

Reporte de Modelos — Toluca

Ciclos incluidos: 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024

Generado: 2025-09-30 17:26

Toluca — 2010

Días del ciclo: 170

ETc total [mm]: 592.4

ETverde total [mm]: 257.5

ETazul total [mm]: 334.9

Tmax / Tmin [°C]: 30.4 / 2.1

Toluca — 2010 · Resultados y métricas

[Toluca 2010] Regresión Lineal ET0 — R^2 : 0.9847 MSE: 0.0237

[Toluca 2010] Random Forest ET0 — R^2 : 0.9824 MSE: 0.0272

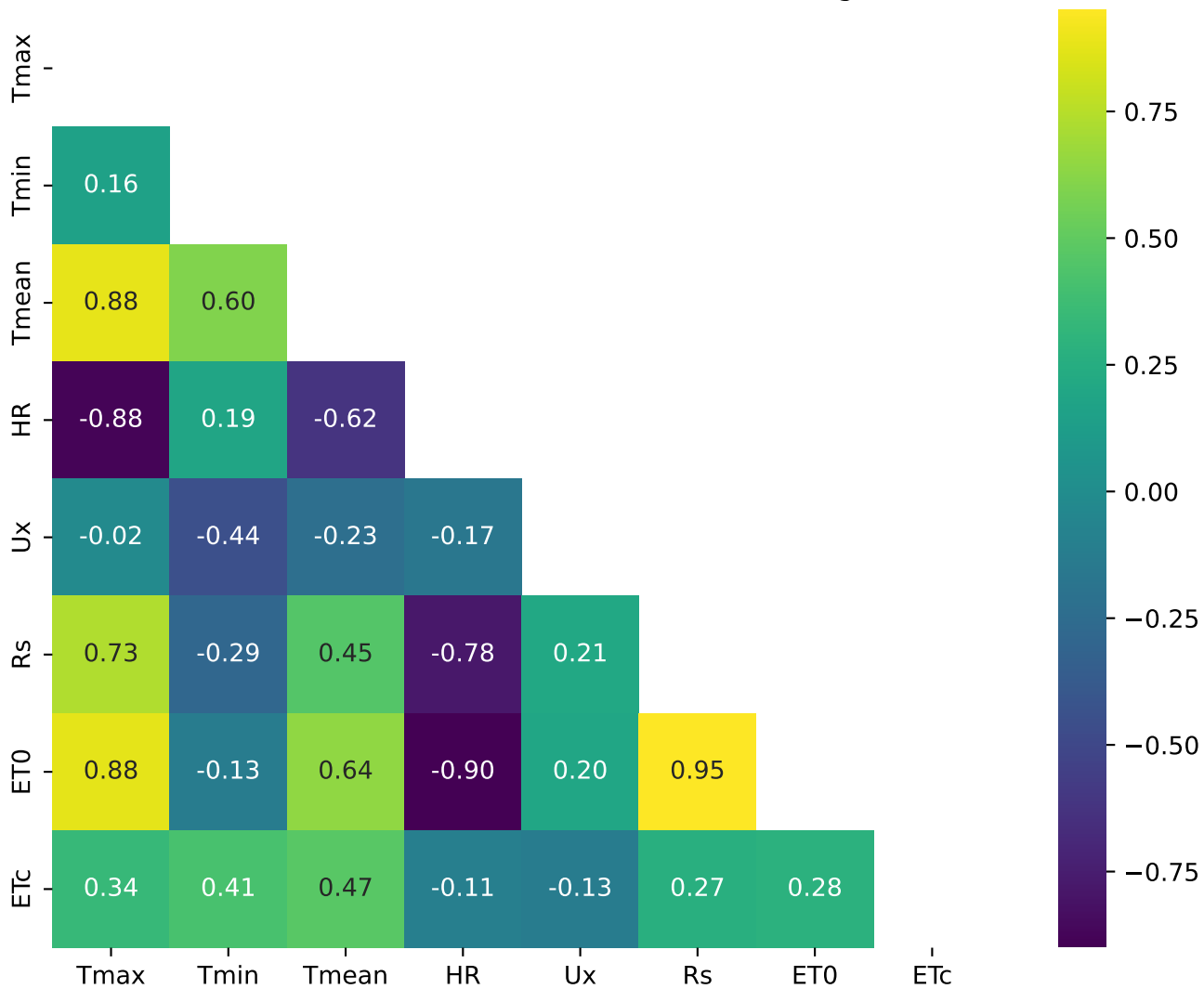
Importancias: {'Tmax': 0.3719197879008696, 'Tmin': 0.005620209627846686, 'HR': 0.0545956138746478, 'Ux': 0.006750759029274406, 'Rs': 0.5611136295673614}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	19.881000	10.859200	83.544000	0.963600	14.457000	2.886713	2.615369
1	27.642273	11.080909	51.154545	0.990455	25.601364	5.396548	6.475858
2	22.565102	10.528980	74.914082	1.218163	21.405714	4.149049	4.664447
3	27.196400	8.765200	42.865600	1.473200	27.257600	5.854454	1.756336
4	19.292500	6.970417	78.699167	1.578750	19.589583	3.386718	1.943975

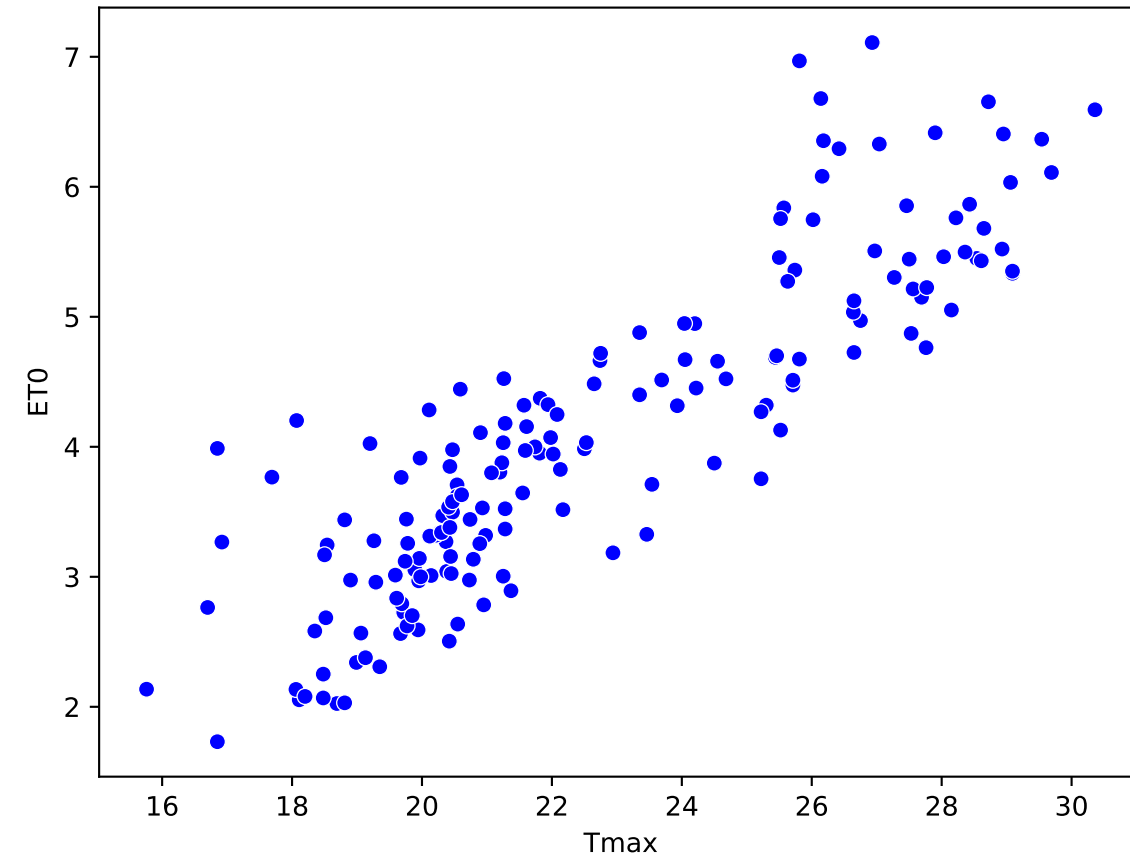
Toluca — 2010

Matriz de Correlación entre Variables Meteorológicas

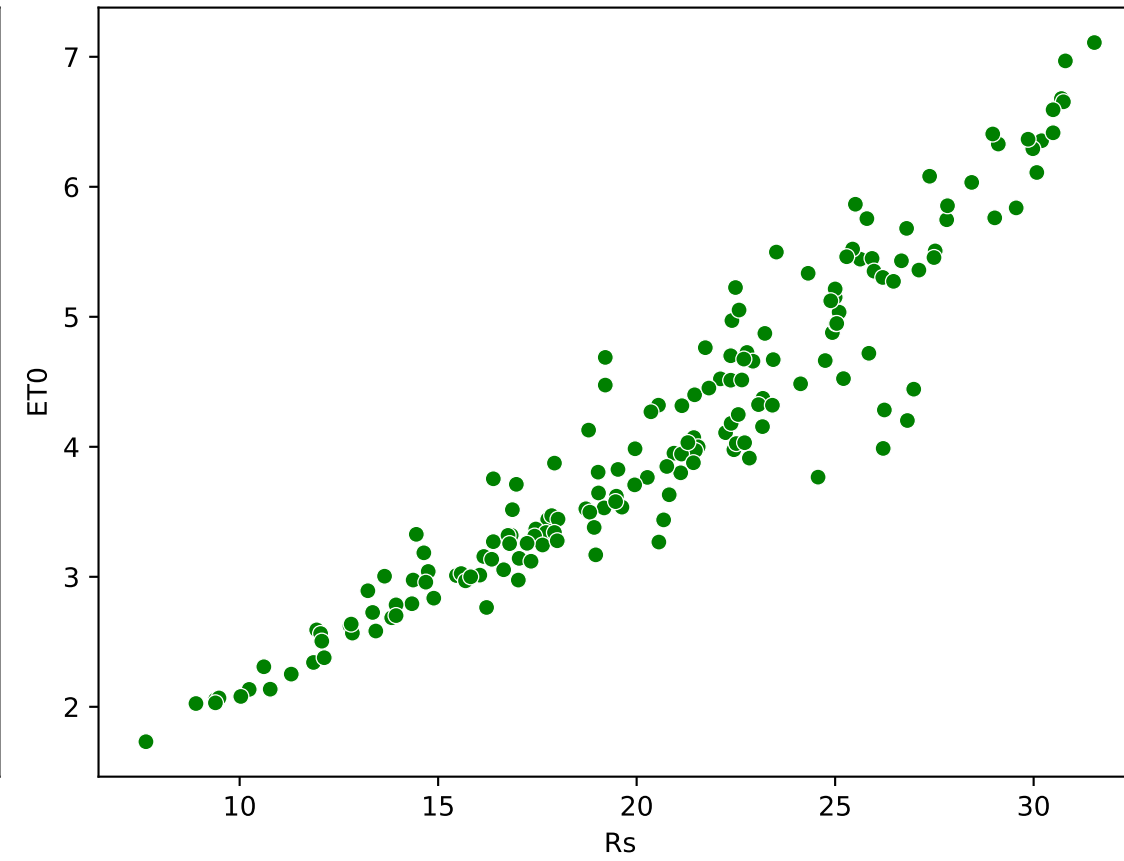


Dispersión — Toluca (2010)

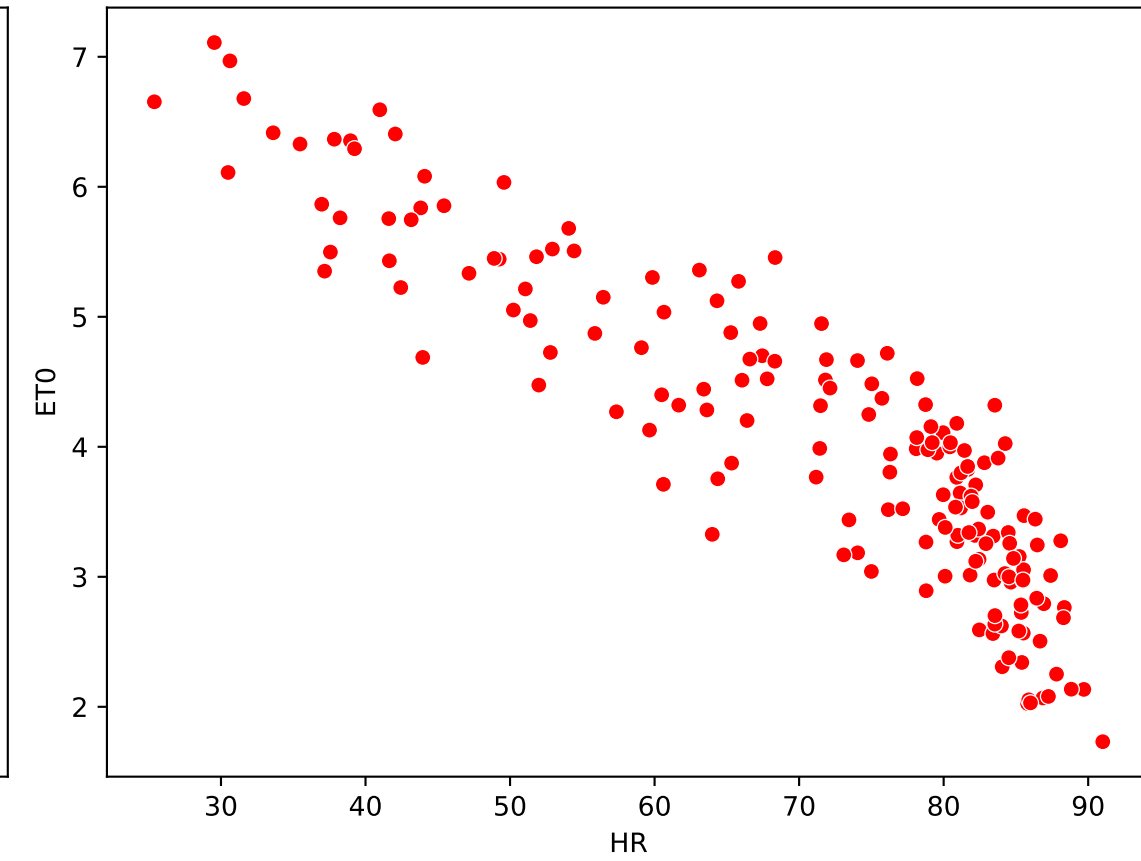
Tmax vs ET0



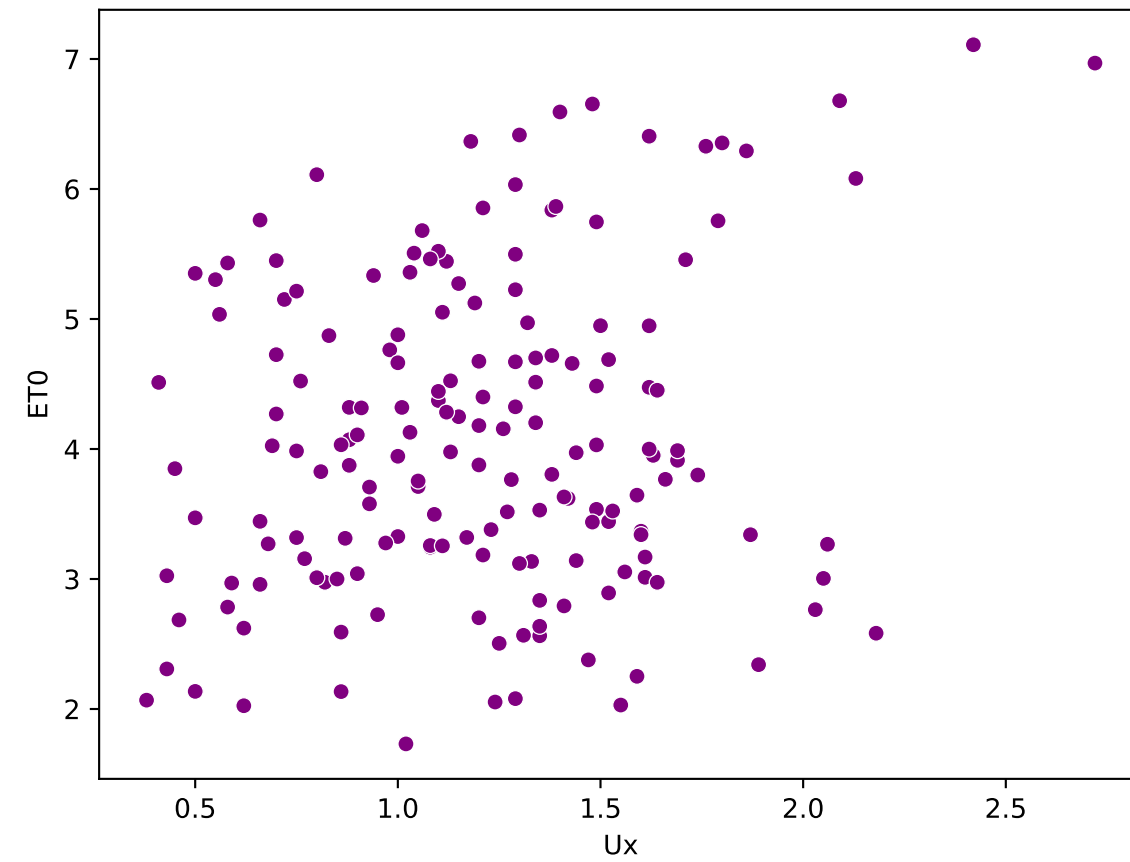
Rs vs ET0



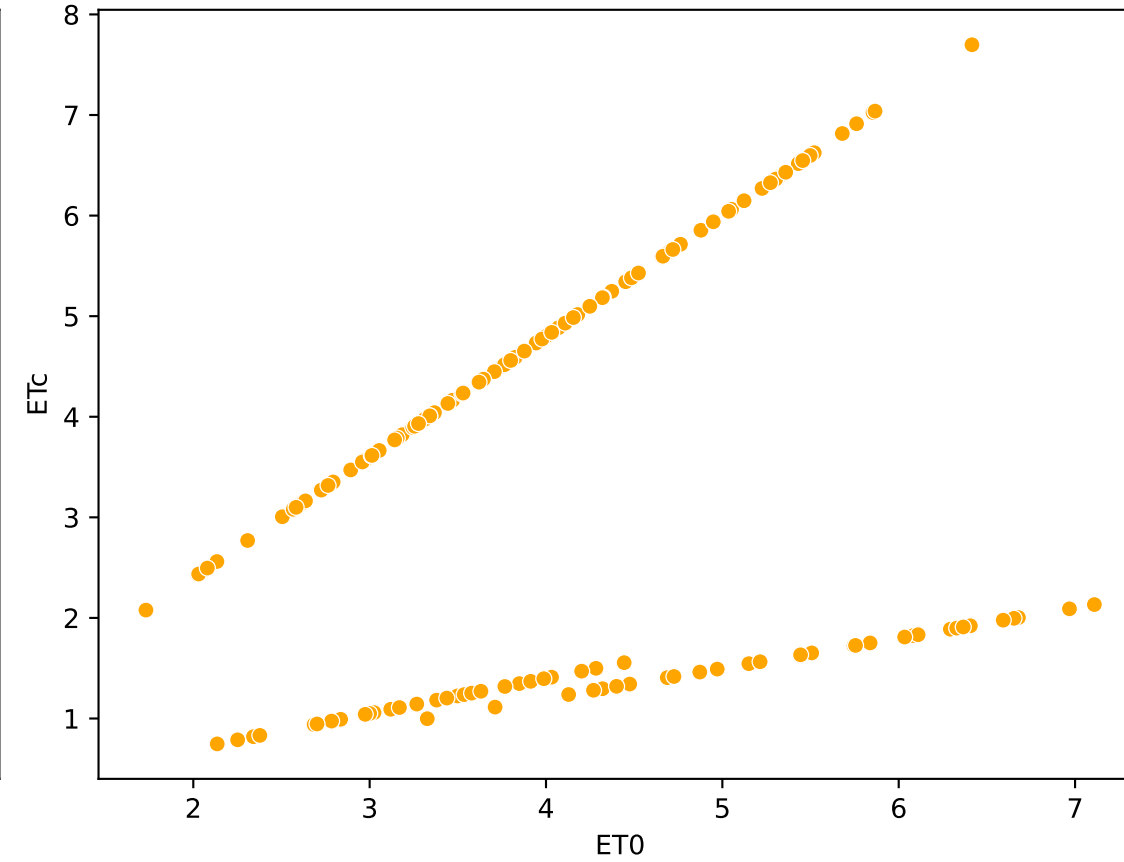
HR vs ET0



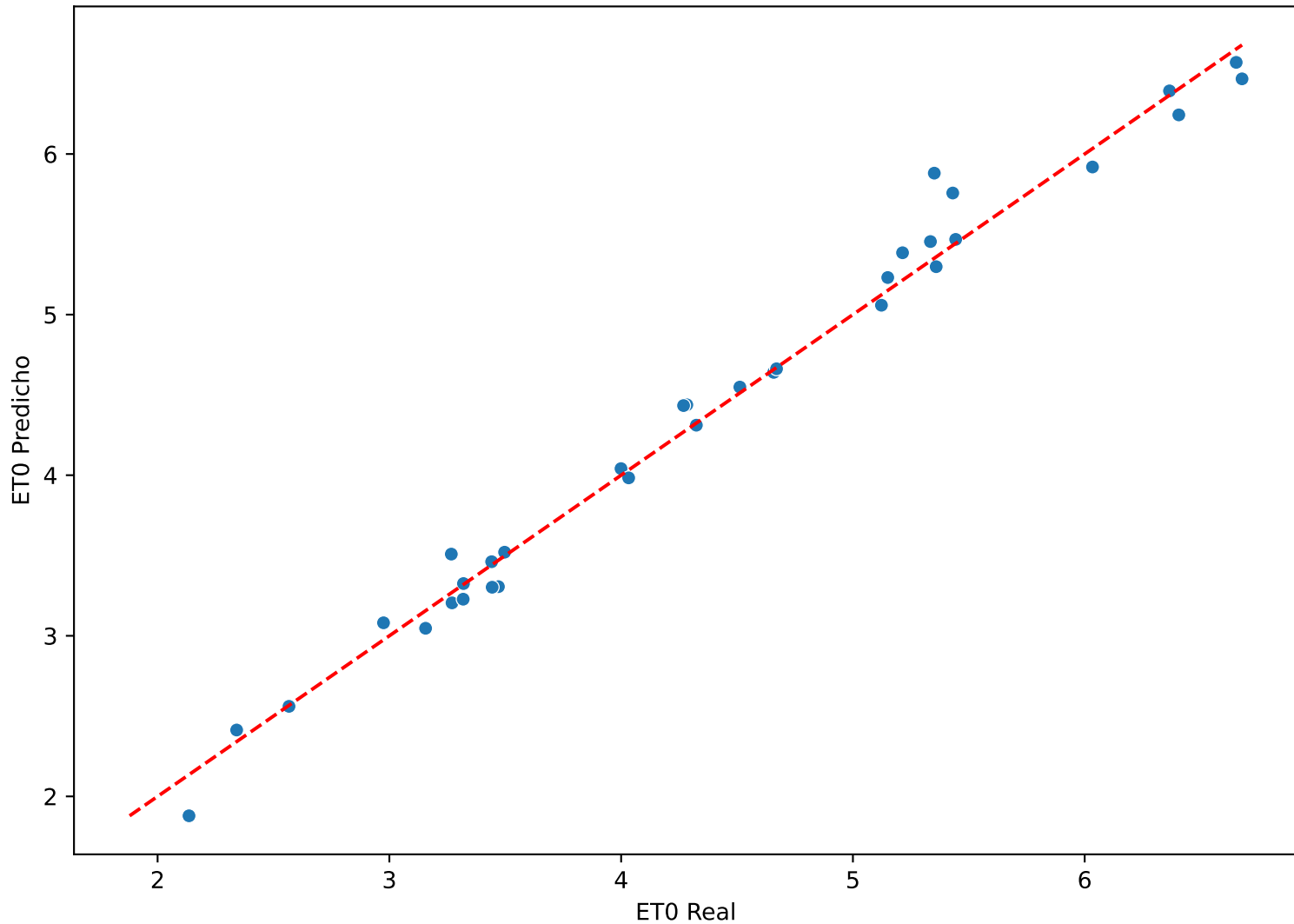
Ux vs ET0



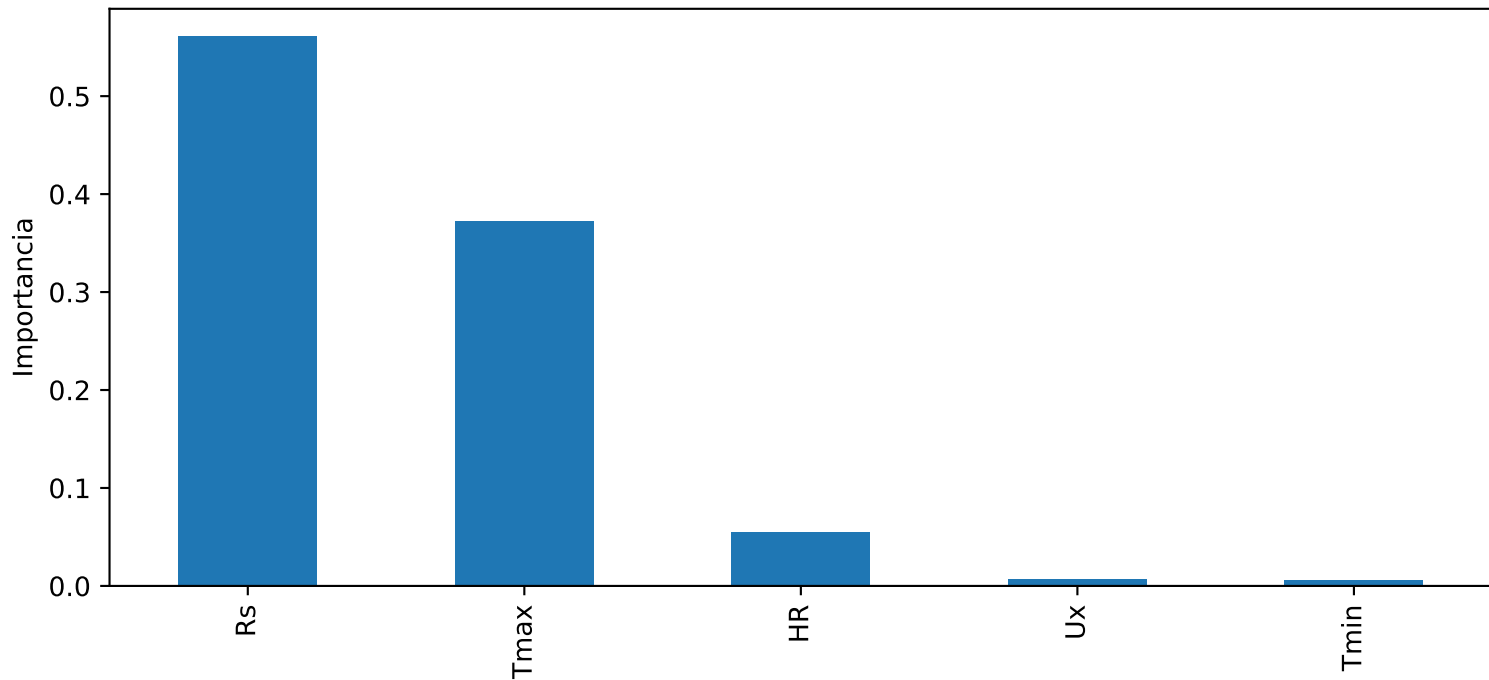
ET0 vs ETc



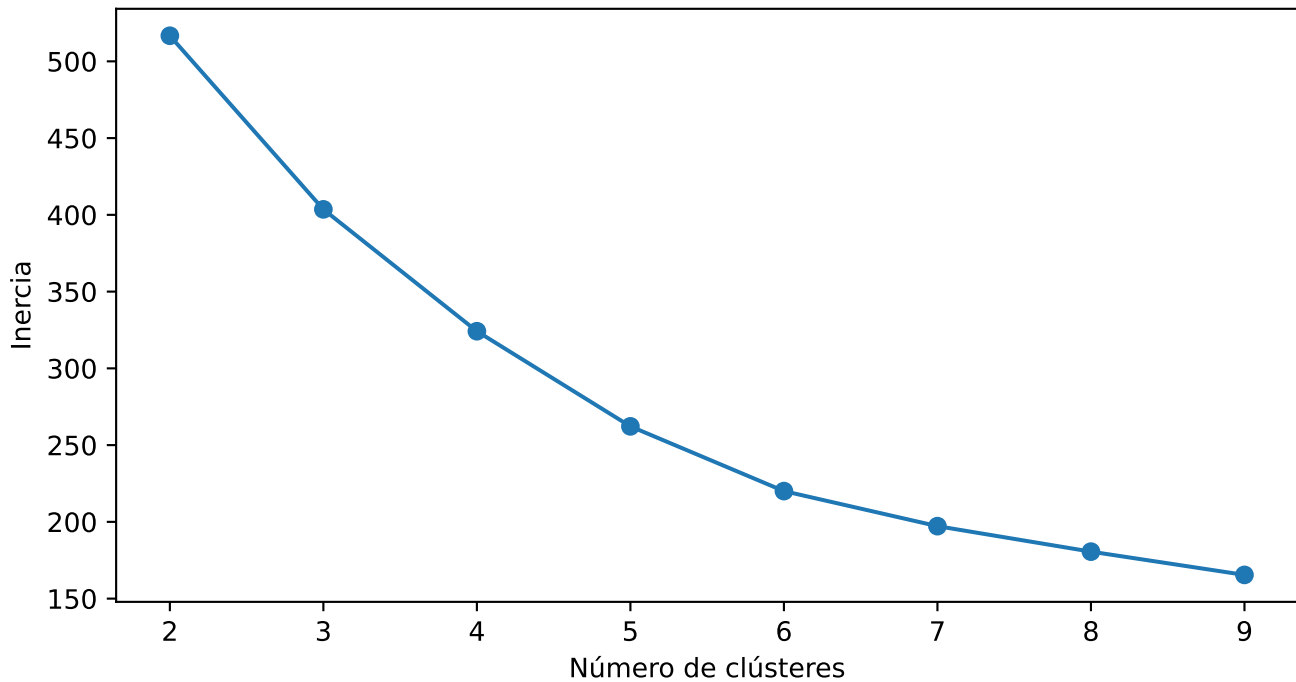
Comparación entre ET0 Real y Predicho — Toluca (2010)



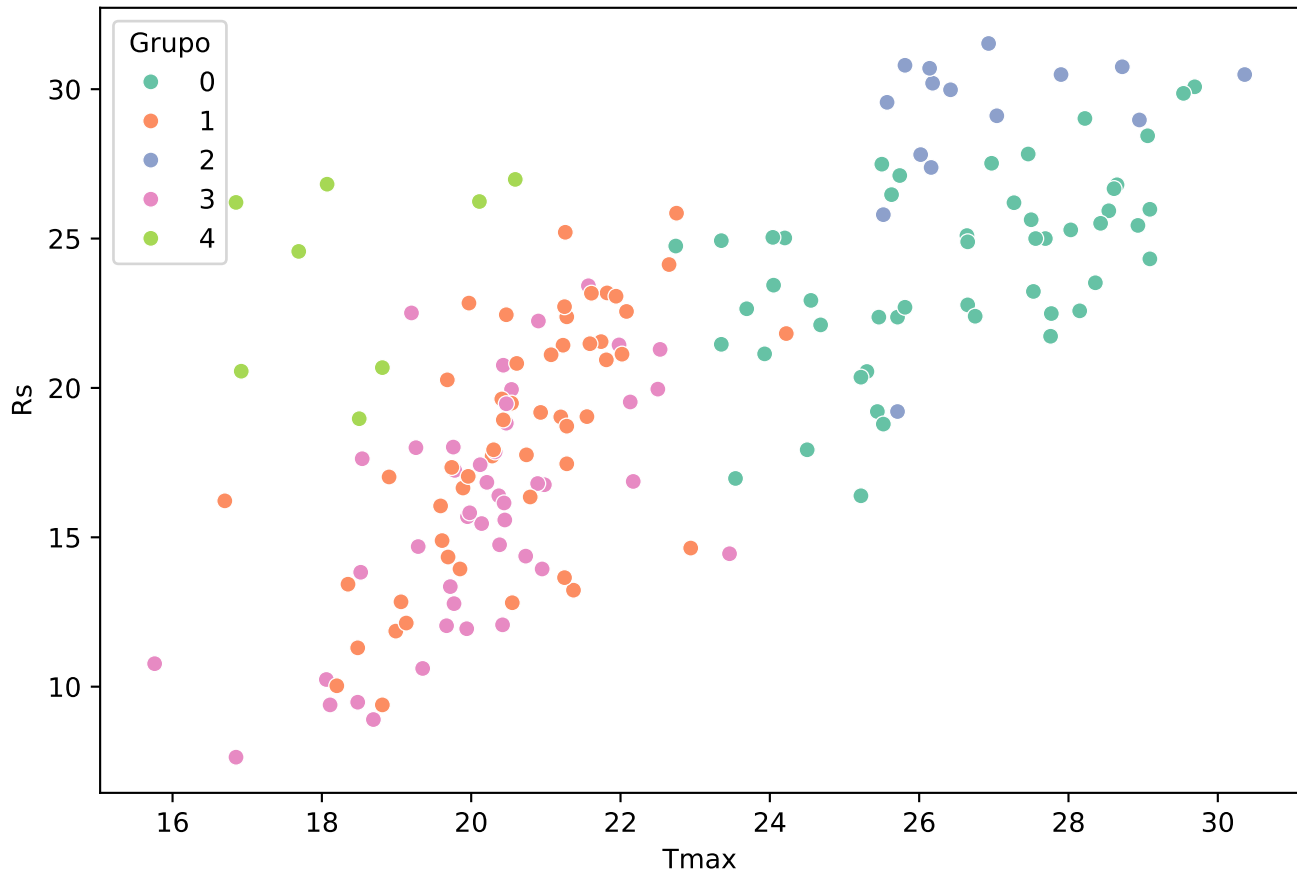
Importancia de variables (RF) — Toluca (2010)



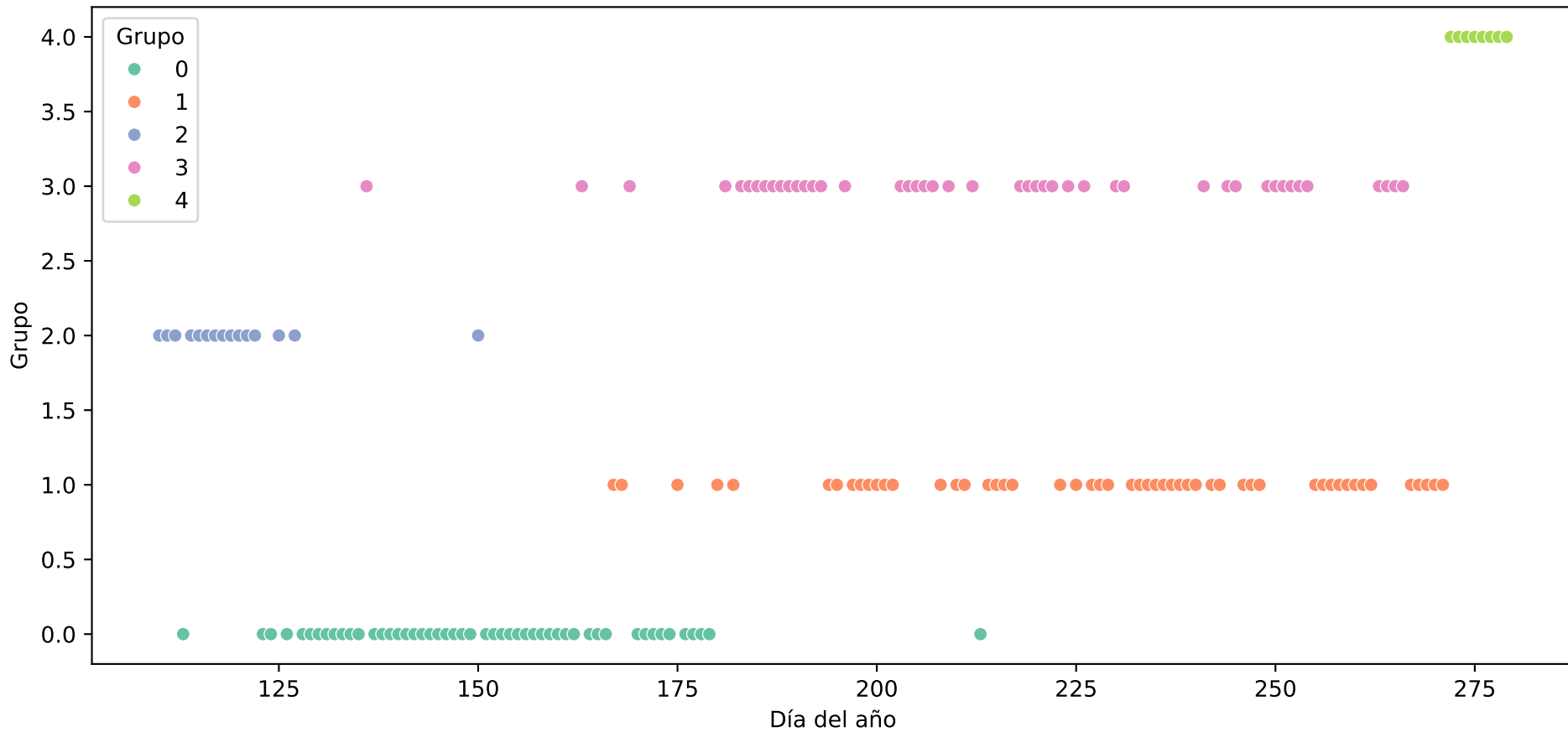
Método del codo



Clasificación de días climáticos — Toluca (2010)

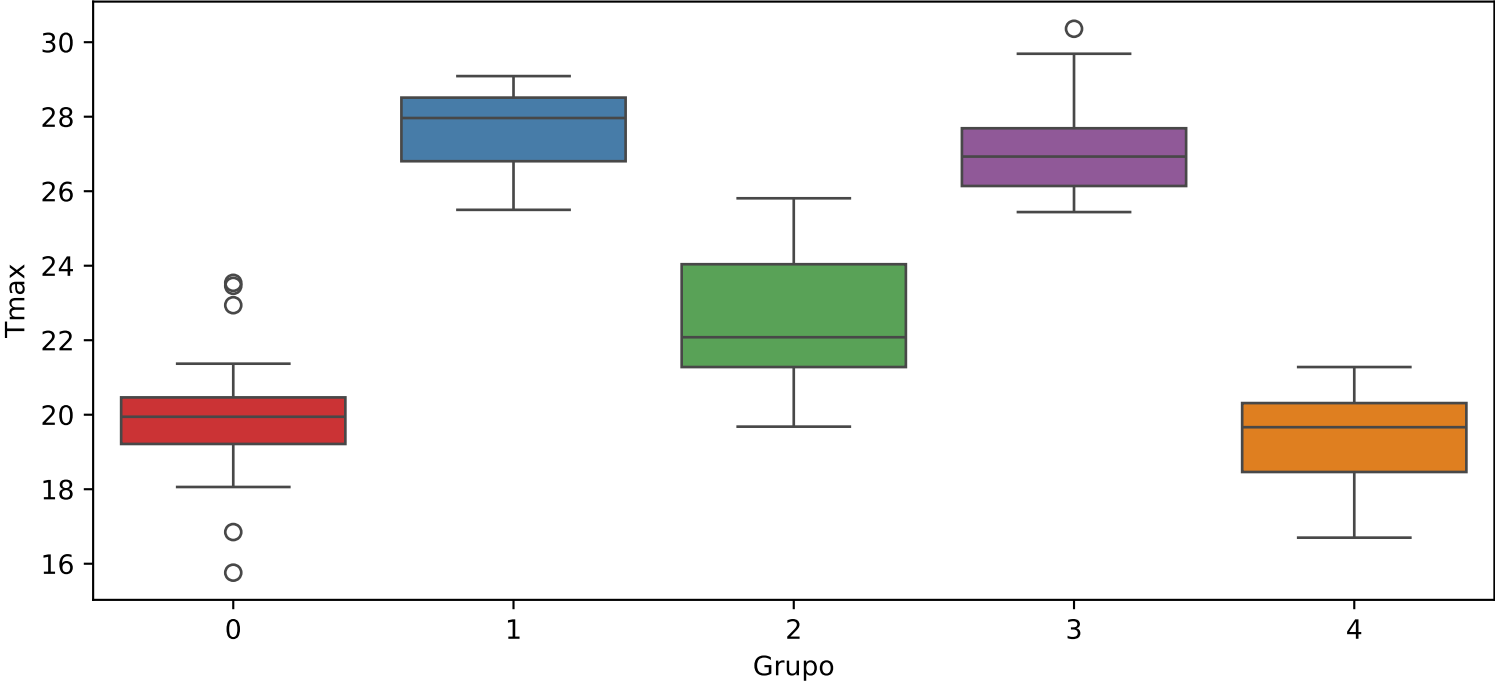


Distribución de días por grupo — Toluca (2010)

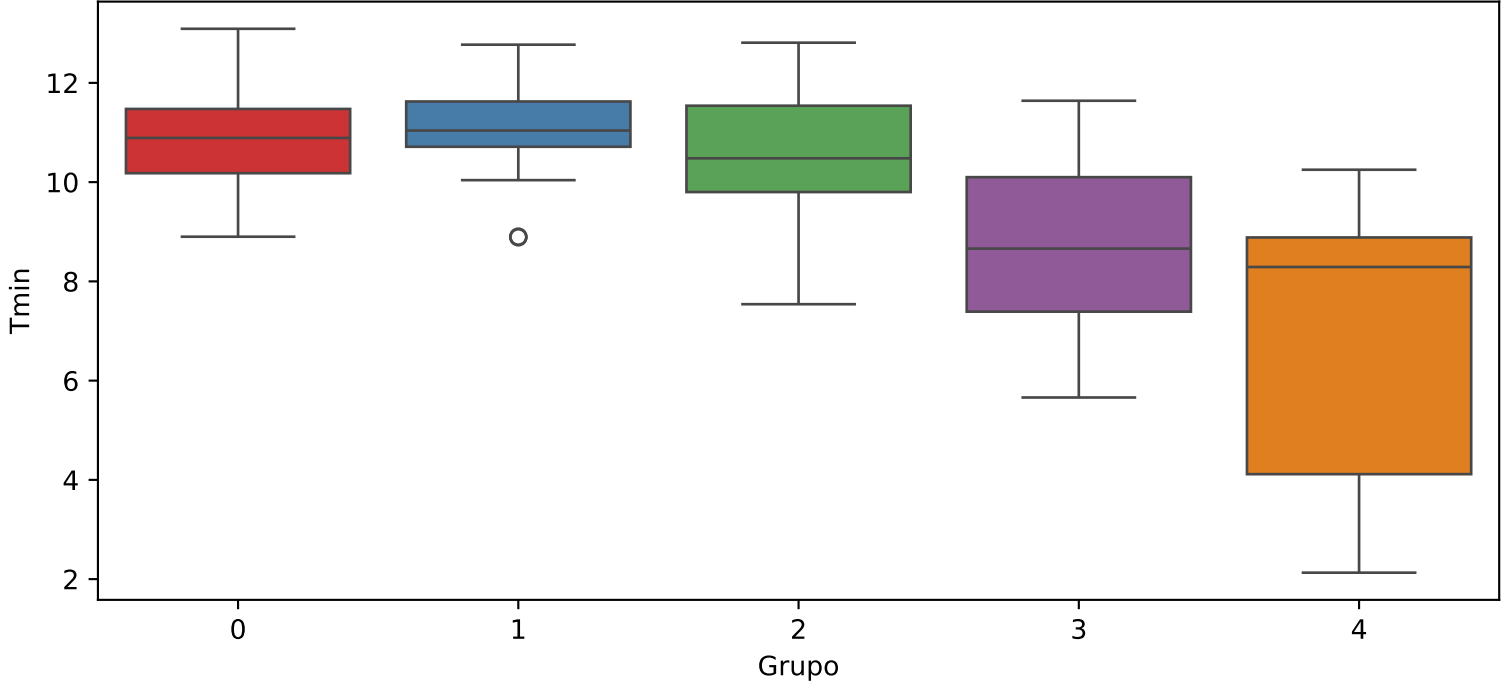


Boxplots por grupo — Toluca (2010)

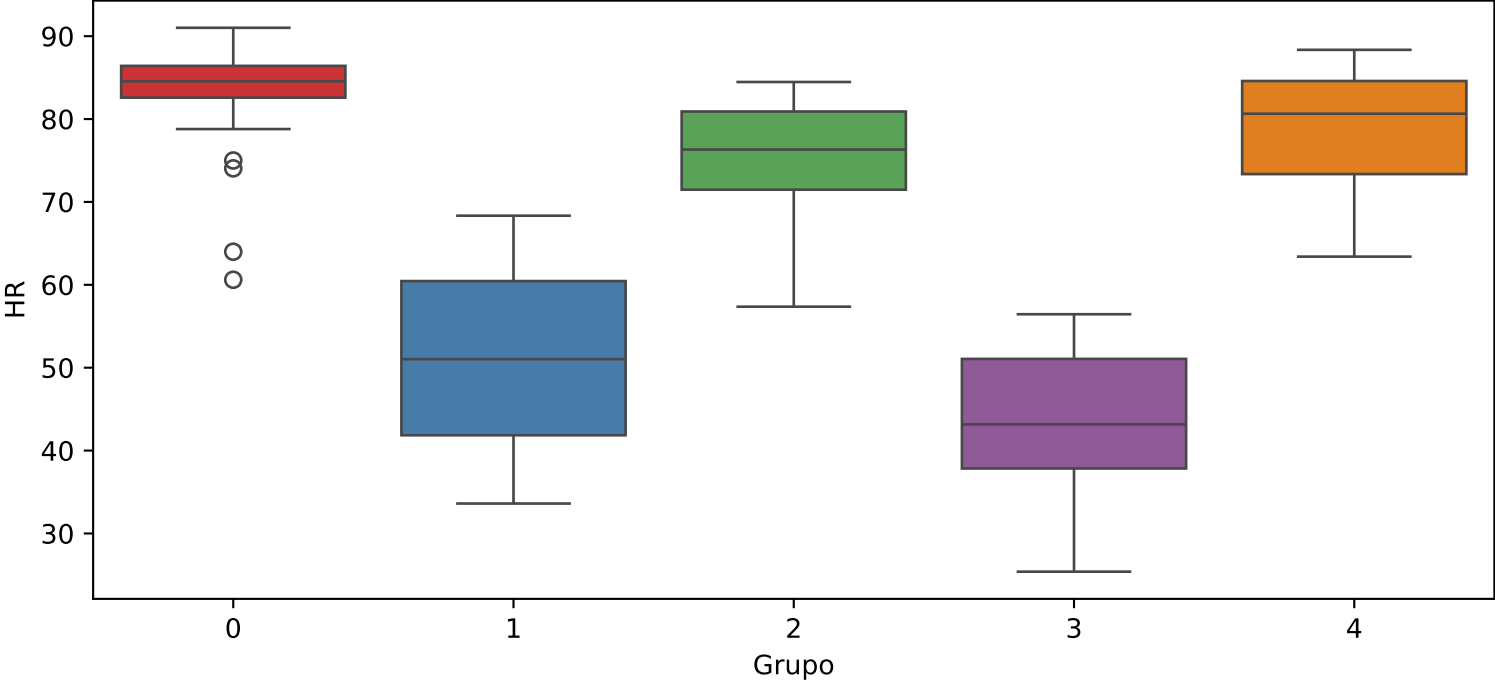
Distribución de Tmax por grupo



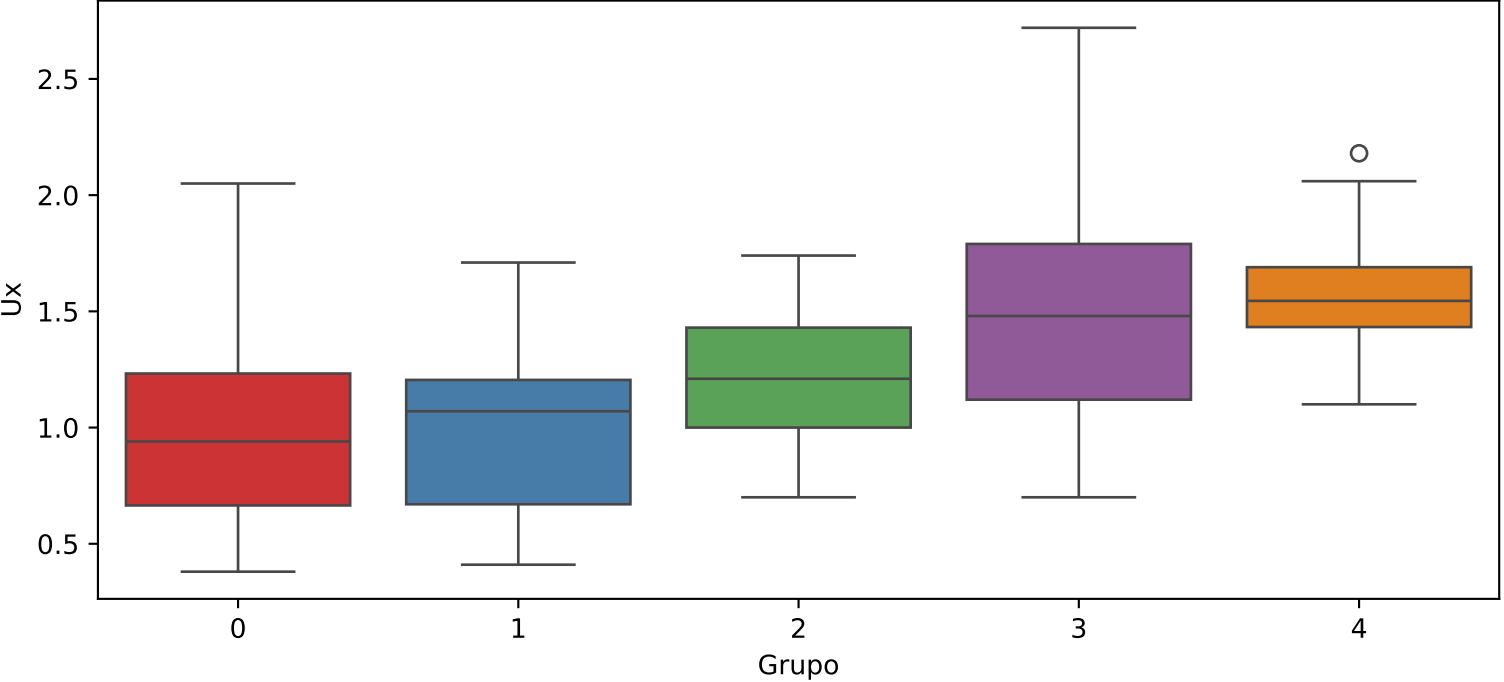
Distribución de Tmin por grupo



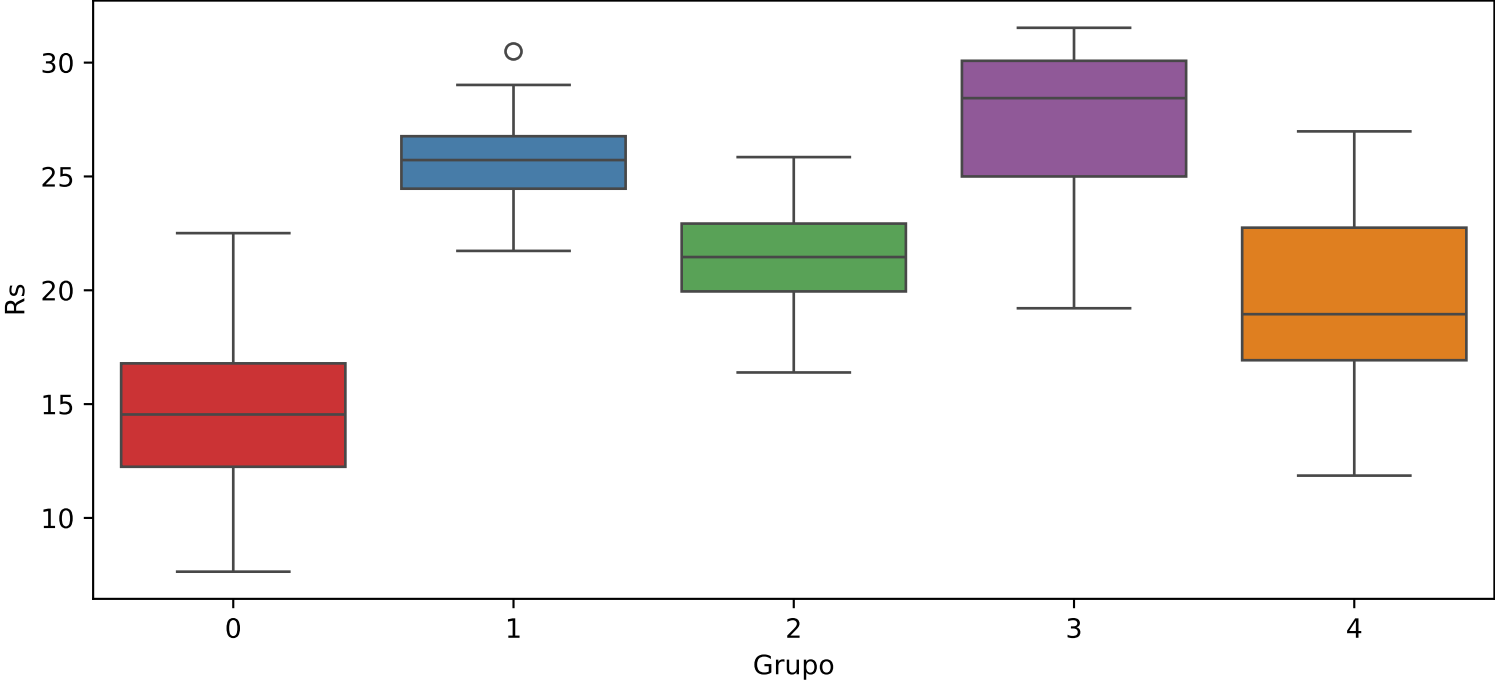
Distribución de HR por grupo



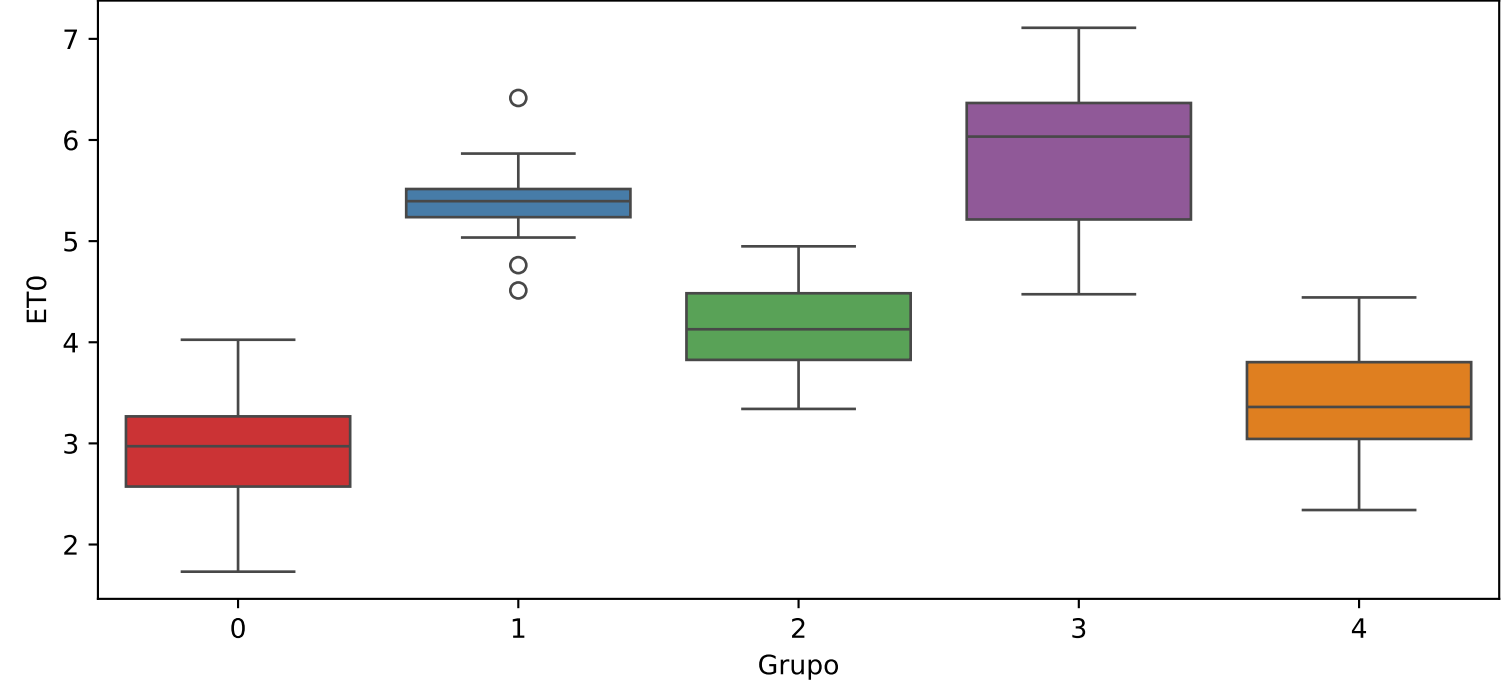
Distribución de Ux por grupo



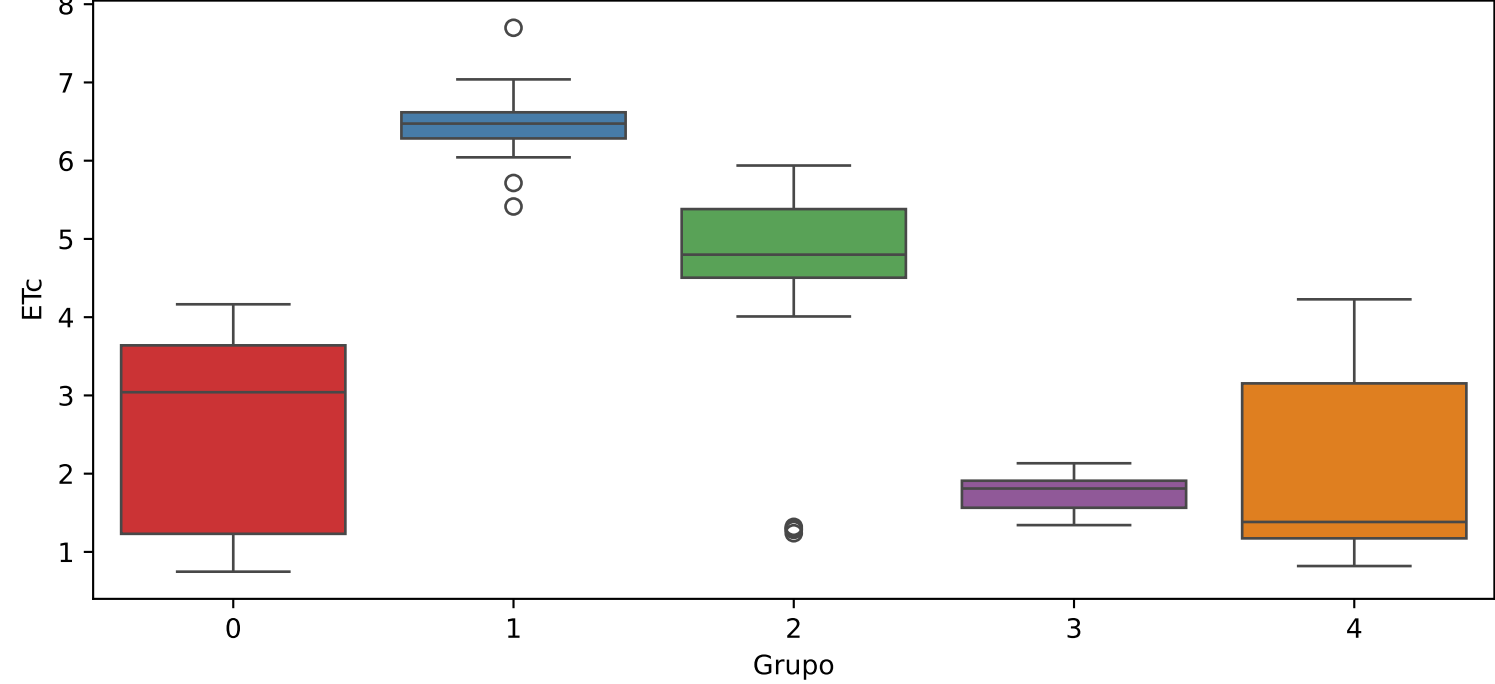
Distribución de Rs por grupo



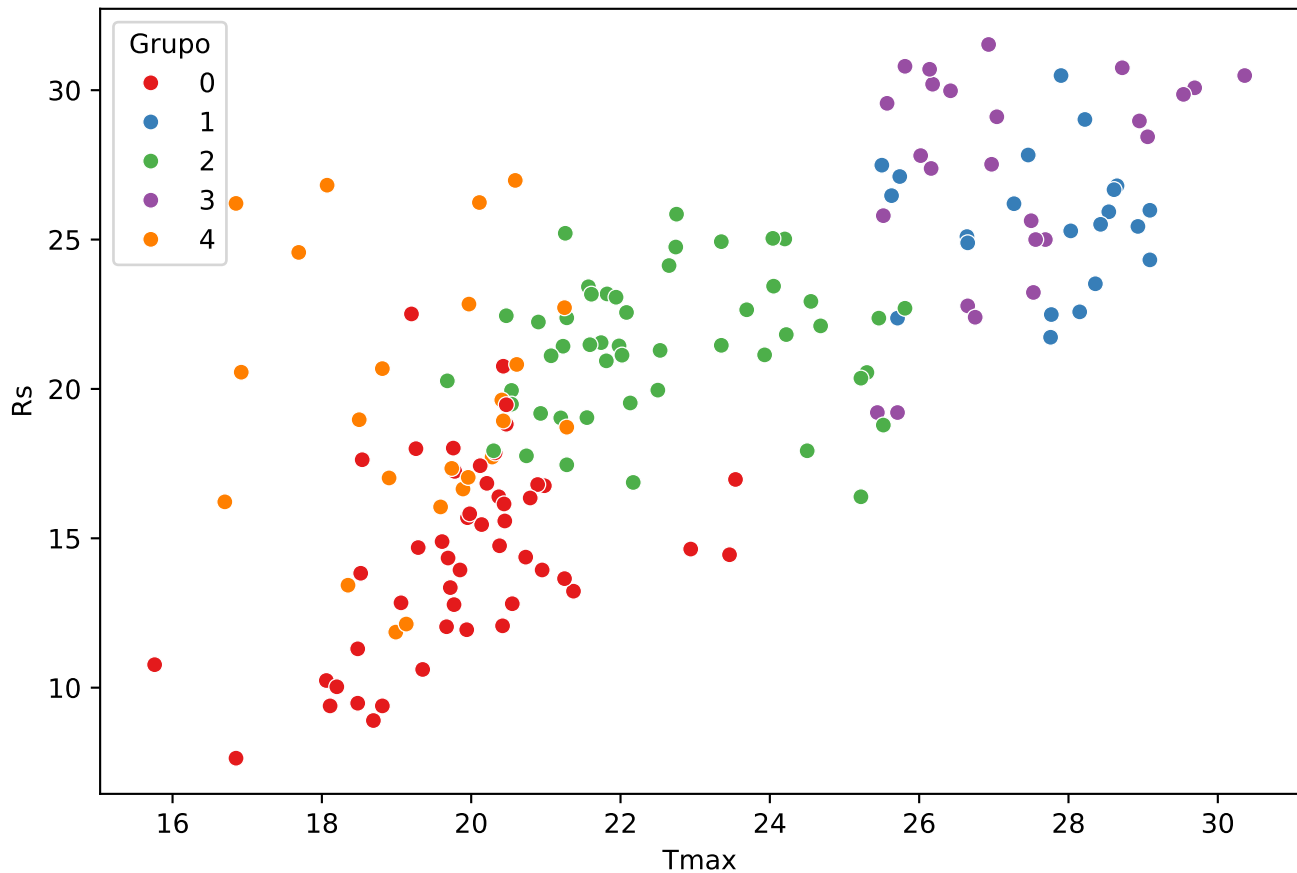
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2010)



Toluca — 2011

Días del ciclo: 170

ETc total [mm]: 608.4

ETverde total [mm]: 256.8

ETazul total [mm]: 351.6

Tmax / Tmin [°C]: 31.1 / 0.6

Toluca — 2011 · Resultados y métricas

[Toluca 2011] Regresión Lineal ET0 — R^2 : 0.9856 MSE: 0.0158

[Toluca 2011] Random Forest ET0 — R^2 : 0.9815 MSE: 0.0203

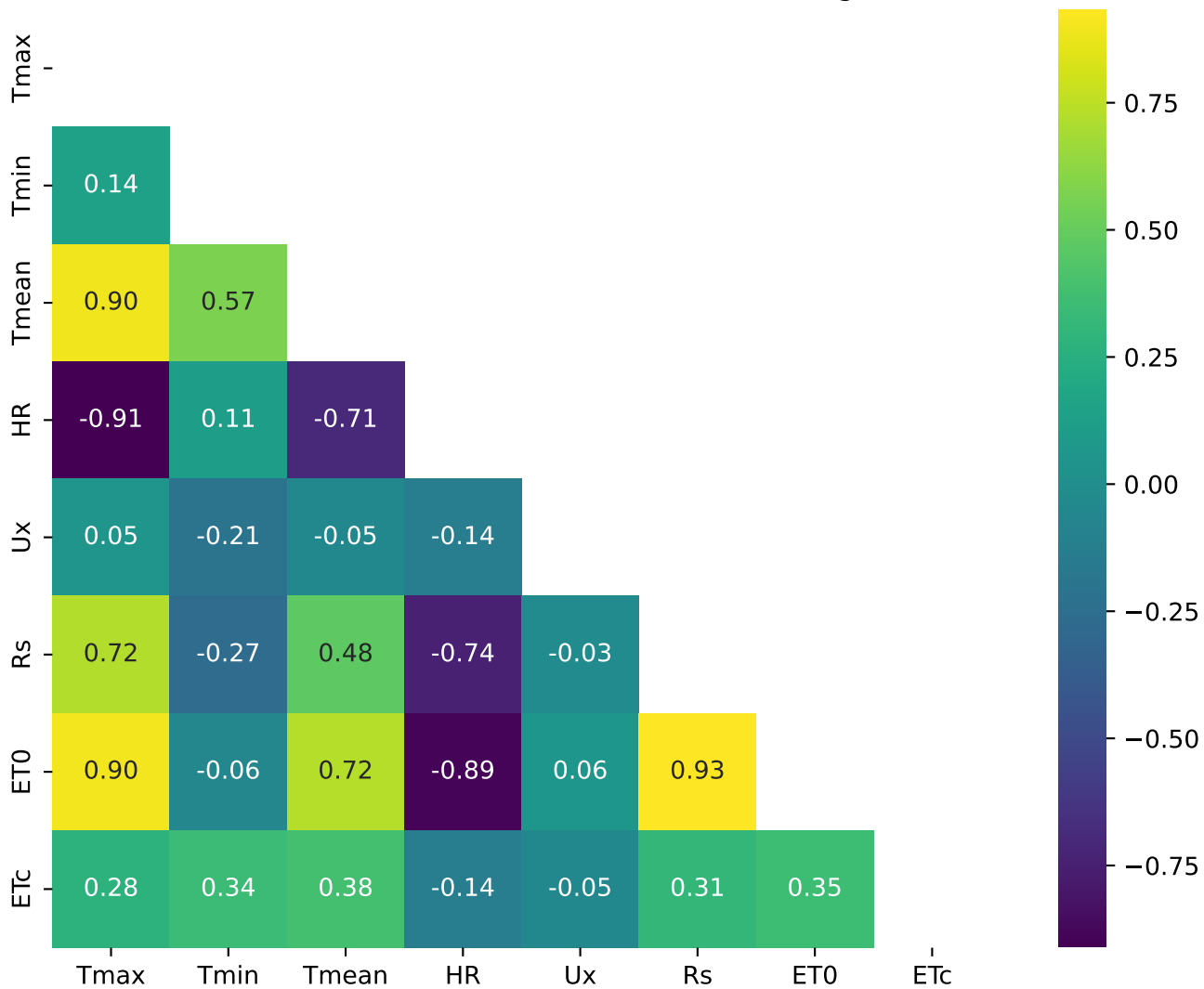
Importancias: {'Tmax': 0.22378526948900554, 'Tmin': 0.0037817760017536646, 'HR': 0.08508751951769015, 'Ux': 0.005592260054672838, 'Rs': 0.6817531749368778}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	21.056957	6.254783	71.184783	1.069130	23.290000	4.057720	1.410042
1	20.553529	10.509853	80.483824	0.888382	18.713676	3.572655	4.151202
2	27.636897	9.827241	50.996897	1.235517	26.265862	5.556324	6.667589
3	27.188621	9.733793	49.148621	1.225517	23.839310	5.180013	1.554004
4	19.016667	9.002857	80.778571	1.899524	14.101905	2.818261	2.629177

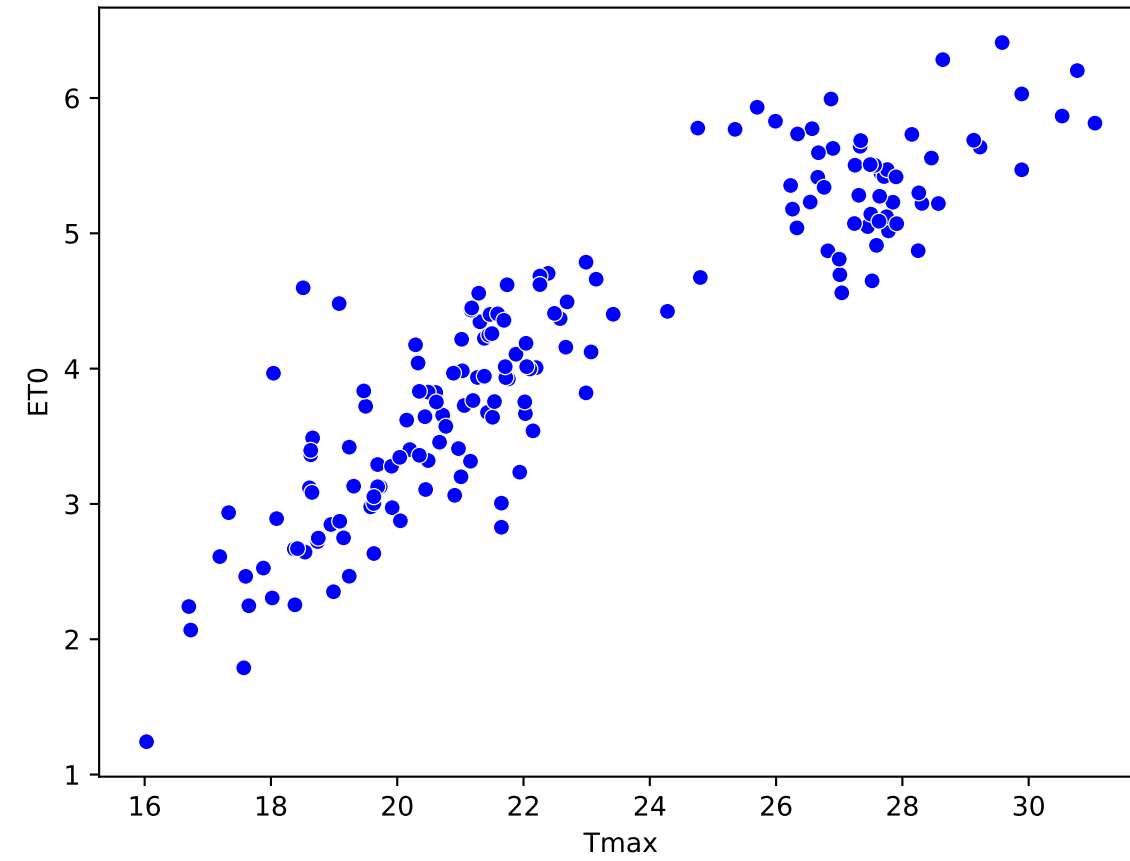
Toluca — 2011

Matriz de Correlación entre Variables Meteorológicas

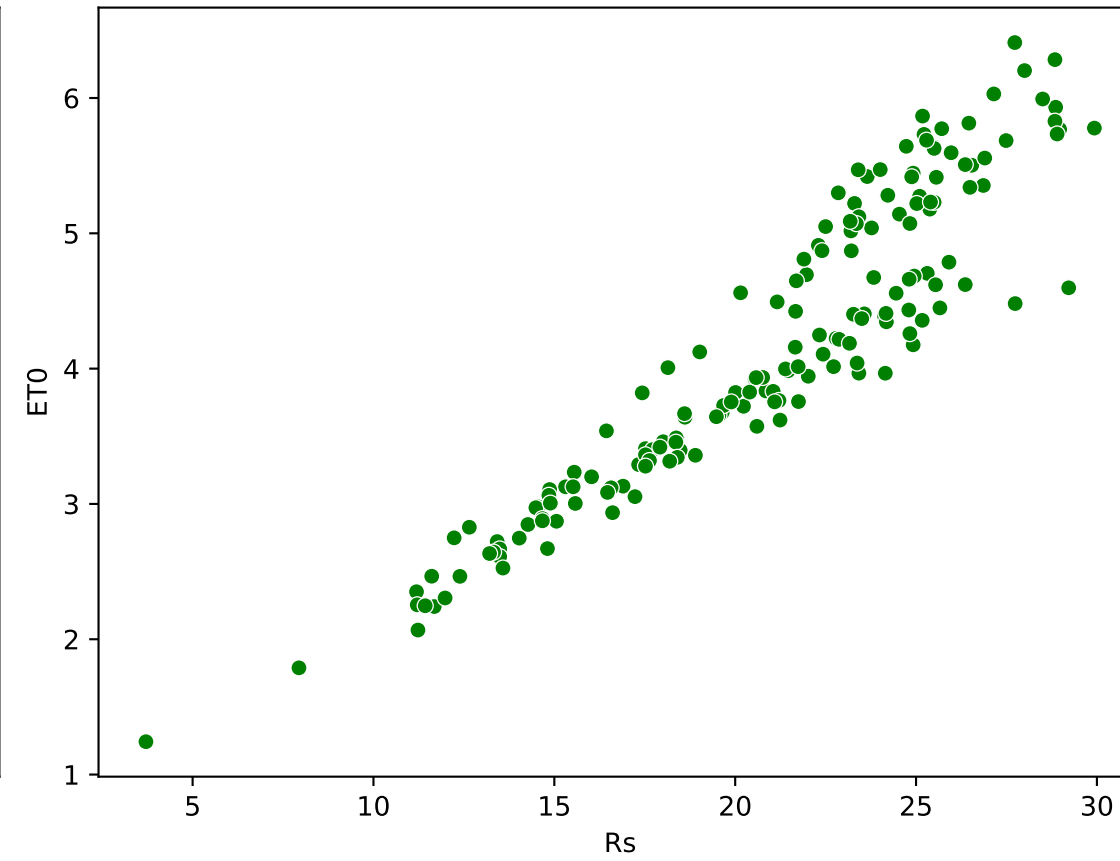


Dispersión — Toluca (2011)

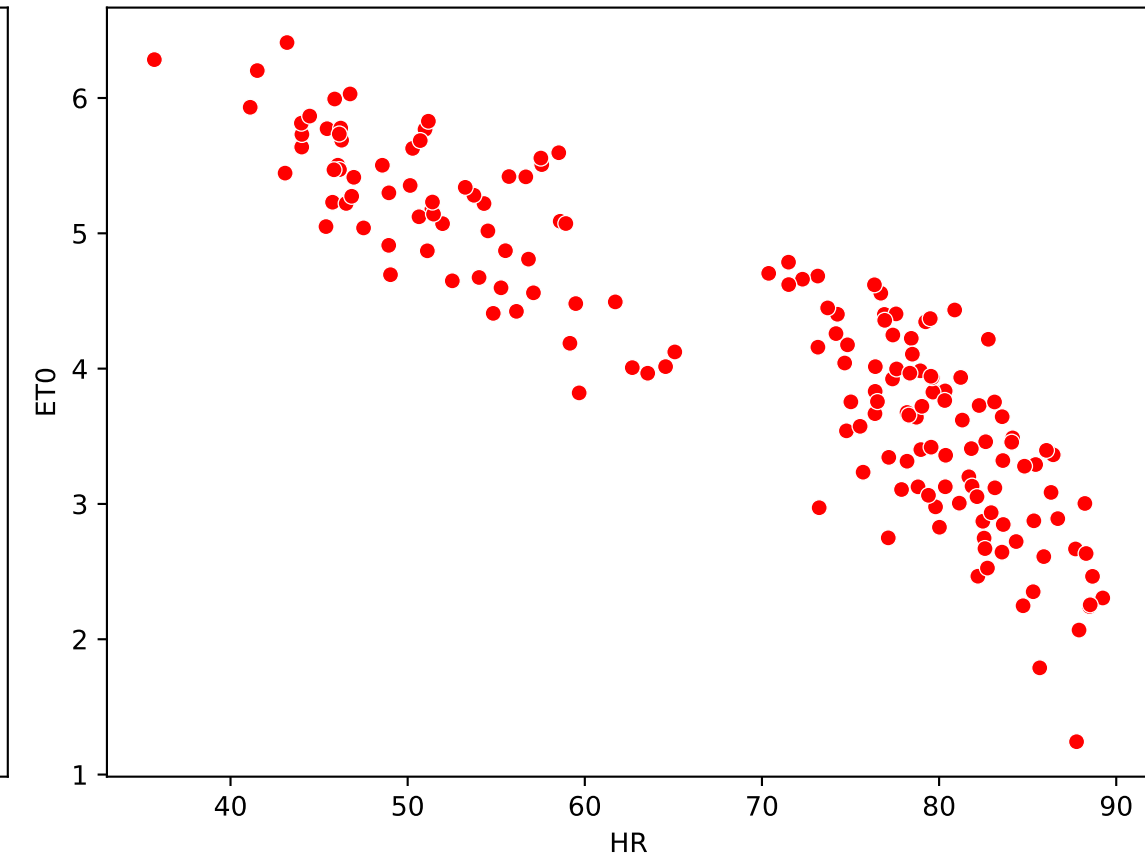
Tmax vs ET0



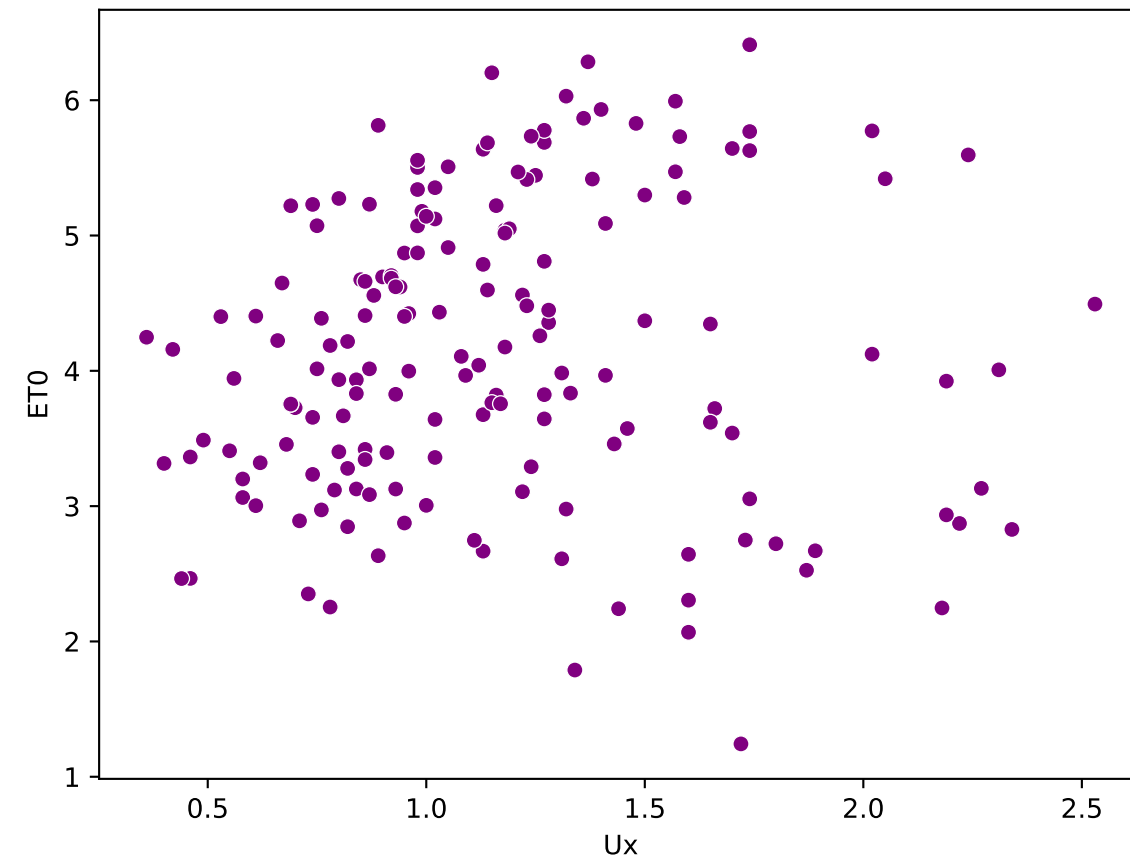
Rs vs ET0



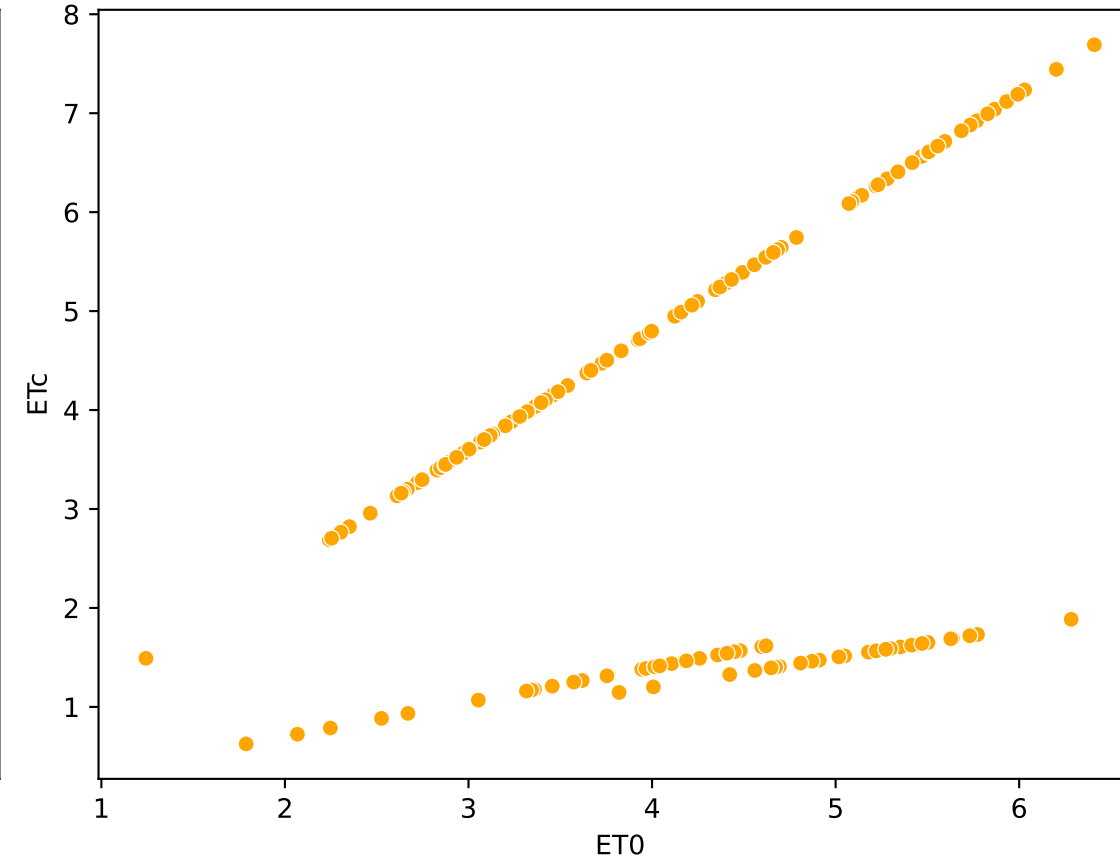
HR vs ET0



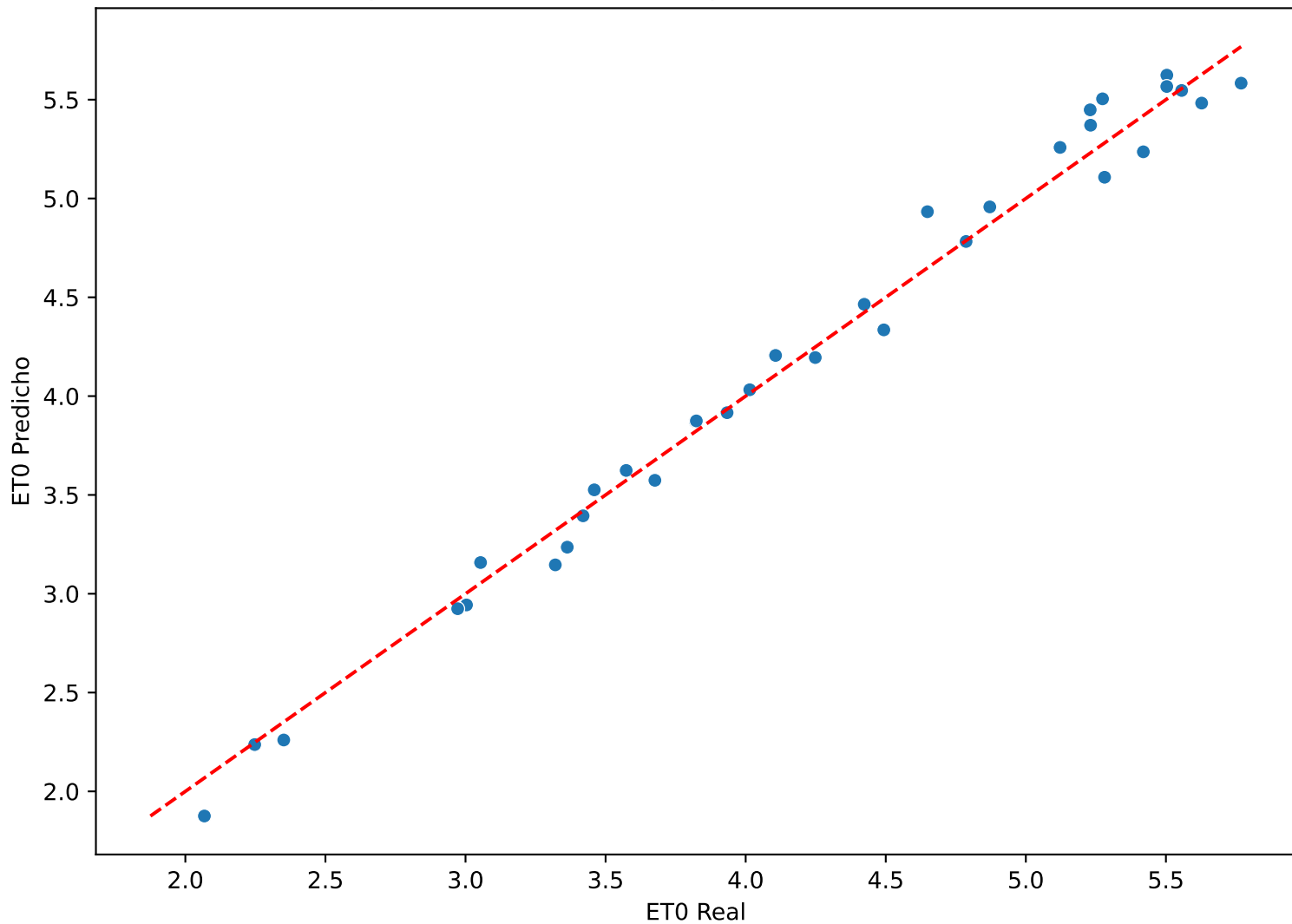
Ux vs ET0



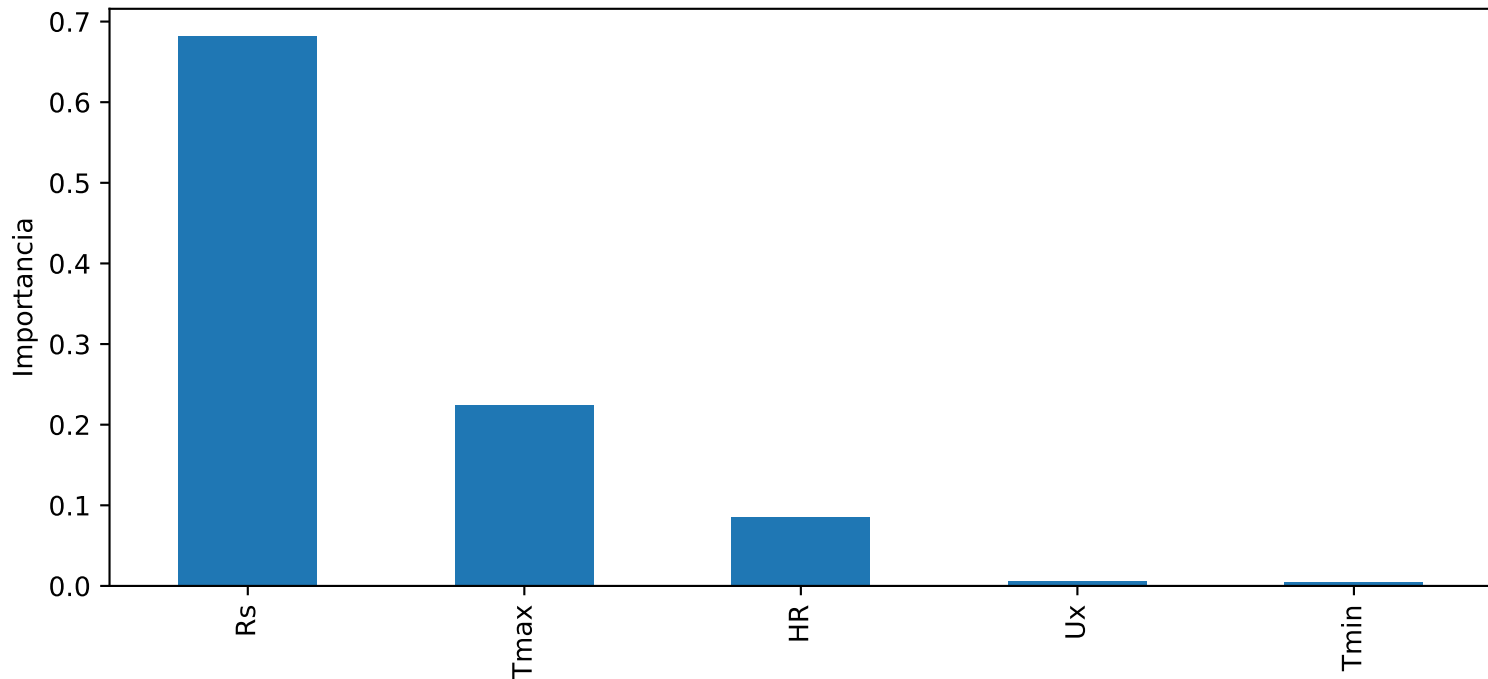
ET0 vs ETc



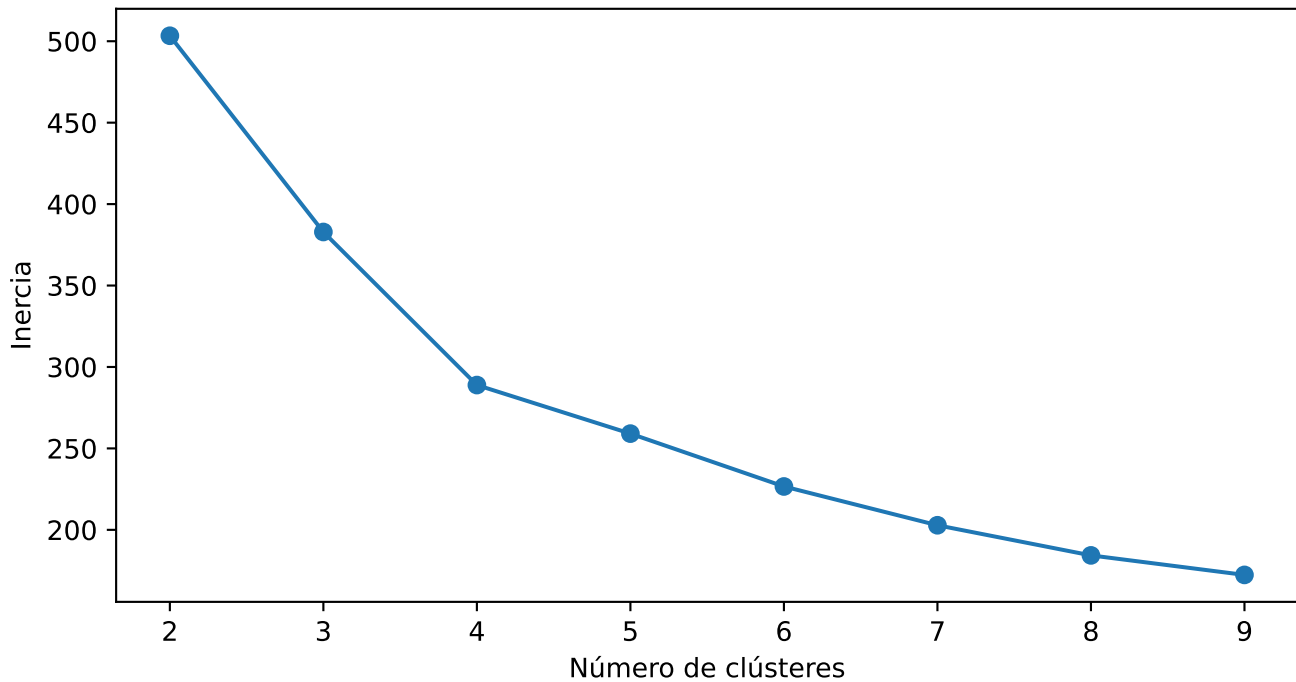
Comparación entre ET0 Real y Predicho — Toluca (2011)



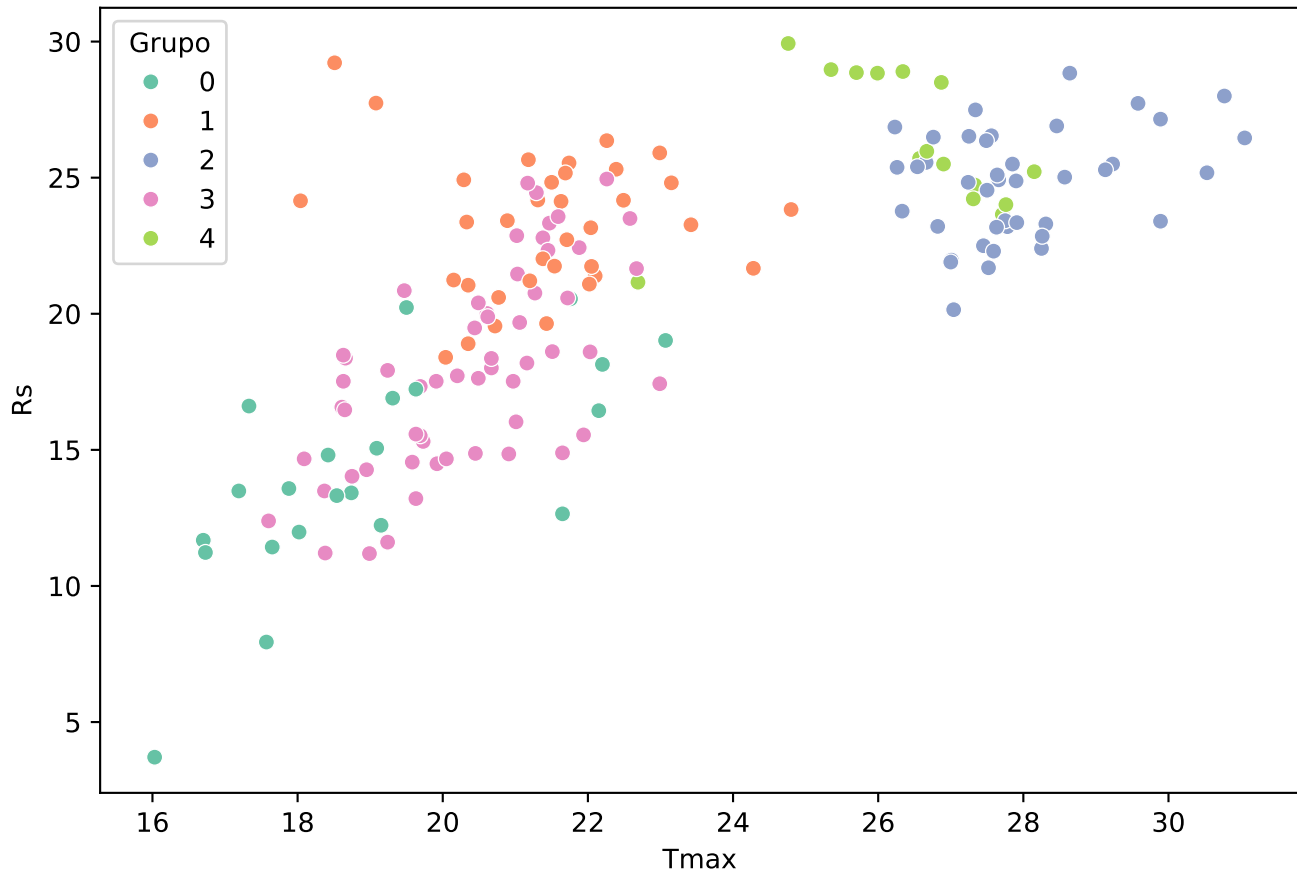
Importancia de variables (RF) — Toluca (2011)



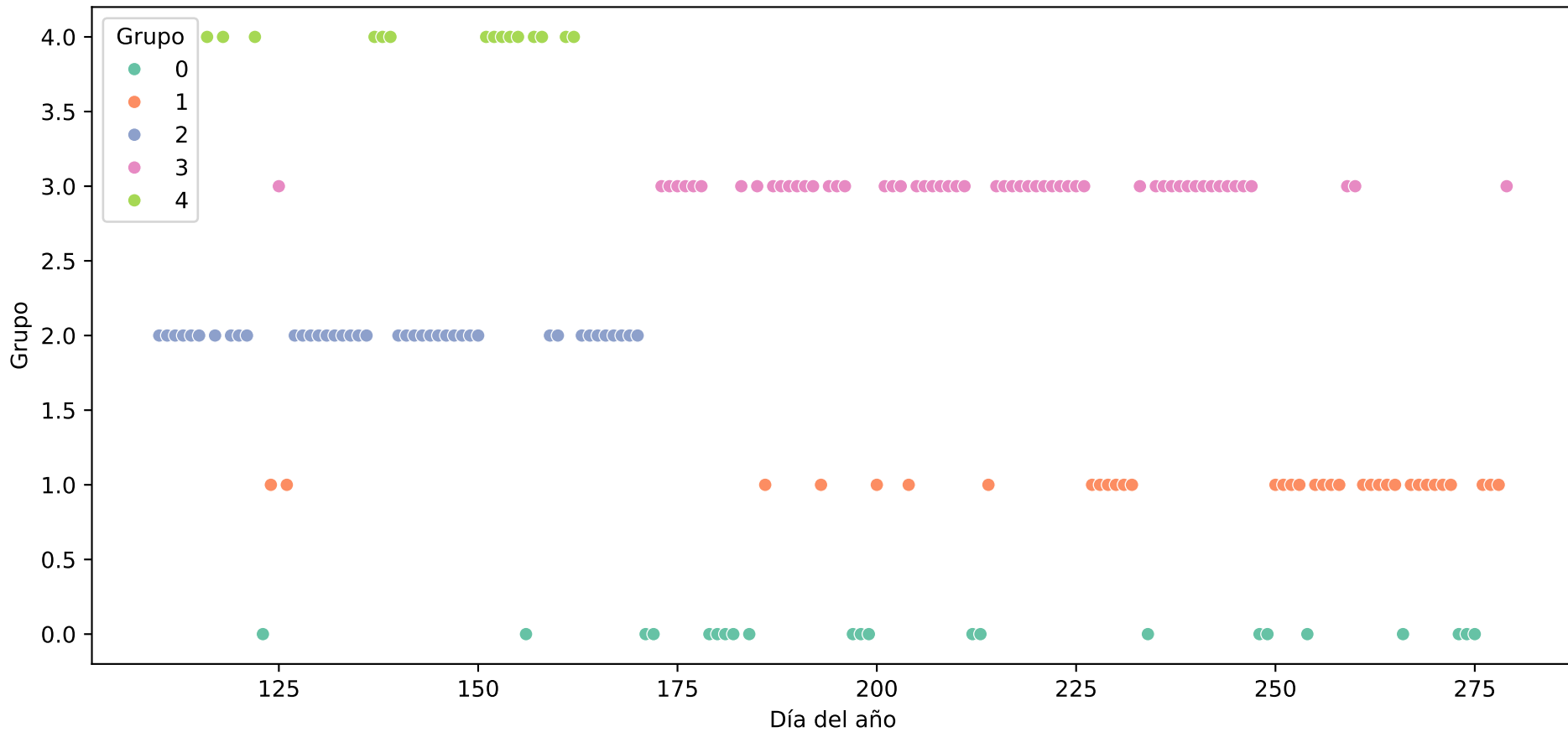
Método del codo



Clasificación de días climáticos — Toluca (2011)

