 0.02	0.60 ± 0.02	0.59 ± 0.02	0.58 ± 0.02	0.61 ± 0.01	0.65 ± 0.02	0.64 ± 0.02
	F1 Score (sample)	†	0.72 ± 0.01	0.71 ± 0.01	0.70 ± 0.01	0.70 ± 0.00	$0.74 {\pm} 0.01$	$0.75 {\pm} 0.01$	$0.76 {\pm} 0.01$
Cloudy	F2 Score (micro)	↑	0.71 ± 0.01	0.69 ± 0.01	0.69 ± 0.01	0.69 ± 0.01	0.72 ± 0.01	0.73 ± 0.01	0.74 ± 0.01
	F2 Score (macro) F2 Score (sample)	↑ ↑	$0.59\pm0.02 \\ 0.72\pm0.01$	$0.58\pm0.02 \\ 0.71\pm0.01$	$0.56\pm0.01 \\ 0.70\pm0.01$	$0.55\pm0.03 \\ 0.70\pm0.01$	0.59 ± 0.02 0.74 ± 0.01	0.63 ± 0.02 0.75±0.01	$0.61{\pm}0.01 \\ 0.76{\pm}0.01$
-	Avg. Entropy		0.31±0.04	0.30 ± 0.05	0.32 ± 0.03	0.29±0.05	0.30 ± 0.03	0.30±0.02	0.34±0.02
	Calibration Érror	\downarrow	$0.04 {\pm} 0.01$	$0.04 {\pm} 0.02$	$0.03 {\pm} 0.01$	$0.04 {\pm} 0.02$	$0.03 {\pm} 0.01$	$0.02{\pm}0.01$	$0.02 {\pm} 0.00$
	F1 Score (micro)	†	0.46±0.04	0.45±0.04	0.45 ± 0.05	0.43±0.02	0.73 ± 0.01	0.55±0.05	0.67±0.03
	F1 Score (macro) F1 Score (sample)	↑ ↑	0.26 ± 0.03 0.43 ± 0.05	$0.26\pm0.02 \\ 0.41\pm0.04$	$0.26\pm0.03 \\ 0.40\pm0.04$	0.24 ± 0.01 0.39 ± 0.02	$0.47{\pm}0.01 \\ 0.73{\pm}0.01$	$0.33\pm0.04 \\ 0.53\pm0.05$	$0.41{\pm}0.01$ $0.67{\pm}0.03$
Very	F2 Score (micro)	†	0.43 ± 0.05 0.41 ± 0.05	0.41 ± 0.04 0.40 ± 0.04	0.40 ± 0.04 0.39 ± 0.05	0.39 ± 0.02 0.38 ± 0.03	0.73 ± 0.01 0.72 ± 0.01	0.53 ± 0.05 0.51 ± 0.05	0.65 ± 0.03
Cloudy	F2 Score (macro)	†	0.25 ± 0.03	0.25 ± 0.02	0.23 ± 0.03	$0.22 {\pm} 0.01$	$0.47{\pm}0.01$	0.32 ± 0.04	0.40 ± 0.02
	F2 Score (sample)	1	0.42±0.05	0.40±0.04	0.39 ± 0.05	0.37±0.03	0.74 ± 0.01	0.52±0.06	0.67±0.03
	Avg. Entropy		0.32 ± 0.05	0.33 ± 0.06	0.32 ± 0.04	0.30 ± 0.04	0.30 ± 0.03	0.31 ± 0.02	0.38±0.02 0.03 ± 0.00
	Calibration Error F1 Score (micro)	<u>↓</u>	0.12 ± 0.02 0.75 ± 0.01	0.12 ± 0.02 0.76 ± 0.00	0.11 ± 0.02 0.76 ± 0.01	0.12 ± 0.02 0.76 ± 0.01	0.03 ± 0.01 0.71 ± 0.01	0.08±0.01 0.78 ± 0.01	0.03 ± 0.00 0.78 ± 0.01
	F1 Score (macro)	†	0.49 ± 0.03	0.50 ± 0.02	0.51 ± 0.02	0.49 ± 0.02	0.48 ± 0.01	0.55 ± 0.02	0.53 ± 0.01
Snow	F1 Score (sample)	1	$0.74 {\pm} 0.01$	$0.76 {\pm} 0.01$	$0.76 {\pm} 0.01$	$0.75 {\pm} 0.01$	$0.70 {\pm} 0.01$	$0.78{\pm}0.01$	$0.78 {\pm} 0.02$
