

Precipitación observada litros/hora

| Precipitación | Total | Porcentaje |
|---------------|-------|------------|
| 0.0 | 7439 | 89.8% |
| 0.1 | 168 | 2.0% |
| 0.2 | 89 | 1.1% |
| 0.3 | 63 | 0.8% |
| 0.4 | 55 | 0.7% |
| 0.5 | 54 | 0.7% |
| 0.6 | 28 | 0.3% |
| 0.7 | 26 | 0.3% |
| 1.3 | 21 | 0.3% |
| 0.8 | 20 | 0.2% |
| 1.0 | 20 | 0.2% |
| 1.8 | 19 | 0.2% |
| 0.9 | 17 | 0.2% |
| 1.5 | 16 | 0.2% |
| 1.1 | 15 | 0.2% |
| 1.2 | 14 | 0.2% |
| 0.6 | 13 | 0.2% |
| 0.3 | 10 | 0.1% |
| 1.9 | 10 | 0.1% |
| 1.4 | 9 | 0.1% |
| 2.3 | 8 | 0.1% |
| 3.1 | 8 | 0.1% |
| 2.5 | 6 | 0.1% |
| 2.2 | 6 | 0.1% |

Precipitación Total Porcentaje

1.7 5 0.1%

Puntos del modelo WRF (4Km) Meteogalicia

Nearest points



Pronóstico de los 4 puntos más cercanos día siguiente (D1)

prec0_1

| | Total | Porcentaje |
|------------------|-------|------------|
| no precipitación | 7151 | 86.5% |
| precipitación | 1114 | 13.5% |

prec1_1

| | Total | Porcentaje |
|------------------|-------|------------|
| no precipitación | 7036 | 85.1% |
| precipitación | 1229 | 14.9% |

prec2_1

| | Total | Porcentaje |
|------------------|-------|------------|
| no precipitación | 7048 | 85.3% |
| precipitación | 1217 | 14.7% |

prec3_1

| | Total | Porcentaje |
|------------------|-------|------------|
| no precipitación | 6924 | 83.8% |
| precipitación | 1341 | 16.2% |

Informe de calidad desagregado (modelo meteorológico D1)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec0_l | | | | |
| | precisión | recall | f1-score | support |
| no precipitación | 0.966298 | 0.910288 | 0.937458 | 7591.000000 |
| precipitación | 0.388689 | 0.642433 | 0.484340 | 674.000000 |
| accuracy | 0.888445 | 0.888445 | 0.888445 | 0.888445 |
| macro avg | 0.677494 | 0.776361 | 0.710899 | 8265.000000 |
| weighted avg | 0.919195 | 0.888445 | 0.900506 | 8265.000000 |

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec1_l | | | | |
| | precisión | recall | f1-score | support |
| no precipitación | 0.971575 | 0.900540 | 0.934710 | 7591.000000 |
| precipitación | 0.385679 | 0.703264 | 0.498161 | 674.000000 |
| accuracy | 0.884453 | 0.884453 | 0.884453 | 0.884453 |
| macro avg | 0.678627 | 0.801902 | 0.716435 | 8265.000000 |
| weighted avg | 0.923796 | 0.884453 | 0.899110 | 8265.000000 |

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec2_l | | | | |
| | precisión | recall | f1-score | support |
| no precipitación | 0.969921 | 0.900540 | 0.933944 | 7591.000000 |
| precipitación | 0.379622 | 0.685460 | 0.488630 | 674.000000 |
| accuracy | 0.883001 | 0.883001 | 0.883001 | 0.883001 |
| macro avg | 0.674771 | 0.793000 | 0.711287 | 8265.000000 |
| weighted avg | 0.921782 | 0.883001 | 0.897629 | 8265.000000 |

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec3_l | | | | |
| | precisión | recall | f1-score | support |
| no precipitación | 0.971693 | 0.886313 | 0.927041 | 7591.000000 |
| precipitación | 0.356450 | 0.709199 | 0.474442 | 674.000000 |
| accuracy | 0.871869 | 0.871869 | 0.871869 | 0.871869 |
| macro avg | 0.664072 | 0.797756 | 0.700741 | 8265.000000 |
| weighted avg | 0.921520 | 0.871869 | 0.890132 | 8265.000000 |