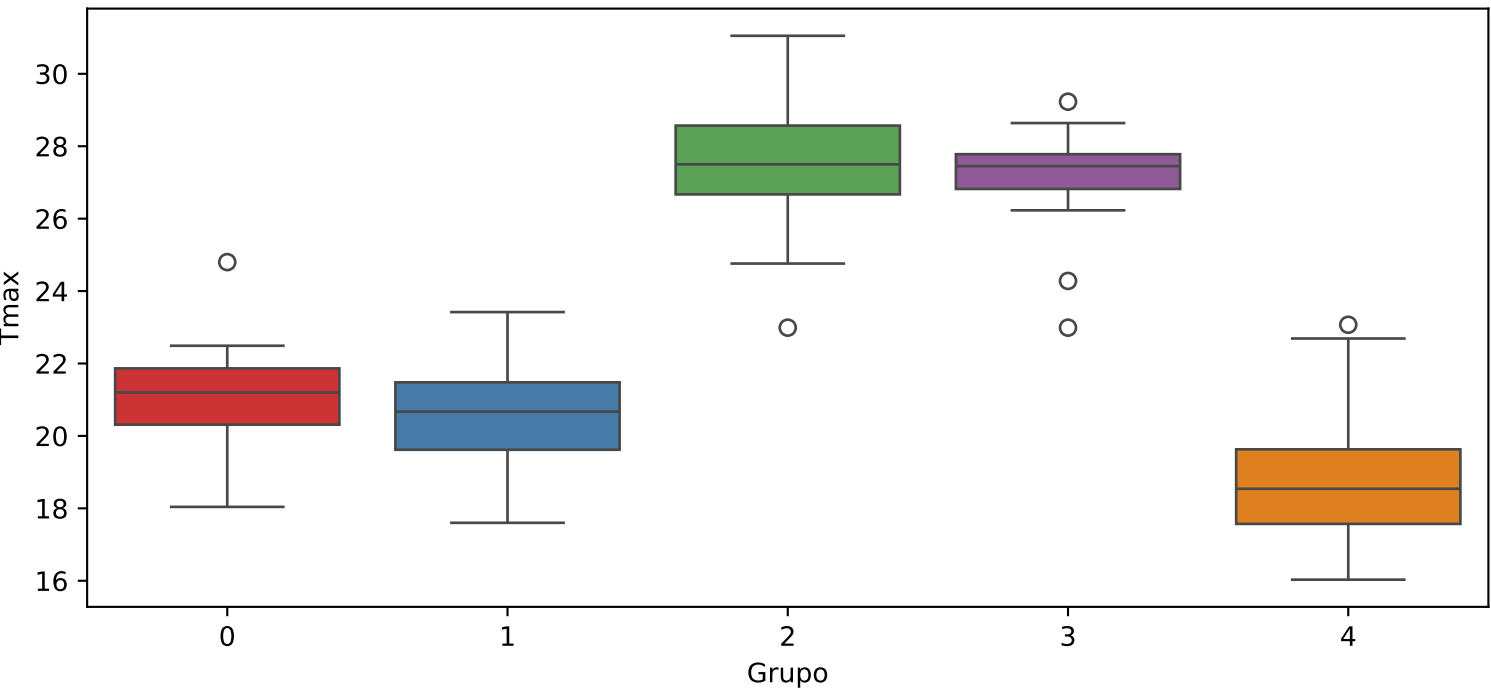


Distribución de días por grupo — Toluca (2011)

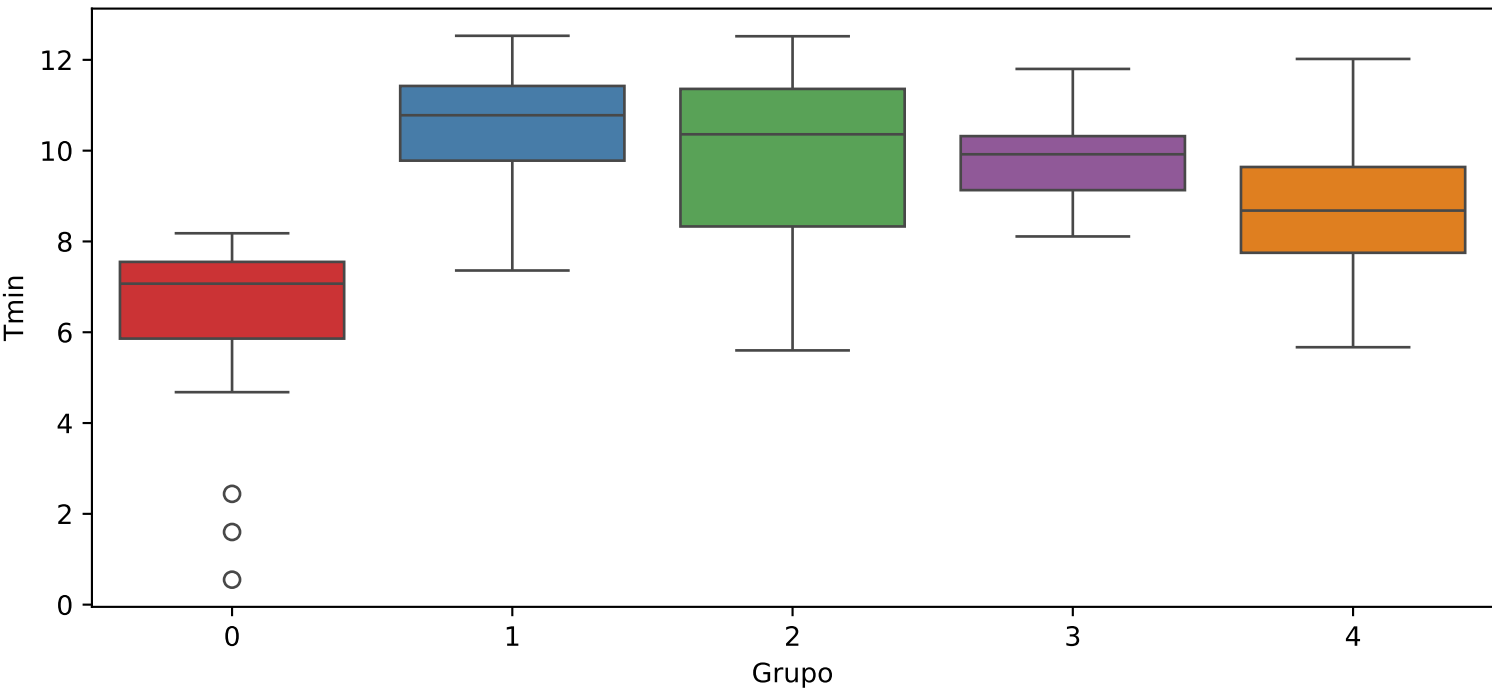


Boxplots por grupo — Toluca (2011)

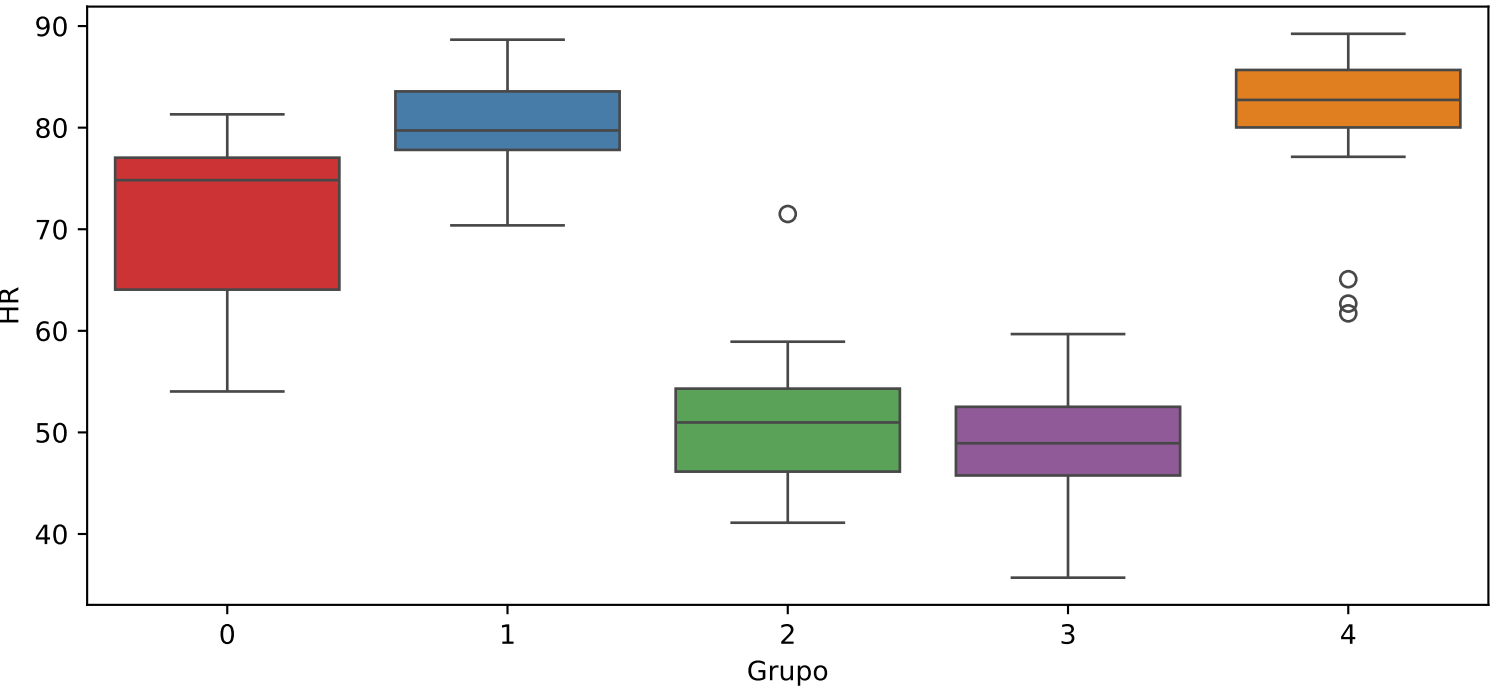
Distribución de Tmax por grupo



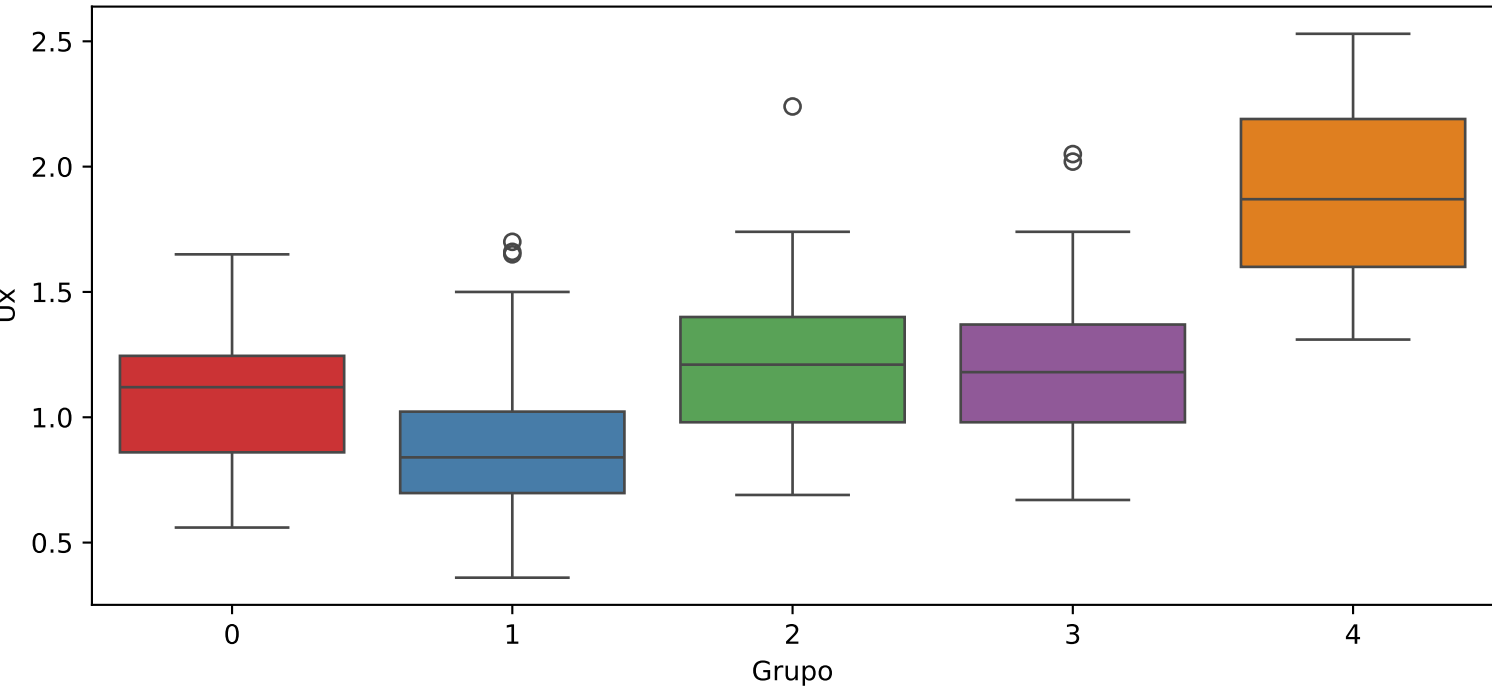
Distribución de Tmin por grupo



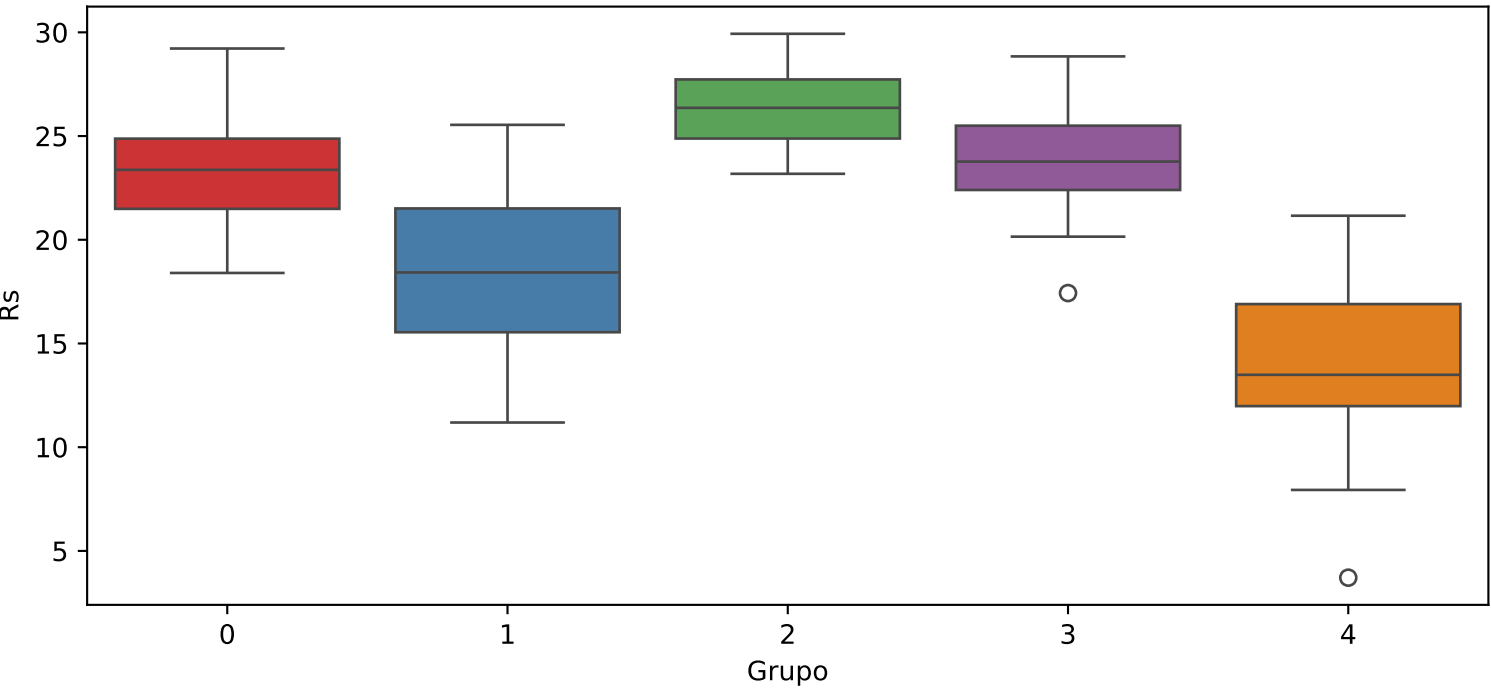
Distribución de HR por grupo



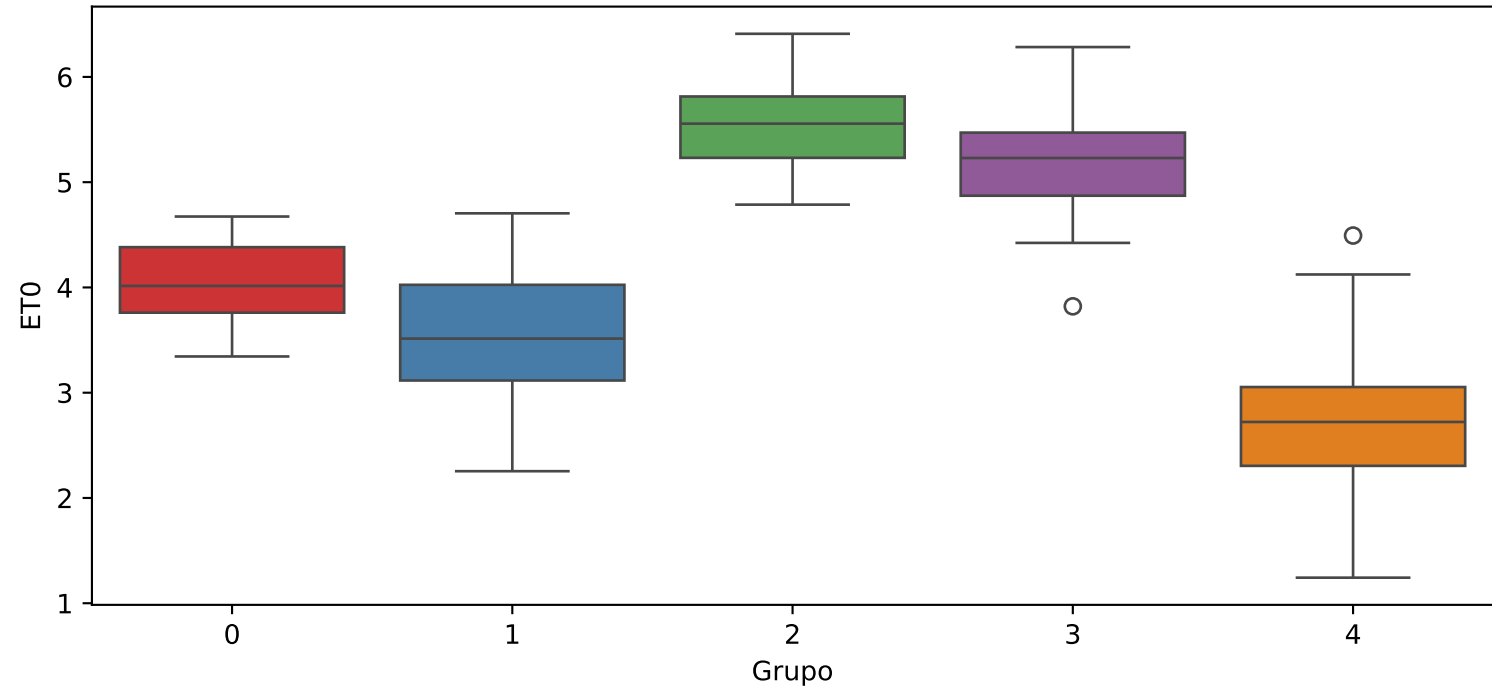
Distribución de Ux por grupo



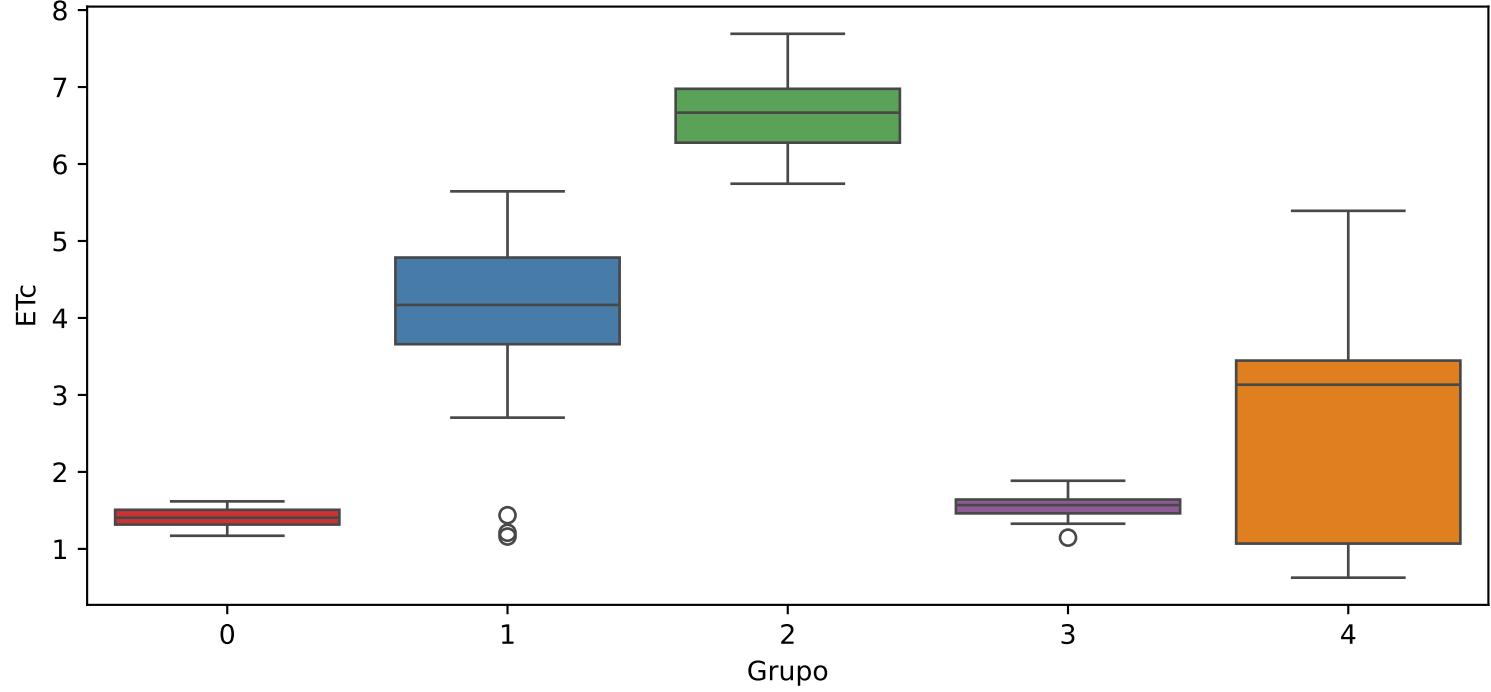
Distribución de Rs por grupo



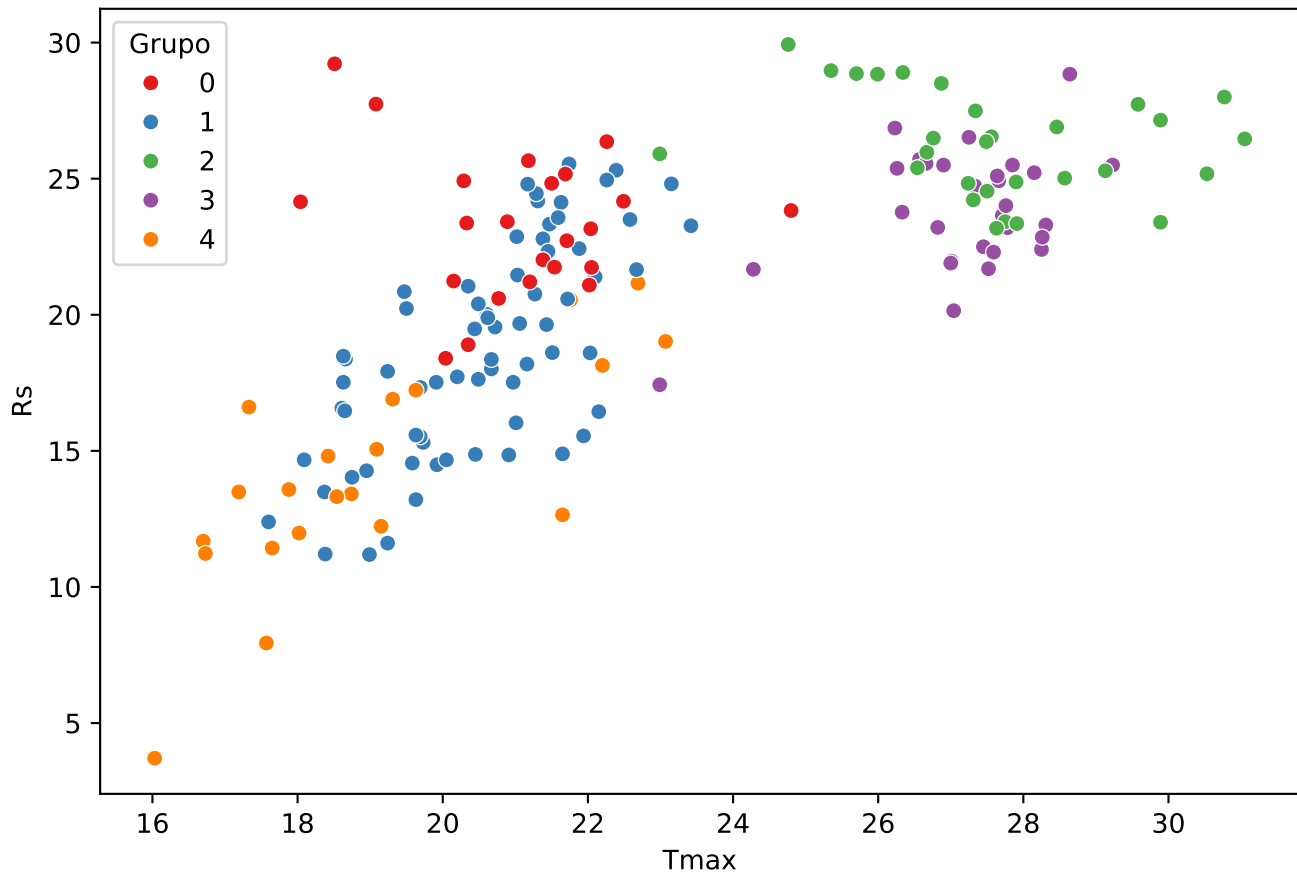
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2011)



Toluca — 2012

Días del ciclo: 170

ETc total [mm]: 586.2

ETverde total [mm]: 251.3

ETazul total [mm]: 335.0

Tmax / Tmin [°C]: 29.3 / 1.5

Toluca — 2012 · Resultados y métricas

[Toluca 2012] Regresión Lineal ET0 — R^2 : 0.9925 MSE: 0.0083

[Toluca 2012] Random Forest ET0 — R^2 : 0.9810 MSE: 0.0211

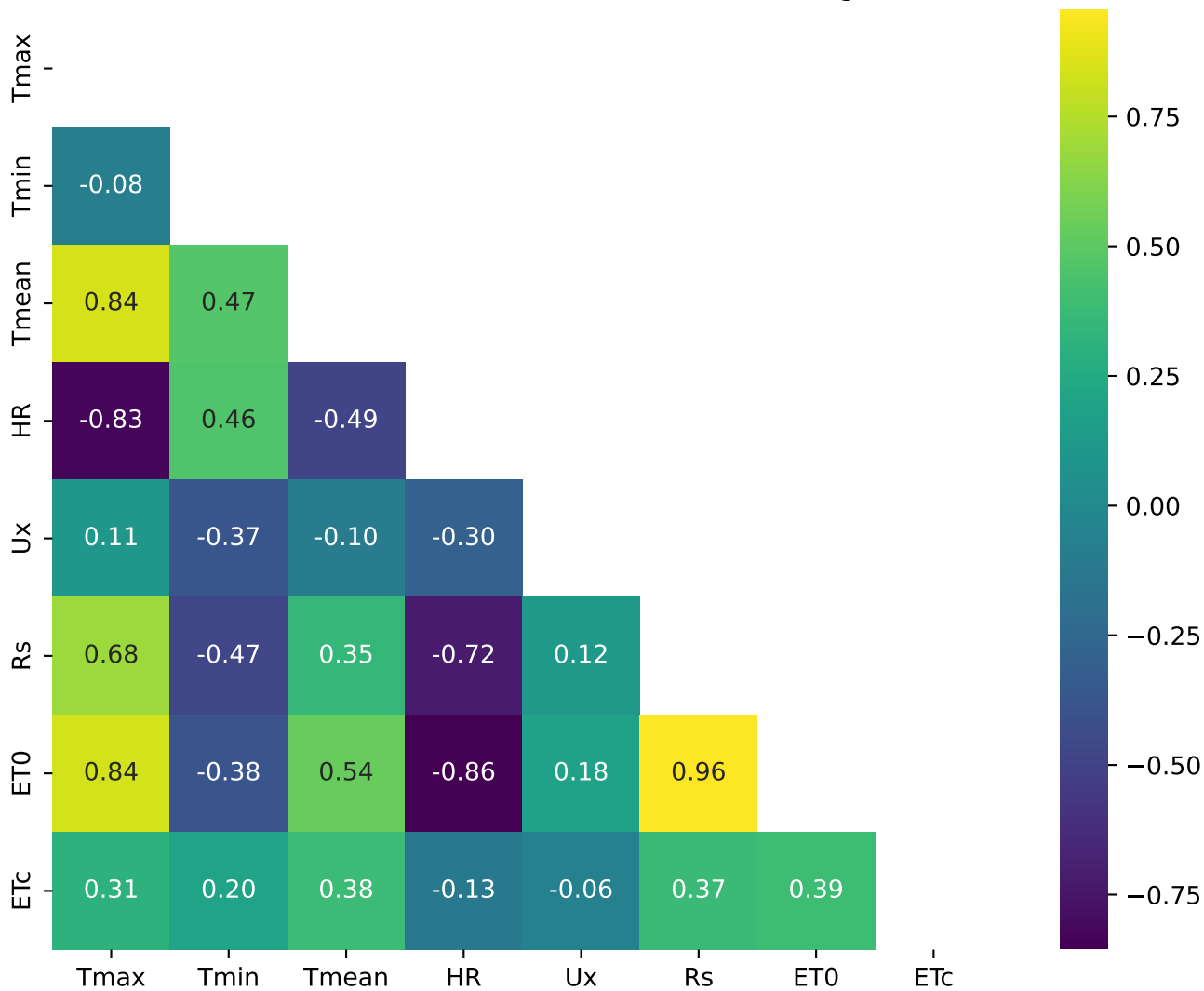
Importancias: {'Tmax': 0.048986542947686784, 'Tmin': 0.005960206824617407, 'HR': 0.08109213011734691, 'Ux': 0.0036817689933279756, 'Rs': 0.8602793511170209}

Estadísticas descriptivas por grupo (medias):

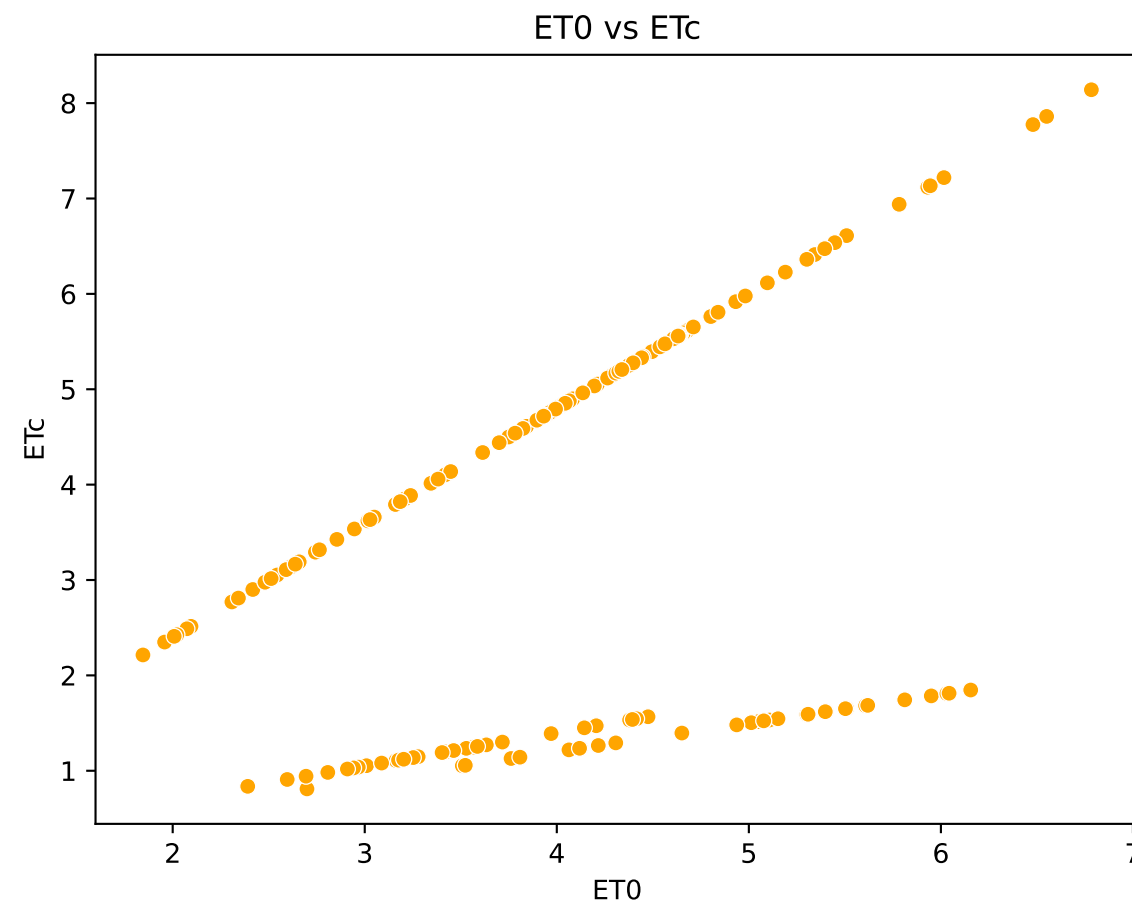
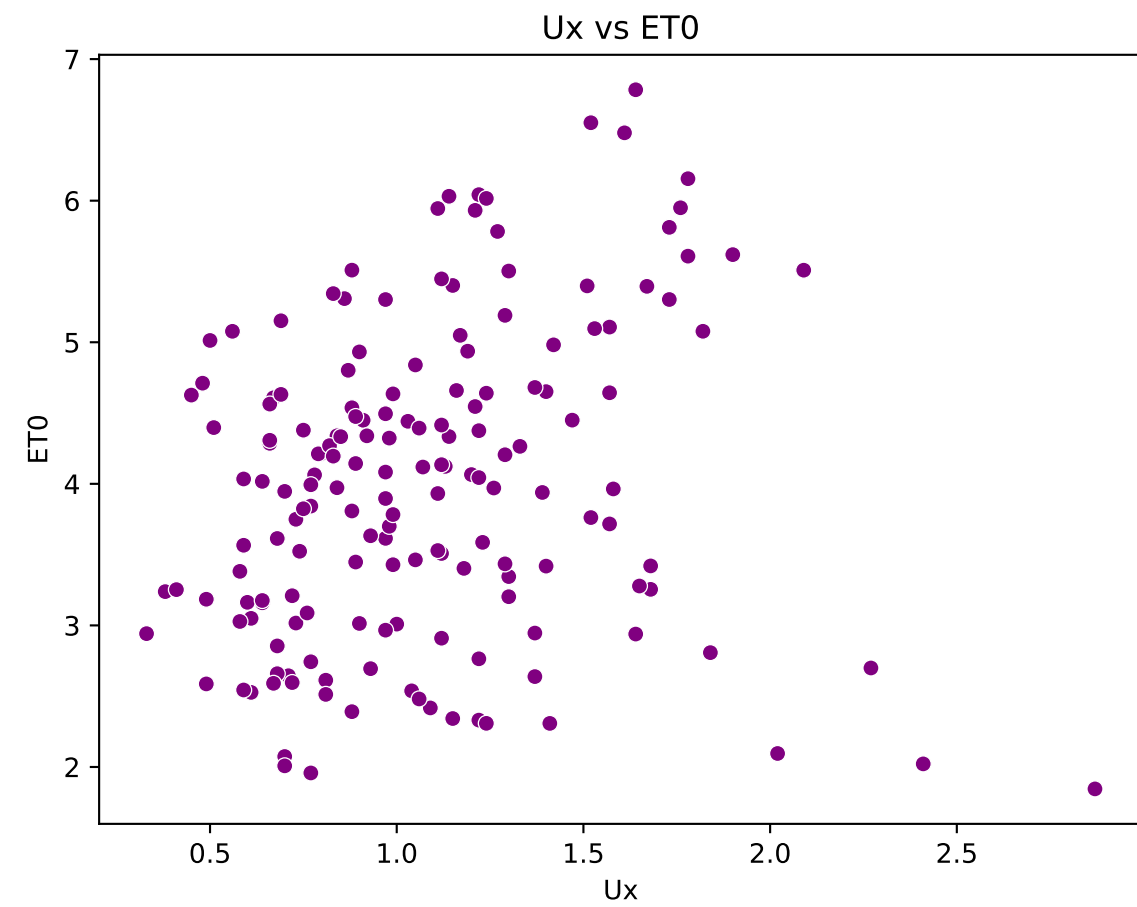
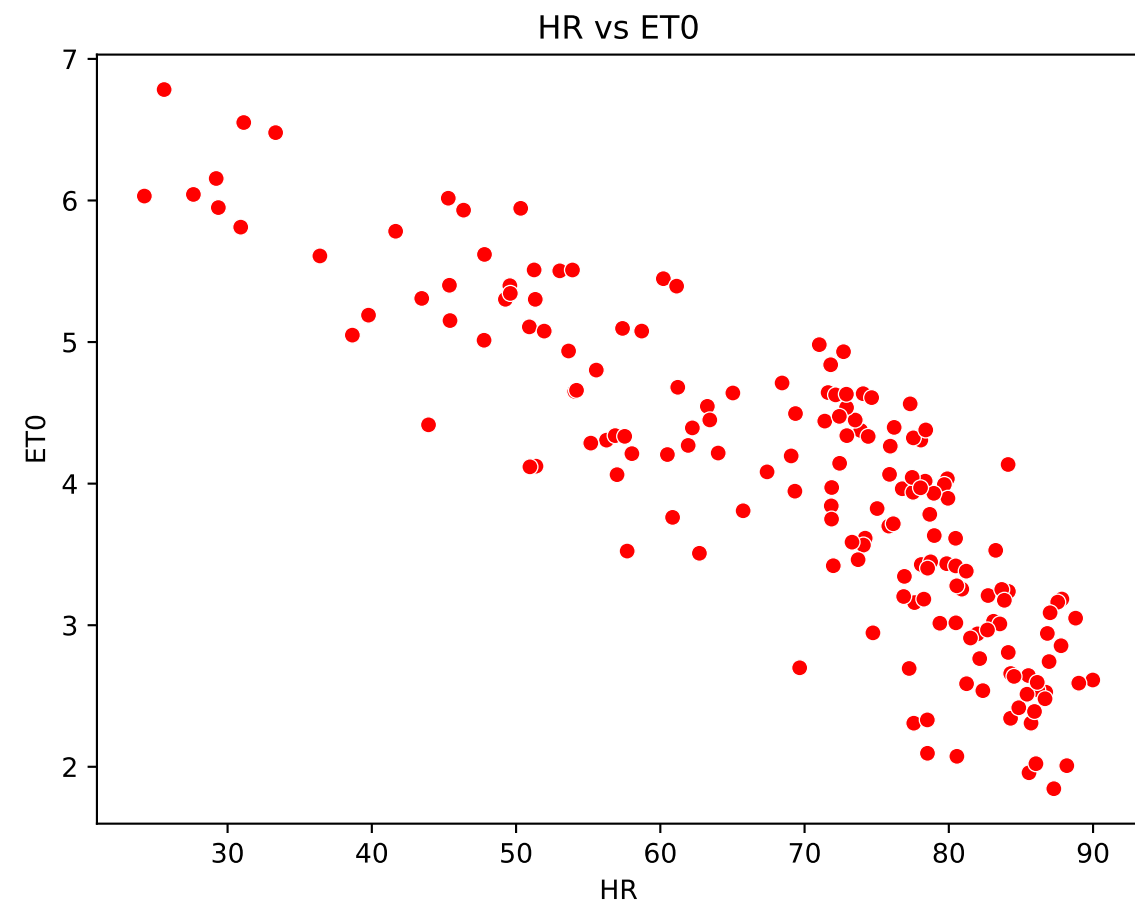
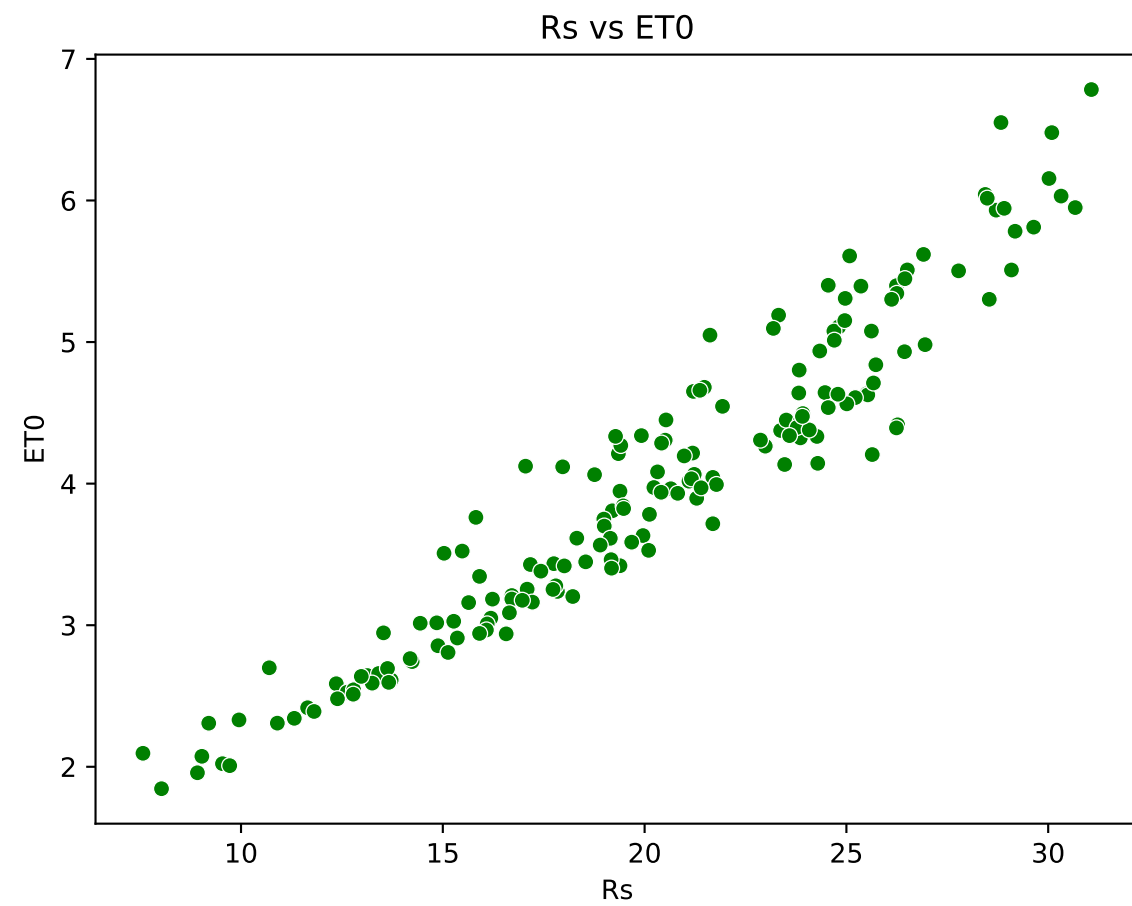
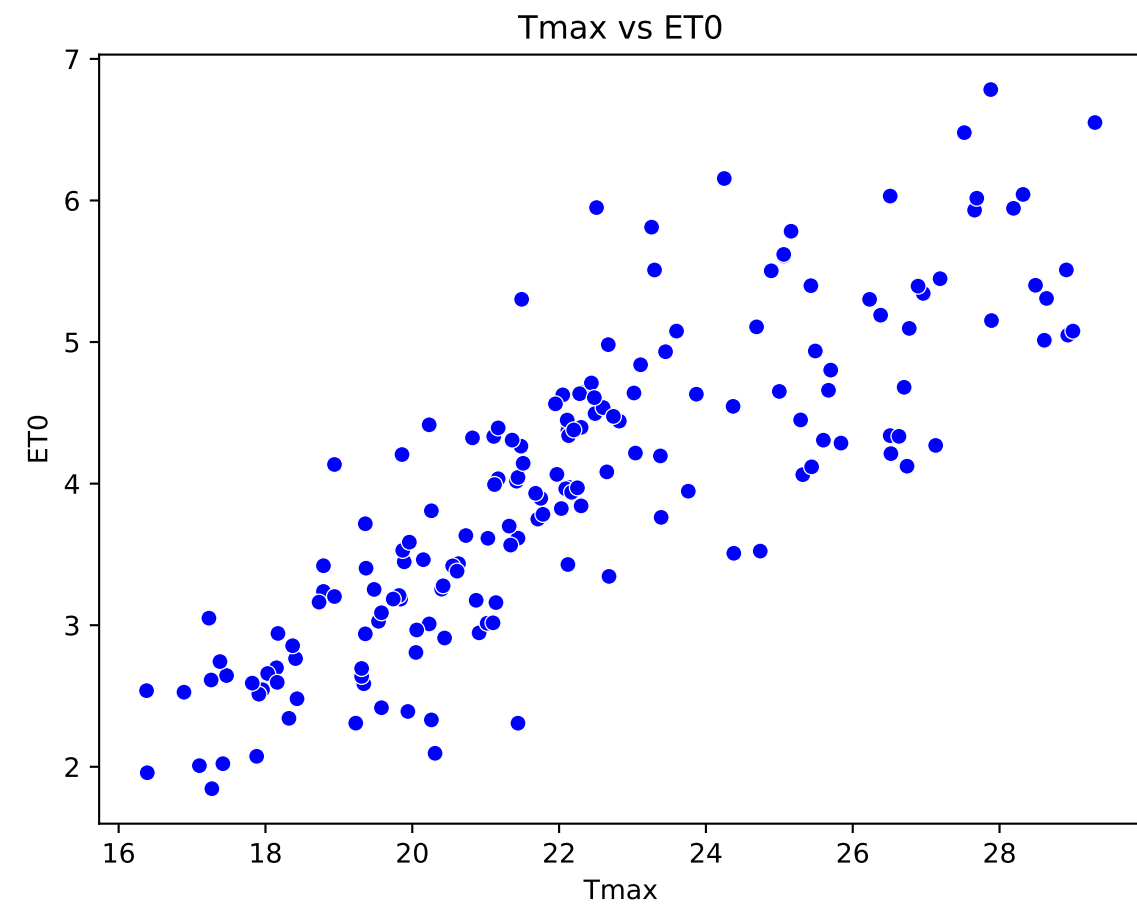
	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	19.020000	10.400000	83.132927	0.757317	14.184390	2.807494	2.706876
1	22.212885	9.633654	73.513654	0.923846	22.291154	4.219767	4.633415
2	24.113889	5.303333	44.437778	1.508889	27.070556	5.339678	1.913505
3	27.049355	9.720000	50.280000	1.108710	24.134516	5.149947	4.892249
4	20.243571	8.729643	77.784643	1.468571	15.987143	3.113087	1.721862

Toluca — 2012

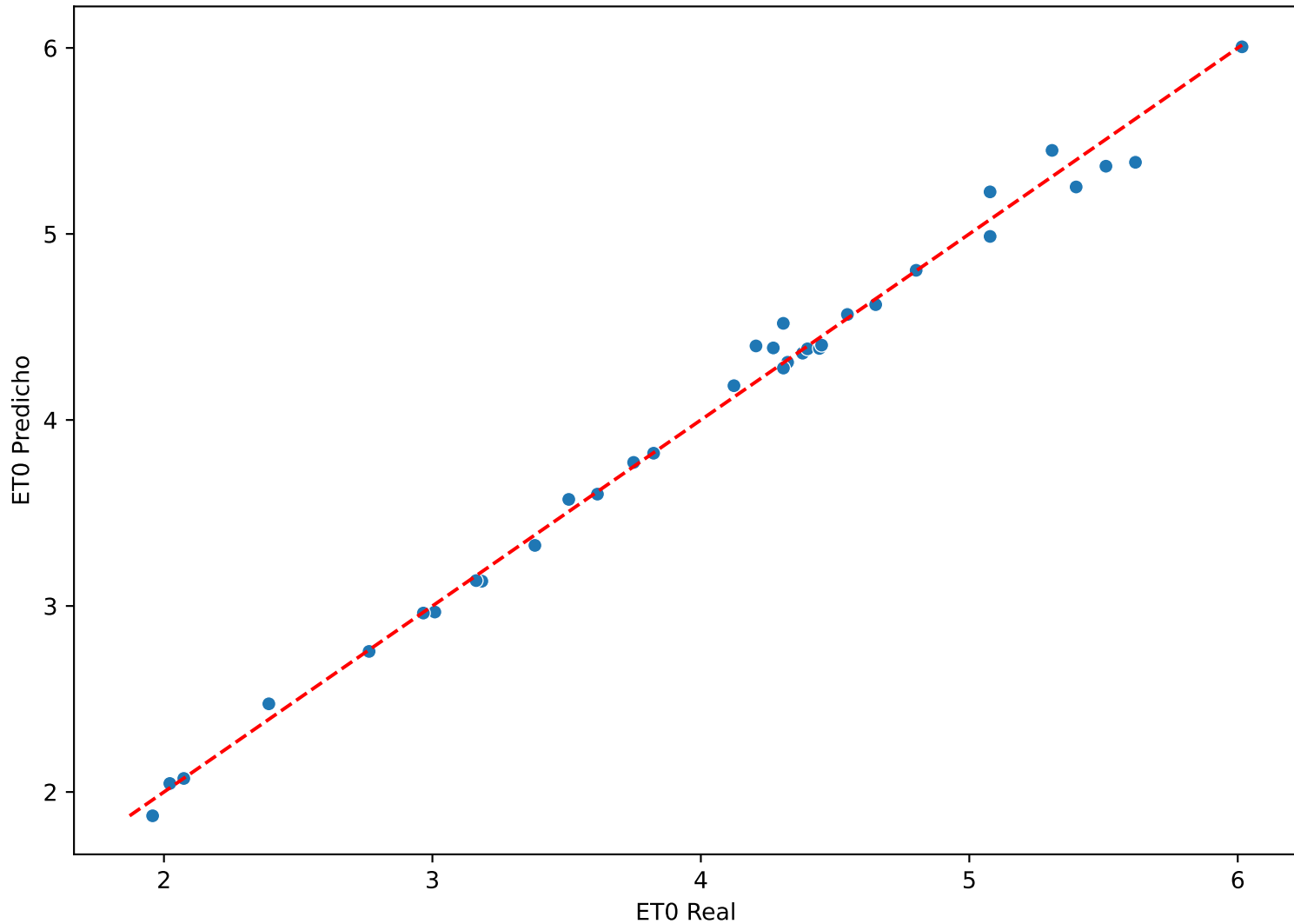
Matriz de Correlación entre Variables Meteorológicas



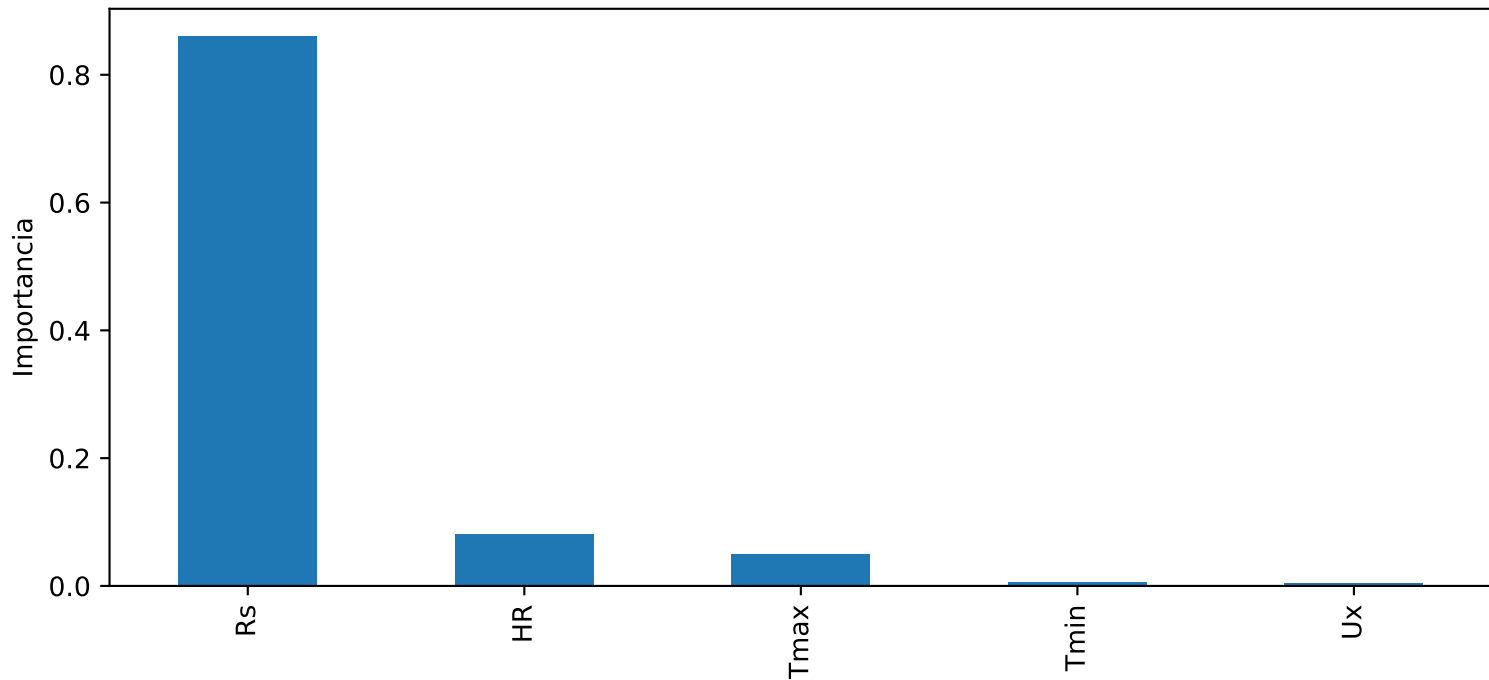
Dispersión — Toluca (2012)



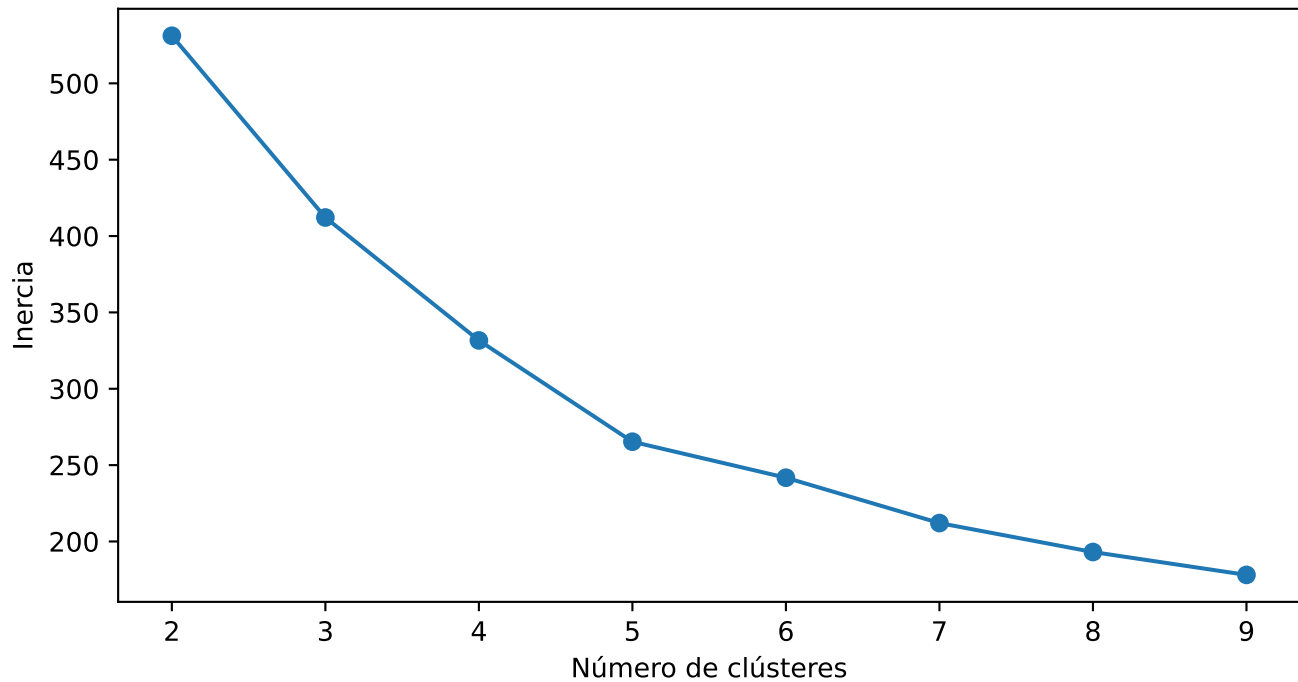
Comparación entre ET0 Real y Predicho — Toluca (2012)



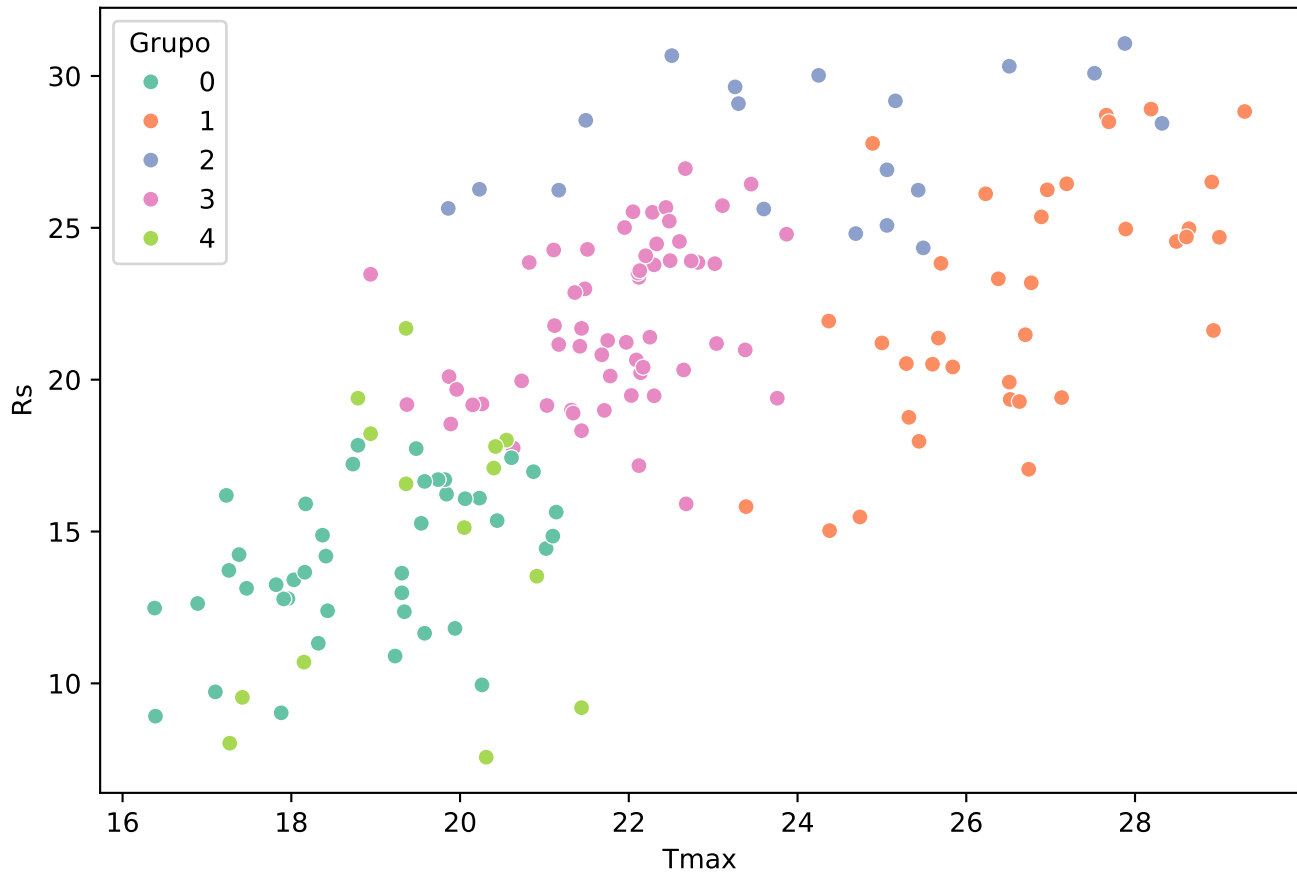
Importancia de variables (RF) — Toluca (2012)



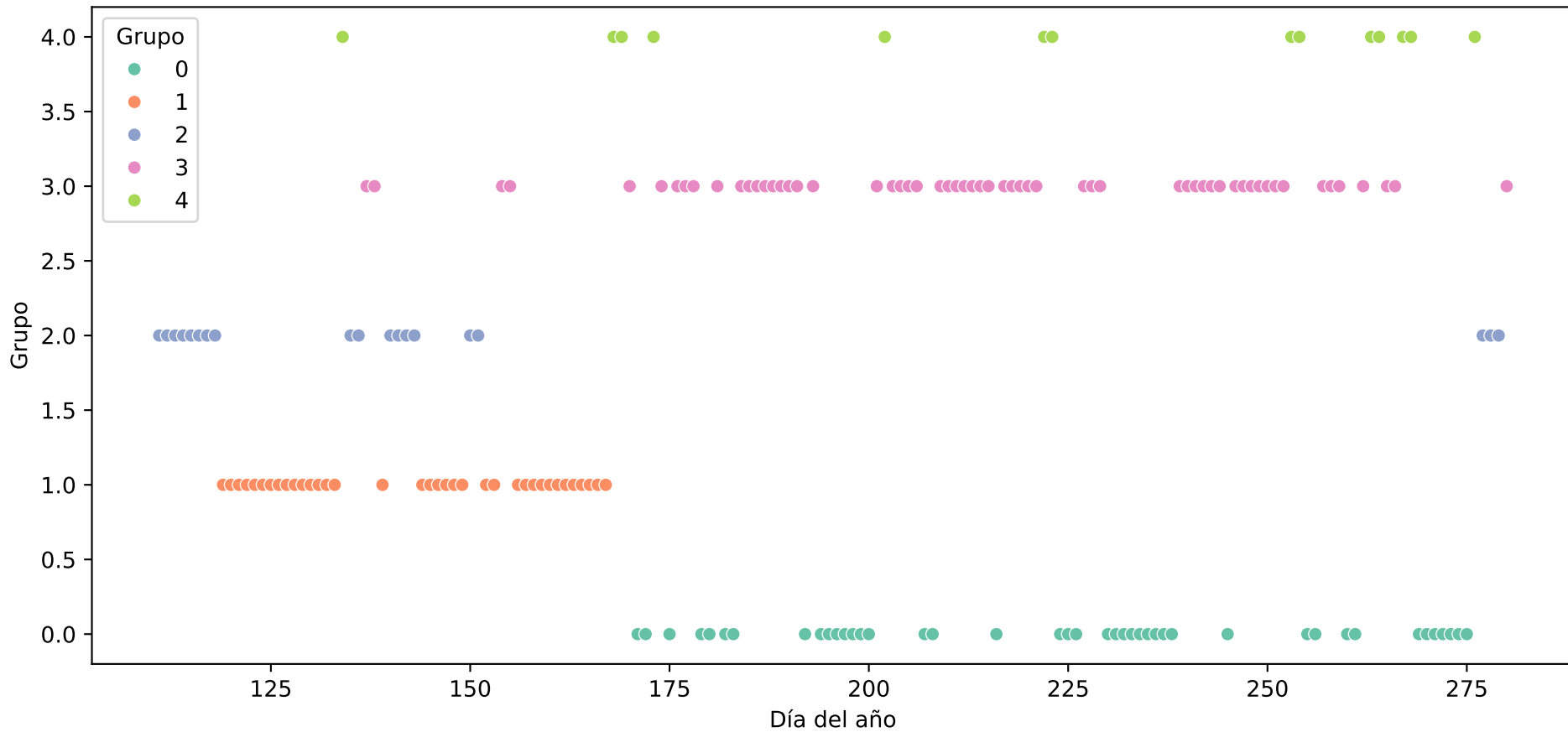
Método del codo



Clasificación de días climáticos — Toluca (2012)

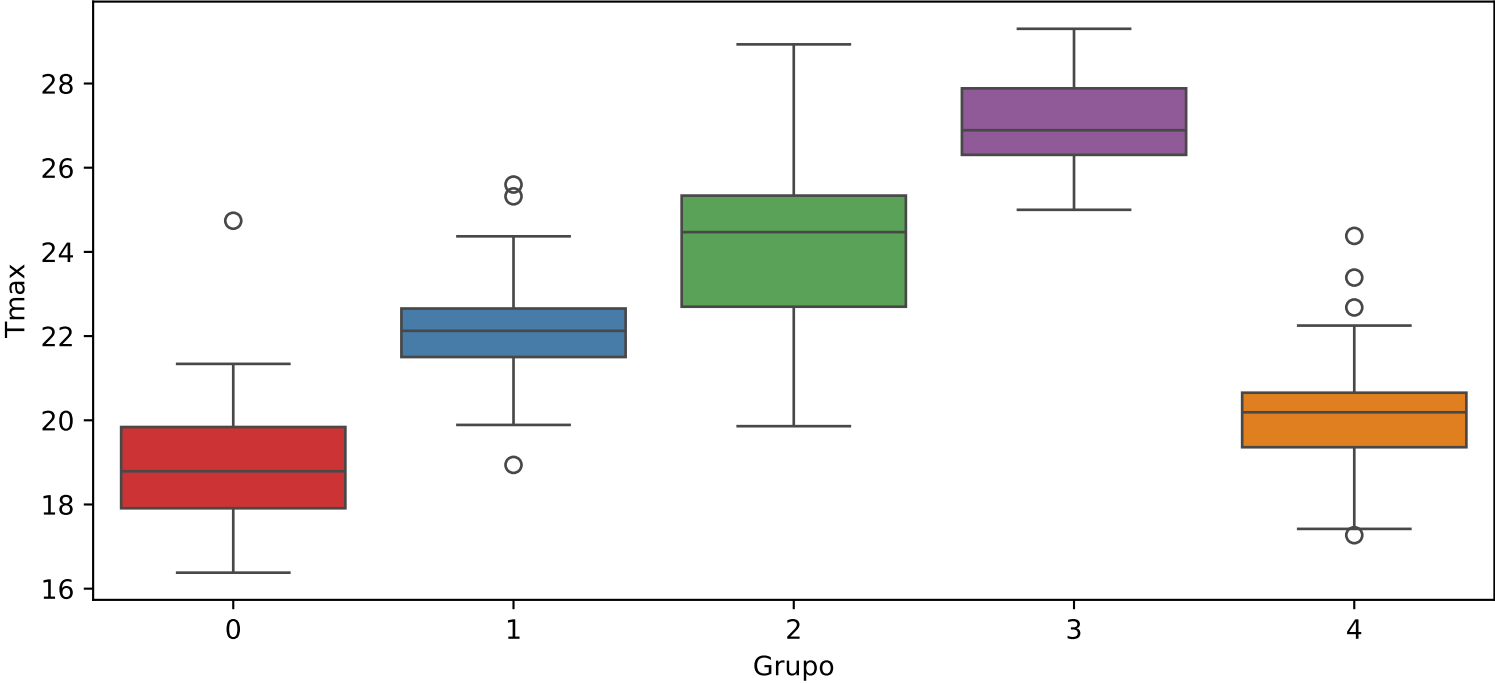


Distribución de días por grupo — Toluca (2012)

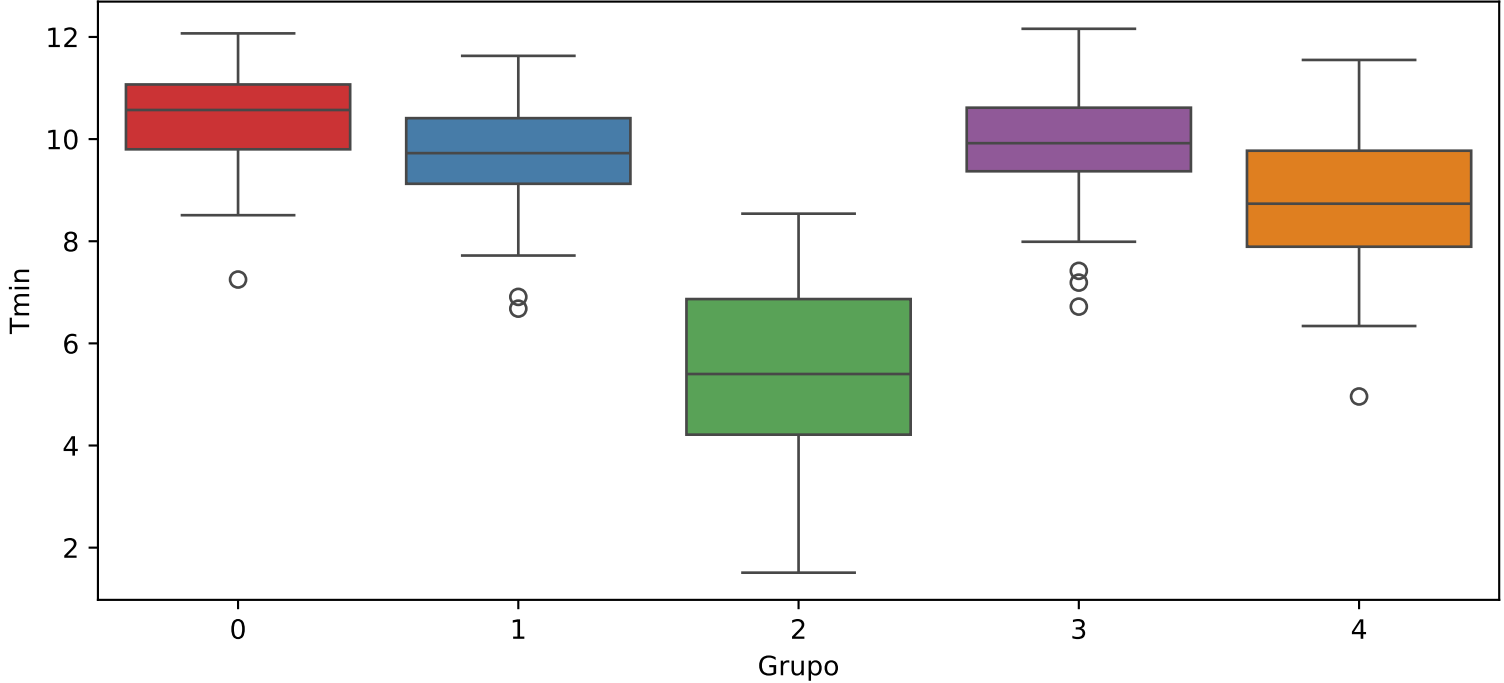


Boxplots por grupo — Toluca (2012)

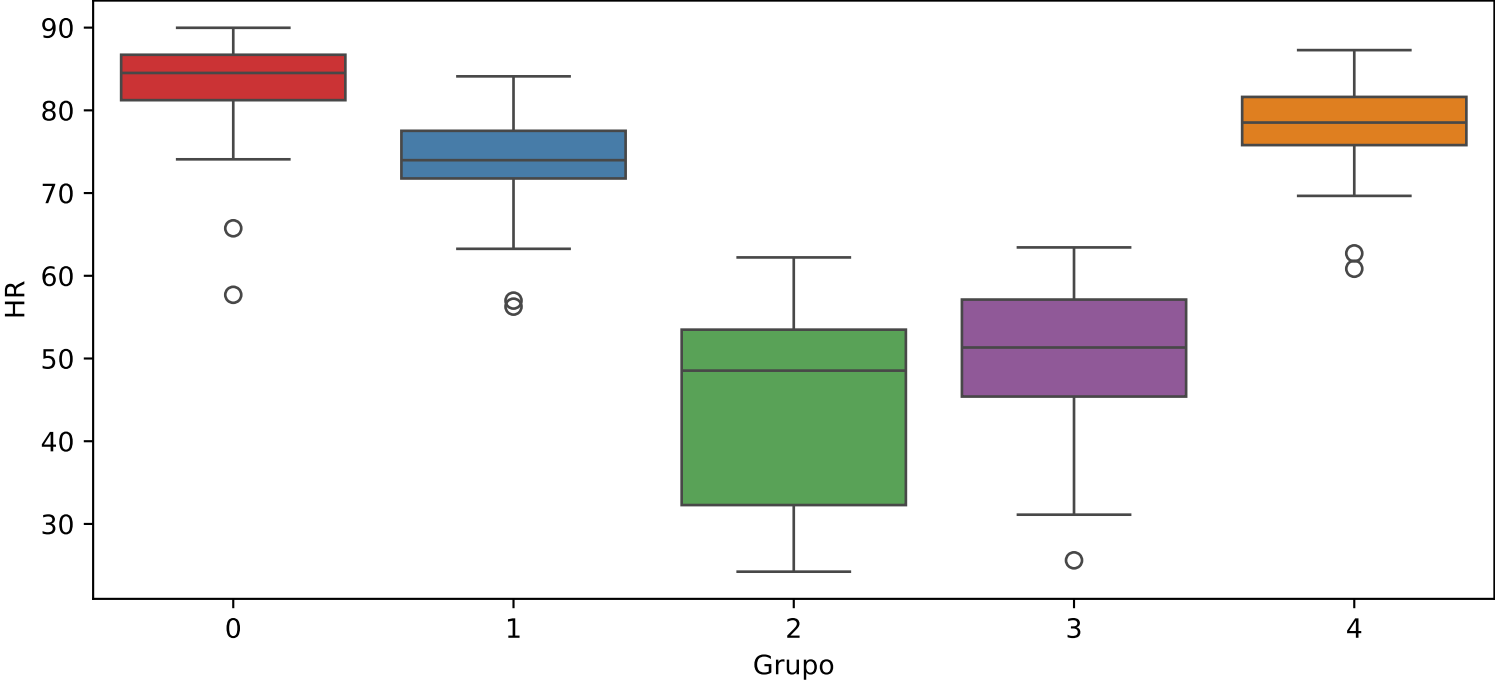
Distribución de Tmax por grupo



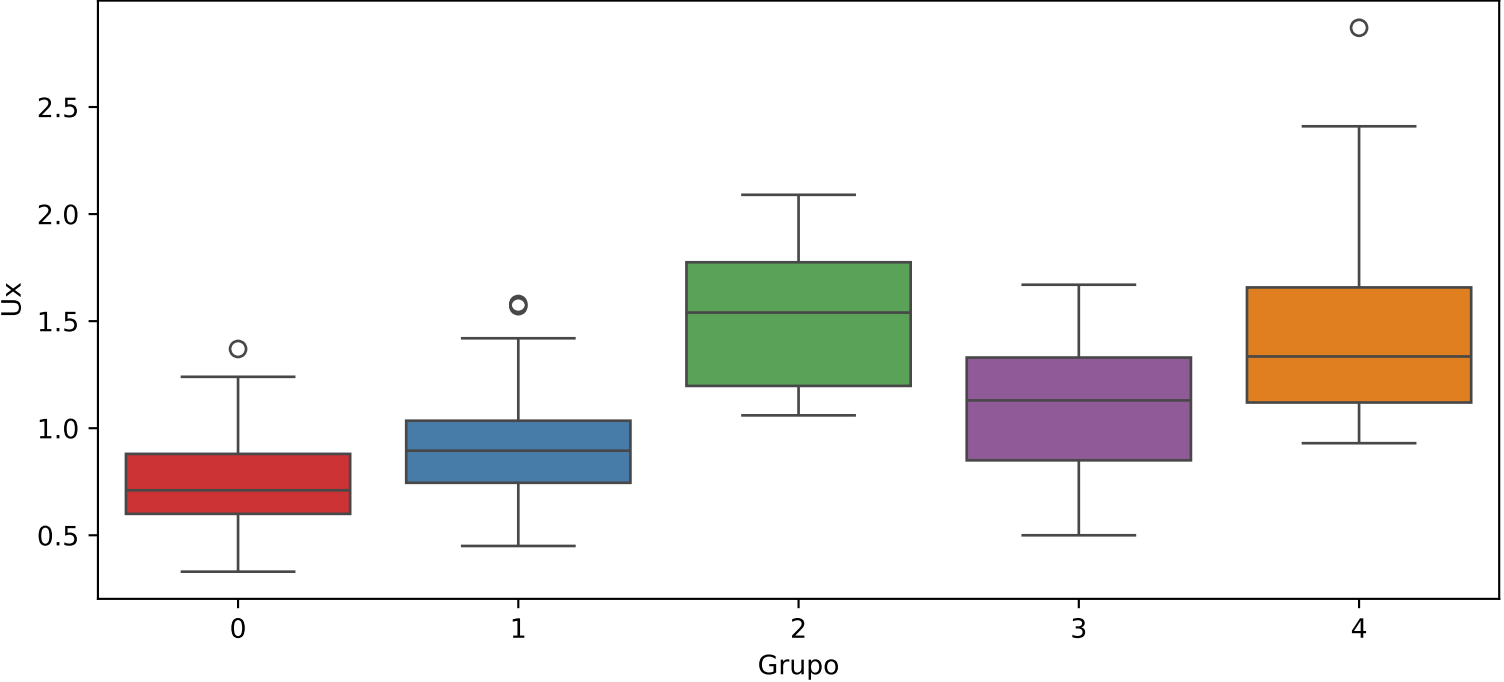
Distribución de Tmin por grupo



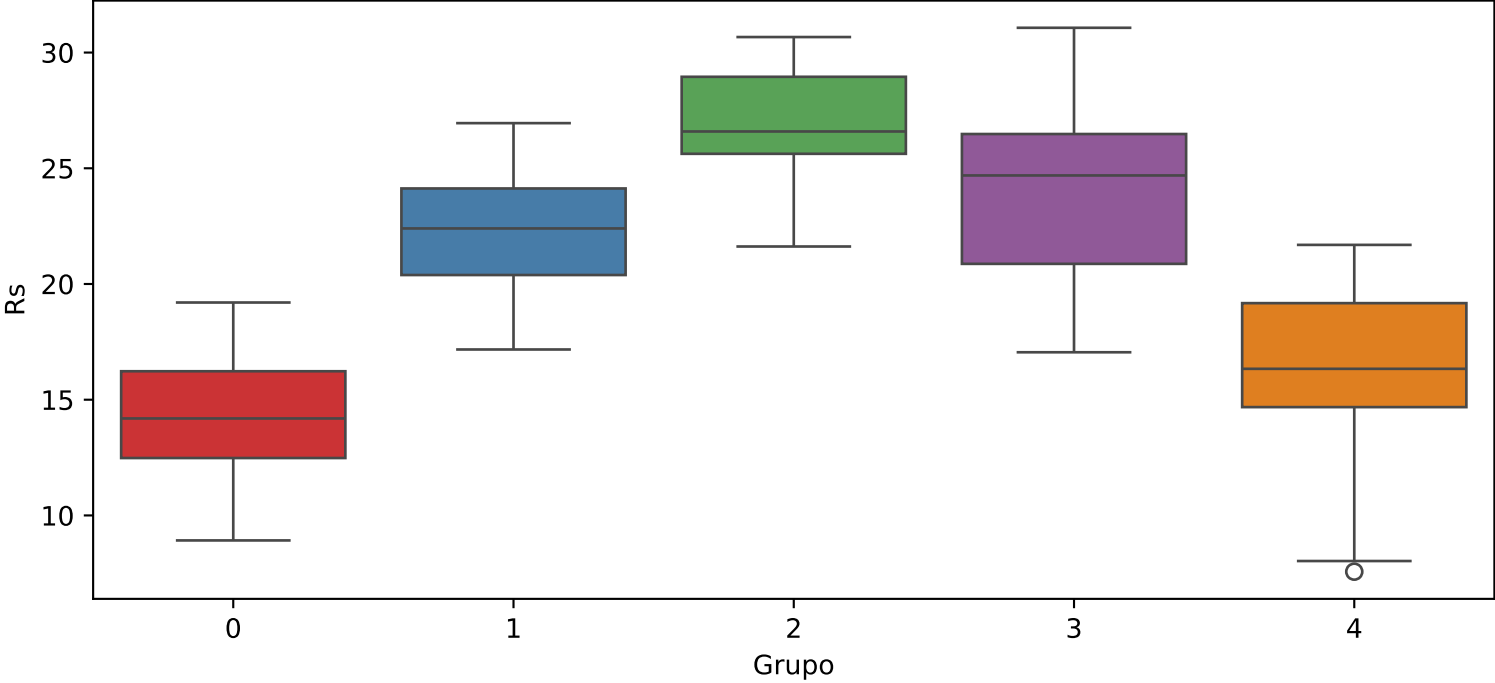
Distribución de HR por grupo



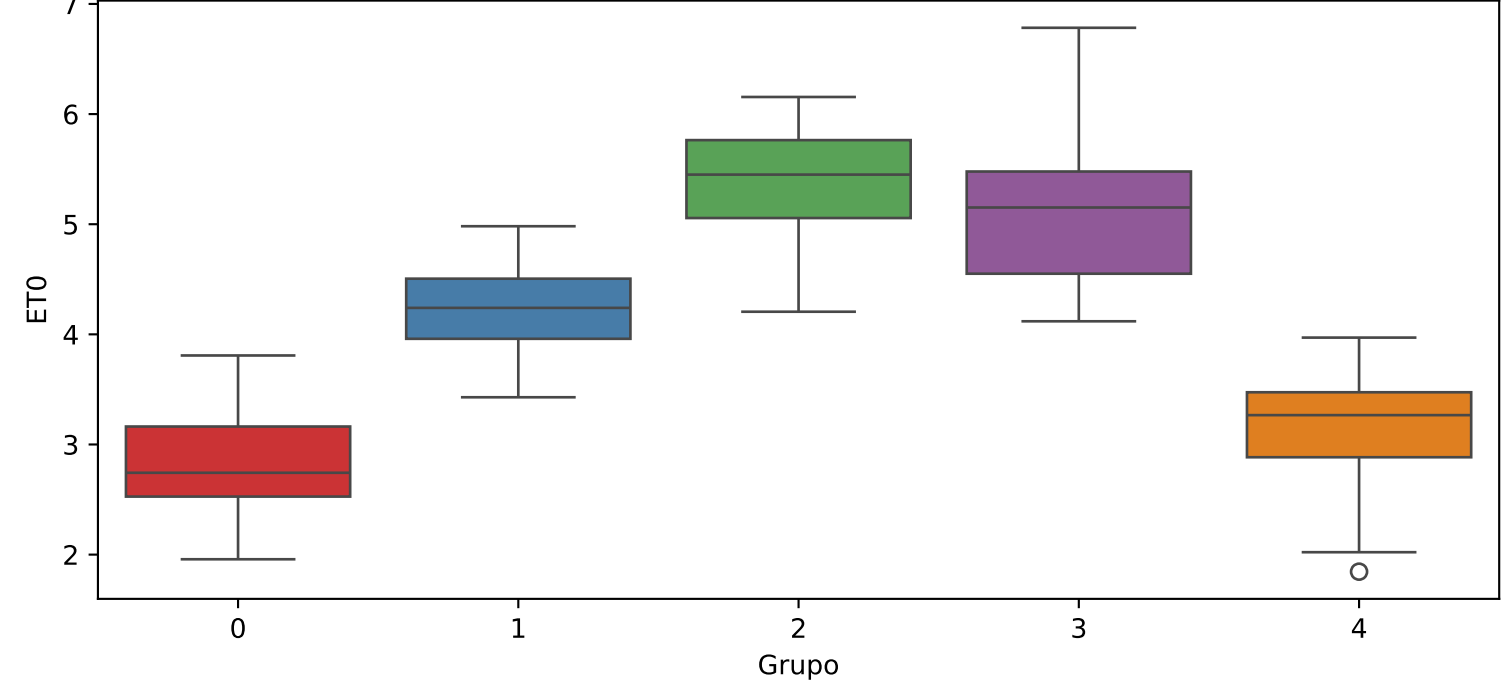
Distribución de Ux por grupo



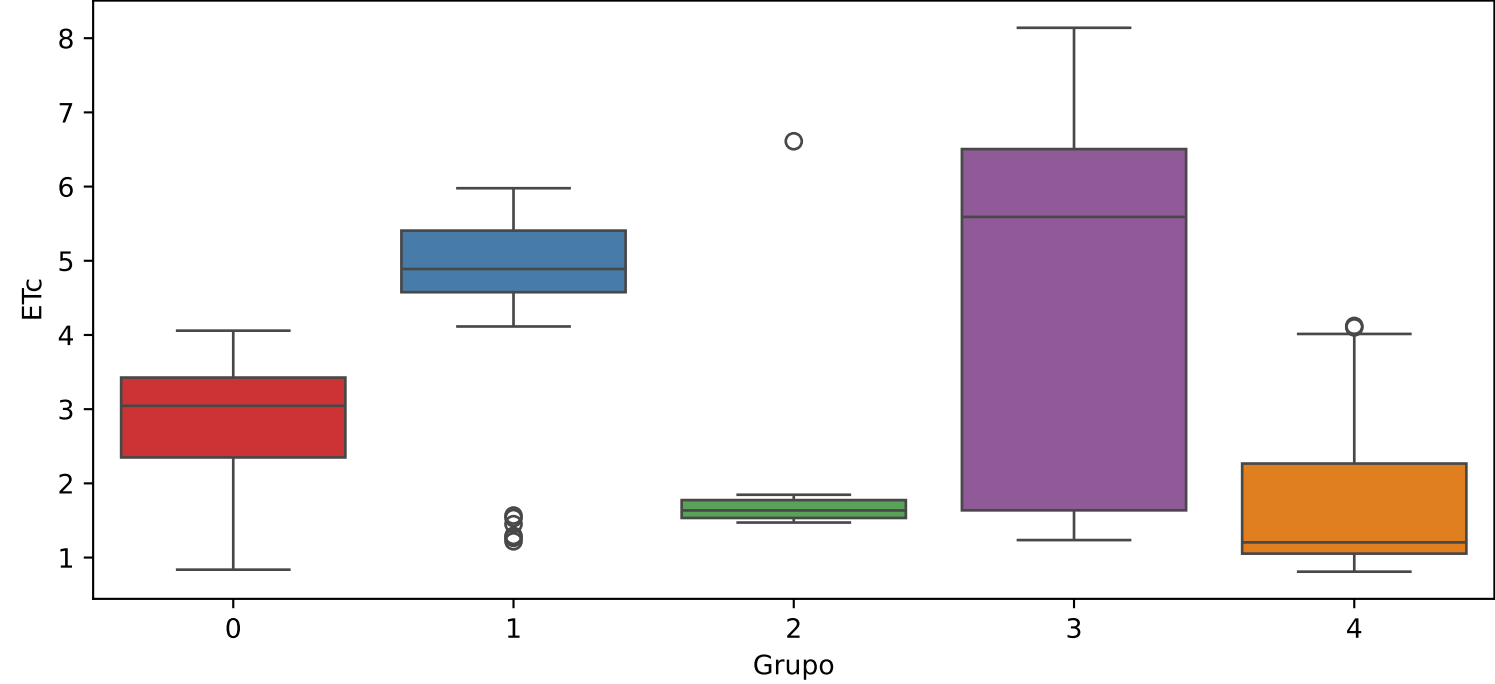
Distribución de Rs por grupo



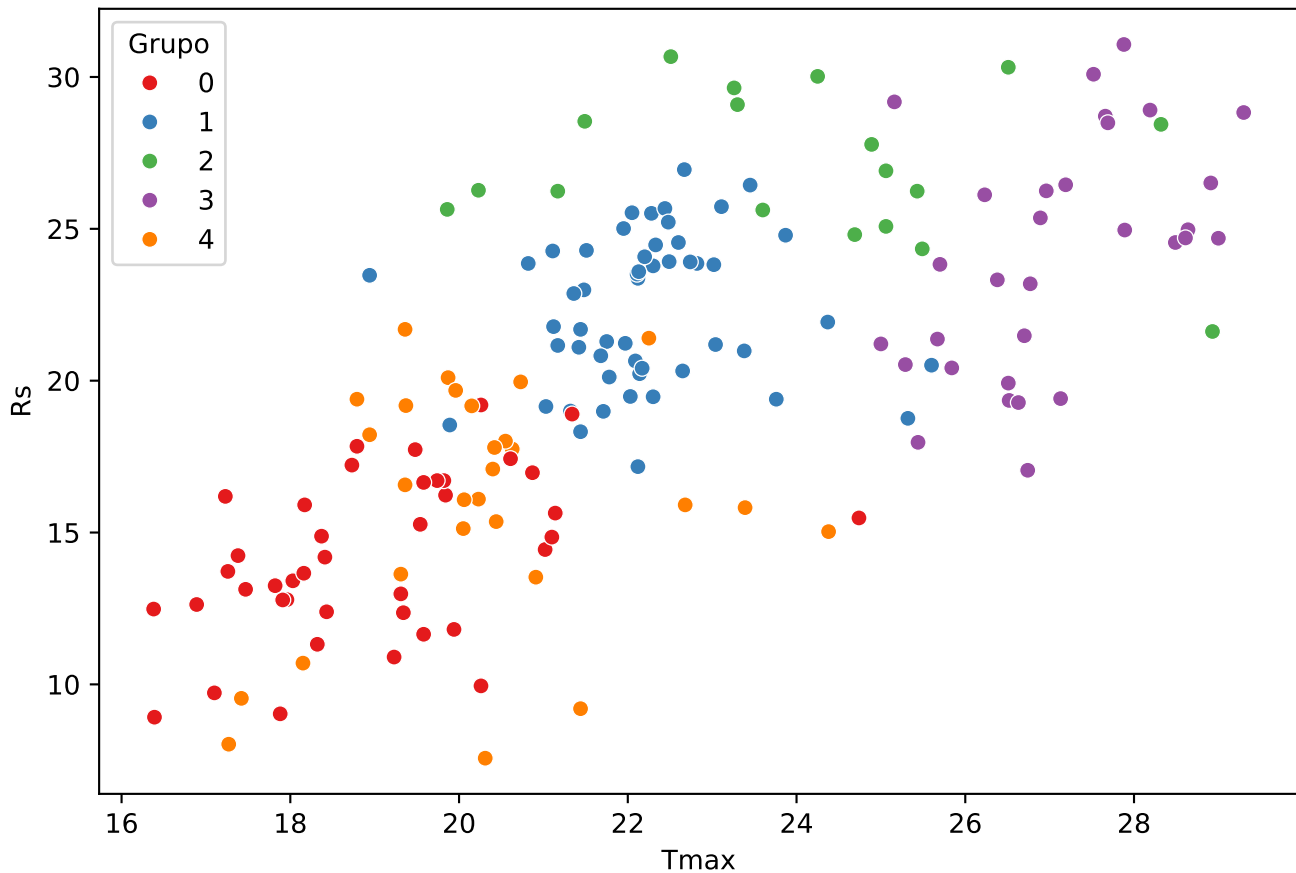
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2012)



Toluca — 2013

Días del ciclo: 170

ETc total [mm]: 590.2

ETverde total [mm]: 278.2

ETazul total [mm]: 312.0

Tmax / Tmin [°C]: 28.3 / 5.8

Toluca — 2013 · Resultados y métricas

[Toluca 2013] Regresión Lineal ET0 — R^2 : 0.9941 MSE: 0.0059

[Toluca 2013] Random Forest ET0 — R^2 : 0.9864 MSE: 0.0135

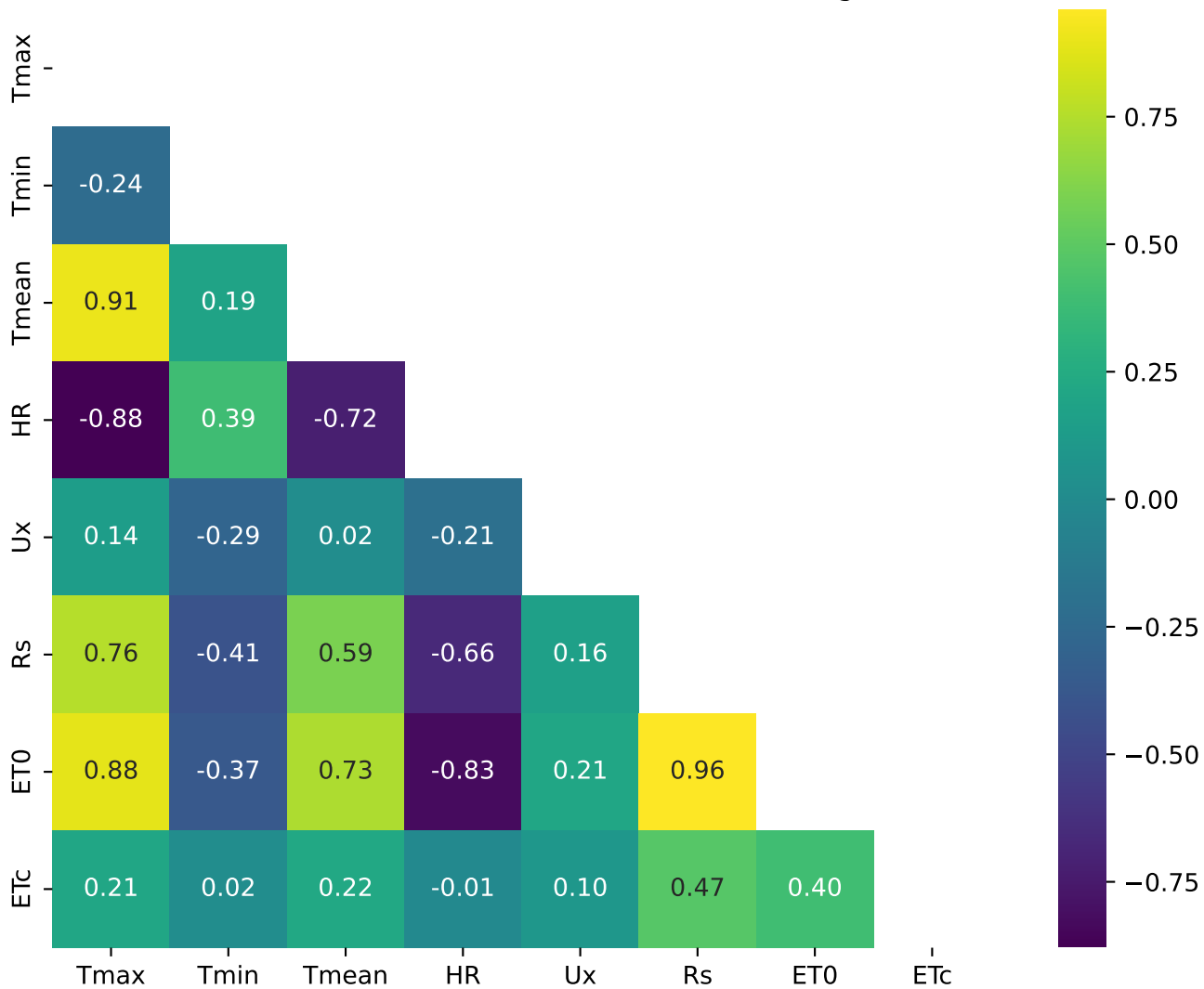
Importancias: {'Tmax': 0.05020604785598835, 'Tmin': 0.00443309300678543, 'HR': 0.0734754079091787, 'Ux': 0.0035006926917585065, 'Rs': 0.868384758536289}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	18.867750	10.203750	85.324250	1.113750	13.382000	2.627563	2.055402
1	24.347429	9.288000	65.577714	1.346857	25.073143	4.922436	5.906923
2	26.310000	8.540000	38.576000	1.254500	24.400000	5.291626	1.587488
3	21.456792	10.349245	76.763396	0.858491	19.610566	3.791702	4.550043
4	23.013636	9.927727	71.761364	0.787273	20.381364	3.947797	1.287449