and Ice	F2 Score (micro)	↑	0.74 ± 0.03	0.76 ± 0.01	0.75 ± 0.02	0.74 ± 0.02	0.69 ± 0.01	0.79 ± 0.01	0.79 ± 0.01
	F2 Score (macro) F2 Score (sample)	↑ ↑	0.46 ± 0.03 0.74 ± 0.02	0.49 ± 0.03 0.77 ± 0.01	$0.48\pm0.03 \\ 0.76\pm0.02$	$0.46\pm0.02 \\ 0.75\pm0.02$	$0.46\pm0.01 \\ 0.70\pm0.01$	$0.53{\pm}0.01\ 0.80{\pm}0.01$	$0.51{\pm}0.01 \\ 0.79{\pm}0.01$
-	Avg. Entropy		0.29±0.03	0.28±0.02	0.29 ± 0.03	0.27±0.02	0.32±0.03	0.30±0.02	0.31±0.02
	Calibration Error	\downarrow	0.03 ± 0.02	$0.03 {\pm} 0.01$	0.03 ± 0.01	$0.03 {\pm} 0.01$	$0.04 {\pm} 0.01$	$0.02 {\pm} 0.01$	$0.02{\pm}0.00$
Unknown	Avg. Entropy	<u></u>	0.31 ± 0.03	0.30±0.01	0.29±0.03	0.31±0.02	0.25±0.03	0.36±0.03	0.80±0.04
Classes	F1 Score (micro) F1 Score (macro)	T ↑	0.52 ± 0.03 0.42 ± 0.04	$0.75\pm0.00 \\ 0.70\pm0.01$	0.76 ± 0.00 0.71 ± 0.01	0.76 ± 0.01 0.71 ± 0.00	-	$0.76{\pm}0.00\ 0.72{\pm}0.00$	$0.76{\pm}0.00\ 0.72{\pm}0.00$
N4: :	F1 Score (sample)	†	0.52 ± 0.03	0.76 ± 0.01 0.76 ± 0.00	0.77 ± 0.00	0.77 ± 0.00	-	0.77 ± 0.00	0.77 ± 0.00
Missing SAR	F2 Score (micro)	†	$0.46 {\pm} 0.04$	0.74 ± 0.01	$0.76 {\pm} 0.00$	$0.75 {\pm} 0.00$	-	$0.75 {\pm} 0.01$	0.75 ± 0.01
JAIK	F2 Score (macro)	↑	0.39 ± 0.04	0.69 ± 0.02	0.72 ± 0.01	0.69 ± 0.00	-	0.69 ± 0.00	0.69 ± 0.00
-	F2 Score (sample) Avg. Entropy		0.49 ± 0.03 0.33 ± 0.04	0.76 ± 0.01 0.33 ± 0.04	0.77 ± 0.00 0.20 ± 0.01	0.77±0.00 0.29±0.04	-	0.78±0.00 0.33±0.02	$\frac{0.78\pm0.00}{0.31\pm0.02}$
	Calibration Error	\downarrow	0.10 ± 0.01	0.02 ± 0.04	0.06 ± 0.01	0.03 ± 0.02	-	0.01 ± 0.00	0.01 ± 0.02
	F1 Score (micro)	\uparrow	0.22 ± 0.01	0.48±0.02	0.52 ± 0.02	-	$0.71 {\pm} 0.01$	0.68 ± 0.01	0.68 ± 0.01
	F1 Score (macro)	↑	0.07 ± 0.01	0.40 ± 0.02	0.44 ± 0.01	-	0.63 ± 0.01	0.60 ± 0.01	0.60 ± 0.01
Missing	F1 Score (sample) F2 Score (micro)	↑	$0.23\pm0.01 \\ 0.19\pm0.01$	0.47 ± 0.02 0.49 ± 0.03	0.51 ± 0.01 0.54 ± 0.01	-	$0.71{\pm}0.01\ 0.69{\pm}0.01$	0.69 ± 0.01 0.66 ± 0.01	$0.69{\pm}0.01 \\ 0.66{\pm}0.01$