Matriz de Confusión (modelo meteorológico D1)

| | | | |
|--------------------------|------------------|---------------|------|
| prec0_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6910 | 681 | 7591 |
| precipitación | 241 | 433 | 674 |
| All | 7151 | 1114 | 8265 |
| Heidke Skill Score: 0.43 | | | |

| | | | |
|------------------|------------------|---------------|------|
| prec1_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6836 | 755 | 7591 |
| precipitación | 200 | 474 | 674 |
| All | 7036 | 1229 | 8265 |

Heidke Skill Score: 0.44

| | | | |
|------------------|------------------|---------------|------|
| prec2_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6836 | 755 | 7591 |
| precipitación | 212 | 462 | 674 |
| All | 7048 | 1217 | 8265 |

Heidke Skill Score: 0.43

| | | | |
|------------------|------------------|---------------|------|
| prec3_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6728 | 863 | 7591 |
| precipitación | 196 | 478 | 674 |
| All | 6924 | 1341 | 8265 |

Heidke Skill Score: 0.41

Matrices de confusión e informe de calidad del algoritmo D1(10 pruebas)

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1103 | 36 | 1139 |
| precipitación | 46 | 55 | 101 |
| All | 1149 | 91 | 1240 |

Heidke Skill Score: 0.54

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.959965 | 0.968393 | 0.964161 | 1139.000000 |
| precipitación | 0.604396 | 0.544554 | 0.572917 | 101.000000 |
| accuracy | 0.933871 | 0.933871 | 0.933871 | 0.933871 |
| macro avg | 0.782180 | 0.756474 | 0.768539 | 1240.000000 |
| weighted avg | 0.931003 | 0.933871 | 0.932293 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1089 | 49 | 1138 |
| precipitación | 38 | 64 | 102 |
| All | 1127 | 113 | 1240 |

Heidke Skill Score: 0.56

Informe de calidad desagregado (Machine Learning)

| | | | | |
|--|-----------|--------|----------|---------|
| | precision | recall | f1-score | support |
|--|-----------|--------|----------|---------|

| | | | | |
|------------------|----------|----------|----------|-------------|
| no precipitación | 0.966282 | 0.956942 | 0.961589 | 1138.000000 |
| precipitación | 0.566372 | 0.627451 | 0.595349 | 102.000000 |
| accuracy | 0.929839 | 0.929839 | 0.929839 | 0.929839 |
| macro avg | 0.766327 | 0.792196 | 0.778469 | 1240.000000 |
| weighted avg | 0.933386 | 0.929839 | 0.931463 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1088 | 28 | 1116 |
| precipitación | 49 | 75 | 124 |
| All | 1137 | 103 | 1240 |

Heidke Skill Score: 0.63

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.956904 | 0.974910 | 0.965823 | 1116.000000 |
| precipitación | 0.728155 | 0.604839 | 0.660793 | 124.000000 |
| accuracy | 0.937903 | 0.937903 | 0.937903 | 0.937903 |
| macro avg | 0.842530 | 0.789875 | 0.813308 | 1240.000000 |
| weighted avg | 0.934029 | 0.937903 | 0.935320 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1091 | 43 | 1134 |
| precipitación | 32 | 74 | 106 |
| All | 1123 | 117 | 1240 |

Heidke Skill Score: 0.63

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.971505 | 0.962081 | 0.966770 | 1134.000000 |
| precipitación | 0.632479 | 0.698113 | 0.663677 | 106.000000 |
| accuracy | 0.939516 | 0.939516 | 0.939516 | 0.939516 |
| macro avg | 0.801992 | 0.830097 | 0.815224 | 1240.000000 |
| weighted avg | 0.942524 | 0.939516 | 0.940860 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1109 | 43 | 1152 |
| precipitación | 26 | 62 | 88 |
| All | 1135 | 105 | 1240 |

Heidke Skill Score: 0.61

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.977093 | 0.962674 | 0.969829 | 1152.000000 |
| precipitación | 0.590476 | 0.704545 | 0.642487 | 88.000000 |
| accuracy | 0.944355 | 0.944355 | 0.944355 | 0.944355 |
| macro avg | 0.783784 | 0.833610 | 0.806158 | 1240.000000 |
| weighted avg | 0.949655 | 0.944355 | 0.946599 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1113 | 38 | 1151 |
| precipitación | 33 | 56 | 89 |
| All | 1146 | 94 | 1240 |