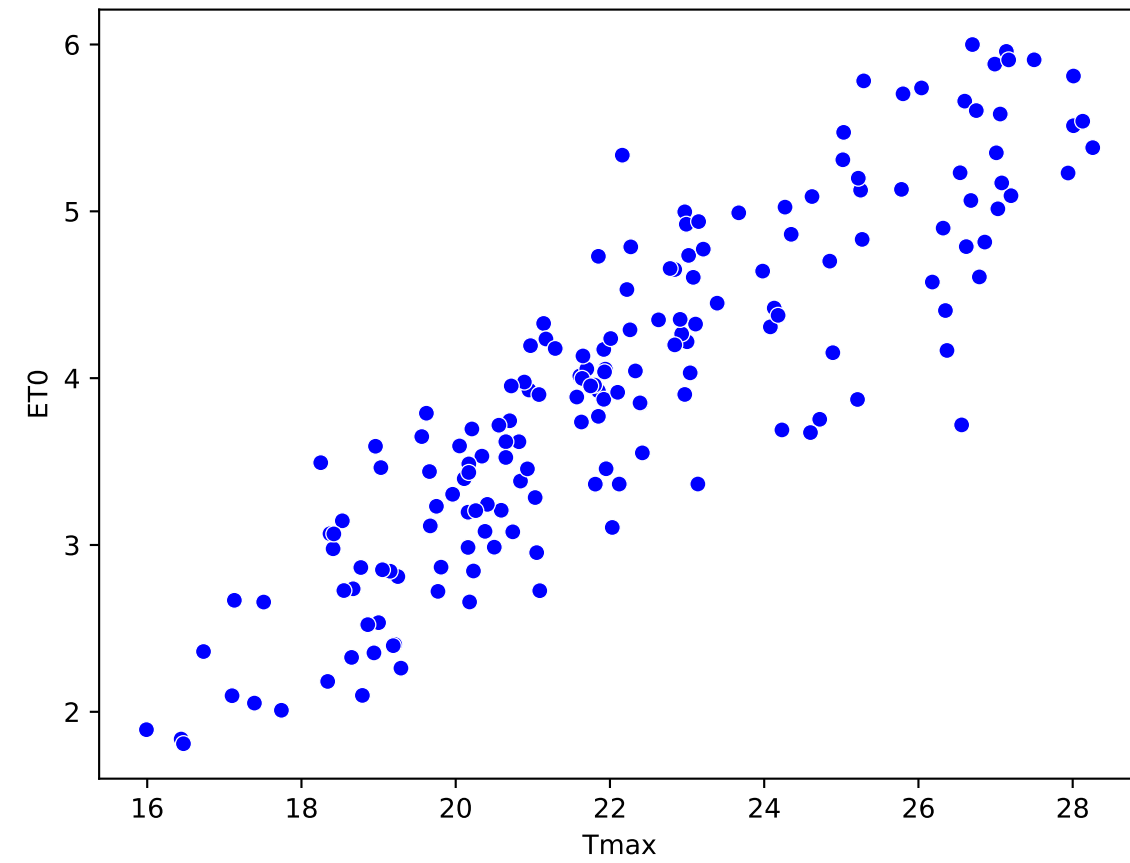
Toluca — 2013

Matriz de Correlación entre Variables Meteorológicas

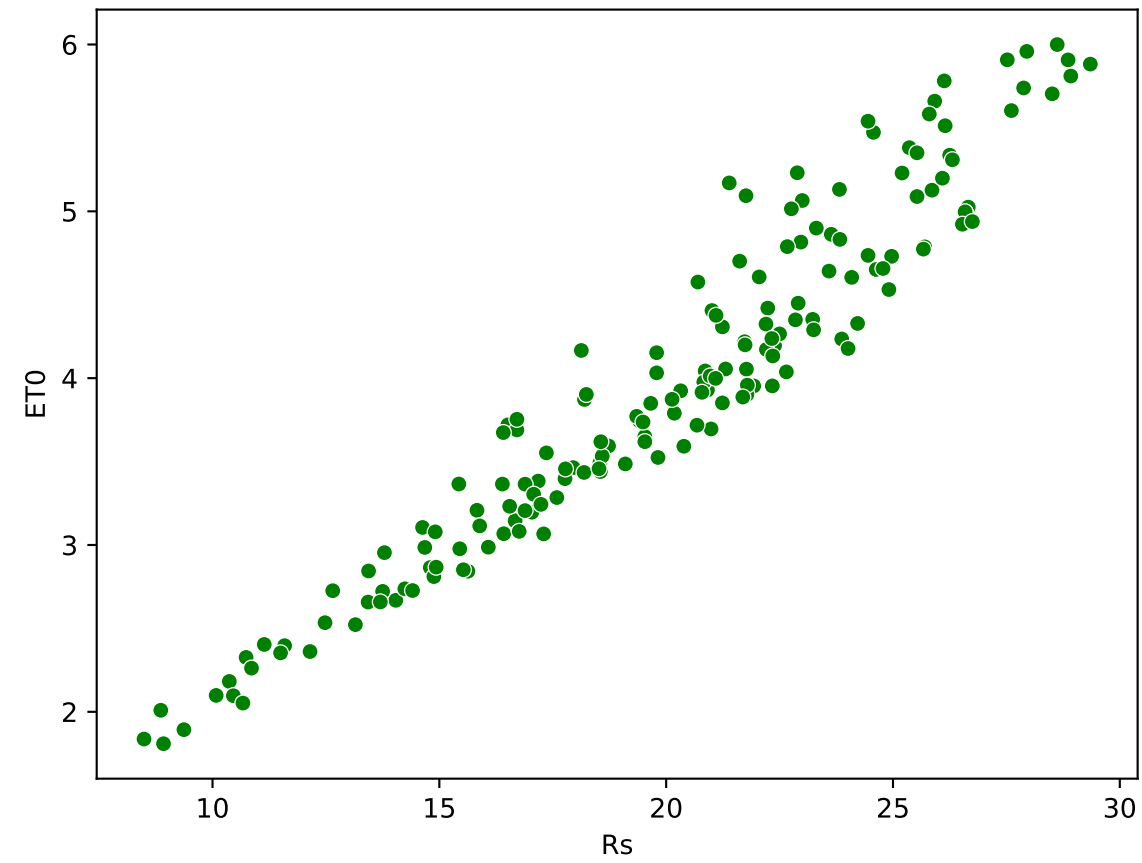


Dispersión — Toluca (2013)

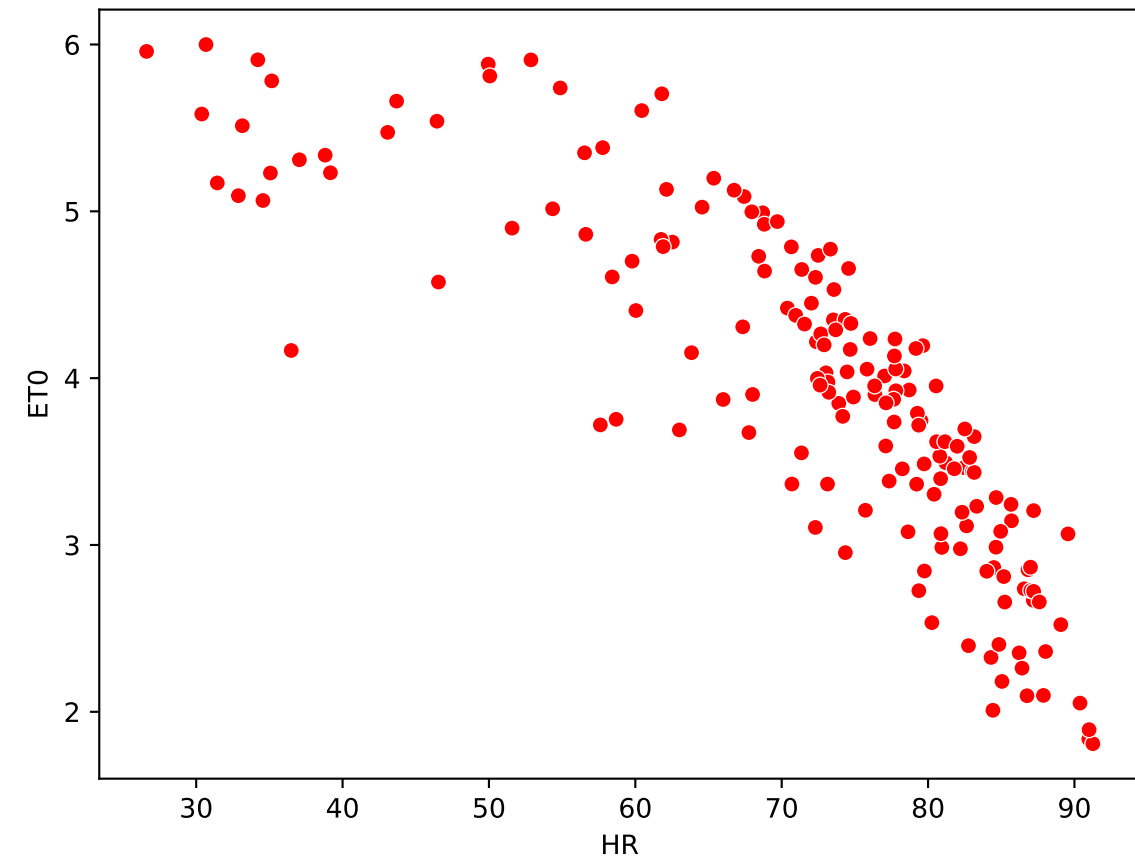
Tmax vs ET0



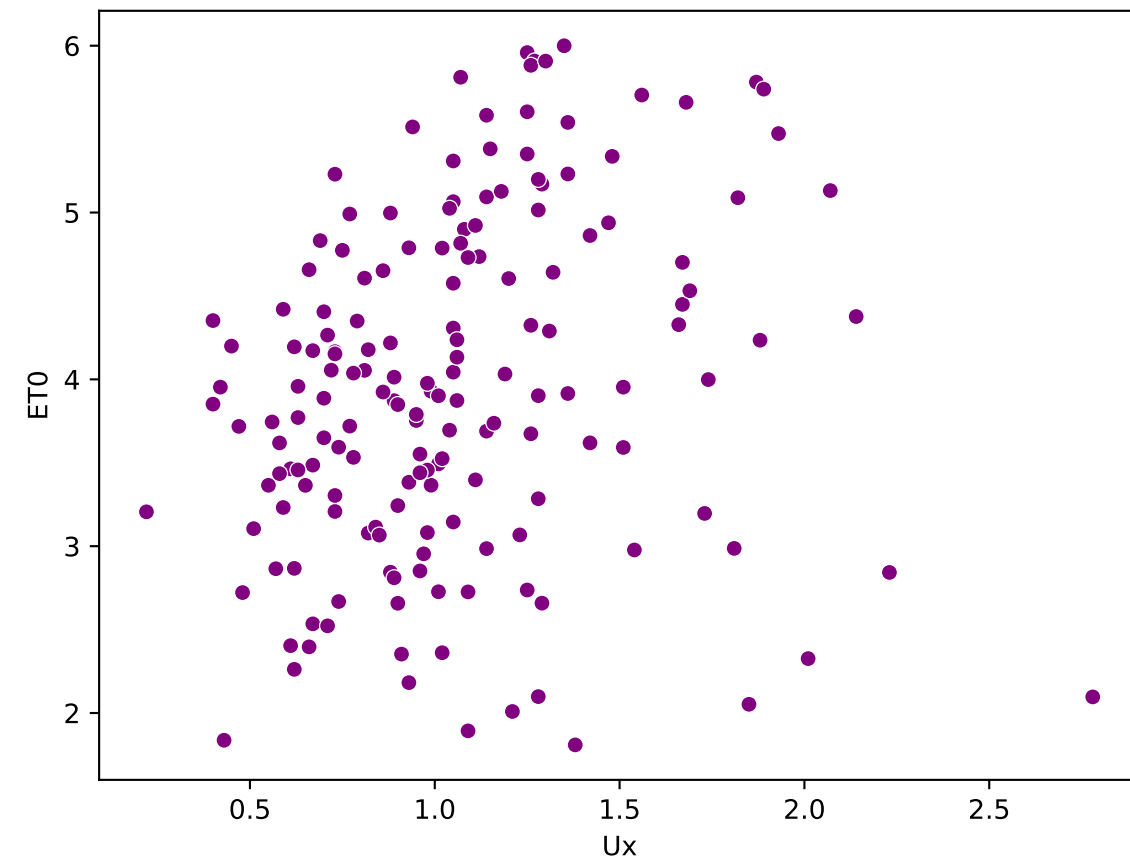
Rs vs ET0



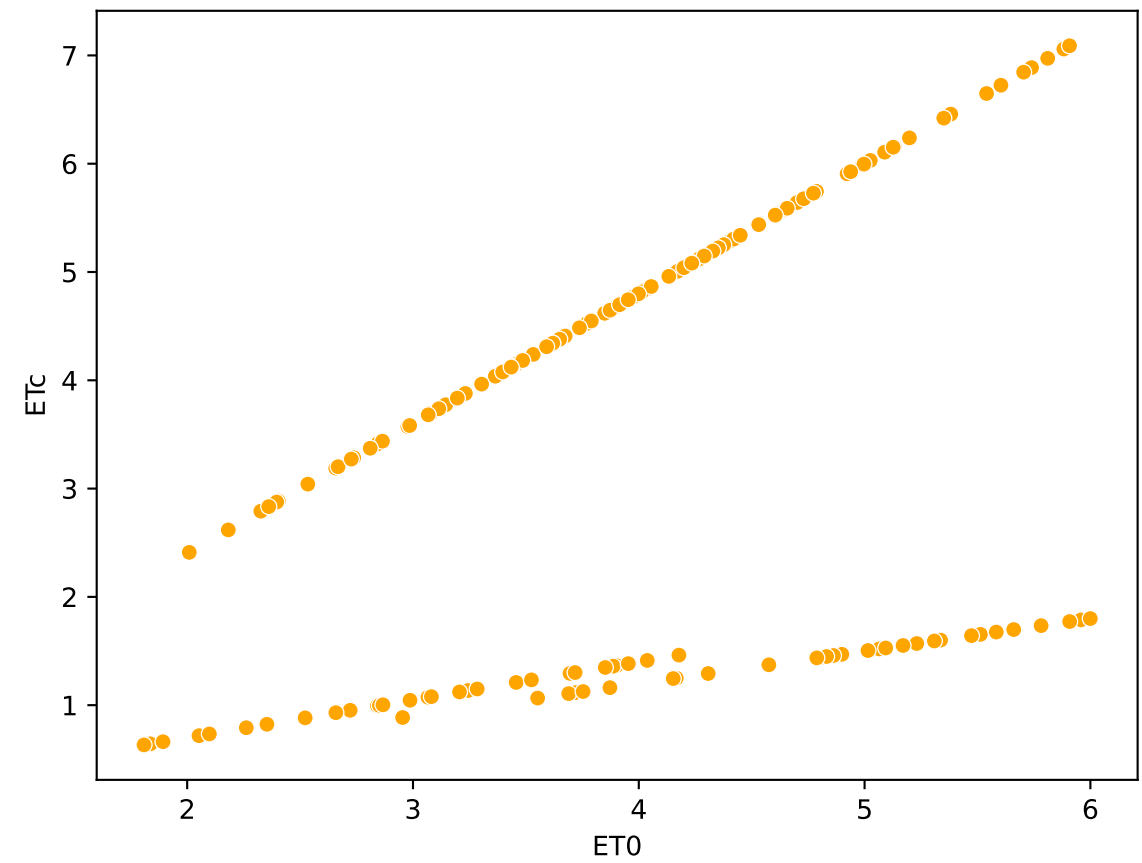
HR vs ET0



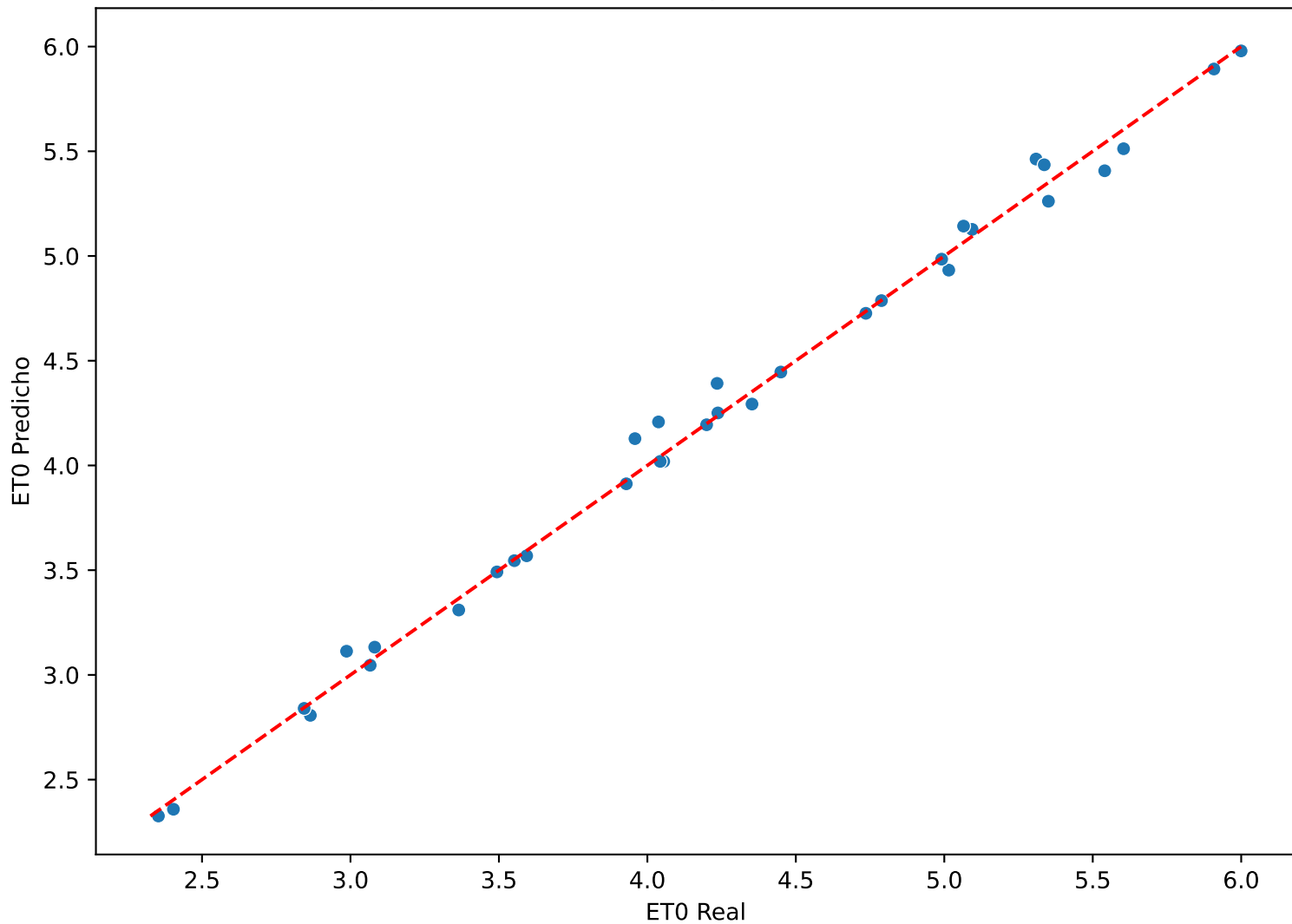
Ux vs ET0



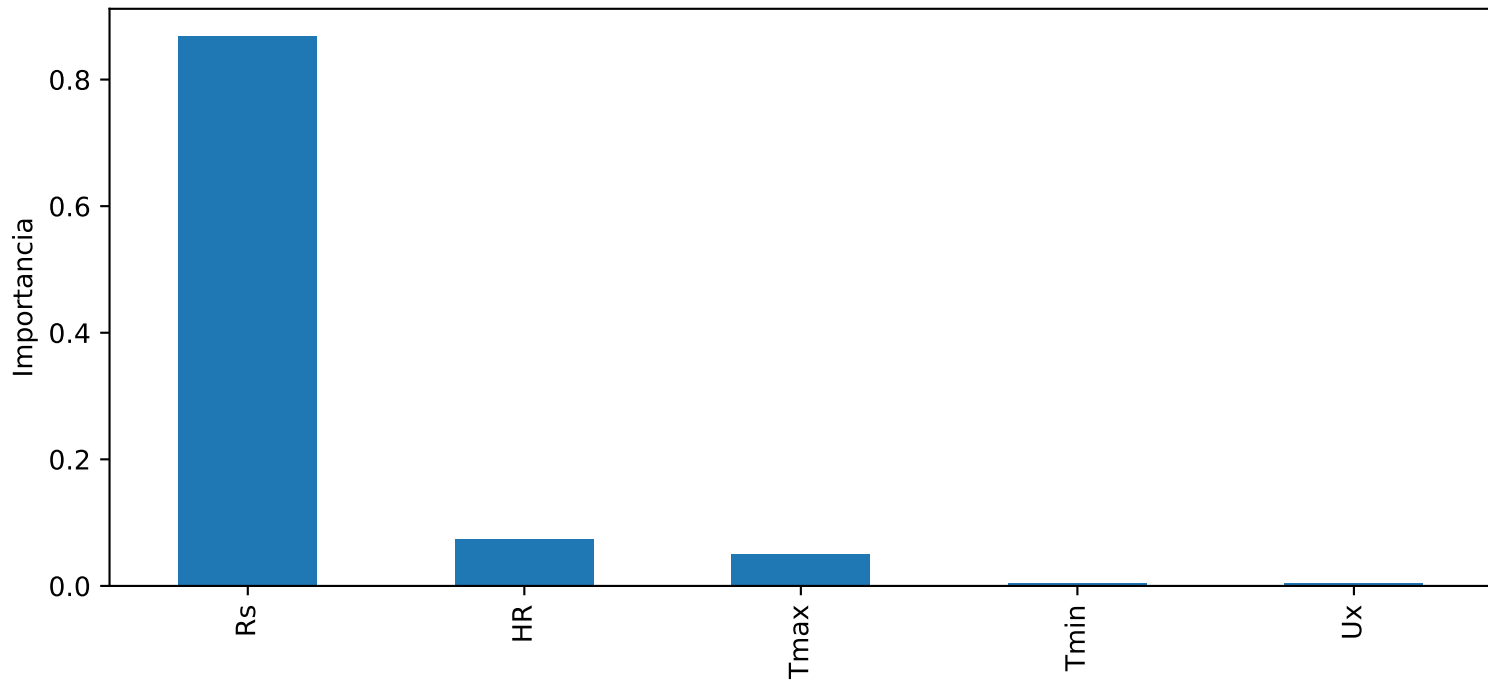
ET0 vs ETc



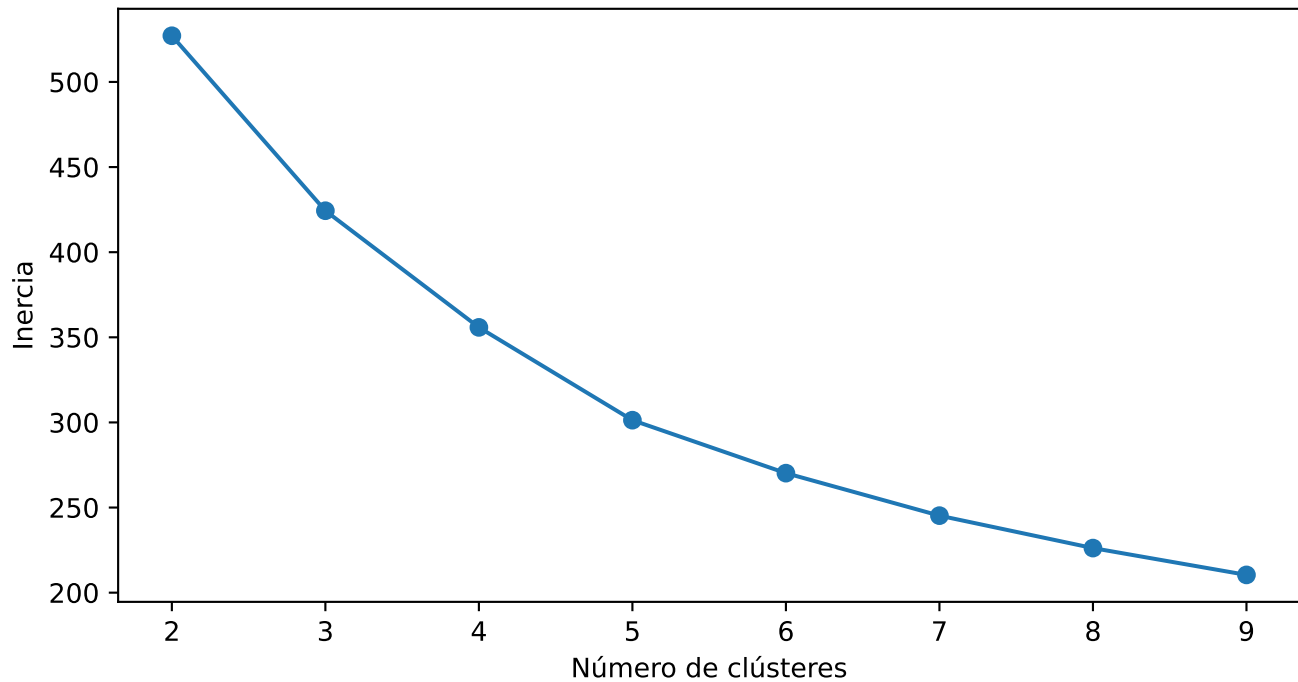
Comparación entre ET0 Real y Predicho — Toluca (2013)



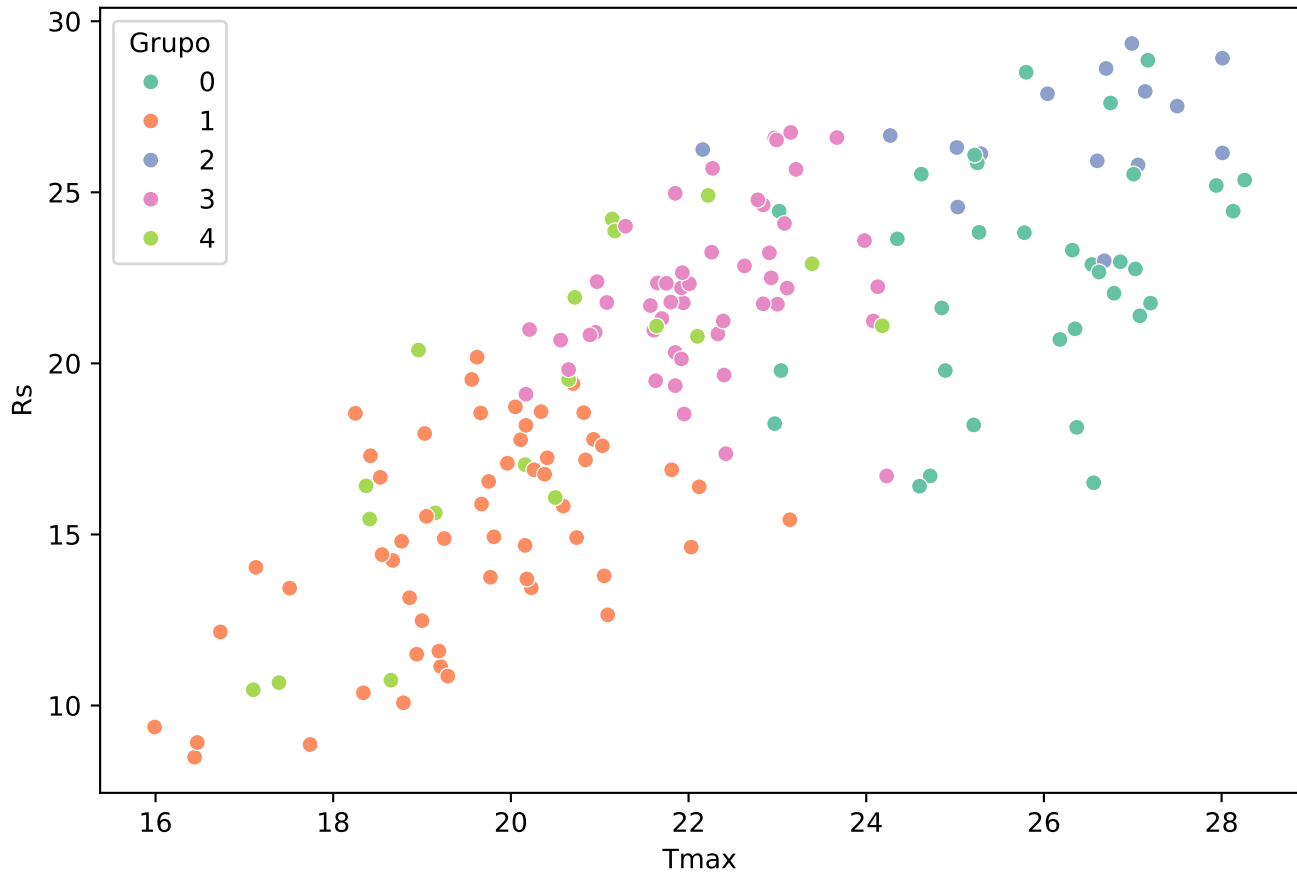
Importancia de variables (RF) — Toluca (2013)



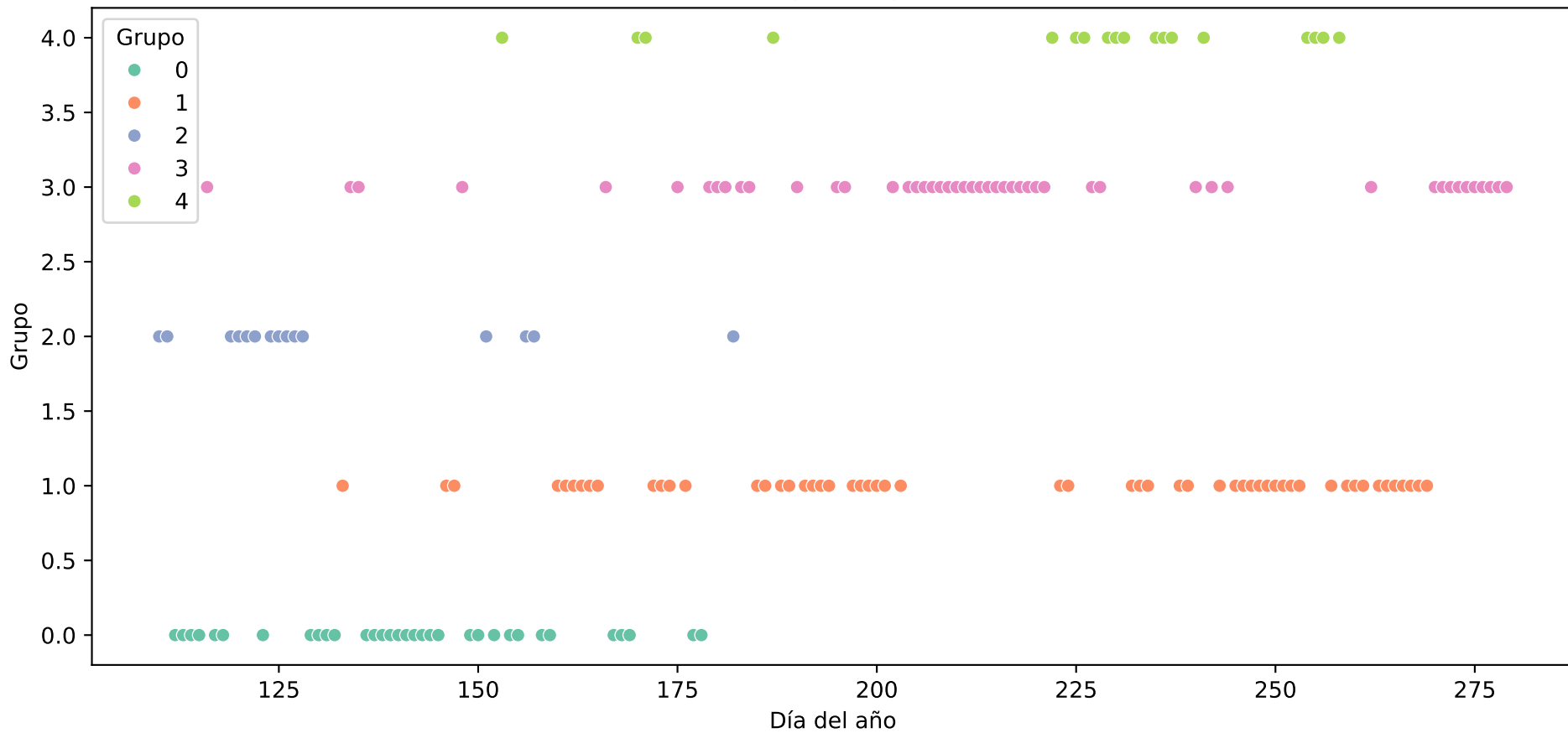
Método del codo



Clasificación de días climáticos — Toluca (2013)

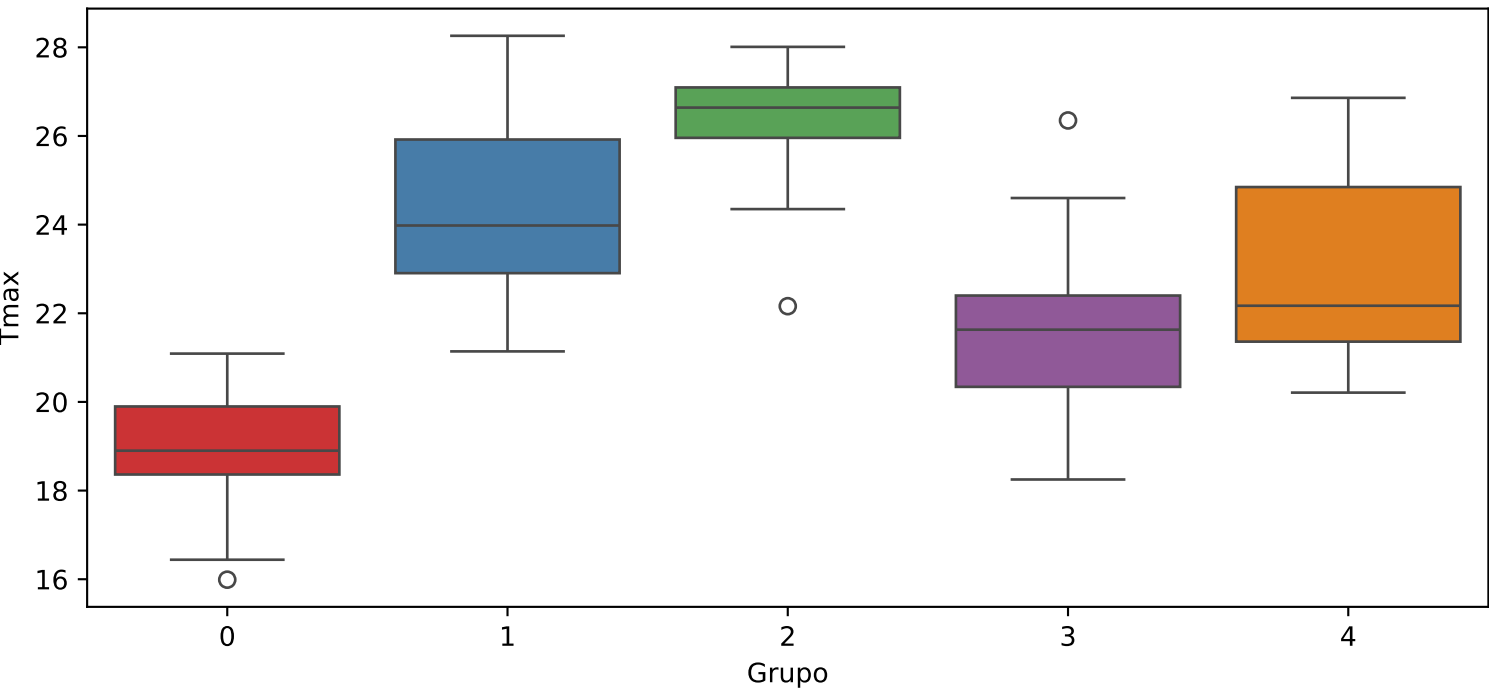


Distribución de días por grupo — Toluca (2013)

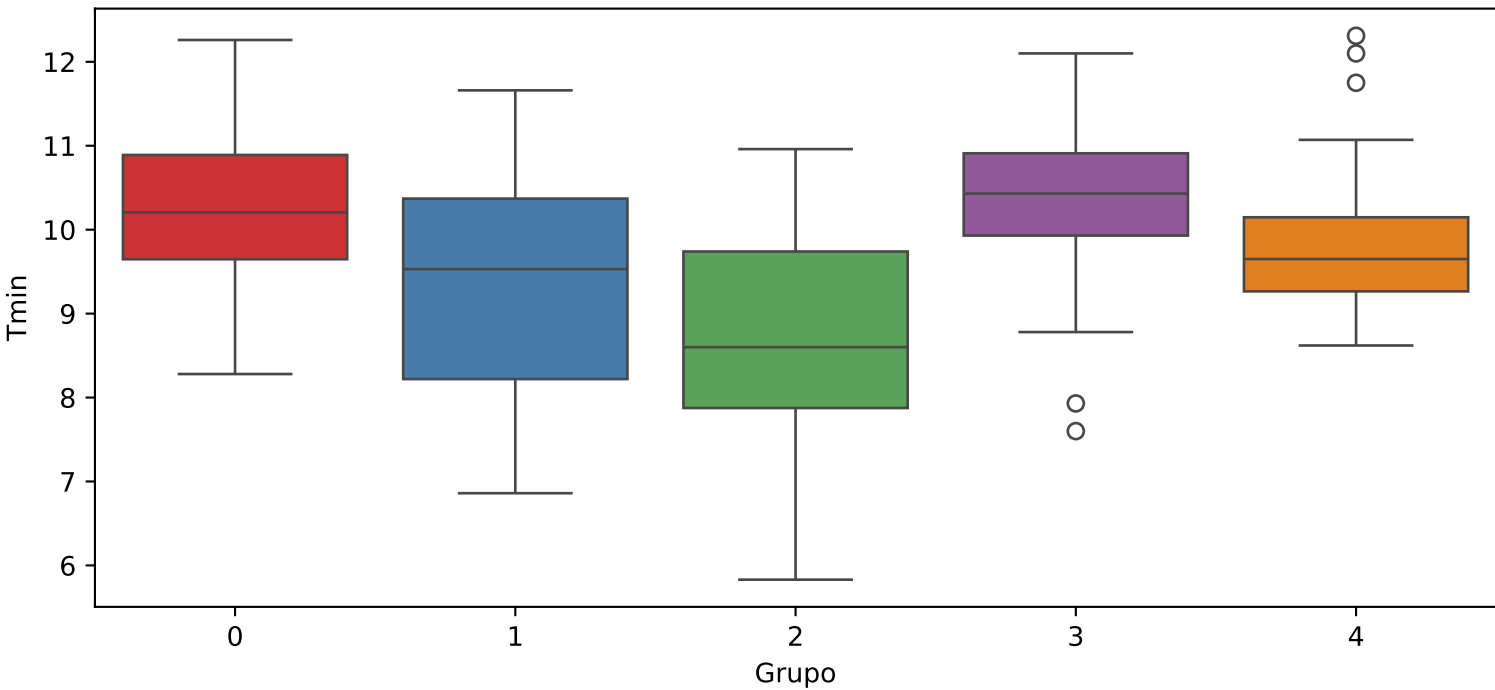


Boxplots por grupo — Toluca (2013)

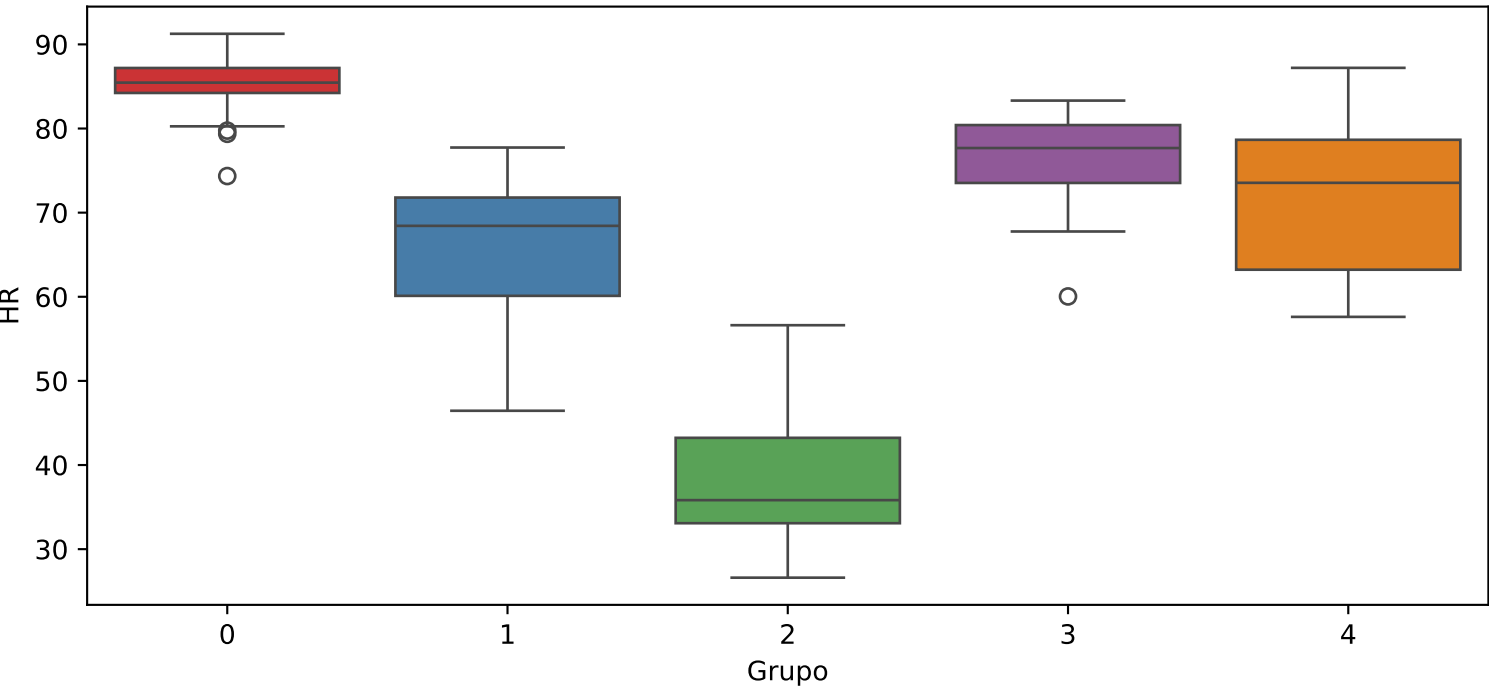
Distribución de Tmax por grupo



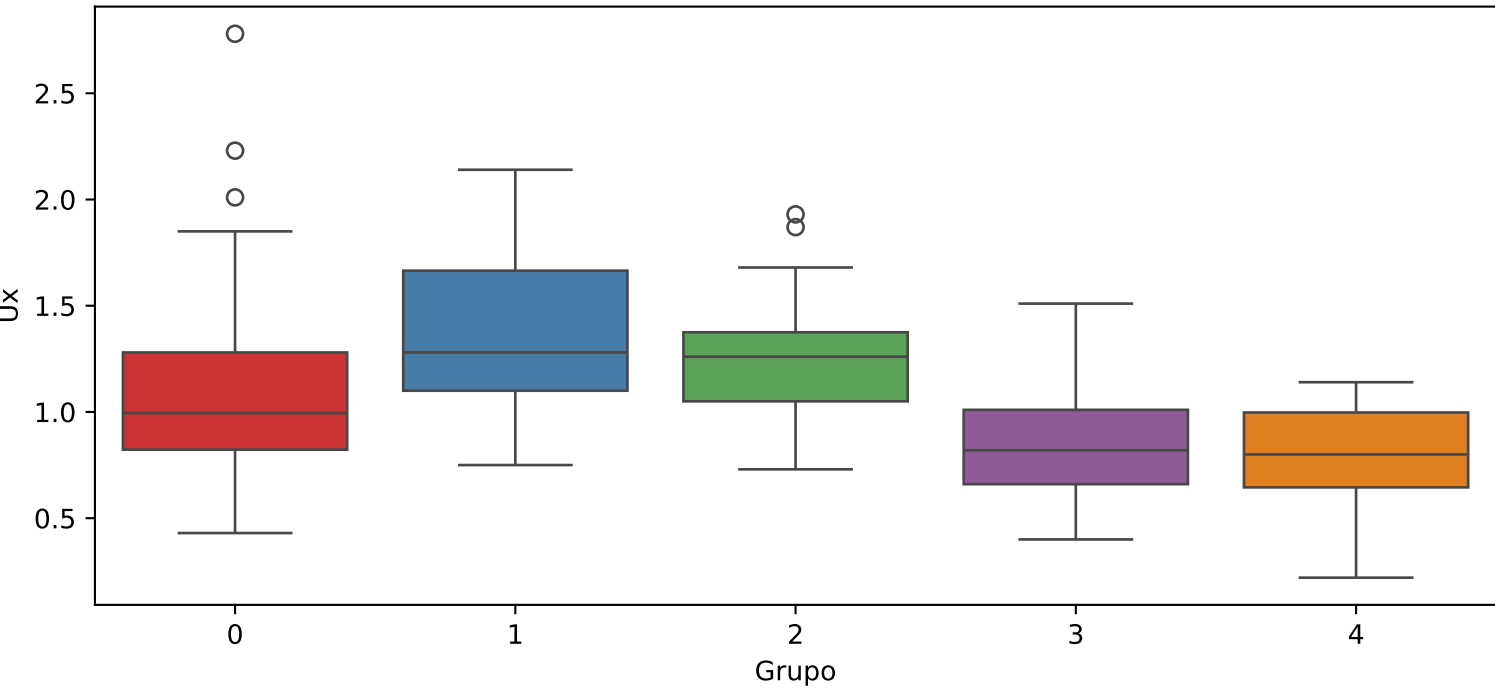
Distribución de Tmin por grupo



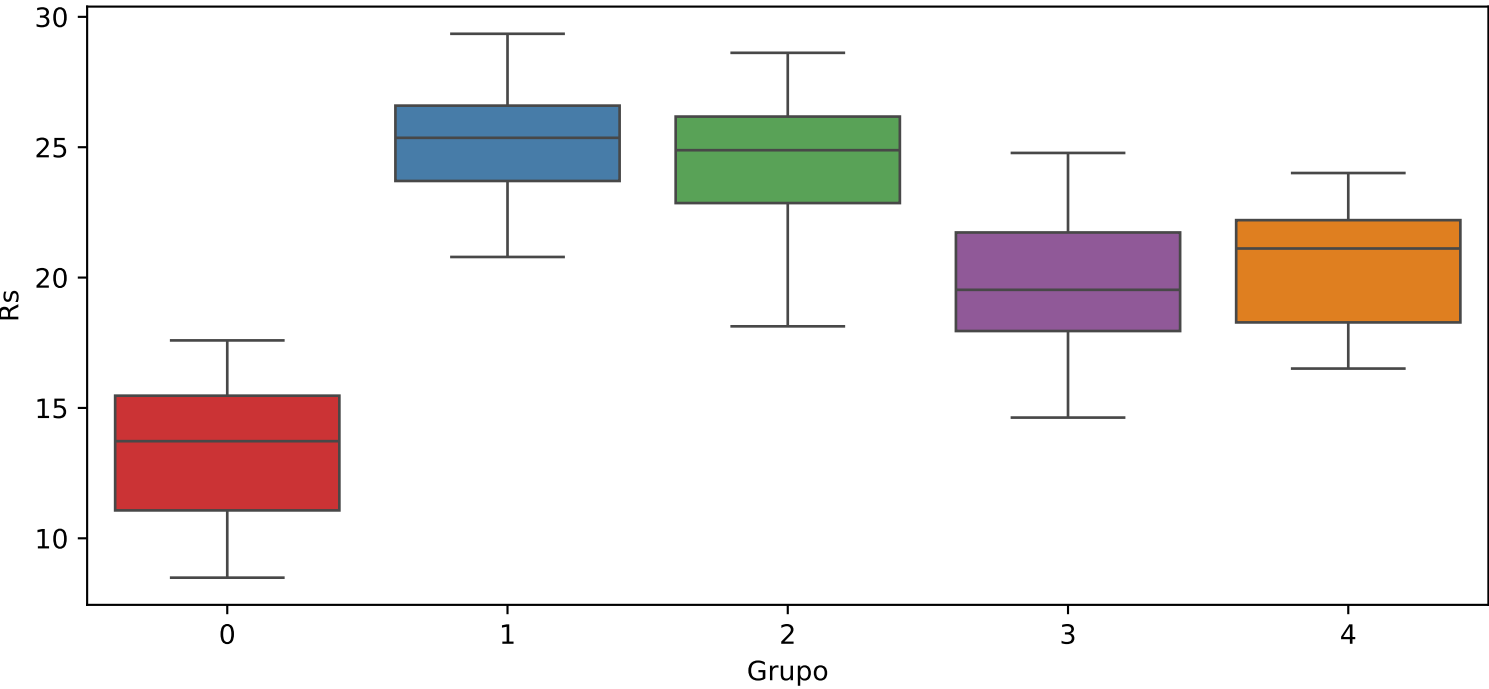
Distribución de HR por grupo



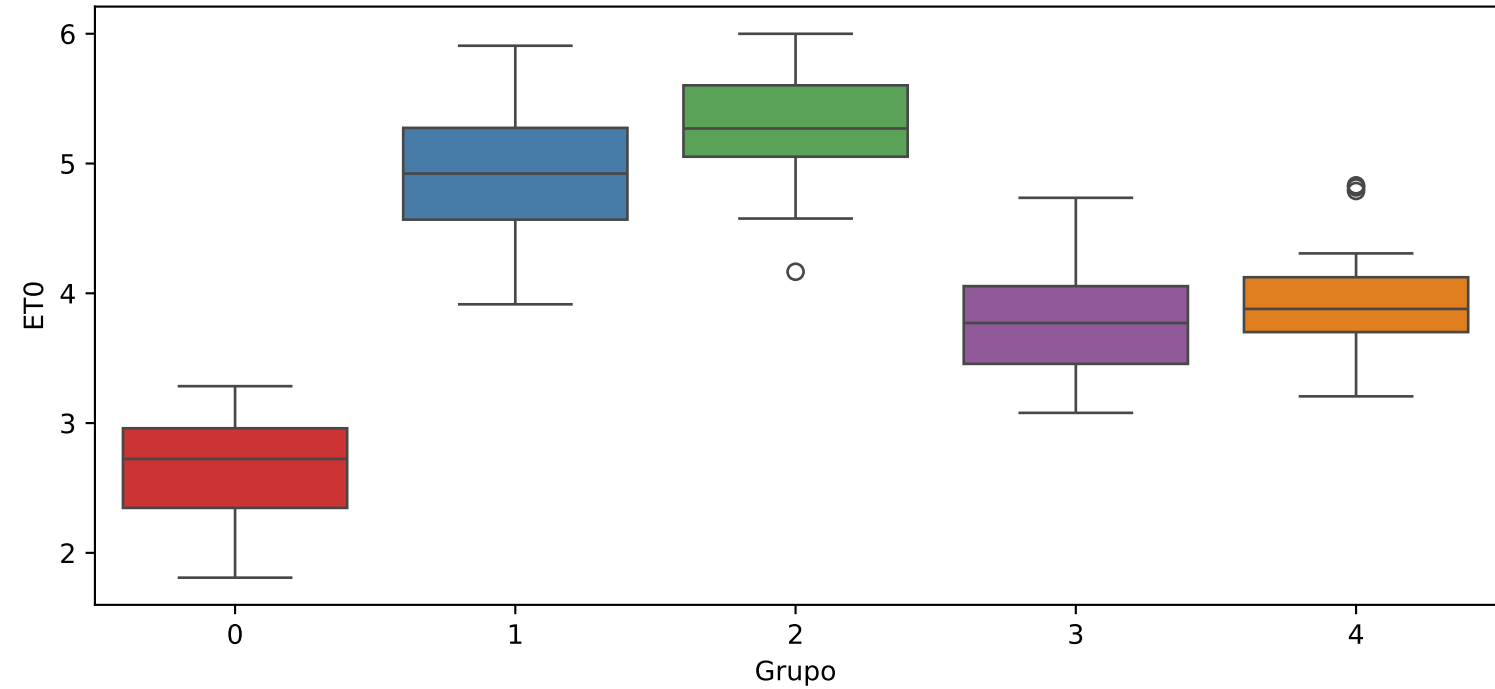
Distribución de Ux por grupo



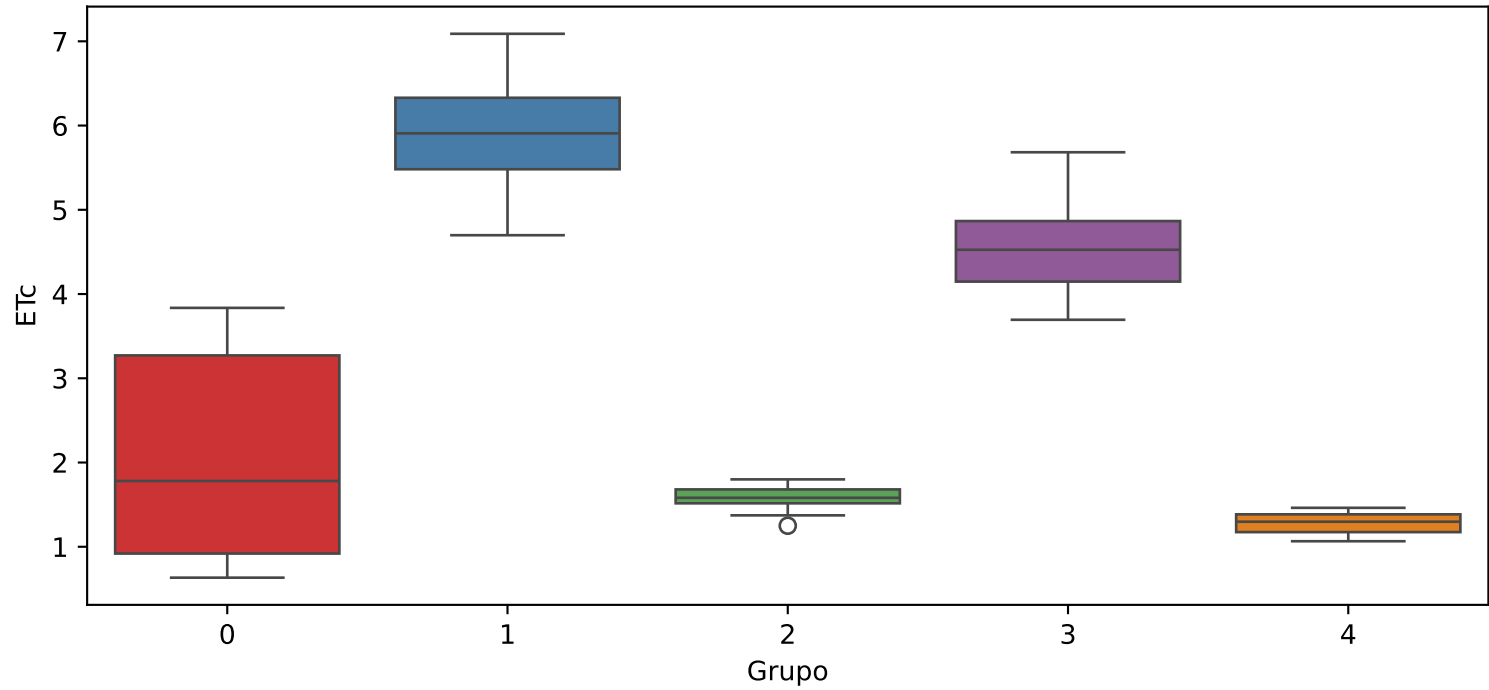
Distribución de Rs por grupo



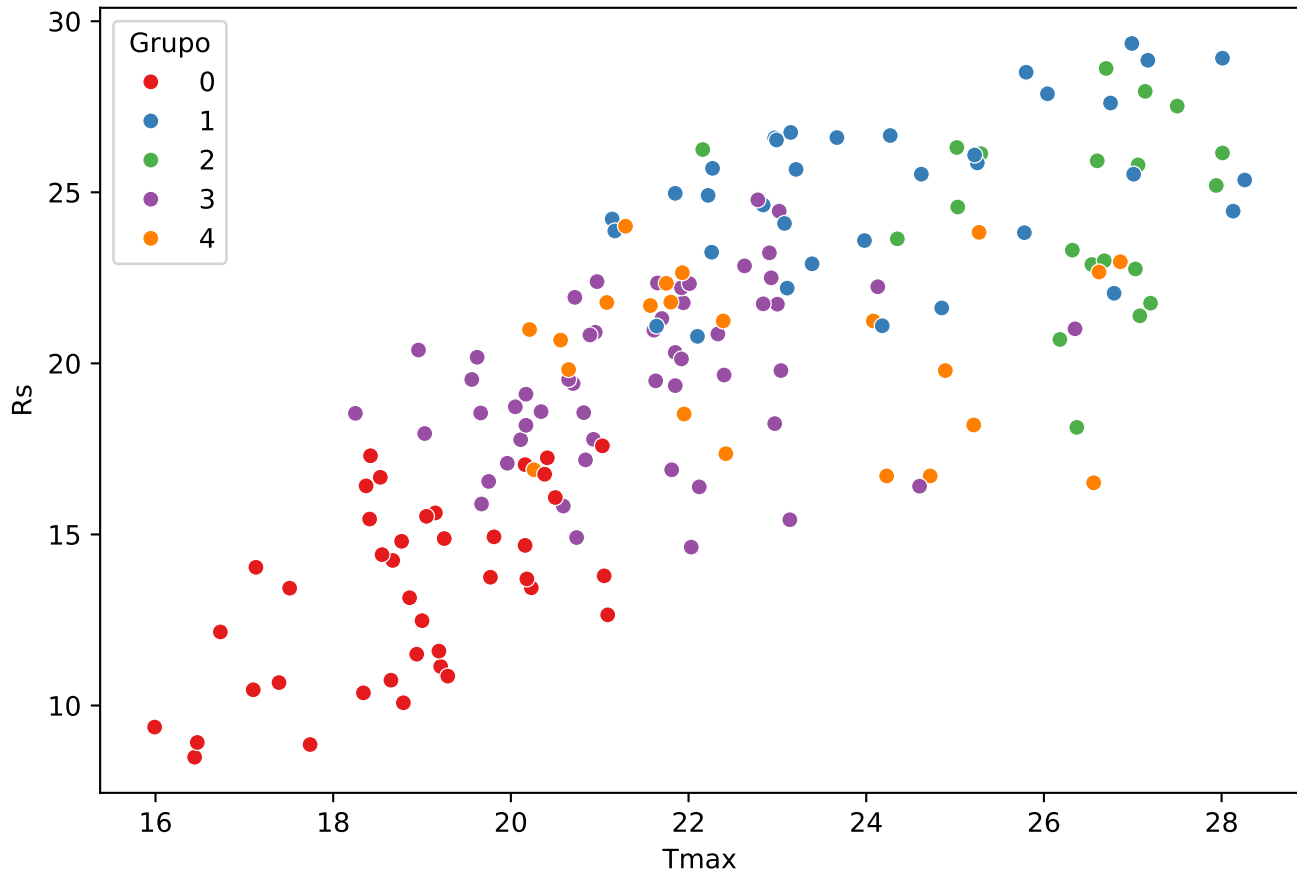
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2013)



Toluca — 2014

Días del ciclo: 170

ETc total [mm]: 559.8

ETverde total [mm]: 307.0

ETazul total [mm]: 252.8

Tmax / Tmin [°C]: 27.6 / 3.5

Toluca — 2014 · Resultados y métricas

[Toluca 2014] Regresión Lineal ET0 — R^2 : 0.9928 MSE: 0.0058

[Toluca 2014] Random Forest ET0 — R^2 : 0.9624 MSE: 0.0304

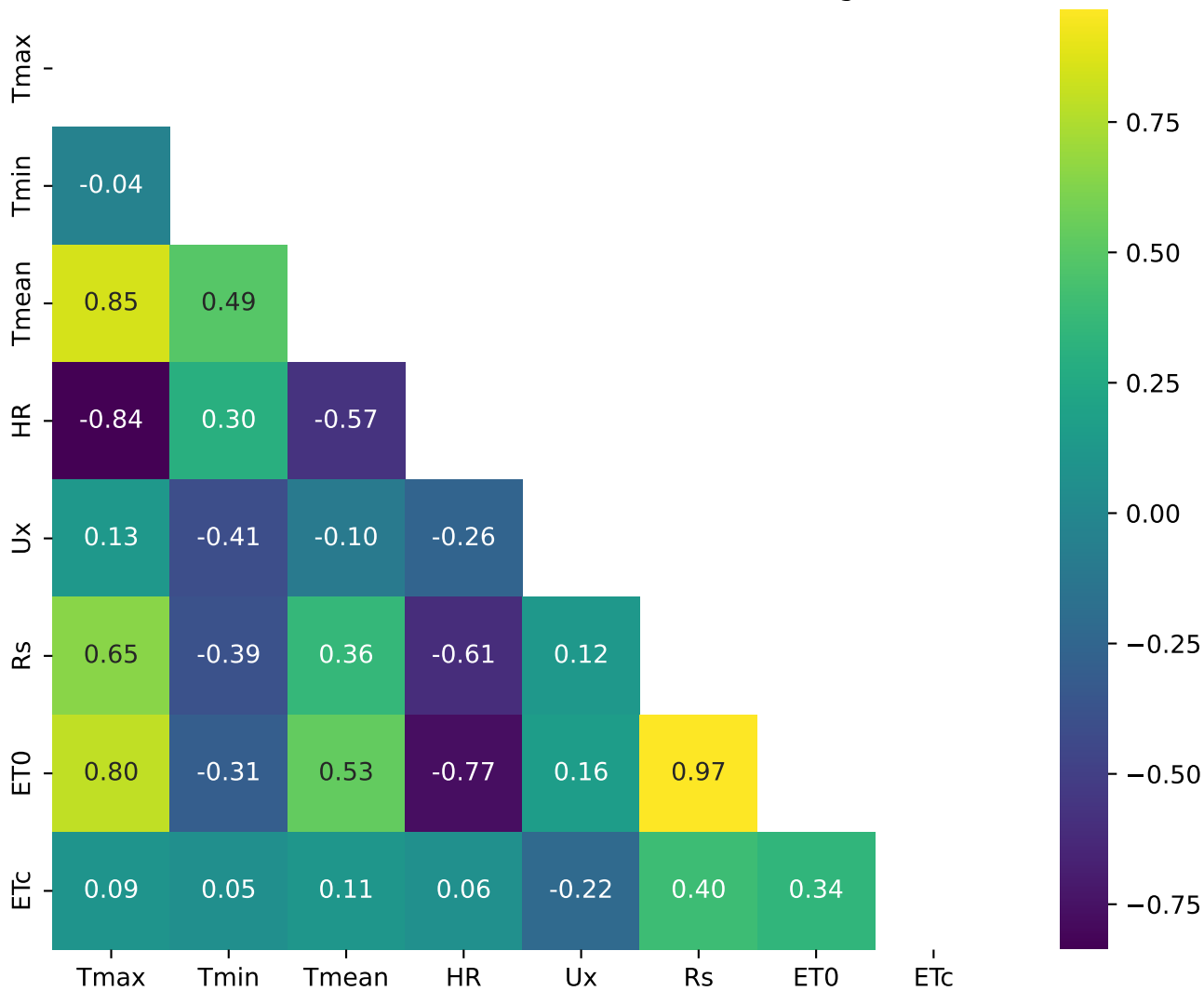
Importancias: {'Tmax': 0.018795907147670068, 'Tmin': 0.0028549747896131983, 'HR': 0.02503466359502706, 'Ux': 0.0033198361405884142, 'Rs': 0.9499946183271012}

Estadísticas descriptivas por grupo (medias):

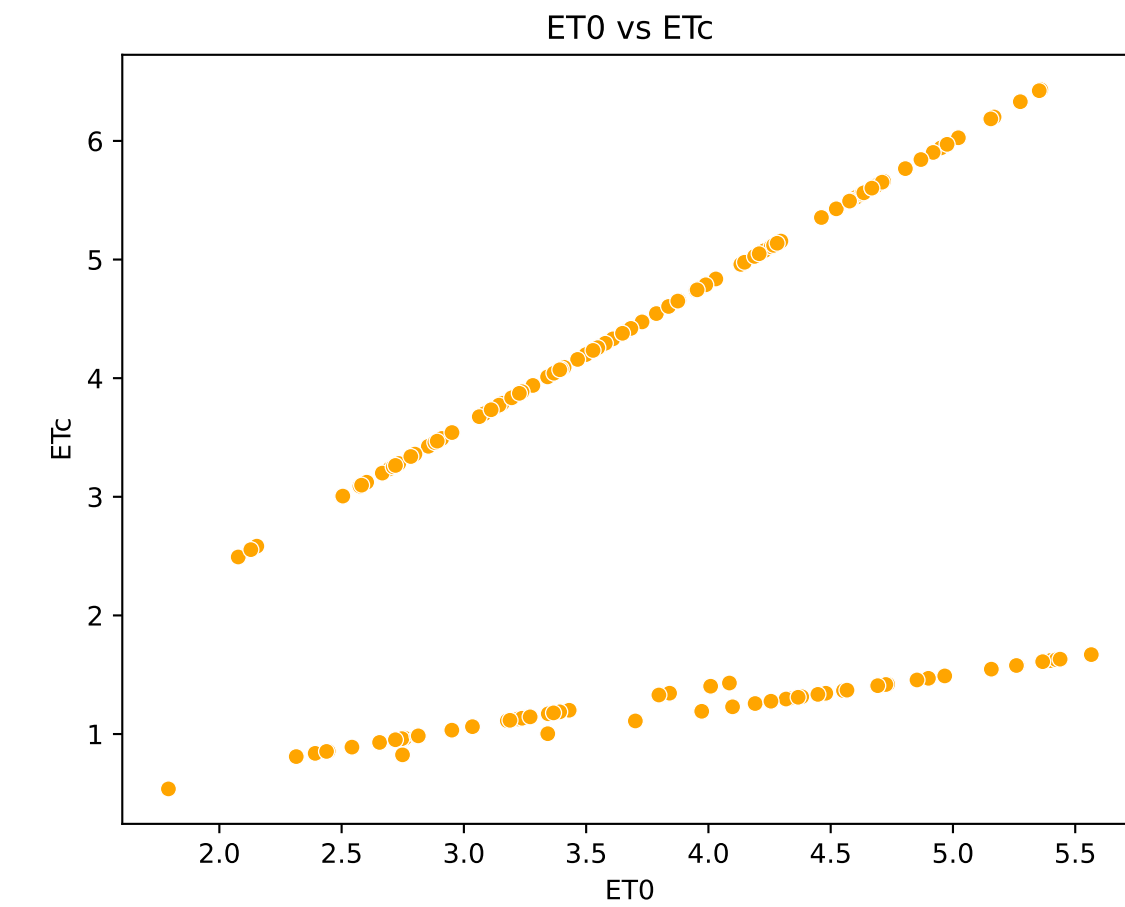
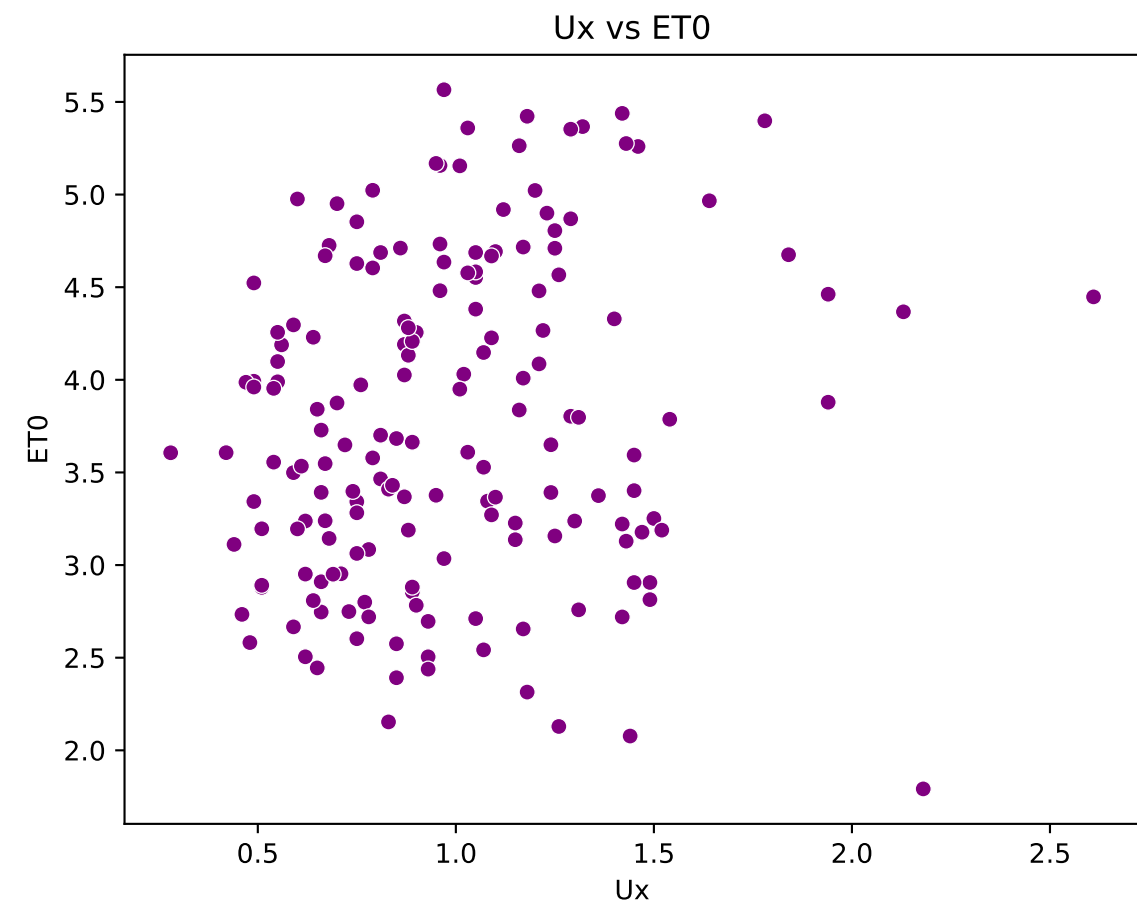
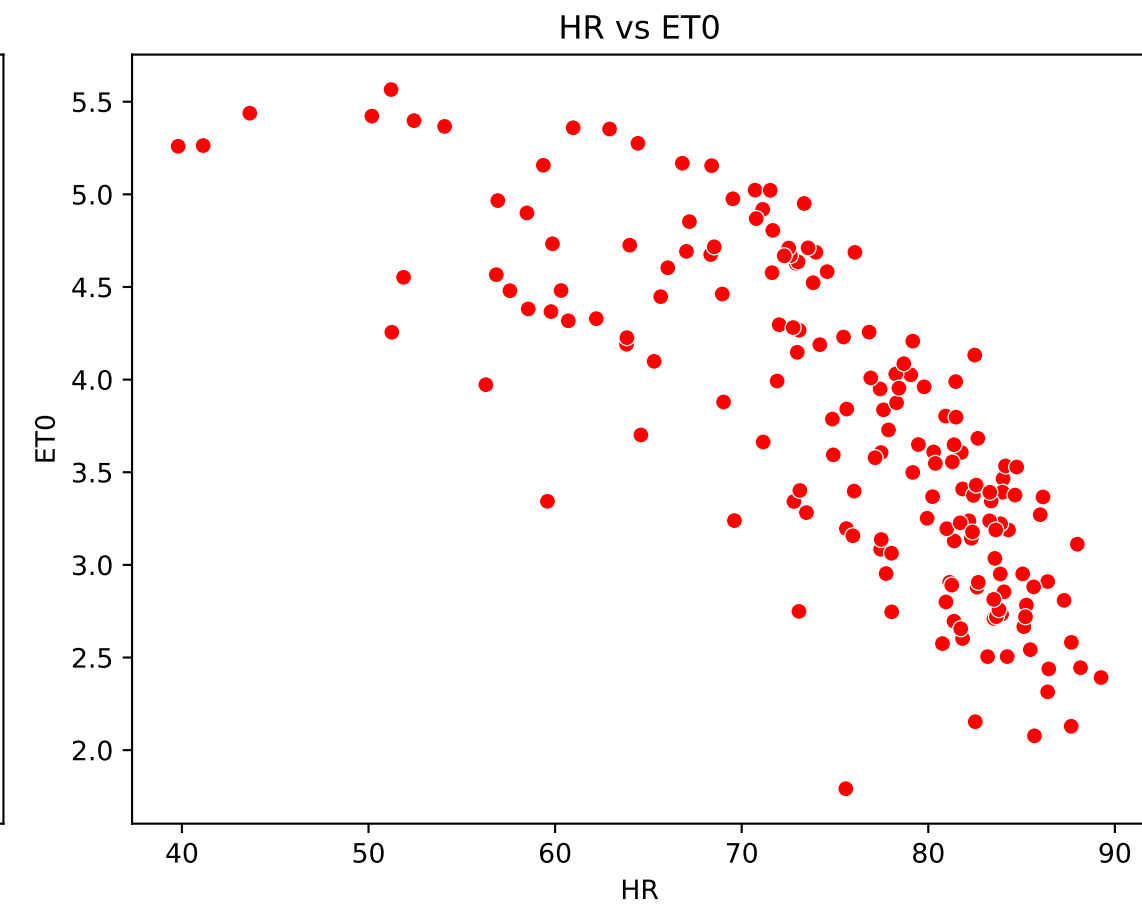
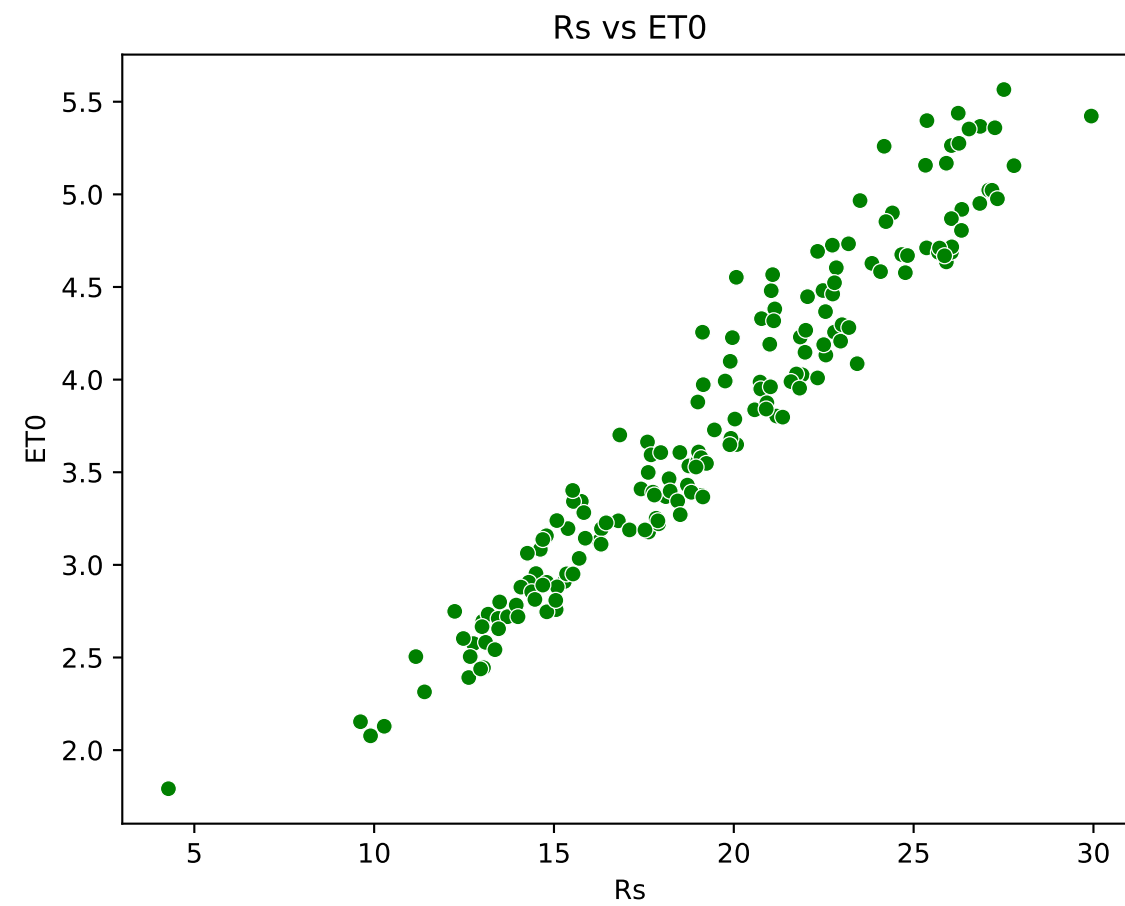
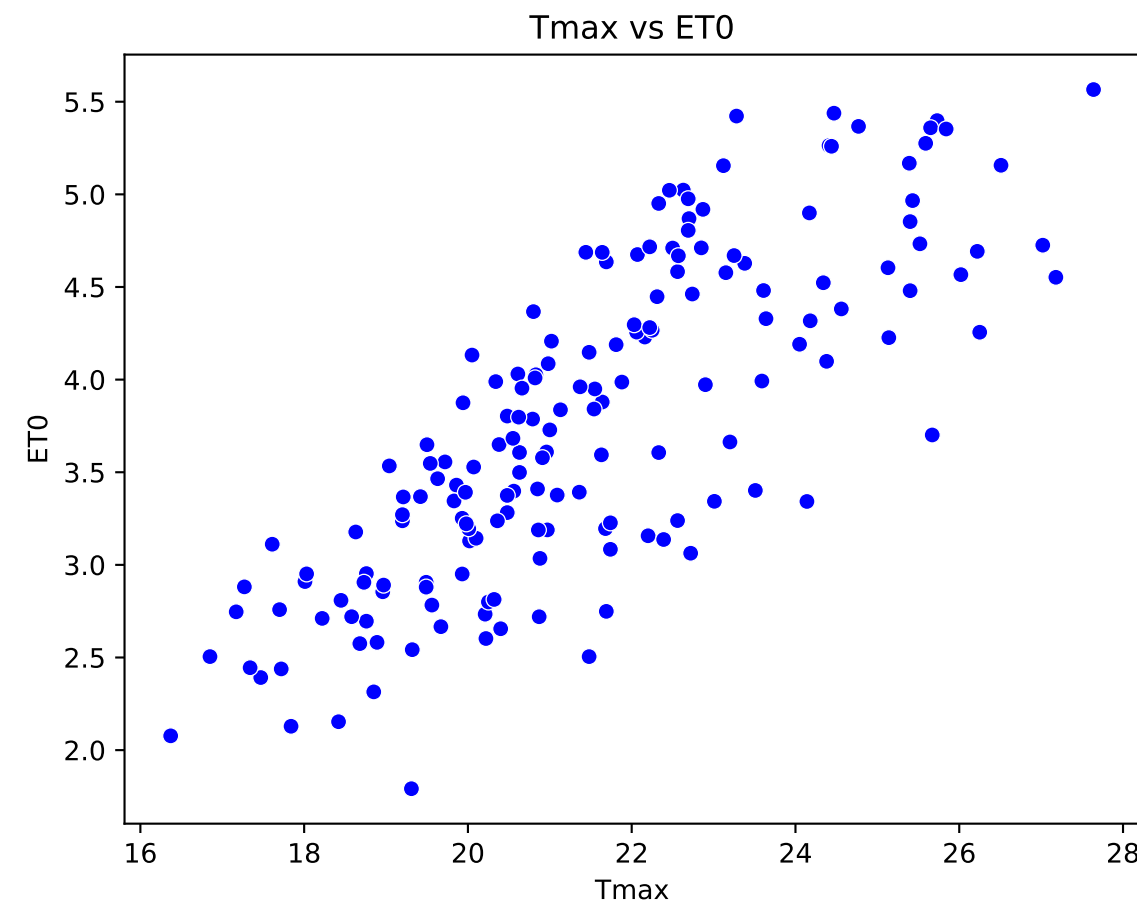
	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	22.608095	9.343095	71.969048	1.037619	24.184286	4.558256	5.469907
1	19.297143	9.906735	83.281633	1.089184	15.260408	2.914250	1.798051
2	24.328000	7.391000	51.486000	1.567000	25.425000	5.149547	1.544864
3	20.817800	10.684600	79.458600	0.740200	17.387800	3.411415	4.028398
4	25.036316	10.329474	60.260000	0.940000	21.141579	4.406867	1.322060

Toluca — 2014

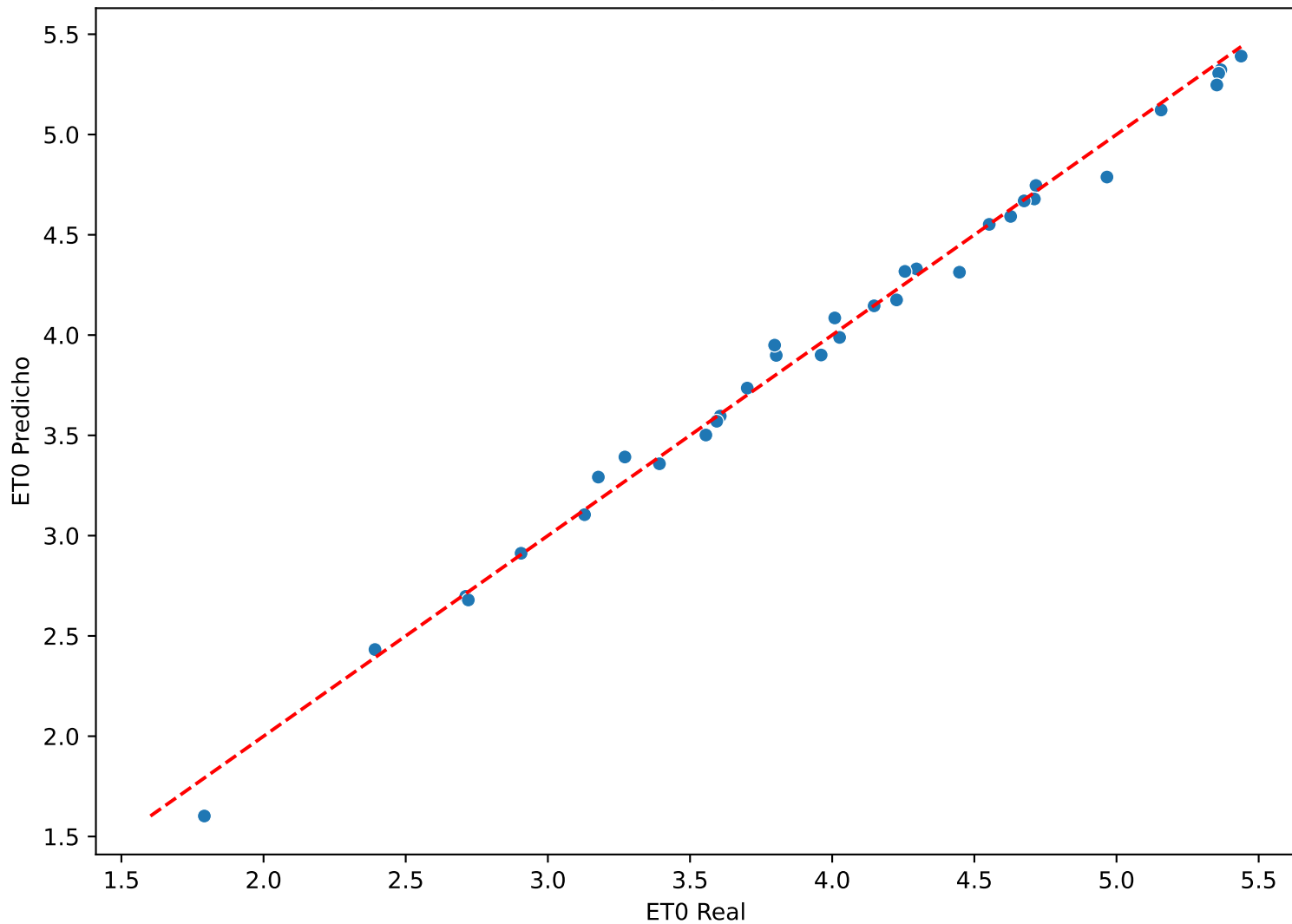
Matriz de Correlación entre Variables Meteorológicas



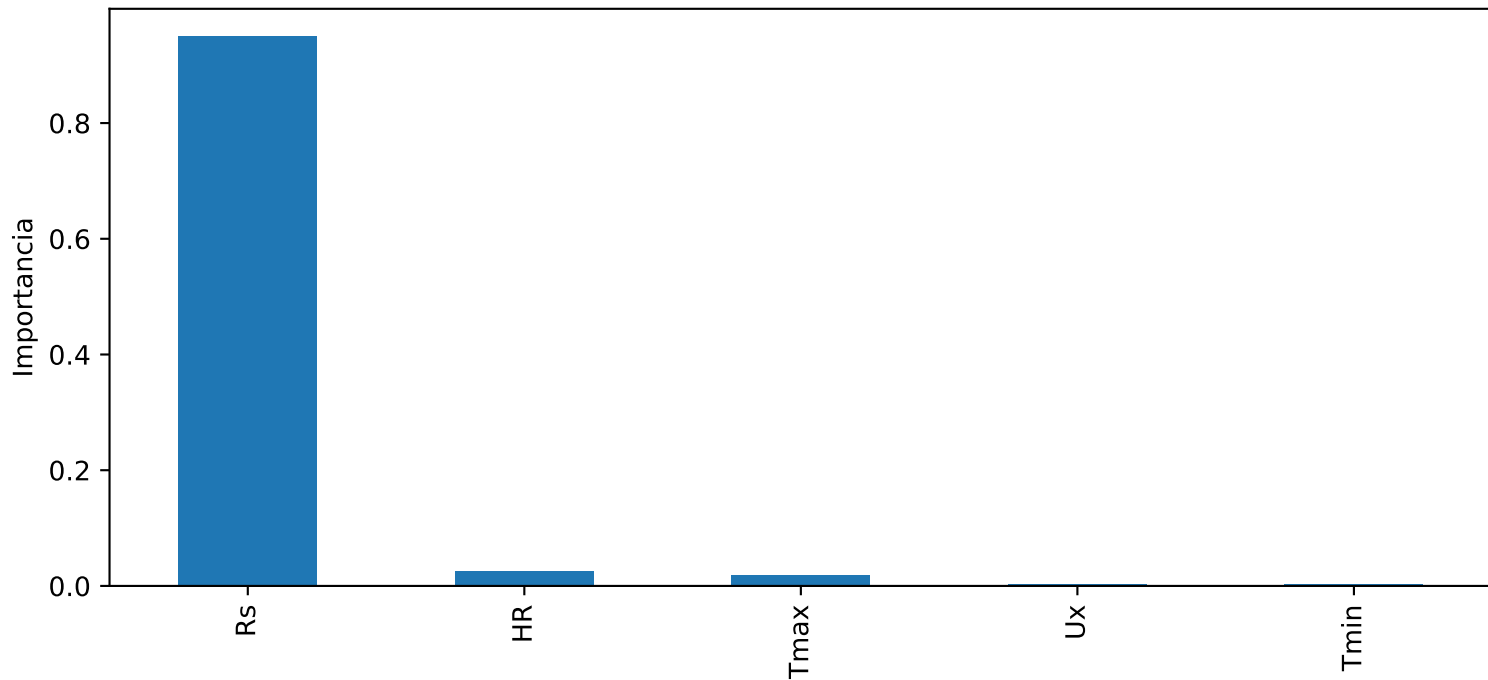
Dispersión — Toluca (2014)



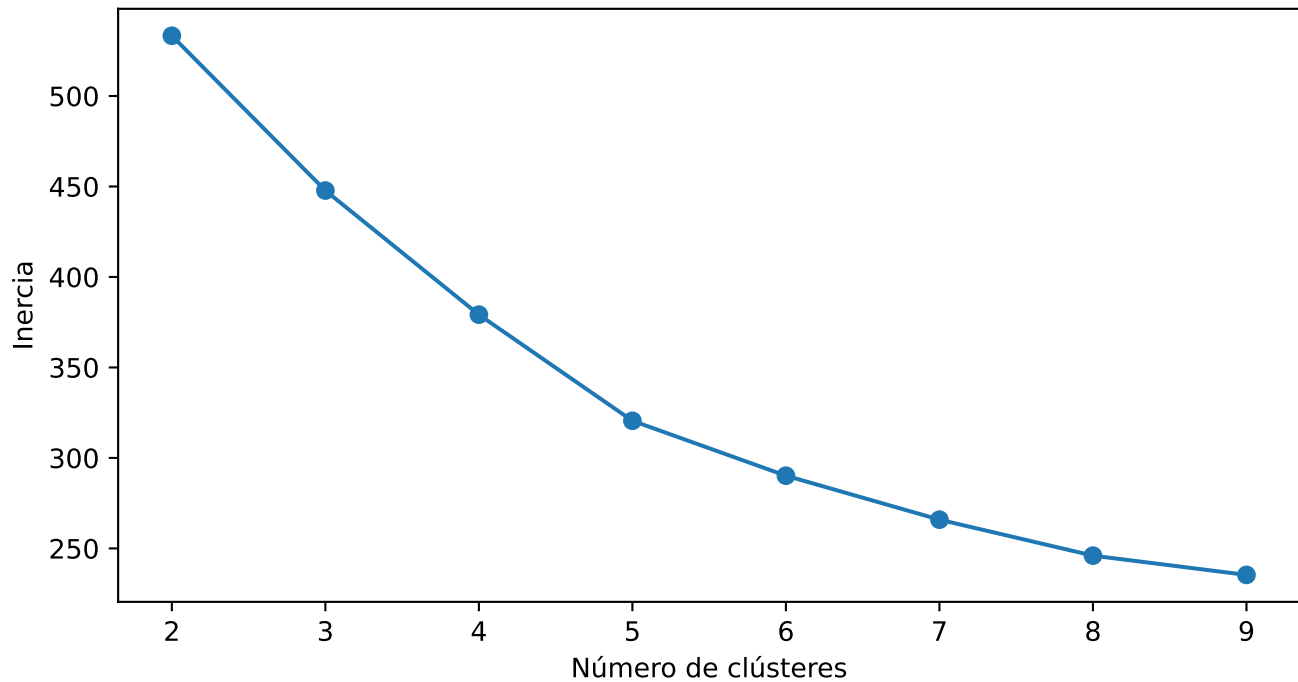
Comparación entre ET0 Real y Predicho — Toluca (2014)



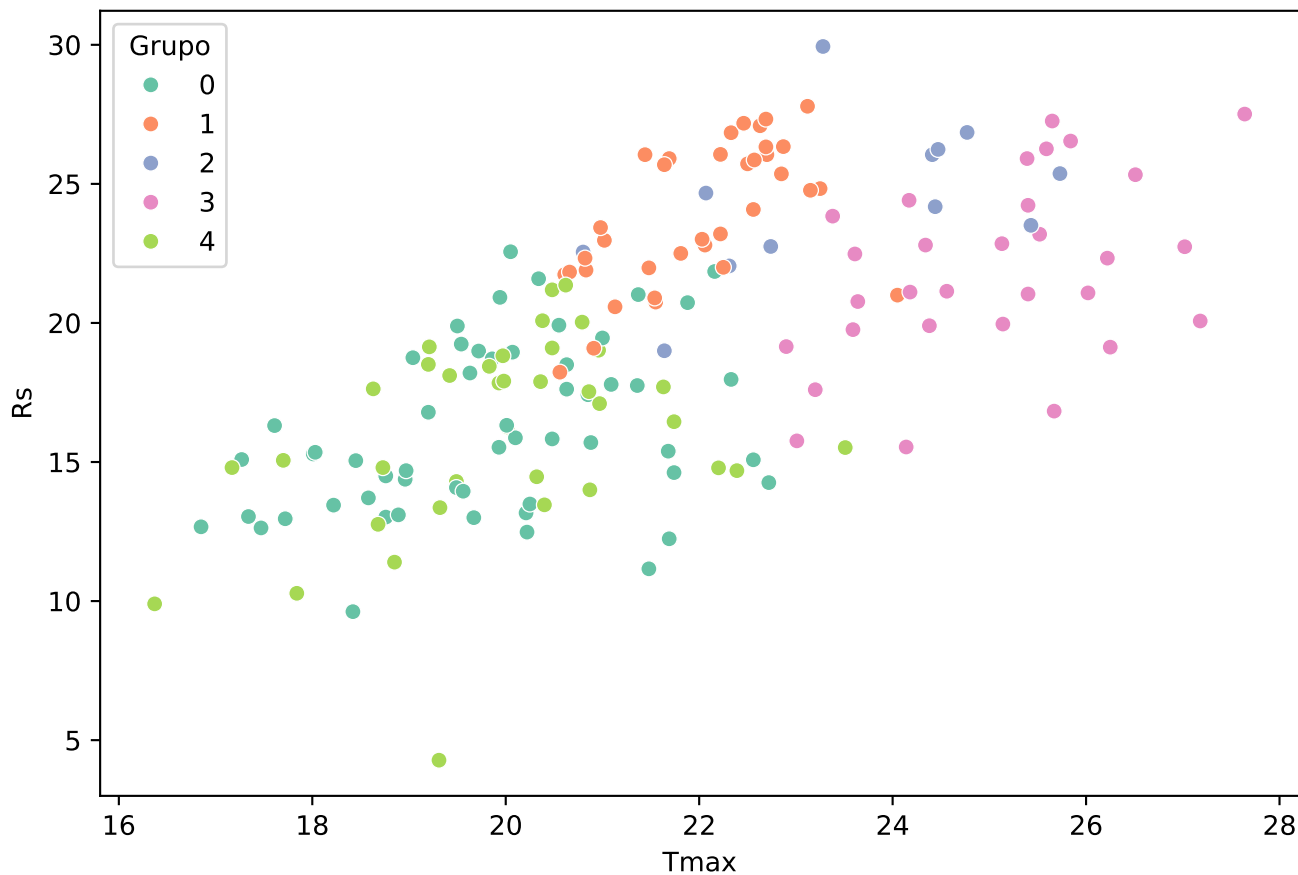
Importancia de variables (RF) — Toluca (2014)



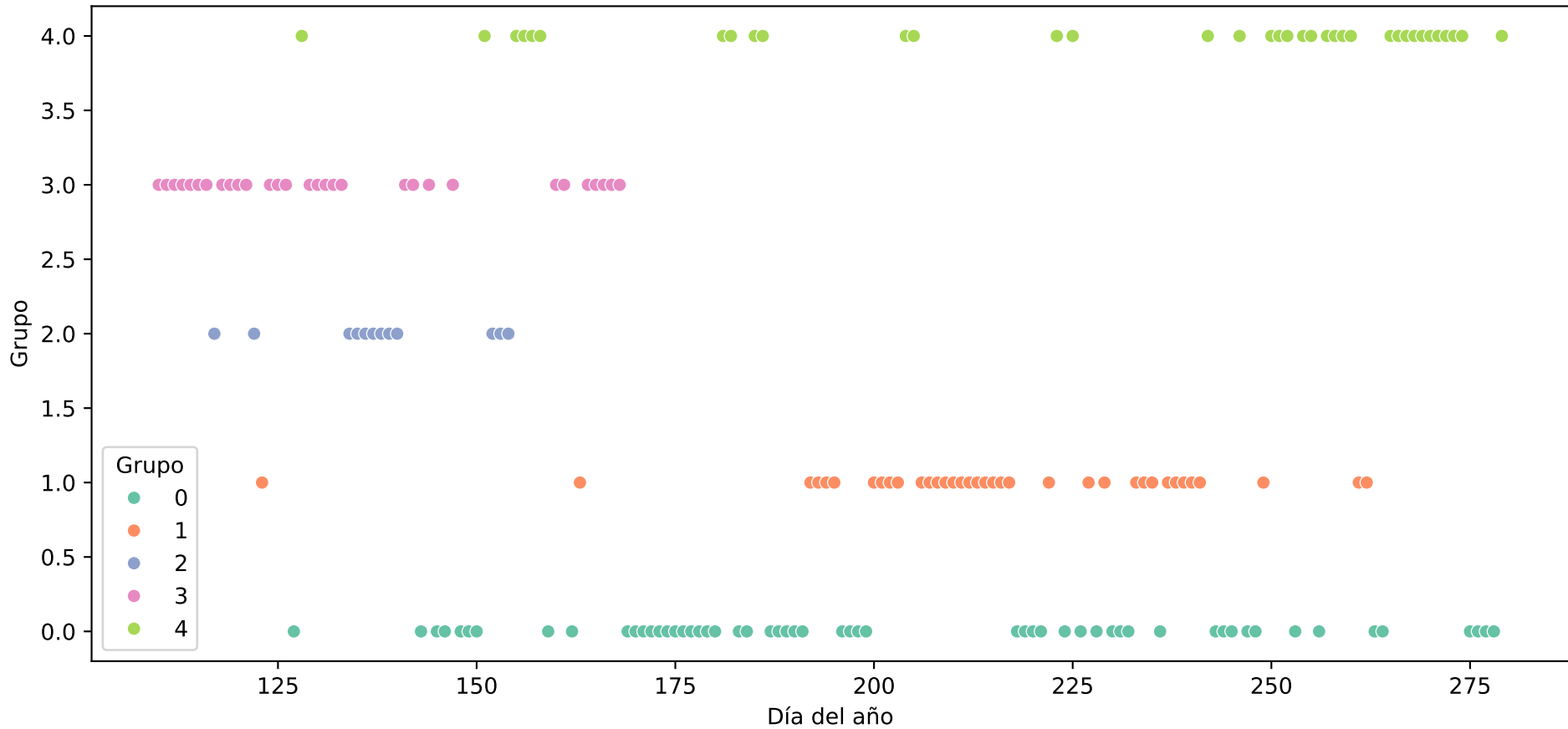
Método del codo



Clasificación de días climáticos — Toluca (2014)

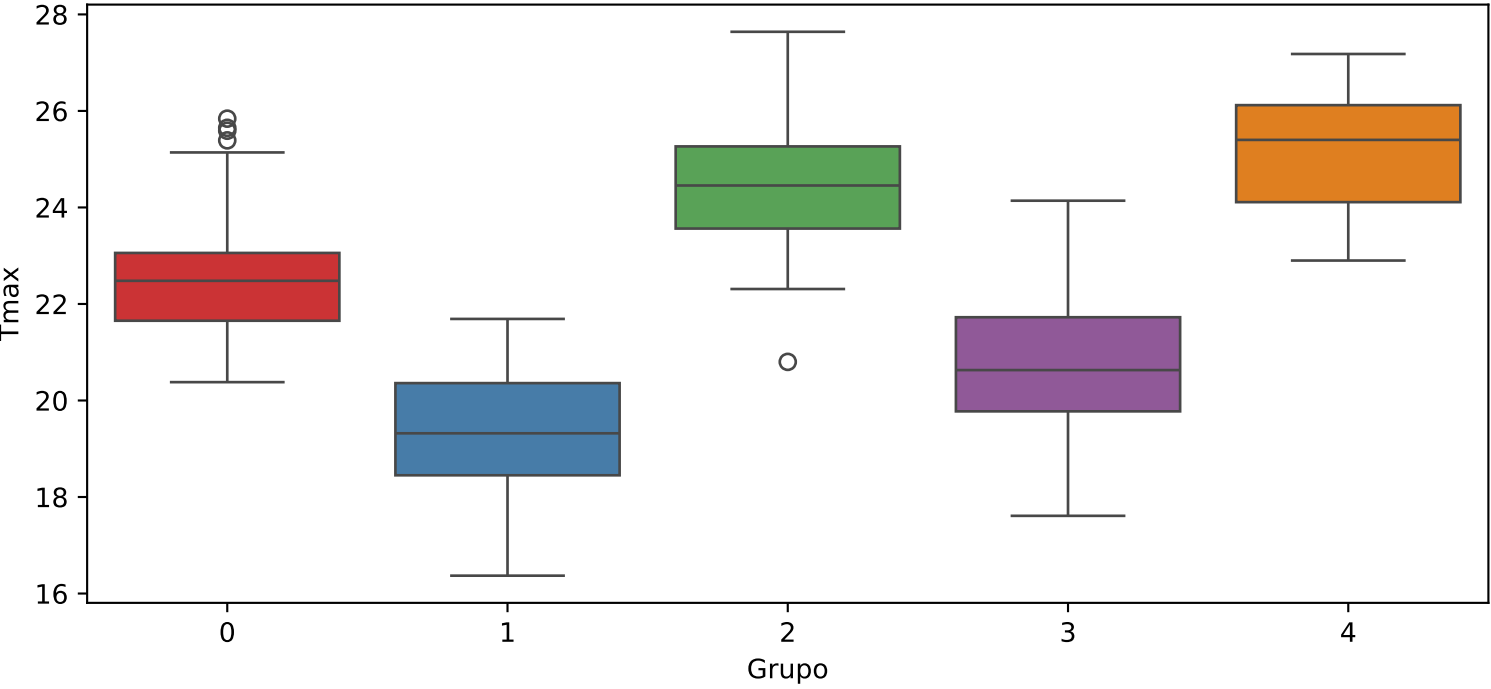


Distribución de días por grupo — Toluca (2014)

