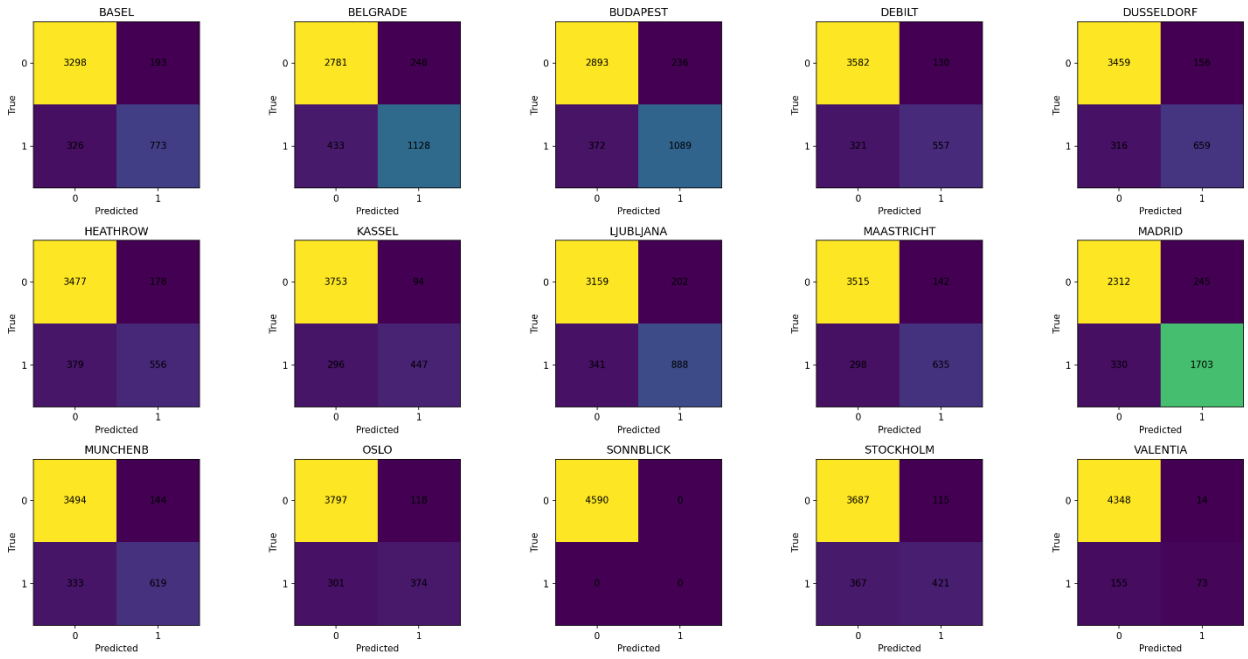

Figure 1: Confusion matrices for each weather station.

The KNN multi-label classifier performed moderately well on the pleasant-weather prediction task. Exact-match test accuracy peaked at **46.2 %** with **k = 4**, while training accuracy dropped from 1.00 at k = 1 to 0.52, indicating reduced overfitting. The steep gap between training and testing accuracy at k = 1 shows that the model memorized the training data. As k increased, predictions generalized better. Most stations displayed strong diagonal confusion-matrix patterns, though a few (like Sonnblick) had heavily imbalanced labels with almost no “pleasant” cases. Overall, the model captured general station trends but struggled with borderline or rare conditions.

KNN Multi-Label Pleasant-Weather Prediction
==========
Train size: 18,360 | Test size: 4,590
k tested: [1, 2, 3, 4]
Train accuracy per k: 1.0000, 0.5650, 0.5706, 0.5233
Test accuracy per k: 0.4259, 0.4451, 0.4577, 0.4623

Best k by test accuracy: 4
Final train exact-match accuracy: 0.5233
Final test exact-match accuracy: 0.4623

	Weather Station	Accurate predictions	False positive	False negative	Accuracy rate
0	BASEL	4071	193	326	88.7%
1	BELGRADE	3909	248	433	85.2%
2	BUDAPEST	3982	236	372	86.8%
3	DEBILT	4139	130	321	90.2%
4	DUSSELDORF	4118	156	316	89.7%
5	HEATHROW	4033	178	379	87.9%
6	KASSEL	4200	94	296	91.5%
7	LJUBLJANA	4047	202	341	88.2%
8	MAASTRICHT	4150	142	298	90.4%
9	MADRID	4015	245	330	87.5%
10	MUNCHENB	4113	144	333	89.6%
11	OSLO	4171	118	301	90.9%
12	SONNBLICK	4590	0	0	100.0%
13	STOCKHOLM	4108	115	367	89.5%
14	VALENTIA	4421	14	155	96.3%
15	Average				90.2%

Table 1: Station-wise performance summary of the final KNN model.