Heidke Skill Score: 0.58

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.971204 | 0.966985 | 0.969090 | 1151.000000 |
| precipitación | 0.595745 | 0.629213 | 0.612022 | 89.000000 |
| accuracy | 0.942742 | 0.942742 | 0.942742 | 0.942742 |
| macro avg | 0.783474 | 0.798099 | 0.790556 | 1240.000000 |
| weighted avg | 0.944256 | 0.942742 | 0.943462 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1102 | 44 | 1146 |
| precipitación | 35 | 59 | 94 |
| All | 1137 | 103 | 1240 |

Heidke Skill Score: 0.56

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.969217 | 0.961606 | 0.965396 | 1146.000000 |
| precipitación | 0.572816 | 0.627660 | 0.598985 | 94.000000 |
| accuracy | 0.936290 | 0.936290 | 0.936290 | 0.93629 |
| macro avg | 0.771016 | 0.794633 | 0.782191 | 1240.000000 |
| weighted avg | 0.939167 | 0.936290 | 0.937620 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1072 | 62 | 1134 |
| precipitación | 45 | 61 | 106 |
| All | 1117 | 123 | 1240 |

Heidke Skill Score: 0.49

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.959714 | 0.945326 | 0.952466 | 1134.000000 |
| precipitación | 0.495935 | 0.575472 | 0.532751 | 106.000000 |
| accuracy | 0.913710 | 0.913710 | 0.913710 | 0.91371 |
| macro avg | 0.727824 | 0.760399 | 0.742608 | 1240.000000 |
| weighted avg | 0.920068 | 0.913710 | 0.916587 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1093 | 45 | 1138 |
| precipitación | 42 | 60 | 102 |
| All | 1135 | 105 | 1240 |

Heidke Skill Score: 0.54

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.962996 | 0.960457 | 0.961725 | 1138.000000 |
| precipitación | 0.571429 | 0.588235 | 0.579710 | 102.000000 |
| accuracy | 0.929839 | 0.929839 | 0.929839 | 0.929839 |
| macro avg | 0.767212 | 0.774346 | 0.770717 | 1240.000000 |
| weighted avg | 0.930786 | 0.929839 | 0.930301 | 1240.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1095 | 37 | 1132 |
| precipitación | 52 | 56 | 108 |
| All | 1147 | 93 | 1240 |

Heidke Skill Score: 0.52

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.954664 | 0.967314 | 0.960948 | 1132.000000 |
| precipitación | 0.602151 | 0.518519 | 0.557214 | 108.000000 |
| accuracy | 0.928226 | 0.928226 | 0.928226 | 0.928226 |
| macro avg | 0.778407 | 0.742917 | 0.759081 | 1240.000000 |
| weighted avg | 0.923962 | 0.928226 | 0.925784 | 1240.000000 |

Estadísticas Heidke Skill Score D1

HSS

| | |
|--------------|-----------|
| count | 10.000000 |
| mean | 0.565522 |
| std | 0.047767 |
| min | 0.485505 |
| 25% | 0.538248 |
| 50% | 0.560754 |
| 75% | 0.604712 |
| max | 0.630536 |

Variables del modelo meteorológico seleccionadas:

'dir0' 'snow_prec0' 'snowlevel0' 'mod0' 'wind_gust0' 'mslp0'
'temp0' 'rh0' 'visibility0' 'lhflx0' 'lwflx0' 'conv_prec0' 'prec0'

```
'swflx0', 'shflx0' 'cape0' 'cin0' 'cfh0' 'cfl0' 'cfm0' 'cft0'
'HGT5000' 'HGT8500' 'T5000' 'T8500' 'dir1' 'snow_prec1'
'snowlevel1' 'mod1' 'wind_gust1' 'mslp1' 'temp1' 'rh1'
'visibility1' 'lhflx1' 'lwflx1' 'conv_prec1' 'prec1' 'swflx1'
'shflx1' 'cape1' 'cin1' 'cfh1' 'cfl1' 'cfm1' 'cft1'
'HGT5001' 'HGT8501' 'T5001' 'T8501' 'dir2' 'snow_prec2'
'snowlevel2' 'mod2' 'wind_gust2' 'mslp2' 'temp2' 'rh2'
'visibility2' 'lhflx2' 'lwflx2' 'conv_prec2' 'prec2' 'swflx2'
'shflx2' 'cape2' 'cin2' 'cfh2' 'cfl2' 'cfm2' 'cft2' 'HGT5002'
'HGT8502' 'T5002' 'T8502' 'dir3' 'snow_prec3' 'snowlevel3' 'mod3'
'wind_gust3' 'mslp3' 'temp3' 'rh3' 'visibility3' 'lhflx3' 'lwflx3'
'conv_prec3' 'prec3' 'swflx3' 'shflx3' 'cape3' 'cin3'
'cfh3' 'cfl3' 'cfm3' 'cft3' 'HGT5003' 'HGT8503' 'T5003' 'T8503'
```