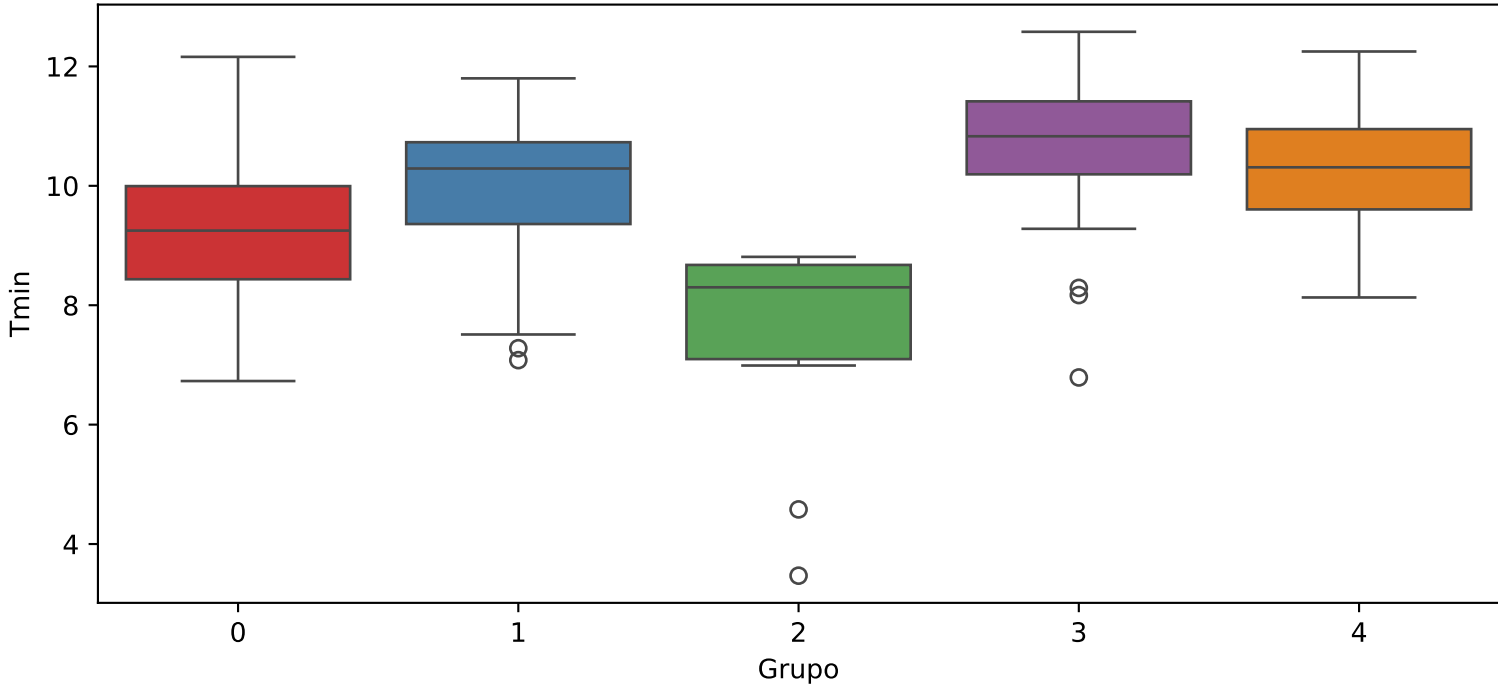


Boxplots por grupo — Toluca (2014)

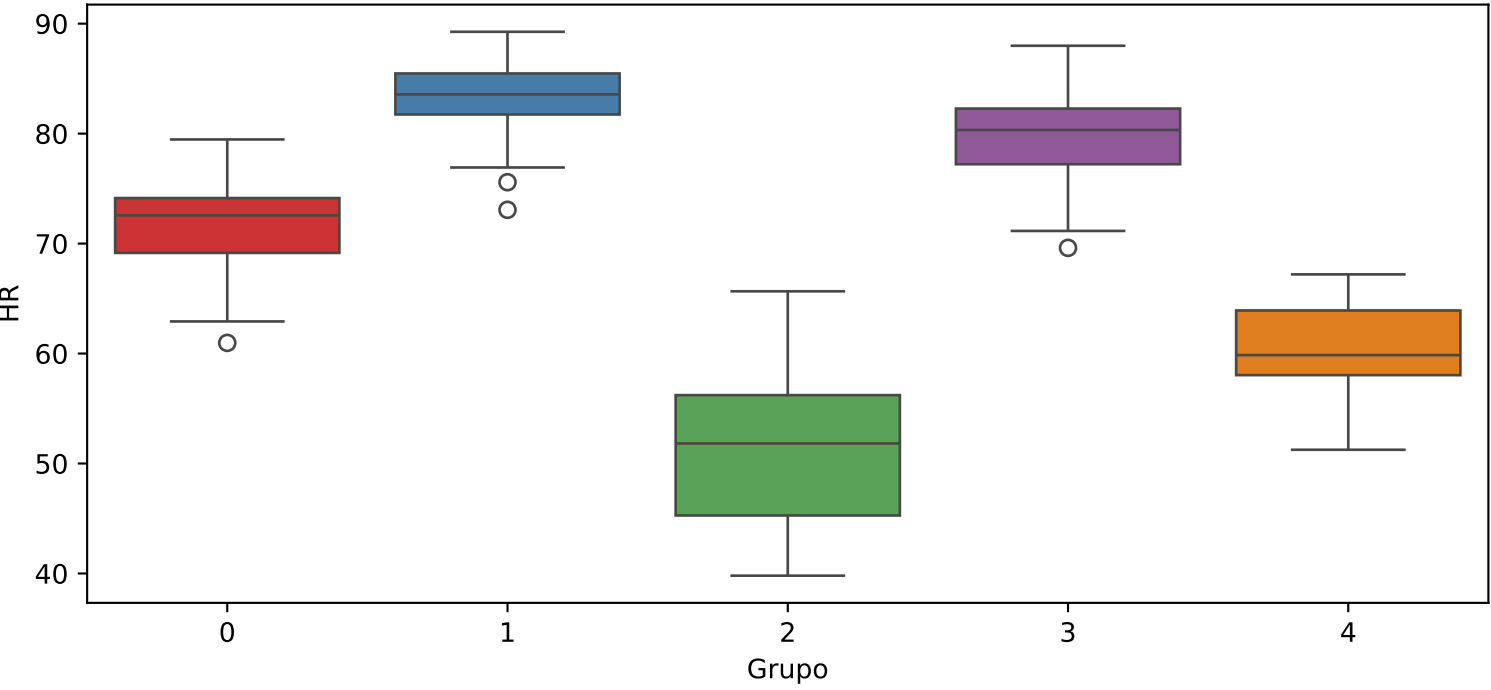
Distribución de Tmax por grupo



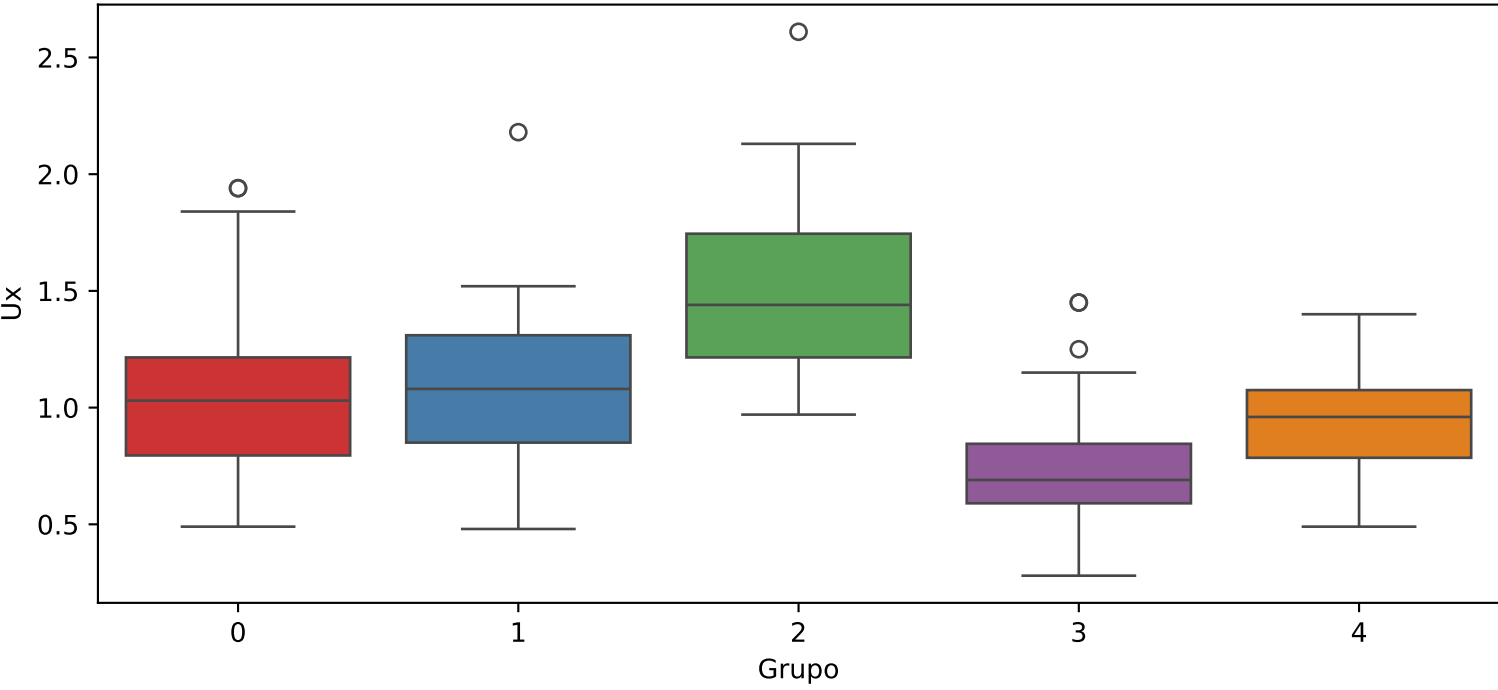
Distribución de Tmin por grupo



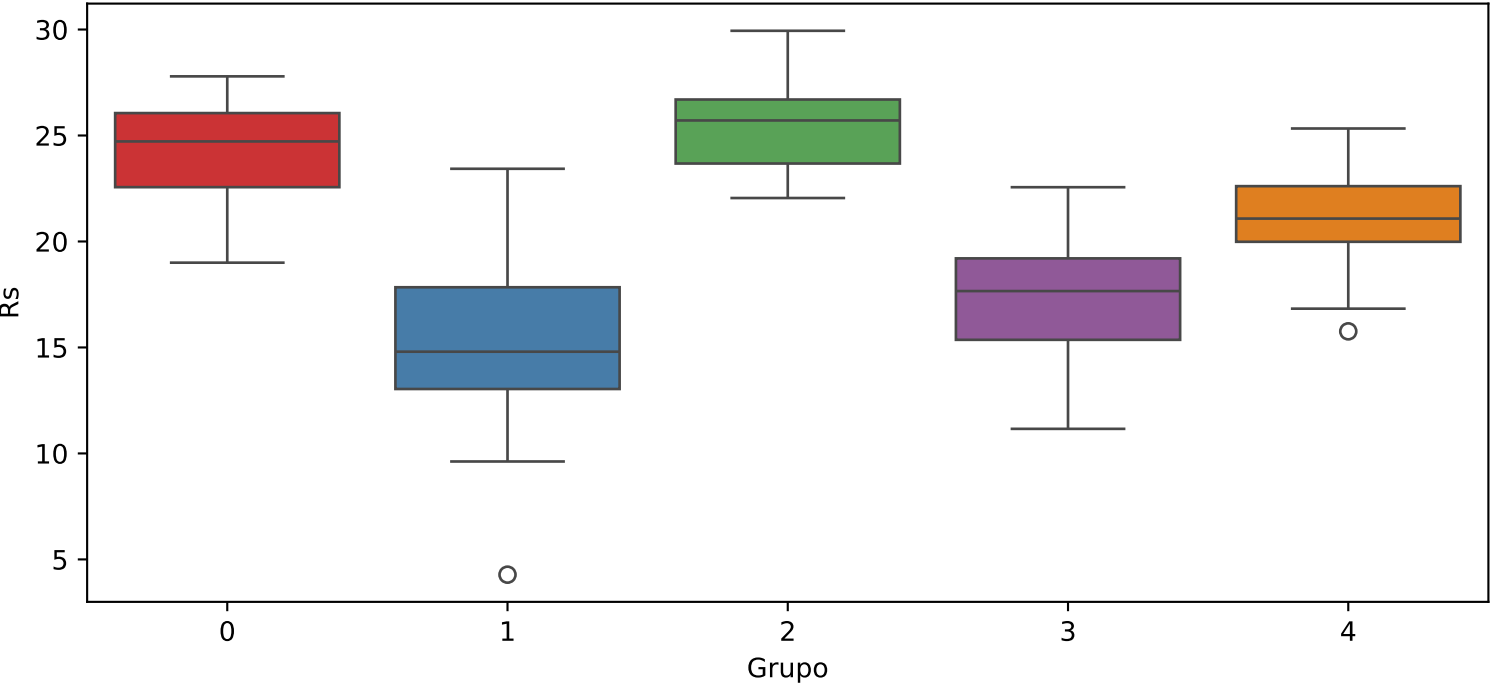
Distribución de HR por grupo



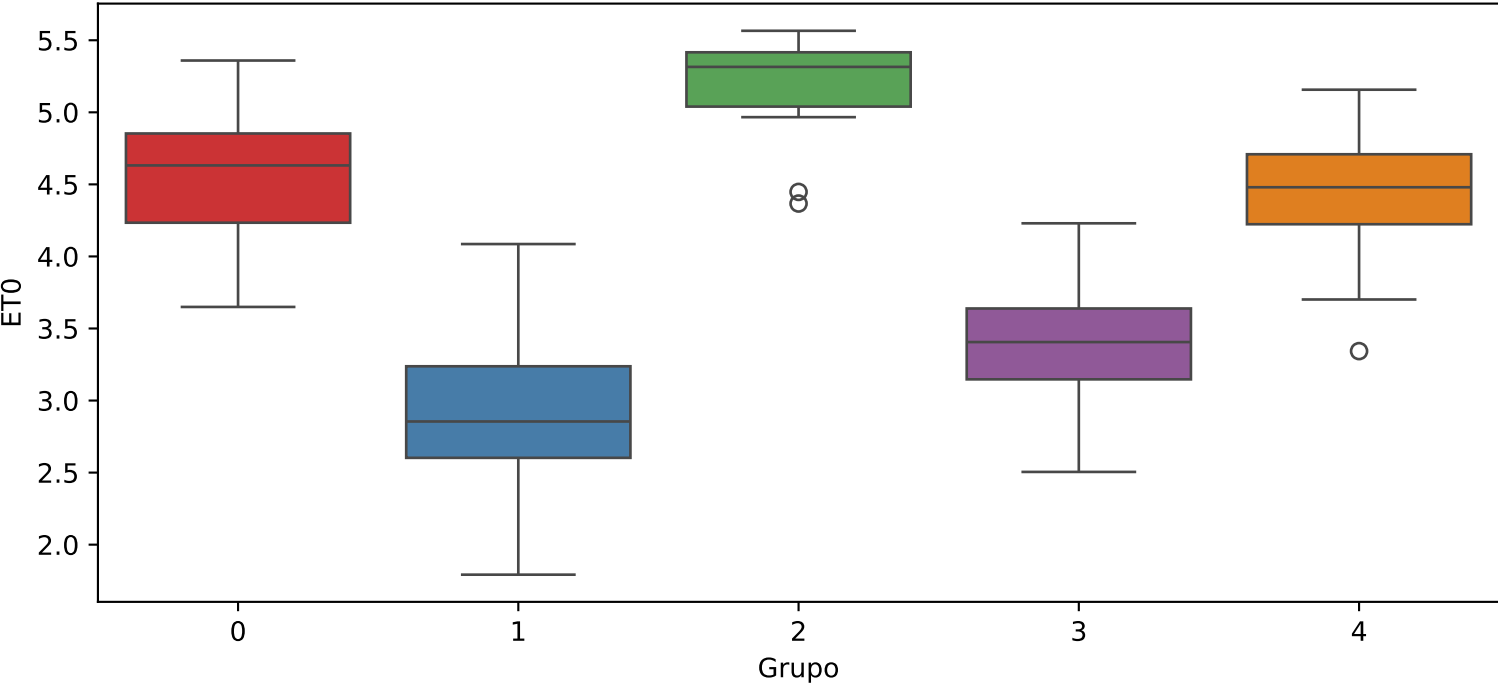
Distribución de Ux por grupo



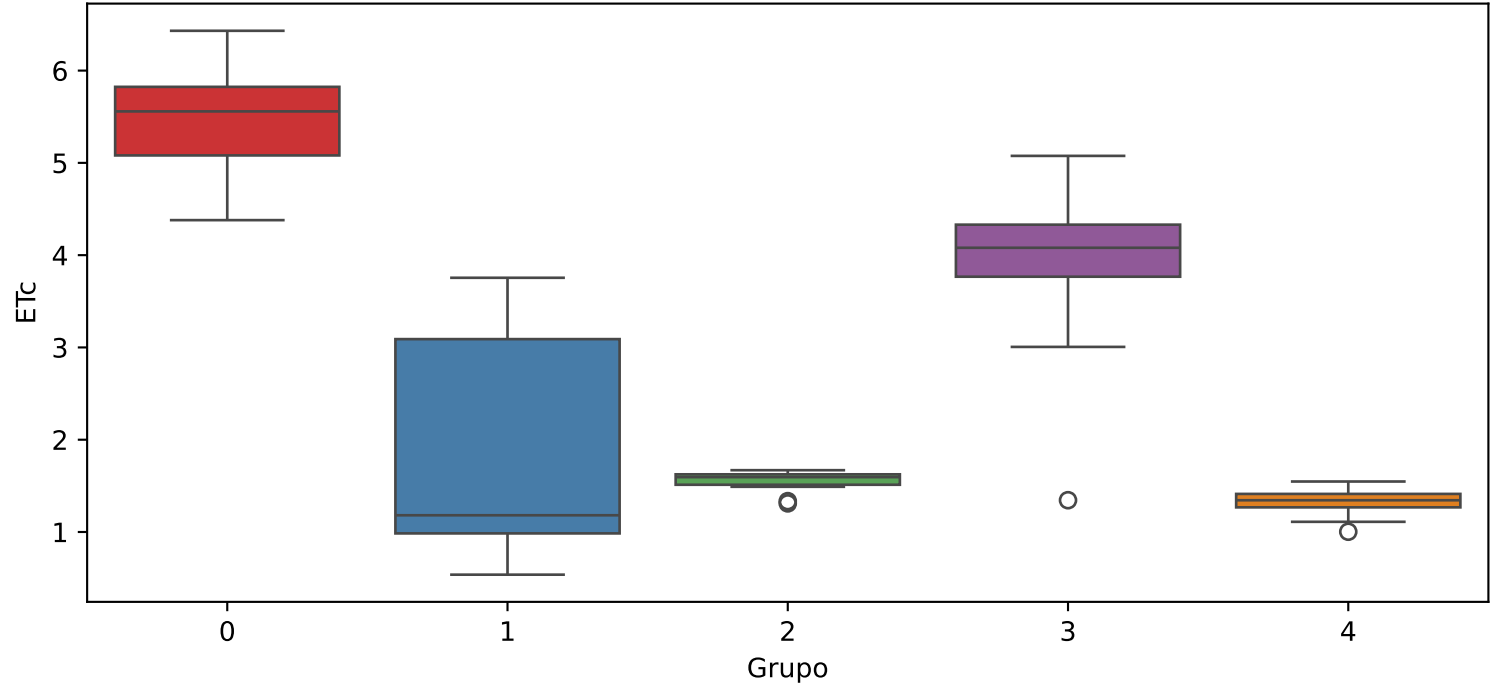
Distribución de Rs por grupo



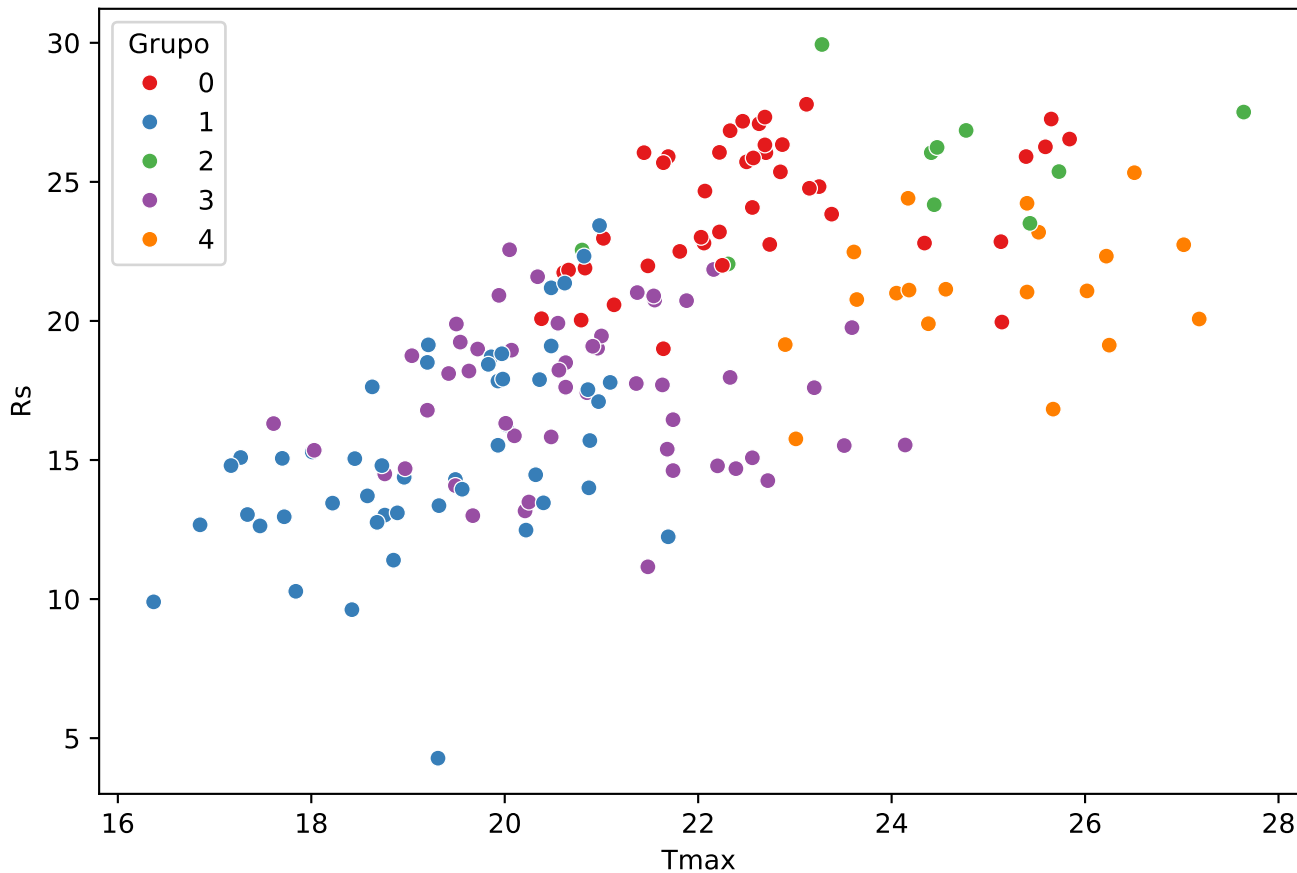
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2014)



Toluca — 2015

Días del ciclo: 170

ETc total [mm]: 572.1

ETverde total [mm]: 283.6

ETazul total [mm]: 288.4

Tmax / Tmin [°C]: 27.2 / 4.4

Toluca — 2015 · Resultados y métricas

[Toluca 2015] Regresión Lineal ET0 — R^2 : 0.9937 MSE: 0.0047

[Toluca 2015] Random Forest ET0 — R^2 : 0.9714 MSE: 0.0213

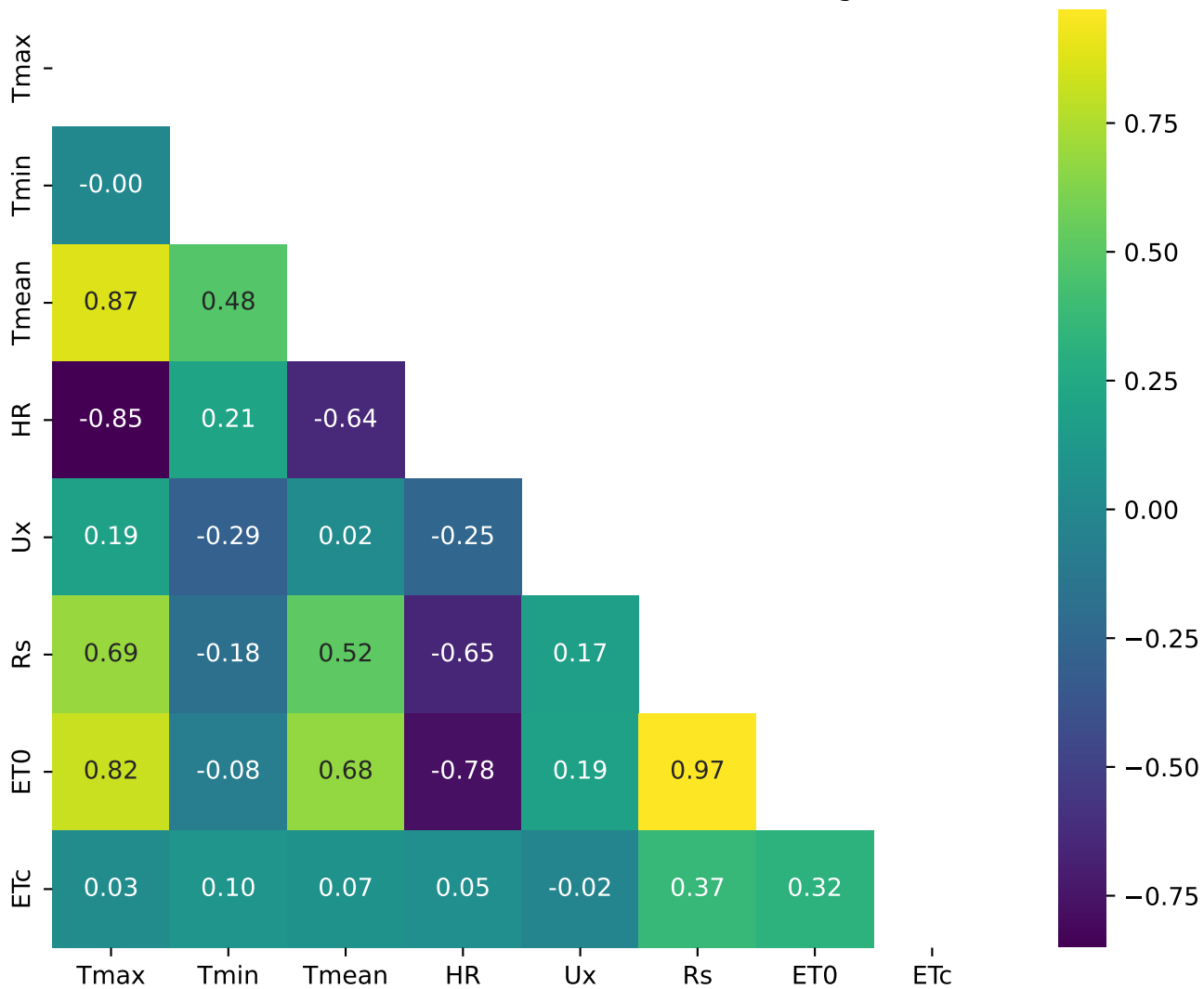
Importancias: {'Tmax': 0.049063647603786724, 'Tmin': 0.007121426473456297, 'HR': 0.013344872327136829, 'Ux': 0.004313044855148364, 'Rs': 0.9261570087404718}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	18.132143	9.786429	84.668571	0.825000	11.384286	2.317369	1.396385
1	25.234815	10.313333	61.999630	1.023704	22.592222	4.639418	1.399984
2	20.273448	11.008793	80.709483	0.760517	17.656207	3.419107	3.685907
3	23.250789	10.004474	71.566053	0.983158	24.183158	4.623462	5.548154
4	21.127879	8.396364	75.763939	1.237273	19.677879	3.667113	2.730078

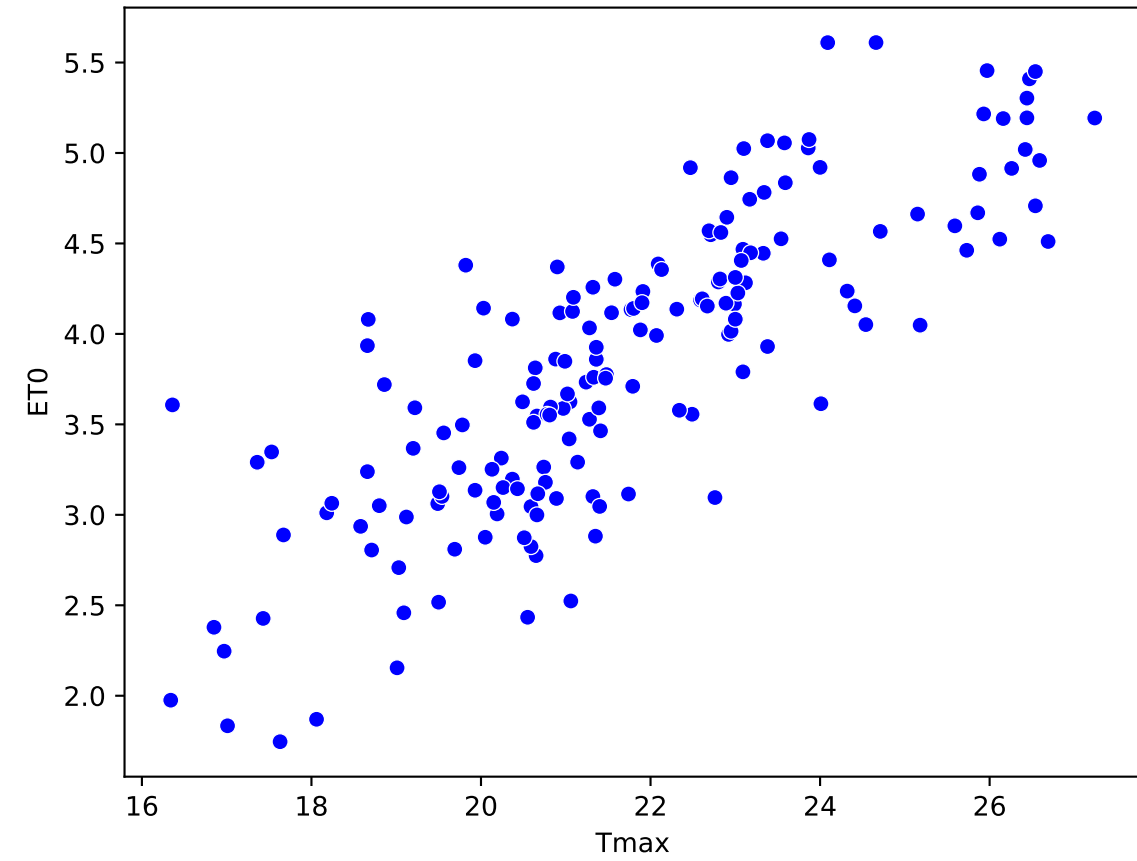
Toluca — 2015

Matriz de Correlación entre Variables Meteorológicas

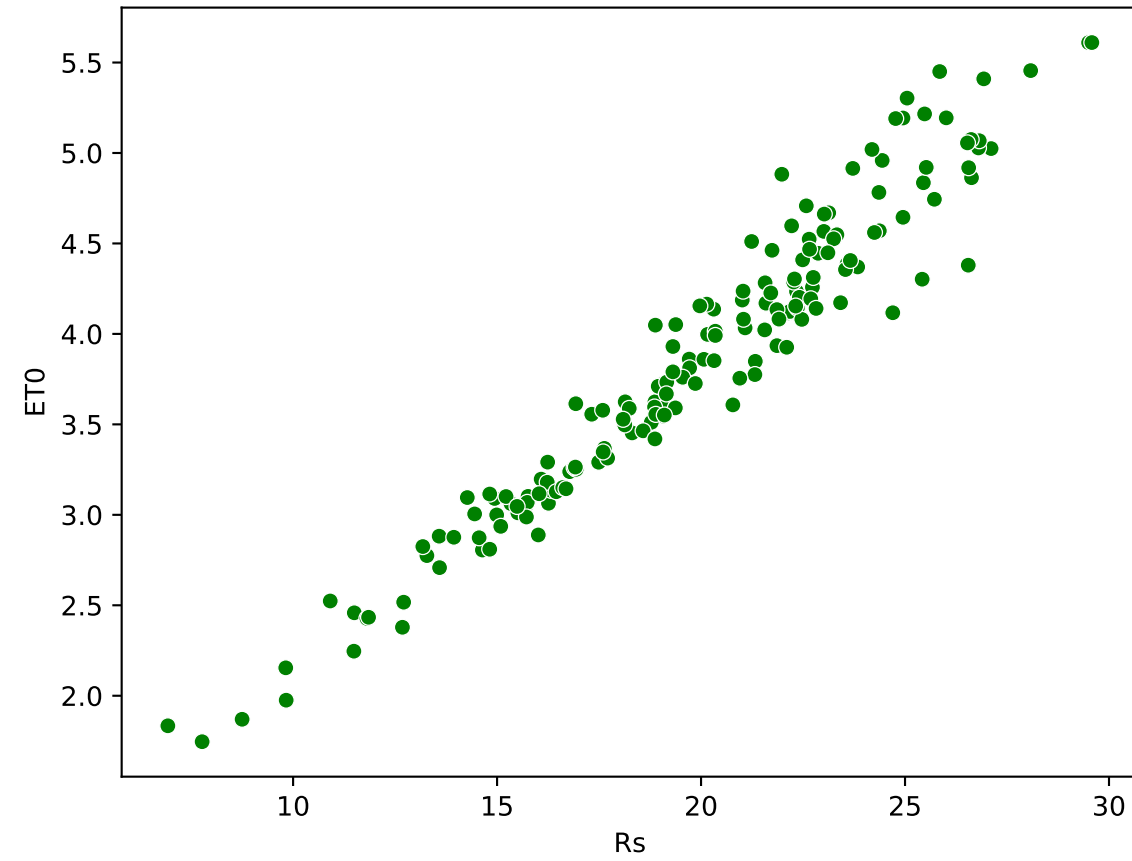


Dispersión — Toluca (2015)

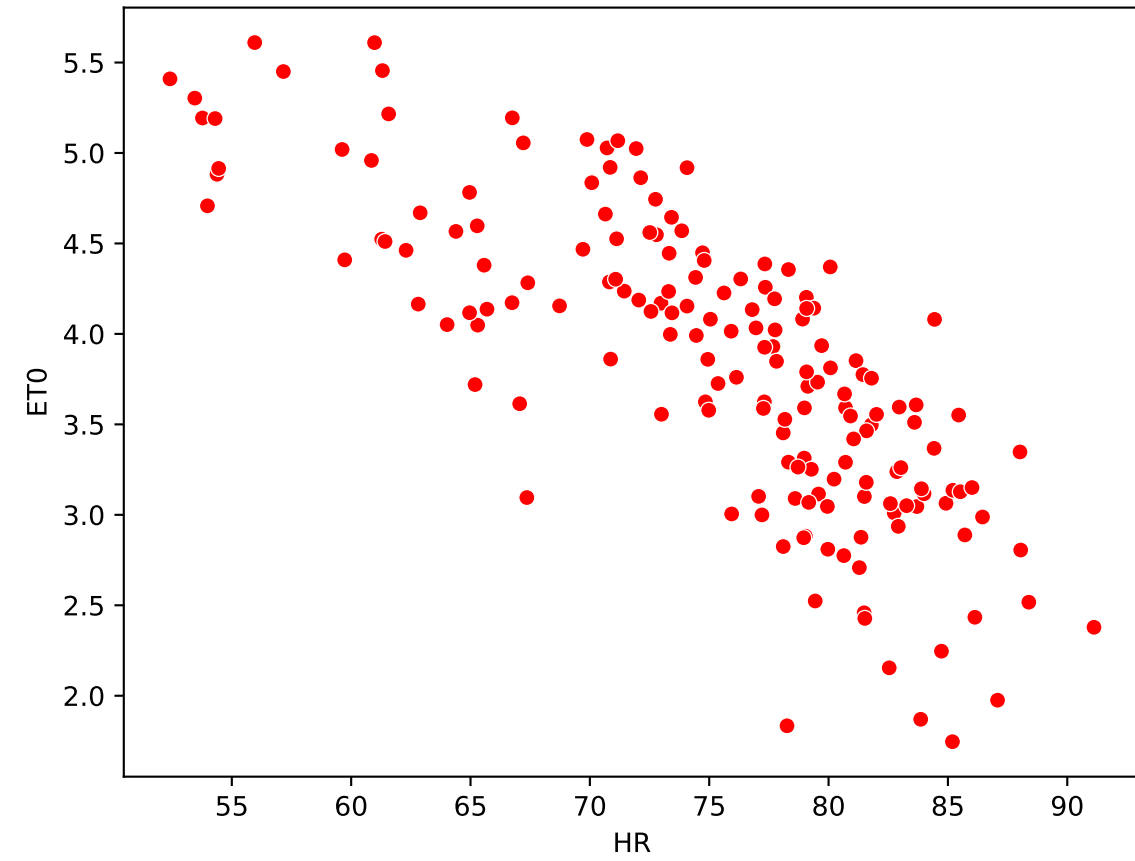
Tmax vs ET0



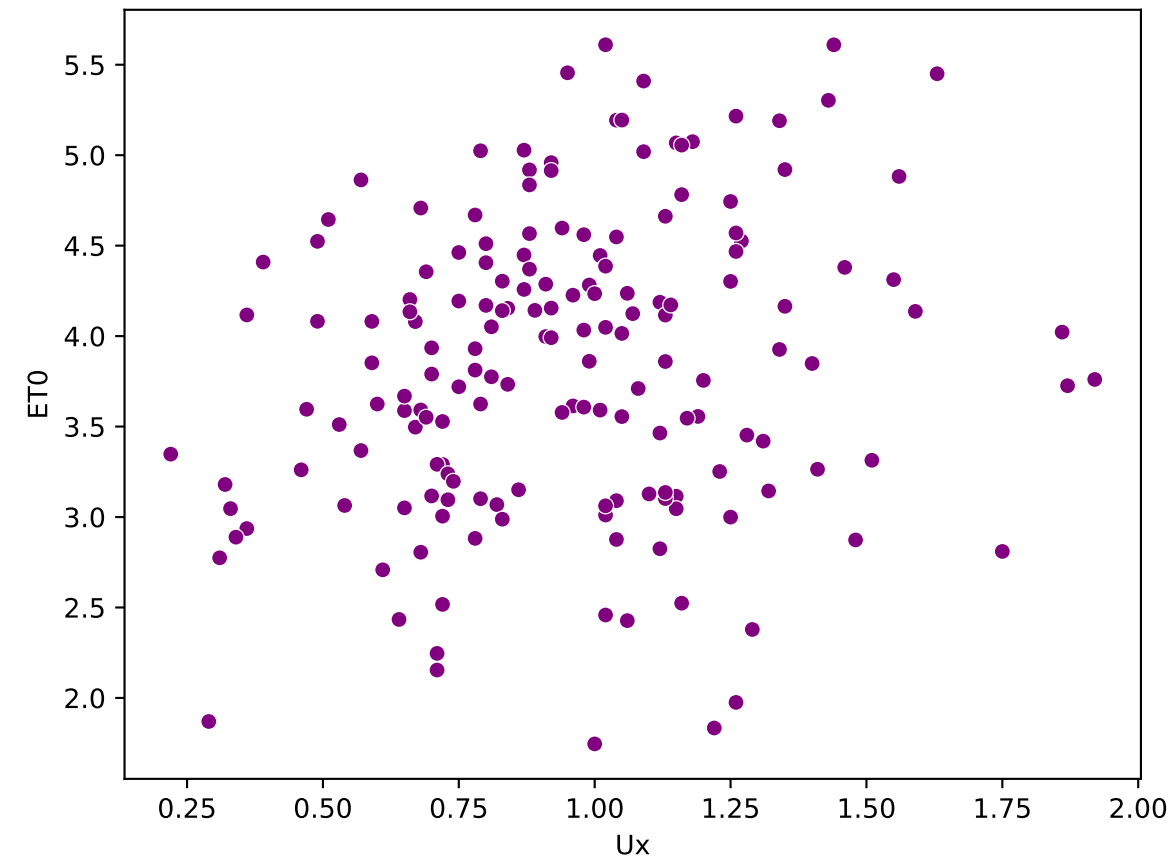
Rs vs ET0



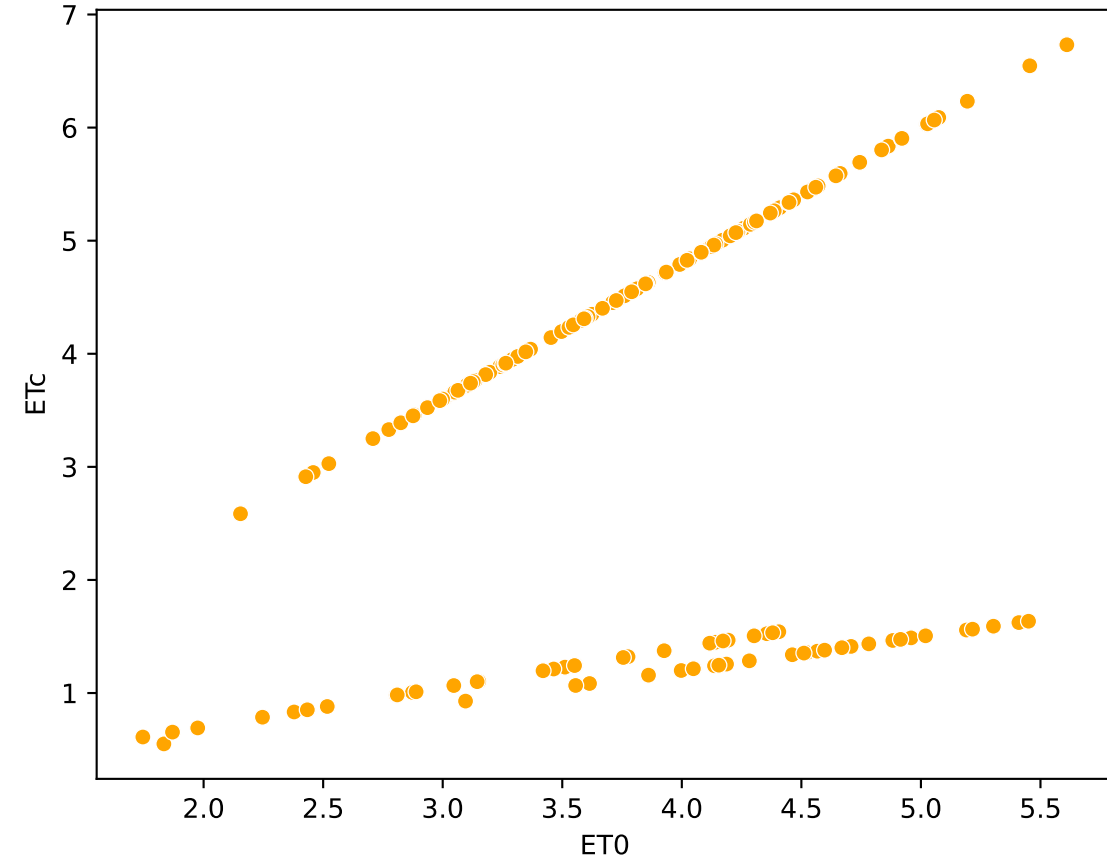
HR vs ET0



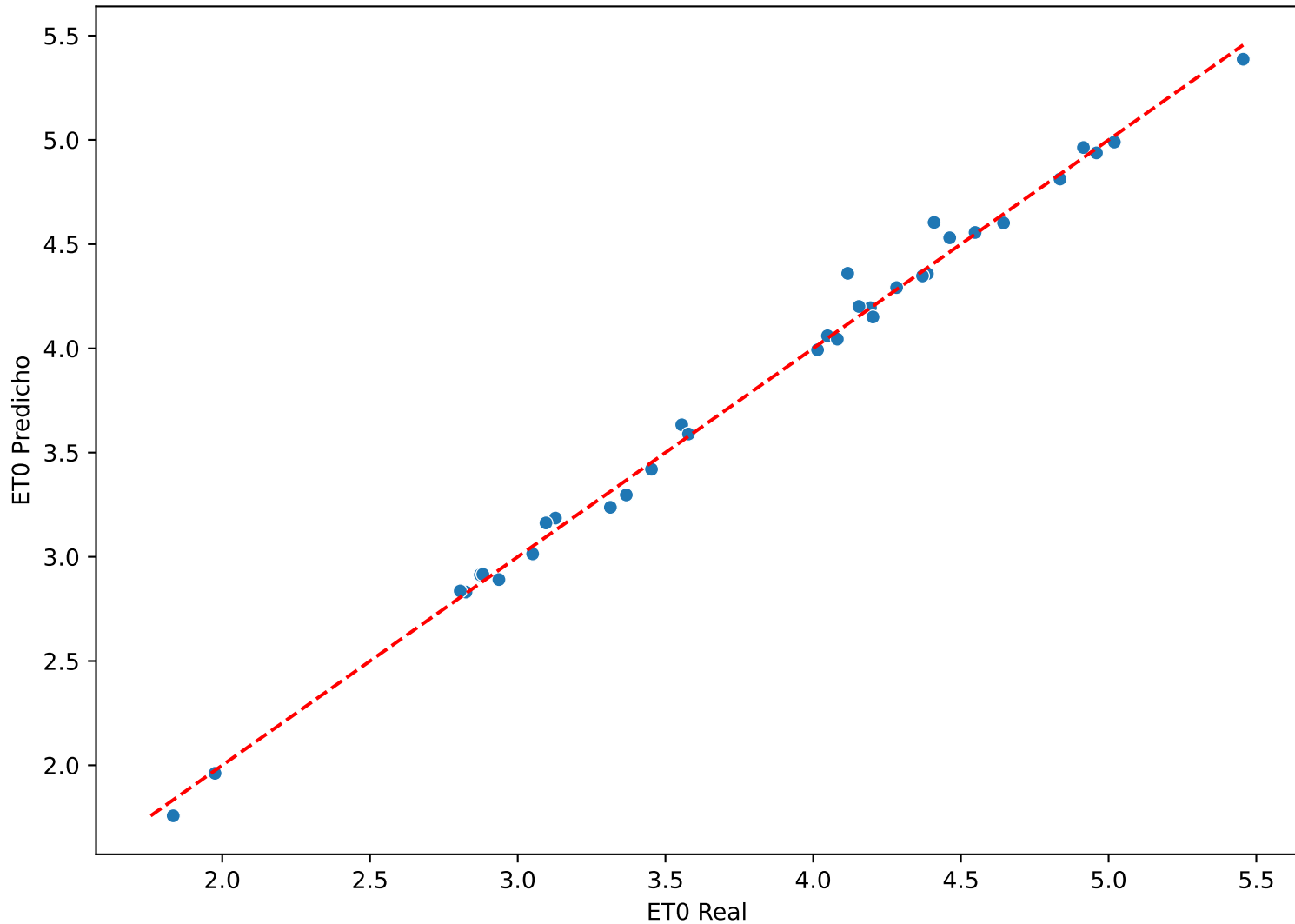
Ux vs ET0



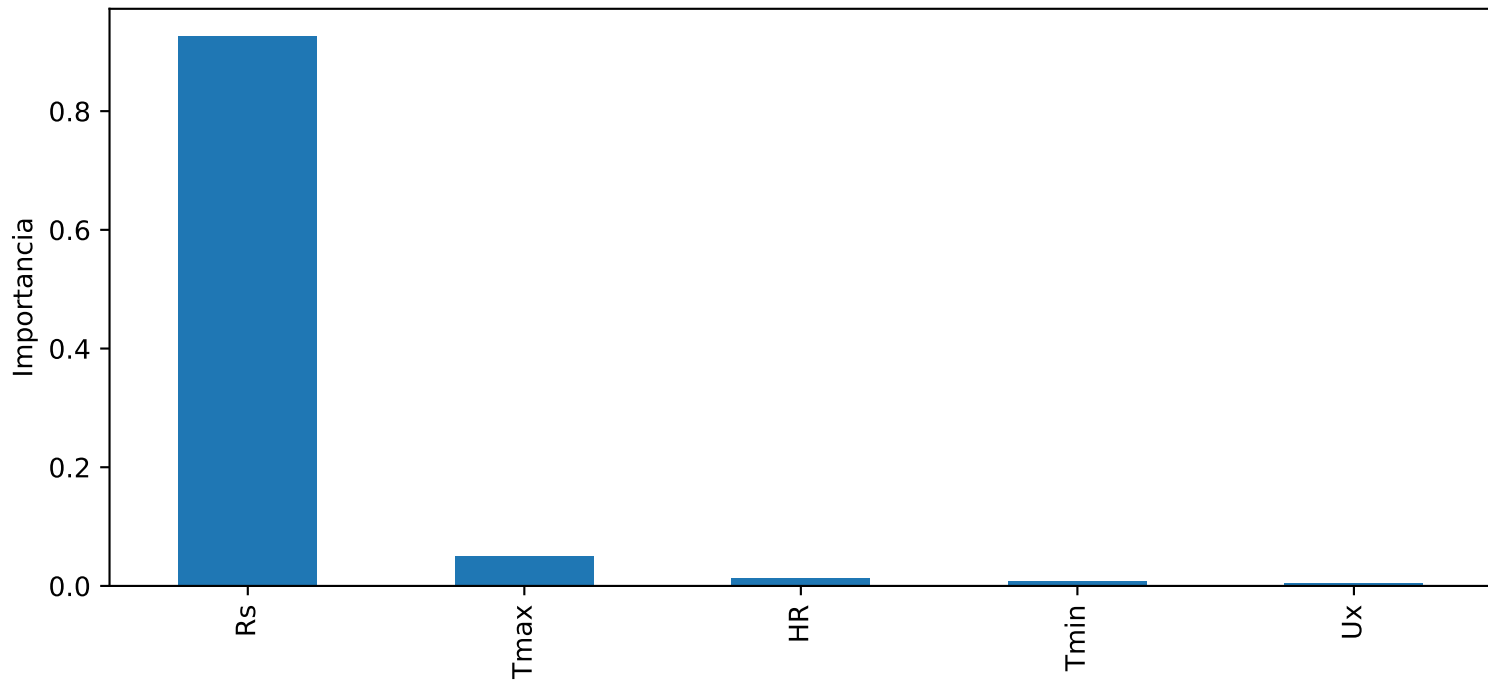
ET0 vs ETc



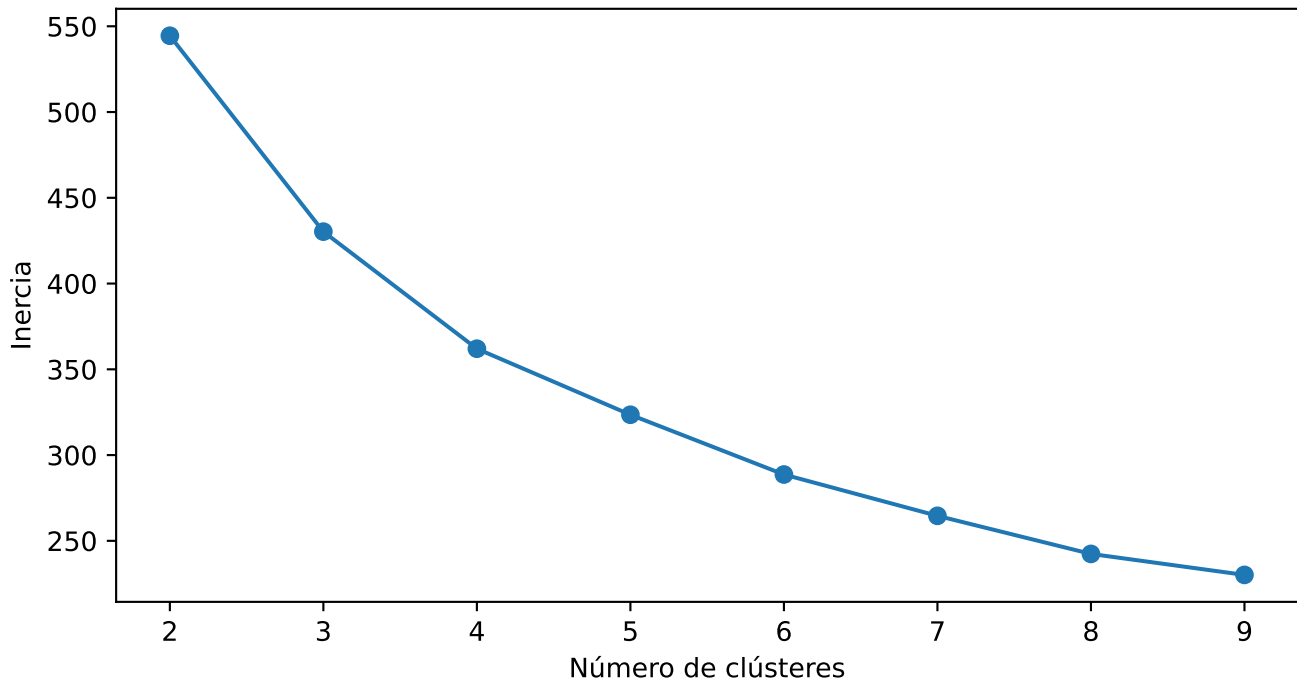
Comparación entre ET0 Real y Predicho — Toluca (2015)



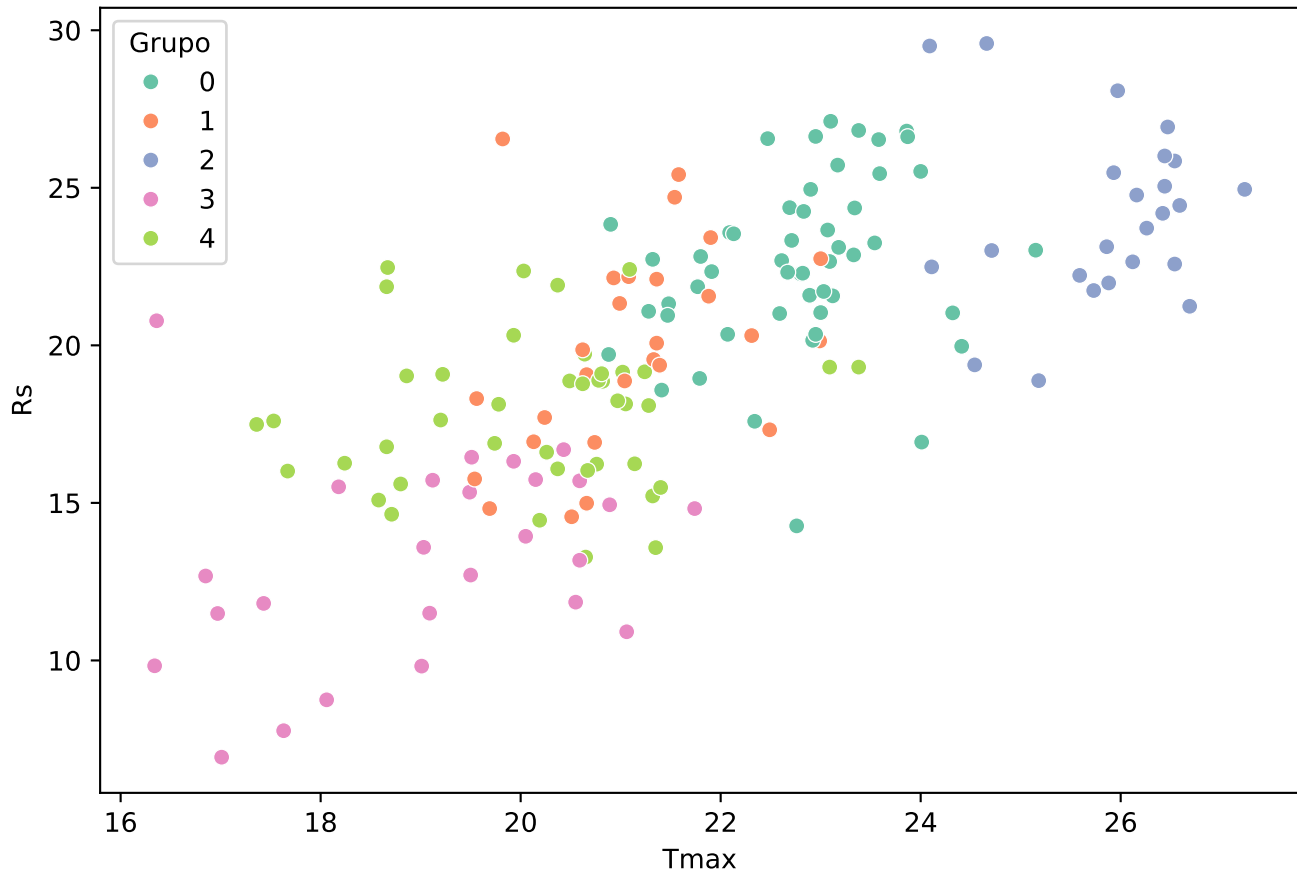
Importancia de variables (RF) — Toluca (2015)



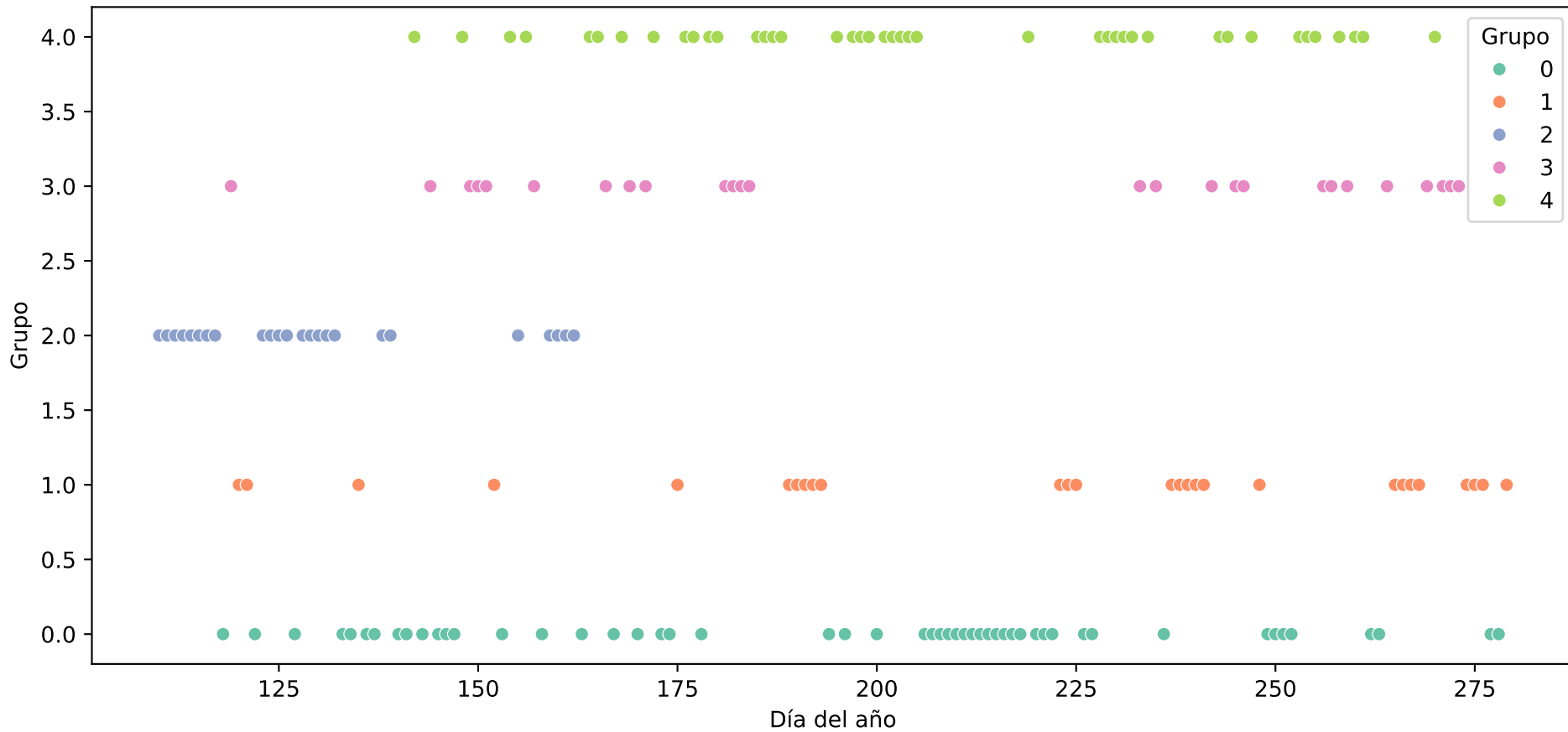
Método del codo



Clasificación de días climáticos — Toluca (2015)

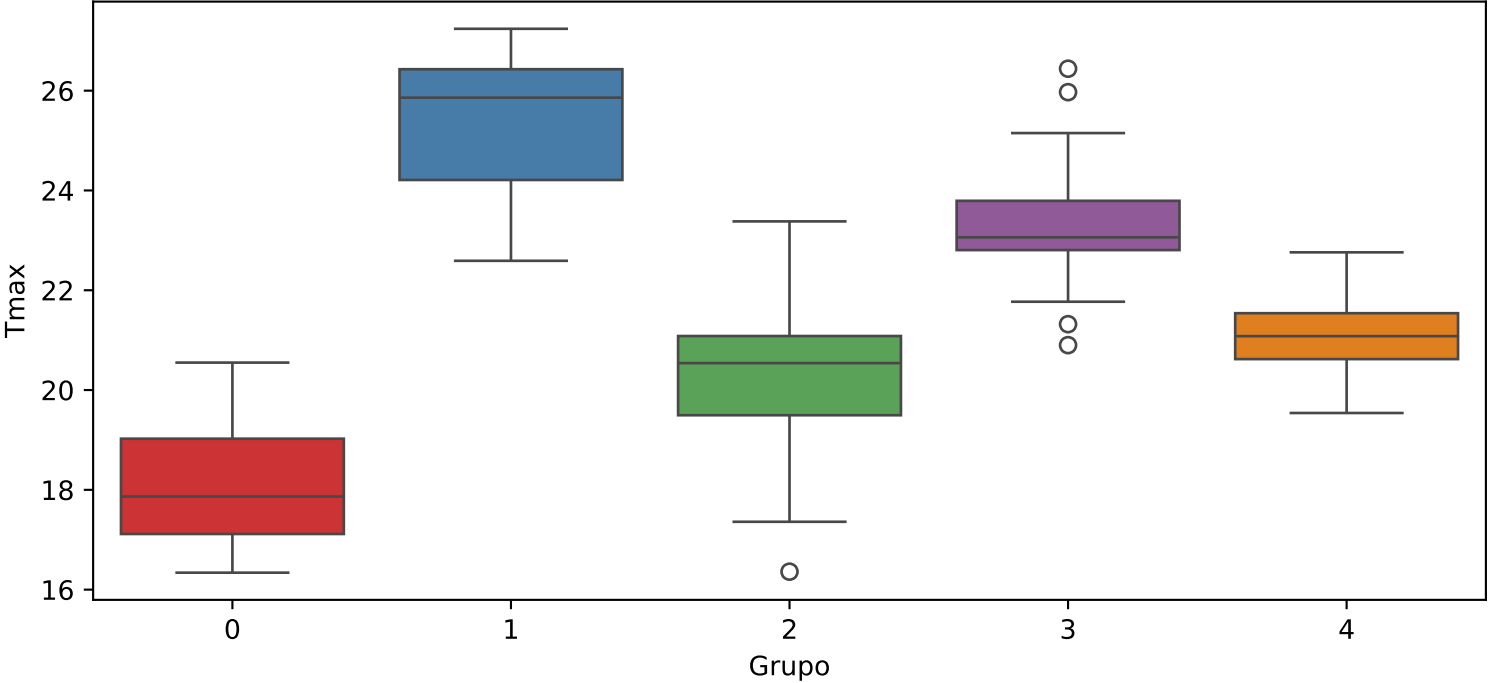


Distribución de días por grupo — Toluca (2015)

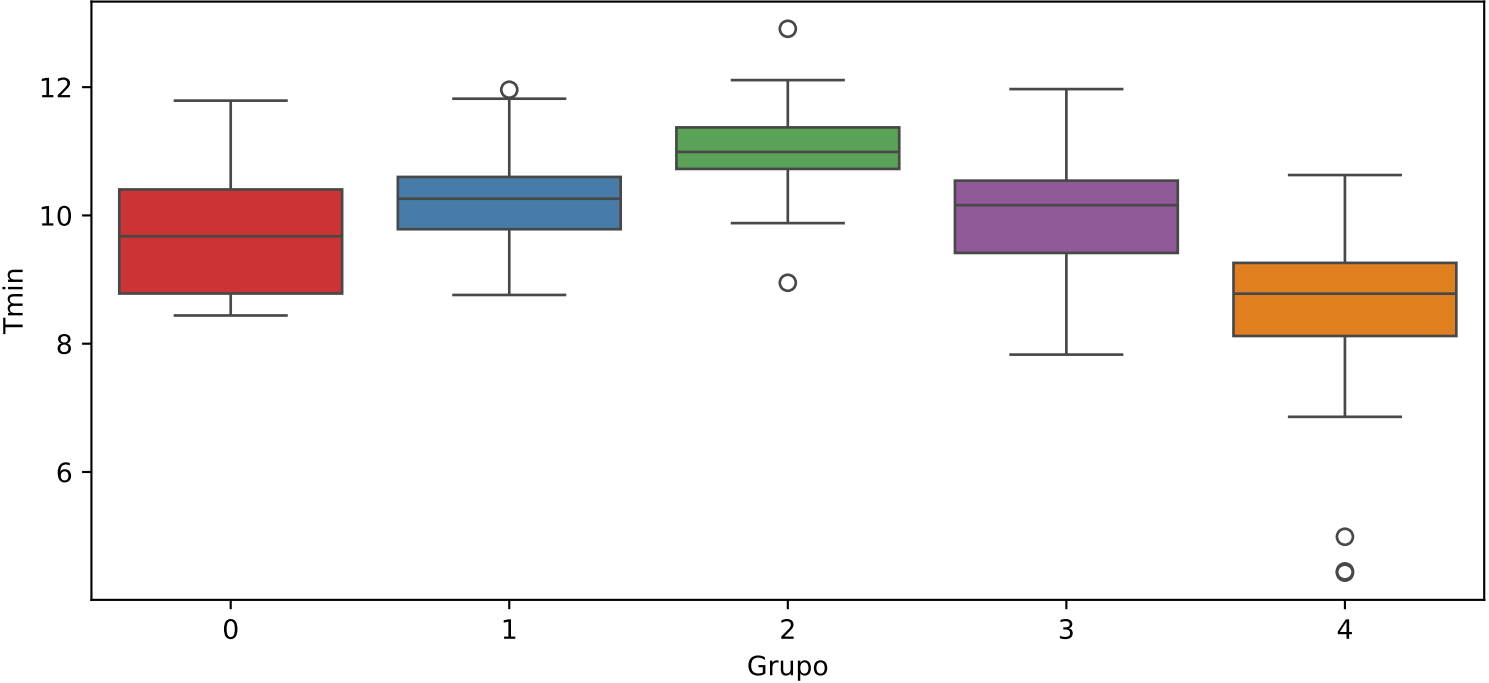


Boxplots por grupo — Toluca (2015)

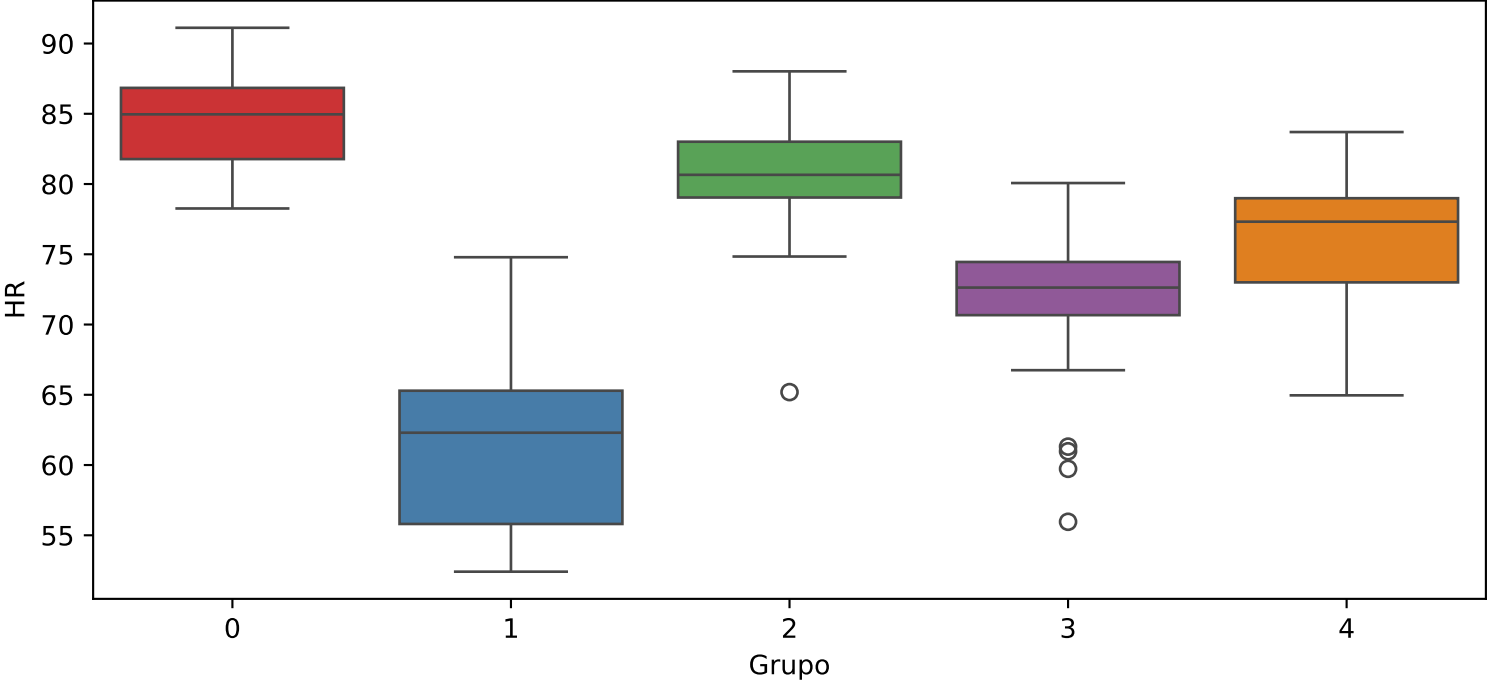
Distribución de Tmax por grupo



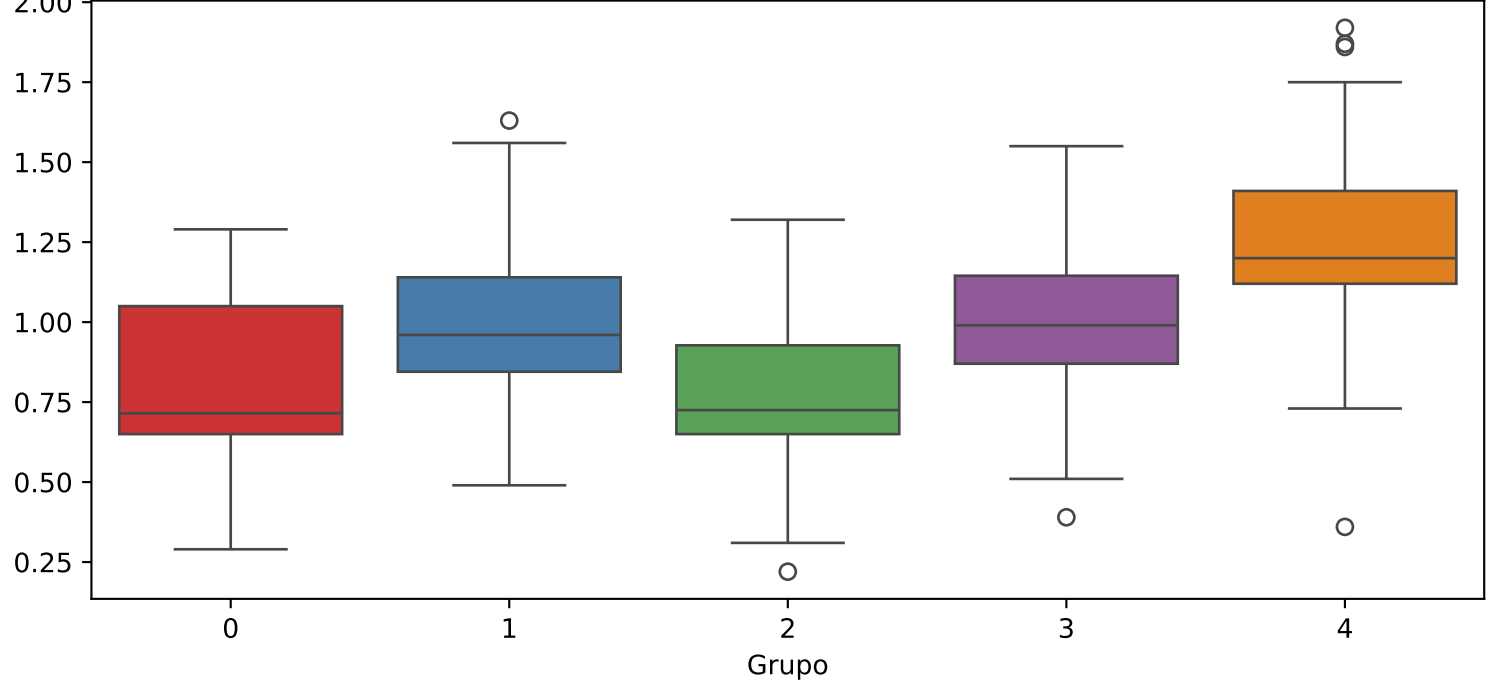
Distribución de Tmin por grupo



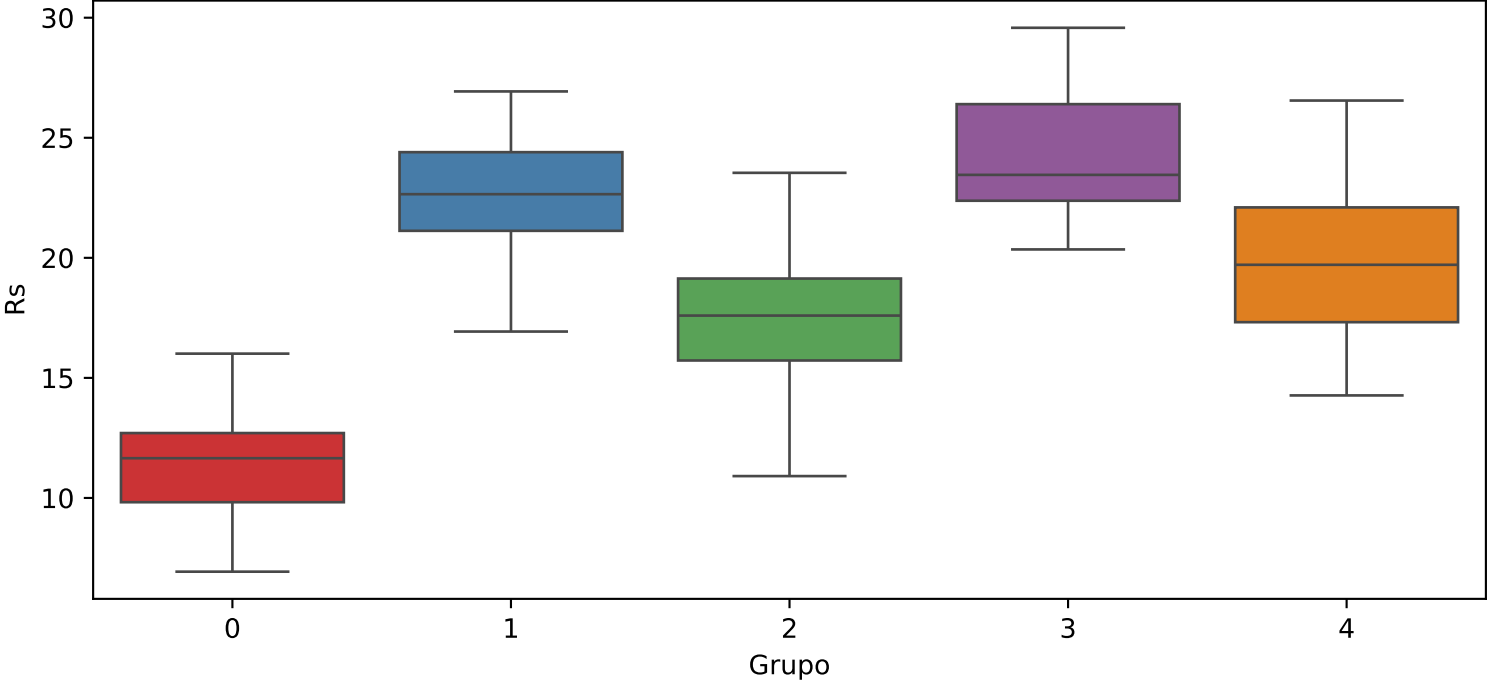
Distribución de HR por grupo



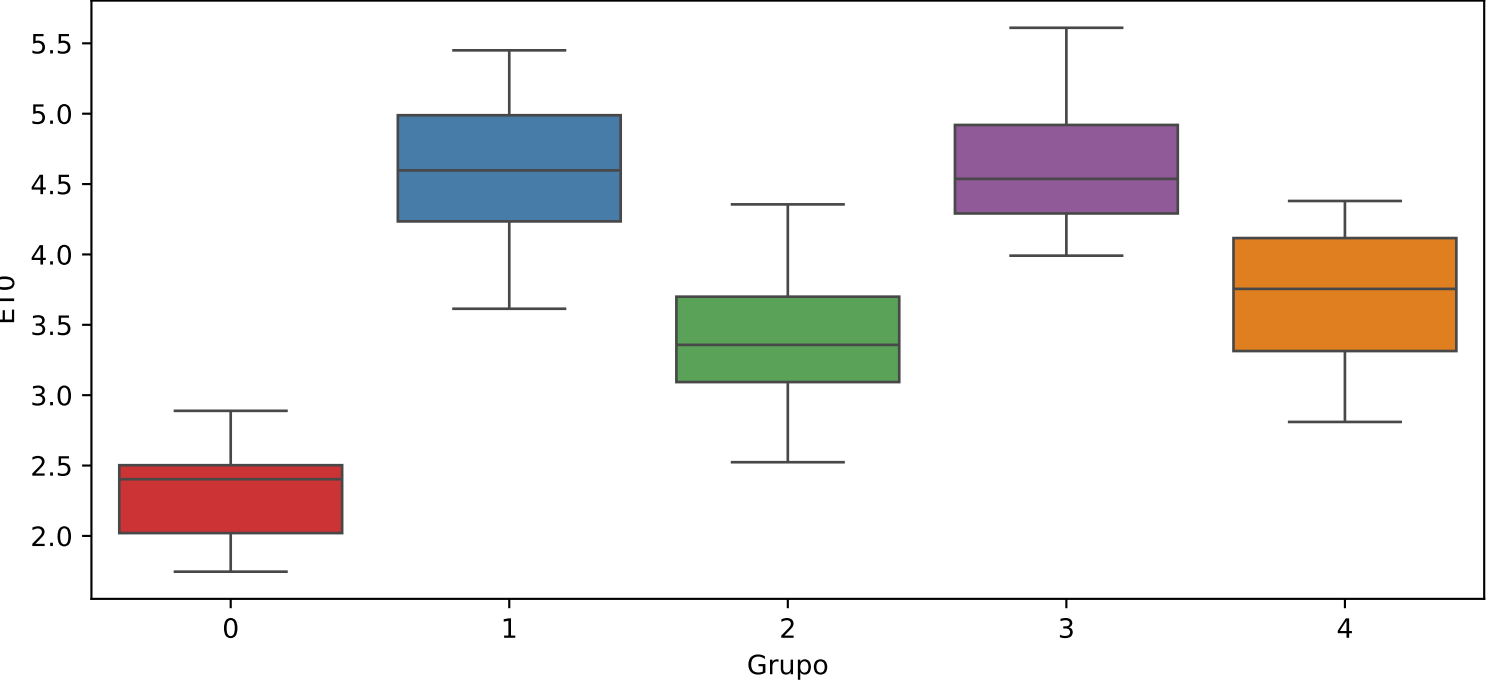
Distribución de Ux por grupo



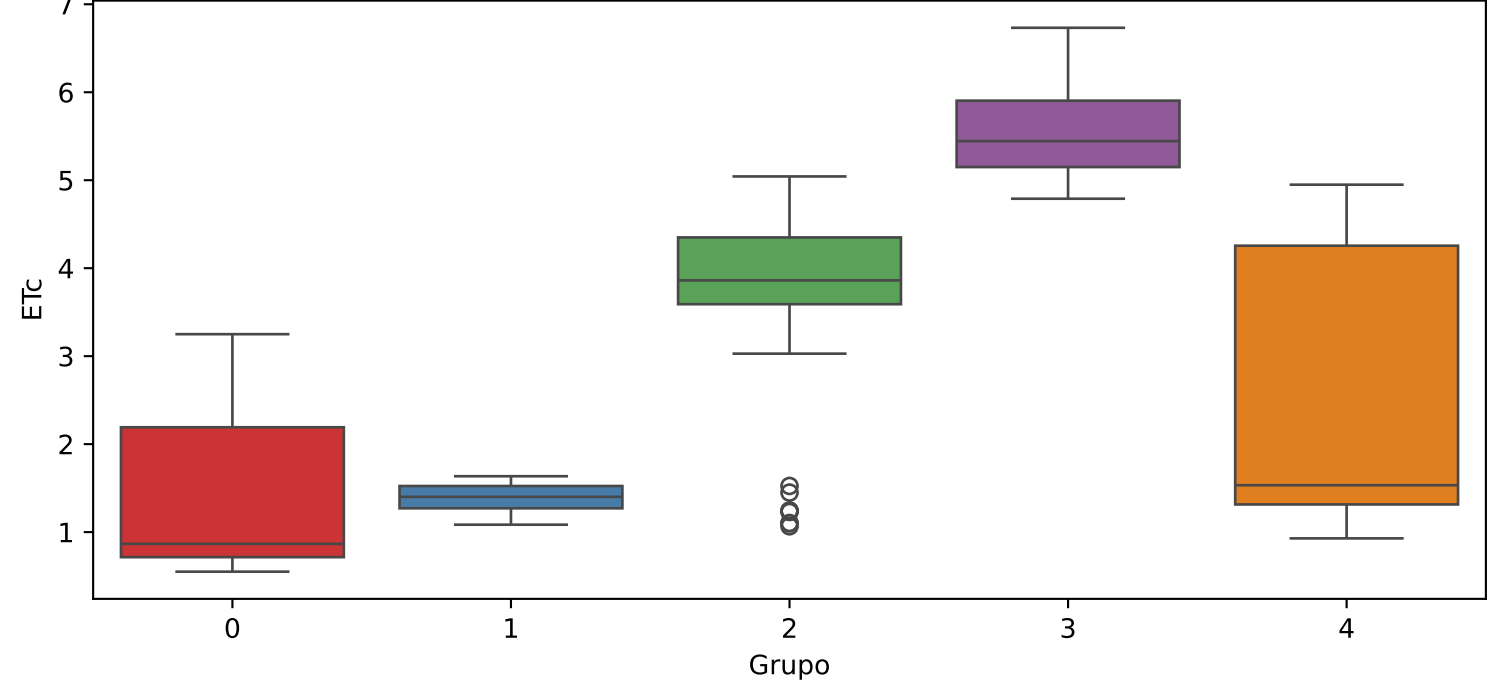
Distribución de Rs por grupo



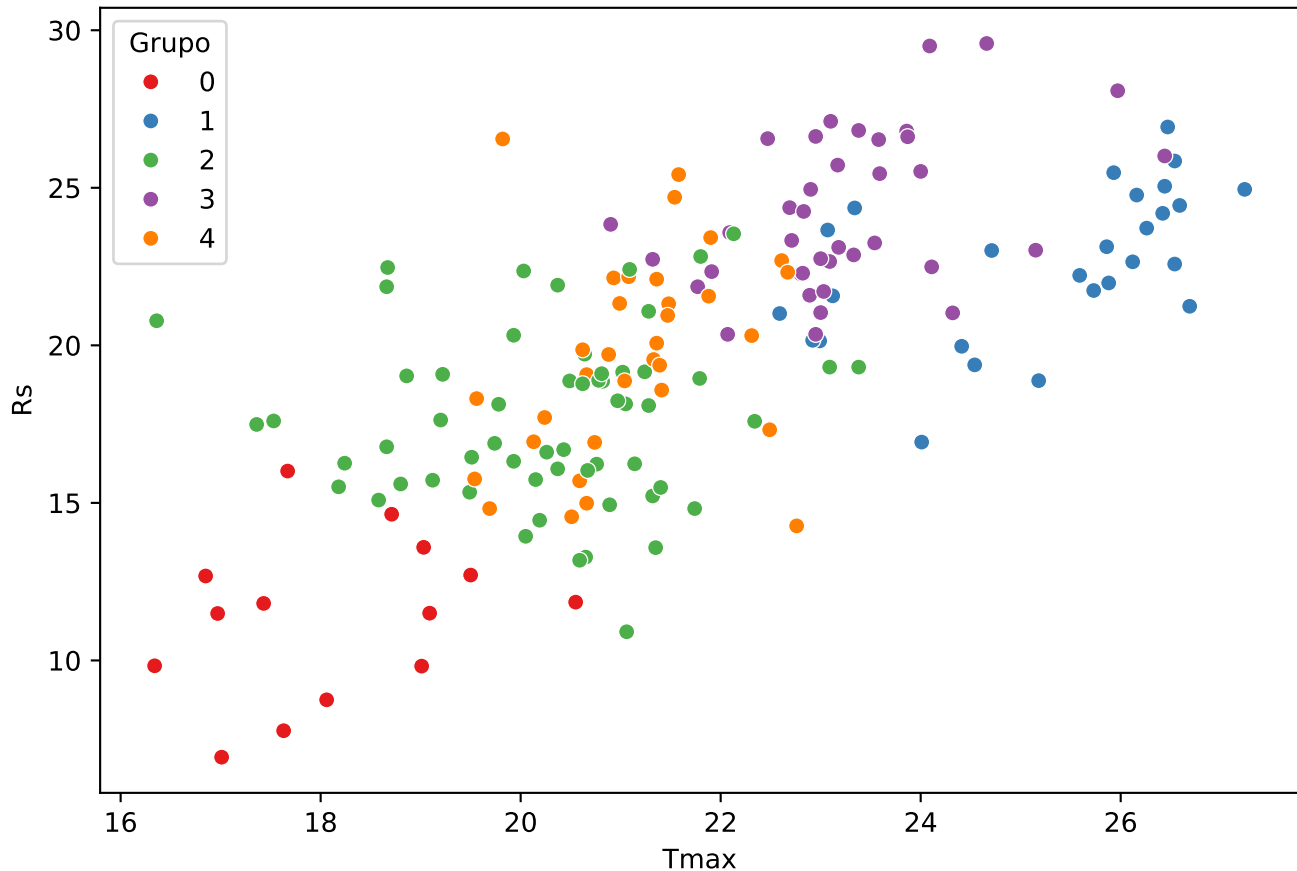
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2015)



Toluca — 2016

Días del ciclo: 170

ETc total [mm]: 579.0

ETverde total [mm]: 334.6

ETazul total [mm]: 244.4

Tmax / Tmin [°C]: 30.3 / 7.3

Toluca — 2016 · Resultados y métricas

[Toluca 2016] Regresión Lineal ET0 — R^2 : 0.9796 MSE: 0.0212

[Toluca 2016] Random Forest ET0 — R^2 : 0.9758 MSE: 0.0251

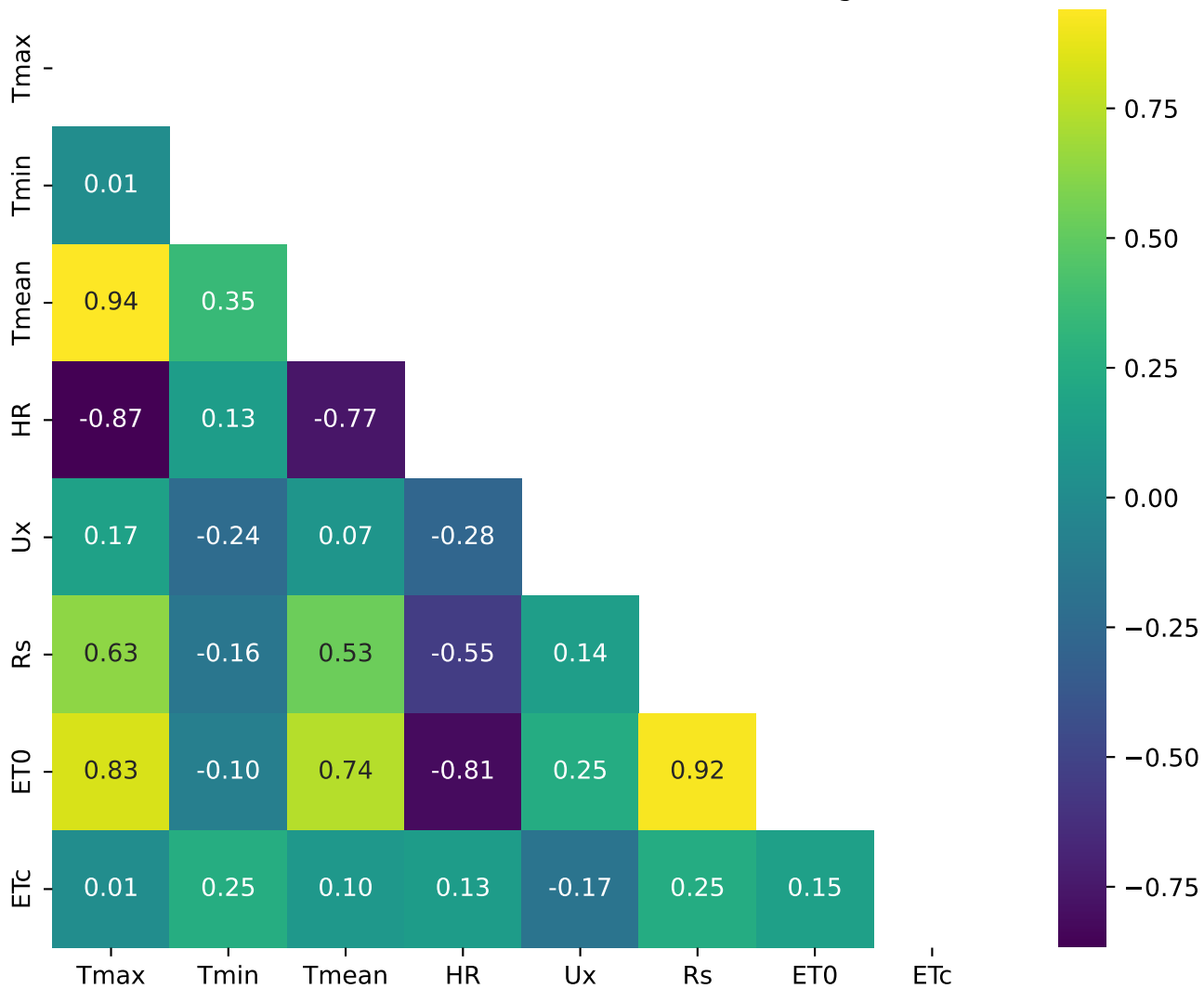
Importancias: {'Tmax': 0.06606973076043436, 'Tmin': 0.004315590043153878, 'HR': 0.1743999996426628, 'Ux': 0.007720508281966191, 'Rs': 0.7474941712717829}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	19.258462	10.516154	83.695000	1.230769	13.888846	2.752890	2.609011
1	20.742745	11.230980	78.815490	0.744902	18.903137	3.660911	4.393093
2	22.301389	10.030000	74.910278	0.905000	19.692778	3.783038	1.263303
3	24.013333	10.363333	69.338718	0.991795	22.895128	4.514845	5.417814
4	27.634444	10.102222	39.778333	1.400556	24.905000	5.611444	1.683433

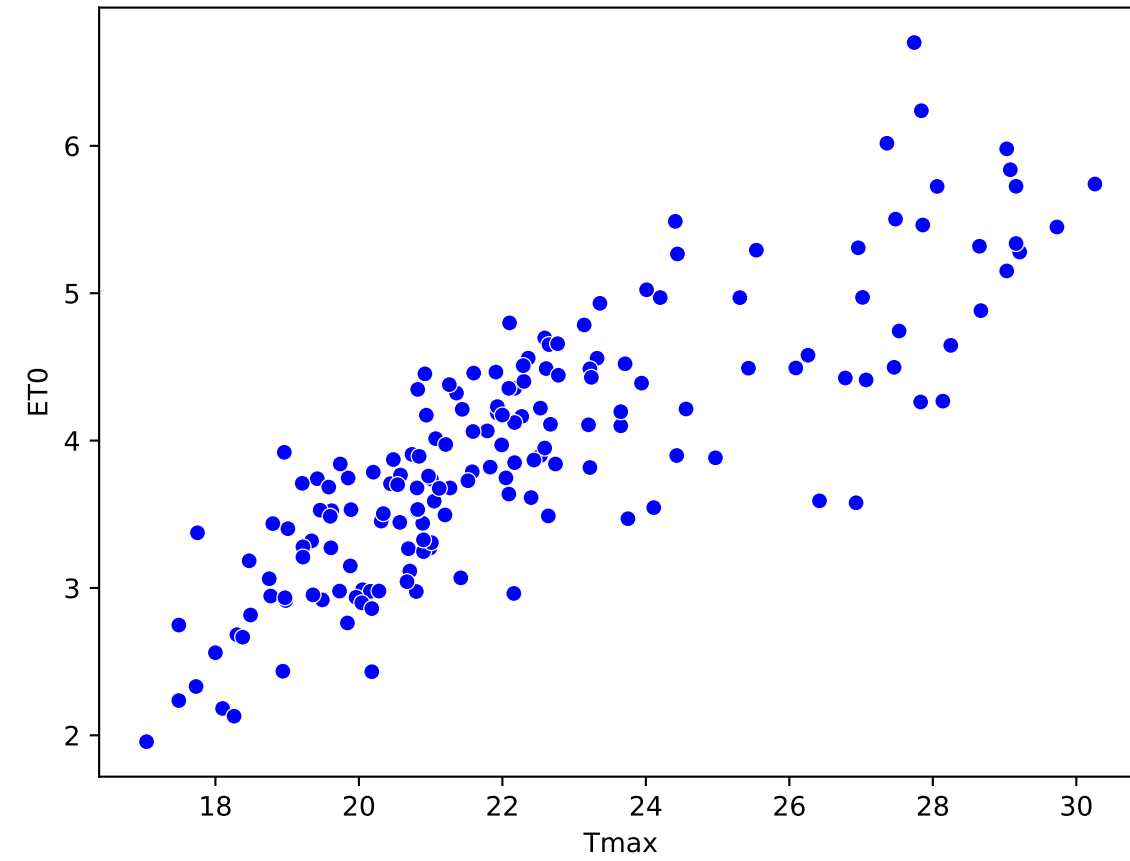
Toluca — 2016

Matriz de Correlación entre Variables Meteorológicas

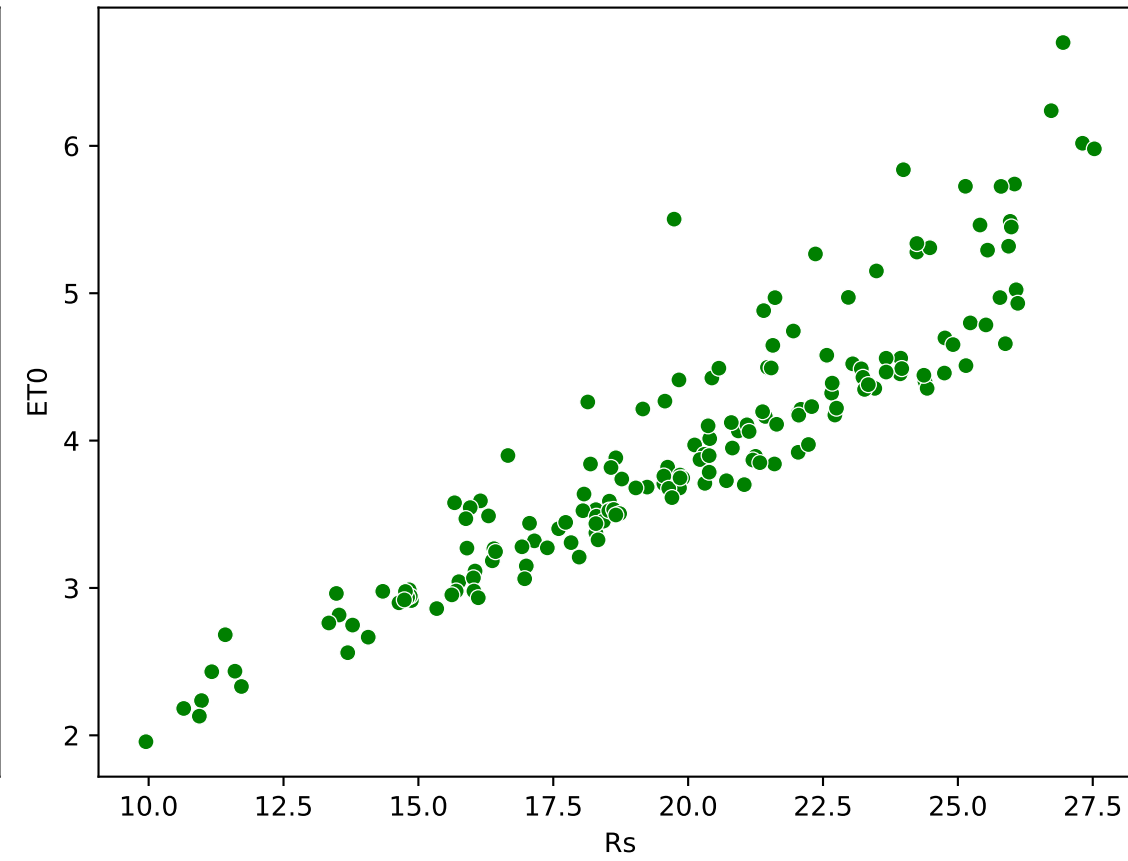


Dispersión — Toluca (2016)