Optical	F2 Score (macro)	†	0.09 ± 0.00	0.41 ± 0.03	0.46 ± 0.01	_	0.61 ± 0.01	0.57 ± 0.01	0.57 ± 0.01
_	F2 Score (samplé)	<u>†</u>	$0.21 {\pm} 0.01$	$0.48 {\pm} 0.02$	$0.53 {\pm} 0.01$	-	$0.71 {\pm} 0.01$	$0.68 {\pm} 0.01$	0.68 ± 0.01
	Avg. Entropy		0.13 ± 0.02	0.74±0.08	0.59 ± 0.05	-	0.36±0.03	0.41±0.01	0.41 ± 0.01
	Calibration Error F1 Score (micro)	<u>↓</u>	0.27 ± 0.01 0.33 ± 0.02	0.11 ± 0.01 0.36 ± 0.04	0.08 ± 0.02 0.38 ± 0.02	- 0.25±0.06	0.03±0.02 0.71±0.01	0.02±0.00 0.41±0.03	$\frac{0.02\pm0.00}{0.61\pm0.07}$
Optical Corrupted	F1 Score (macro)	†	0.18 ± 0.02	0.18 ± 0.02	0.19 ± 0.02	0.12 ± 0.02	0.63 ± 0.01	0.41 ± 0.05 0.27 ± 0.06	0.52 ± 0.08
	F1 Score (sample)	†	0.32 ± 0.02	0.34 ± 0.04	0.36 ± 0.02	0.23 ± 0.06	$0.71 {\pm} 0.01$	0.40 ± 0.02	0.61 ± 0.07
	F2 Score (micro)	↑	0.31 ± 0.03	0.34 ± 0.06	0.36 ± 0.04	0.23±0.07	0.69 ± 0.01	0.38±0.03	0.58 ± 0.07
	F2 Score (macro) F2 Score (sample)	↑ ↑	$0.19\pm0.03 \\ 0.31\pm0.03$	0.21 ± 0.04 0.33 ± 0.05	0.22 ± 0.03 0.36 ± 0.03	$0.14\pm0.03 \\ 0.22\pm0.07$	$0.61{\pm}0.01 \\ 0.71{\pm}0.01$	$0.27{\pm}0.04$ $0.38{\pm}0.02$	$0.49{\pm}0.08 \\ 0.60{\pm}0.08$
	Avg. Entropy		0.51 ± 0.03 0.50 ± 0.04	0.33 ± 0.05 0.37 ± 0.06	0.30 ± 0.03 0.39 ± 0.10	0.22 ± 0.07 0.45 ± 0.10	0.71 ± 0.01 0.36 ± 0.03	0.36 ± 0.02 0.44 ± 0.10	0.53±0.05
	Calibration Error	\downarrow	0.14 ± 0.02	0.19 ± 0.05	0.18 ± 0.04	0.18 ± 0.04	0.03 ± 0.02	0.12 ± 0.06	0.04 ± 0.02
	F1 Score (micro)	1	0.64±0.02	0.55±0.07	0.48±0.05	0.76±0.01	0.23±0.05	0.37±0.06	0.49±0.14
	F1 Score (macro)	↑	0.56 ± 0.02	0.45 ± 0.08	0.37 ± 0.03	0.71 ± 0.00	0.09 ± 0.04	0.25 ± 0.03	0.36 ± 0.16
SAR	F1 Score (sample) F2 Score (micro)	↑ ↑	$0.63\pm0.02 \\ 0.60\pm0.02$	$0.54\pm0.08 \\ 0.52\pm0.06$	$0.46\pm0.05 \\ 0.46\pm0.04$	$0.77{\pm}0.01\ 0.75{\pm}0.00$	0.23 ± 0.04 0.23 ± 0.08	0.35 ± 0.06 0.35 ± 0.05	$0.47{\pm}0.15 \\ 0.45{\pm}0.14$
Corrupted	F2 Score (macro)	<u></u>	0.54 ± 0.02	0.32 ± 0.00 0.44 ± 0.07	0.40 ± 0.04 0.37 ± 0.04	0.69 ± 0.00	0.23 ± 0.05 0.12 ± 0.05	0.33 ± 0.03 0.27 ± 0.04	0.43 ± 0.14 0.37 ± 0.15