Modelo de AI:

```
LGBMClassifier(n_estimators=250)
```

Library versions

```
sklearn: 1.0.2
pandas: 1.3.5
numpy: 1.21.6
```

Pronóstico de los 4 puntos más cercanos mismo día (D0)

```
prec0_1
Total Porcentaje
no precipitación 6981 87.9%
precipitación 962 12.1%
```

```
prec1_1
Total Porcentaje
no precipitación 6918 87.1%
precipitación 1025 12.9%
```

```
prec2_1
Total Porcentaje
no precipitación 6871 86.5%
precipitación 1072 13.5%
```

```
prec3_1
Total Porcentaje
no precipitación 6763 85.1%
precipitación 1180 14.9%
```


Informe de calidad desagregado (modelo meteorológico D0)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec0_l | | | | |
| | precision | recall | f1-score | support |
| no precipitación | 0.968056 | 0.926261 | 0.946697 | 7296.000000 |
| precipitación | 0.440748 | 0.655332 | 0.527035 | 647.000000 |
| accuracy | 0.904192 | 0.904192 | 0.904192 | 0.904192 |
| macro avg | 0.704402 | 0.790797 | 0.736866 | 7943.000000 |
| weighted avg | 0.925104 | 0.904192 | 0.912514 | 7943.000000 |

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec1_l | | | | |
| | precision | recall | f1-score | support |
| no precipitación | 0.971090 | 0.920779 | 0.945265 | 7296.000000 |
| precipitación | 0.436098 | 0.690881 | 0.534689 | 647.000000 |
| accuracy | 0.902052 | 0.902052 | 0.902052 | 0.902052 |
| macro avg | 0.703594 | 0.805830 | 0.739977 | 7943.000000 |
| weighted avg | 0.927512 | 0.902052 | 0.911822 | 7943.000000 |

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec2_l | | | | |
| | precision | recall | f1-score | support |
| no precipitación | 0.971038 | 0.914474 | 0.941907 | 7296.000000 |
| precipitación | 0.417910 | 0.692427 | 0.521233 | 647.000000 |
| accuracy | 0.896387 | 0.896387 | 0.896387 | 0.896387 |
| macro avg | 0.694474 | 0.803450 | 0.731570 | 7943.000000 |
| weighted avg | 0.925983 | 0.896387 | 0.907641 | 7943.000000 |

| | | | | |
|------------------|-----------|----------|----------|-------------|
| prec3_l | | | | |
| | precision | recall | f1-score | support |
| no precipitación | 0.973237 | 0.902138 | 0.936340 | 7296.000000 |
| precipitación | 0.394915 | 0.720247 | 0.510126 | 647.000000 |
| accuracy | 0.887322 | 0.887322 | 0.887322 | 0.887322 |
| macro avg | 0.684076 | 0.811193 | 0.723233 | 7943.000000 |
| weighted avg | 0.926129 | 0.887322 | 0.901622 | 7943.000000 |

Matriz de Confusión (modelo meteorológico D0)

Matriz de Confusión (modelo meteorológico)

| | | | | |
|--------------------------|------------------|---------------|-----|------|
| prec0_l | | | | |
| prec_lb | no precipitación | precipitación | All | |
| no precipitación | | 6758 | 538 | 7296 |
| precipitación | | 223 | 424 | 647 |
| All | | 6981 | 962 | 7943 |
| Heidke Skill Score: 0.48 | | | | |

| | | | |
|------------------|------------------|---------------|------|
| prec1_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6718 | 578 | 7296 |
| precipitación | 200 | 447 | 647 |
| All | 6918 | 1025 | 7943 |

Heidke Skill Score: 0.48

| | | | |
|------------------|------------------|---------------|------|
| prec2_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6672 | 624 | 7296 |
| precipitación | 199 | 448 | 647 |
| All | 6871 | 1072 | 7943 |

Heidke Skill Score: 0.47

| | | | |
|------------------|------------------|---------------|------|
| prec3_l | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 6582 | 714 | 7296 |
| precipitación | 181 | 466 | 647 |
| All | 6763 | 1180 | 7943 |

