

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING

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Informações gerais

Total de registros: 19957

Total de cidades: 5

Total de condições climáticas: 12

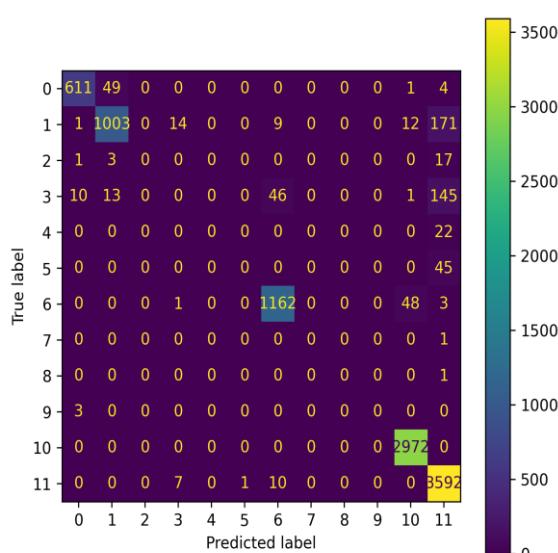
Total de temperaturas: 51

Condições climáticas

Regressão logística

Condição	Precision	Recall	F1-Score	Support
Chuva	0.98	0.92	0.95	665
Chuvas esparsas	0.94	0.83	0.88	1210
Chuviscos	0.0	0.0	0.0	21
Neblina	0.0	0.0	0.0	215
Neve	0.0	0.0	0.0	22
Neve baixa	0.0	0.0	0.0	45
Parcialmente nublado	0.95	0.96	0.95	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	0.98	1.0	0.99	2972
Tempo nublado	0.9	1.0	0.94	3610

Acurácia: 93.60%



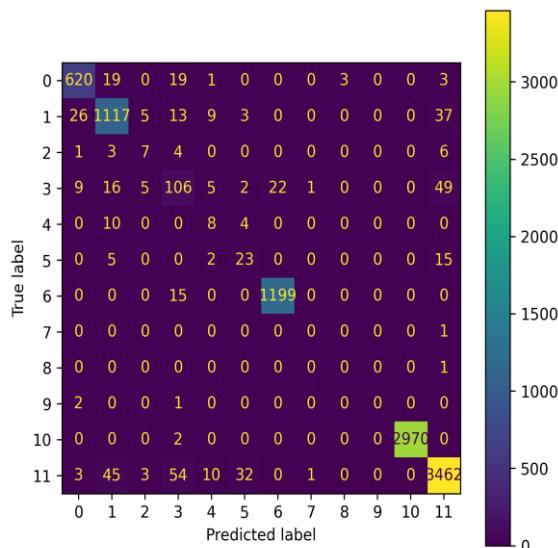
Matriz de confusão

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING

Árvore de decisão

Condição	Precision	Recall	F1-Score	Support
Chuva	0.94	0.93	0.94	665
Chuvas esparsas	0.92	0.92	0.92	1210
Chuviscos	0.35	0.33	0.34	21
Neblina	0.5	0.49	0.49	215
Neve	0.23	0.36	0.28	22
Neve baixa	0.36	0.51	0.42	45
Parcialmente nublado	0.98	0.99	0.98	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	1.0	1.0	1.0	2972
Tempo nublado	0.97	0.96	0.96	3610

Acurácia: 95.32%



Matriz de confusão

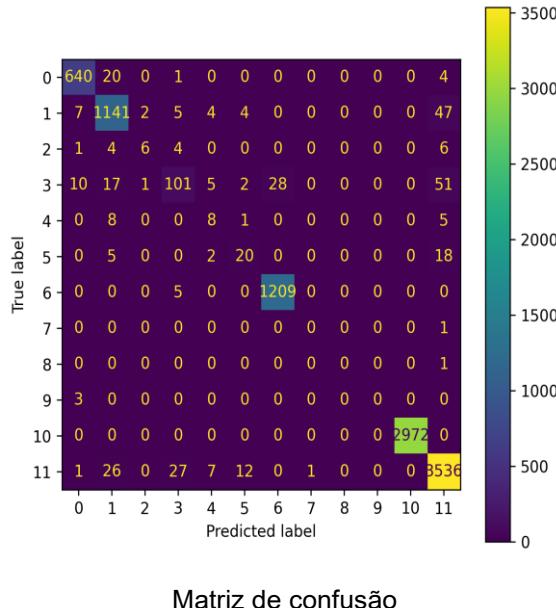
Floresta aleatória

Condição	Precision	Recall	F1-Score	Support
Chuva	0.97	0.96	0.96	665
Chuvas esparsas	0.93	0.94	0.94	1210
Chuviscos	0.67	0.29	0.4	21
Neblina	0.71	0.47	0.56	215
Neve	0.31	0.36	0.33	22
Neve baixa	0.51	0.44	0.48	45
Parcialmente nublado	0.98	1.0	0.99	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING

Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	1.0	1.0	1.0	2972
Tempo nublado	0.96	0.98	0.97	3610

Acurácia: 96.53%



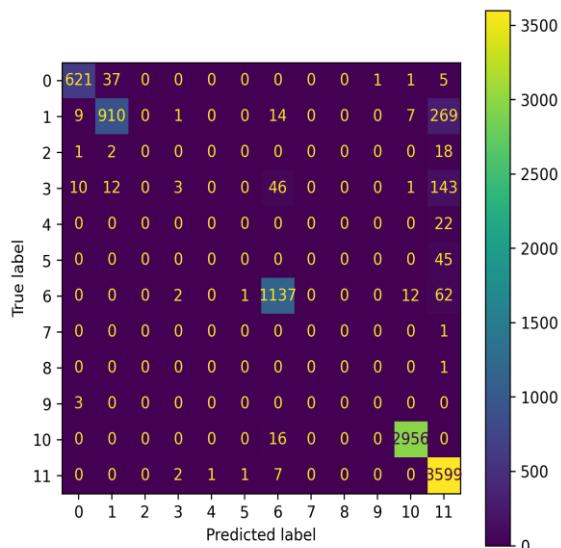
Matriz de confusão

Multi-layer Perceptron (ADAM)

Condição	Precision	Recall	F1-Score	Support
Chuva	0.96	0.93	0.95	665
Chuvas esparsas	0.95	0.75	0.84	1210
Chuviscos	0.0	0.0	0.0	21
Neblina	0.38	0.01	0.03	215
Neve	0.0	0.0	0.0	22
Neve baixa	0.0	0.0	0.0	45
Parcialmente nublado	0.93	0.94	0.93	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	0.99	0.99	0.99	2972
Tempo nublado	0.86	1.0	0.93	3610

Acurácia: 92.45%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



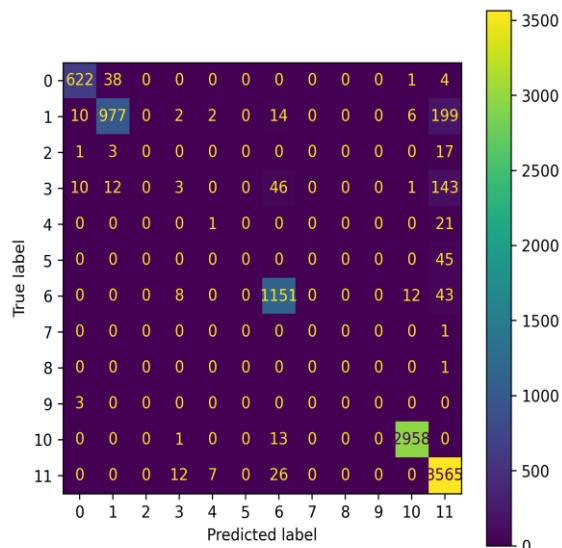
Matriz de confusão

Multi-layer Perceptron (LBFGS)

Condição	Precision	Recall	F1-Score	Support
Chuva	0.96	0.94	0.95	665
Chuvas esparsas	0.95	0.81	0.87	1210
Chuviscos	0.0	0.0	0.0	21
Neblina	0.12	0.01	0.02	215
Neve	0.1	0.05	0.06	22
Neve baixa	0.0	0.0	0.0	45
Parcialmente nublado	0.92	0.95	0.93	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	0.99	1.0	0.99	2972
Tempo nublado	0.88	0.99	0.93	3610