	F2 Score (samplé)	<u></u>	$0.61 {\pm} 0.02$	$0.53 {\pm} 0.07$	$0.46 {\pm} 0.03$	$0.77{\pm}0.00$	$0.22 {\pm} 0.07$	$0.34 {\pm} 0.06$	$0.45{\pm}0.15$
-	Avg. Entropy		0.39±0.03	0.27±0.05	0.26±0.03	0.29±0.04	0.31±0.17	0.36±0.05	0.39±0.05
	Calibration Error		0.04 ± 0.01	0.13 ± 0.04	0.16 ± 0.03	0.18±0.04	0.03 ± 0.02	0.26±0.11	0.10±0.04

Table 3 Separation of in-distribution samples and OOD samples. The given values only indicate how well the considered approaches and metrics separate the given data sets. For the cloudy data set, for example, many samples contain almost no clouds and hence the sample might not be interpreted as a clear OOD example. For the Optical Only and for the SAR Only approaches only the results with available data is listed, for the Baseline fusion approaches, the missing modalities are masked out with zeros. For cases, where the separation of in-distribution and OOD examples is clear, the direction of improvement is indicated by an arrow.

Data Set	Metric	Approach							
			Baseline Fusion (early)	Baseline Fusion (late)	Embrace Net	Optical Only	SAR Only	Non- Adaptive Fusion (proposed)	Adaptive Fusion (proposed)
Cloudy	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)		$0.72\pm0.03 \\ 0.71\pm0.03 \\ 0.62\pm0.01 \\ 0.70\pm0.03$	0.73±0.04 0.73±0.04 0.63±0.02 0.73±0.05	$0.70\pm0.03 \\ 0.69\pm0.03 \\ 0.62\pm0.01 \\ 0.68\pm0.04$	0.73±0.02 0.73±0.01 0.63±0.01 0.72±0.02	$0.62\pm0.04 \\ 0.59\pm0.03 \\ 0.59\pm0.01 \\ 0.56\pm0.03$	$0.67{\pm}0.03 \\ 0.65{\pm}0.03 \\ 0.60{\pm}0.01 \\ 0.65{\pm}0.03$	0.72 ± 0.03 0.71 ± 0.04 0.63 ± 0.01 0.72 ± 0.03
Cloudy Handpicked	AUPR (avg. entropy)		0.72±0.08 0.72±0.08 0.61±0.04 0.69±0.08	0.78±0.06 0.78±0.07 0.65±0.02 0.76±0.08	0.69 ± 0.07 0.68 ± 0.07 0.60 ± 0.04 0.66 ± 0.07	0.74±0.06 0.75±0.04 0.62±0.03 0.73±0.05	0.63±0.05 0.59±0.05 0.57±0.02 0.58±0.05	0.68±0.05 0.68±0.06 0.58±0.03 0.68±0.05	0.77±0.05 0.77±0.07 0.64±0.02 0.77±0.07