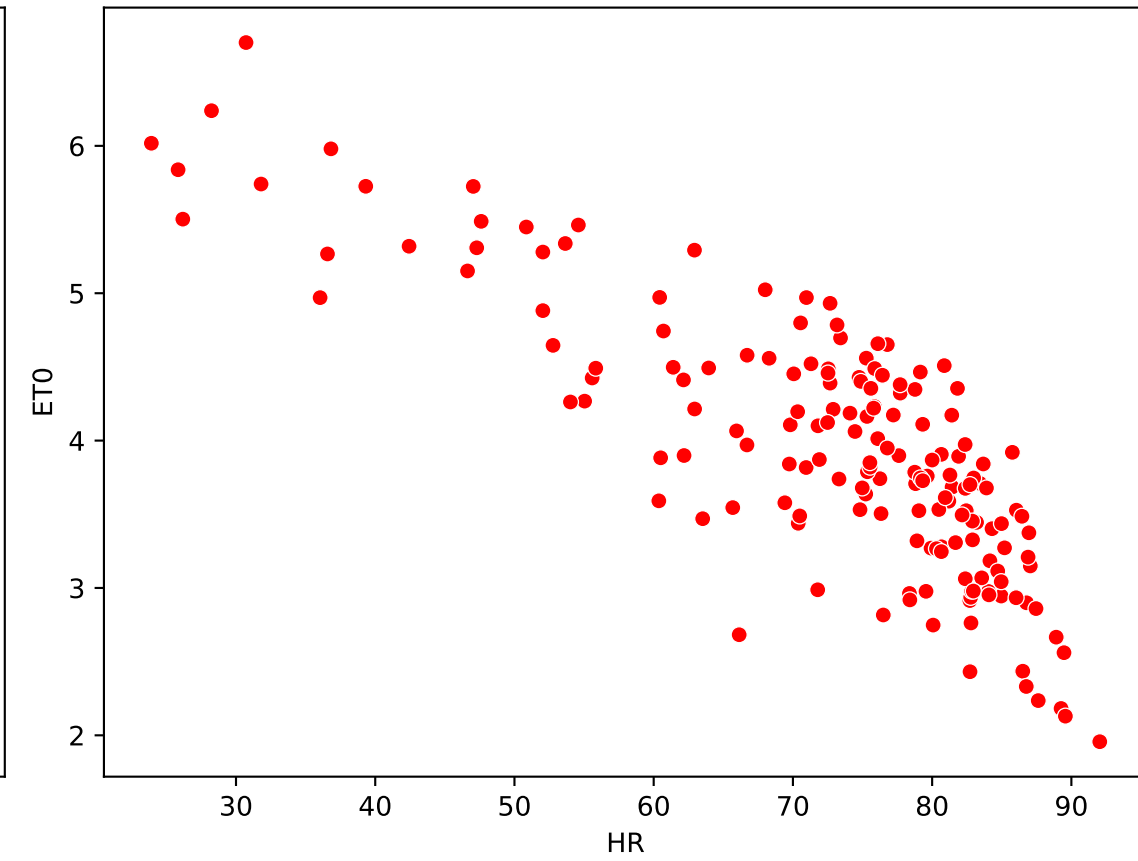
Tmax vs ET0



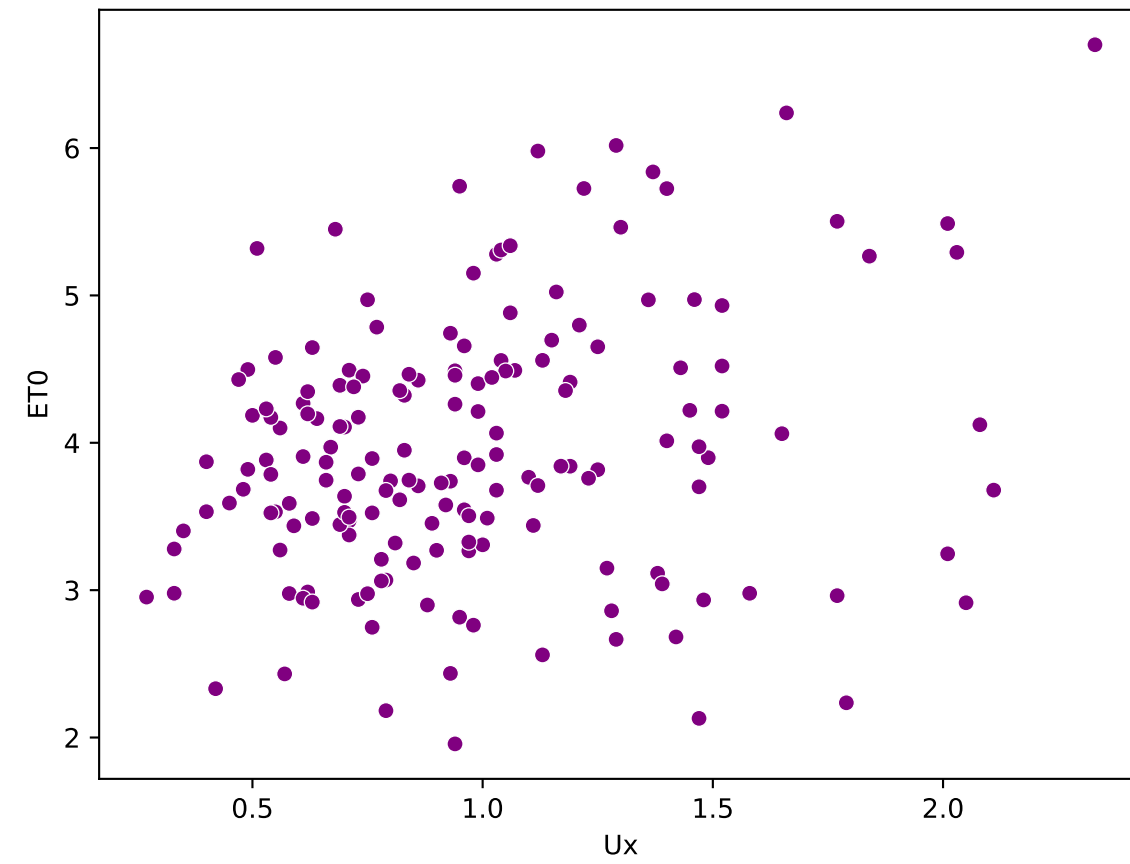
Rs vs ET0



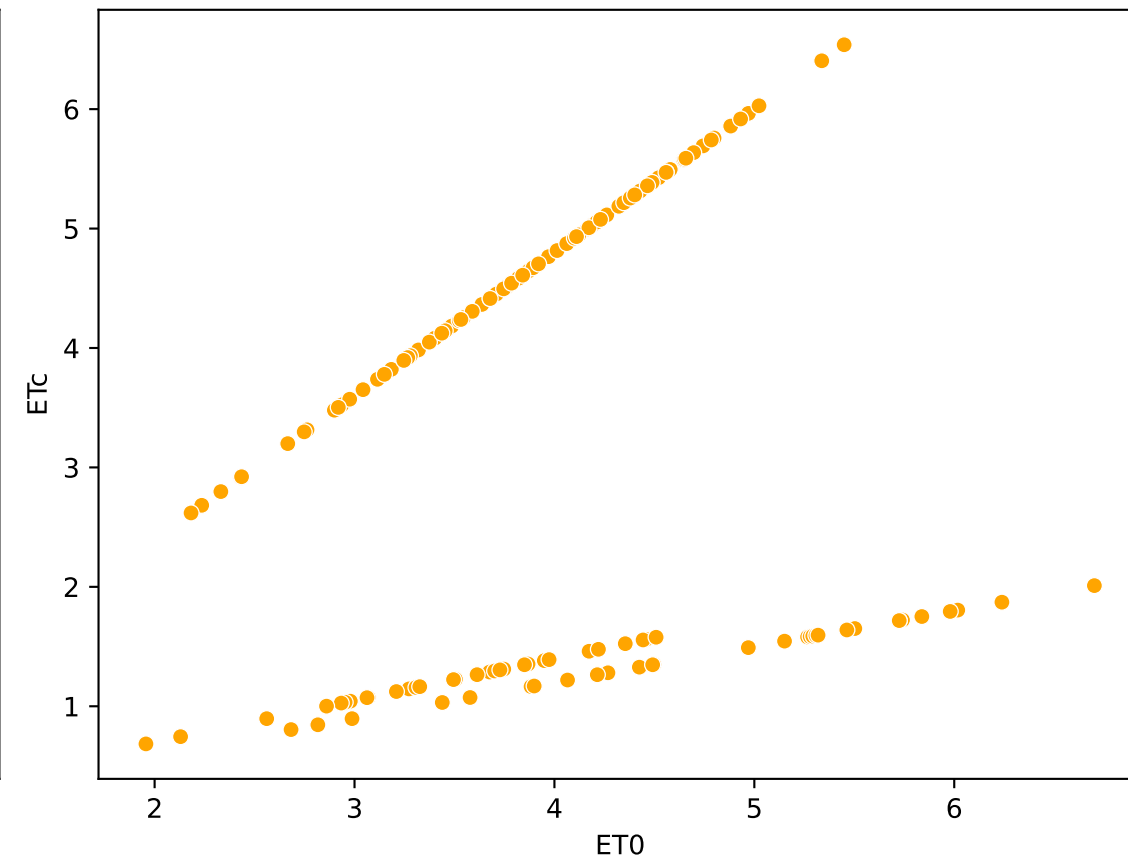
HR vs ET0



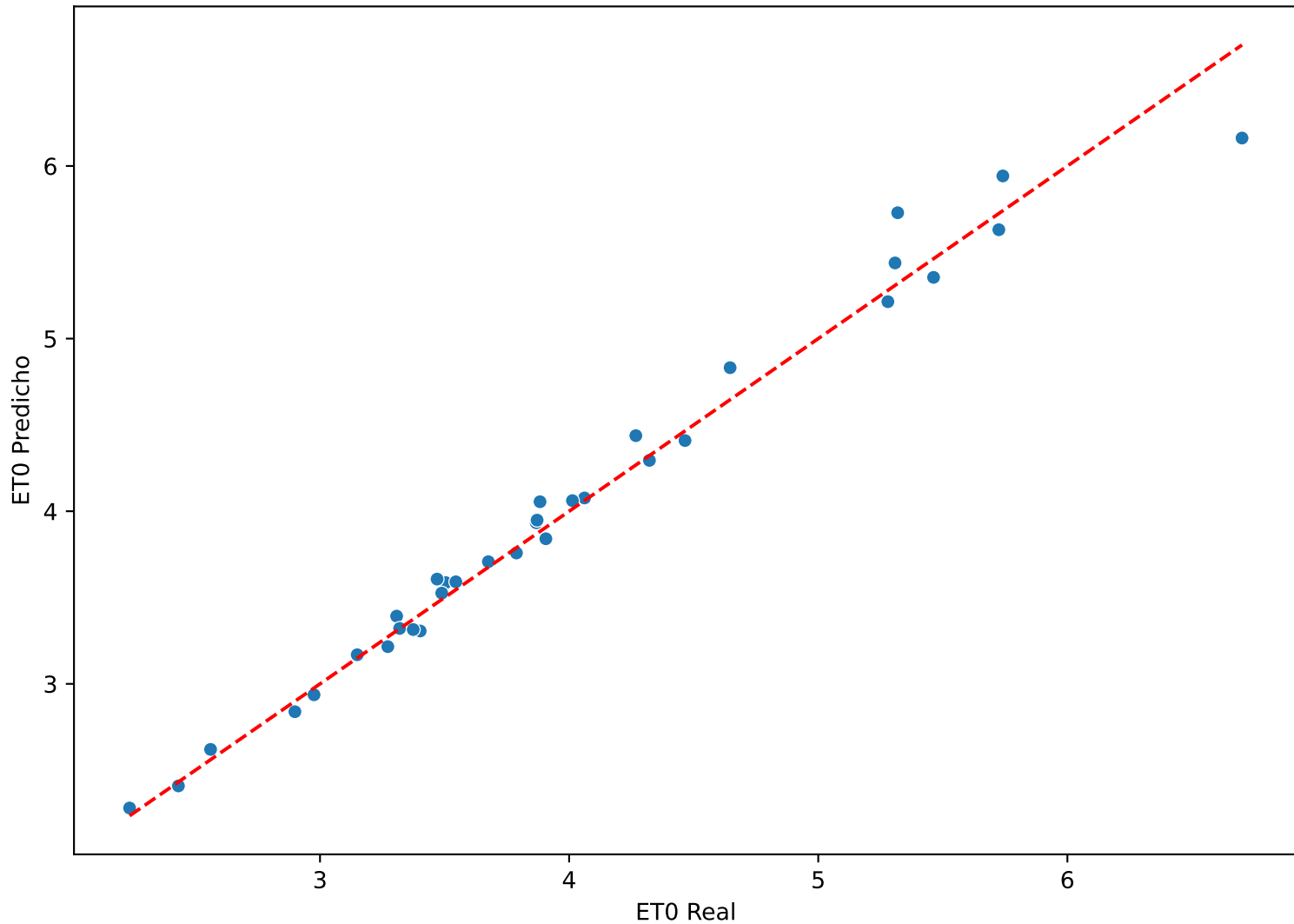
Ux vs ET0



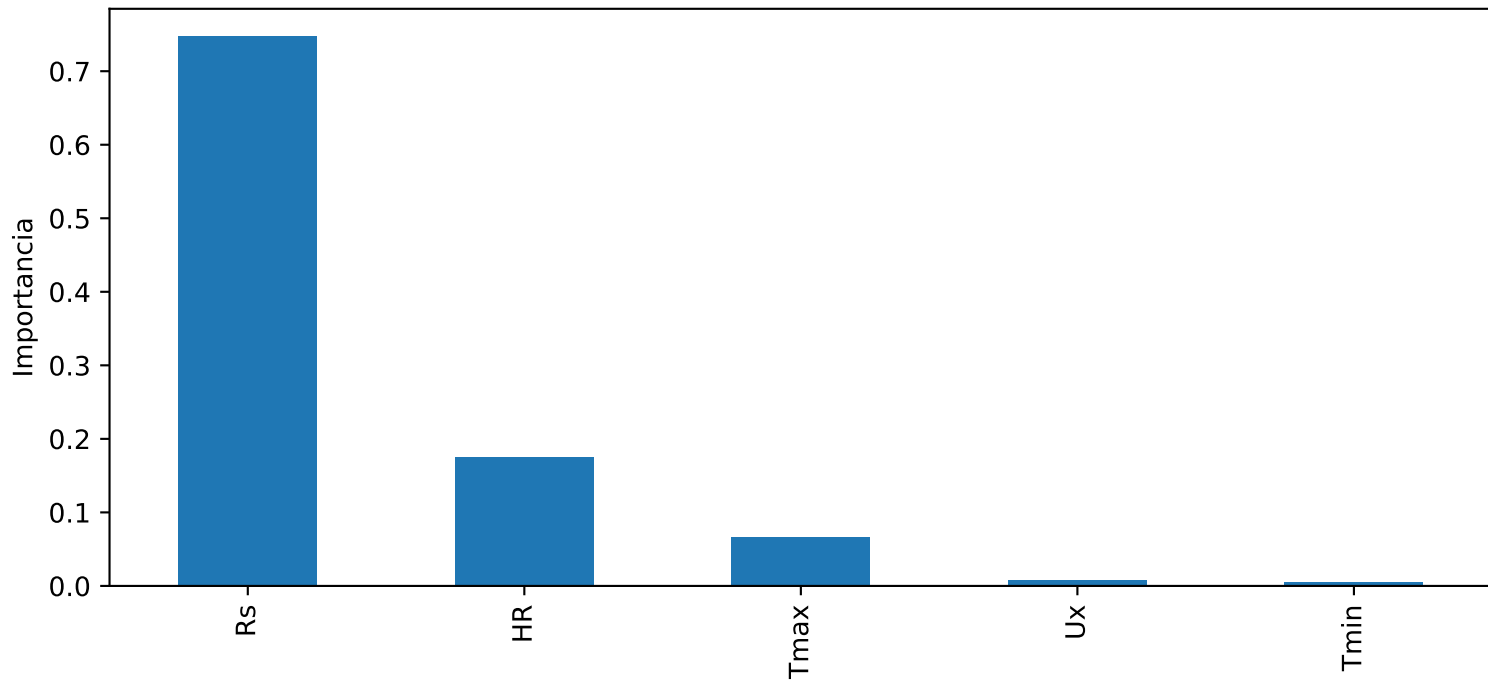
ET0 vs ETc



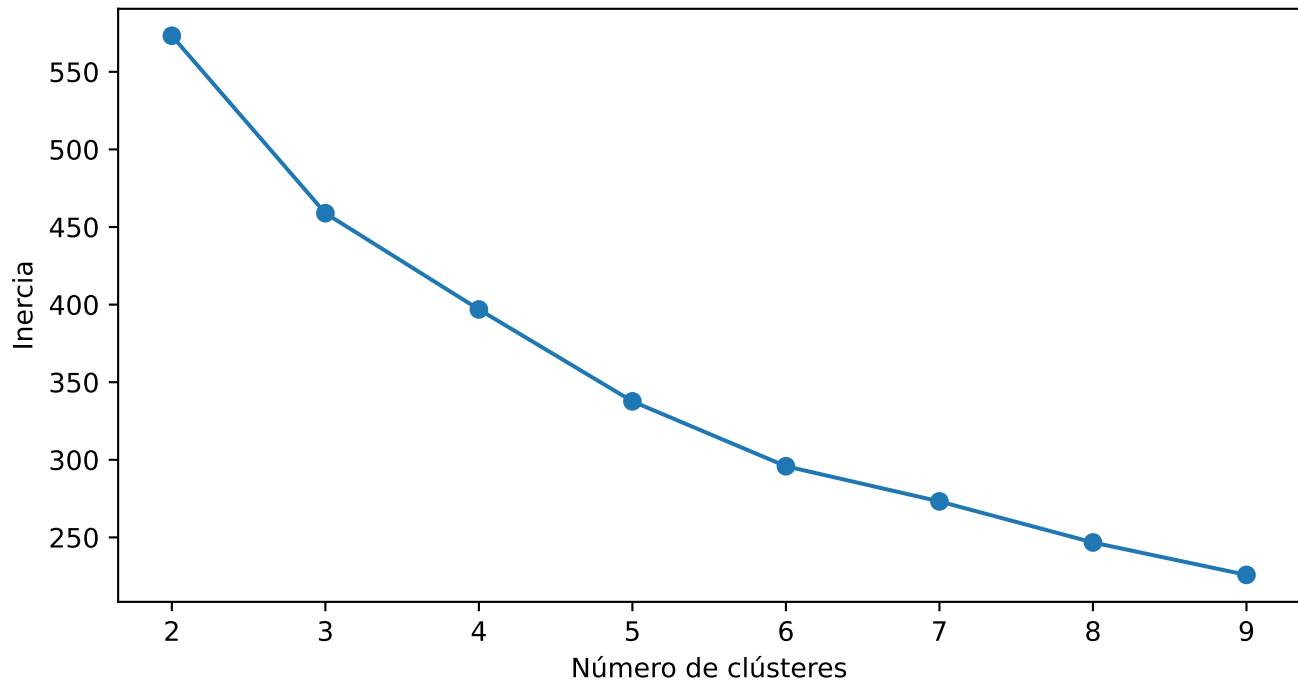
Comparación entre ET0 Real y Predicho — Toluca (2016)



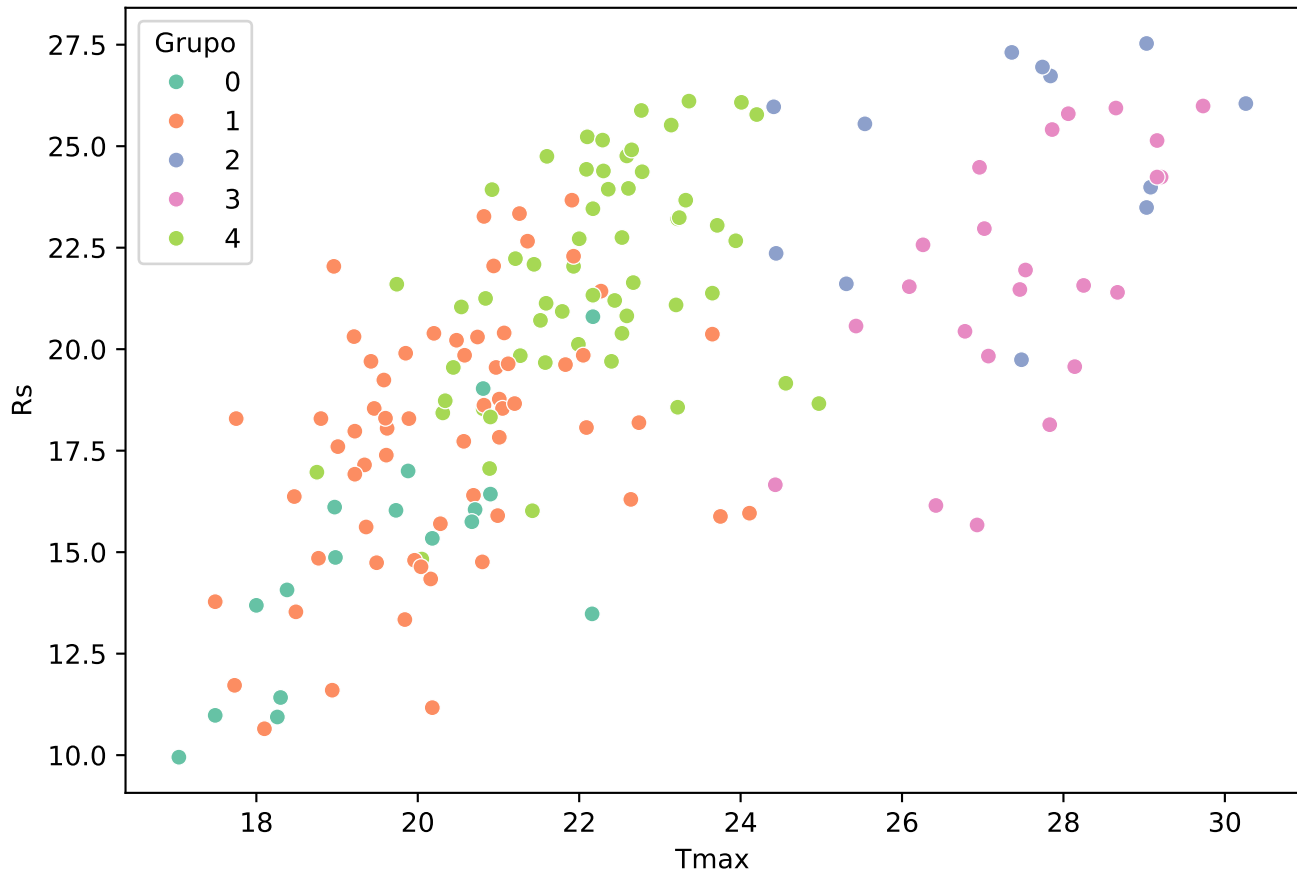
Importancia de variables (RF) — Toluca (2016)



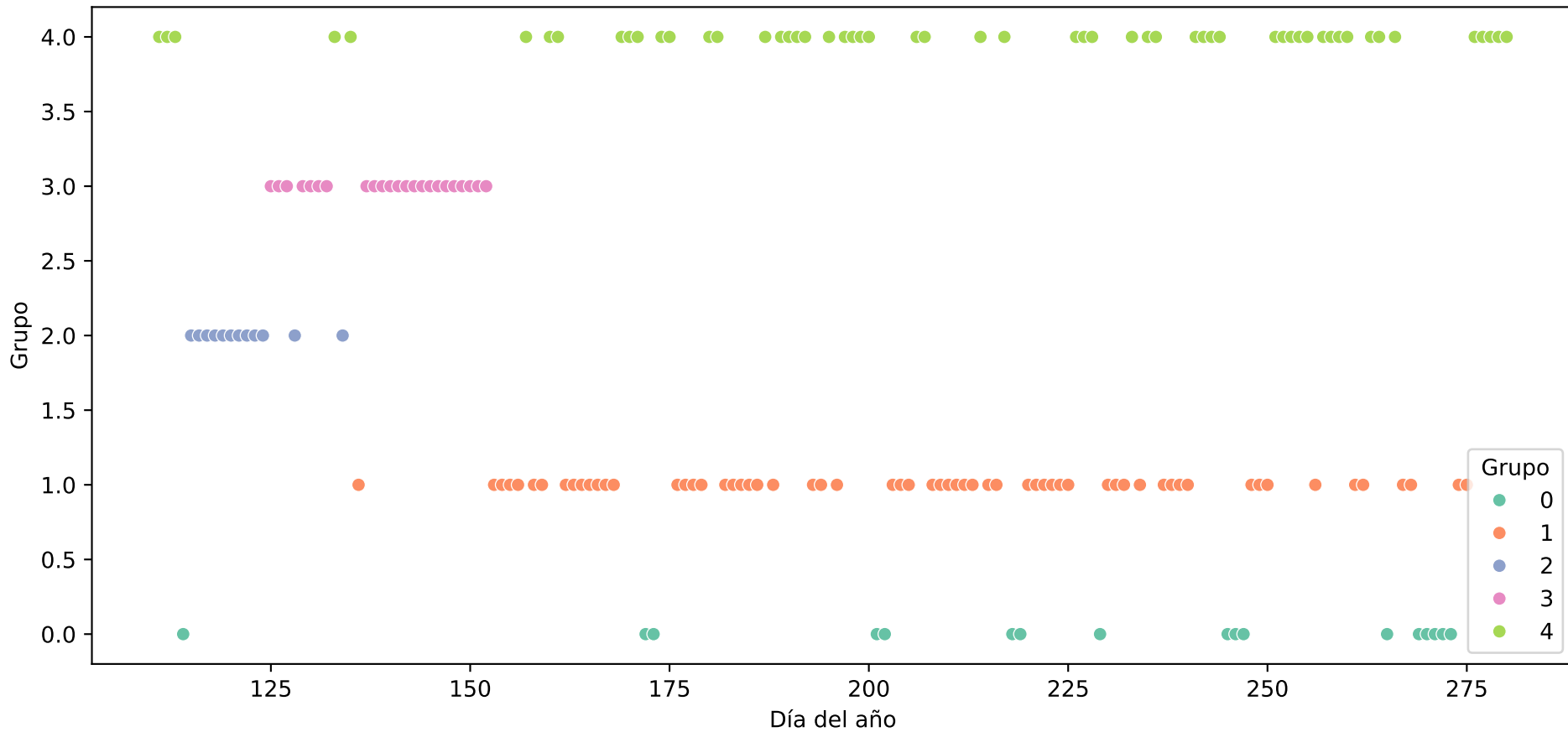
Método del codo



Clasificación de días climáticos — Toluca (2016)

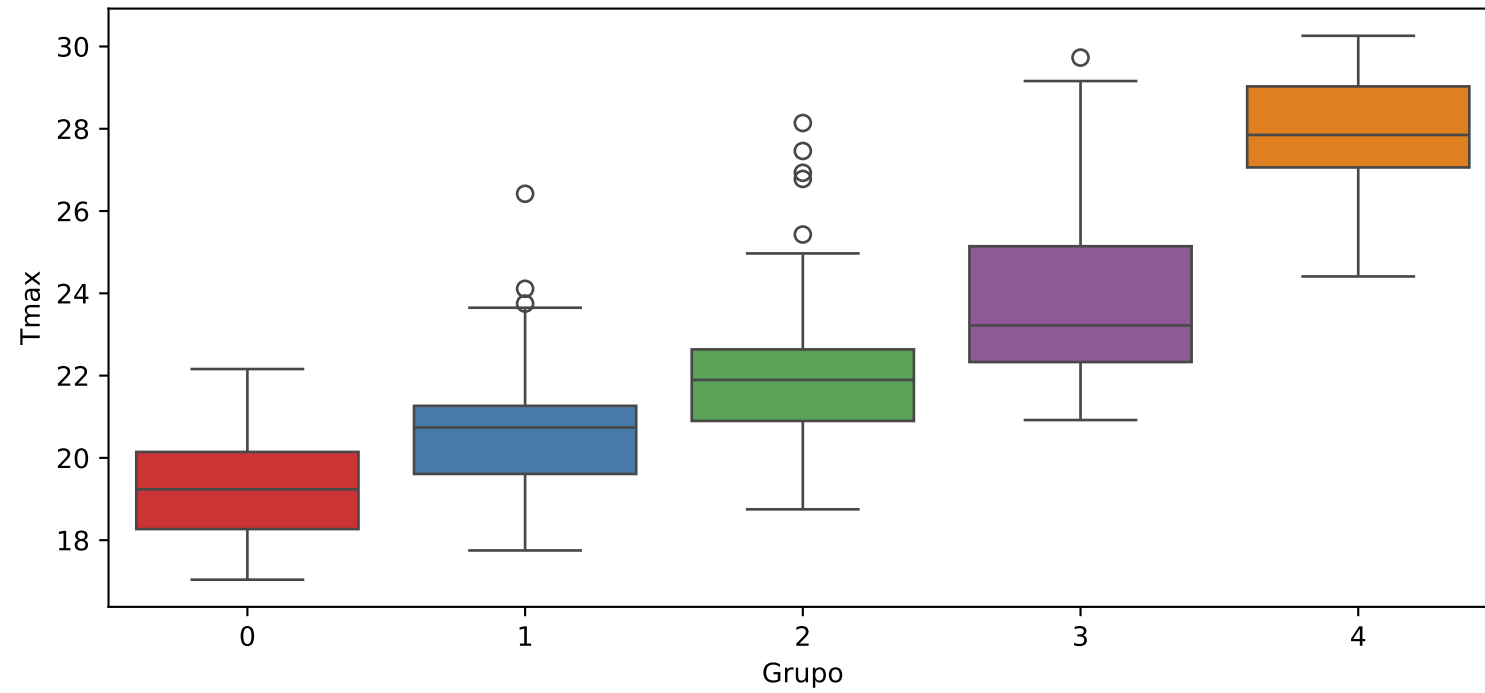


Distribución de días por grupo — Toluca (2016)

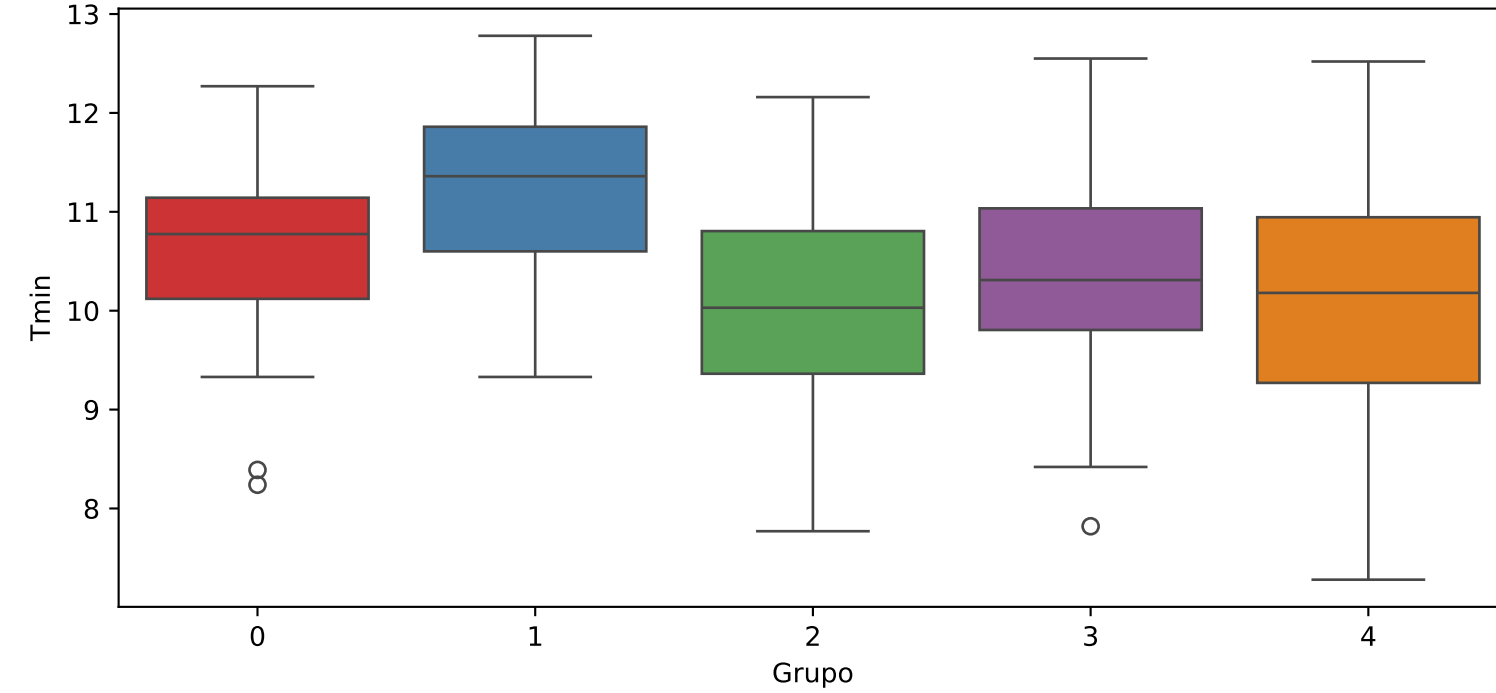


Boxplots por grupo — Toluca (2016)

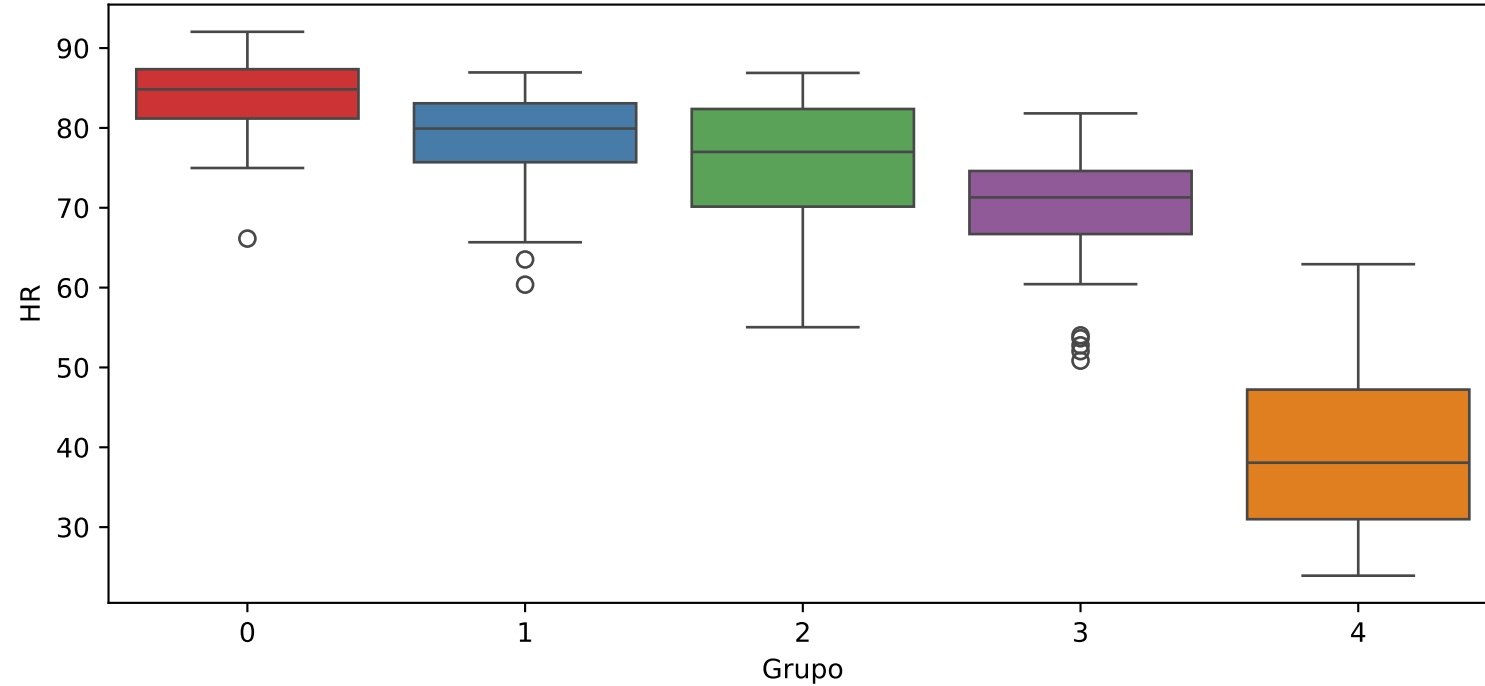
Distribución de Tmax por grupo



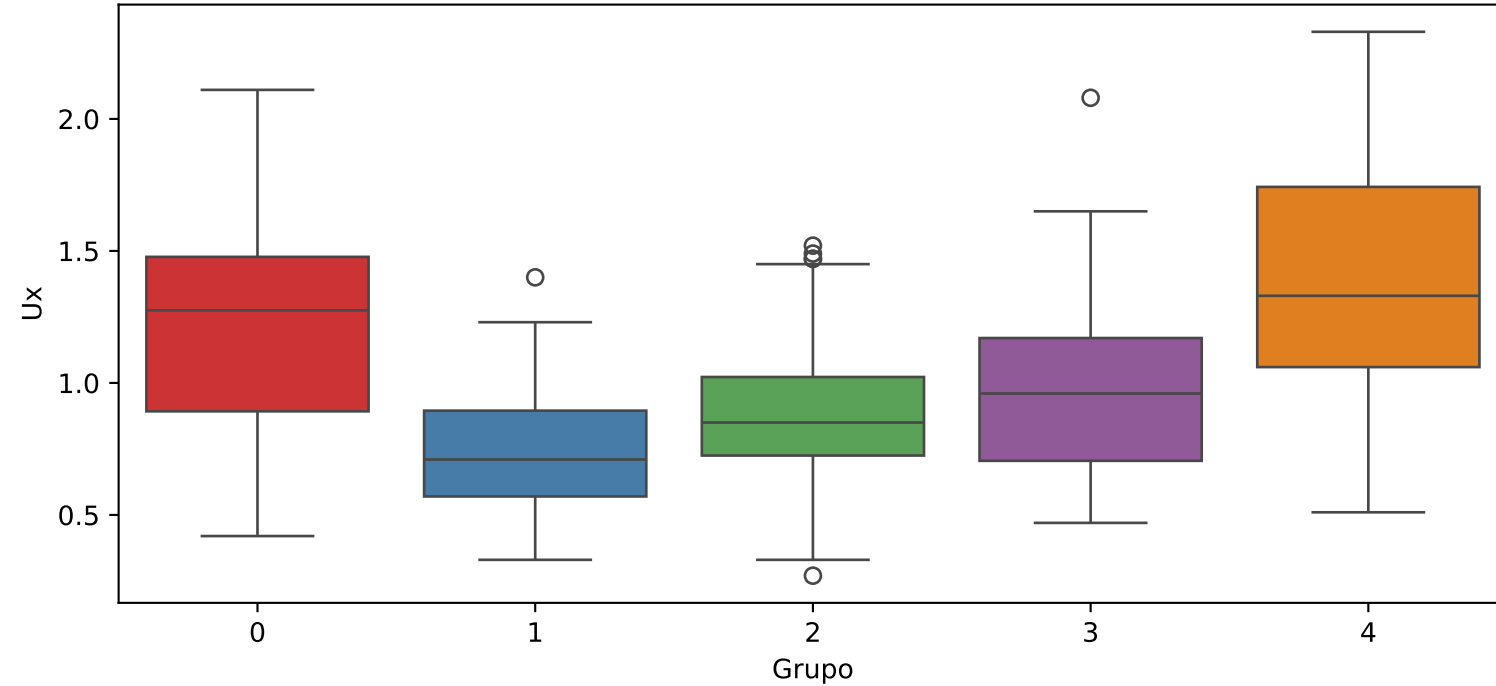
Distribución de Tmin por grupo



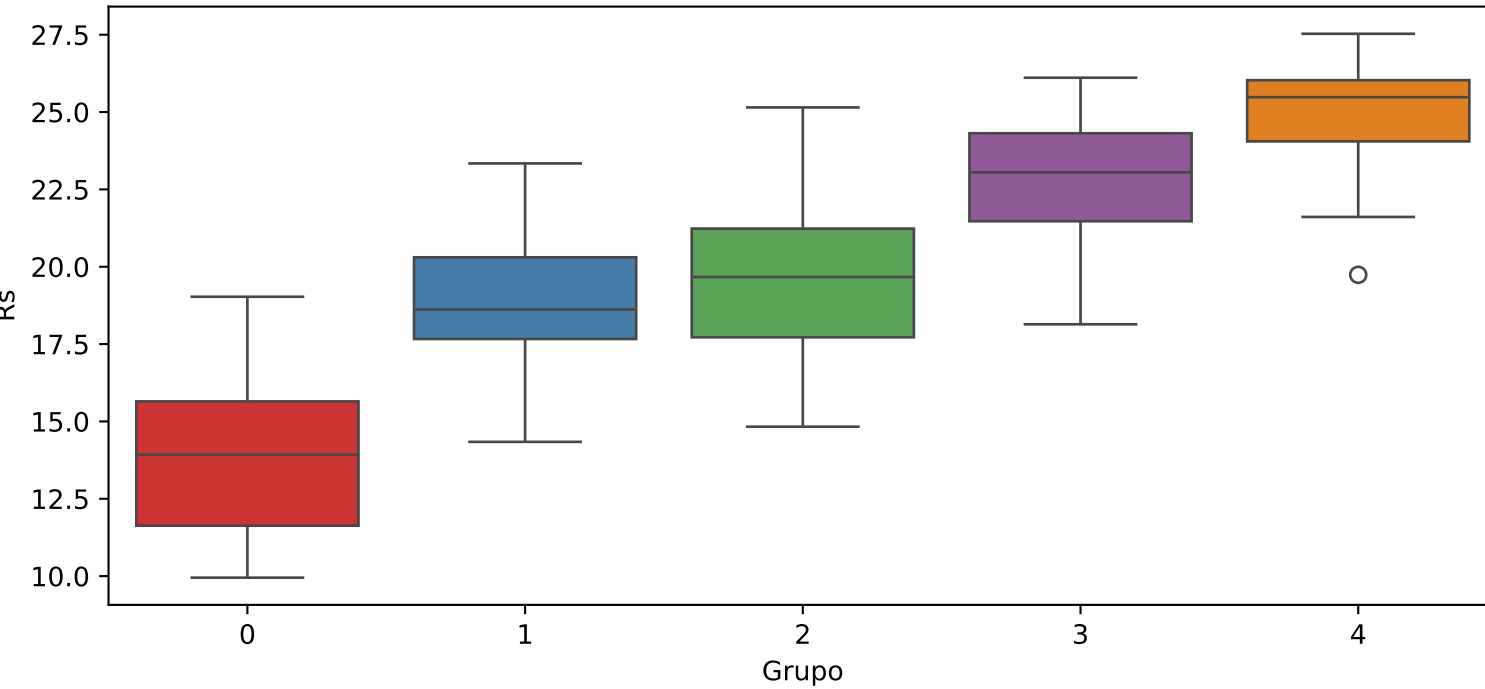
Distribución de HR por grupo



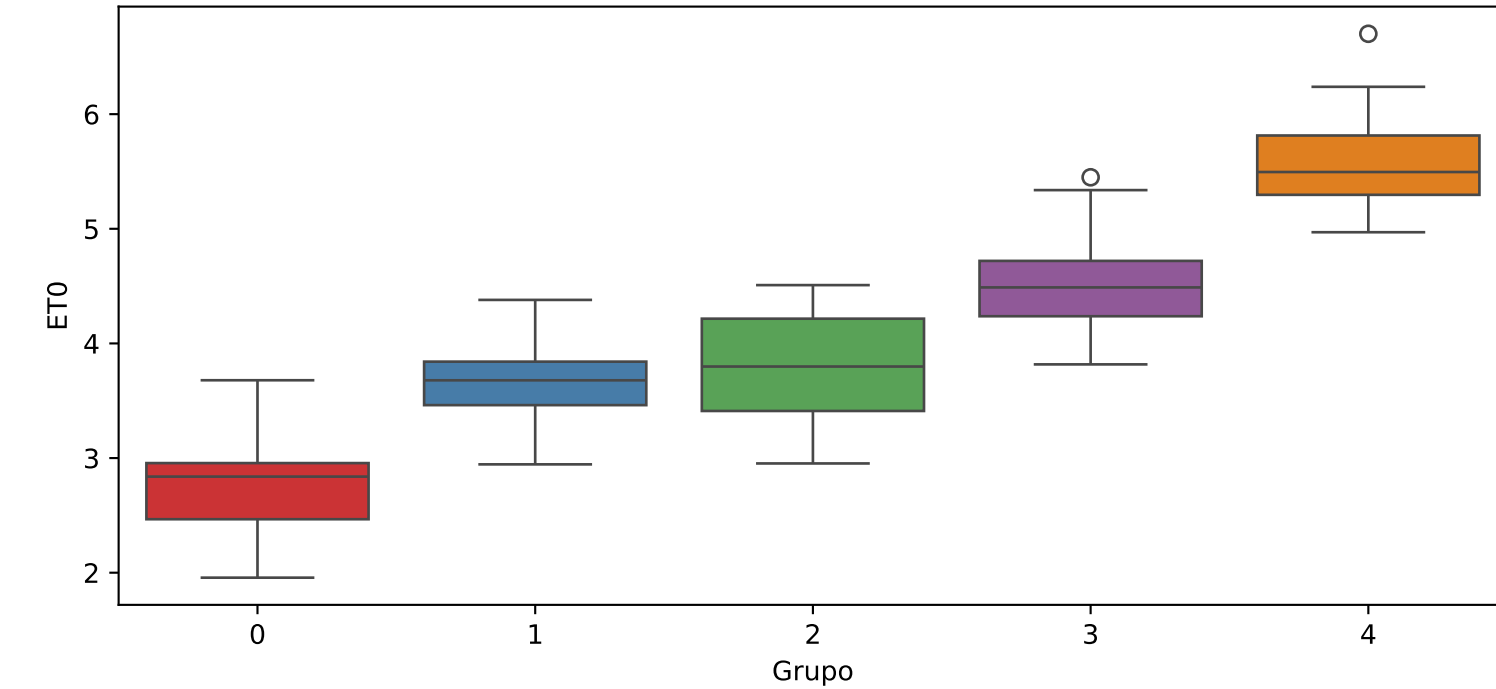
Distribución de Ux por grupo



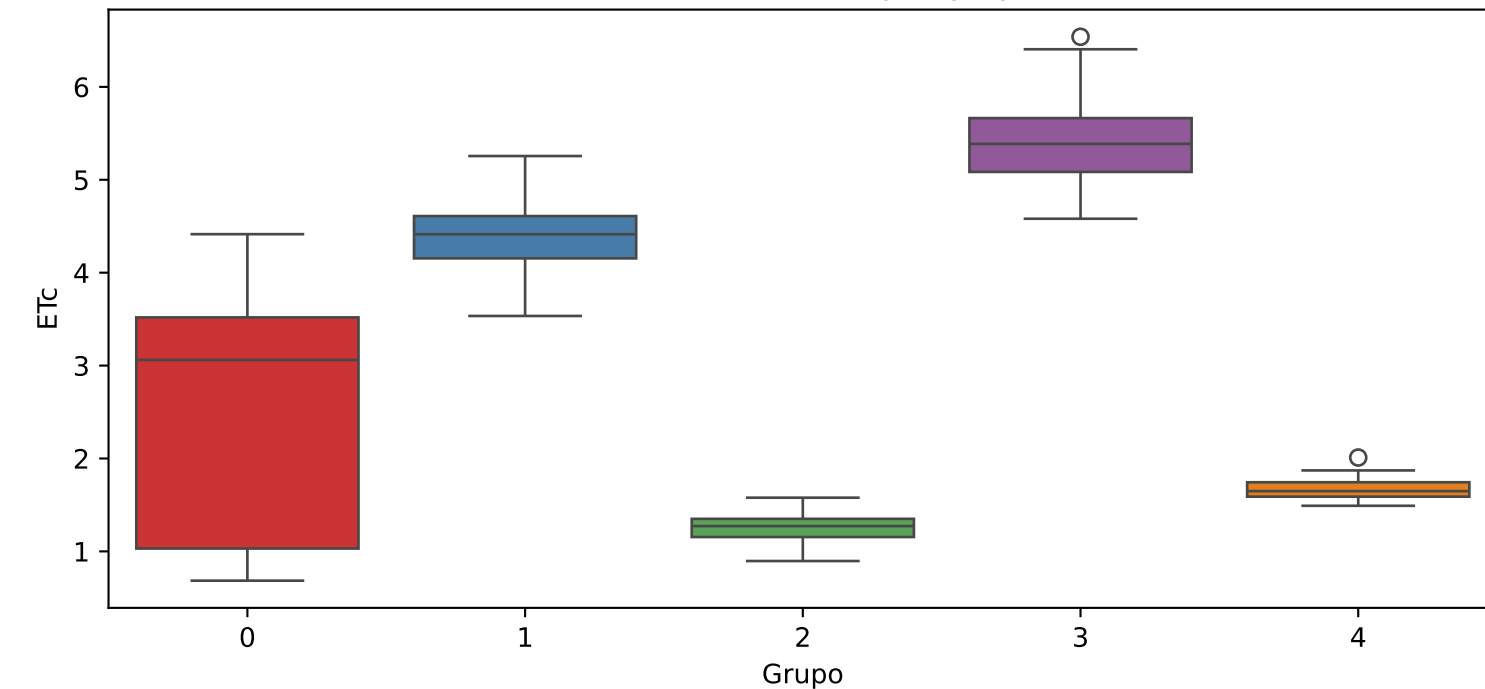
Distribución de Rs por grupo



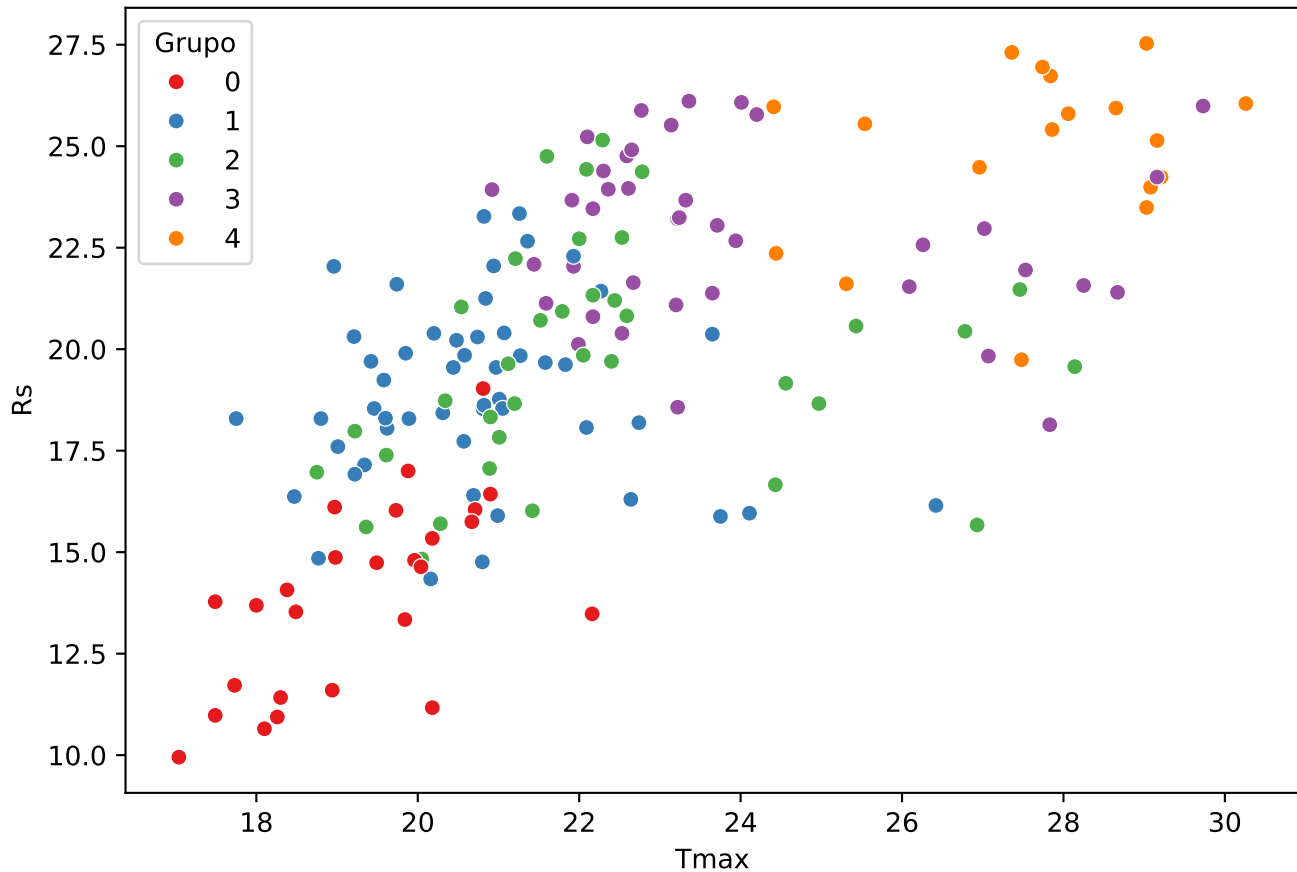
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2016)



Toluca — 2017

Días del ciclo: 170

ETc total [mm]: 595.6

ETverde total [mm]: 274.3

ETazul total [mm]: 321.2

Tmax / Tmin [°C]: 30.2 / 4.7

Toluca — 2017 · Resultados y métricas

[Toluca 2017] Regresión Lineal ET0 — R²: 0.9818 MSE: 0.0213

[Toluca 2017] Random Forest ET0 — R²: 0.9541 MSE: 0.0537

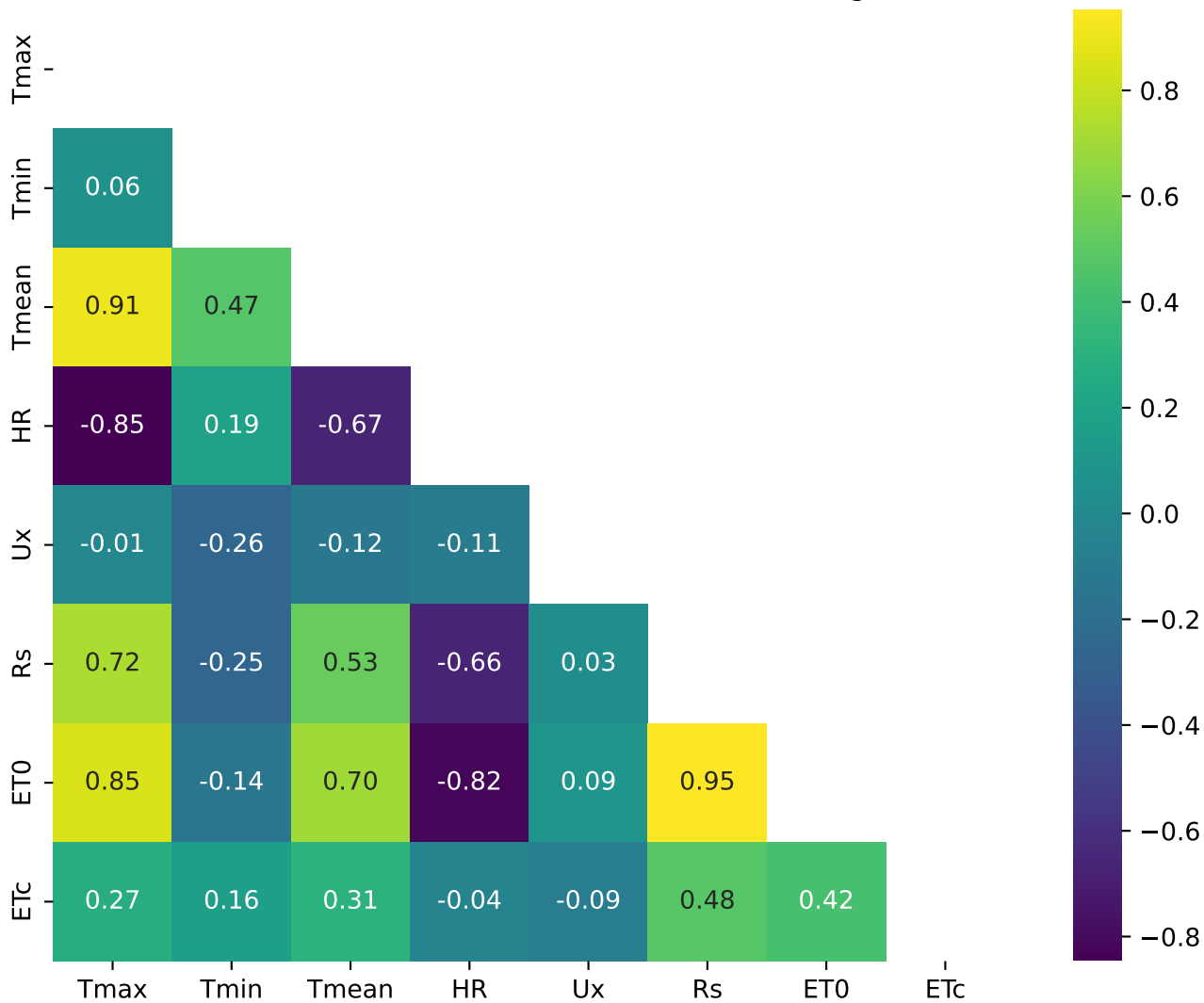
Importancias: {'Tmax': 0.07002474785620422, 'Tmin': 0.0034291820478793943, 'HR': 0.047848434358847496, 'Ux': 0.0065188809906454636, 'Rs': 0.8721787547464234}

Estadísticas descriptivas por grupo (medias):

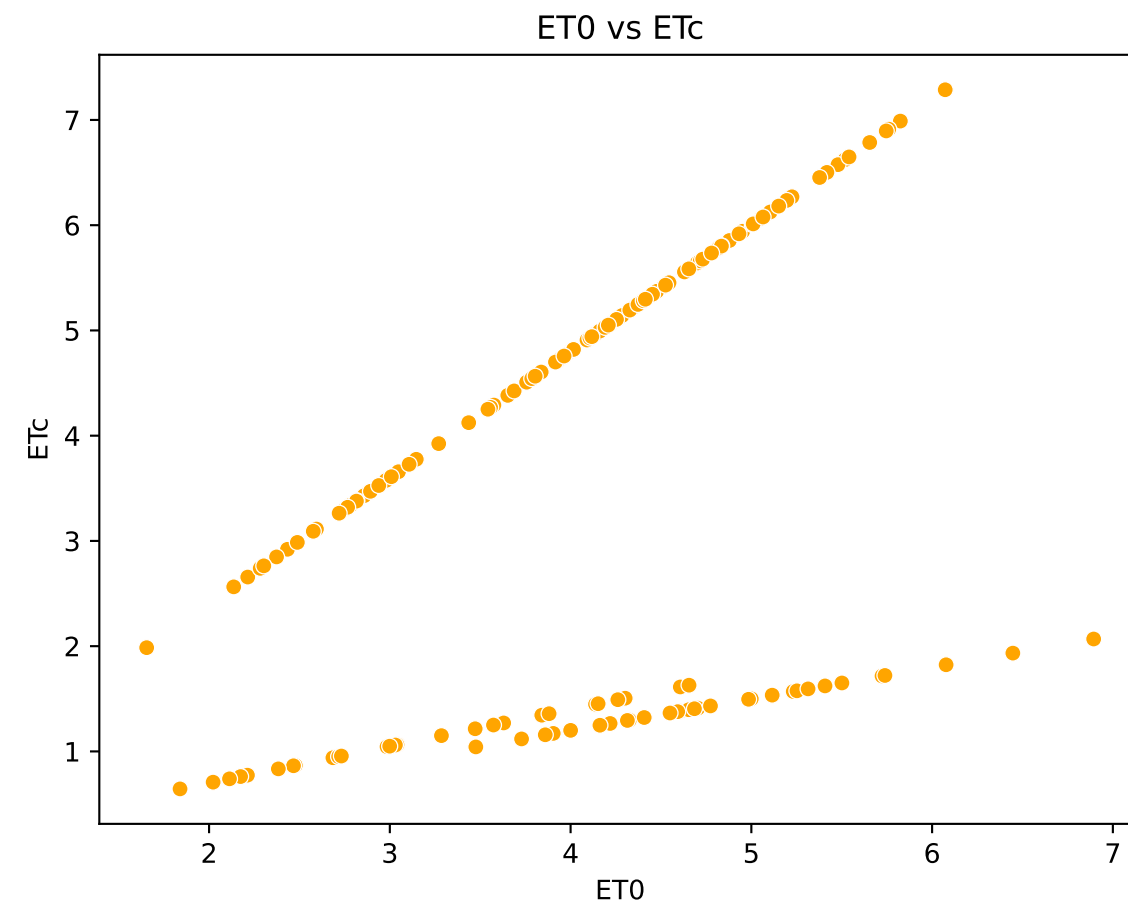
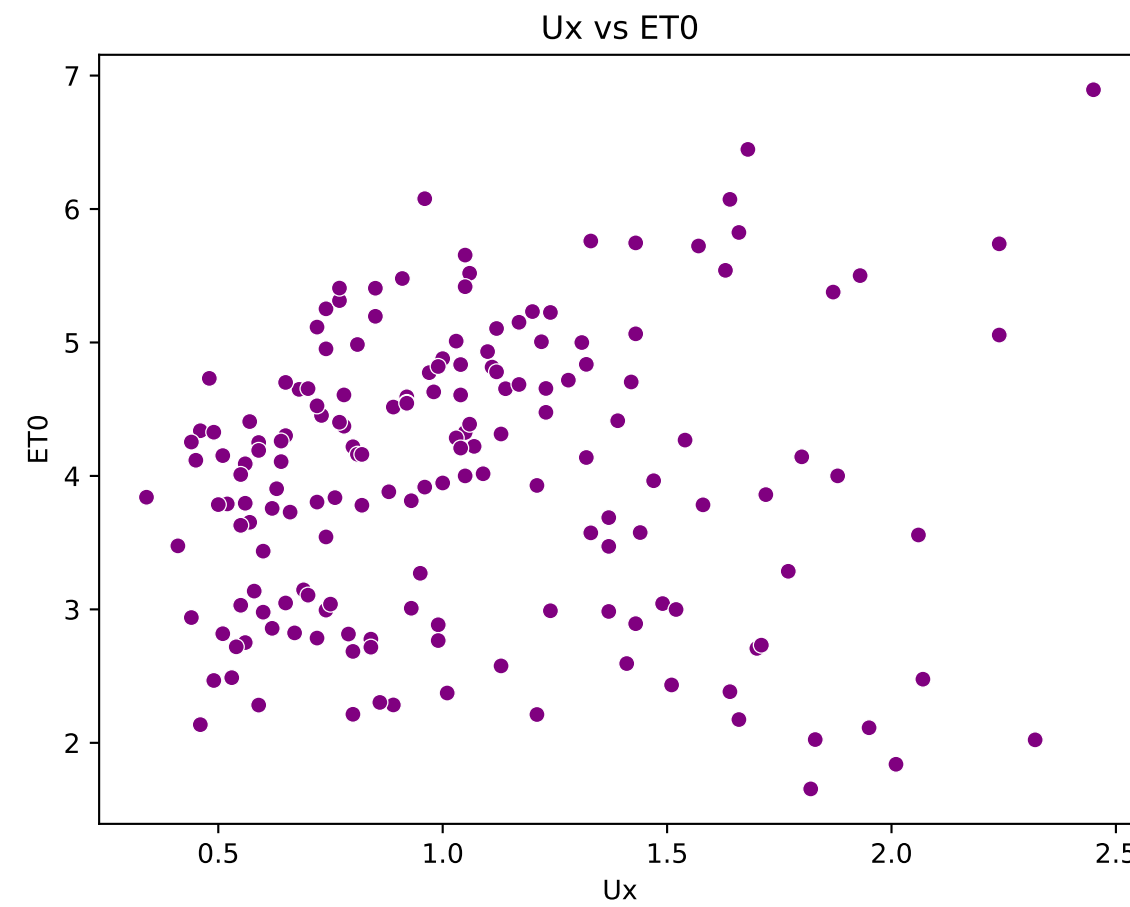
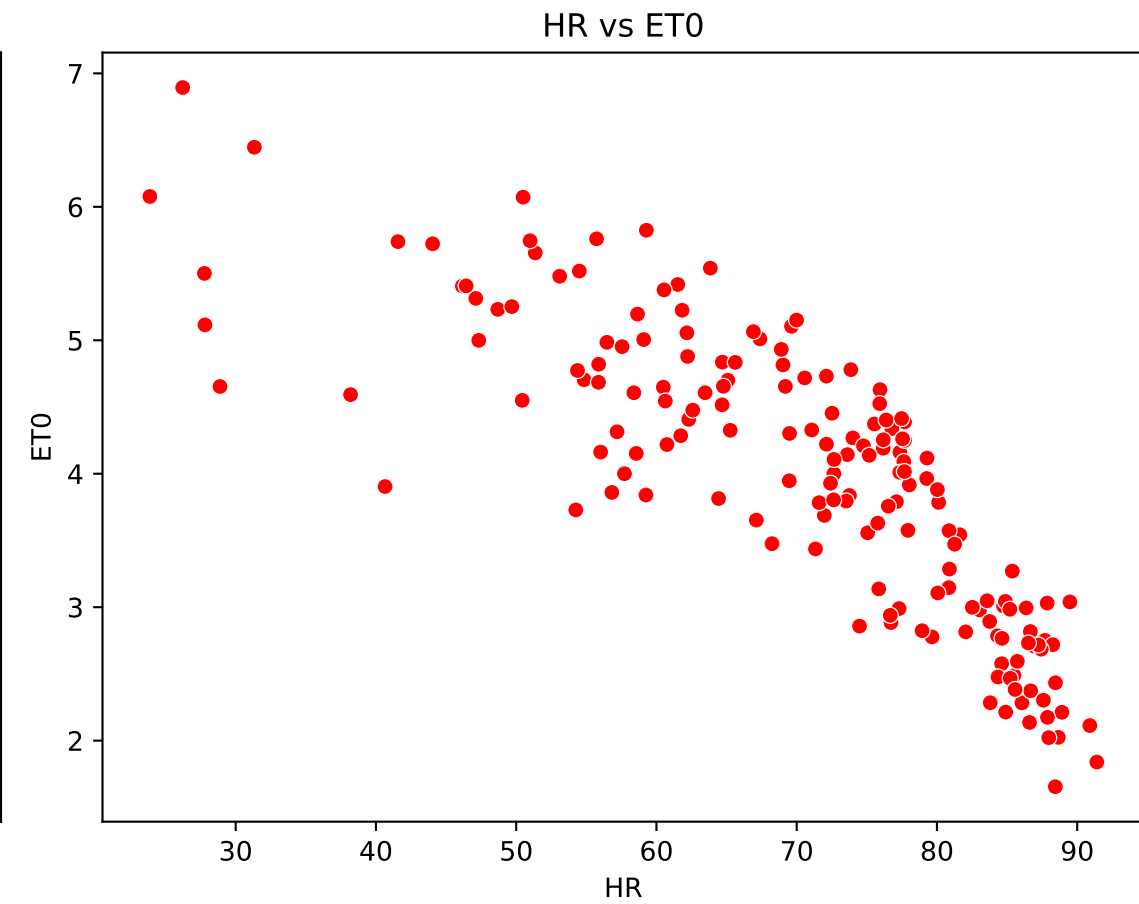
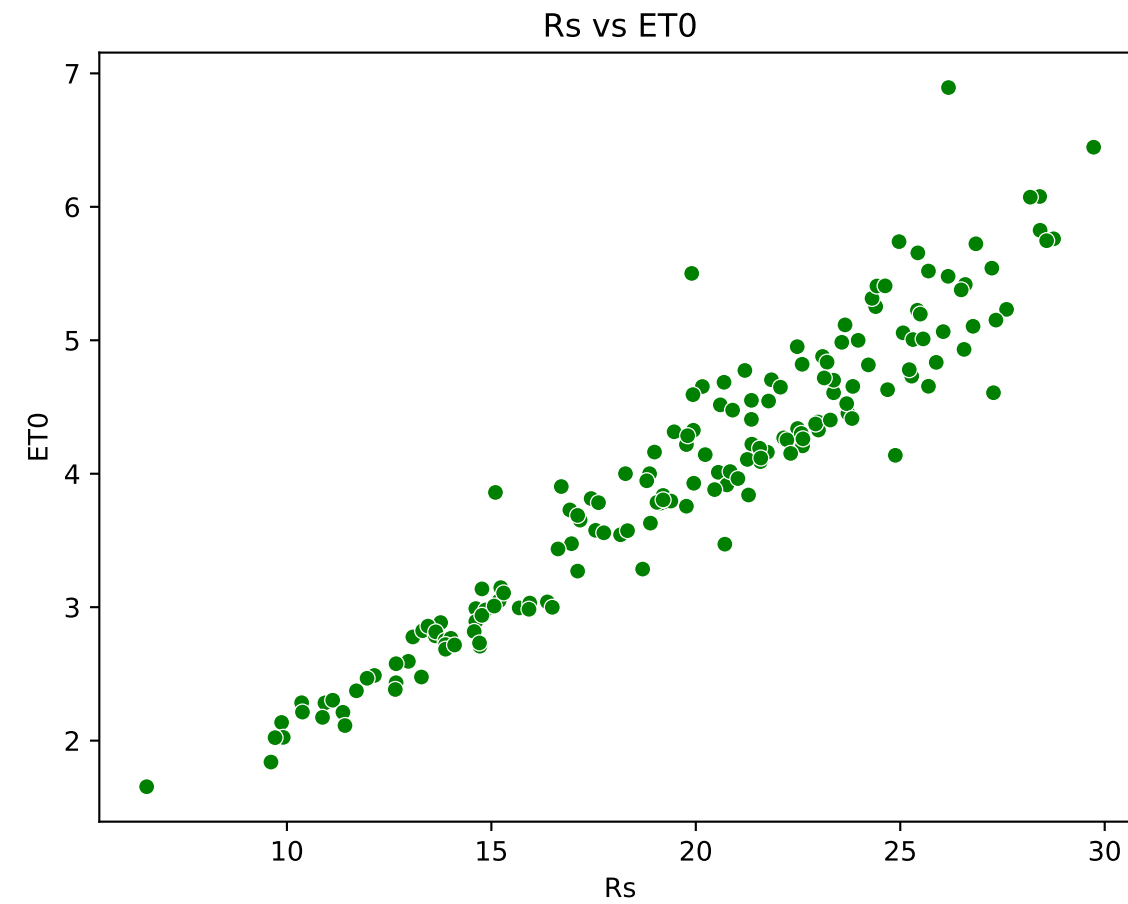
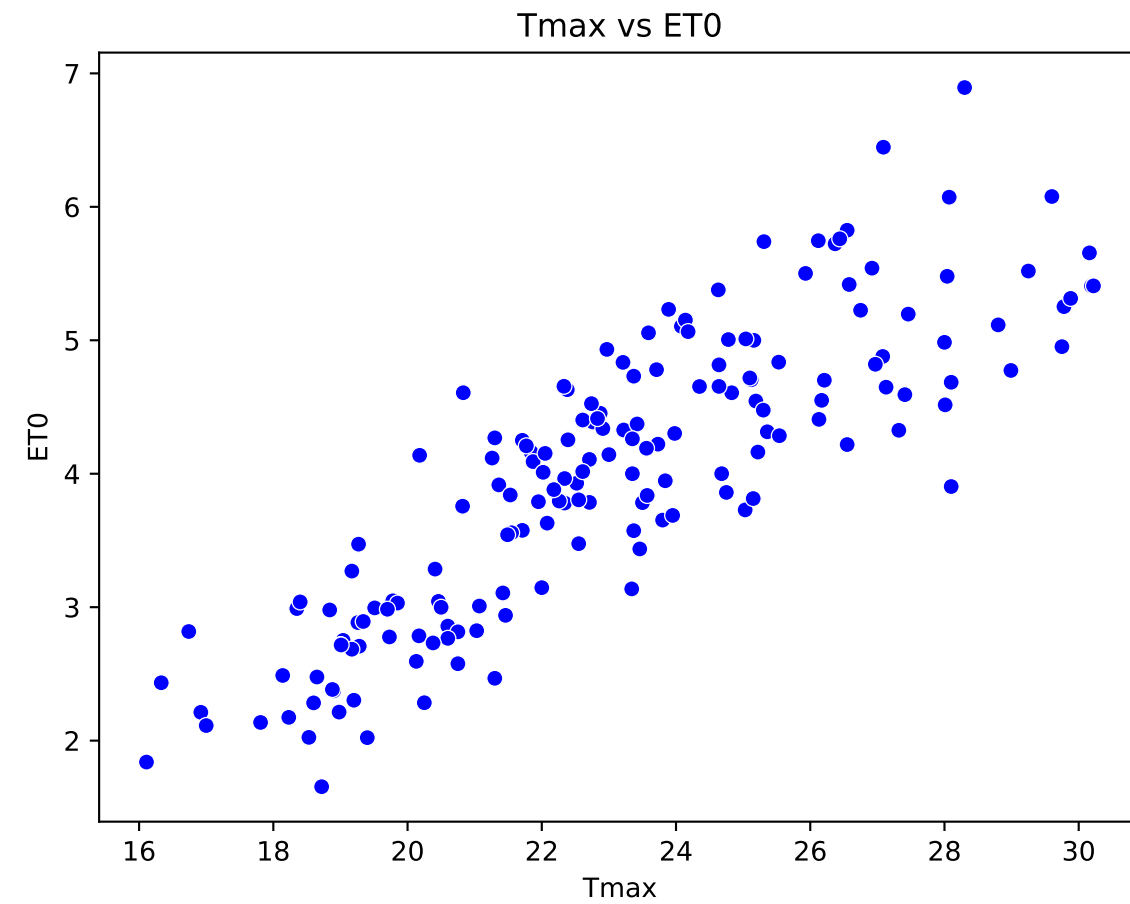
	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	26.049375	10.388125	61.837500	1.187500	25.115313	5.114338	6.137205
1	20.036923	11.105385	82.924872	0.780000	14.267179	2.862886	2.679552
2	26.005556	9.433056	50.198611	1.078611	22.564722	4.813202	1.479649
3	22.809111	10.639778	74.556222	0.881333	20.845556	4.080505	4.816114
4	18.930556	9.403333	85.906111	1.725000	13.359444	2.540351	1.372685

Toluca — 2017

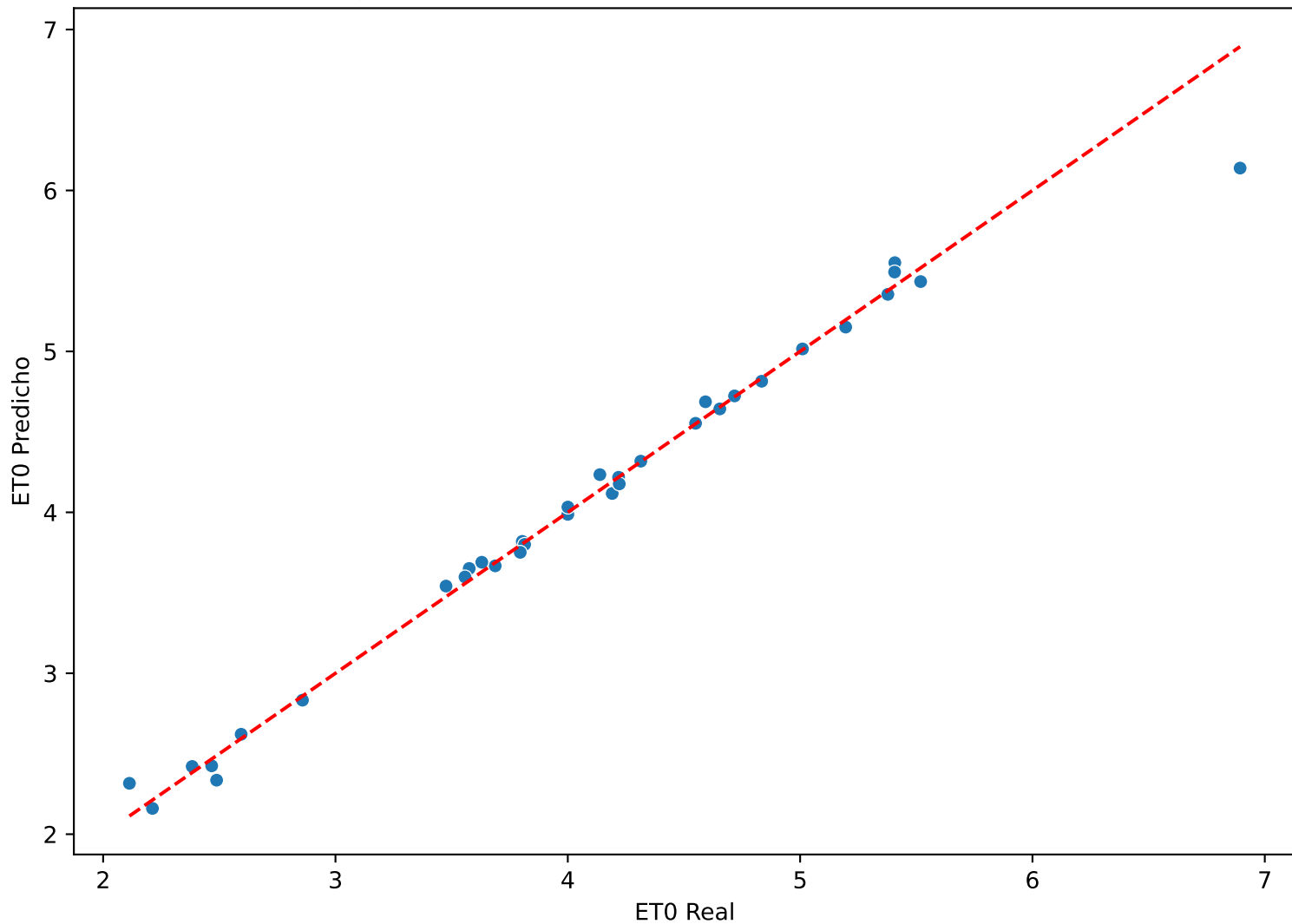
Matriz de Correlación entre Variables Meteorológicas



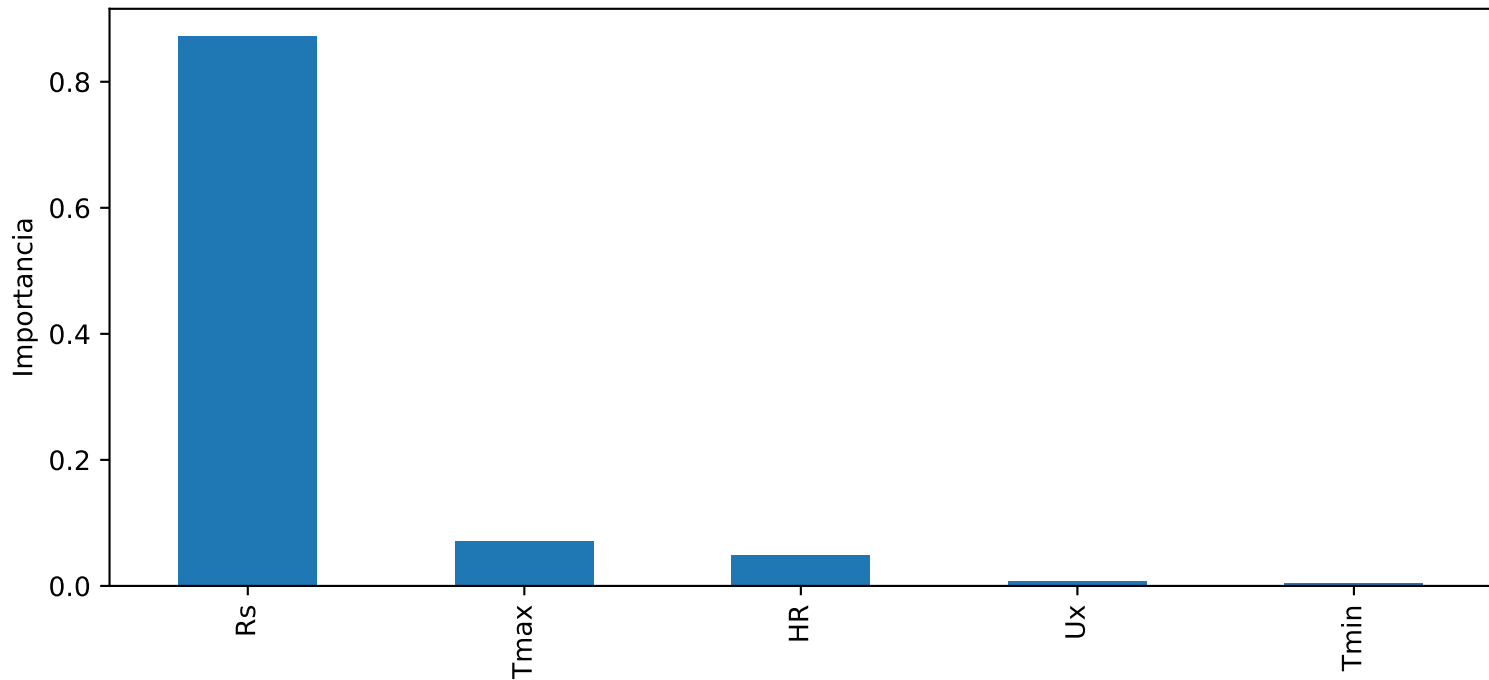
Dispersión — Toluca (2017)



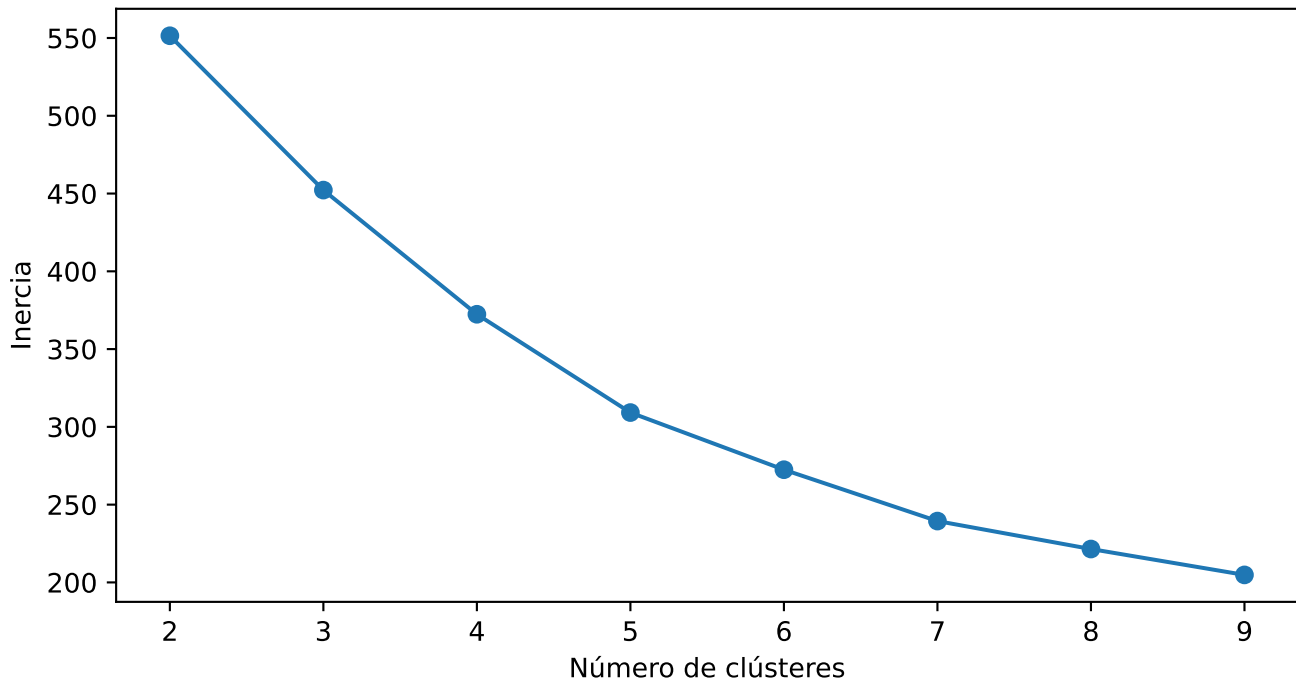
Comparación entre ET0 Real y Predicho — Toluca (2017)



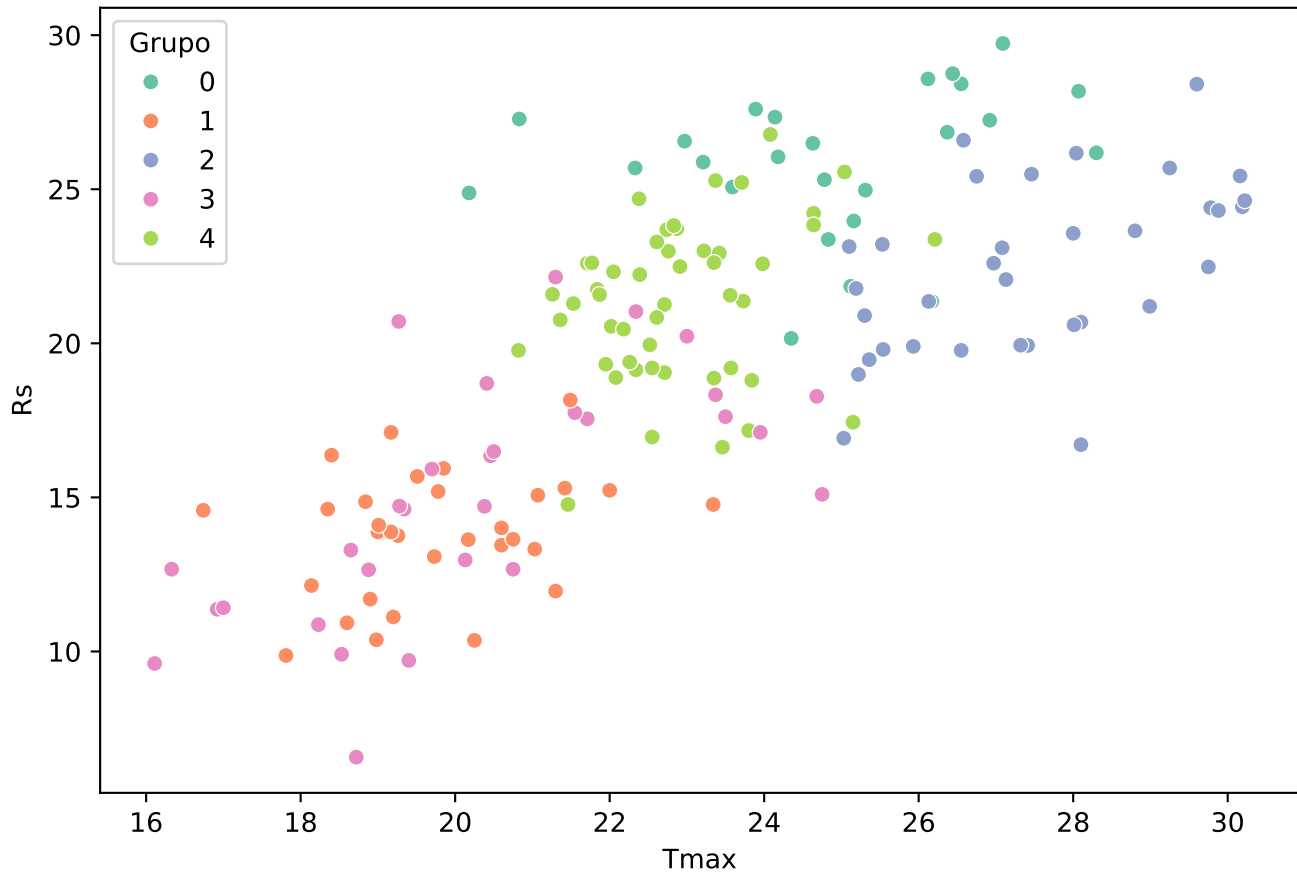
Importancia de variables (RF) — Toluca (2017)



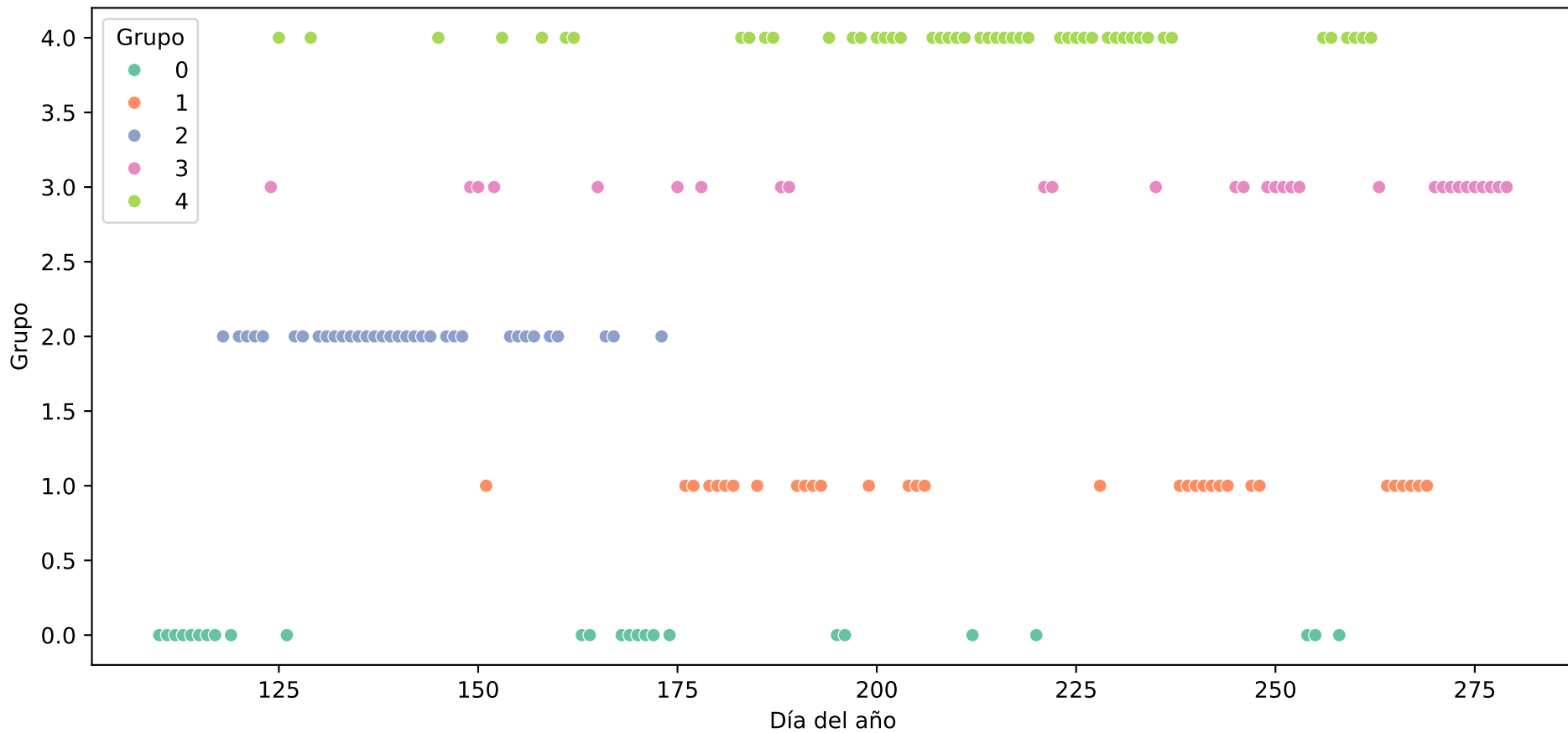
Método del codo



Clasificación de días climáticos — Toluca (2017)

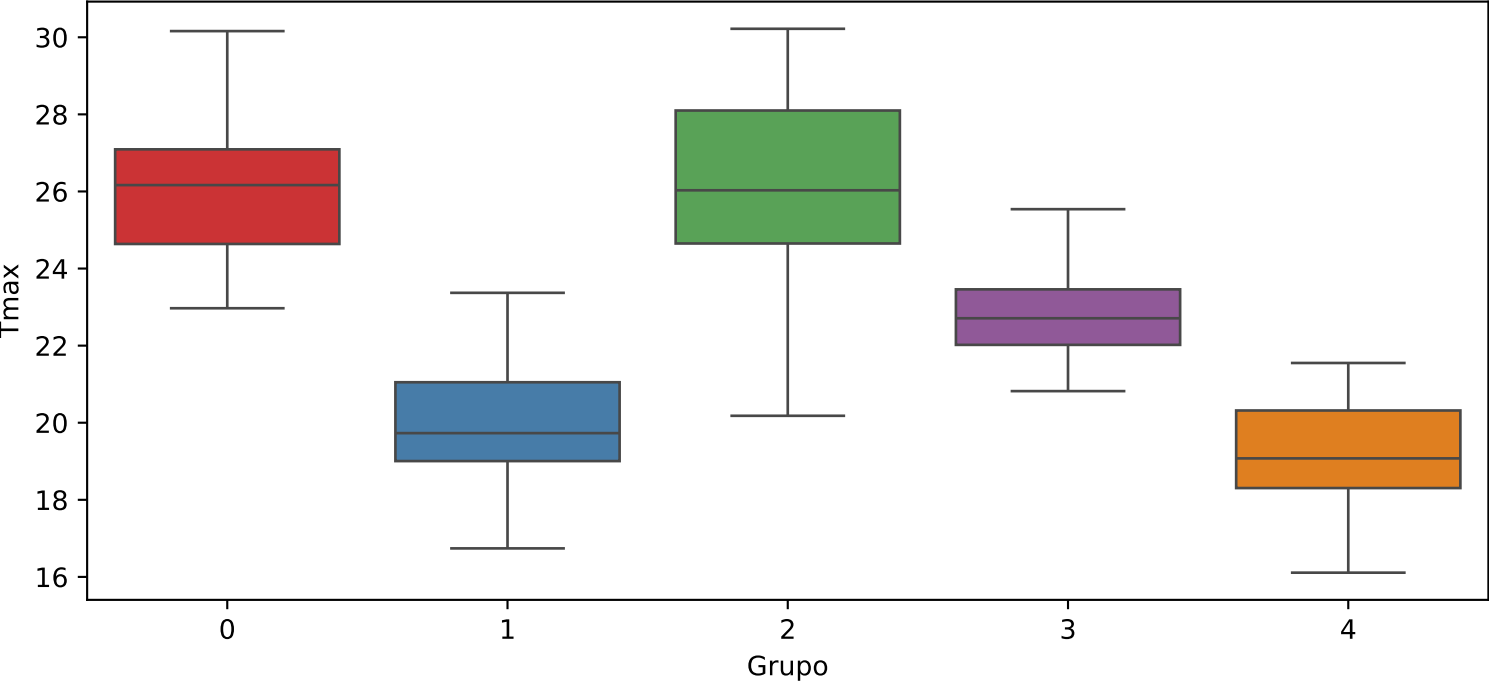


Distribución de días por grupo — Toluca (2017)

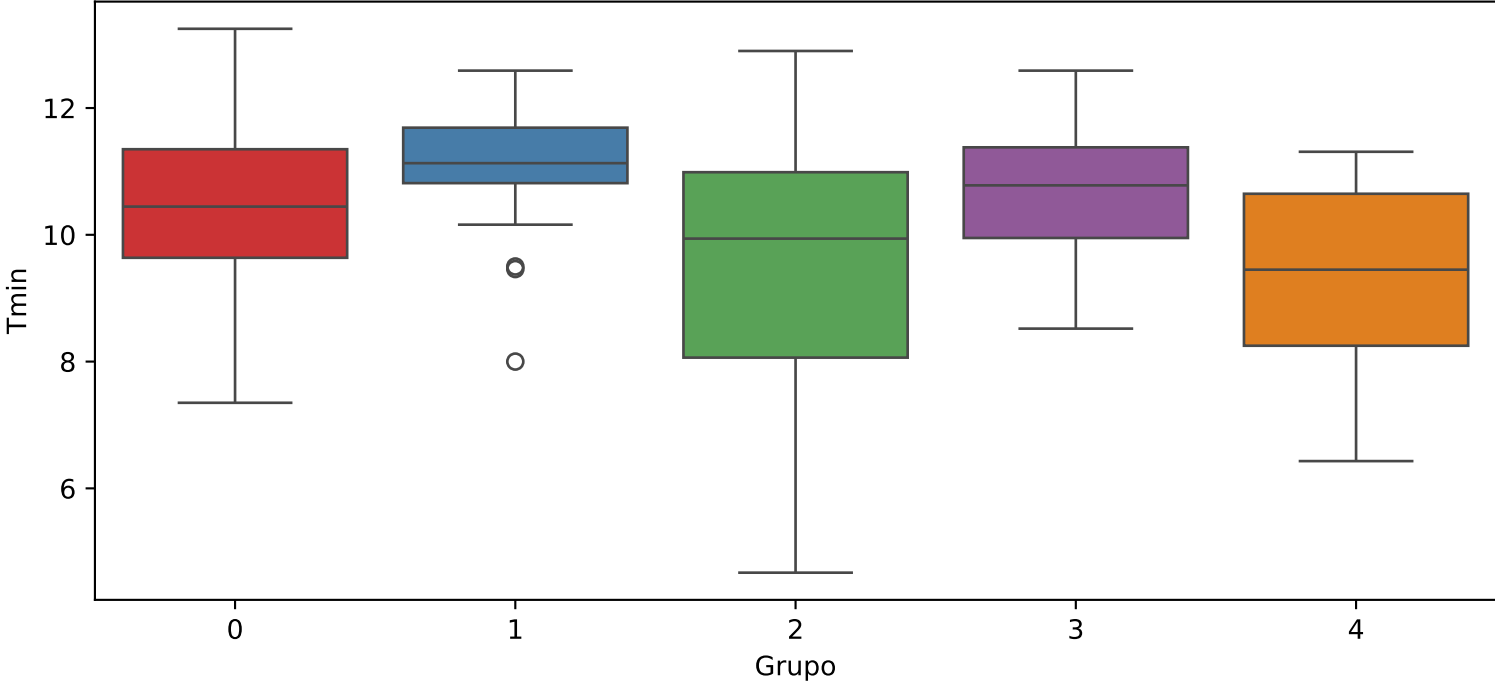


Boxplots por grupo — Toluca (2017)