Acurácia: 92.97%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



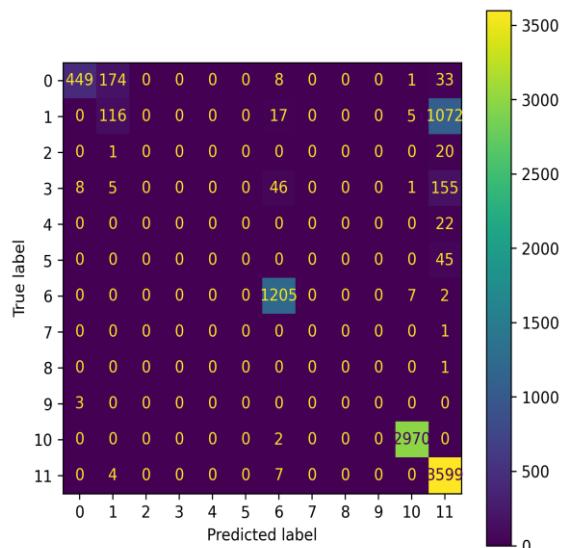
Matriz de confusão

SVM - Support Vector Machine (RBF)

Condição	Precision	Recall	F1-Score	Support
Chuva	0.98	0.68	0.8	665
Chuvas esparsas	0.39	0.1	0.15	1210
Chuviscos	0.0	0.0	0.0	21
Neblina	0.0	0.0	0.0	215
Neve	0.0	0.0	0.0	22
Neve baixa	0.0	0.0	0.0	45
Parcialmente nublado	0.94	0.99	0.96	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	1.0	1.0	1.0	2972
Tempo nublado	0.73	1.0	0.84	3610

Acurácia: 83.57%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



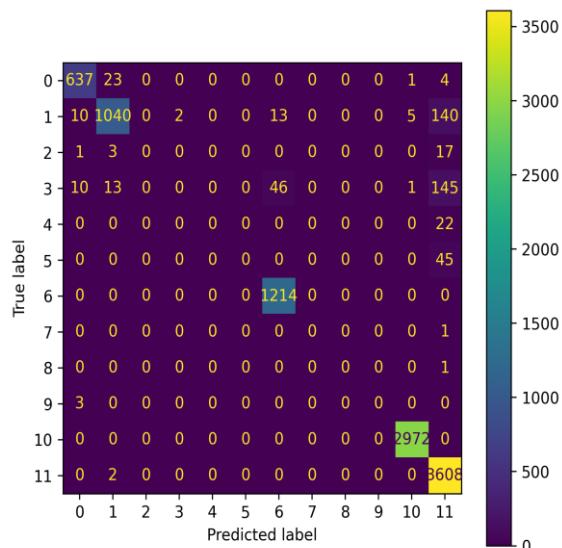
Matriz de confusão

SVM - Support Vector Machine (Linear)

Condição	Precision	Recall	F1-Score	Support
Chuva	0.96	0.96	0.96	665
Chuvas esparsas	0.96	0.86	0.91	1210
Chuviscos	0.0	0.0	0.0	21
Neblina	0.0	0.0	0.0	215
Neve	0.0	0.0	0.0	22
Neve baixa	0.0	0.0	0.0	45
Parcialmente nublado	0.95	1.0	0.98	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	1.0	1.0	1.0	2972
Tempo nublado	0.91	1.0	0.95	3610

Acurácia: 94.91%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



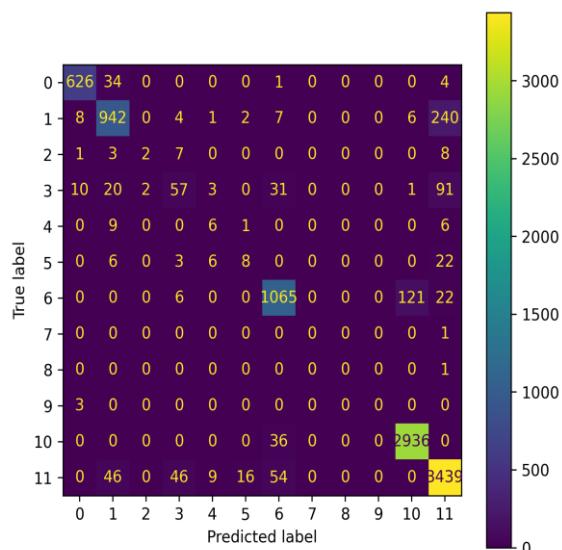
Matriz de confusão

K Neighbors

Condição	Precision	Recall	F1-Score	Support
Chuva	0.97	0.94	0.95	665
Chuvas esparsas	0.89	0.78	0.83	1210
Chuviscos	0.5	0.1	0.16	21
Neblina	0.46	0.27	0.34	215
Neve	0.24	0.27	0.26	22
Neve baixa	0.3	0.18	0.22	45
Parcialmente nublado	0.89	0.88	0.88	1214
Tempestade de areia	0.0	0.0	0.0	1
Tempestades	0.0	0.0	0.0	1
Tempestades isoladas	0.0	0.0	0.0	3
Tempo limpo	0.96	0.99	0.97	2972
Tempo nublado	0.9	0.95	0.92	3610