Snow and Ice	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)		0.62±0.08 0.60±0.09 0.59±0.04 0.55±0.07	0.63±0.05 0.62±0.06 0.60±0.02 0.56±0.05	0.60±0.05 0.58±0.06 0.59±0.02 0.52±0.04	0.63 ± 0.06 0.61 ± 0.08 0.60 ± 0.02 0.56 ± 0.06	0.58 ± 0.02 0.55 ± 0.02 0.58 ± 0.01 0.54 ± 0.02	0.62 ± 0.03 0.61 ± 0.05 0.60 ± 0.01 0.55 ± 0.04	0.62±0.03 0.60±0.04 0.60±0.01 0.56±0.03
Unknown Classes	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)	$\uparrow \uparrow \uparrow$	$0.68\pm0.05 \\ 0.67\pm0.04 \\ 0.62\pm0.02 \\ 0.54\pm0.03$	$0.69\pm0.07 \\ 0.69\pm0.08 \\ 0.62\pm0.02 \\ 0.56\pm0.06$	$0.64\pm0.07 \\ 0.61\pm0.05 \\ 0.61\pm0.03 \\ 0.51\pm0.03$	0.72 ± 0.10 0.71 ± 0.08 0.63 ± 0.03 0.58 ± 0.06	0.41±0.12 0.42±0.11 0.42±0.12 0.43±0.05	0.73 ± 0.08 0.74 ± 0.05 0.63 ± 0.02 0.62 ± 0.05	0.86 ± 0.05 0.91 ± 0.04 0.66 ± 0.02 0.94 ± 0.02
Missing SAR	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)		0.54±0.03 0.57±0.03 0.52±0.02 0.57±0.04	0.58±0.01 0.59±0.01 0.55±0.01 0.60±0.01	0.31±0.01 0.28±0.01 0.31±0.01 0.37±0.00	- - -	- - -	$0.54\pm0.01 \\ 0.54\pm0.01 \\ 0.52\pm0.01 \\ 0.54\pm0.01$	0.48±0.01 0.48±0.01 0.48±0.00 0.47±0.01
Missing Optical	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)		0.13±0.05 0.13±0.06 0.18±0.05 0.33±0.01	$0.99\pm0.01 \\ 0.99\pm0.01 \\ 0.69\pm0.00 \\ 0.99\pm0.01$	0.90±0.03 0.92±0.02 0.68±0.00 0.93±0.02	- - -	- - -	$0.66\pm0.03 \\ 0.68\pm0.03 \\ 0.60\pm0.01 \\ 0.69\pm0.03$	0.64 ± 0.03 0.65 ± 0.03 0.59 ± 0.02 0.60 ± 0.02
Optical Corrupted	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)		0.86±0.03 0.88±0.02 0.67±0.01 0.84±0.03	0.66±0.06 0.70±0.08 0.61±0.02 0.60±0.08	0.66±0.17 0.67±0.18 0.60±0.08 0.60±0.16	0.81±0.12 0.82±0.13 0.65±0.03 0.74±0.17	- - -	0.72 ± 0.14 0.76 ± 0.15 0.63 ± 0.05 0.69 ± 0.15	0.76±0.05 0.79±0.05 0.64±0.02 0.74±0.03
SAR Corrupted	AUROC (avg. conf) AUROC (avg. entropy) AUPR (avg. conf) AUPR (avg. entropy)		$0.65\pm0.02 \\ 0.68\pm0.02 \\ 0.59\pm0.01 \\ 0.68\pm0.02$	0.45±0.06 0.45±0.07 0.49±0.04 0.45±0.06	0.39±0.04 0.39±0.04 0.46±0.03 0.41±0.02	- - - -	0.44±0.32 0.46±0.32 0.42±0.25 0.48±0.14	$0.58\pm0.08 \\ 0.61\pm0.08 \\ 0.57\pm0.04 \\ 0.55\pm0.07$	0.59±0.09 0.62±0.09 0.58±0.04 0.56±0.08

2 Data Distributions