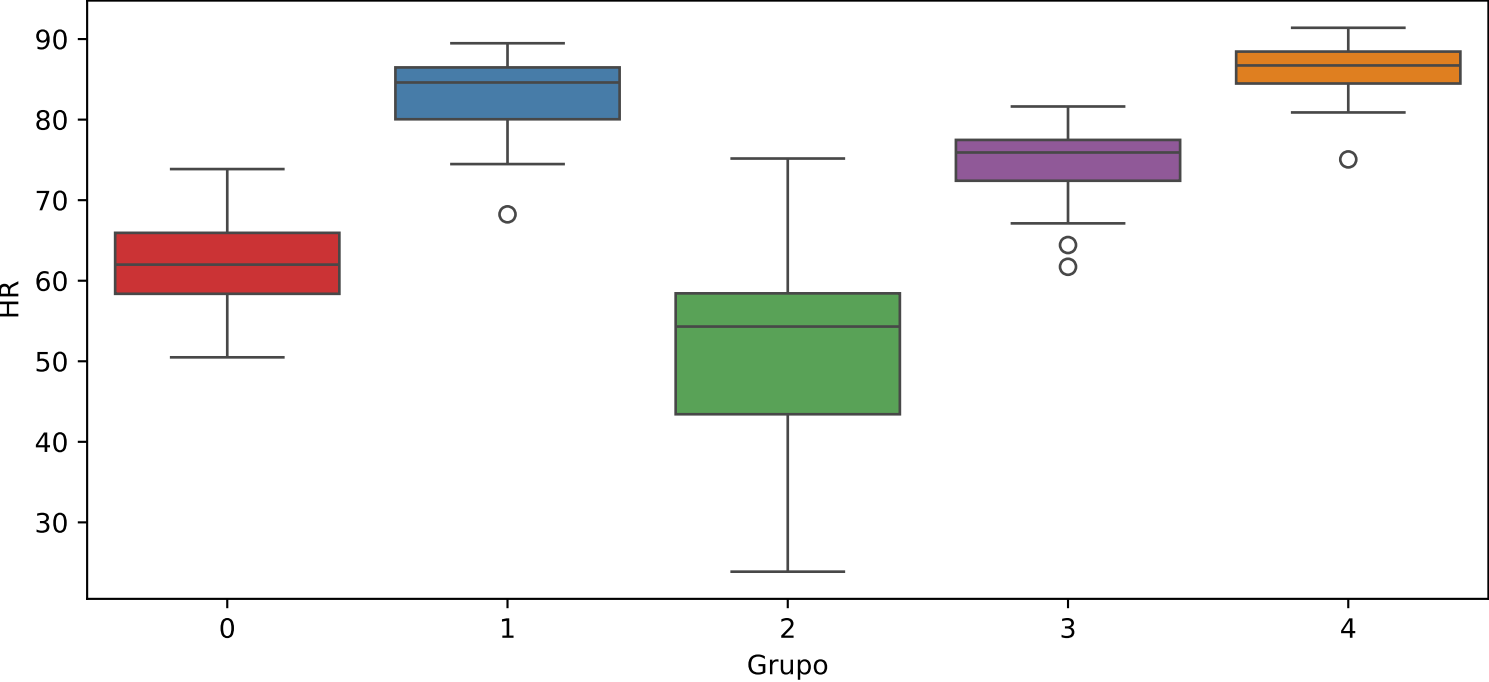
Distribución de Tmax por grupo



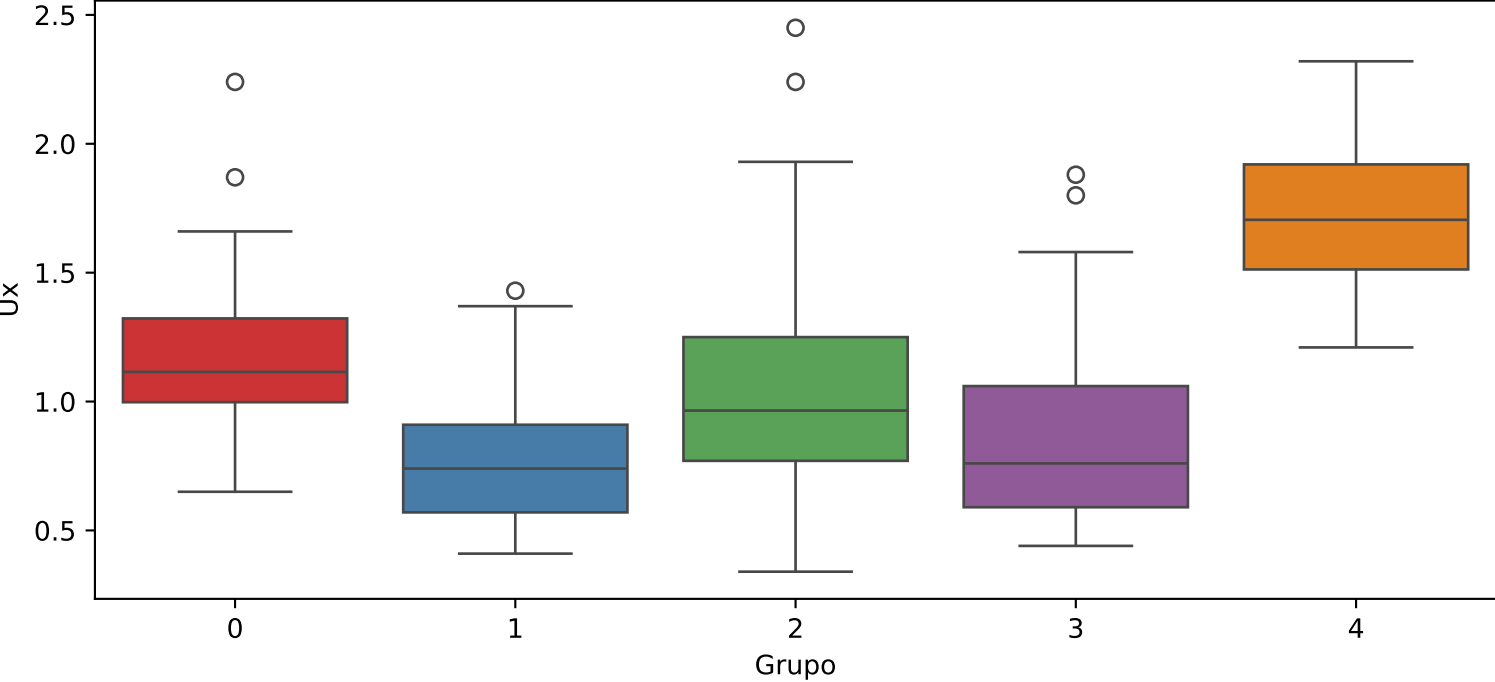
Distribución de Tmin por grupo



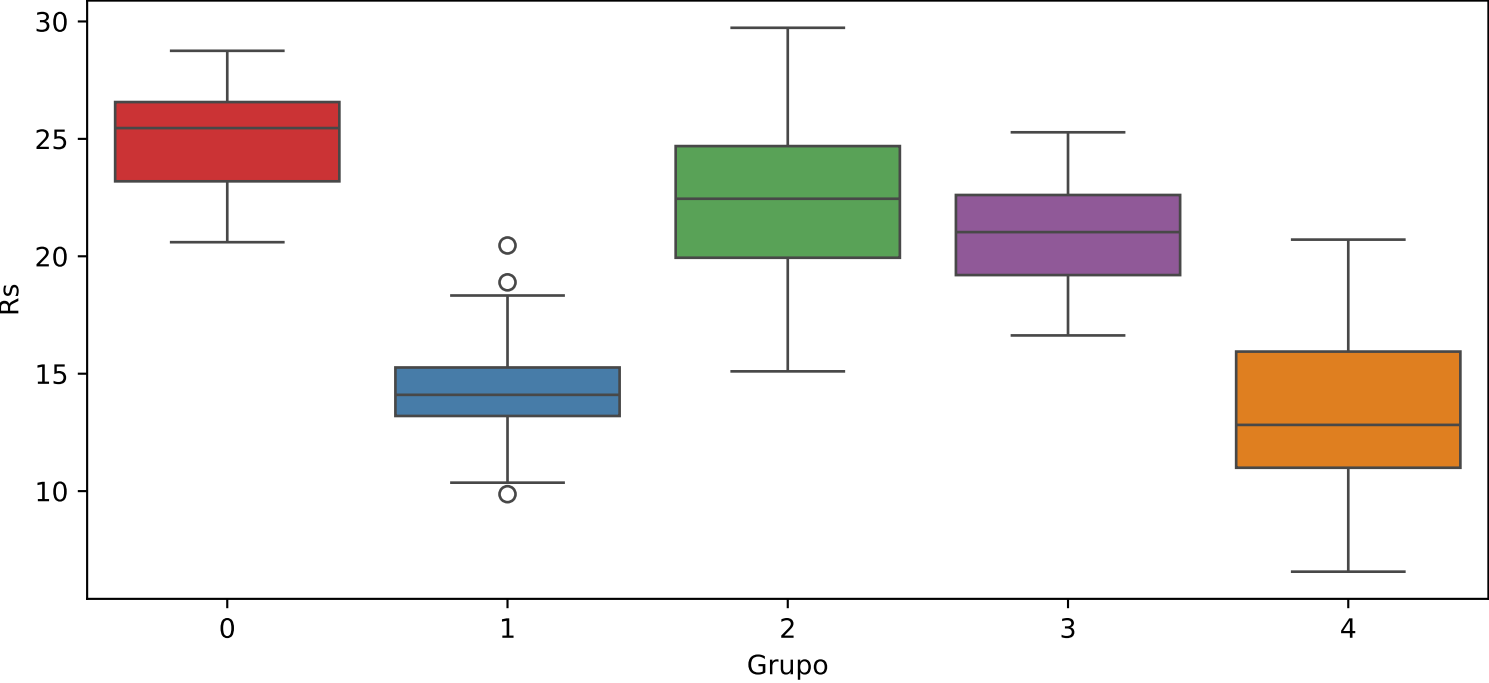
Distribución de HR por grupo



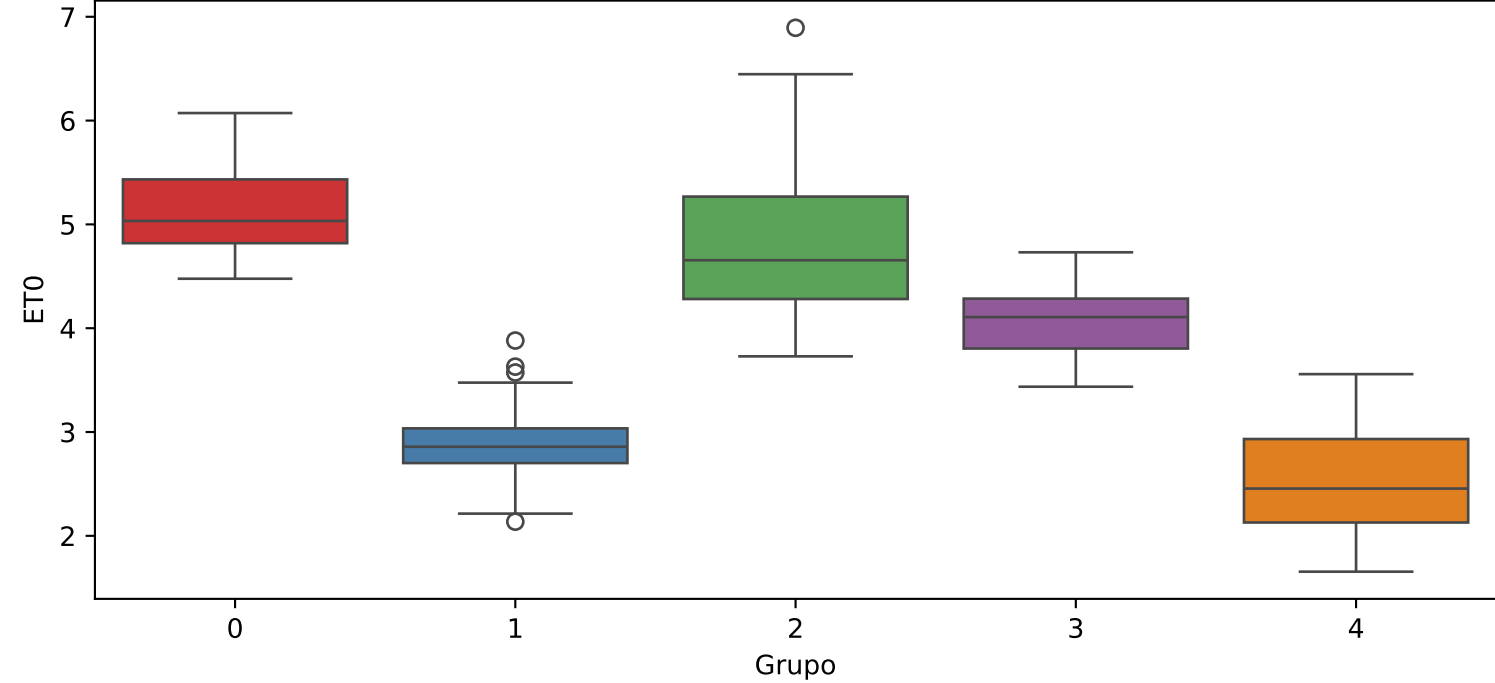
Distribución de Ux por grupo



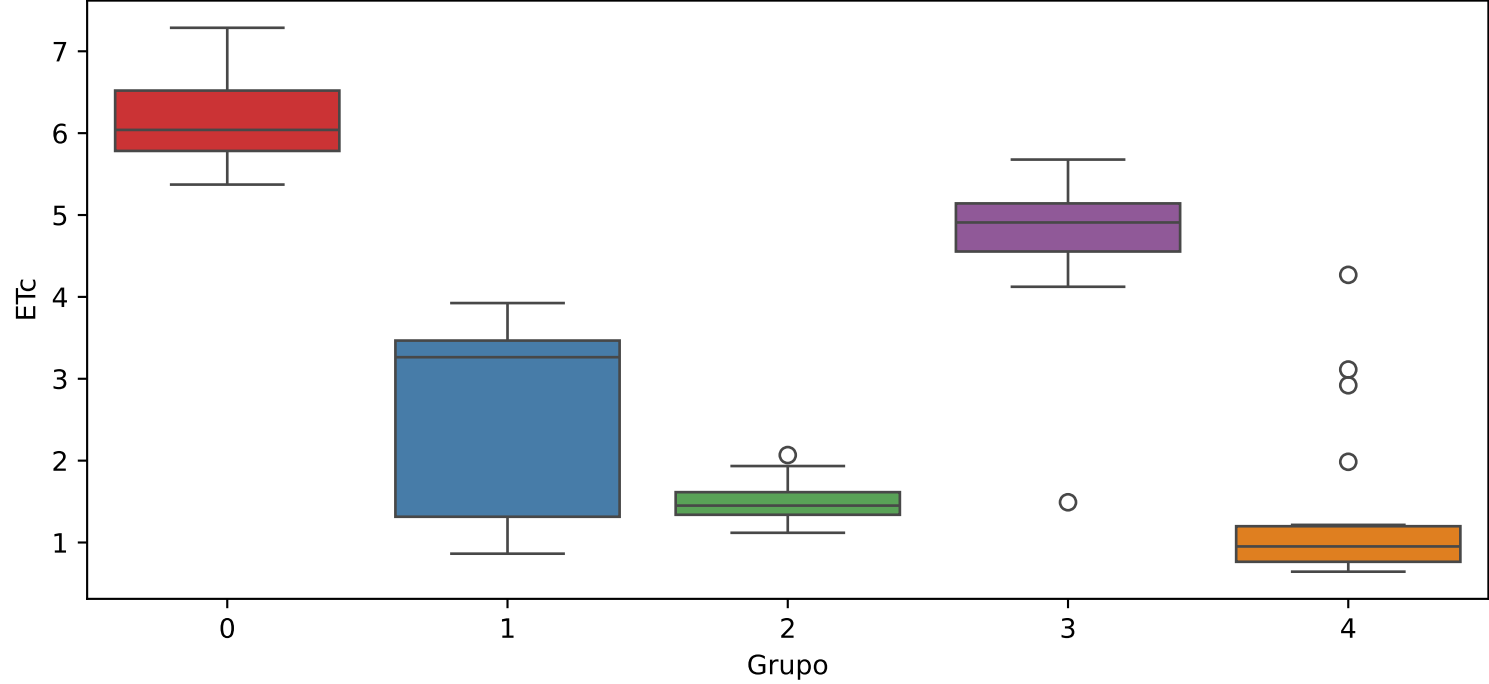
Distribución de Rs por grupo



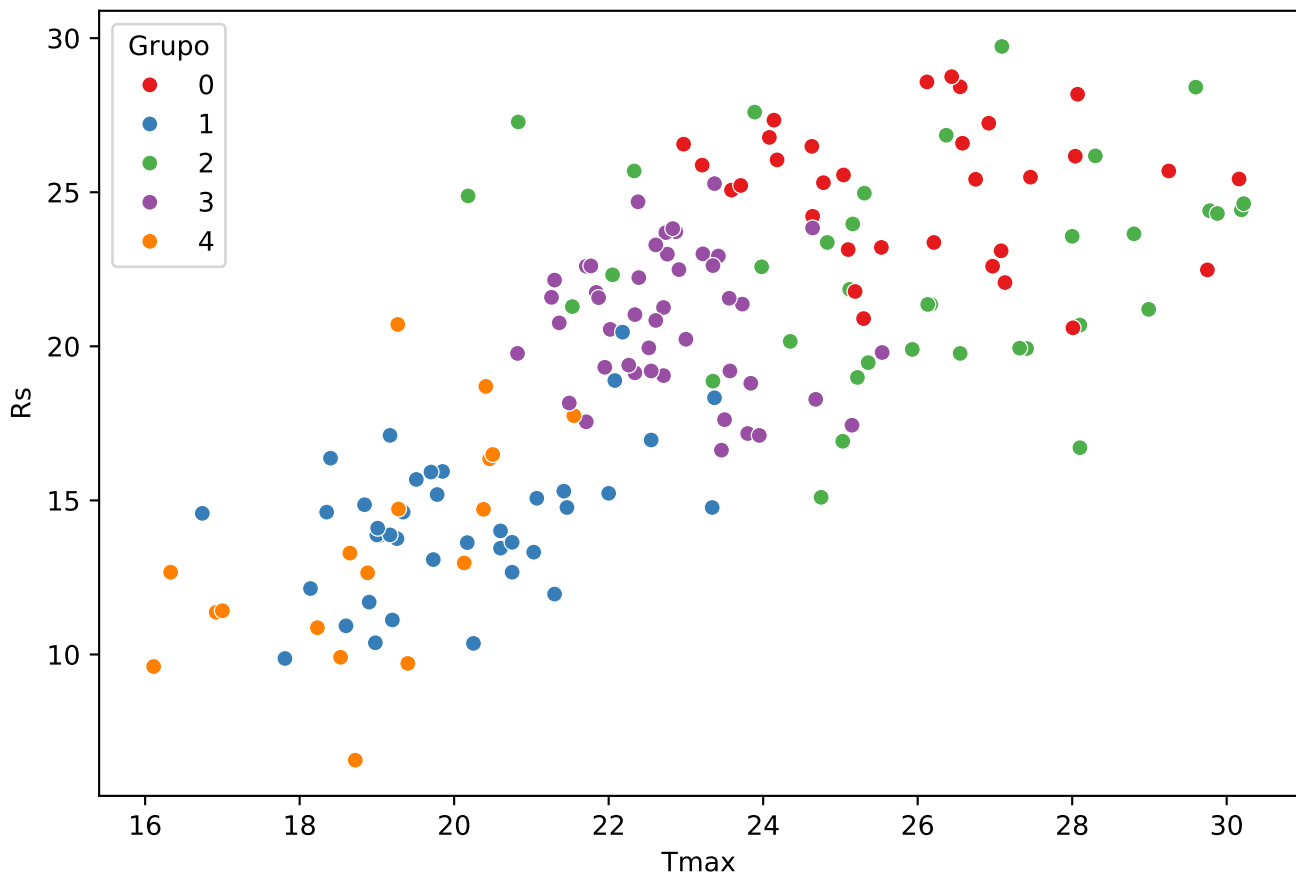
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2017)



Toluca — 2018

Días del ciclo: 170

ETc total [mm]: 618.9

ETverde total [mm]: 303.9

ETazul total [mm]: 315.0

Tmax / Tmin [°C]: 30.0 / 7.2

Toluca — 2018 · Resultados y métricas

[Toluca 2018] Regresión Lineal ET0 — R^2 : 0.9927 MSE: 0.0073

[Toluca 2018] Random Forest ET0 — R^2 : 0.9893 MSE: 0.0107

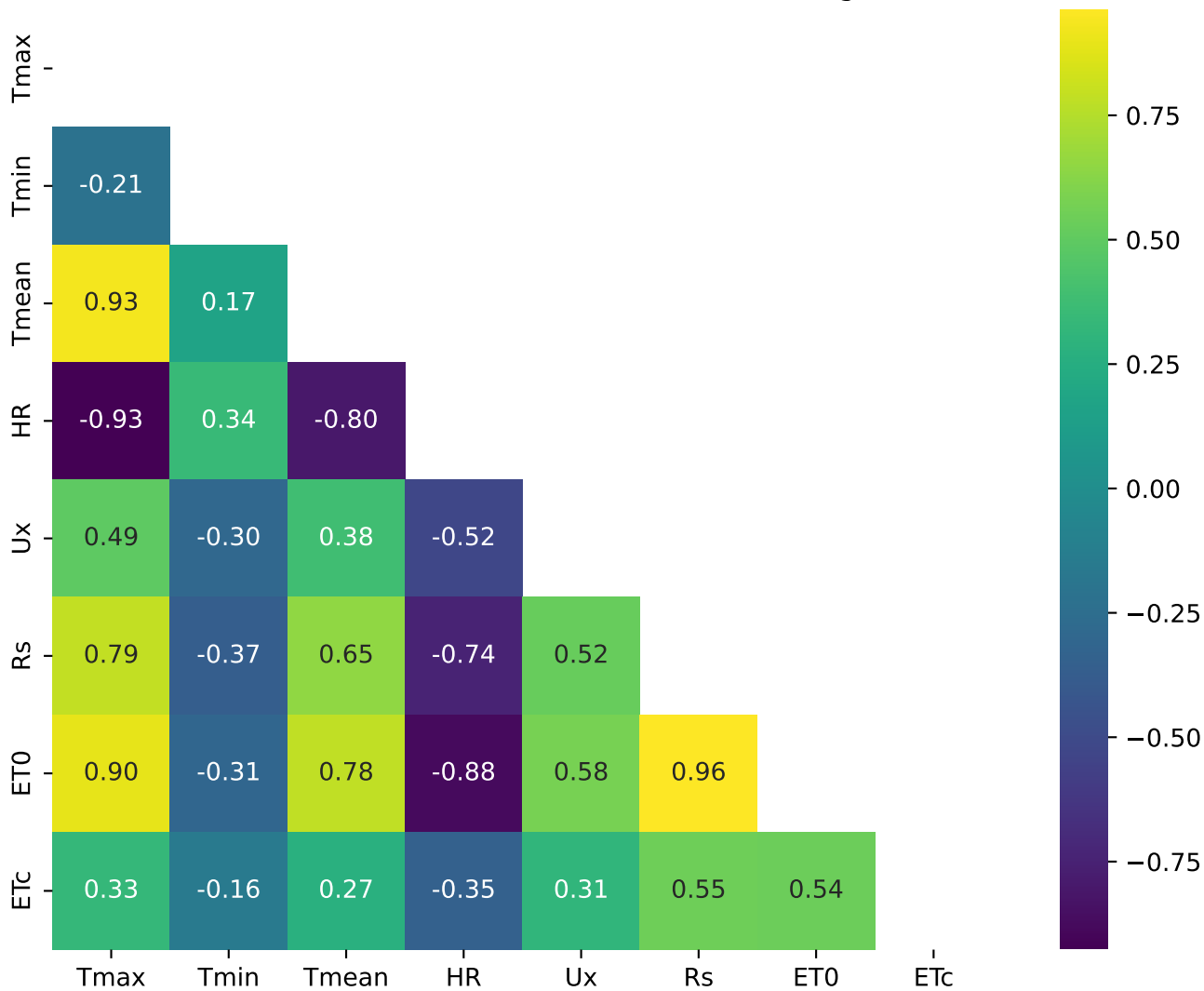
Importancias: {'Tmax': 0.03582806416778577, 'Tmin': 0.0027854538566191916, 'HR': 0.063608449045224, 'Ux': 0.008929125813217456, 'Rs': 0.8888489071171536}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	20.973509	10.265789	79.112456	0.962982	19.109649	3.621418	2.862920
1	23.339318	9.764318	69.645000	0.972500	23.763182	4.579864	5.495837
2	26.195909	9.751364	56.161364	1.037727	23.741818	4.928997	1.478699
3	27.692500	9.148333	45.203333	1.692500	28.933333	6.240104	7.488124
4	19.109714	10.939714	83.810286	0.638000	15.099429	2.948656	2.614414

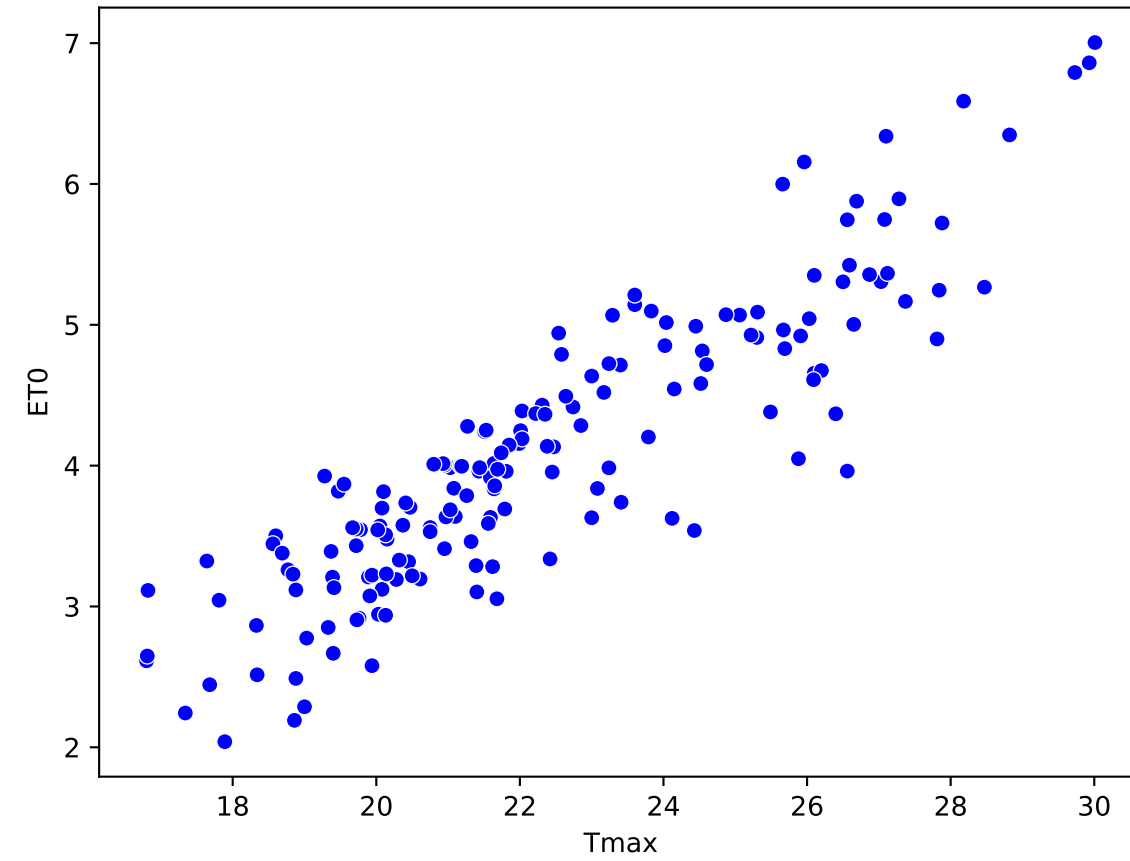
Toluca — 2018

Matriz de Correlación entre Variables Meteorológicas

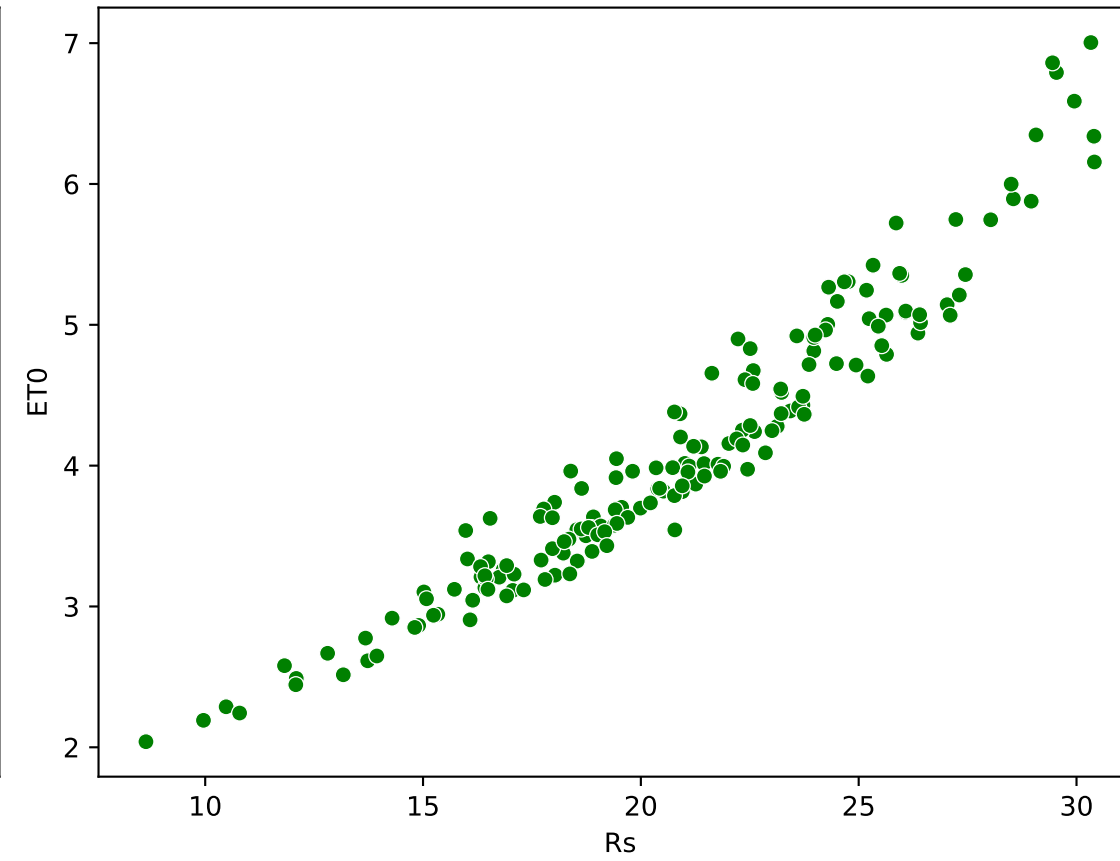


Dispersión — Toluca (2018)

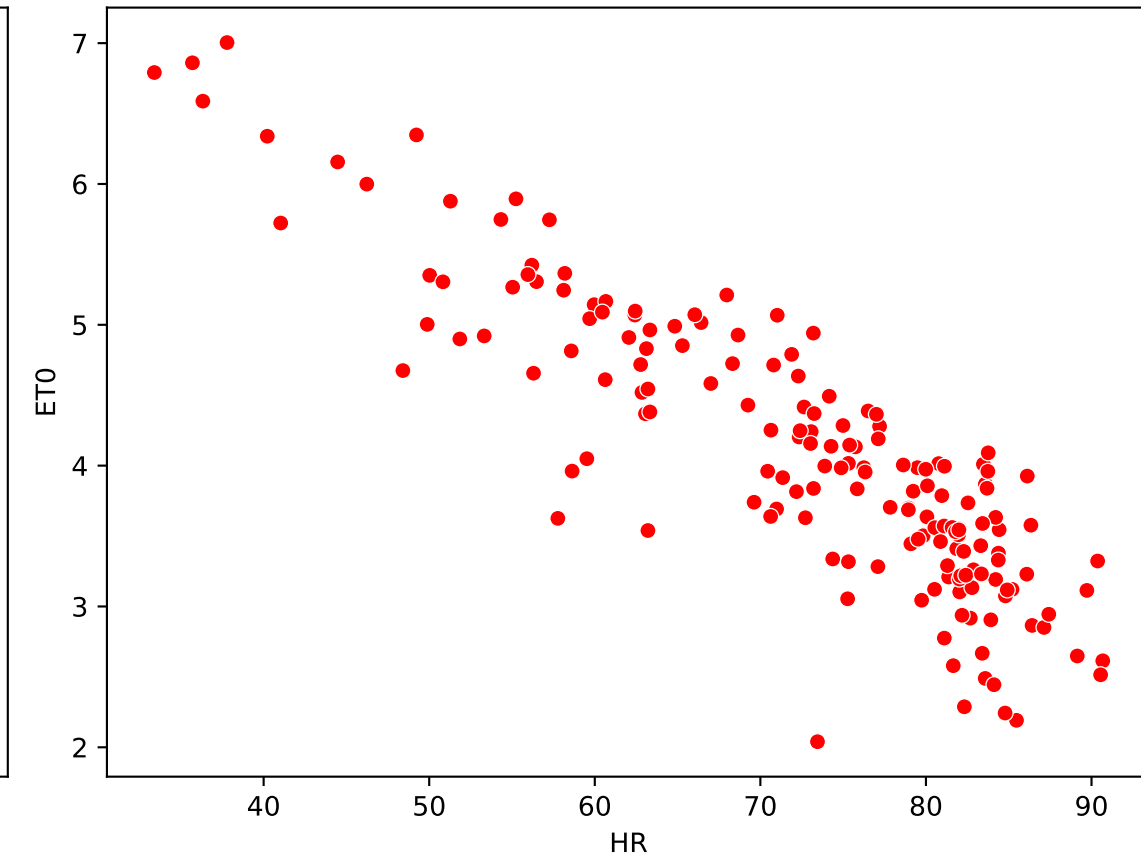
Tmax vs ET0



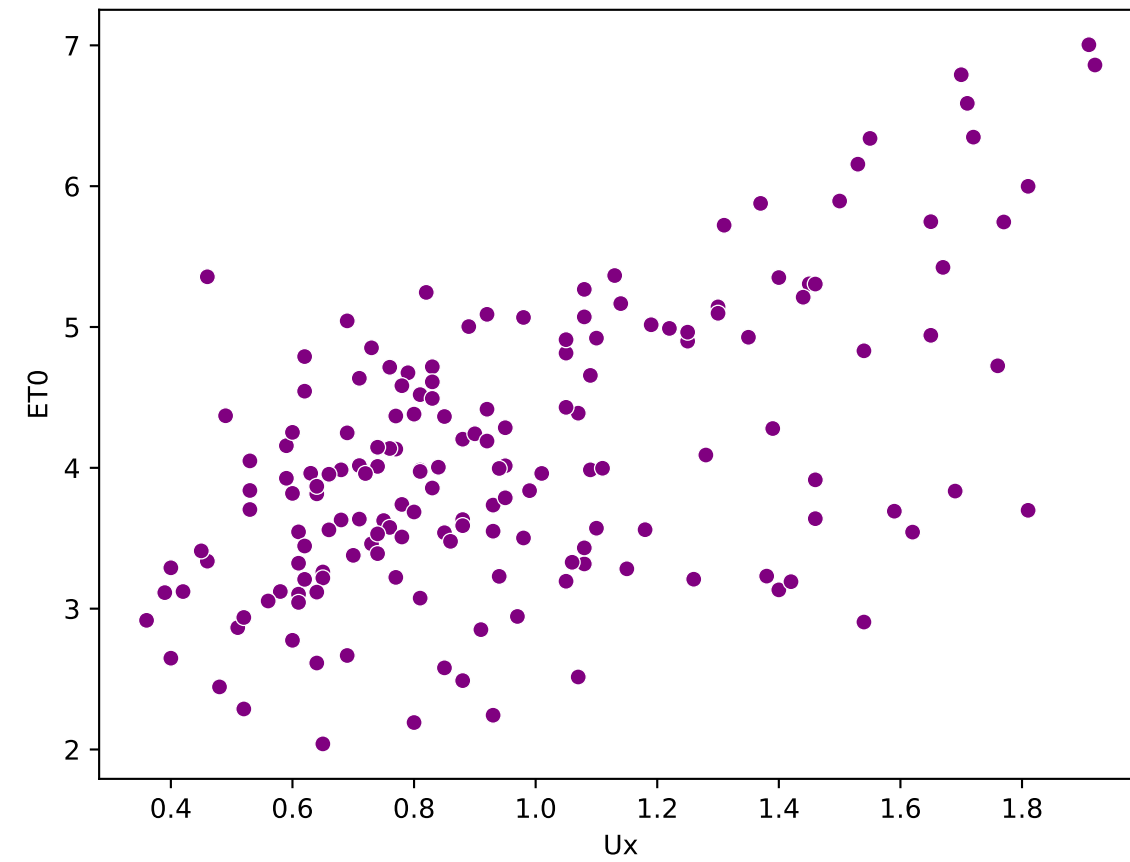
Rs vs ET0



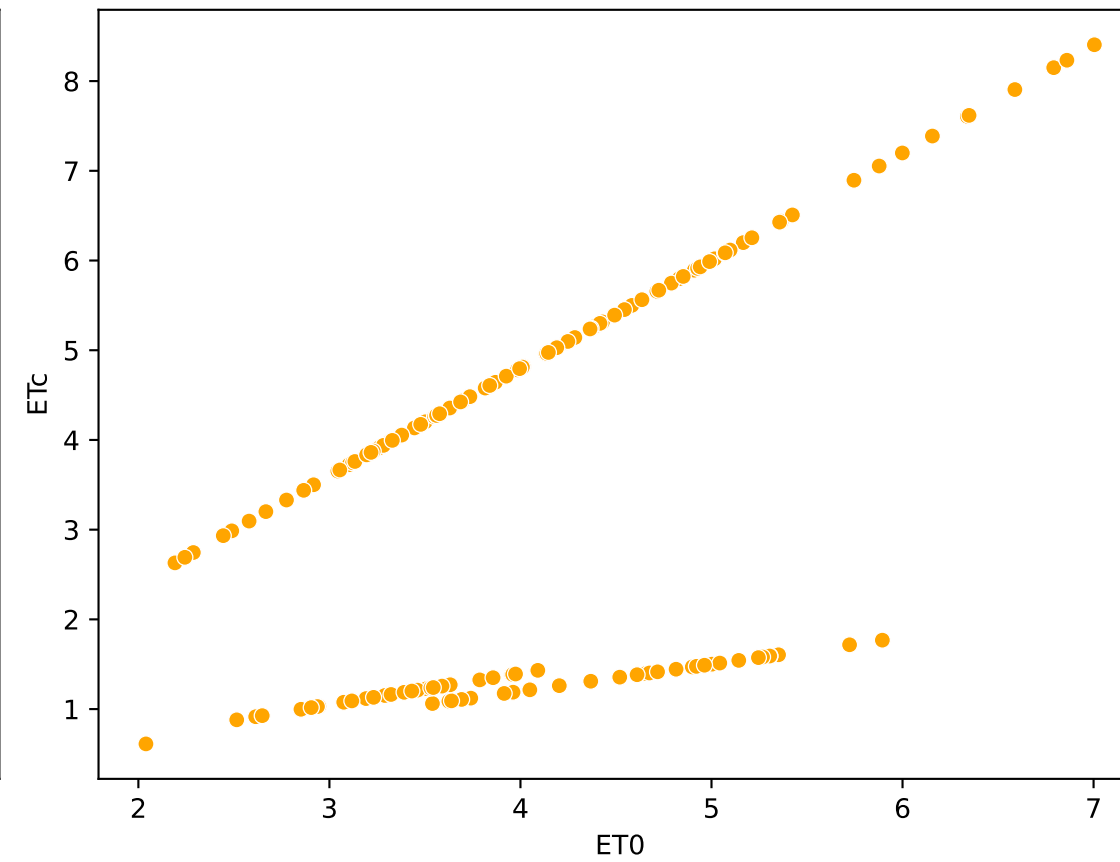
HR vs ET0



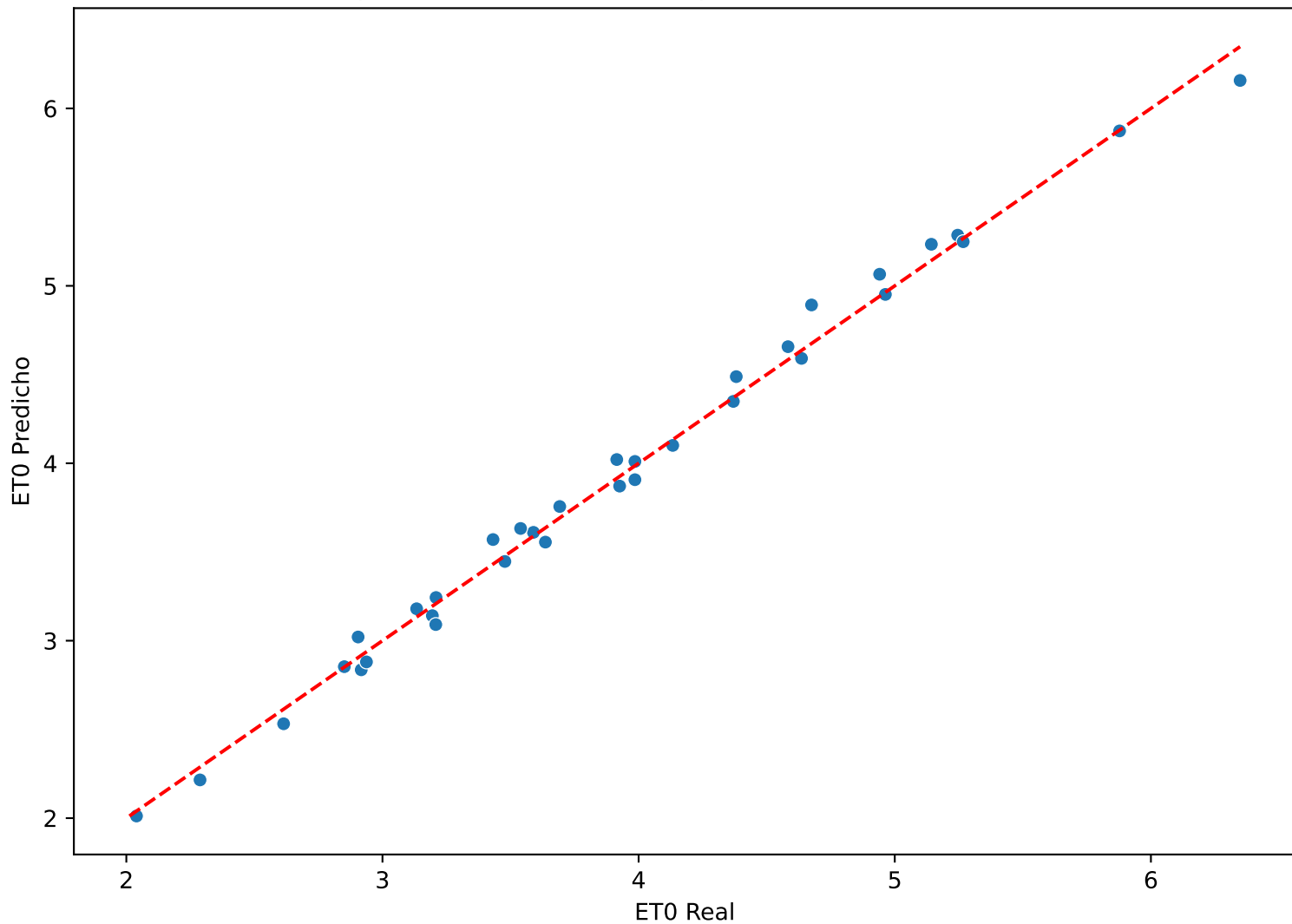
Ux vs ET0



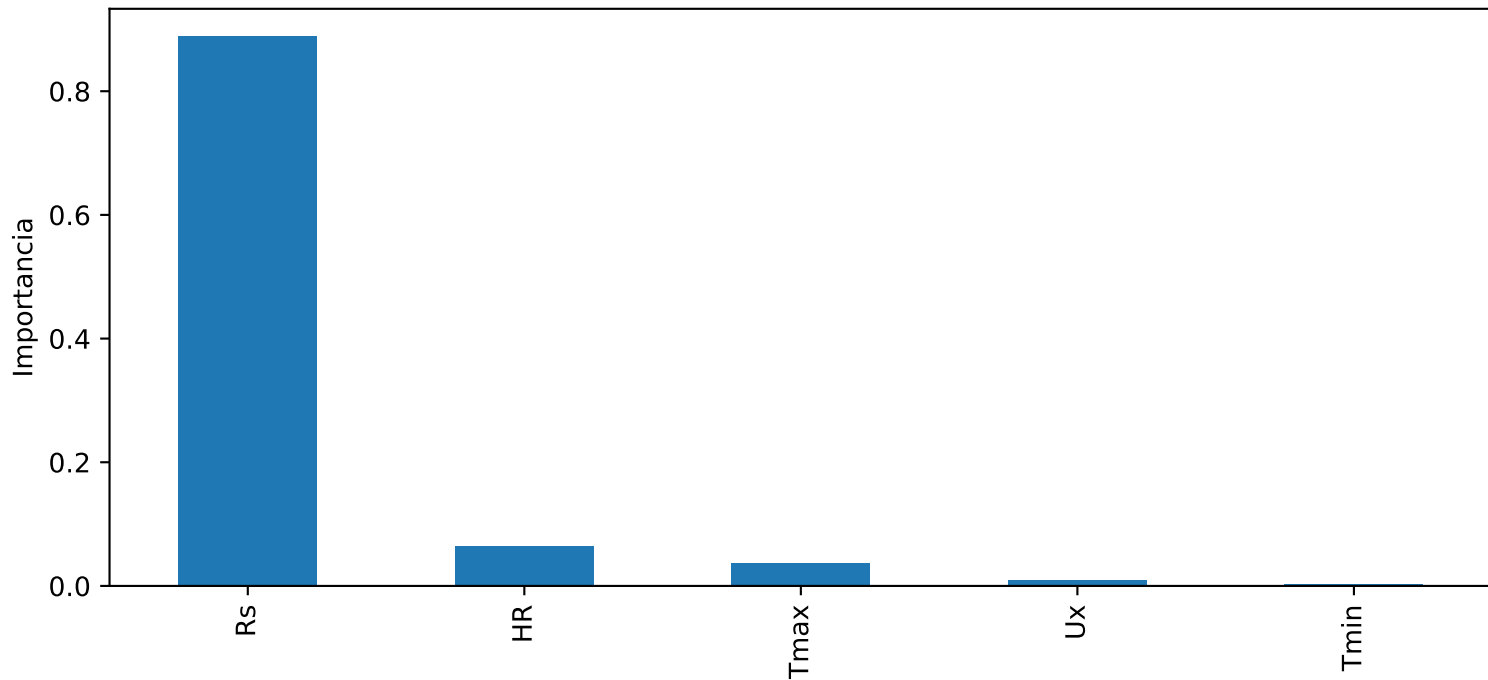
ET0 vs ETc



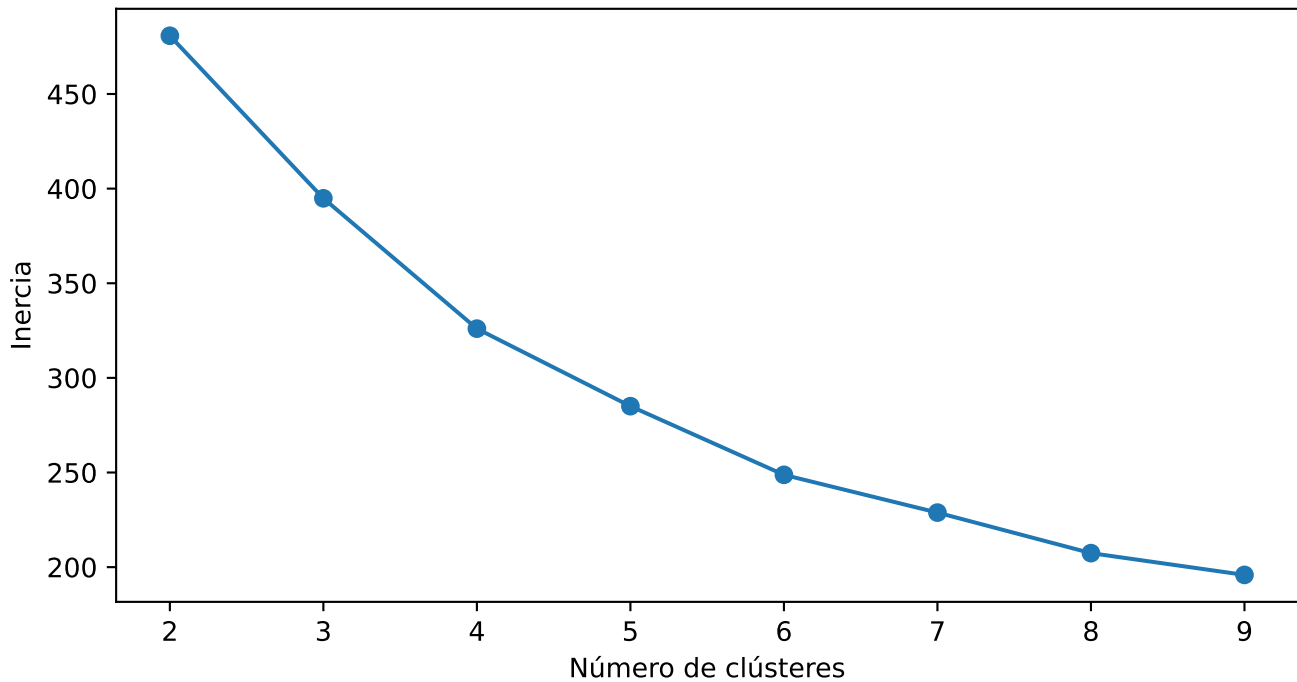
Comparación entre ET0 Real y Predicho — Toluca (2018)



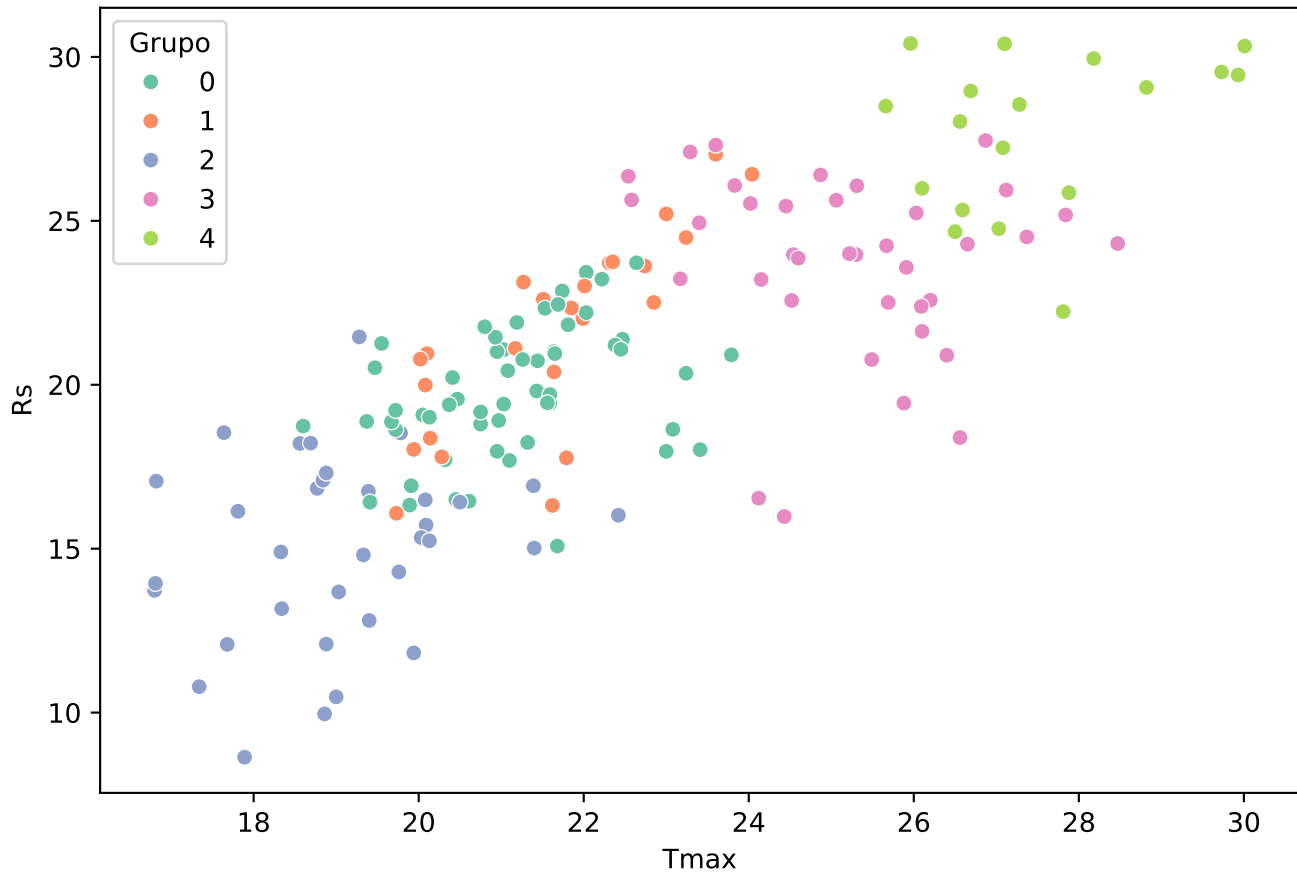
Importancia de variables (RF) — Toluca (2018)



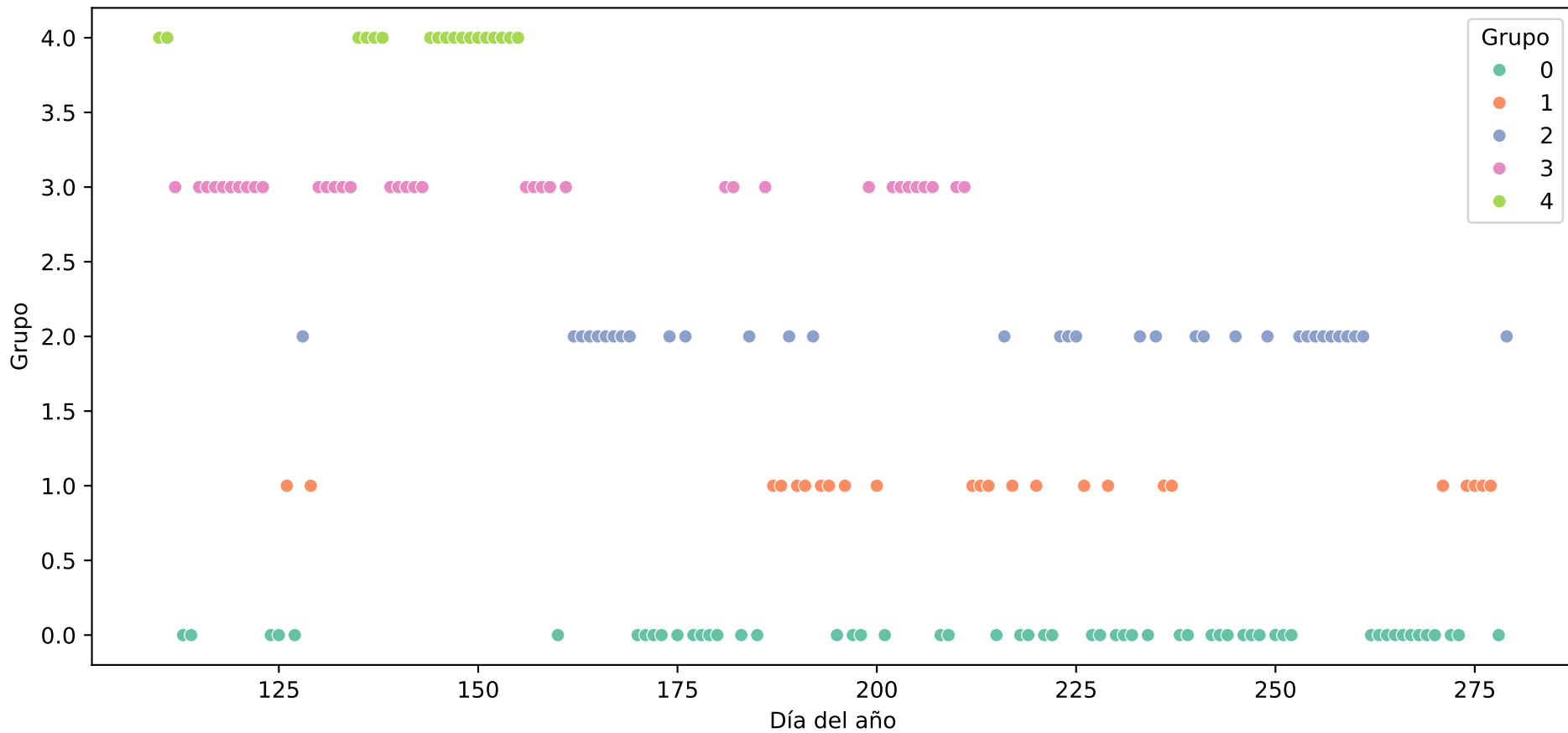
Método del codo



Clasificación de días climáticos — Toluca (2018)

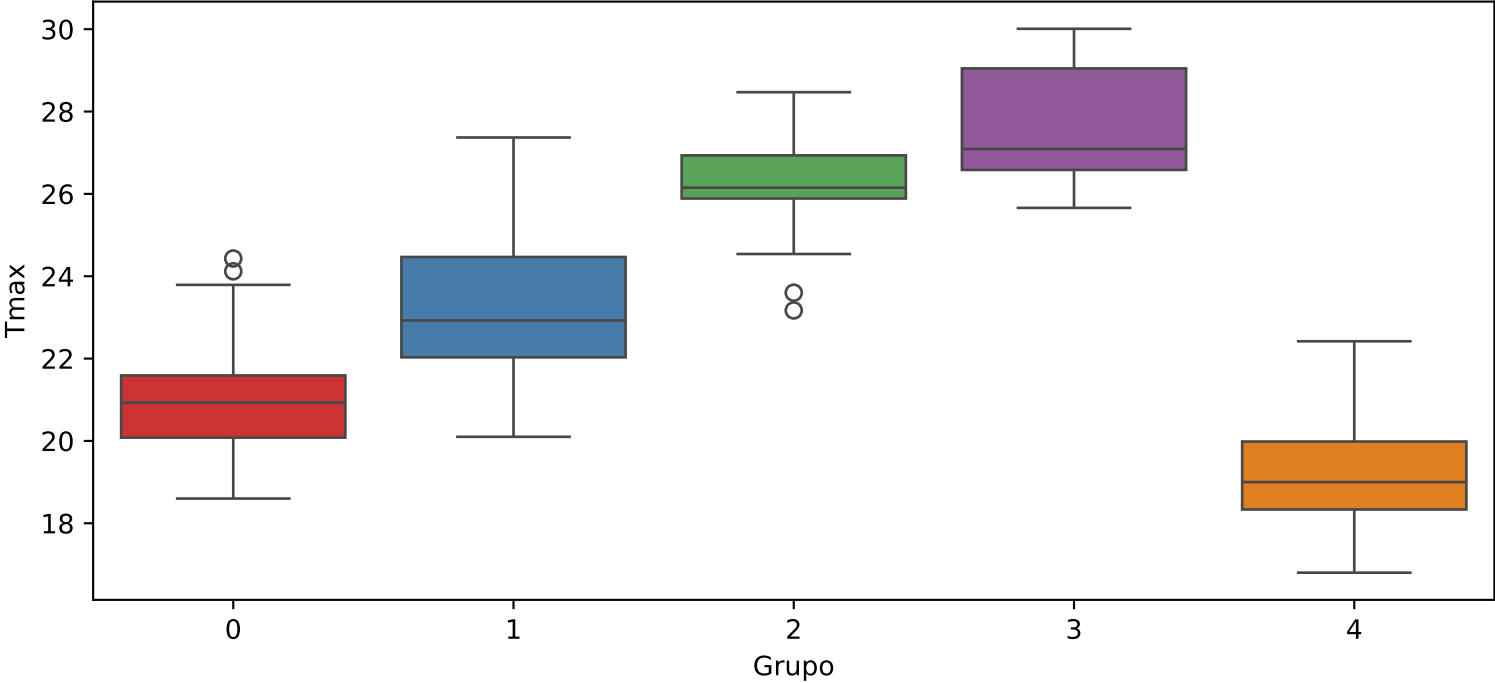


Distribución de días por grupo — Toluca (2018)

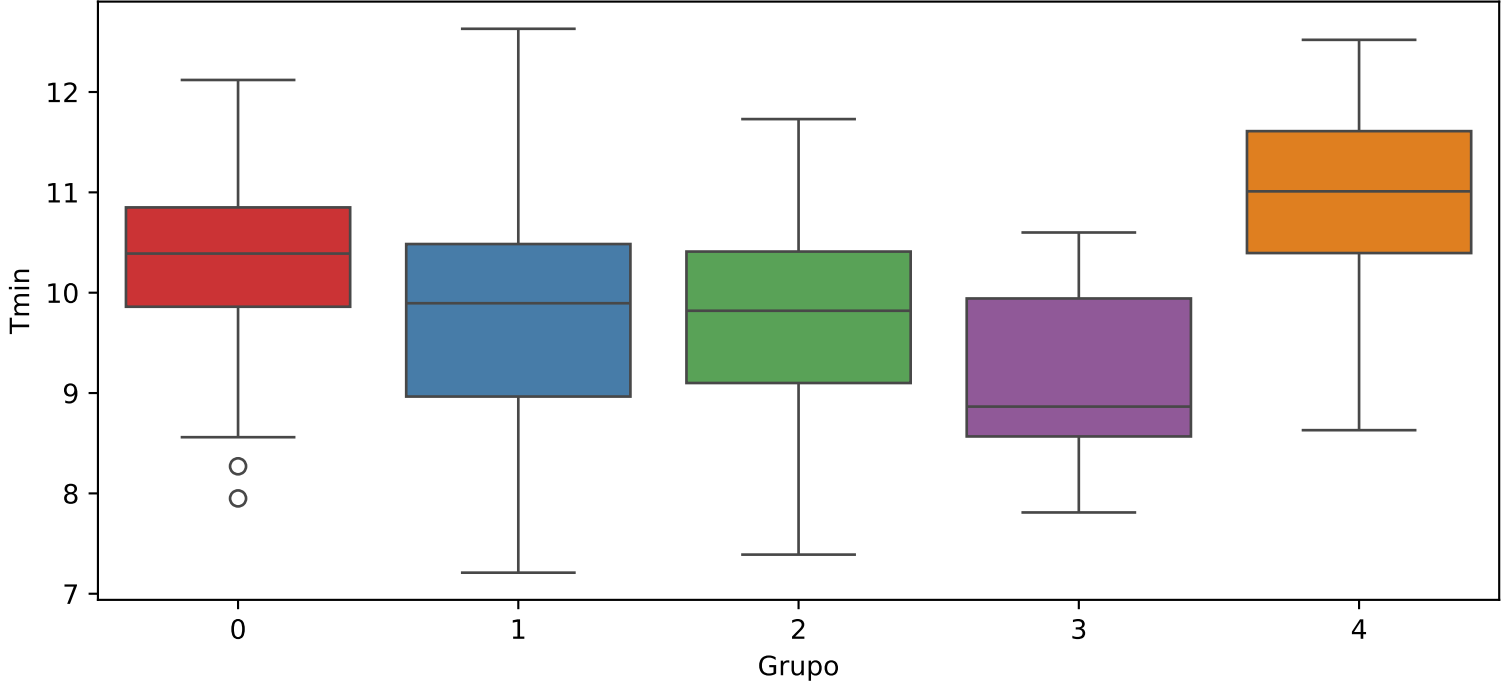


Boxplots por grupo — Toluca (2018)

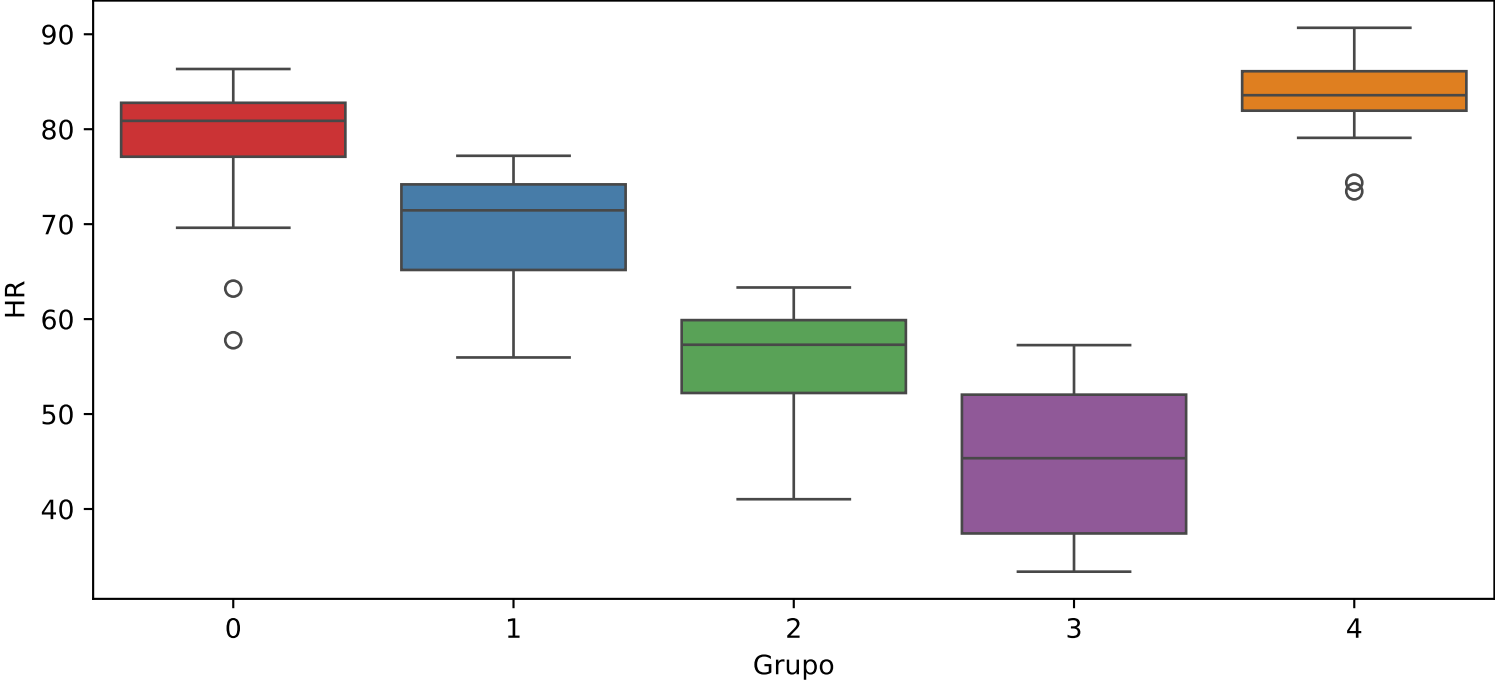
Distribución de Tmax por grupo



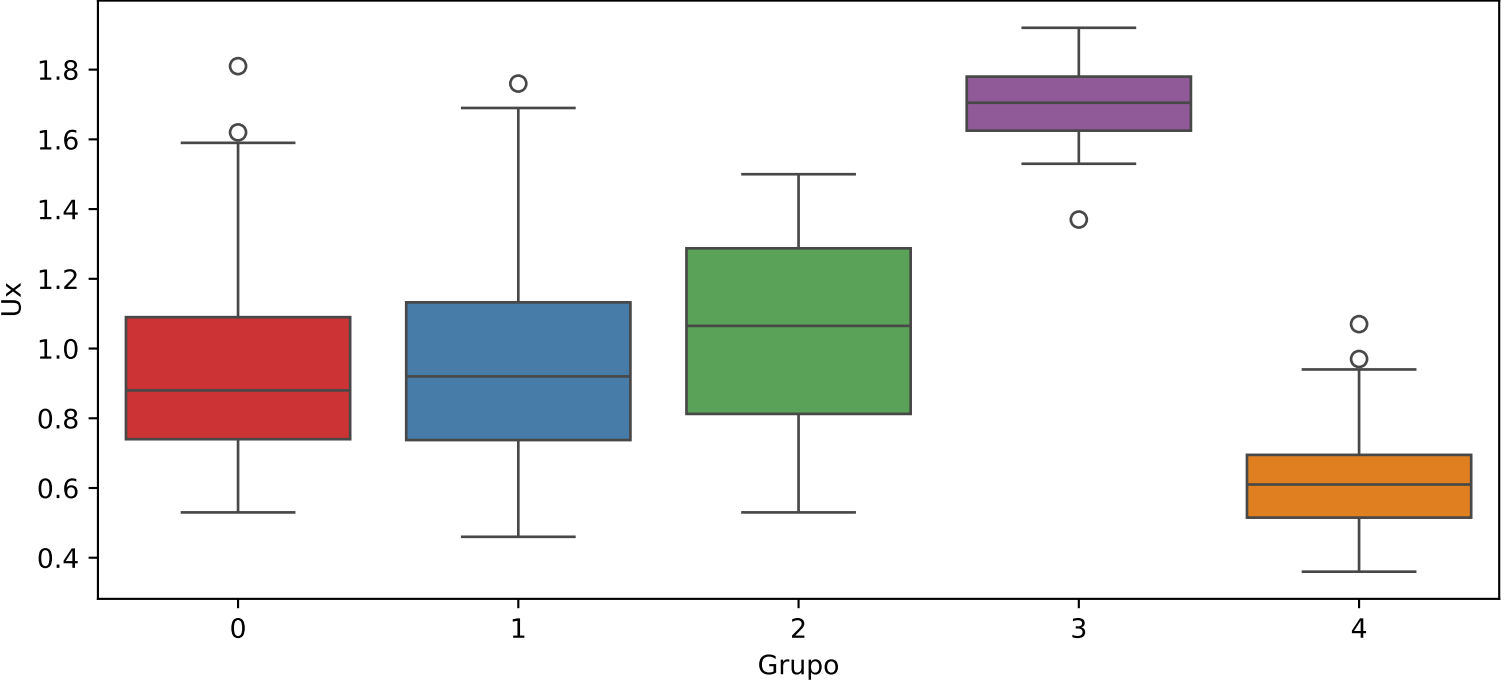
Distribución de Tmin por grupo



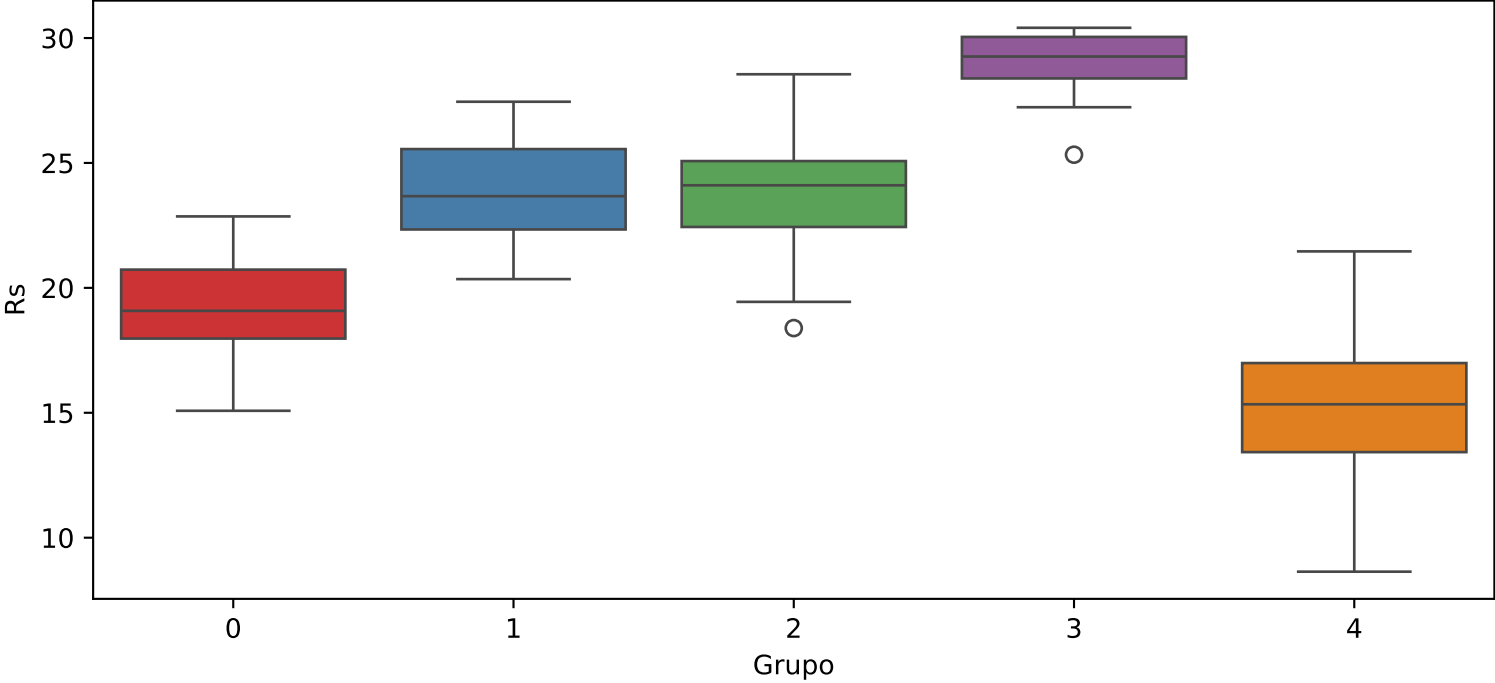
Distribución de HR por grupo



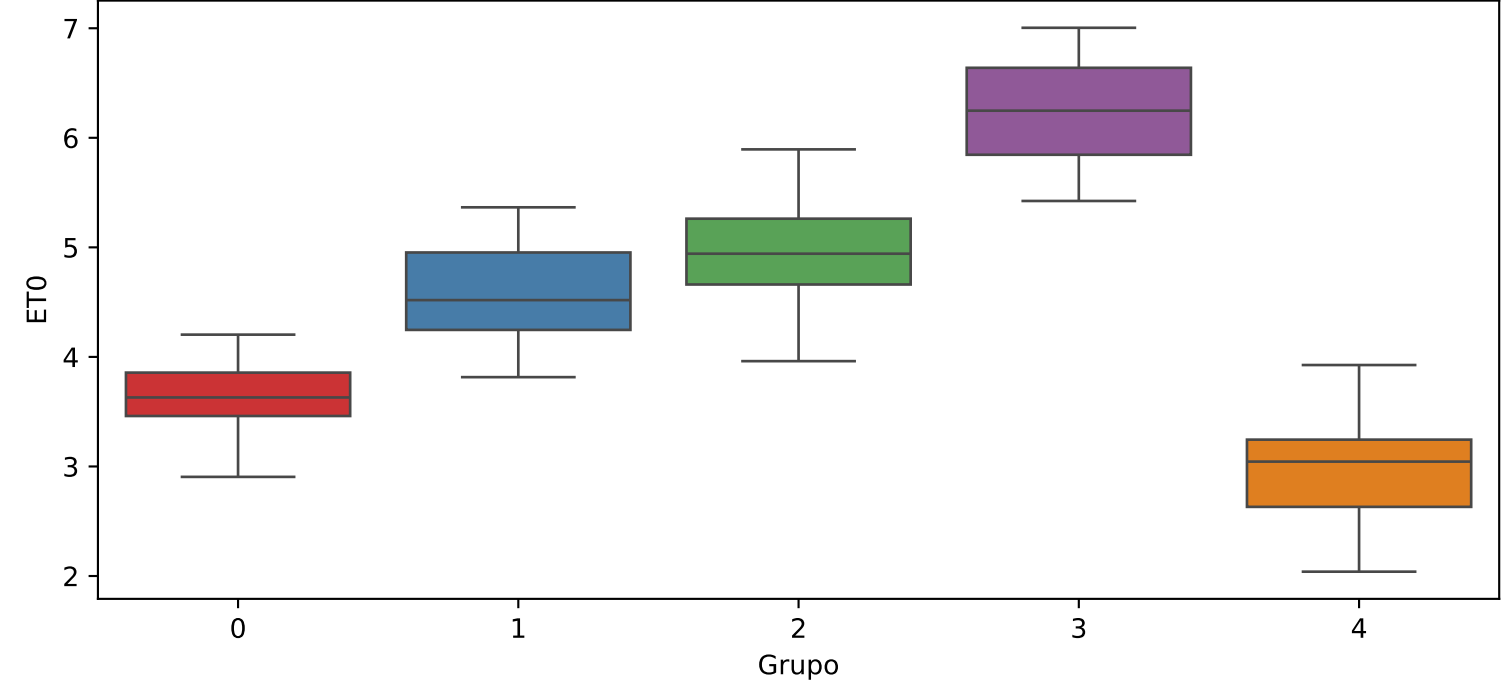
Distribución de Ux por grupo



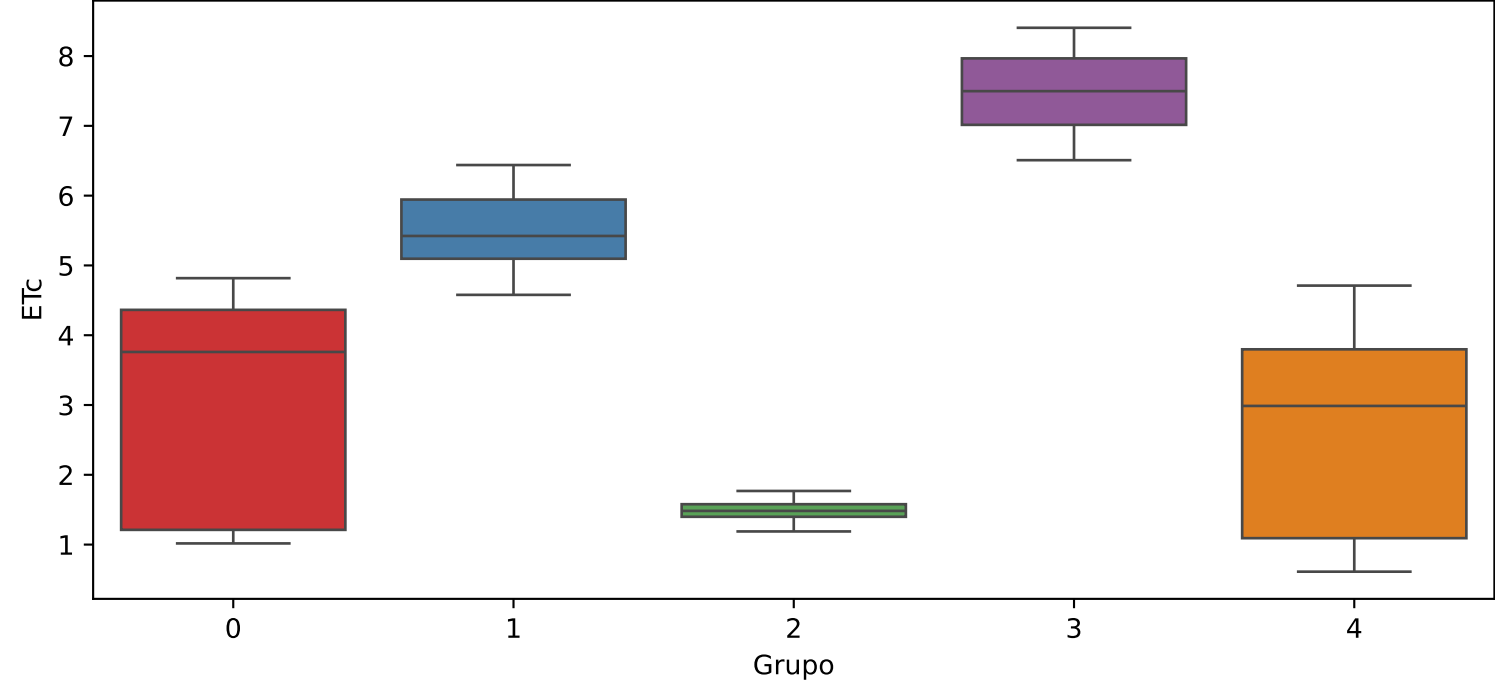
Distribución de Rs por grupo



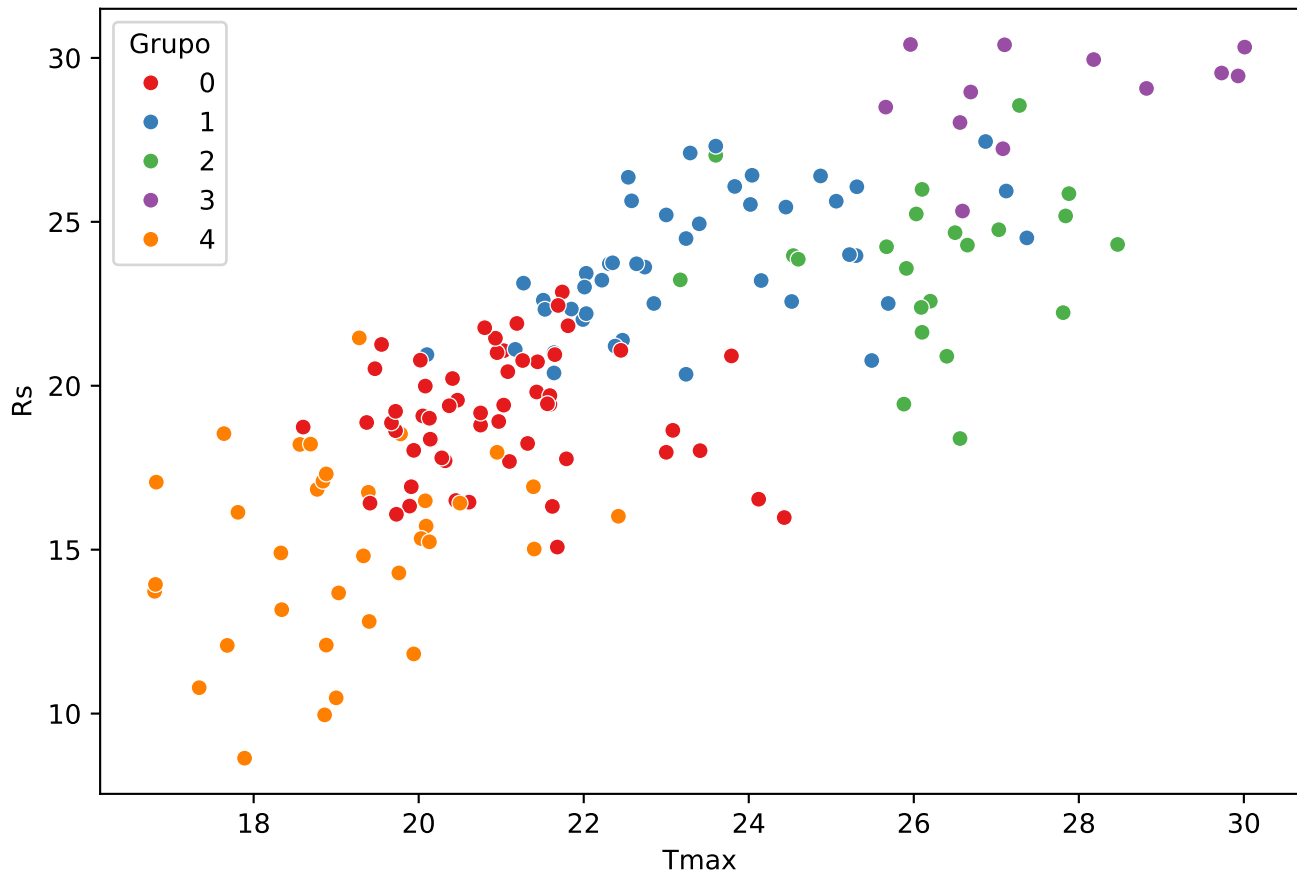
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2018)



Toluca — 2019

Días del ciclo: 170

ETc total [mm]: 631.8

ETverde total [mm]: 265.0

ETazul total [mm]: 366.9

Tmax / Tmin [°C]: 30.0 / 6.4

Toluca — 2019 · Resultados y métricas

[Toluca 2019] Regresión Lineal ET0 — R^2 : 0.9807 MSE: 0.0244

[Toluca 2019] Random Forest ET0 — R^2 : 0.9493 MSE: 0.0642

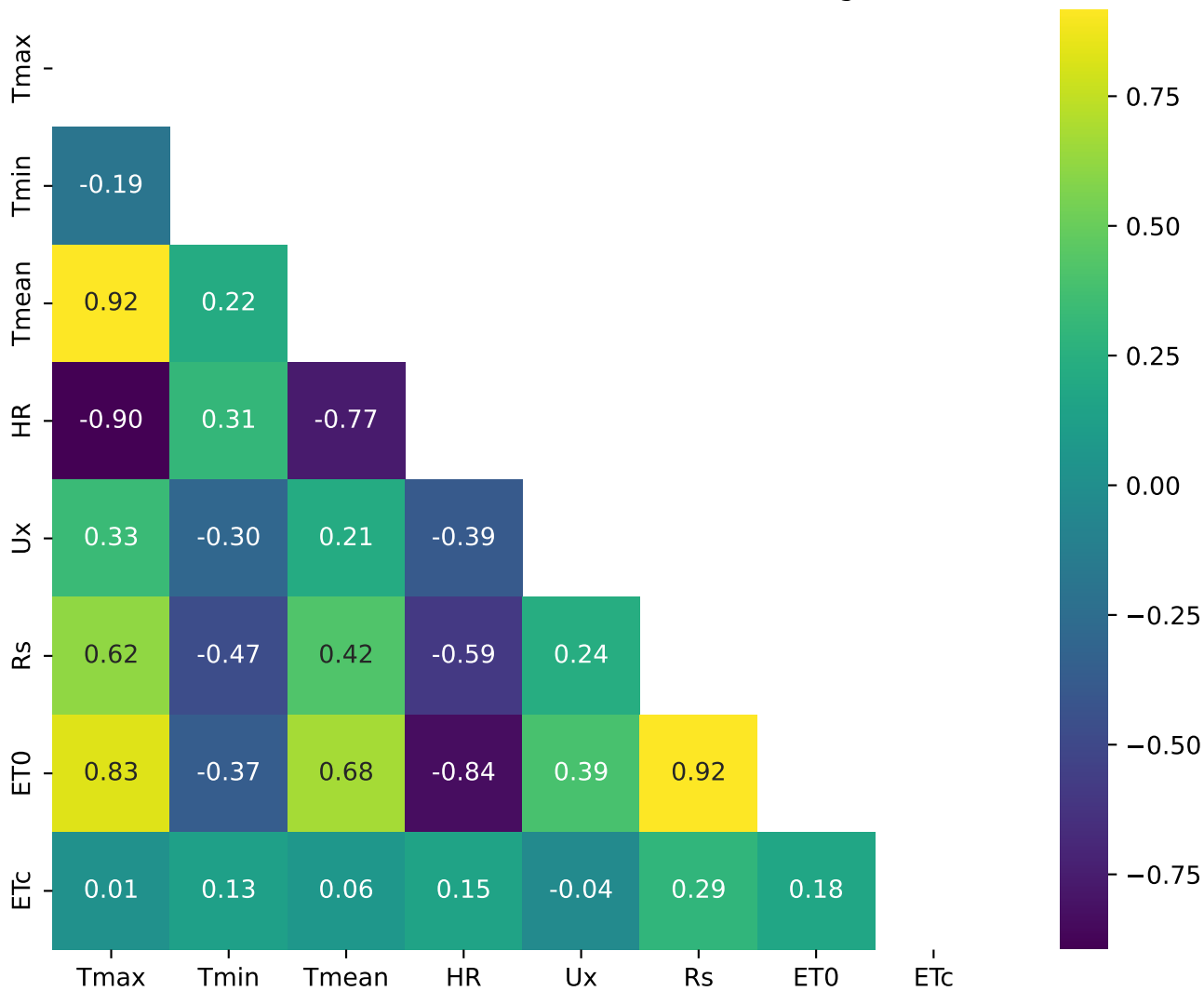
Importancias: {'Tmax': 0.010061971113902736, 'Tmin': 0.004505741267467799, 'HR': 0.3195430220727121, 'Ux': 0.00947679173770982, 'Rs': 0.6564124738082074}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	22.659565	9.718696	73.074348	0.902609	20.758696	3.920627	1.355687
1	22.527027	10.520811	74.529189	0.718378	22.291351	4.264497	5.117396
2	25.844324	10.008108	61.521081	1.236216	24.327027	4.969412	5.963295
3	28.367241	9.680000	37.321724	1.237241	24.609655	5.559097	1.667729
4	20.765000	11.297727	80.530455	0.913182	15.575000	3.144430	3.233760

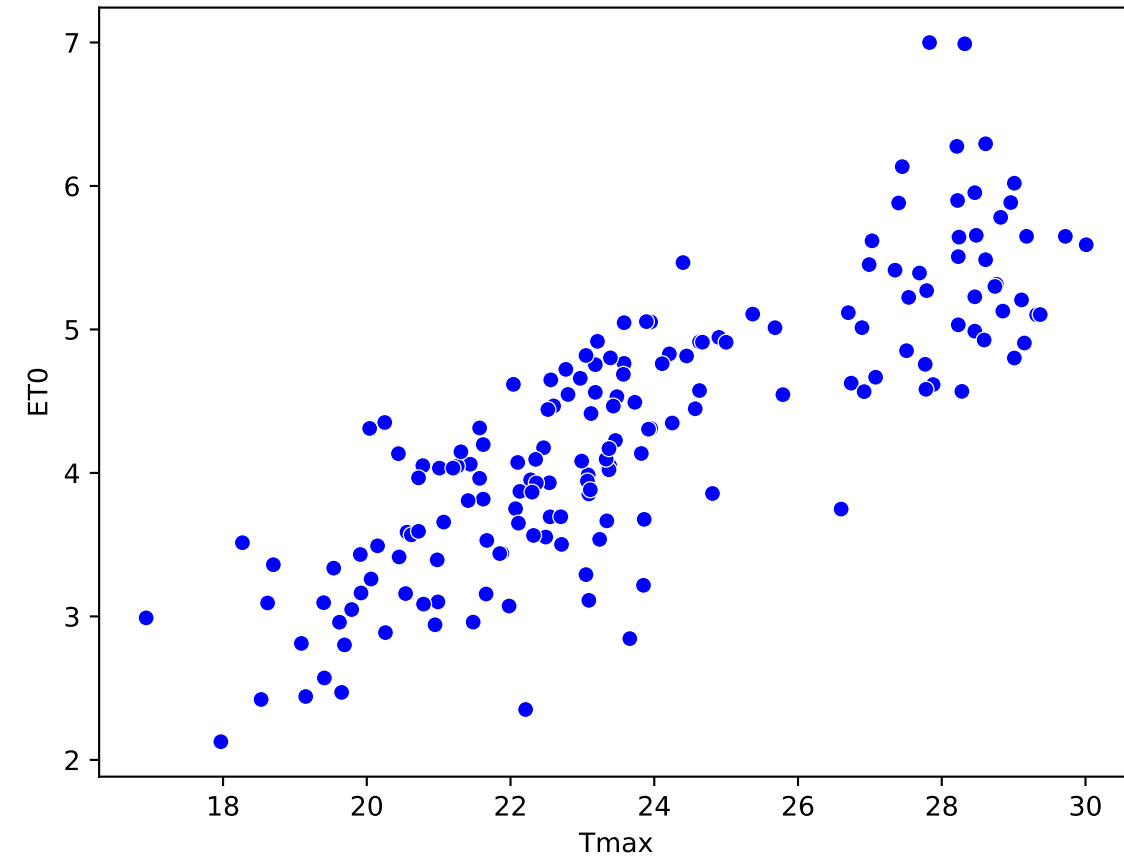
Toluca — 2019

Matriz de Correlación entre Variables Meteorológicas

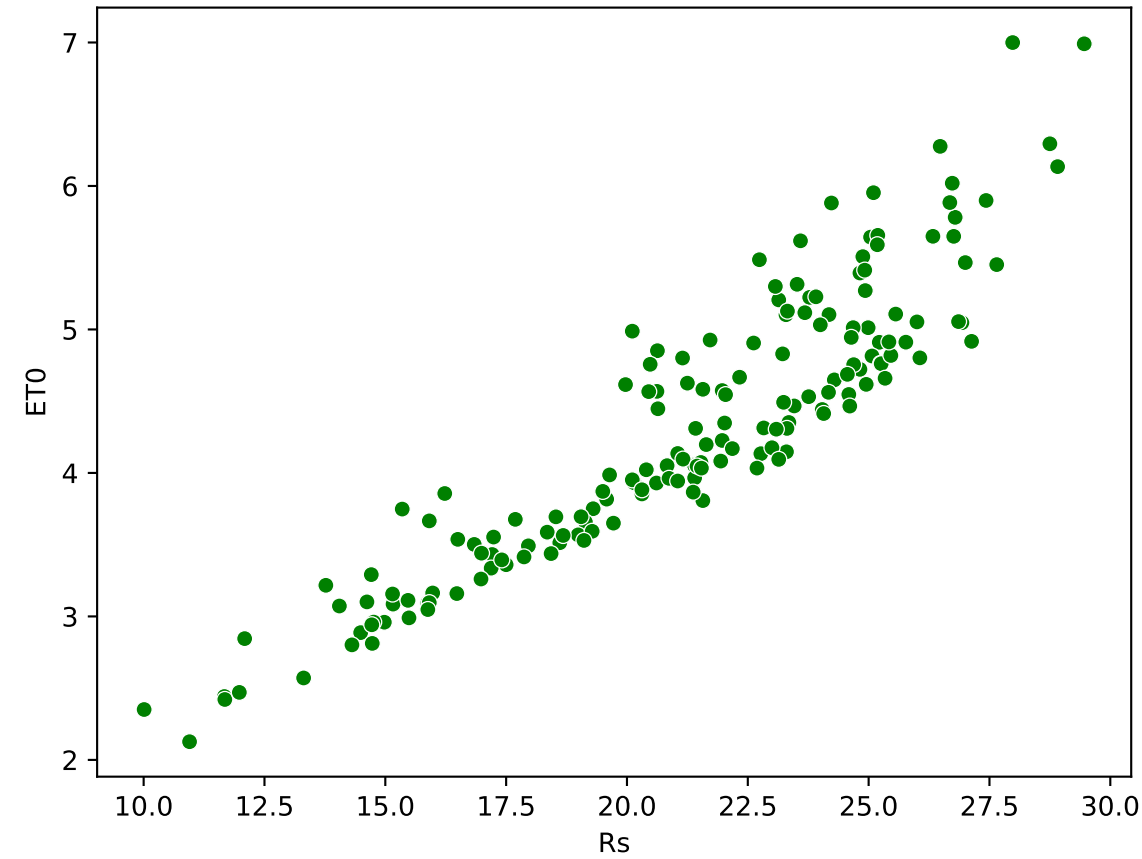


Dispersión — Toluca (2019)