Heidke Skill Score: 0.45

Matrices de confusión e informe de calidad del algoritmo D0(10 pruebas)

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1048 | 58 | 1106 |
| precipitación | 30 | 56 | 86 |
| All | 1078 | 114 | 1192 |

Heidke Skill Score: 0.52

Informe de calidad desagregado (Machine Learning)

| | | | | |
|------------------|-----------|----------|----------|-------------|
| | precision | recall | f1-score | support |
| no precipitación | 0.972171 | 0.947559 | 0.959707 | 1106.000000 |
| precipitación | 0.491228 | 0.651163 | 0.560000 | 86.000000 |
| accuracy | 0.926174 | 0.926174 | 0.926174 | 0.926174 |
| macro avg | 0.731699 | 0.799361 | 0.759853 | 1192.000000 |
| weighted avg | 0.937472 | 0.926174 | 0.930869 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| | | | |
|------------------|------------------|---------------|------|
| col_0 | no precipitación | precipitación | All |
| prec_lb | | | |
| no precipitación | 1057 | 47 | 1104 |
| precipitación | 27 | 61 | 88 |
| All | 1084 | 108 | 1192 |

Heidke Skill Score: 0.59

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.975092 | 0.957428 | 0.966179 | 1104.000000 |
| precipitación | 0.564815 | 0.693182 | 0.622449 | 88.000000 |
| accuracy | 0.937919 | 0.937919 | 0.937919 | 0.937919 |
| macro avg | 0.769954 | 0.825305 | 0.794314 | 1192.000000 |
| weighted avg | 0.944803 | 0.937919 | 0.940803 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1054 | 47 | 1101 |
| precipitación | 35 | 56 | 91 |
| All | 1089 | 103 | 1192 |

Heidke Skill Score: 0.54

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.967860 | 0.957312 | 0.962557 | 1101.000000 |
| precipitación | 0.543689 | 0.615385 | 0.577320 | 91.000000 |
| accuracy | 0.931208 | 0.931208 | 0.931208 | 0.931208 |
| macro avg | 0.755775 | 0.786348 | 0.769938 | 1192.000000 |
| weighted avg | 0.935478 | 0.931208 | 0.933147 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1039 | 41 | 1080 |
| precipitación | 49 | 63 | 112 |
| All | 1088 | 104 | 1192 |

Heidke Skill Score: 0.54

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.954963 | 0.962037 | 0.958487 | 1080.000000 |
| precipitación | 0.605769 | 0.562500 | 0.583333 | 112.000000 |
| accuracy | 0.924497 | 0.924497 | 0.924497 | 0.924497 |
| macro avg | 0.780366 | 0.762269 | 0.770910 | 1192.000000 |
| weighted avg | 0.922153 | 0.924497 | 0.923238 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1049 | 42 | 1091 |
| precipitación | 34 | 67 | 101 |
| All | 1083 | 109 | 1192 |

Heidke Skill Score: 0.6

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.968606 | 0.961503 | 0.965041 | 1091.000000 |
| precipitación | 0.614679 | 0.663366 | 0.638095 | 101.000000 |
| accuracy | 0.936242 | 0.936242 | 0.936242 | 0.936242 |
| macro avg | 0.791642 | 0.812435 | 0.801568 | 1192.000000 |
| weighted avg | 0.938617 | 0.936242 | 0.937339 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1058 | 37 | 1095 |
| precipitación | 35 | 62 | 97 |
| All | 1093 | 99 | 1192 |

Heidke Skill Score: 0.6

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.967978 | 0.966210 | 0.967093 | 1095.000000 |
| precipitación | 0.626263 | 0.639175 | 0.632653 | 97.000000 |
| accuracy | 0.939597 | 0.939597 | 0.939597 | 0.939597 |
| macro avg | 0.797120 | 0.802693 | 0.799873 | 1192.000000 |
| weighted avg | 0.940171 | 0.939597 | 0.939878 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1047 | 32 | 1079 |
| precipitación | 40 | 73 | 113 |
| All | 1087 | 105 | 1192 |

Heidke Skill Score: 0.64

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.963201 | 0.970343 | 0.966759 | 1079.000000 |
| precipitación | 0.695238 | 0.646018 | 0.669725 | 113.000000 |
| accuracy | 0.939597 | 0.939597 | 0.939597 | 0.939597 |
| macro avg | 0.829220 | 0.808180 | 0.818242 | 1192.000000 |
| weighted avg | 0.937799 | 0.939597 | 0.938601 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1040 | 47 | 1087 |
| precipitación | 41 | 64 | 105 |
| All | 1081 | 111 | 1192 |