Acurácia: 91.00%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



Matriz de confusão

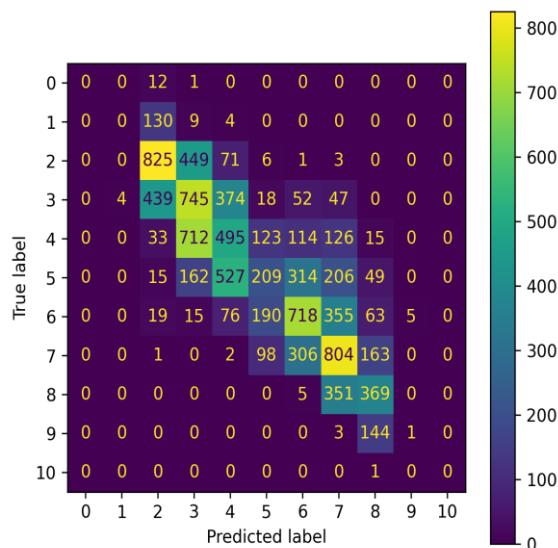
Temperaturas

Rregressão logística

Temperatura	Precision	Recall	F1-Score	Support
-10	0.0	0.0	0.0	13
-5	0.0	0.0	0.0	143
0	0.56	0.61	0.58	1355
5	0.36	0.44	0.4	1679
10	0.32	0.31	0.31	1618
15	0.32	0.14	0.2	1482
20	0.48	0.5	0.49	1441
25	0.42	0.59	0.49	1374
30	0.46	0.51	0.48	725
35	0.17	0.01	0.01	148
40	0.0	0.0	0.0	1

Acurácia: 41.75%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



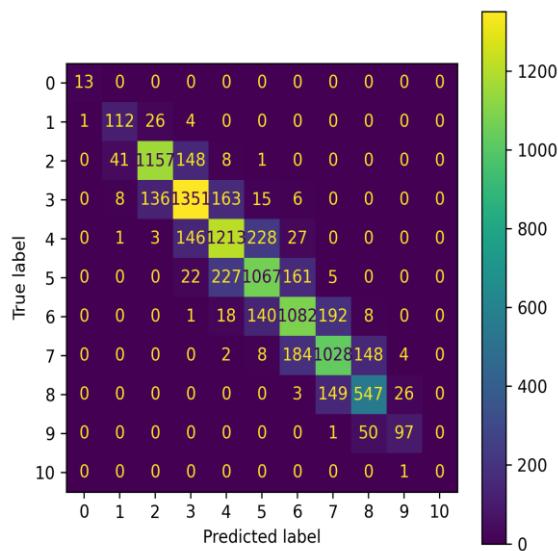
Matriz de confusão

Árvore de decisão

Temperatura	Precision	Recall	F1-Score	Support
-10	0.93	1.0	0.96	13
-5	0.69	0.78	0.73	143
0	0.88	0.85	0.86	1355
5	0.81	0.8	0.81	1679
10	0.74	0.75	0.75	1618
15	0.73	0.72	0.73	1482
20	0.74	0.75	0.75	1441
25	0.75	0.75	0.75	1374
30	0.73	0.75	0.74	725
35	0.76	0.66	0.7	148
40	0.0	0.0	0.0	1

Acurácia: 76.83%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



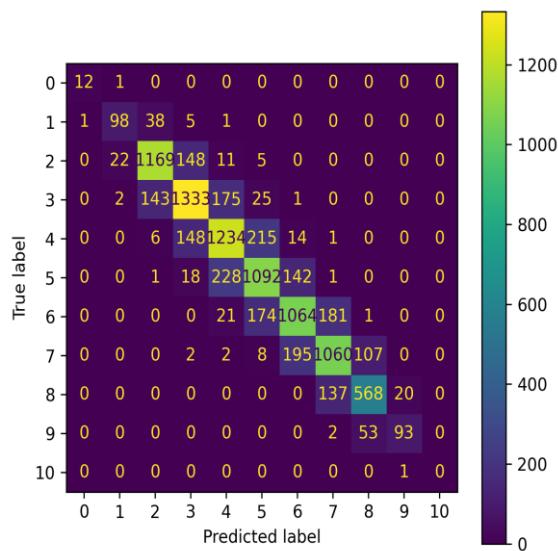
Matriz de confusão

Floresta aleatória

Temperatura	Precision	Recall	F1-Score	Support
-10	0.92	0.92	0.92	13
-5	0.8	0.69	0.74	143
0	0.86	0.86	0.86	1355
5	0.81	0.79	0.8	1679
10	0.74	0.76	0.75	1618
15	0.72	0.74	0.73	1482
20	0.75	0.74	0.74	1441
25	0.77	0.77	0.77	1374
30	0.78	0.78	0.78	725
35	0.82	0.63	0.71	148
40	0.0	0.0	0.0	1