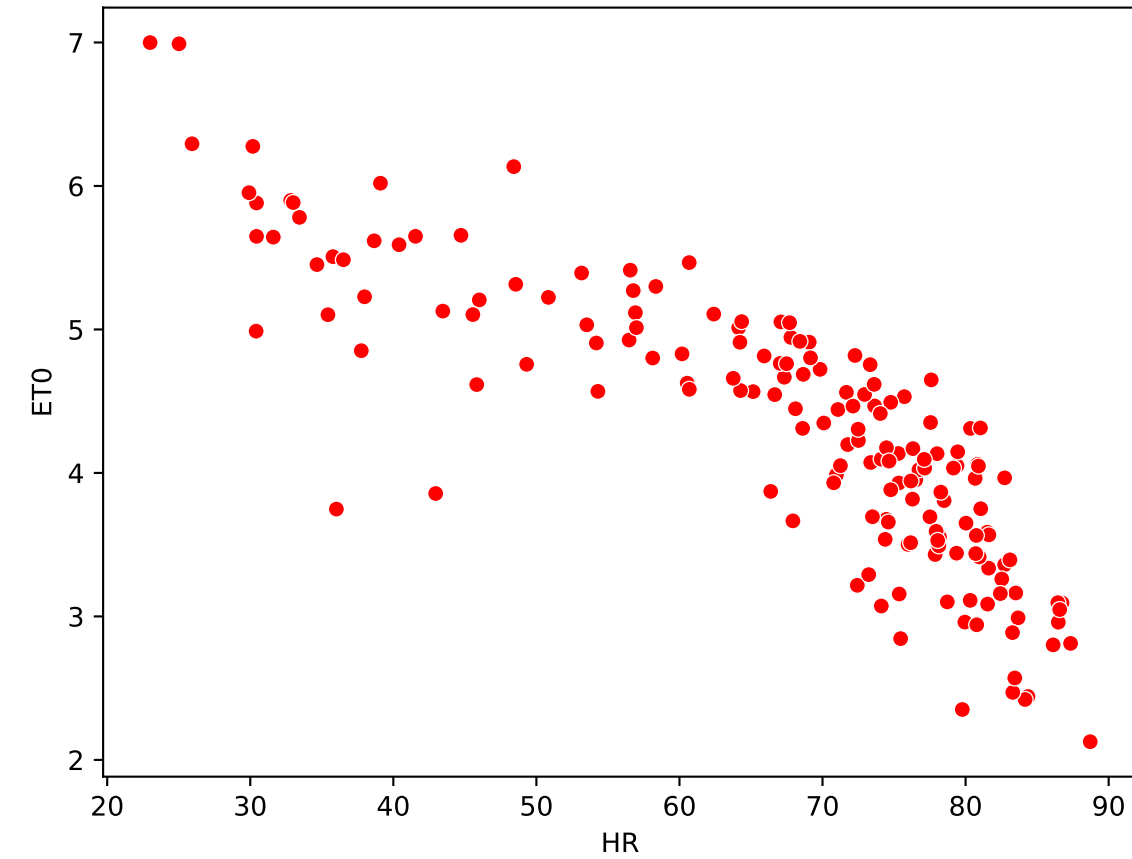
Tmax vs ET0



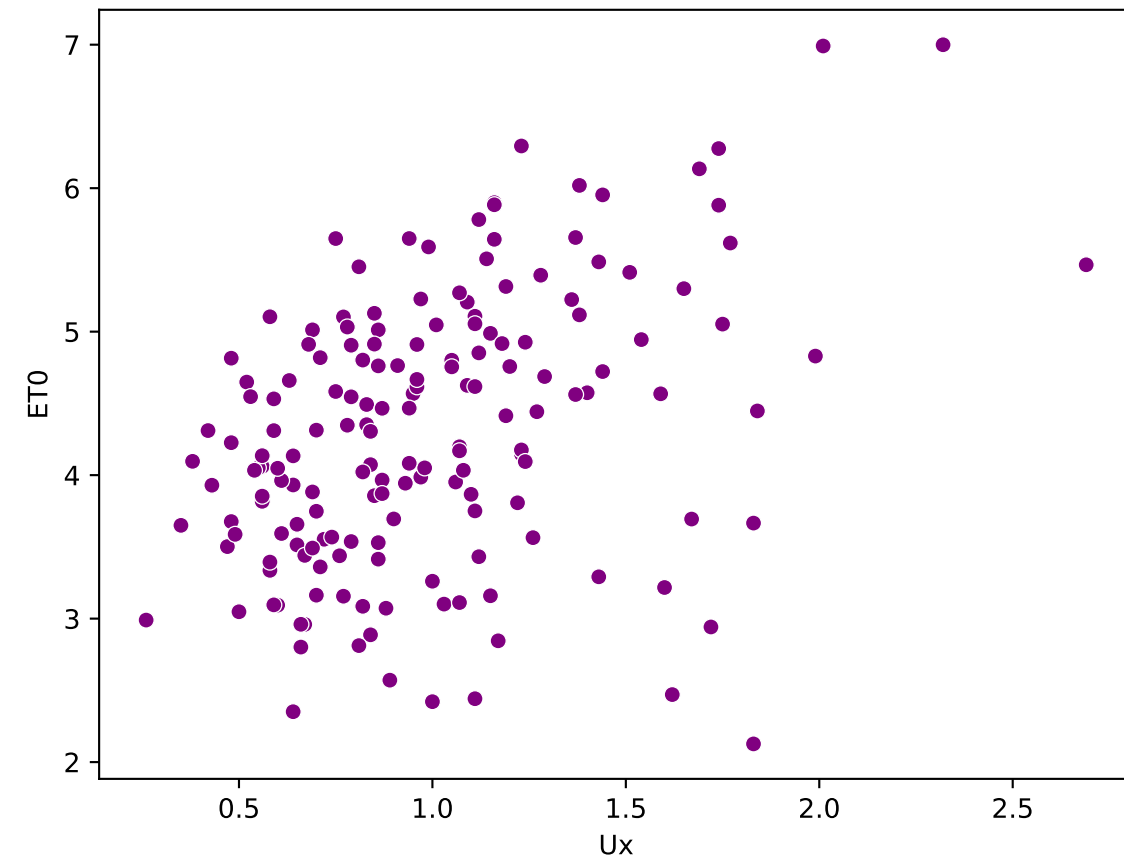
Rs vs ET0



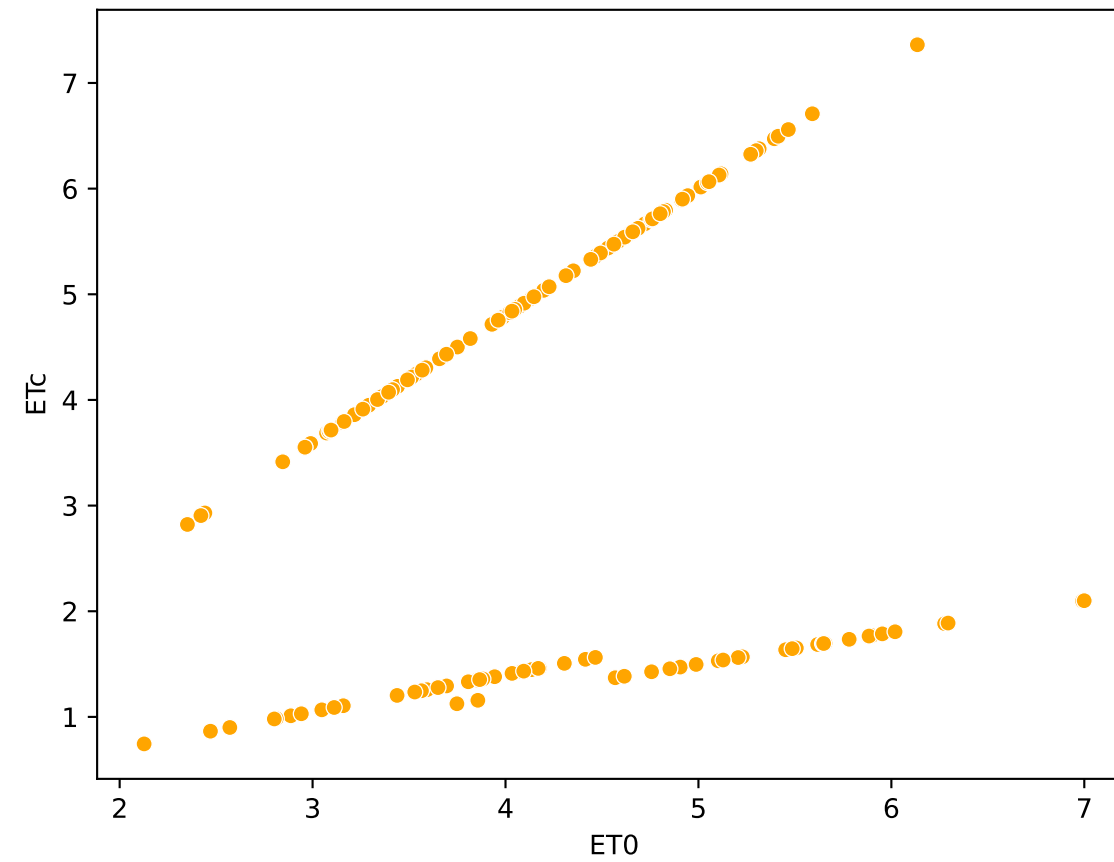
HR vs ET0



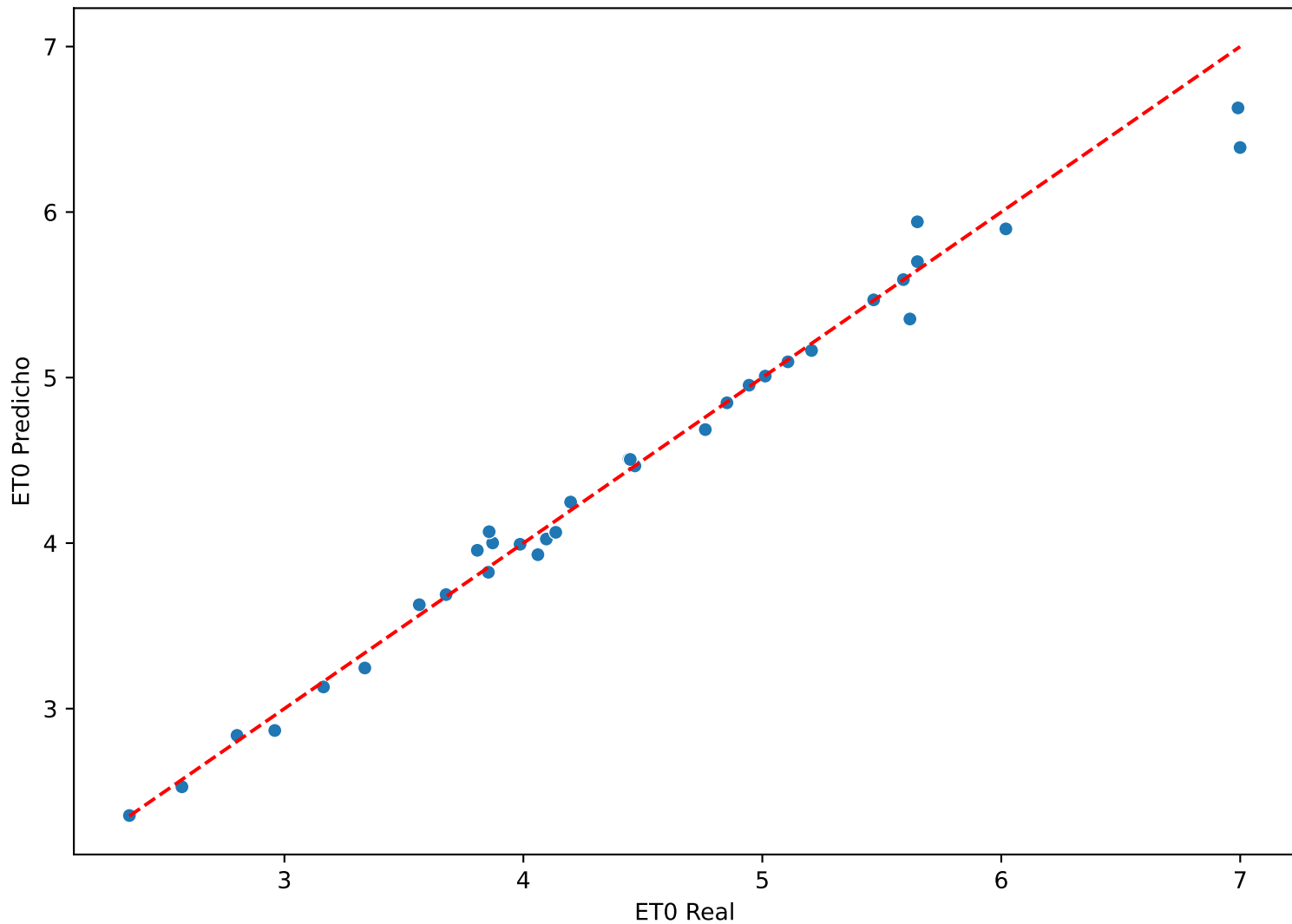
Ux vs ET0



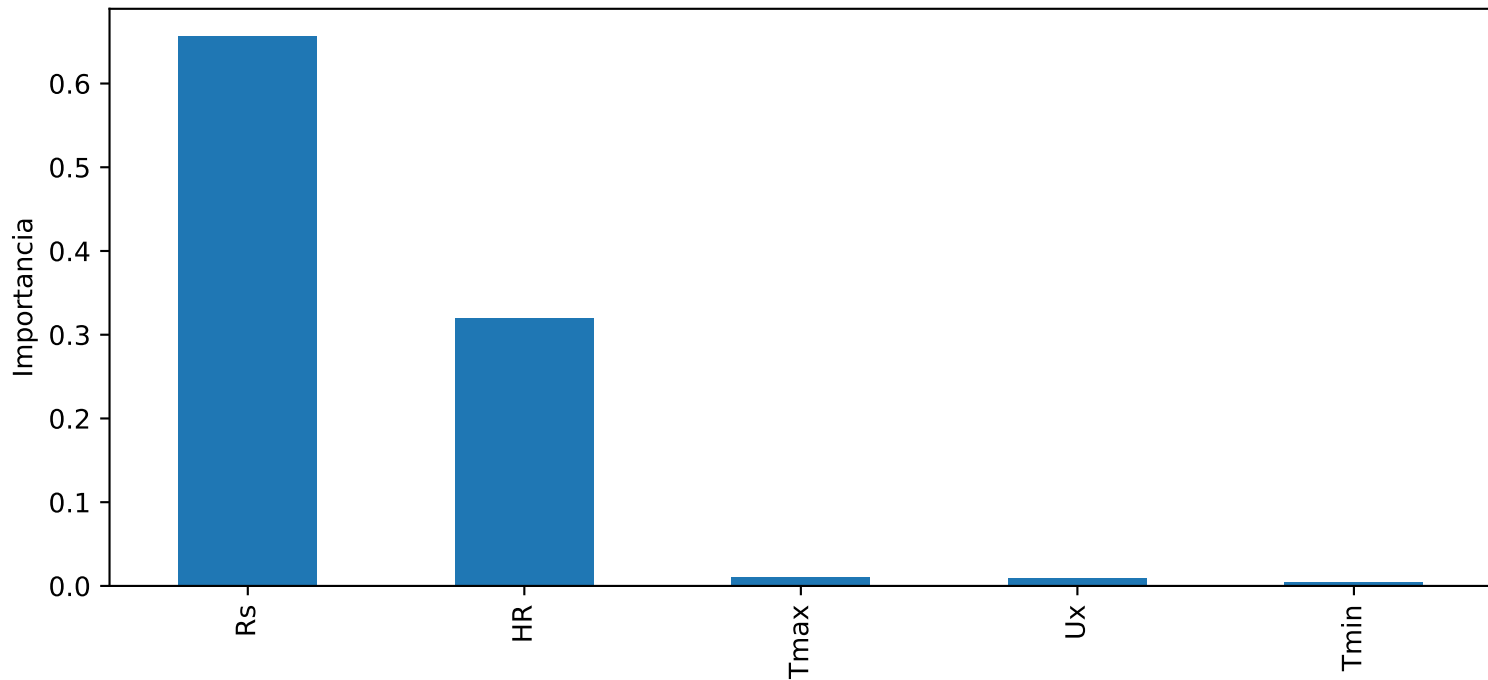
ET0 vs ETc



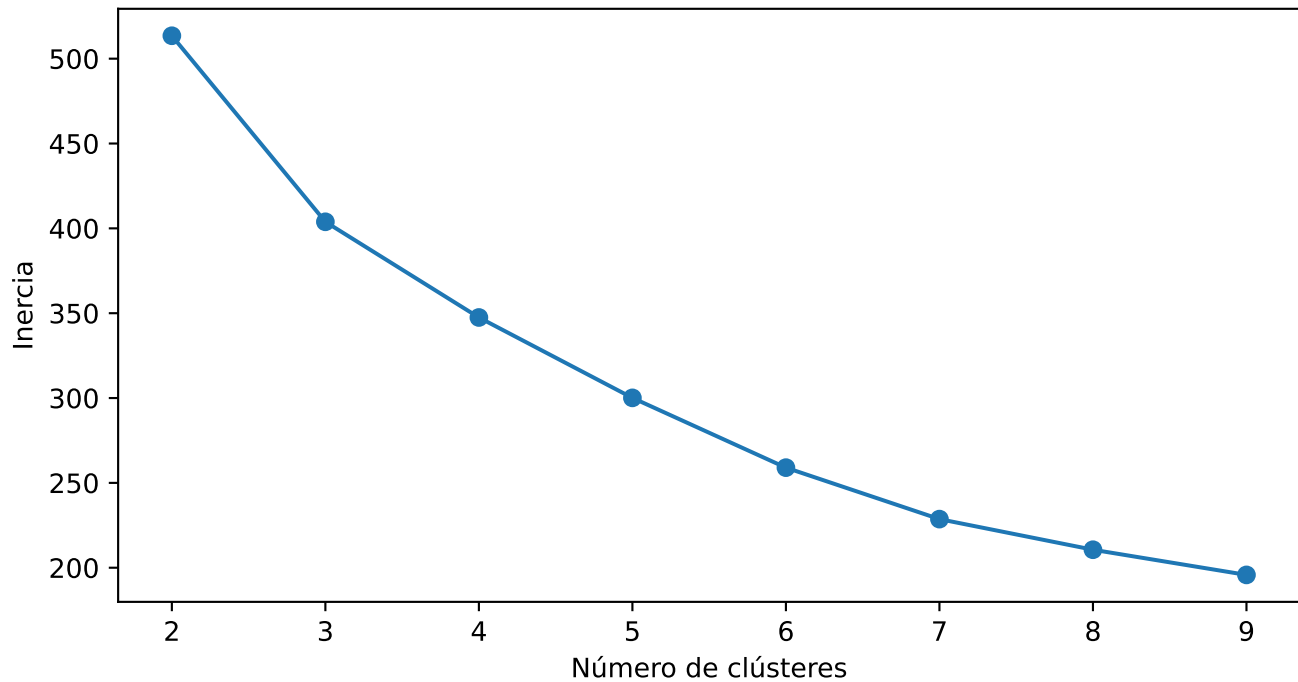
Comparación entre ET0 Real y Predicho — Toluca (2019)



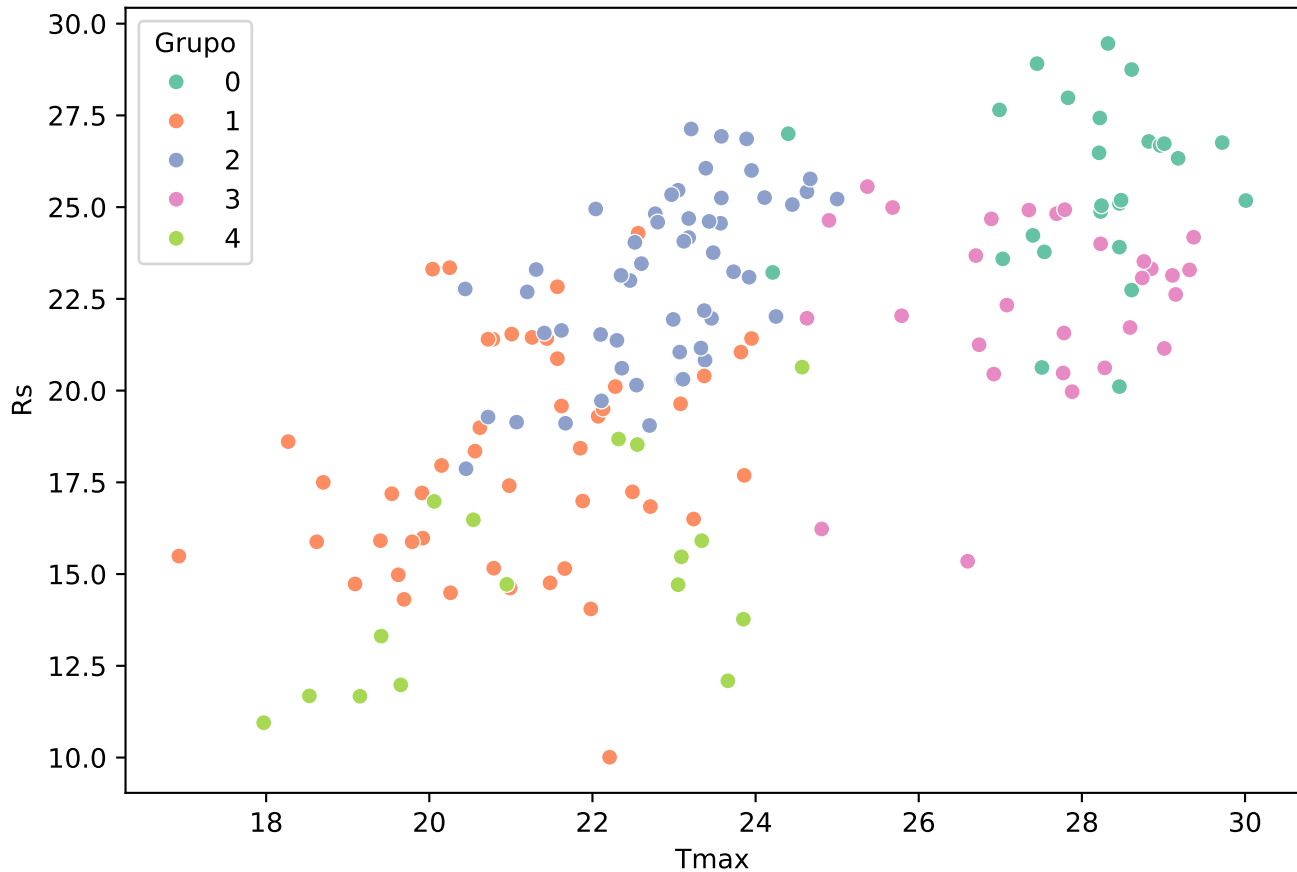
Importancia de variables (RF) — Toluca (2019)



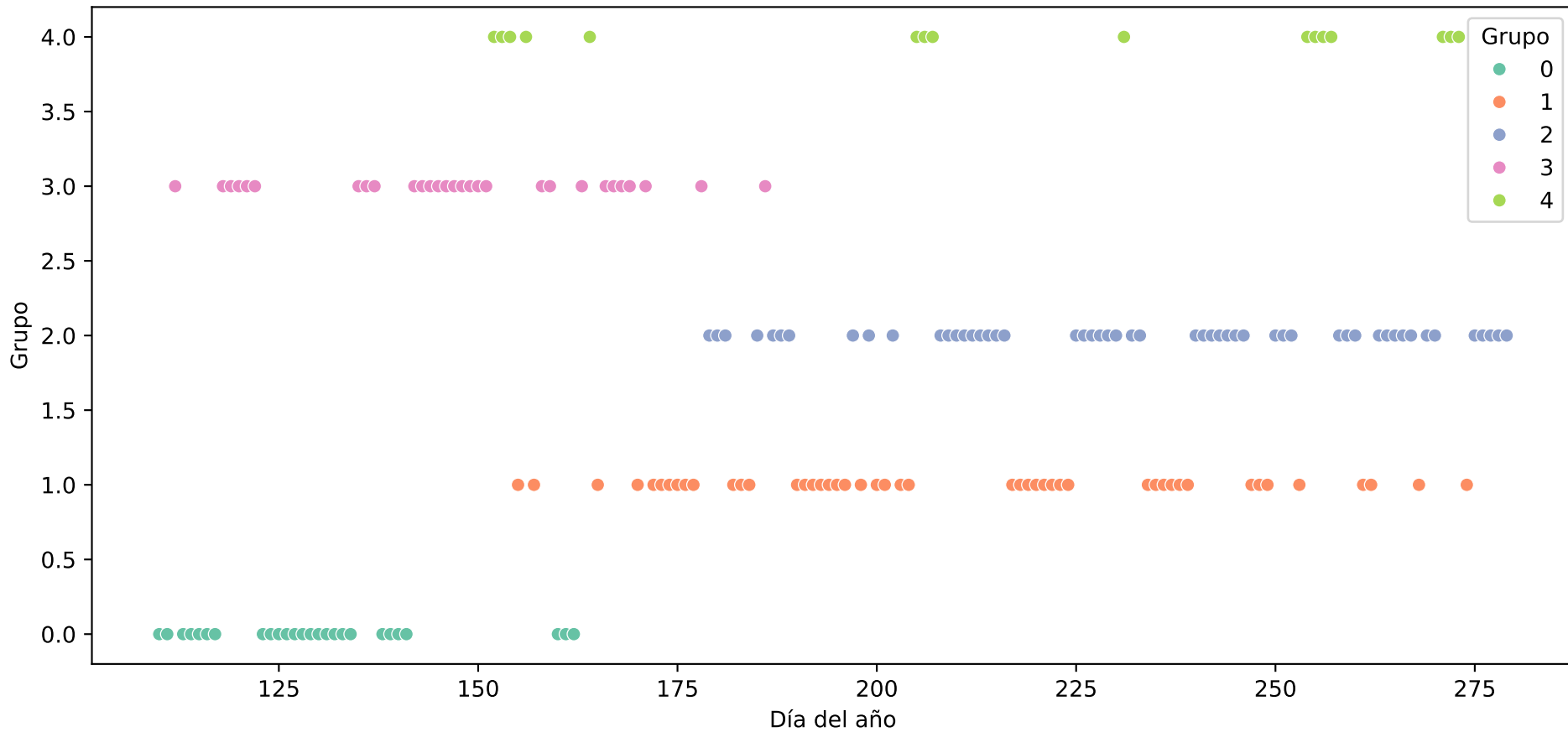
Método del codo



Clasificación de días climáticos — Toluca (2019)

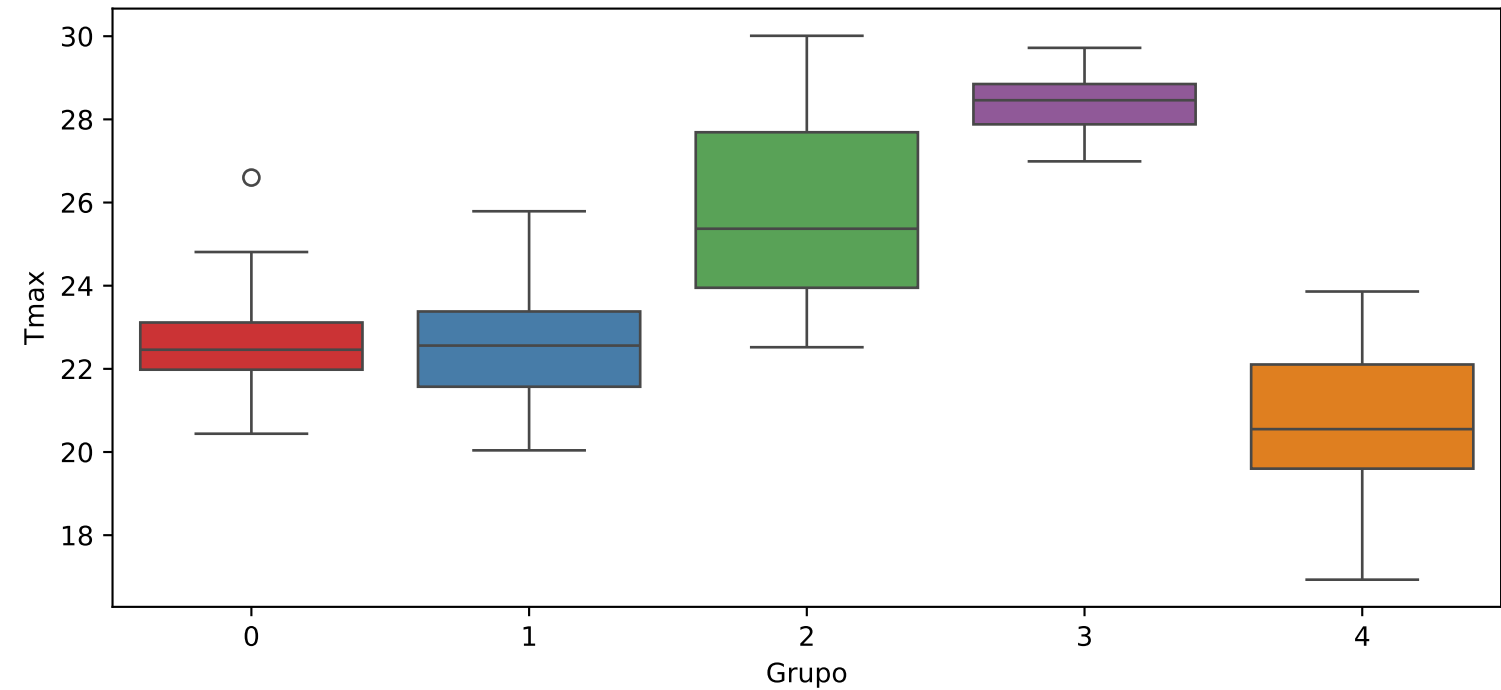


Distribución de días por grupo — Toluca (2019)

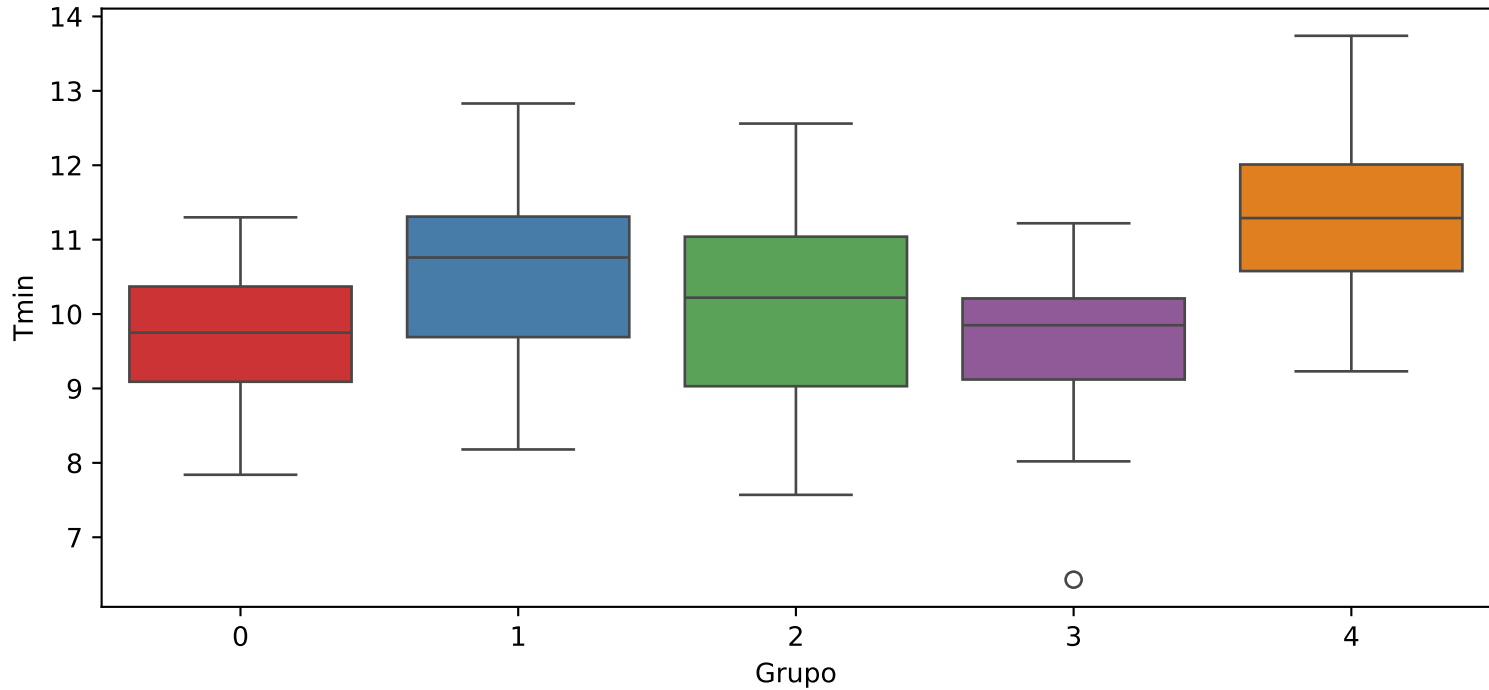


Boxplots por grupo — Toluca (2019)

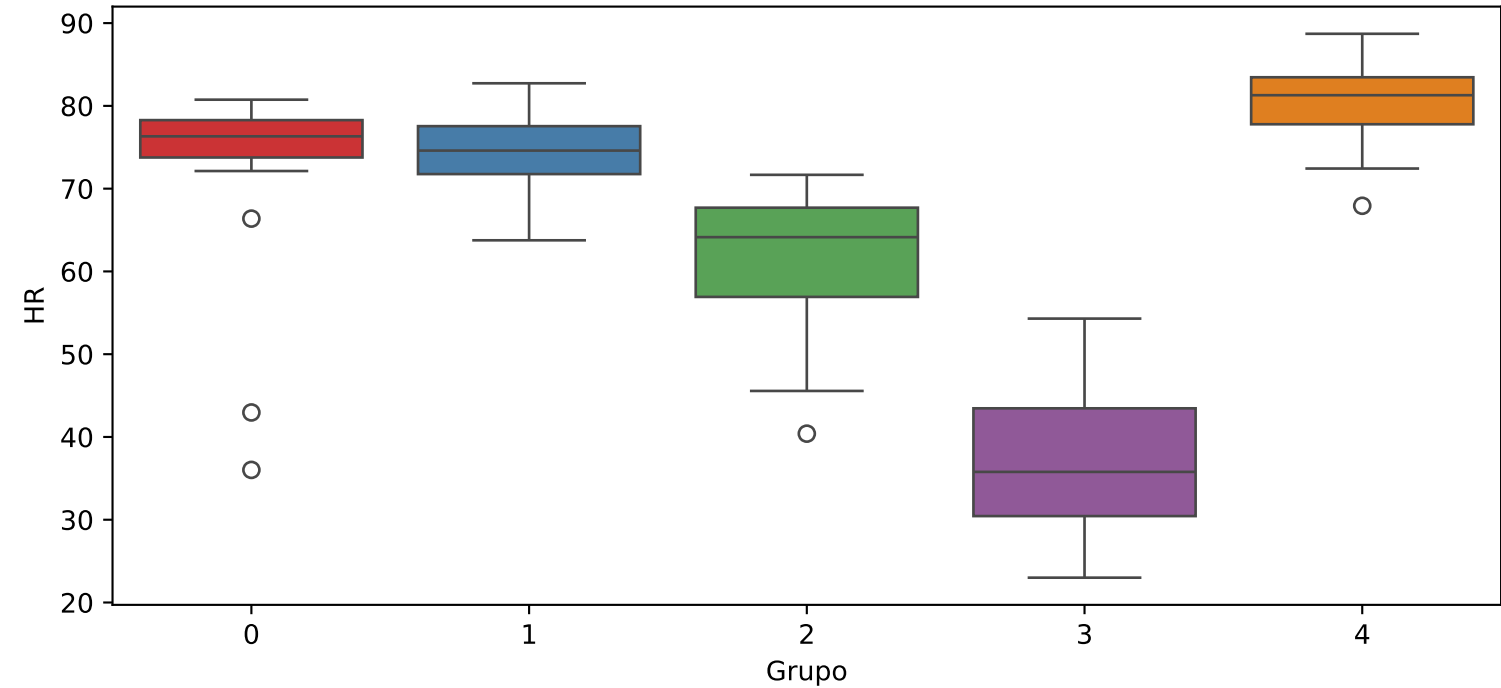
Distribución de Tmax por grupo



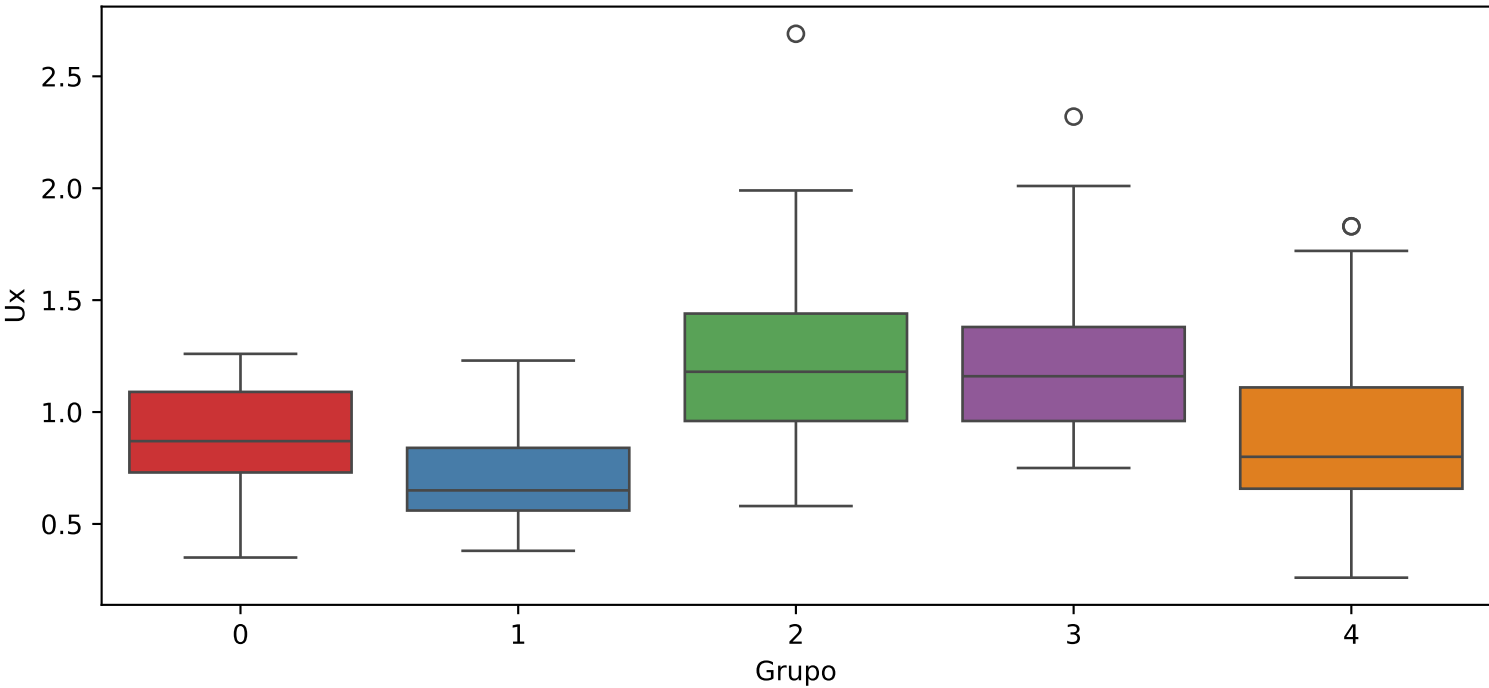
Distribución de Tmin por grupo



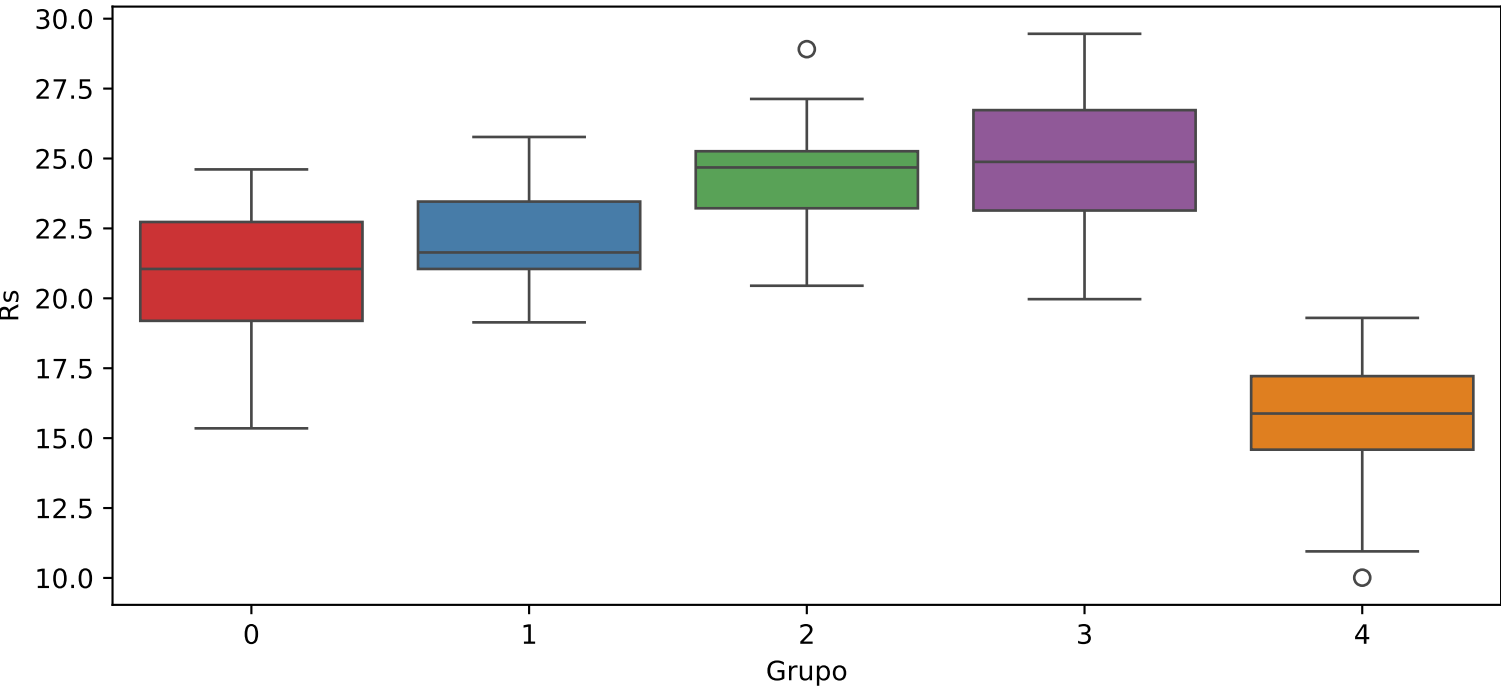
Distribución de HR por grupo



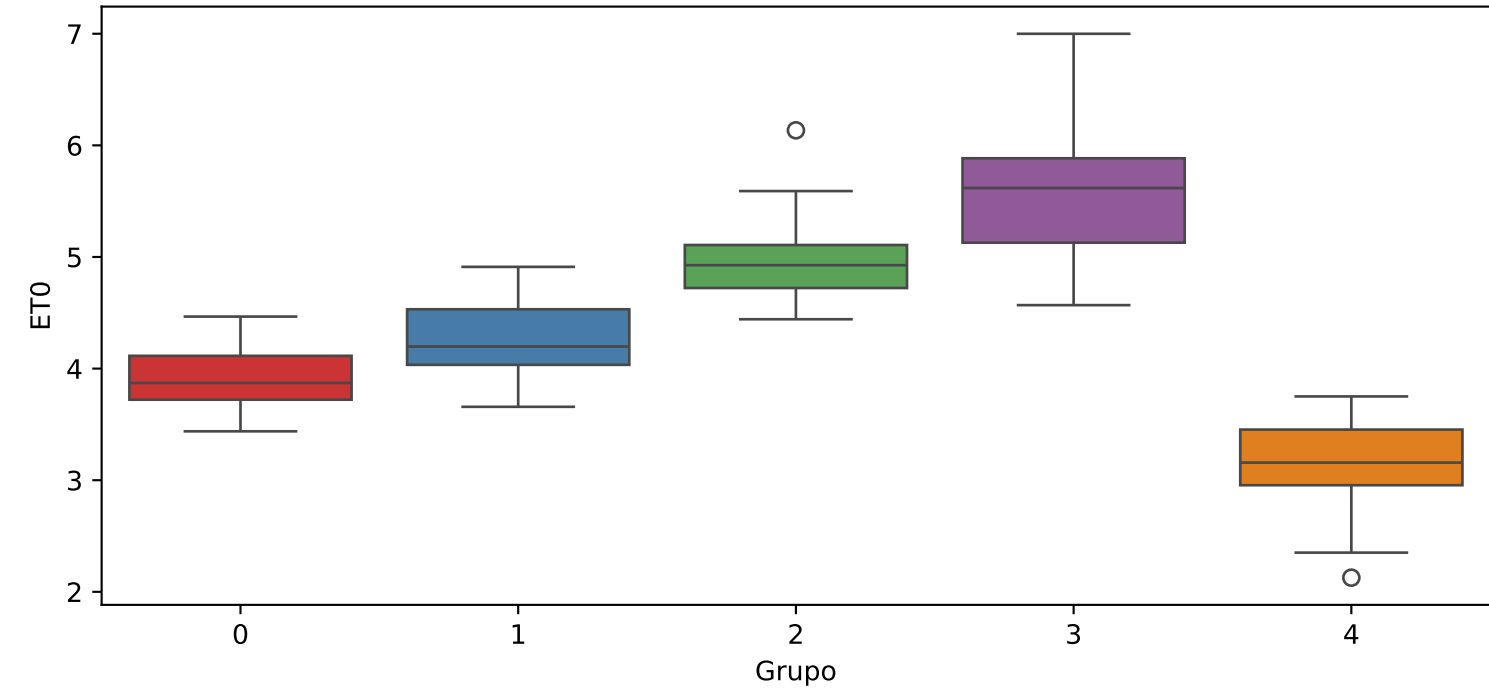
Distribución de Ux por grupo



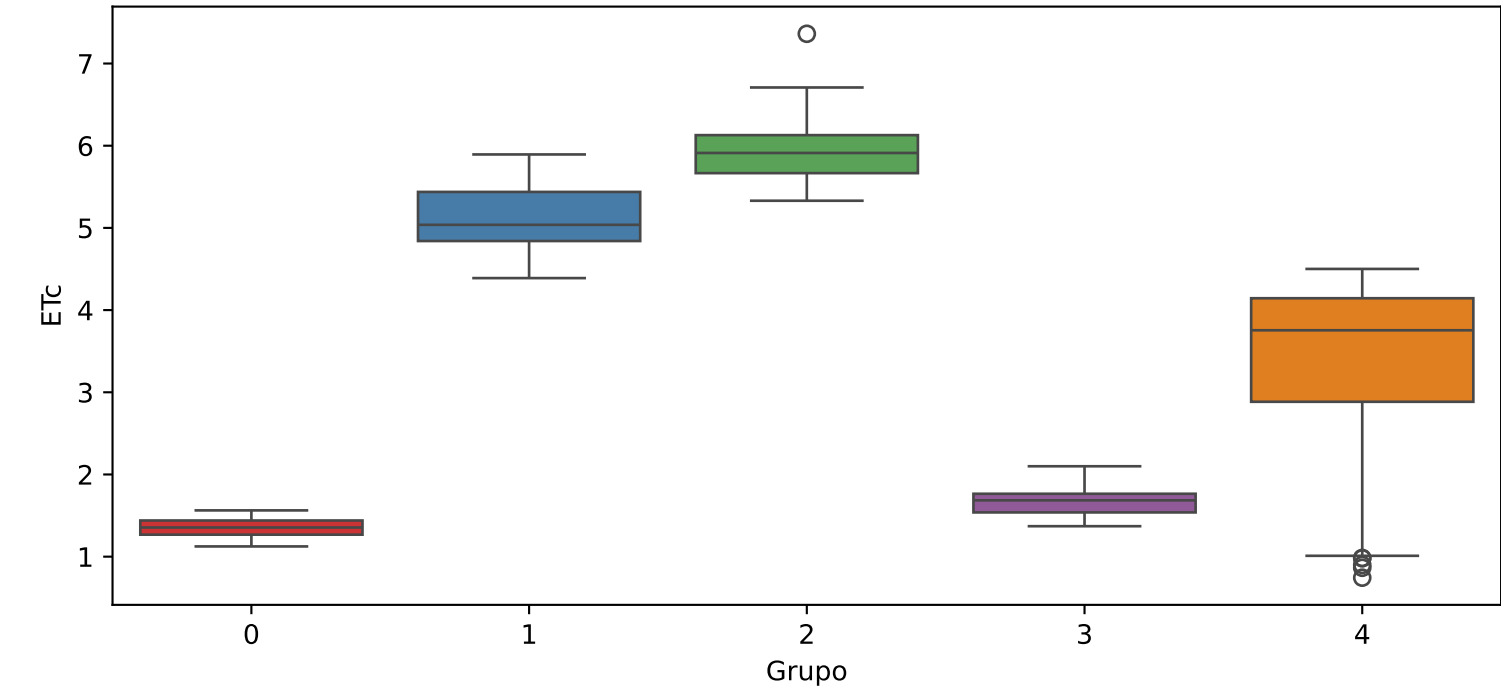
Distribución de Rs por grupo



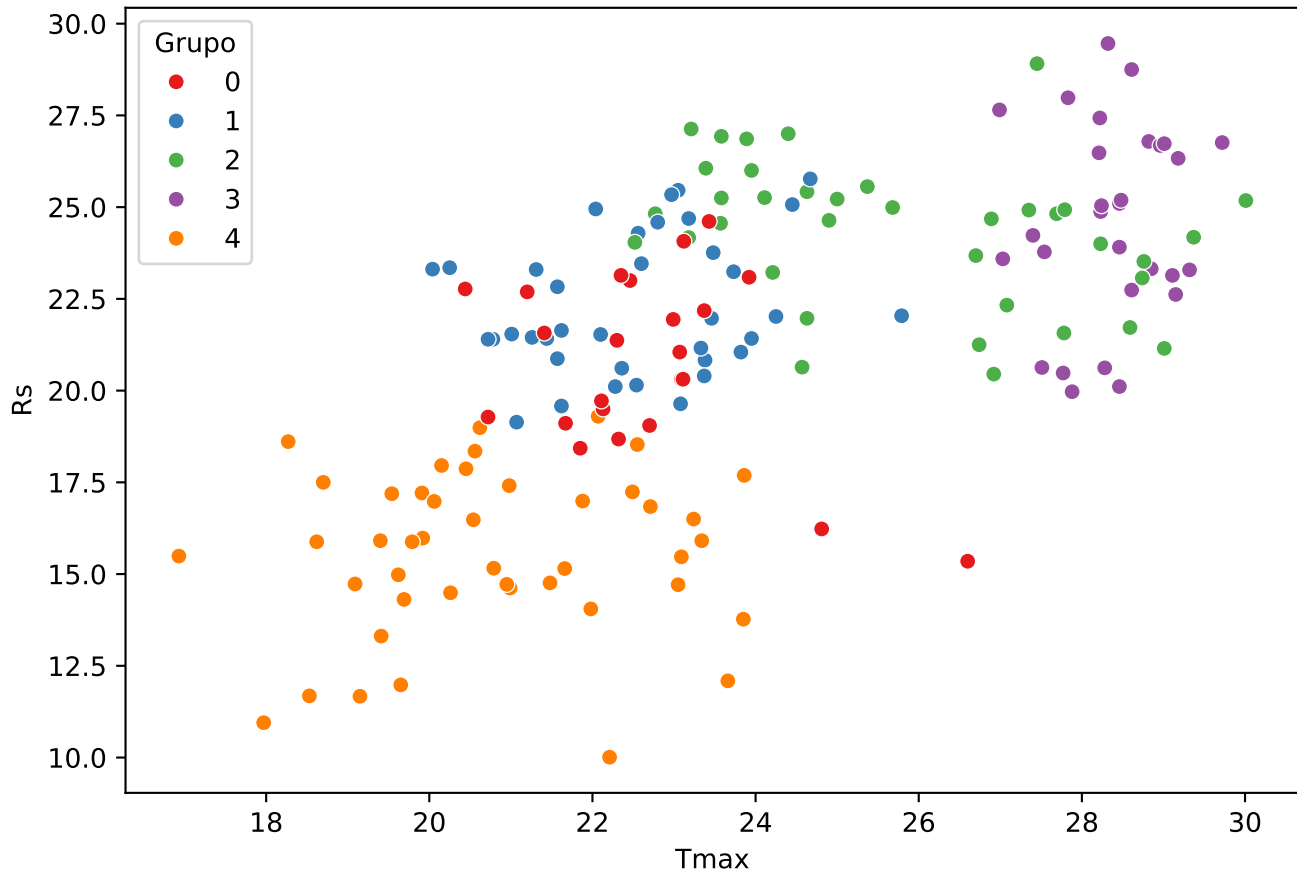
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2019)



Toluca — 2020

Días del ciclo: 170

ETc total [mm]: 634.8

ETverde total [mm]: 271.7

ETazul total [mm]: 363.1

Tmax / Tmin [°C]: 29.0 / 0.1

Toluca — 2020 · Resultados y métricas

[Toluca 2020] Regresión Lineal ET0 — R²: 0.9938 MSE: 0.0059

[Toluca 2020] Random Forest ET0 — R²: 0.9658 MSE: 0.0327

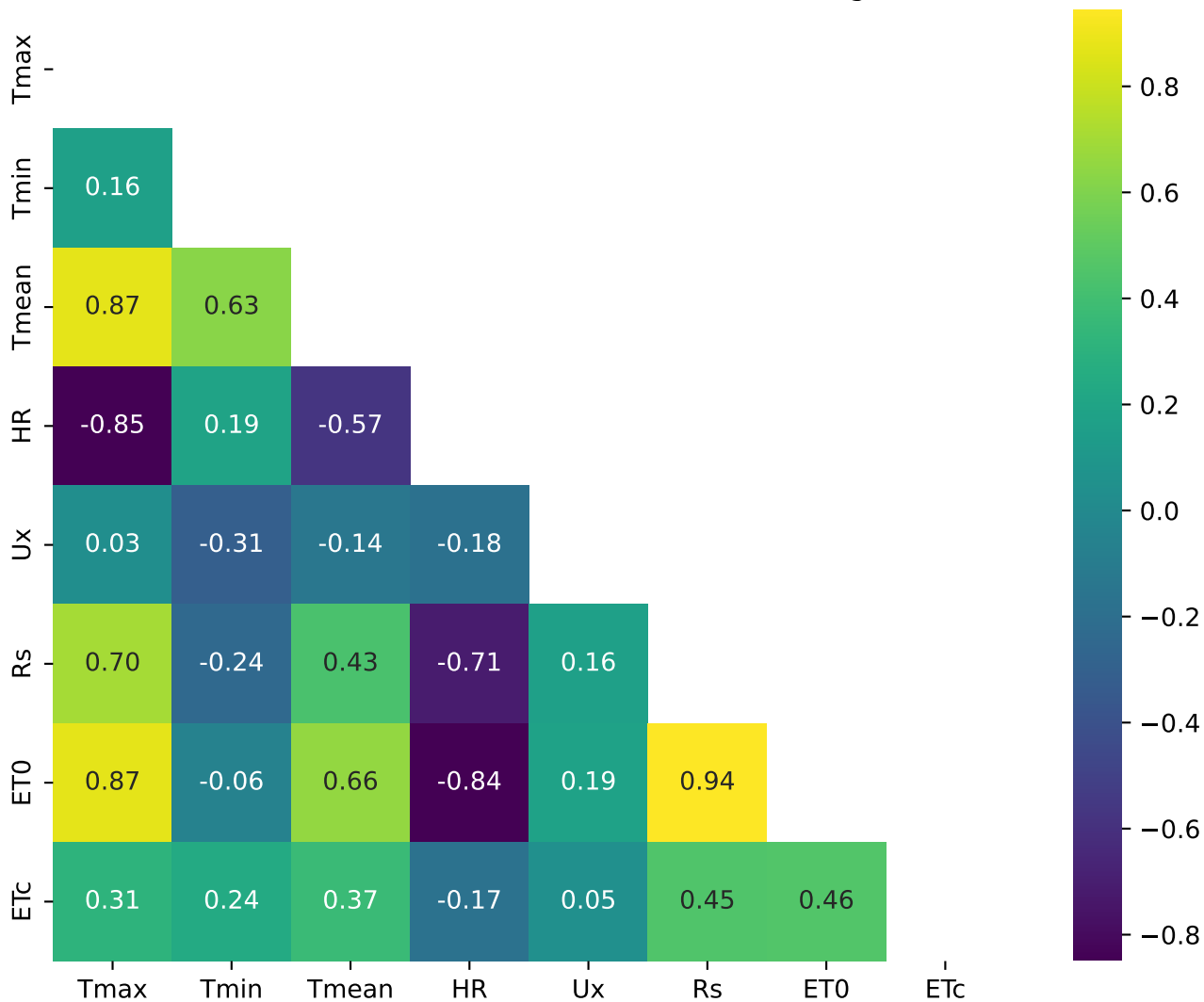
Importancias: {'Tmax': 0.2638948129972035, 'Tmin': 0.006227951270951618, 'HR': 0.012985761608389558, 'Ux': 0.0047005361574275015, 'Rs': 0.7121909379660278}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	26.247200	9.675600	53.786000	1.515200	25.932800	5.400641	6.480769
1	20.186897	10.707586	81.037586	0.987241	16.111379	3.151503	2.737194
2	26.390968	9.801290	53.020000	1.180968	23.403871	4.963269	1.496012
3	18.273750	3.155000	70.290000	1.556250	22.463750	3.631887	1.271160
4	23.667917	10.714583	71.241458	0.952917	22.831458	4.469621	5.363546

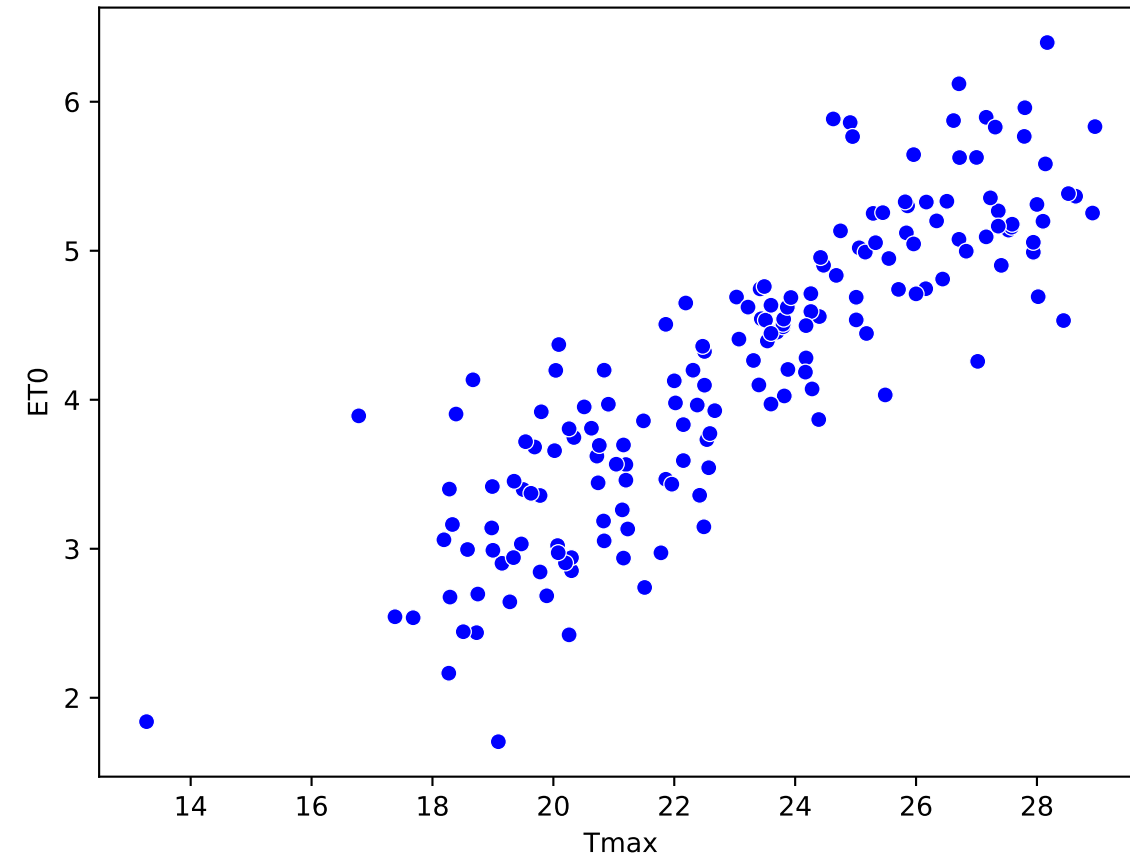
Toluca — 2020

Matriz de Correlación entre Variables Meteorológicas

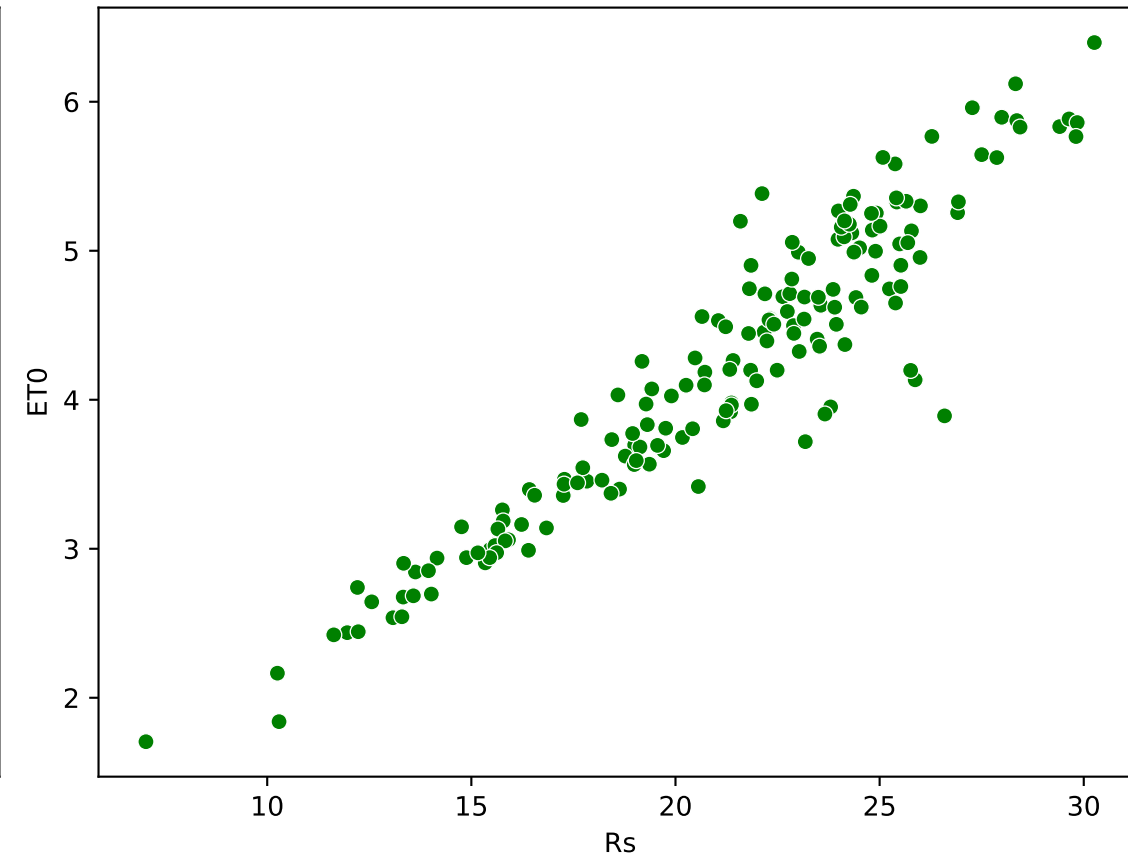


Dispersión — Toluca (2020)

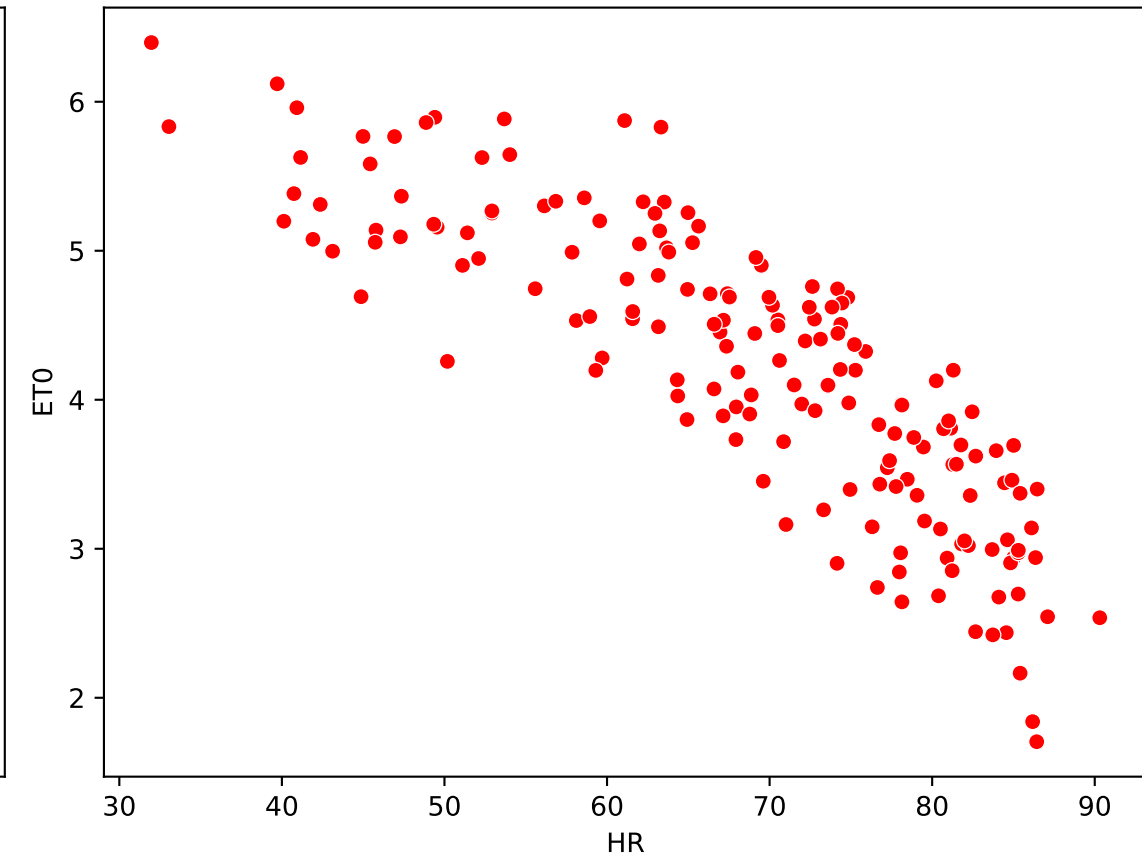
Tmax vs ET0



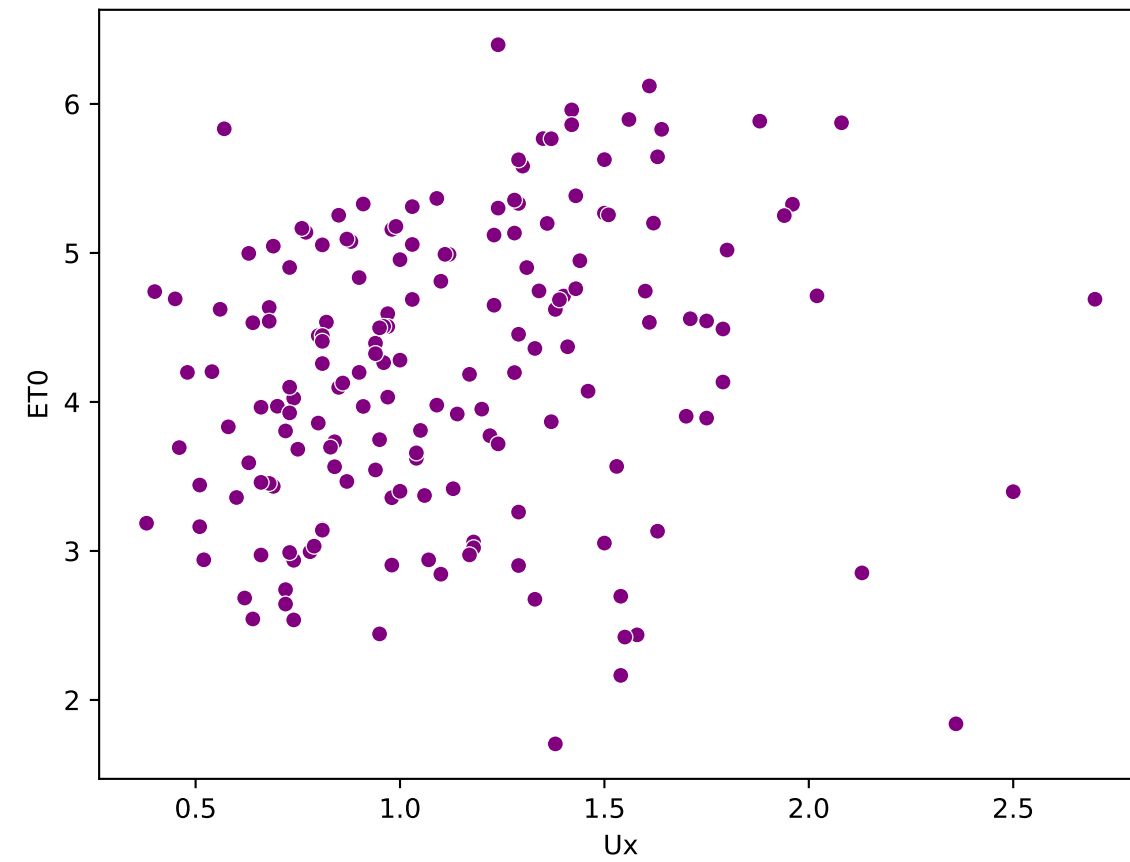
Rs vs ET0



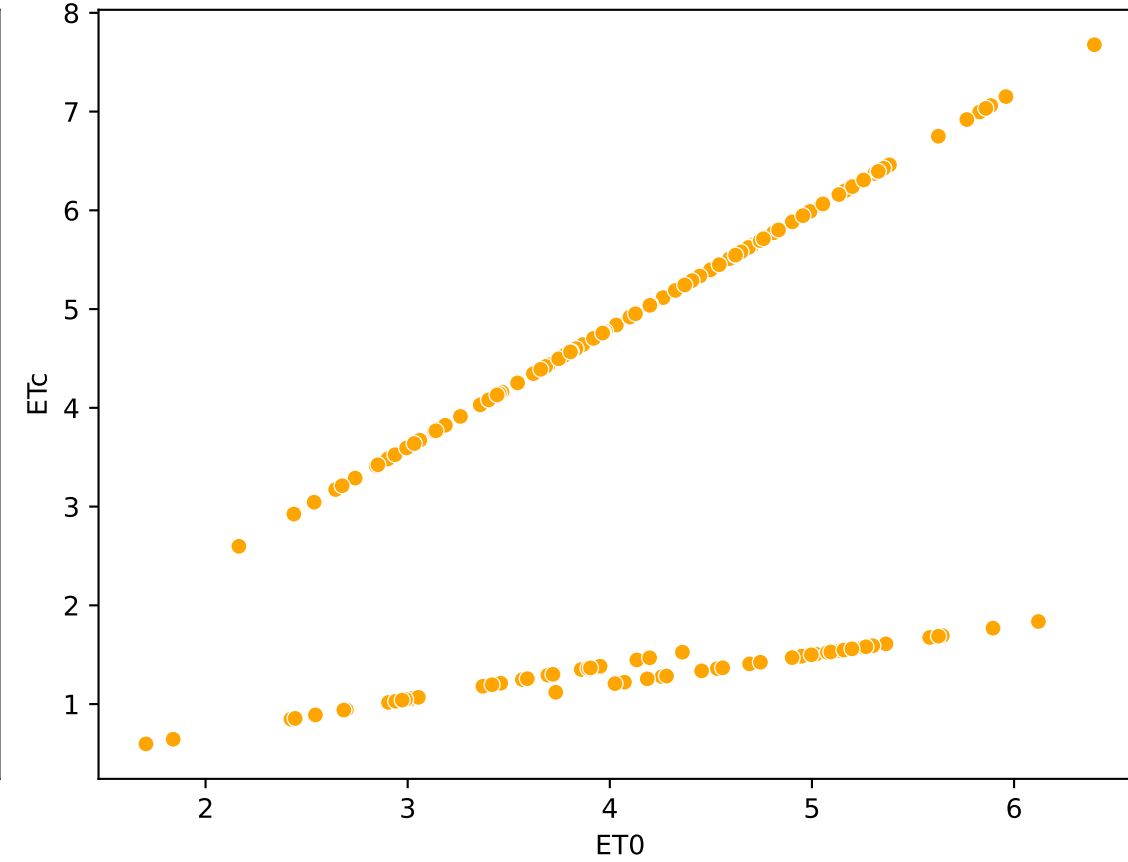
HR vs ET0



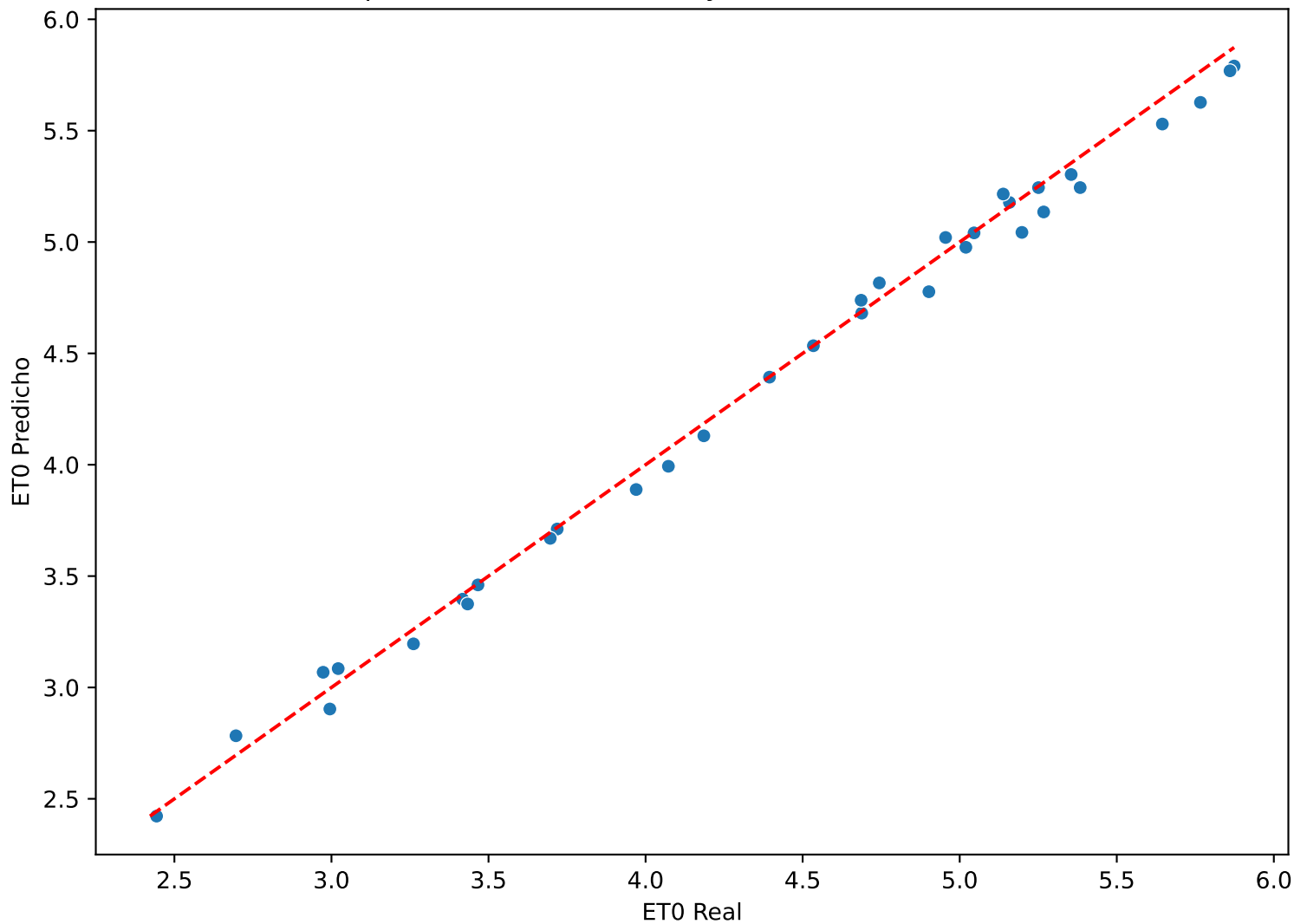
Ux vs ET0



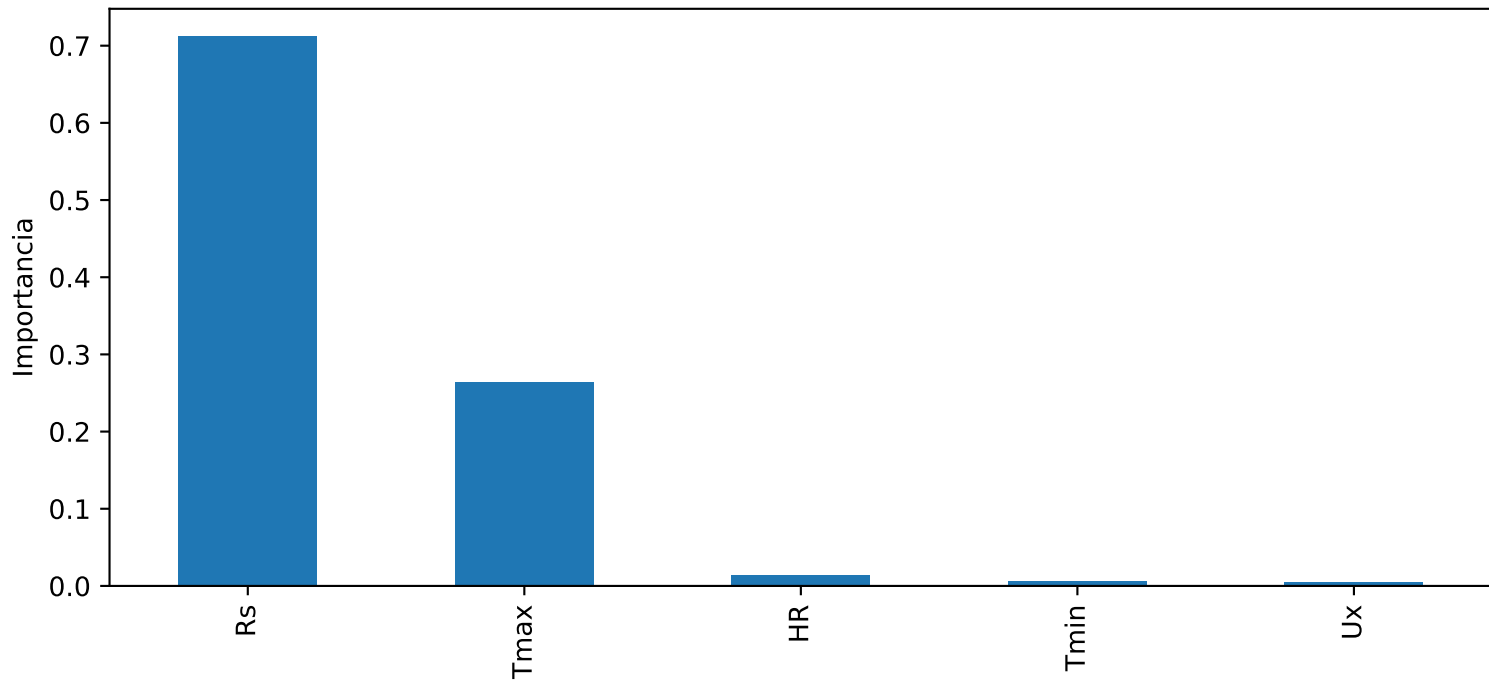
ET0 vs ETc



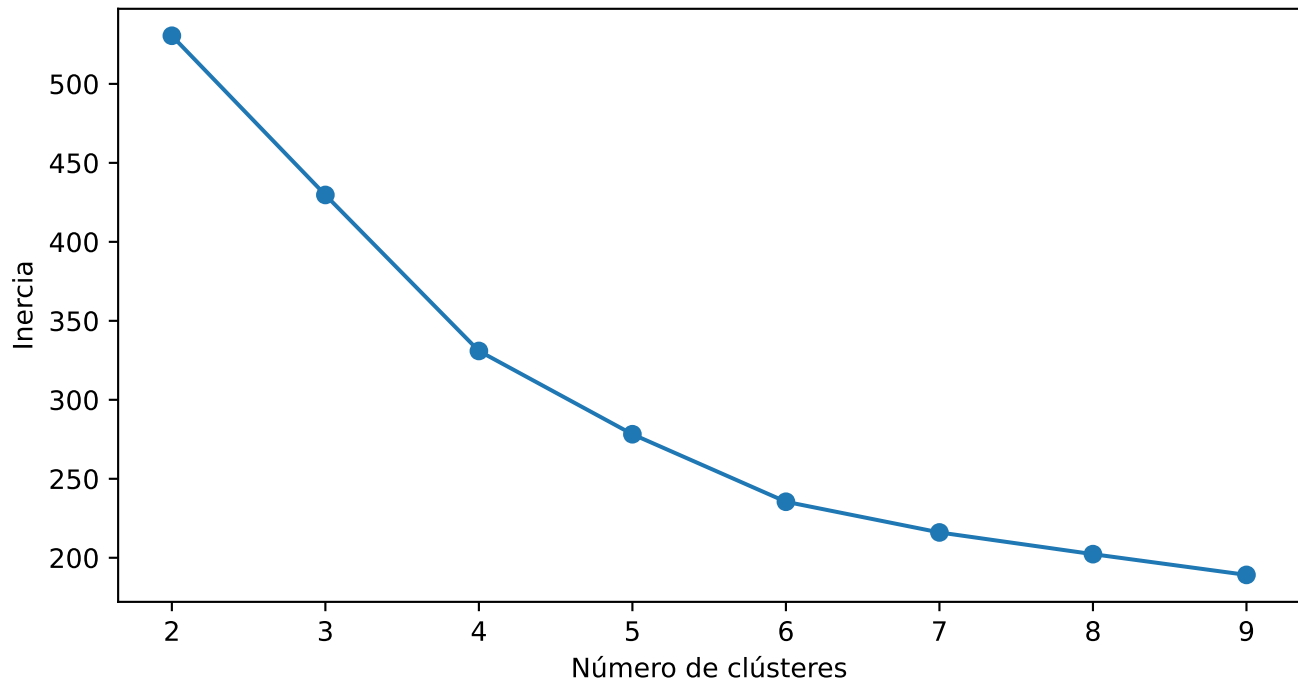
Comparación entre ET0 Real y Predicho — Toluca (2020)



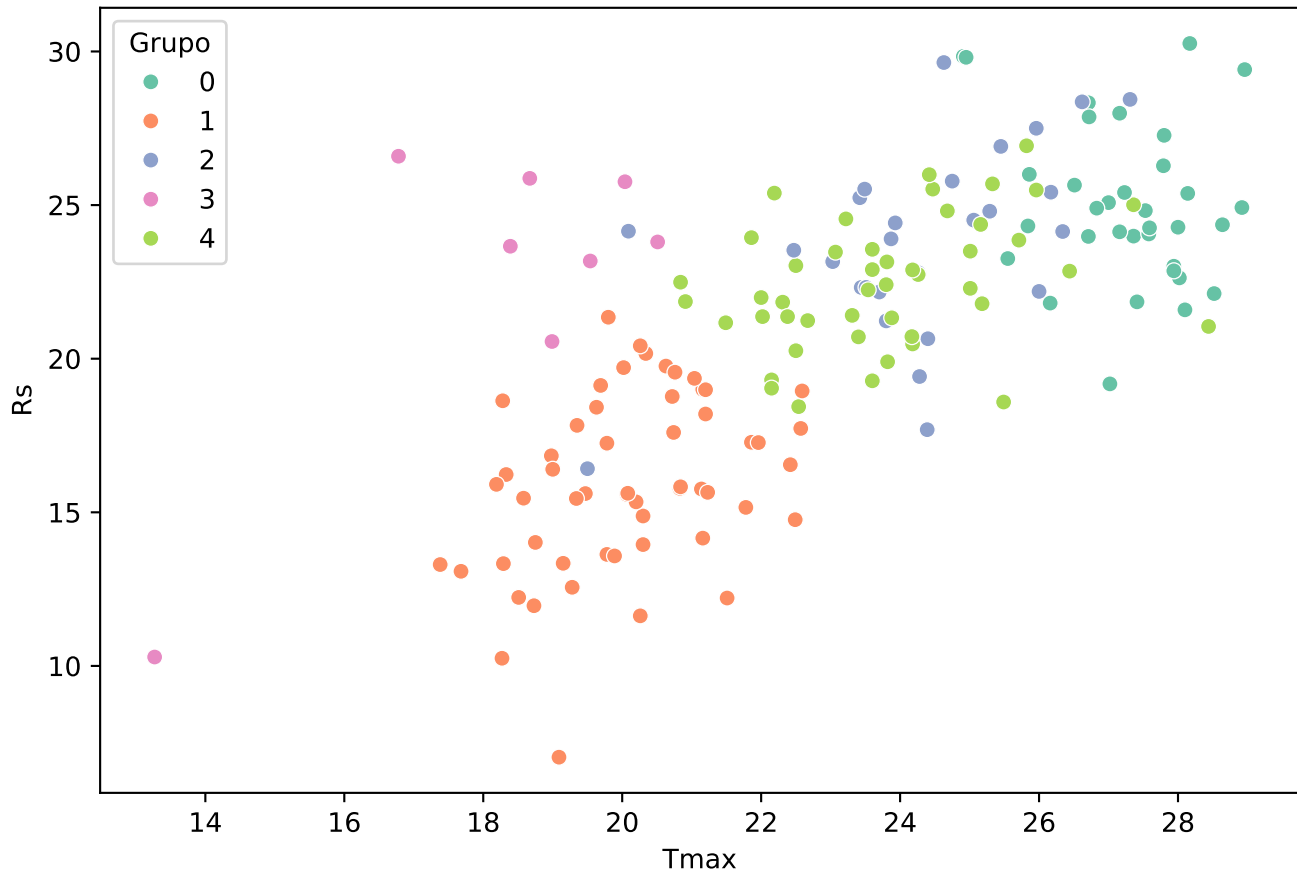
Importancia de variables (RF) — Toluca (2020)



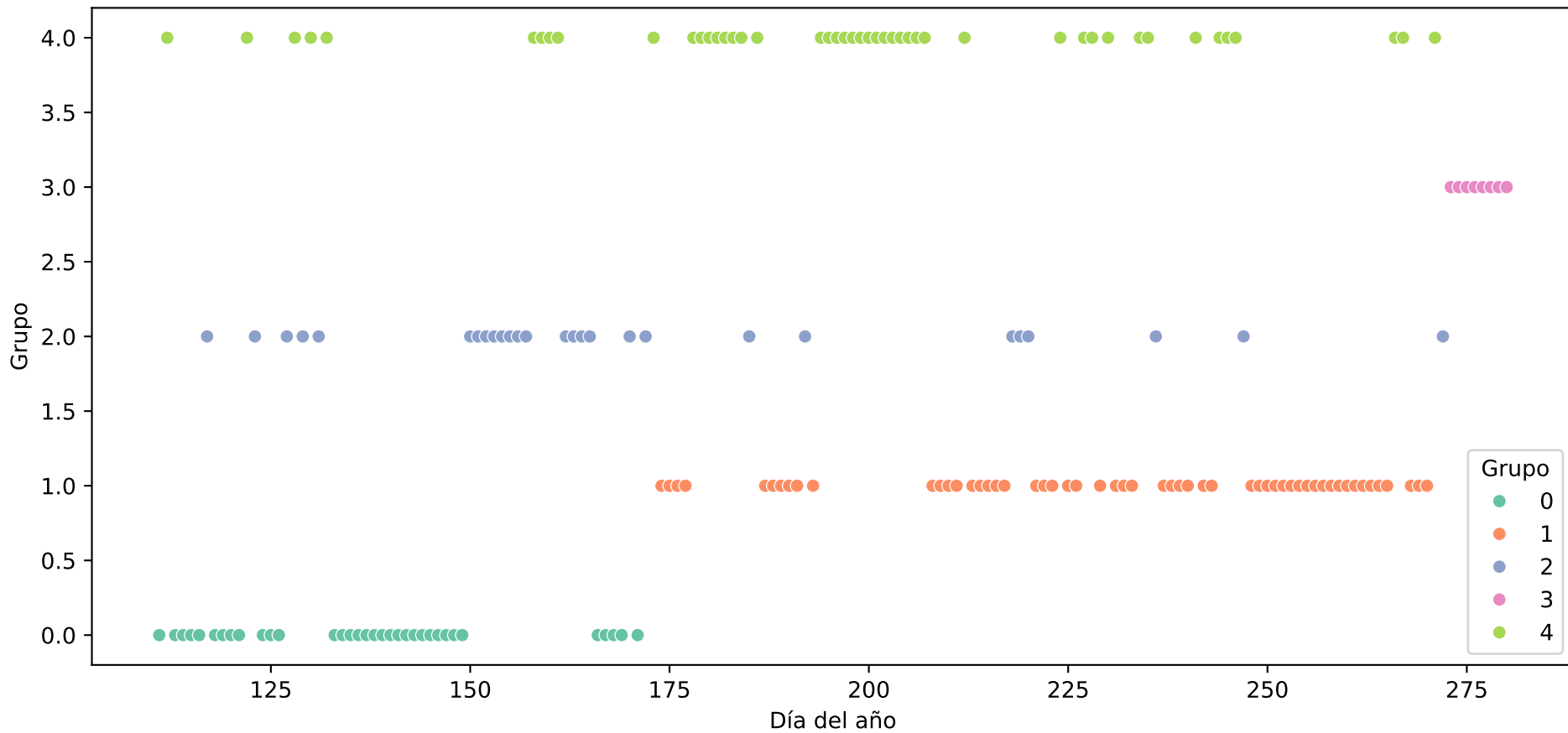
Método del codo



Clasificación de días climáticos — Toluca (2020)

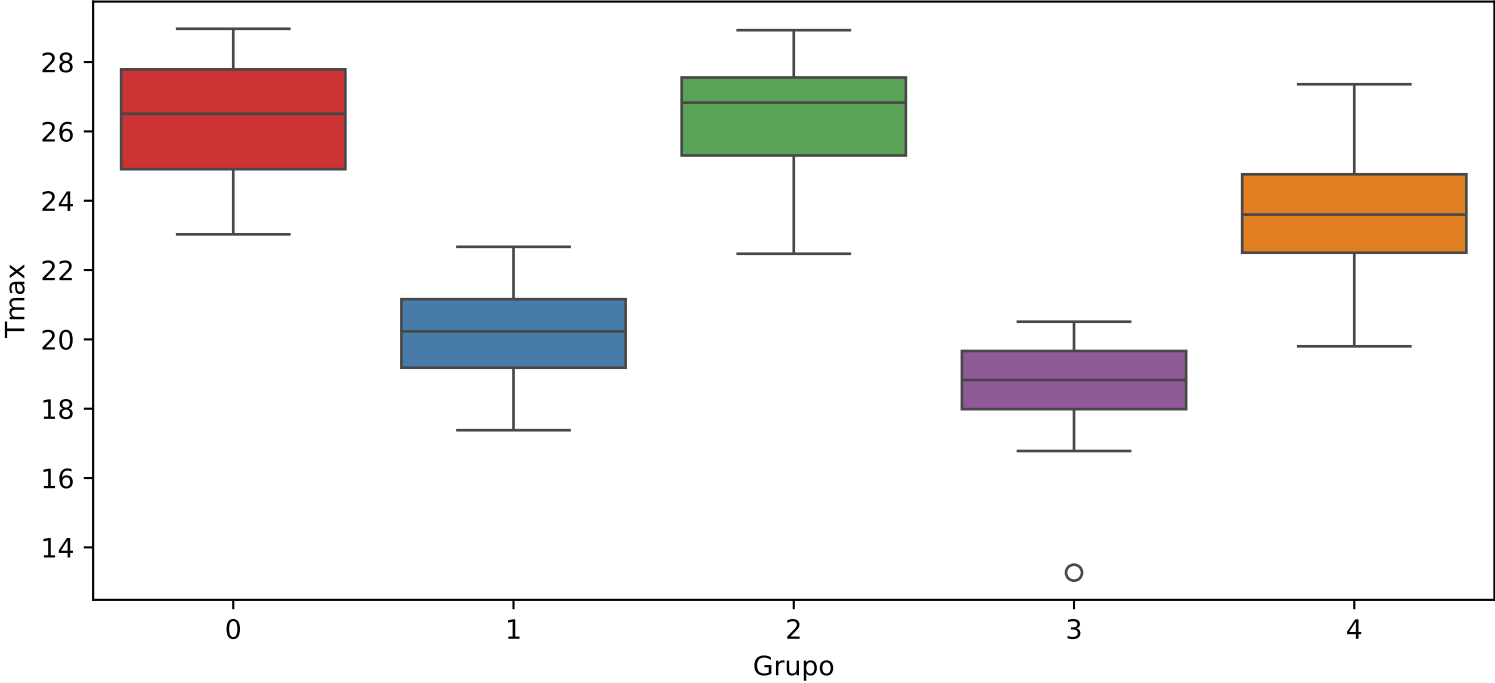


Distribución de días por grupo — Toluca (2020)

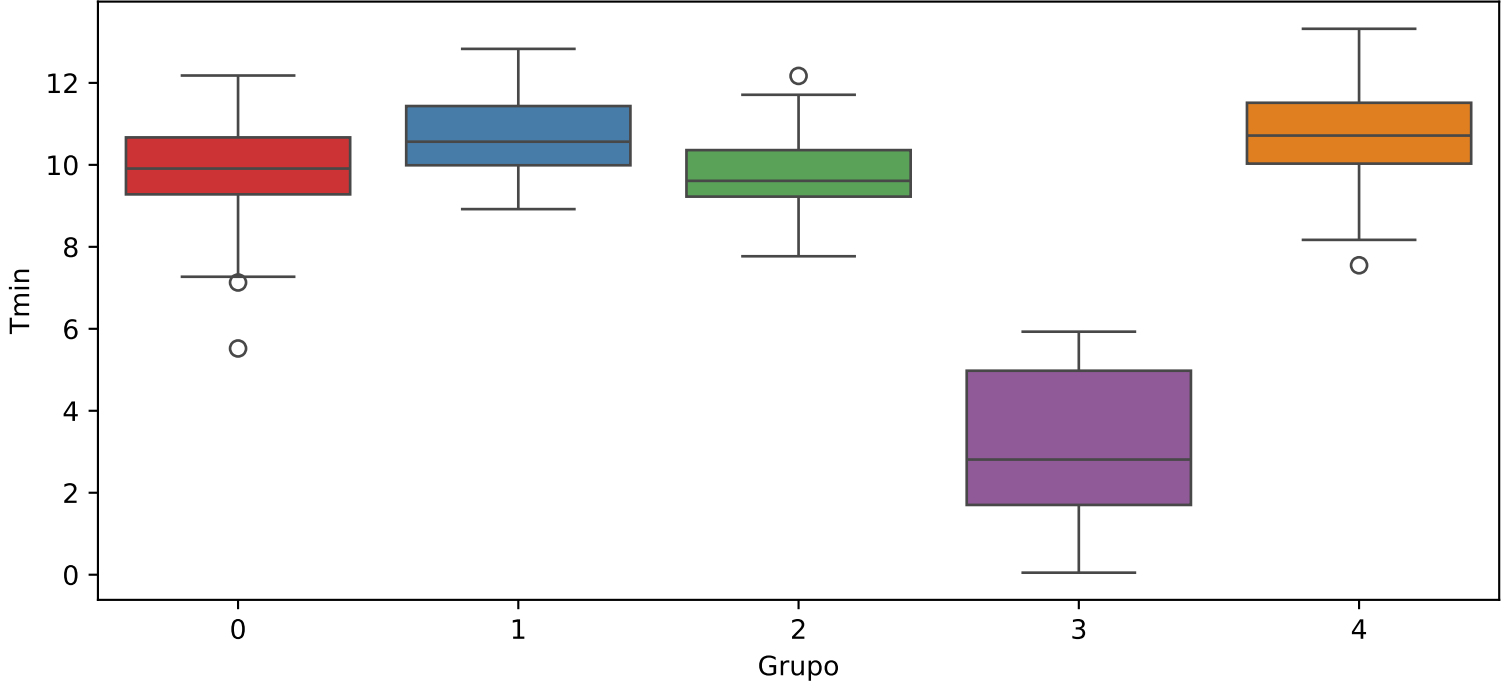


Boxplots por grupo — Toluca (2020)

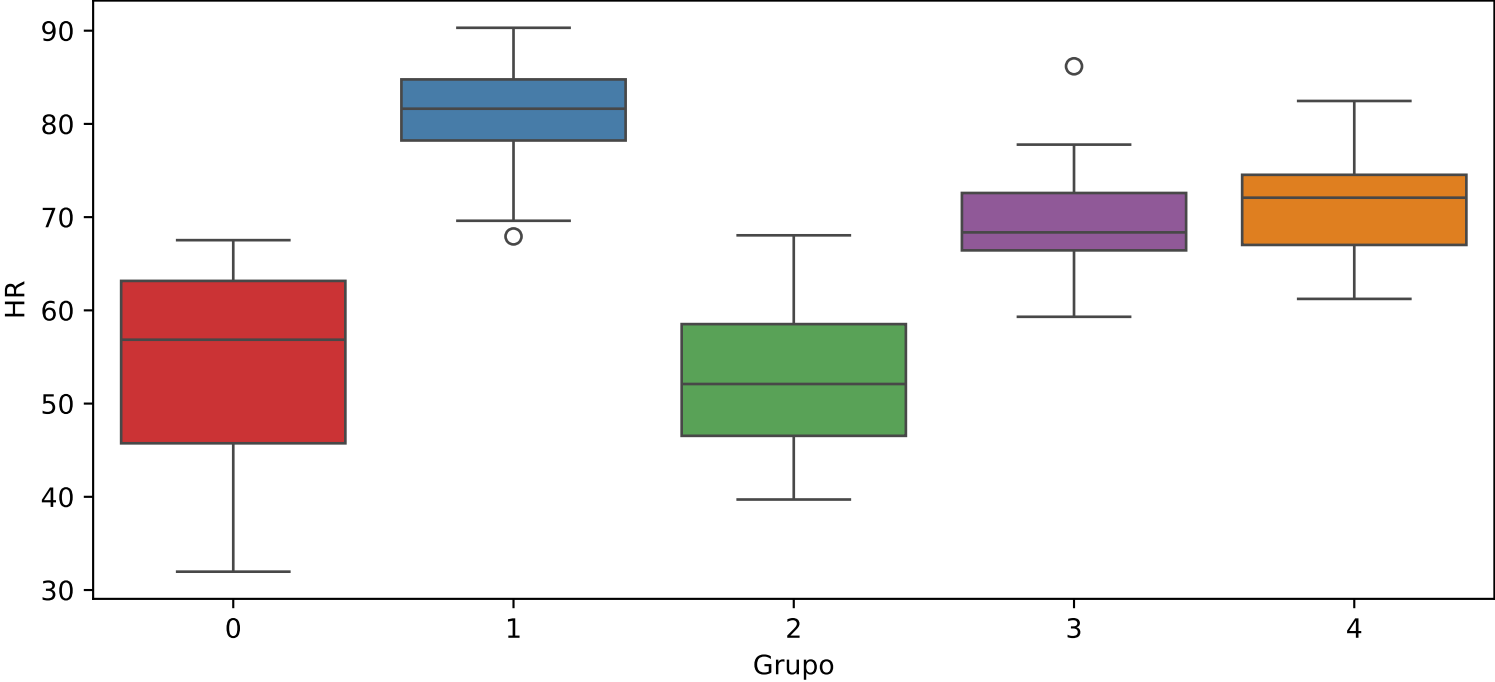
Distribución de Tmax por grupo



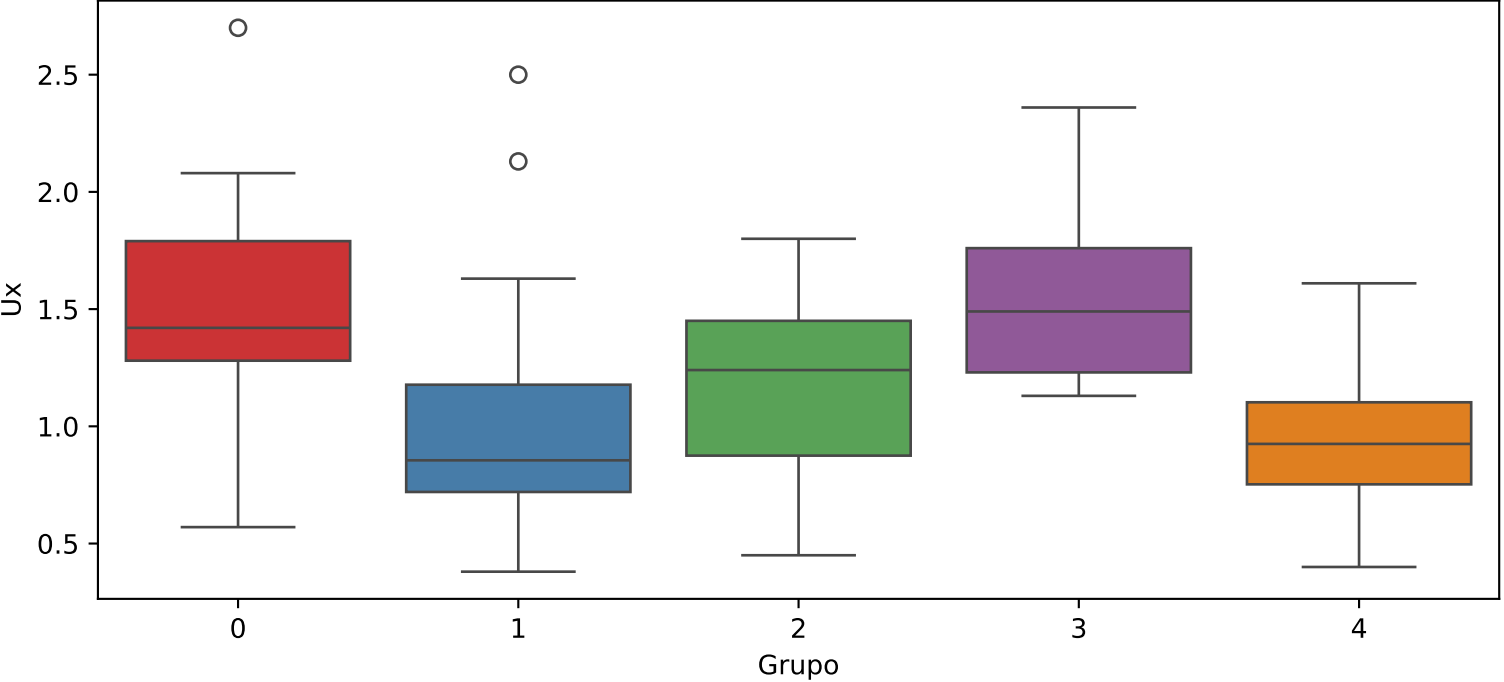
Distribución de Tmin por grupo



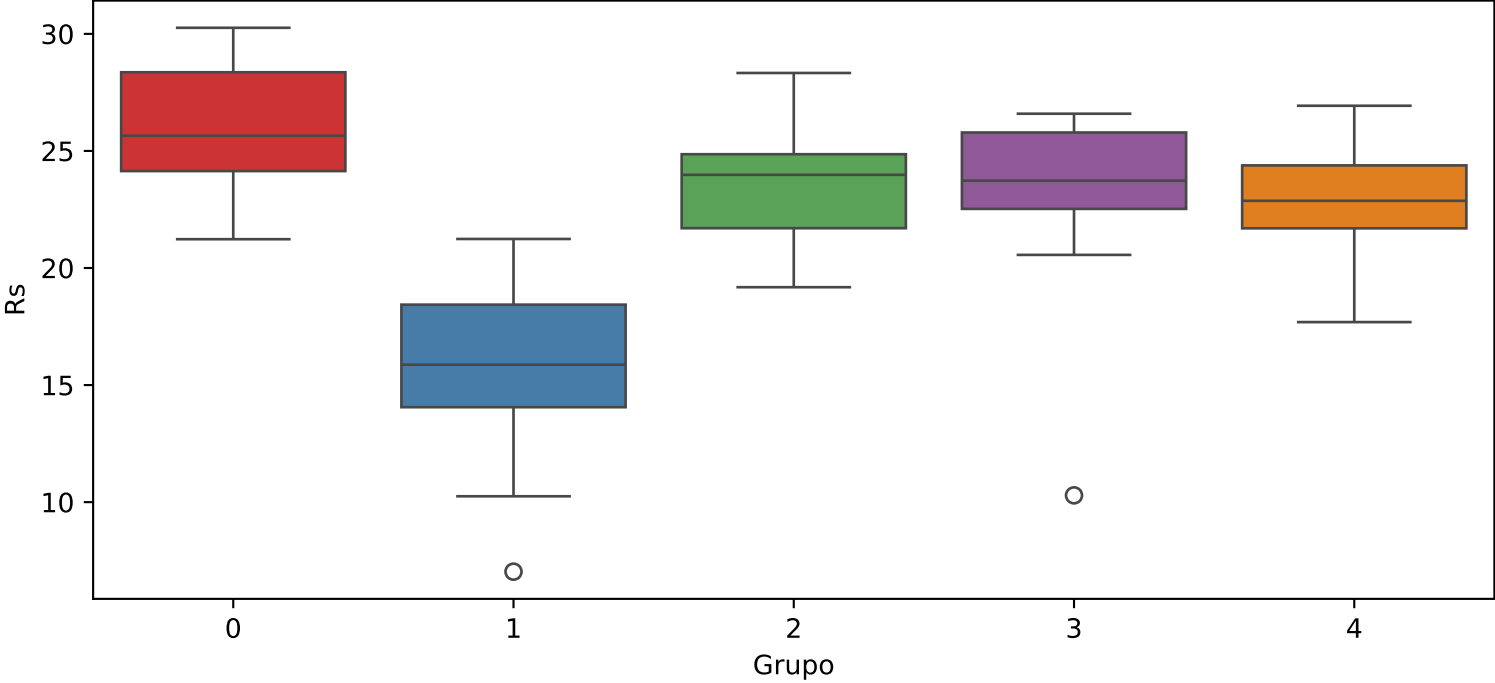
Distribución de HR por grupo



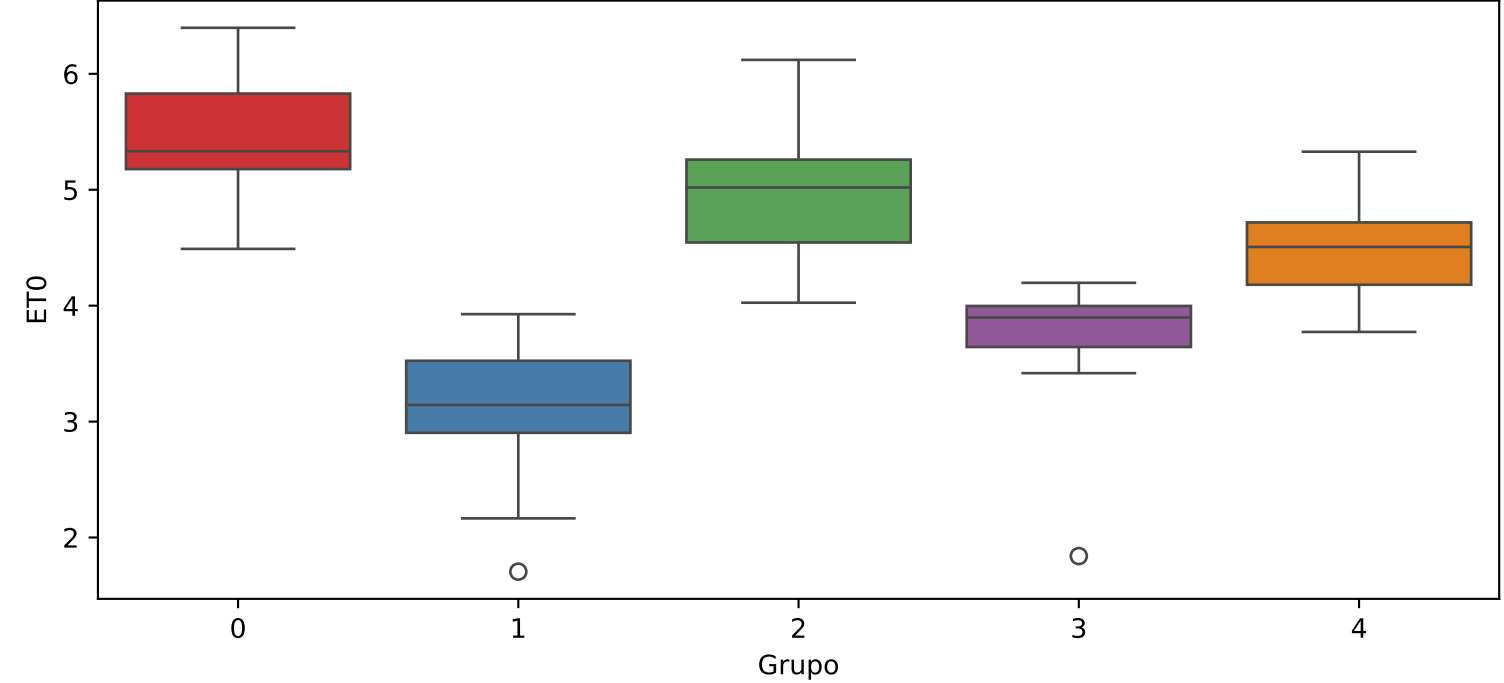
Distribución de Ux por grupo



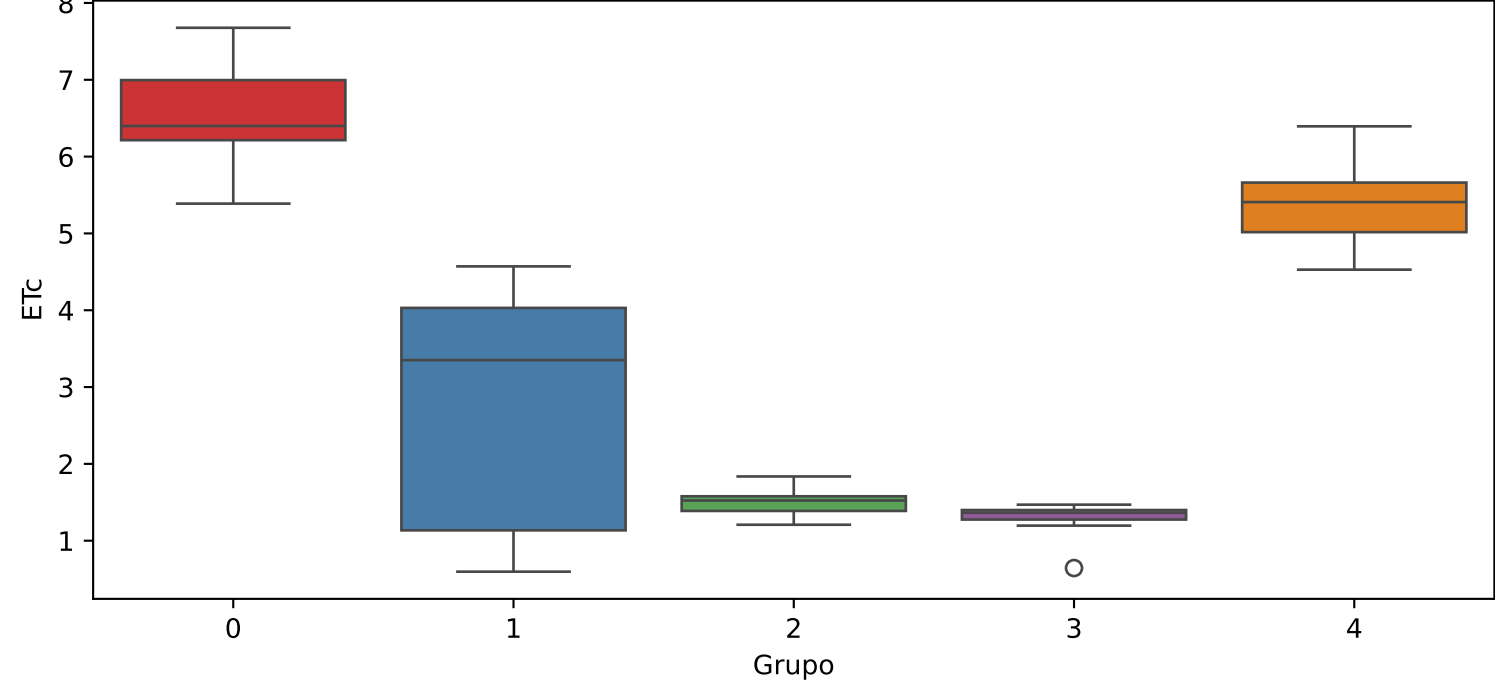
Distribución de Rs por grupo



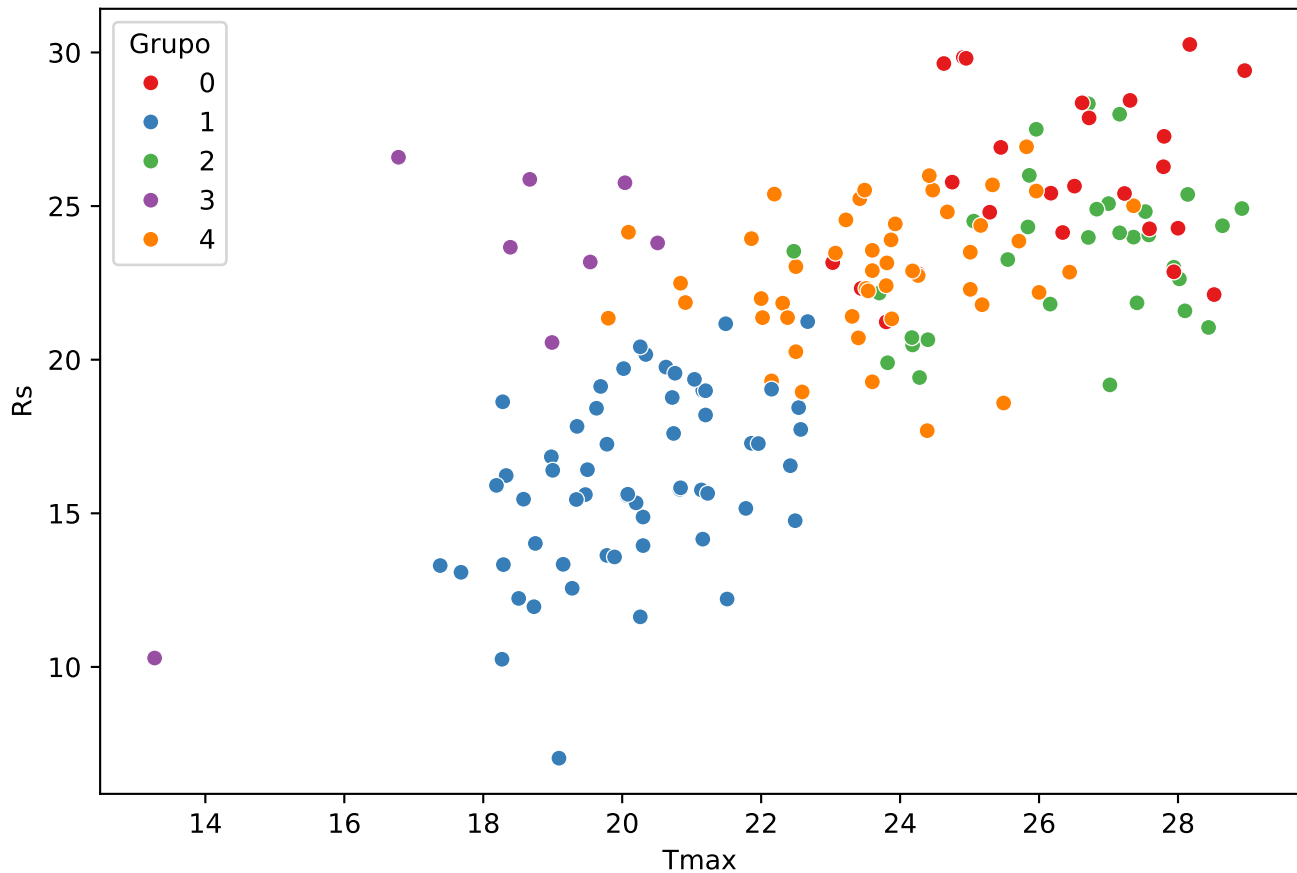
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2020)