Heidke Skill Score: 0.55

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.962072 | 0.956762 | 0.959410 | 1087.000000 |
| precipitación | 0.576577 | 0.609524 | 0.592593 | 105.000000 |
| accuracy | 0.926174 | 0.926174 | 0.926174 | 0.926174 |
| macro avg | 0.769324 | 0.783143 | 0.776001 | 1192.000000 |
| weighted avg | 0.928115 | 0.926174 | 0.927098 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1053 | 40 | 1093 |
| precipitación | 48 | 51 | 99 |
| All | 1101 | 91 | 1192 |

Heidke Skill Score: 0.5

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.956403 | 0.963403 | 0.959891 | 1093.000000 |
| precipitación | 0.560440 | 0.515152 | 0.536842 | 99.000000 |
| accuracy | 0.926174 | 0.926174 | 0.926174 | 0.926174 |
| macro avg | 0.758421 | 0.739277 | 0.748366 | 1192.000000 |
| weighted avg | 0.923517 | 0.926174 | 0.924755 | 1192.000000 |

Matriz de Confusión (Machine Learning)

| col_0 | no precipitación | precipitación | All |
|------------------|------------------|---------------|------|
| prec_lb | | | |
| no precipitación | 1058 | 39 | 1097 |
| precipitación | 42 | 53 | 95 |
| All | 1100 | 92 | 1192 |

Heidke Skill Score: 0.53

Informe de calidad desagregado (Machine Learning)

| | precision | recall | f1-score | support |
|------------------|-----------|----------|----------|-------------|
| no precipitación | 0.961818 | 0.964448 | 0.963132 | 1097.000000 |
| precipitación | 0.576087 | 0.557895 | 0.566845 | 95.000000 |
| accuracy | 0.932047 | 0.932047 | 0.932047 | 0.932047 |
| macro avg | 0.768953 | 0.761172 | 0.764988 | 1192.000000 |
| weighted avg | 0.931076 | 0.932047 | 0.931548 | 1192.000000 |

Estadísticas Heidke Skill Score D0

HSS

count 10.000000

mean 0.560980

std 0.043937

min 0.496810

25% 0.532498

50% 0.546960

75% 0.597065

max 0.636533

Variables del modelo meteorológico seleccionadas:

'dir0' 'snow_prec0' 'snowlevel0' 'mod0' 'wind_gust0' 'mslp0'
'temp0' 'rh0' 'visibility0' 'lhflx0' 'lwflx0' 'conv_prec0' 'prec0'

```
'swflx0', 'shflx0' 'cape0' 'cin0' 'cfh0' 'cfl0' 'cfm0' 'cft0'  
'HGT5000' 'HGT8500' 'T5000' 'T8500' 'dir1' 'snow_prec1'  
'snowlevel1' 'mod1' 'wind_gust1' 'mslp1' 'temp1' 'rh1'  
'visibility1' 'lhflx1' 'lwflx1' 'conv_prec1' 'prec1' 'swflx1'  
'shflx1' 'cape1' 'cin1' 'cfh1' 'cfl1' 'cfm1' 'cft1'  
'HGT5001' 'HGT8501' 'T5001' 'T8501' 'dir2' 'snow_prec2'  
'snowlevel2' 'mod2' 'wind_gust2' 'mslp2' 'temp2' 'rh2'  
'visibility2' 'lhflx2' 'lwflx2' 'conv_prec2' 'prec2' 'swflx2'  
'shflx2' 'cape2' 'cin2' 'cfh2' 'cfl2' 'cfm2' 'cft2' 'HGT5002'  
'HGT8502' 'T5002' 'T8502' 'dir3' 'snow_prec3' 'snowlevel3' 'mod3'  
'wind_gust3' 'mslp3' 'temp3' 'rh3' 'visibility3' 'lhflx3' 'lwflx3'  
'conv_prec3' 'prec3' 'swflx3' 'shflx3' 'cape3' 'cin3'  
'cfh3' 'cfl3' 'cfm3' 'cft3' 'HGT5003' 'HGT8503' 'T5003' 'T8503'
```

Modelo de AI:

```
LGBMClassifier(n_estimators=200)
```

Library versions

```
sklearn: 1.0.2  
pandas: 1.3.5  
numpy: 1.21.6
```