Acurácia: 77.39%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



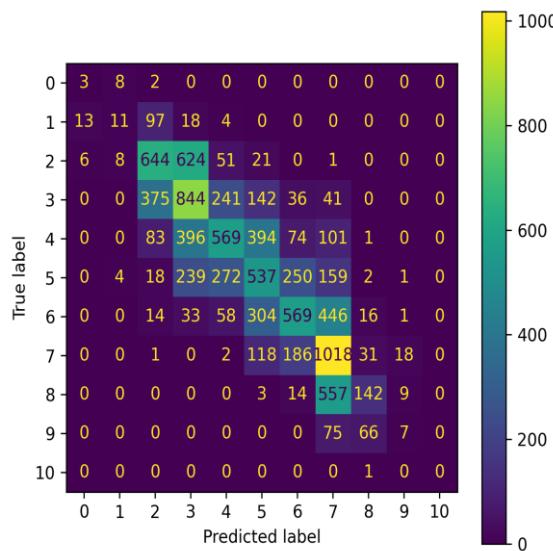
Matriz de confusão

Multi-layer Perceptron (ADAM)

Temperatura	Precision	Recall	F1-Score	Support
-10	0.14	0.23	0.17	13
-5	0.35	0.08	0.13	143
0	0.52	0.48	0.5	1355
5	0.39	0.5	0.44	1679
10	0.48	0.35	0.4	1618
15	0.35	0.36	0.36	1482
20	0.5	0.39	0.44	1441
25	0.42	0.74	0.54	1374
30	0.55	0.2	0.29	725
35	0.19	0.05	0.08	148
40	0.0	0.0	0.0	1

Acurácia: 43.53%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



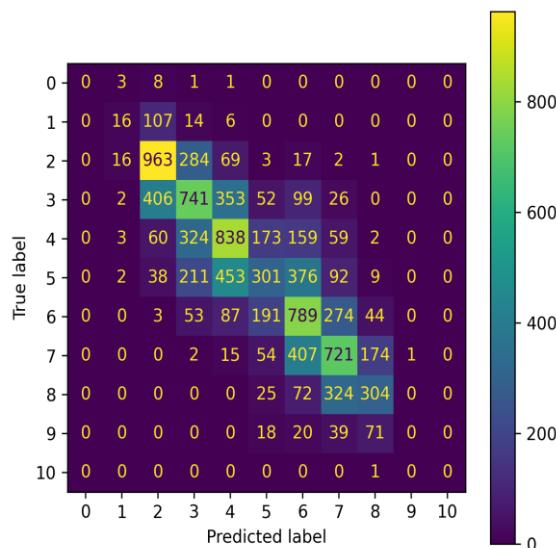
Matriz de confusão

Multi-layer Perceptron (LBFGS)

Temperatura	Precision	Recall	F1-Score	Support
-10	0.0	0.0	0.0	13
-5	0.38	0.11	0.17	143
0	0.61	0.71	0.66	1355
5	0.45	0.44	0.45	1679
10	0.46	0.52	0.49	1618
15	0.37	0.2	0.26	1482
20	0.41	0.55	0.47	1441
25	0.47	0.52	0.5	1374
30	0.5	0.42	0.46	725
35	0.0	0.0	0.0	148
40	0.0	0.0	0.0	1

Acurácia: 46.83%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



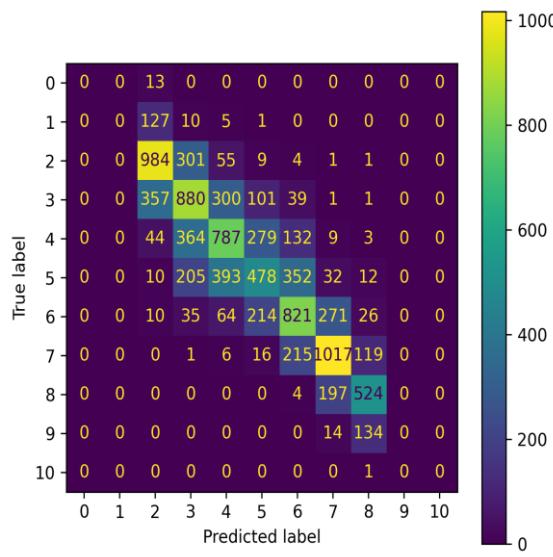
Matriz de confusão

SVM - Support Vector Machine (RBF)

Temperatura	Precision	Recall	F1-Score	Support
-10	0.0	0.0	0.0	13
-5	0.0	0.0	0.0	143
0	0.64	0.73	0.68	1355
5	0.49	0.52	0.51	1679
10	0.49	0.49	0.49	1618
15	0.44	0.32	0.37	1482
20	0.52	0.57	0.55	1441
25	0.66	0.74	0.7	1374
30	0.64	0.72	0.68	725
35	0.0	0.0	0.0	148
40	0.0	0.0	0.0	1

Acurácia: 55.03%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



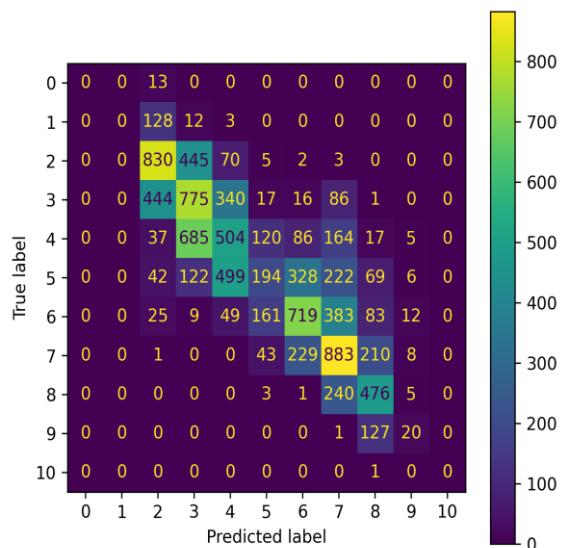
Matriz de confusão

SVM - Support Vector Machine (Linear)

Temperatura	Precision	Recall	F1-Score	Support
-10	0.0	0.0	0.0	13
-5	0.0	0.0	0.0	143
0	0.55	0.61	0.58	1355
5	0.38	0.46	0.42	1679
10	0.34	0.31	0.33	1618
15	0.36	0.13	0.19	1482
20	0.52	0.5	0.51	1441
25	0.45	0.64	0.53	1374
30	0.48	0.66	0.56	725
35	0.36	0.14	0.2	148
40	0.0	0.0	0.0	1

Acurácia: 44.10%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



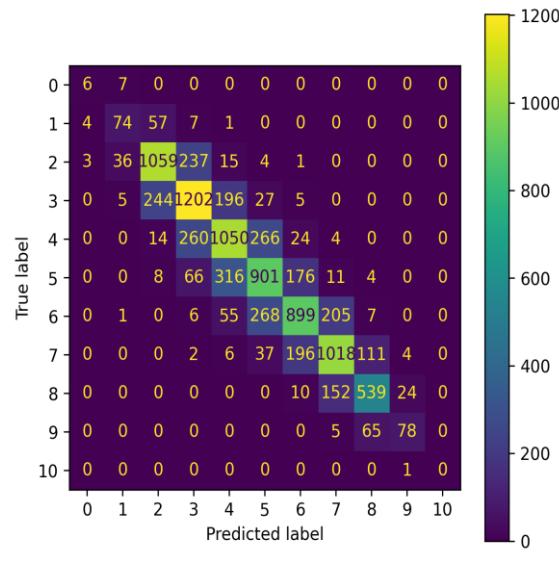
Matriz de confusão

K Neighbors

Temperatura	Precision	Recall	F1-Score	Support
-10	0.46	0.46	0.46	13
-5	0.6	0.52	0.56	143
0	0.77	0.78	0.77	1355
5	0.68	0.72	0.69	1679
10	0.64	0.65	0.64	1618
15	0.6	0.61	0.6	1482
20	0.69	0.62	0.65	1441
25	0.73	0.74	0.74	1374
30	0.74	0.74	0.74	725
35	0.73	0.53	0.61	148
40	0.0	0.0	0.0	1

Acurácia: 68.40%

ANÁLISE PREDITIVA DE DADOS METEOROLÓGICOS USANDO MACHINE LEARNING



Matriz de confusão