Toluca — 2021

Días del ciclo: 170

ETc total [mm]: 567.6

ETverde total [mm]: 284.4

ETazul total [mm]: 283.2

Tmax / Tmin [°C]: 29.5 / 7.4

Toluca — 2021 · Resultados y métricas

[Toluca 2021] Regresión Lineal ET0 — R^2 : 0.9922 MSE: 0.0068

[Toluca 2021] Random Forest ET0 — R^2 : 0.9752 MSE: 0.0217

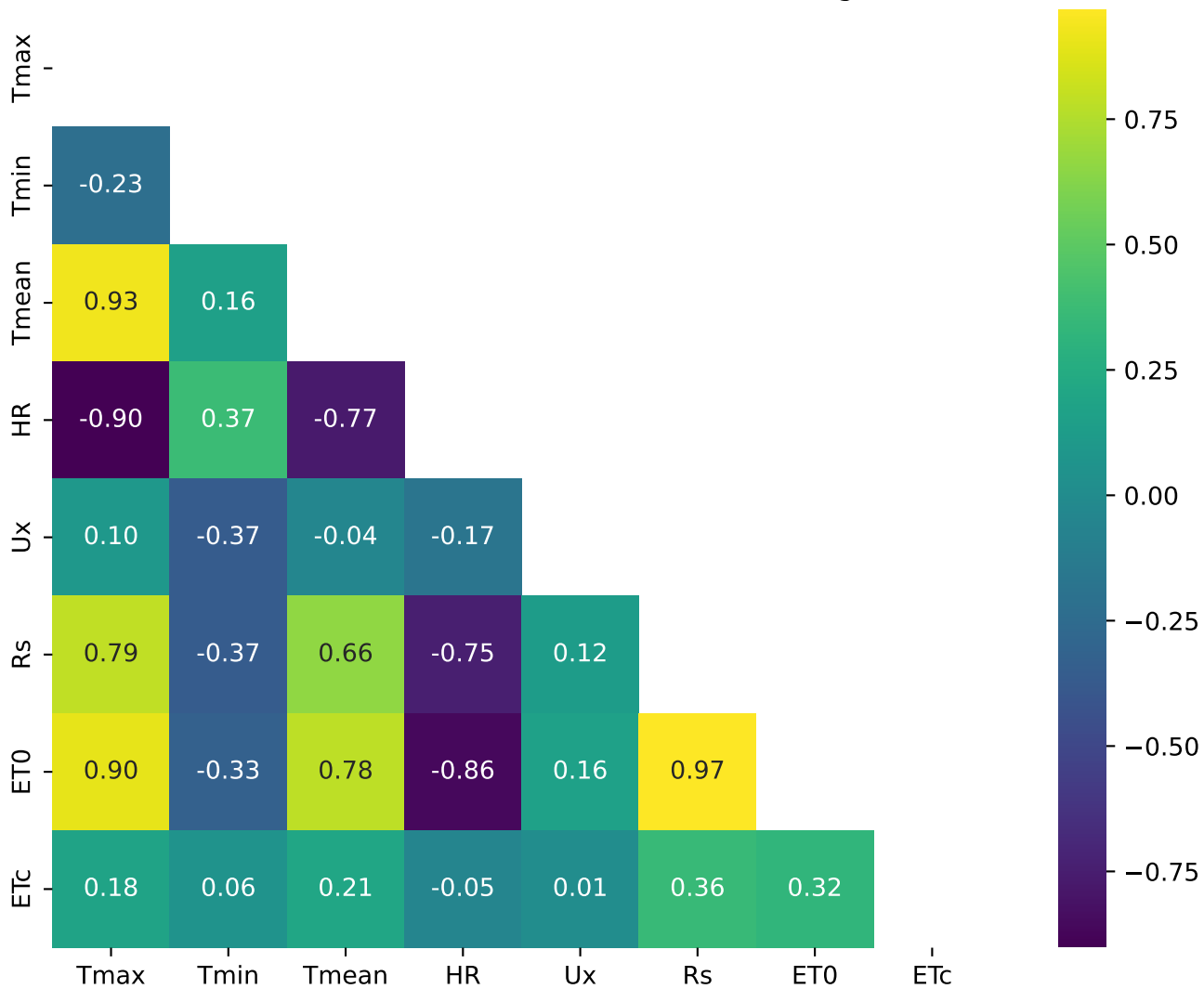
Importancias: {'Tmax': 0.0945186053380644, 'Tmin': 0.004938177803953196, 'HR': 0.0472031992841825, 'Ux': 0.004605343833544552, 'Rs': 0.8487346737402554}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	19.572703	9.487027	81.938649	1.416216	15.835676	3.031217	2.381970
1	25.589474	9.912105	59.928947	1.295263	24.987895	5.102319	6.122783
2	22.345128	10.205897	75.454872	0.874615	22.222821	4.228471	4.782203
3	19.733846	11.159231	83.480577	0.718846	15.988269	3.107540	2.711317
4	26.782609	9.391304	47.370870	1.142174	24.464348	5.159459	1.547838

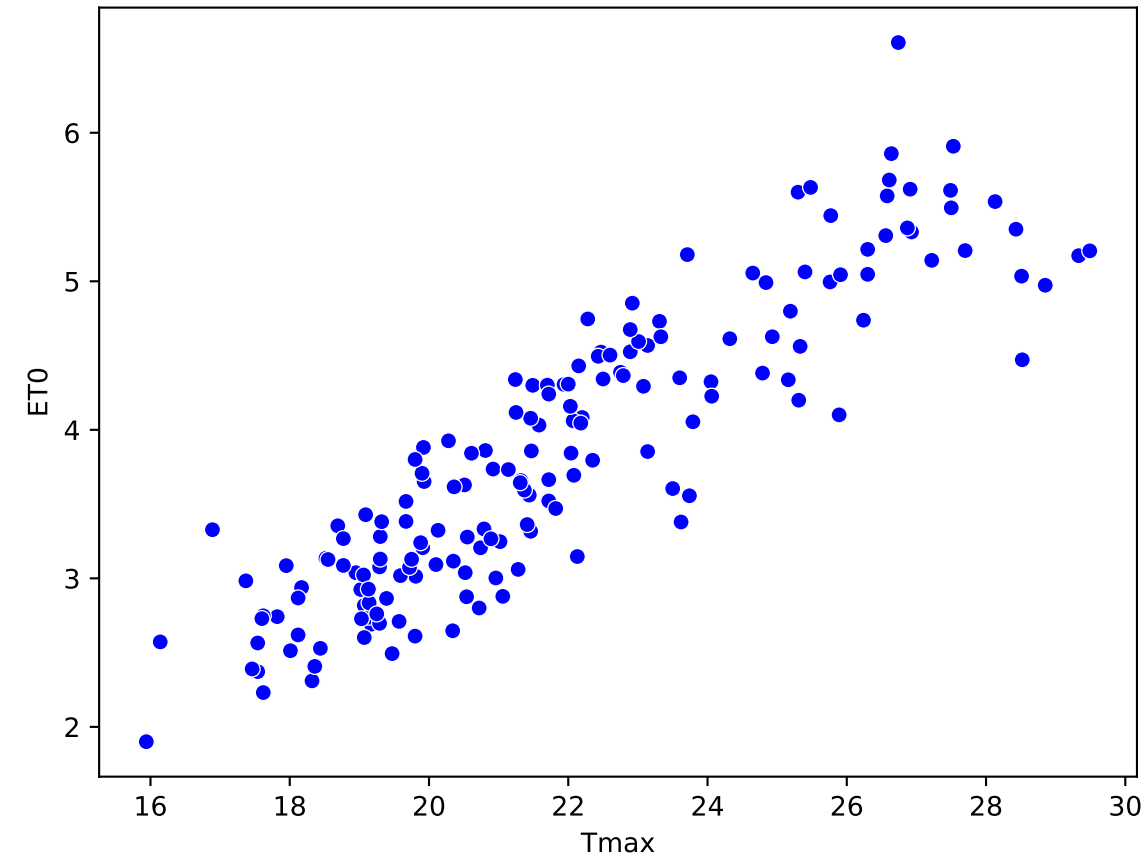
Toluca — 2021

Matriz de Correlación entre Variables Meteorológicas

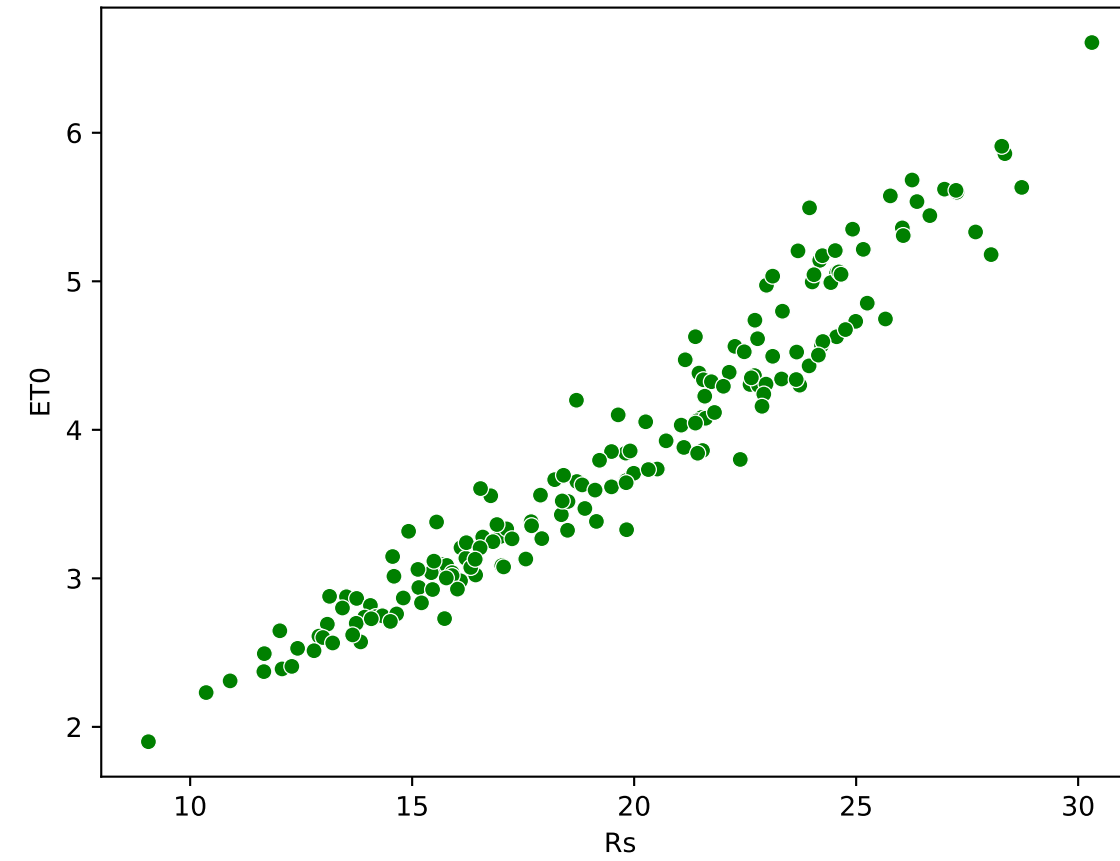


Dispersión — Toluca (2021)

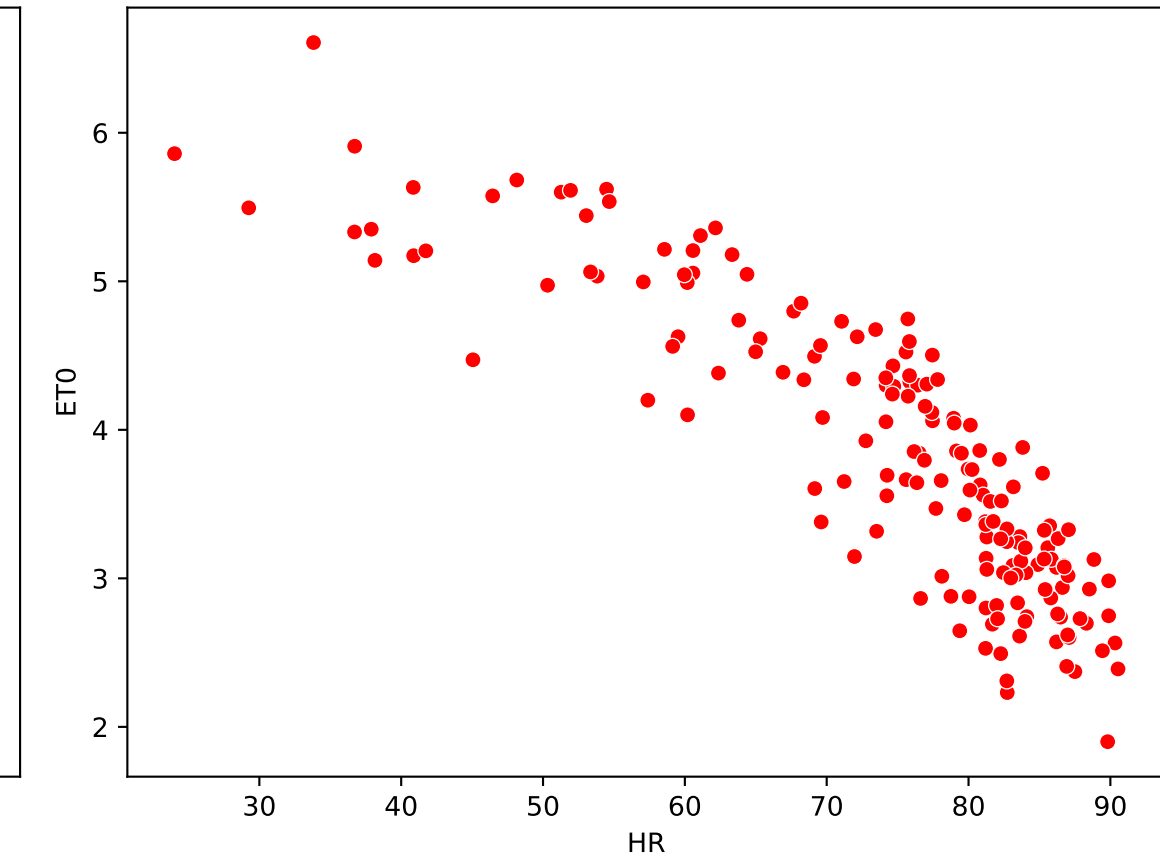
Tmax vs ET0



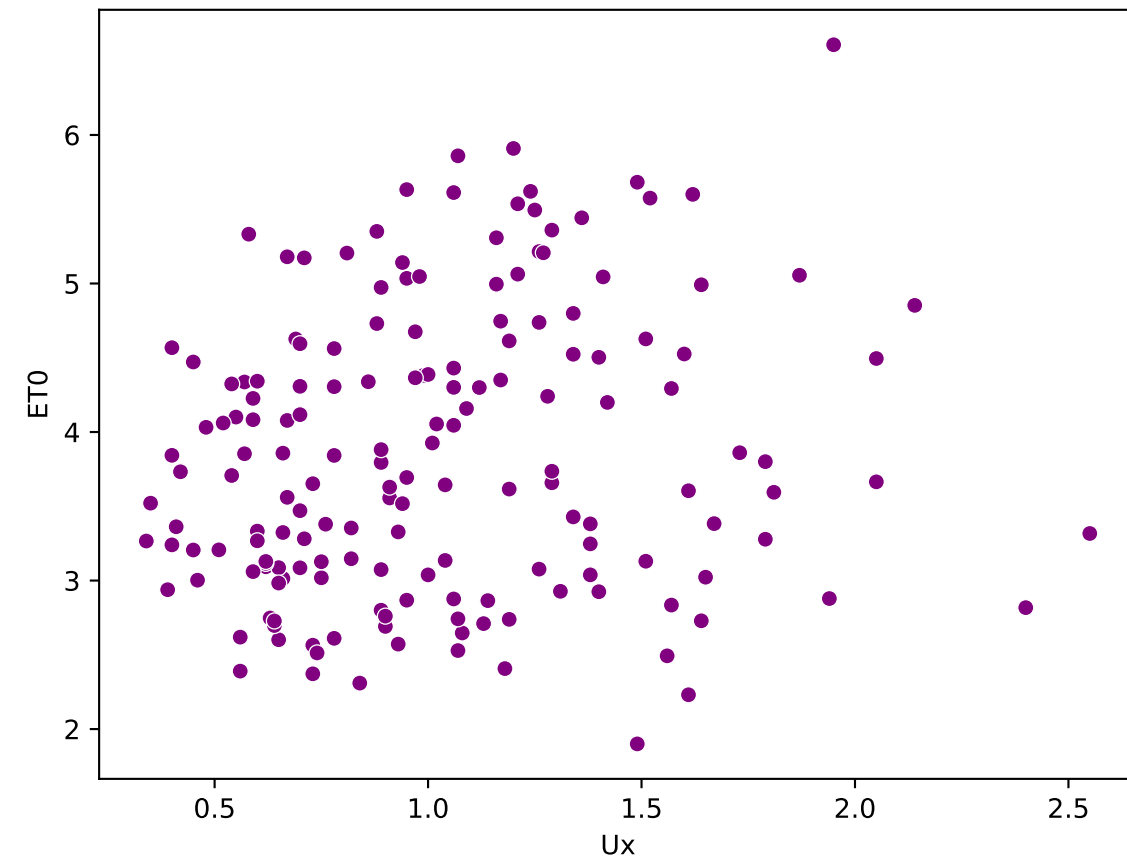
Rs vs ET0



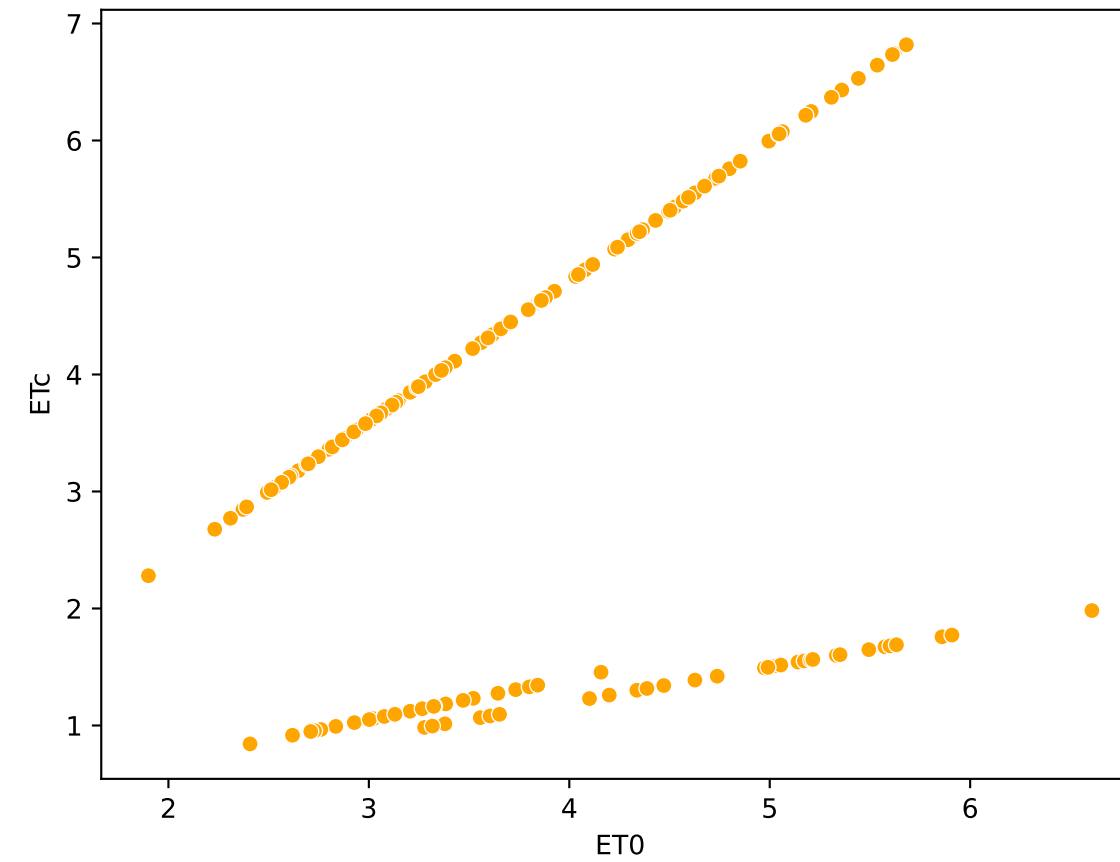
HR vs ET0



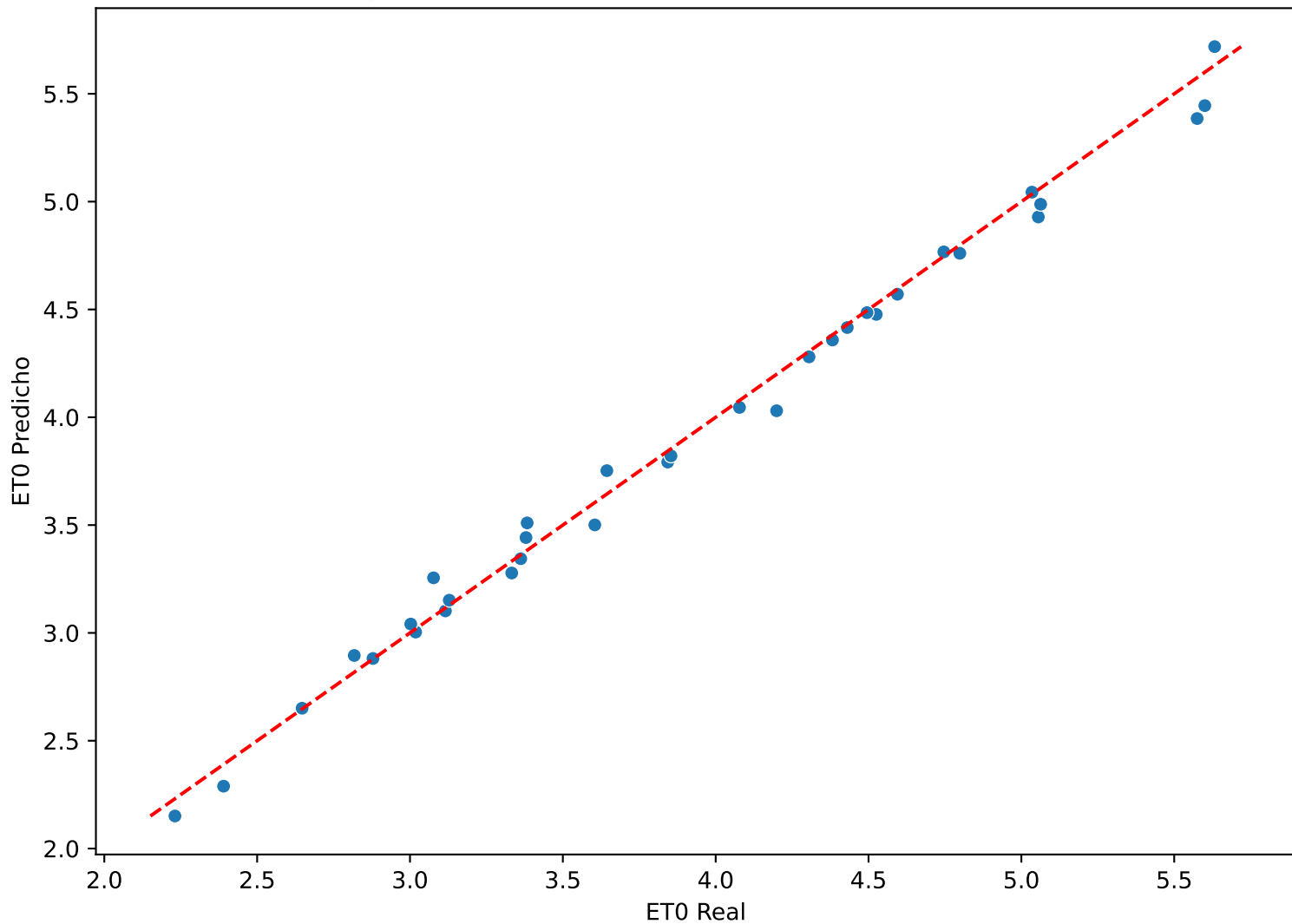
Ux vs ET0



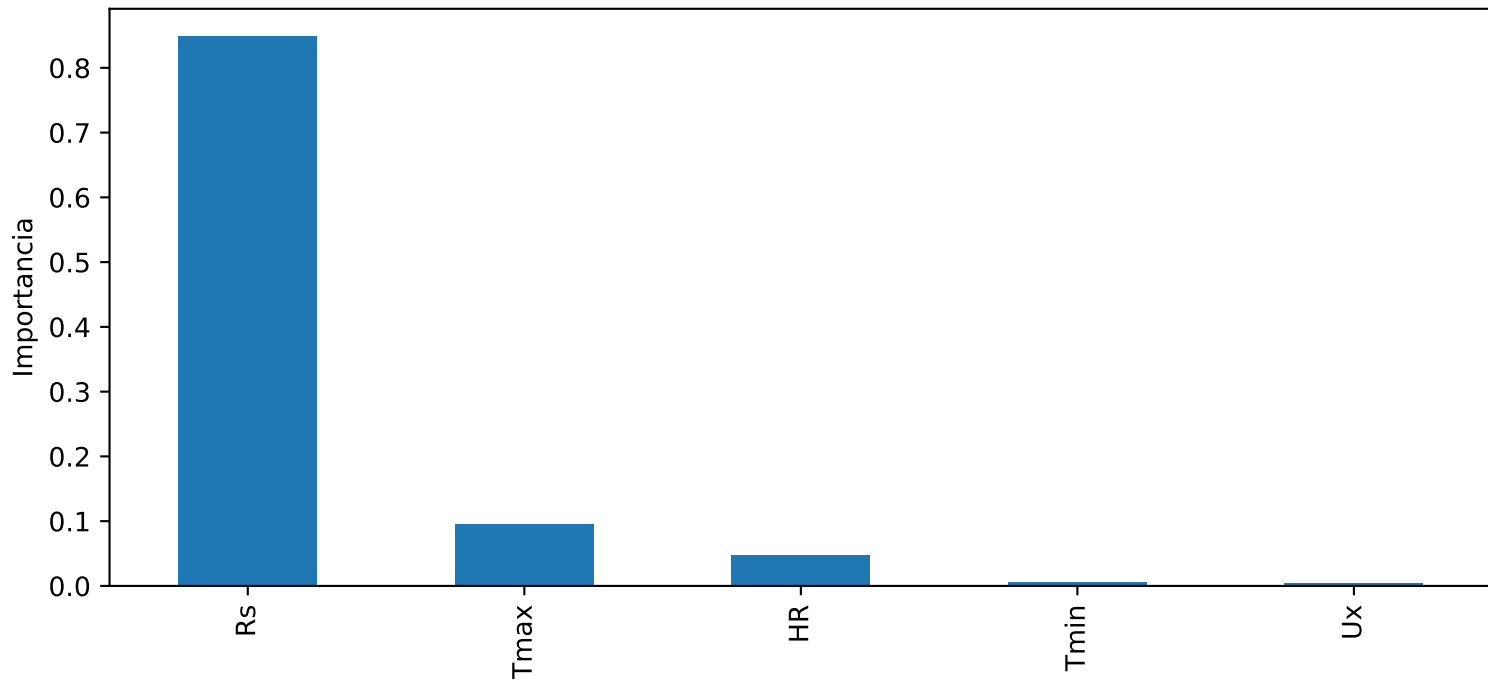
ET0 vs ETc



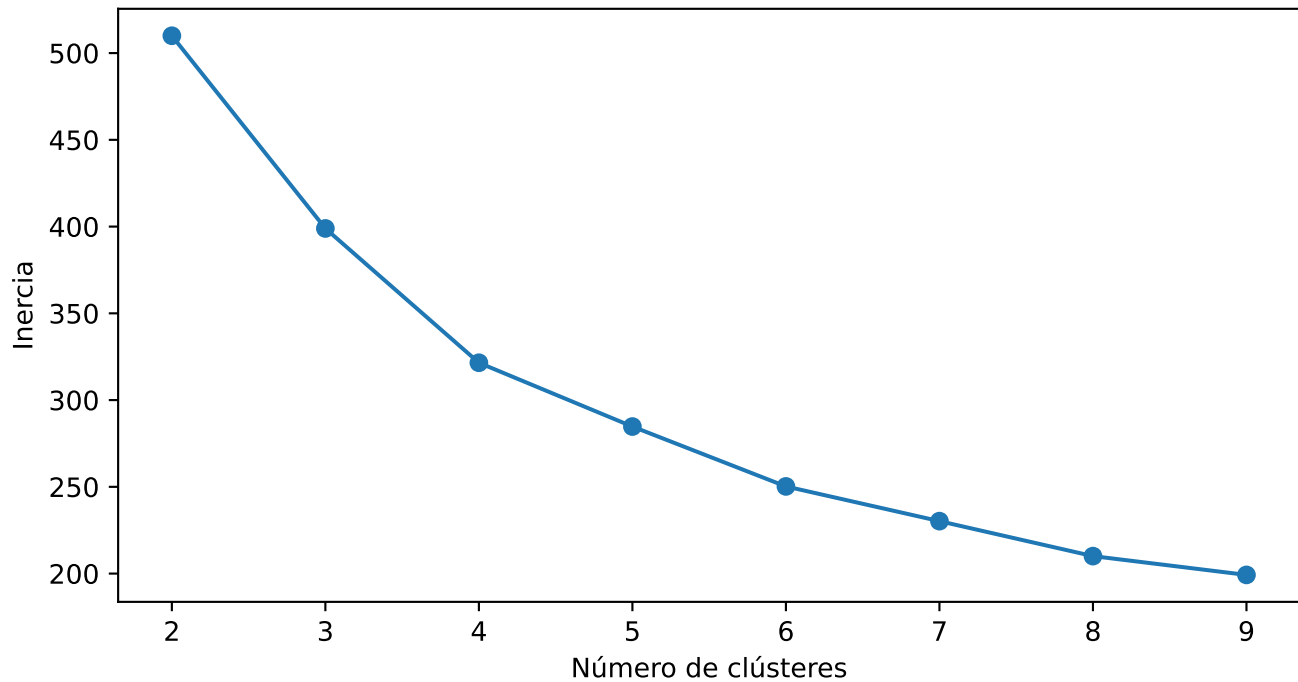
Comparación entre ET0 Real y Predicho — Toluca (2021)



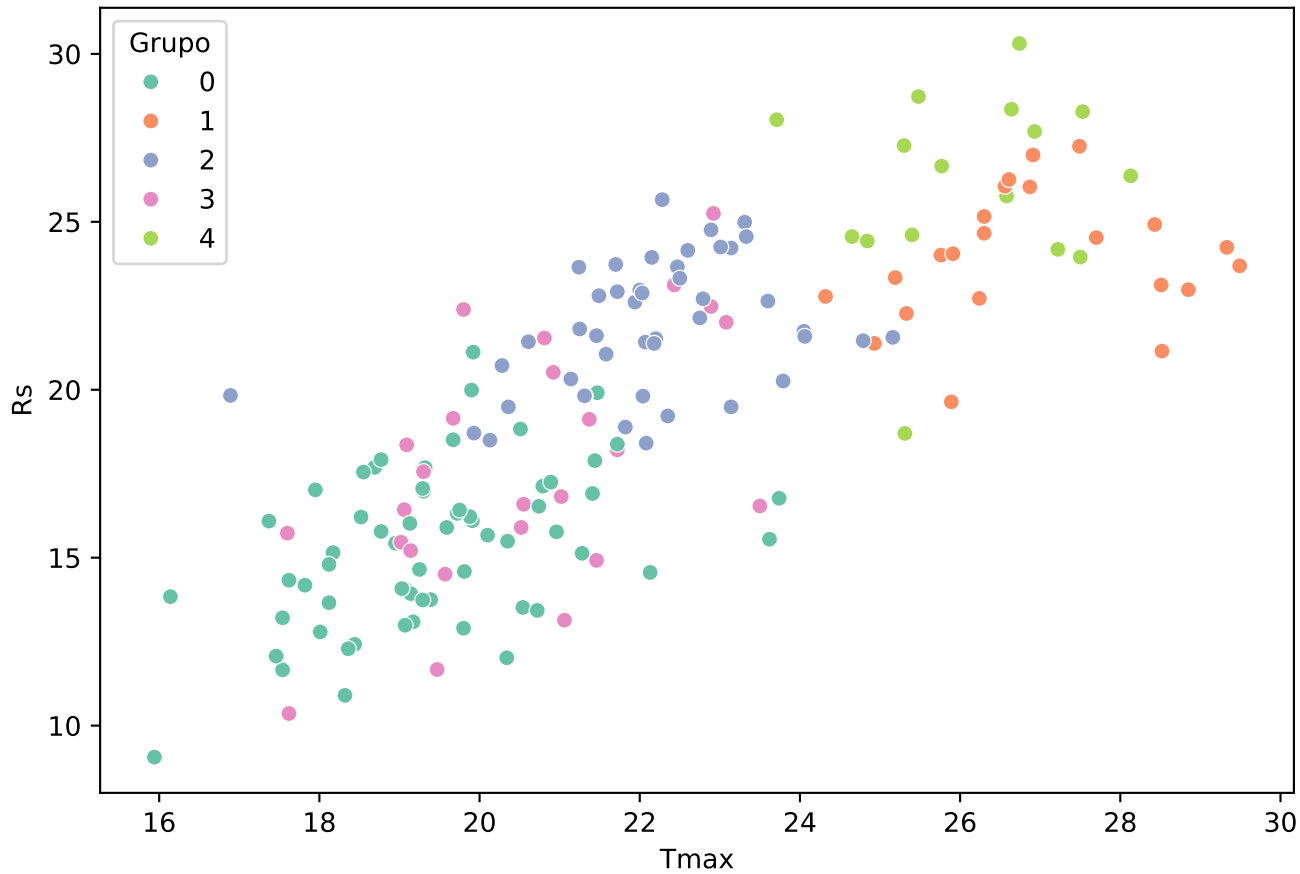
Importancia de variables (RF) — Toluca (2021)



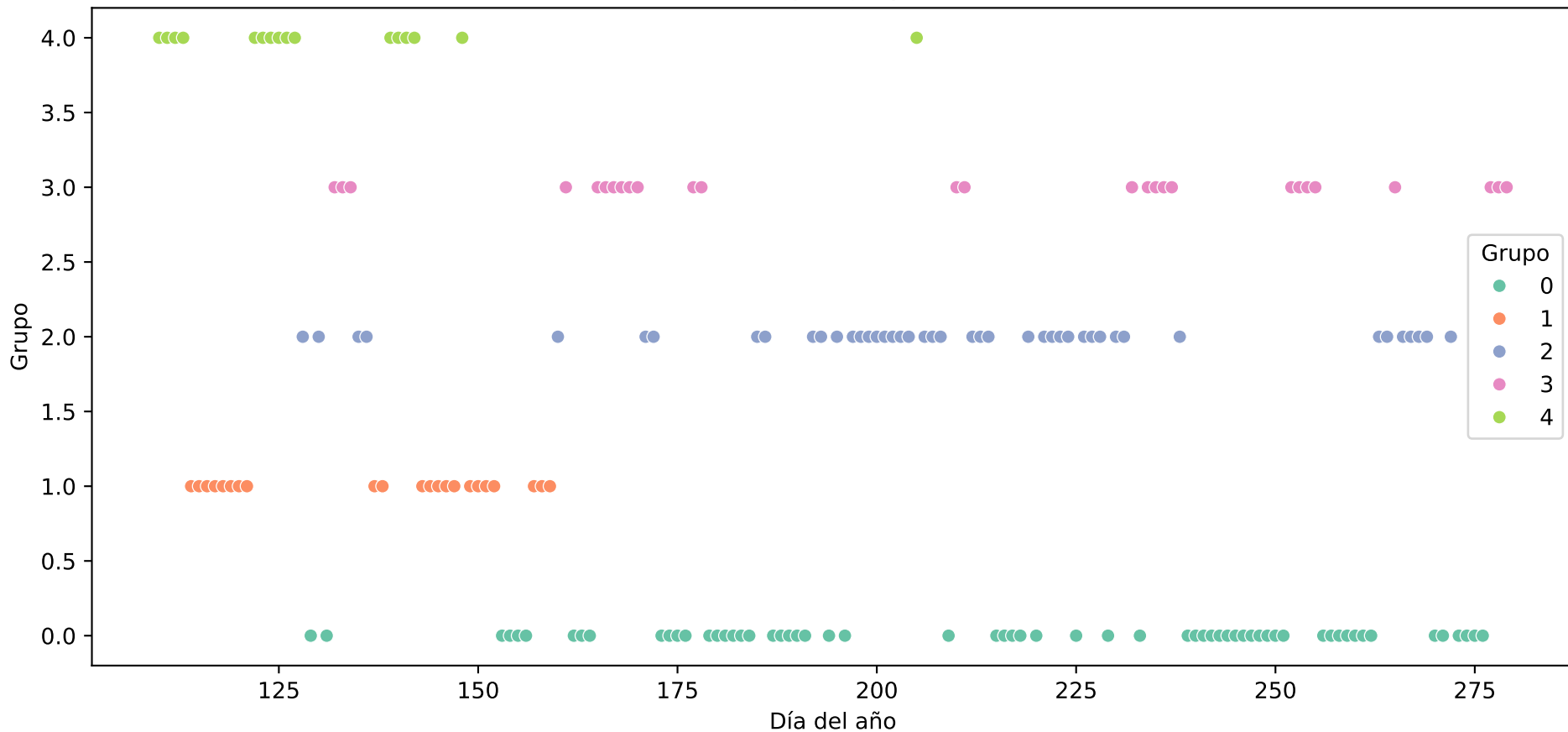
Método del codo



Clasificación de días climáticos — Toluca (2021)

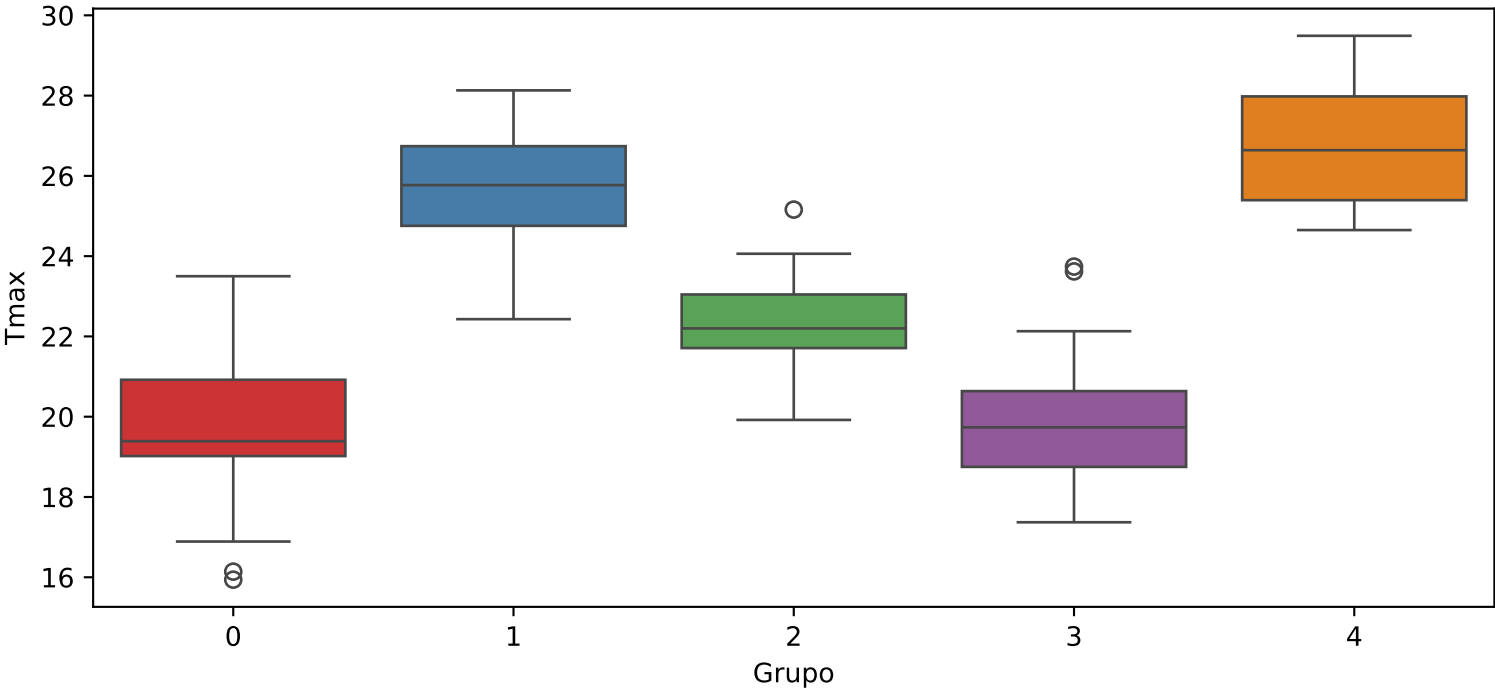


Distribución de días por grupo — Toluca (2021)

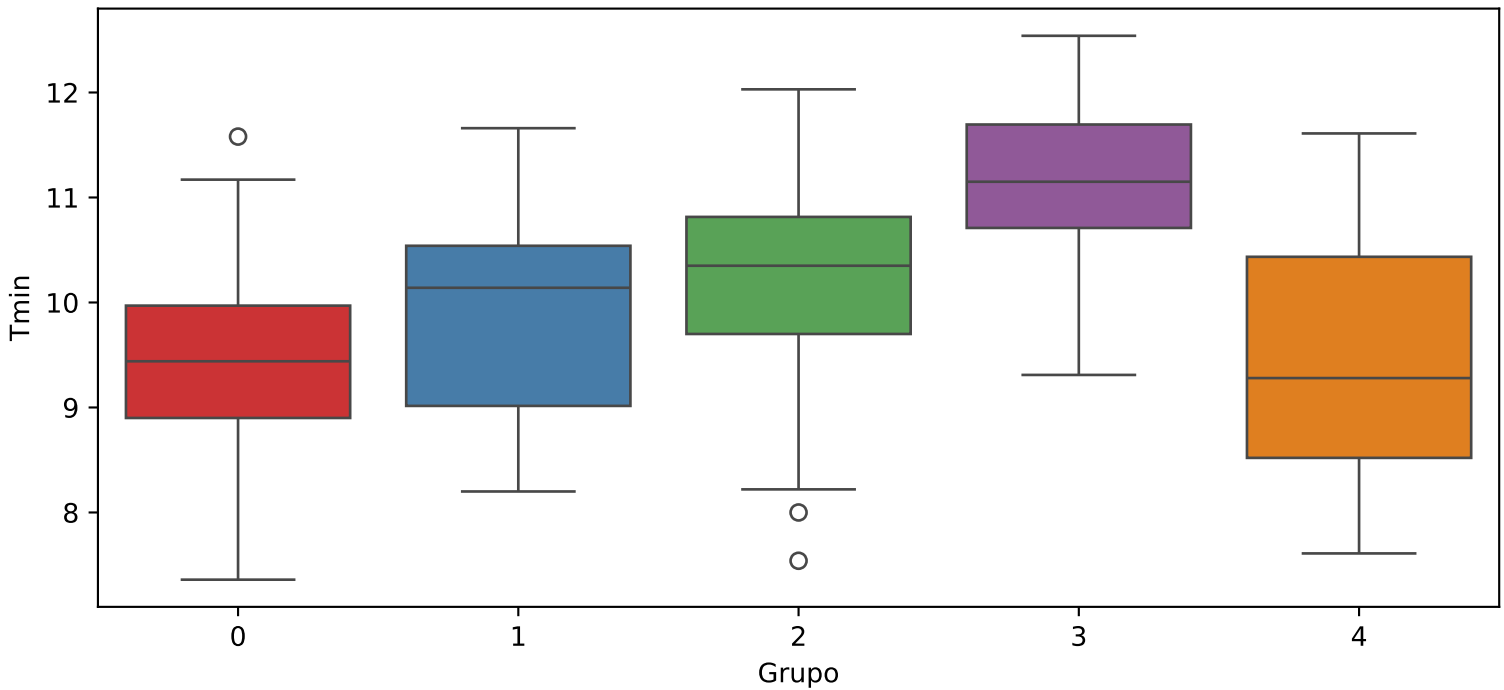


Boxplots por grupo — Toluca (2021)

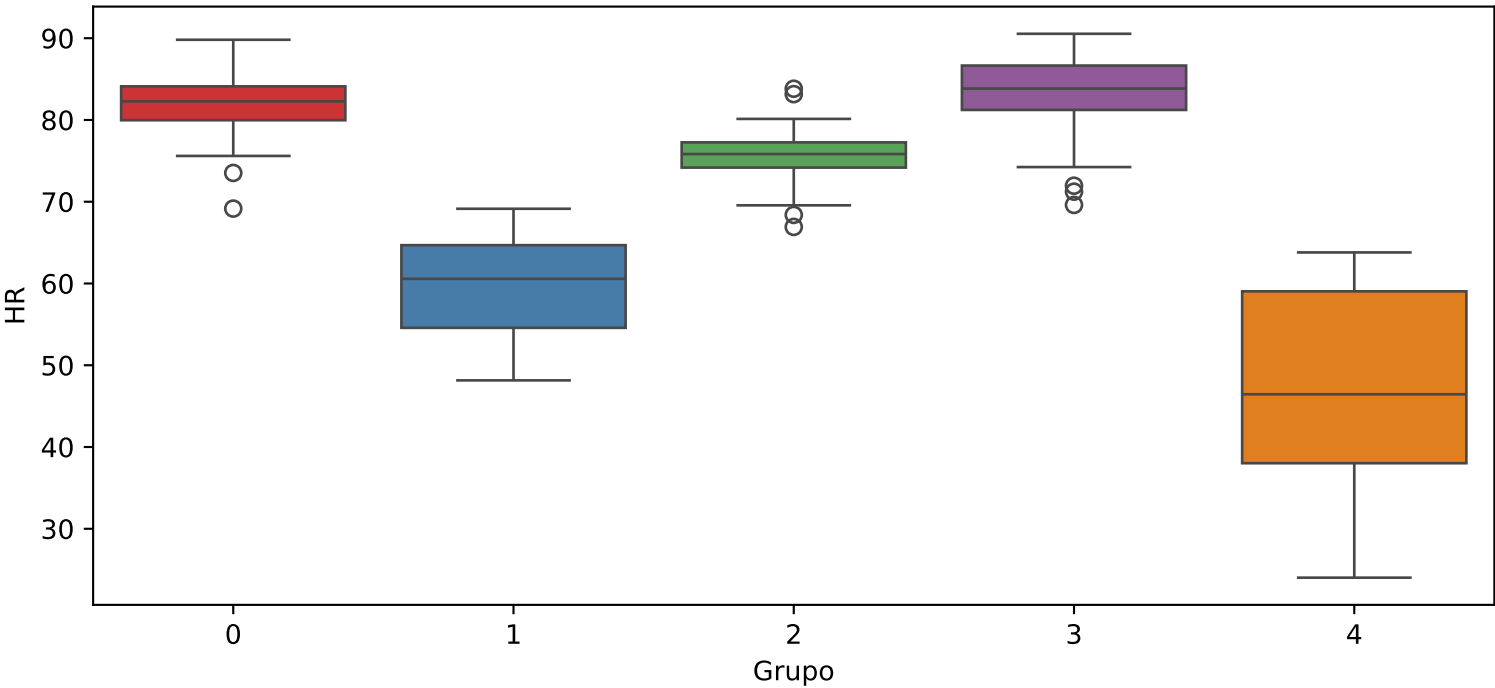
Distribución de Tmax por grupo



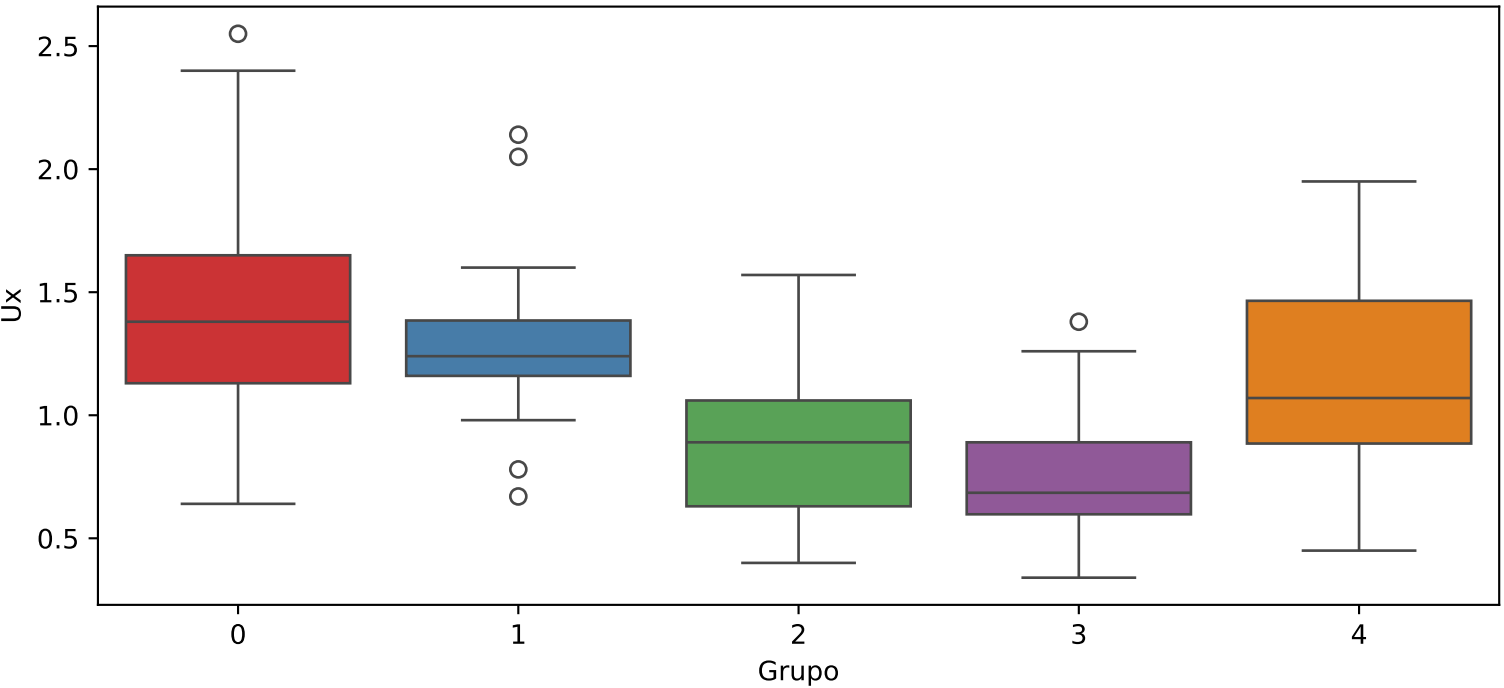
Distribución de Tmin por grupo



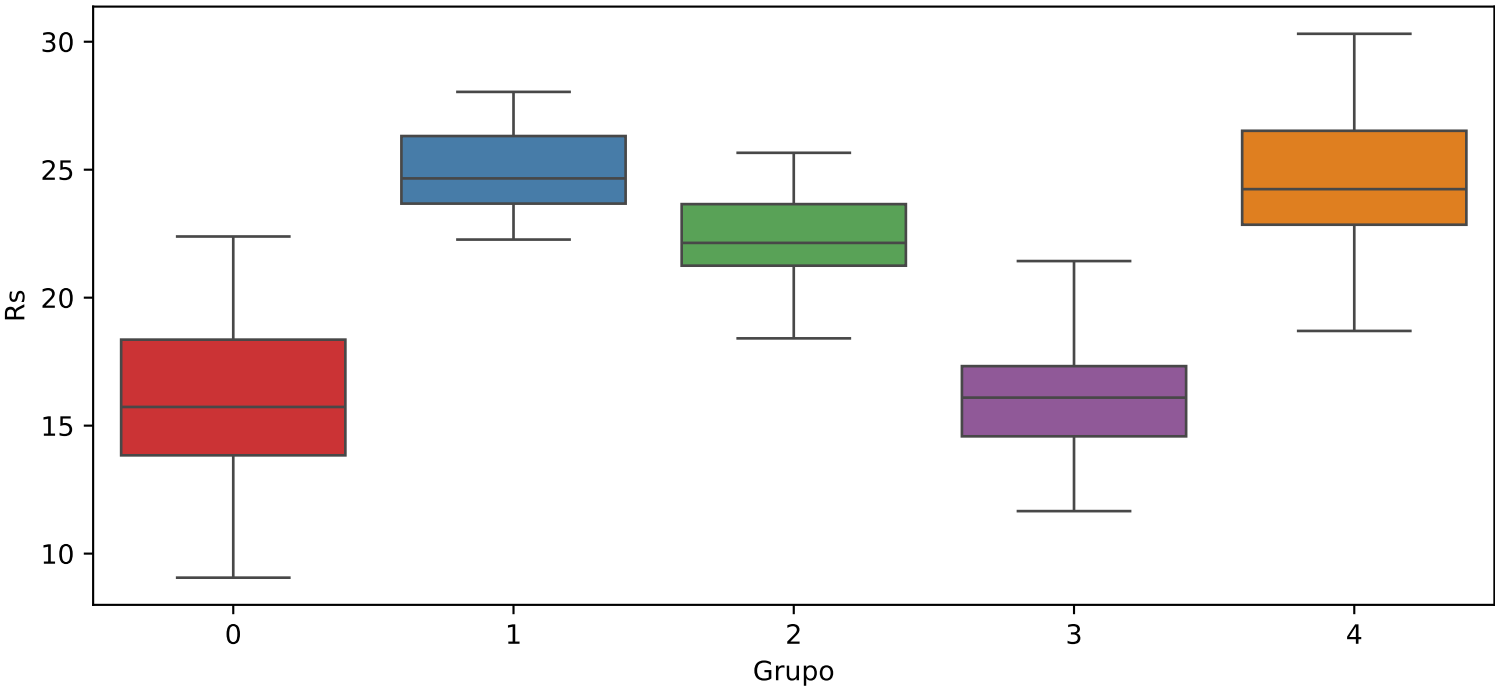
Distribución de HR por grupo



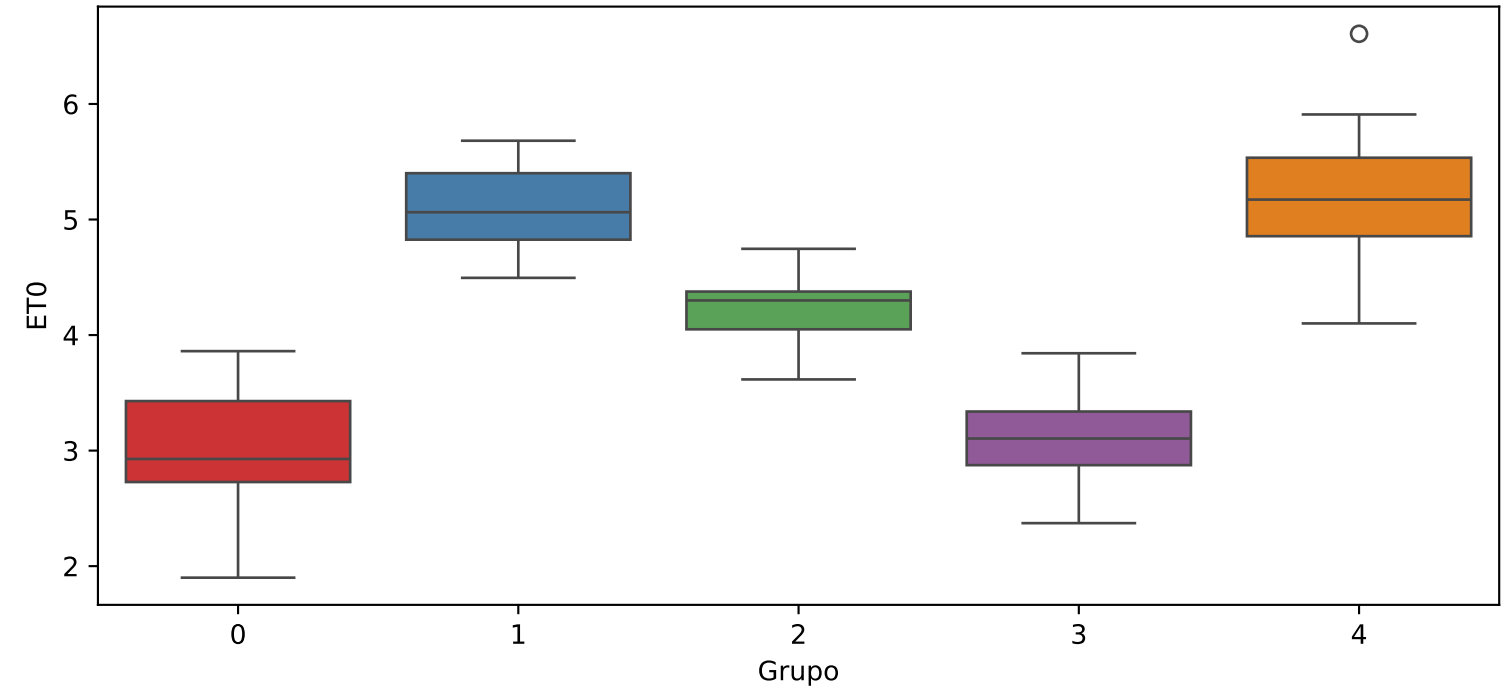
Distribución de Ux por grupo



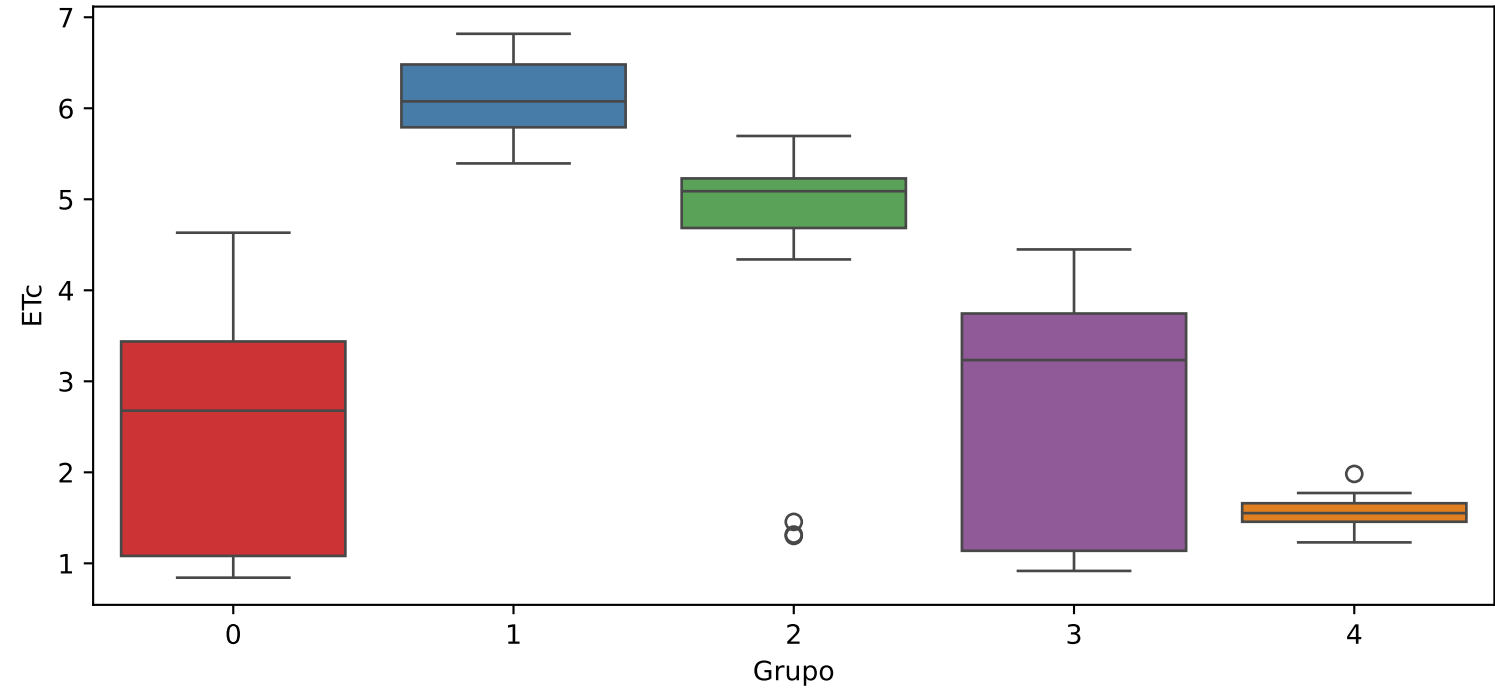
Distribución de Rs por grupo



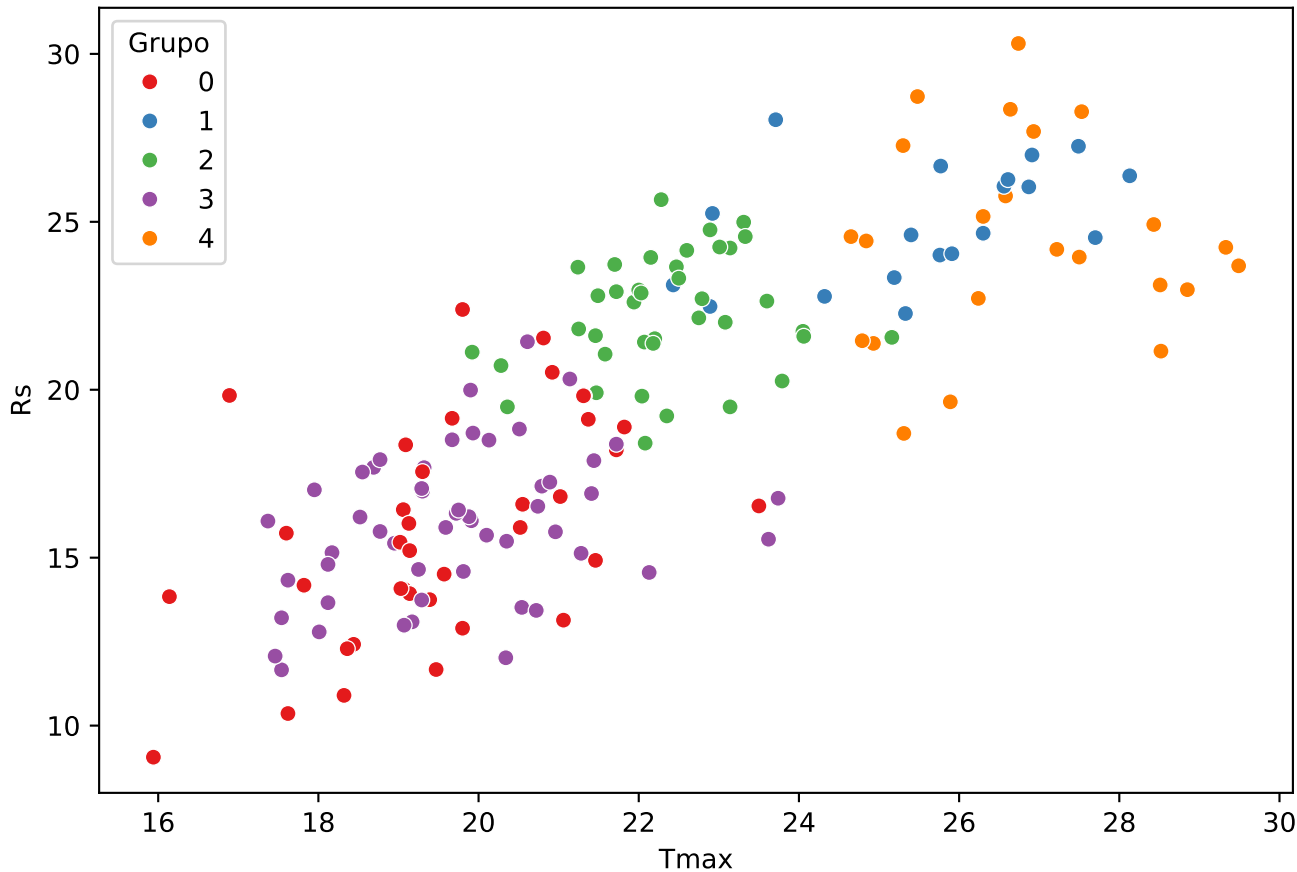
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2021)



Toluca — 2022

Días del ciclo: 170

ETc total [mm]: 626.4

ETverde total [mm]: 277.4

ETazul total [mm]: 349.0

Tmax / Tmin [°C]: 30.0 / 3.9

Toluca — 2022 · Resultados y métricas

[Toluca 2022] Regresión Lineal ET0 — R²: 0.9865 MSE: 0.0126

[Toluca 2022] Random Forest ET0 — R²: 0.9699 MSE: 0.0281

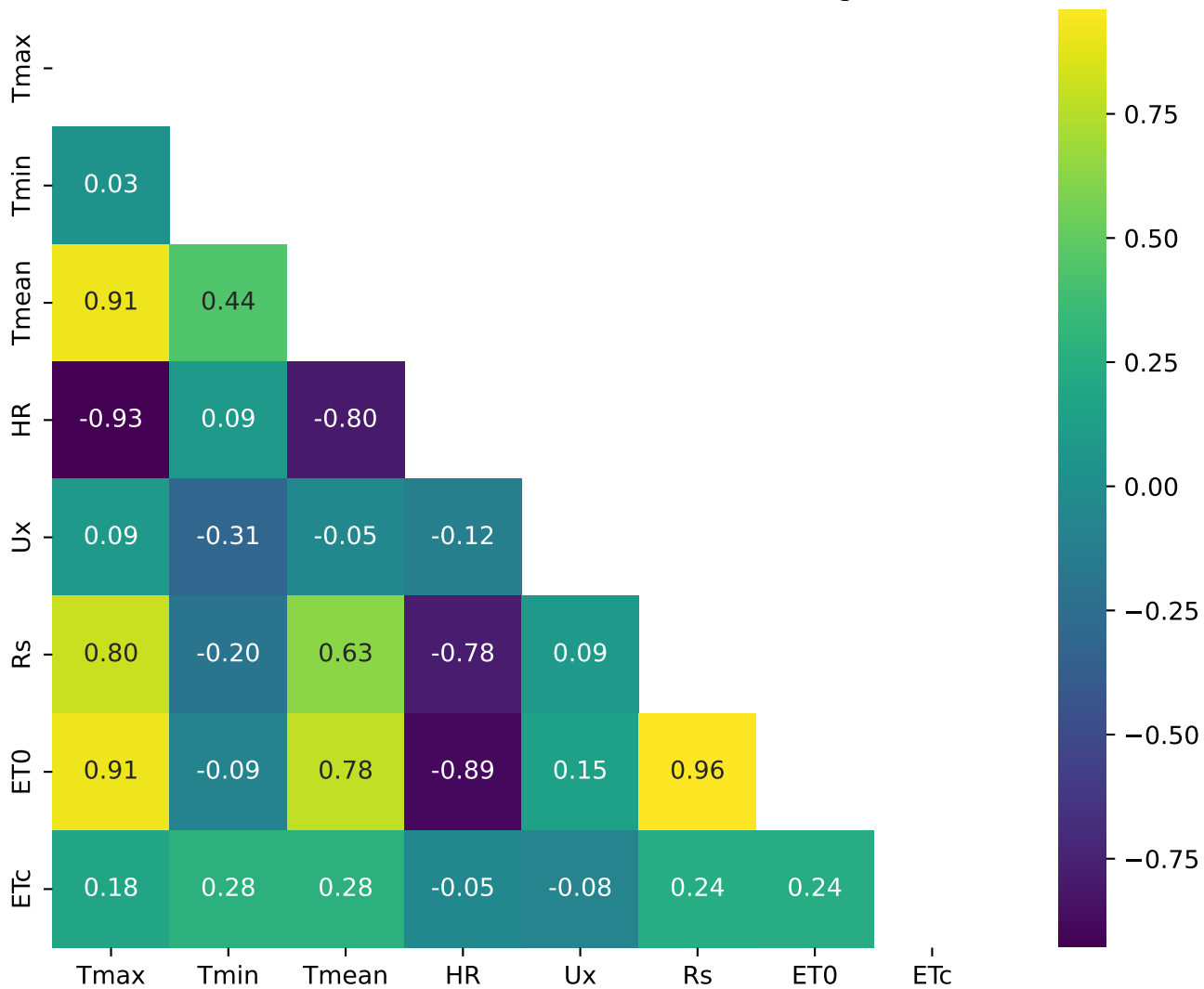
Importancias: {'Tmax': 0.4810267024466159, 'Tmin': 0.0037966015158710465, 'HR': 0.03685705366642034, 'Ux': 0.004654908883567291, 'Rs': 0.4736647334875254}

Estadísticas descriptivas por grupo (medias):

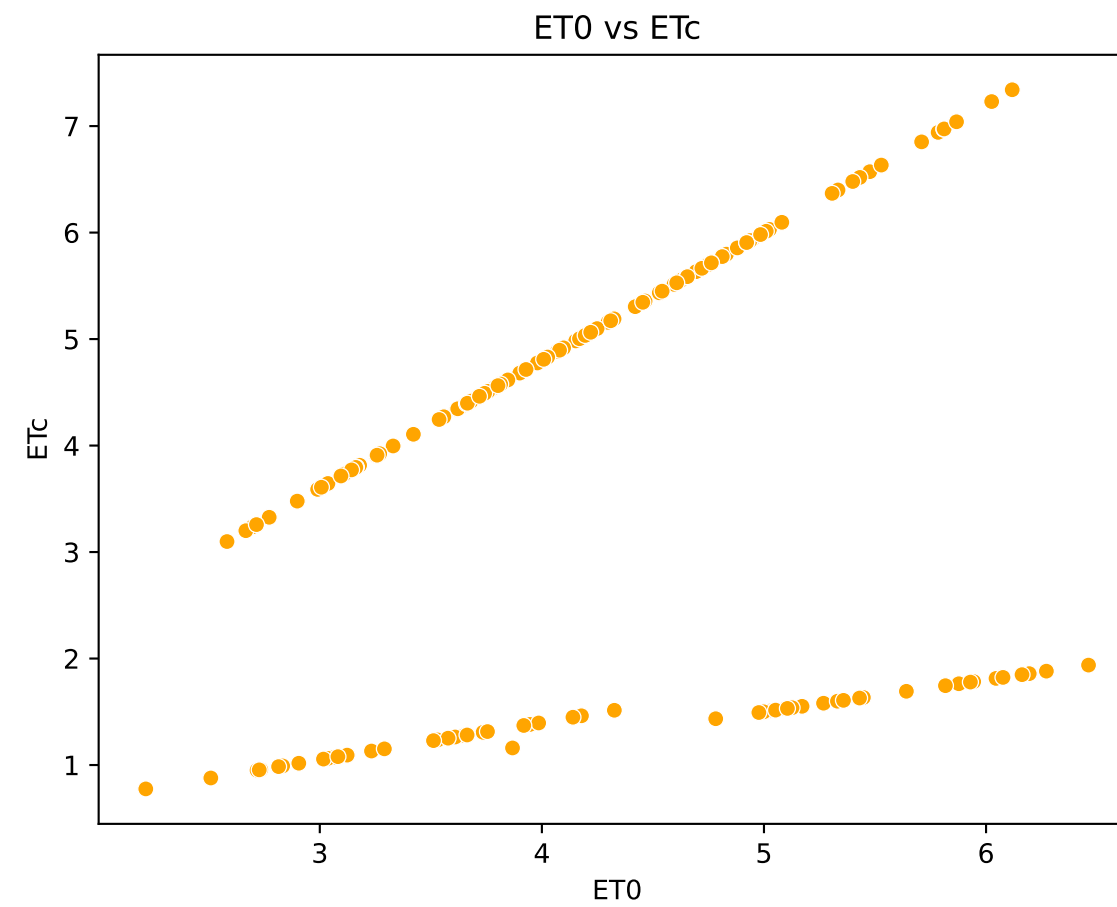
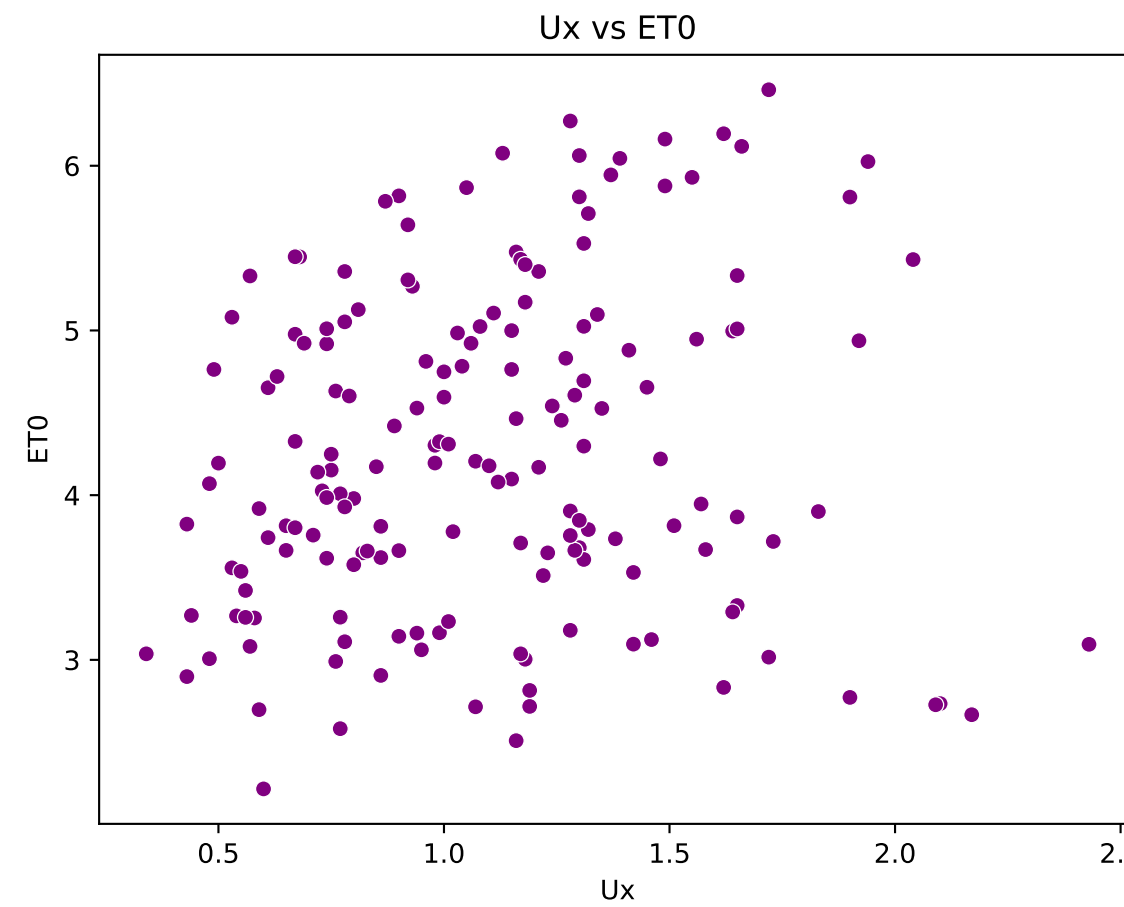
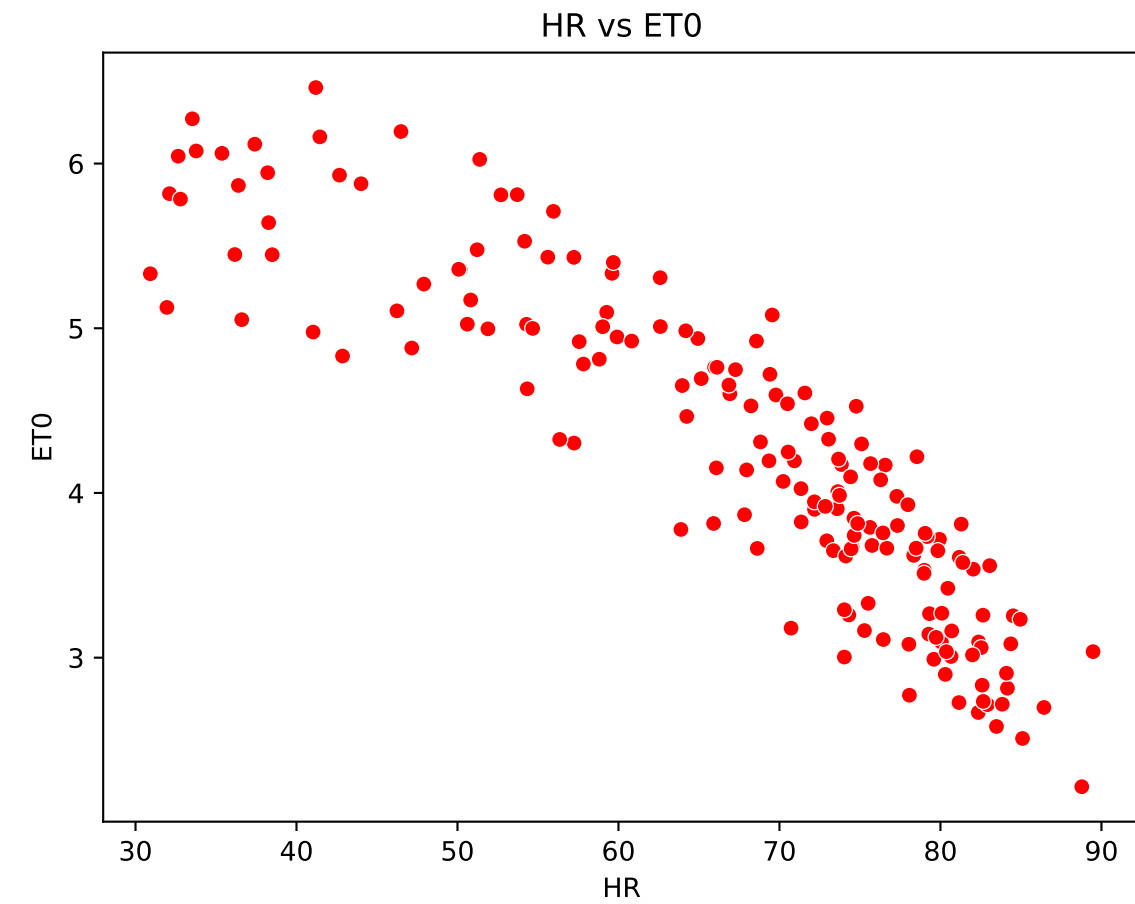
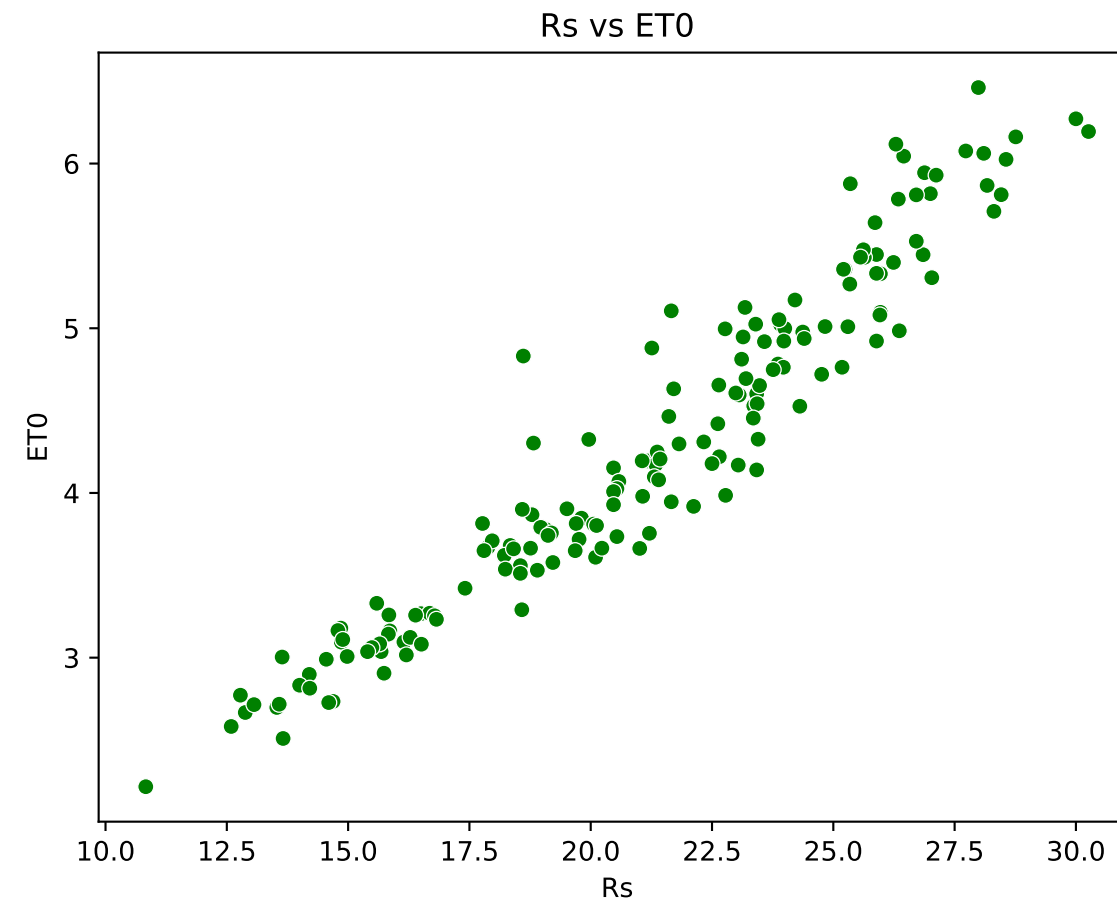
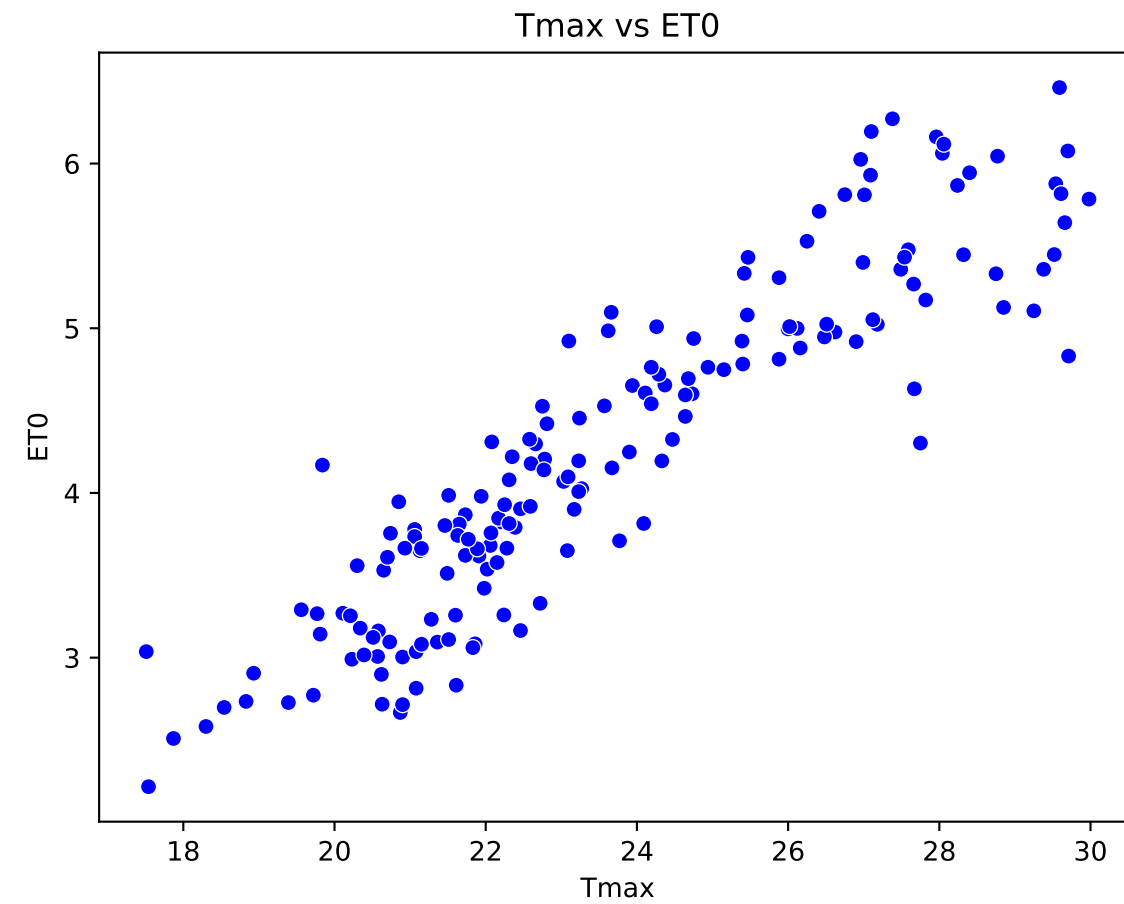
	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	21.051714	8.752000	77.382571	1.377714	17.775143	3.373403	1.890389
1	26.607308	10.048077	54.541923	1.255769	25.055385	5.267696	6.321236
2	27.723667	9.594000	43.810000	1.183000	25.825000	5.515429	1.654629
3	20.554074	11.152222	81.213333	0.711852	15.624444	3.118503	3.285731
4	23.141538	10.303269	71.789423	0.958462	21.300385	4.186478	4.953055

Toluca — 2022

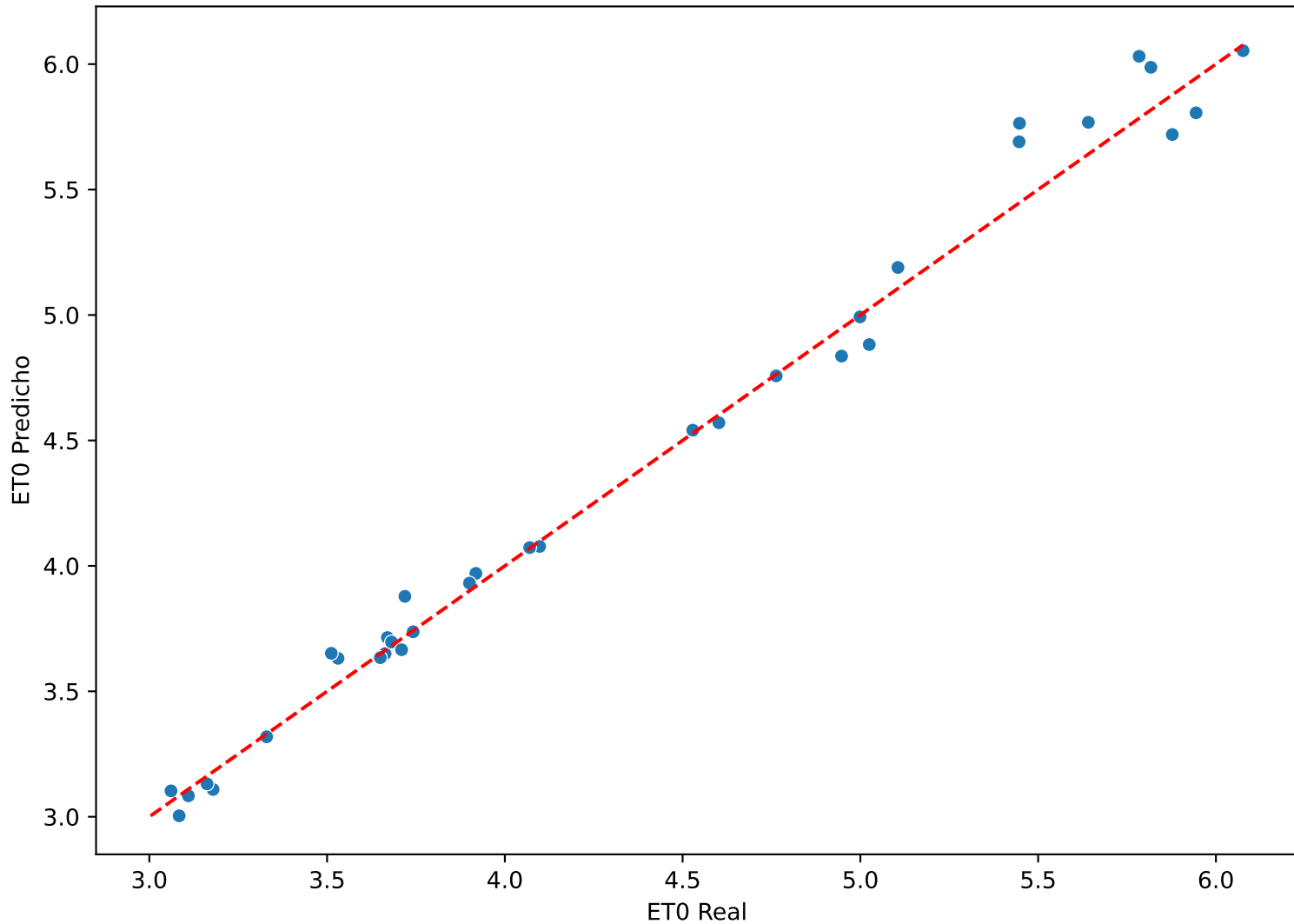
Matriz de Correlación entre Variables Meteorológicas



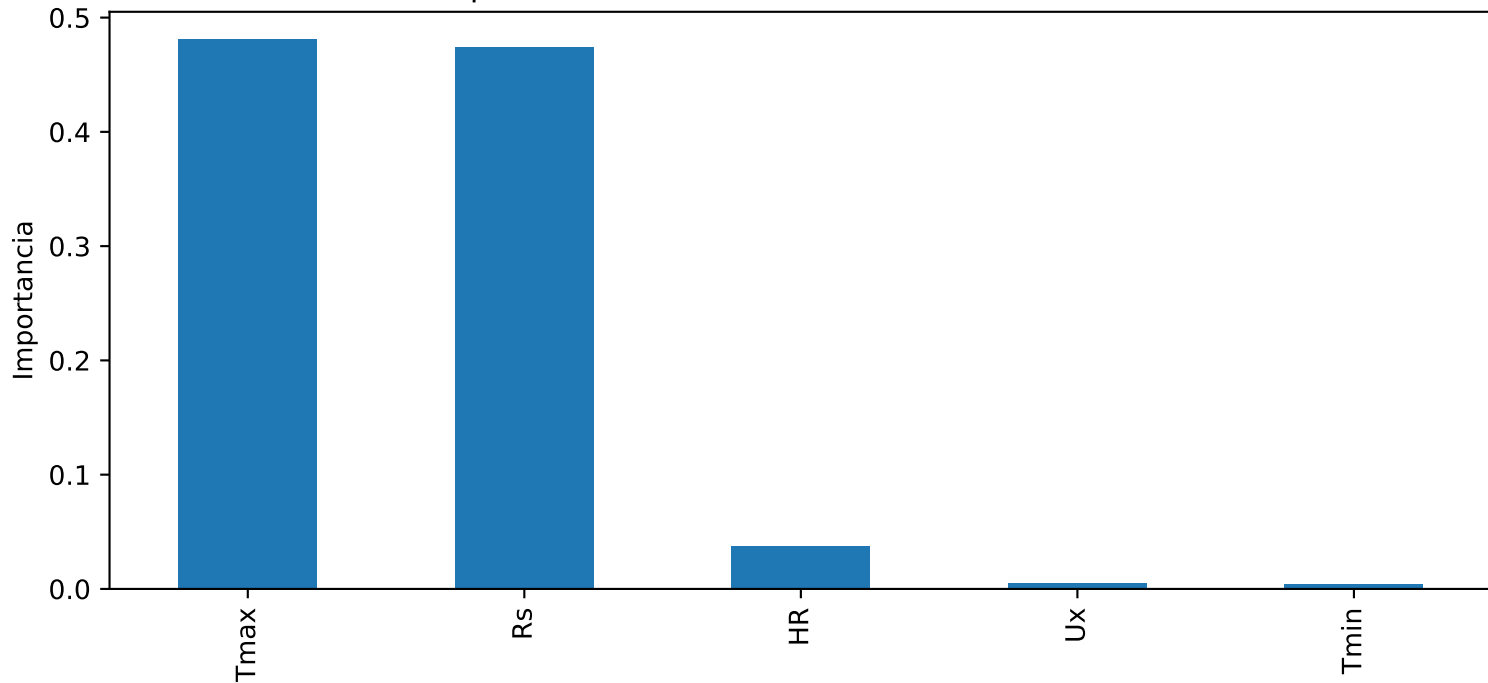
Dispersión — Toluca (2022)



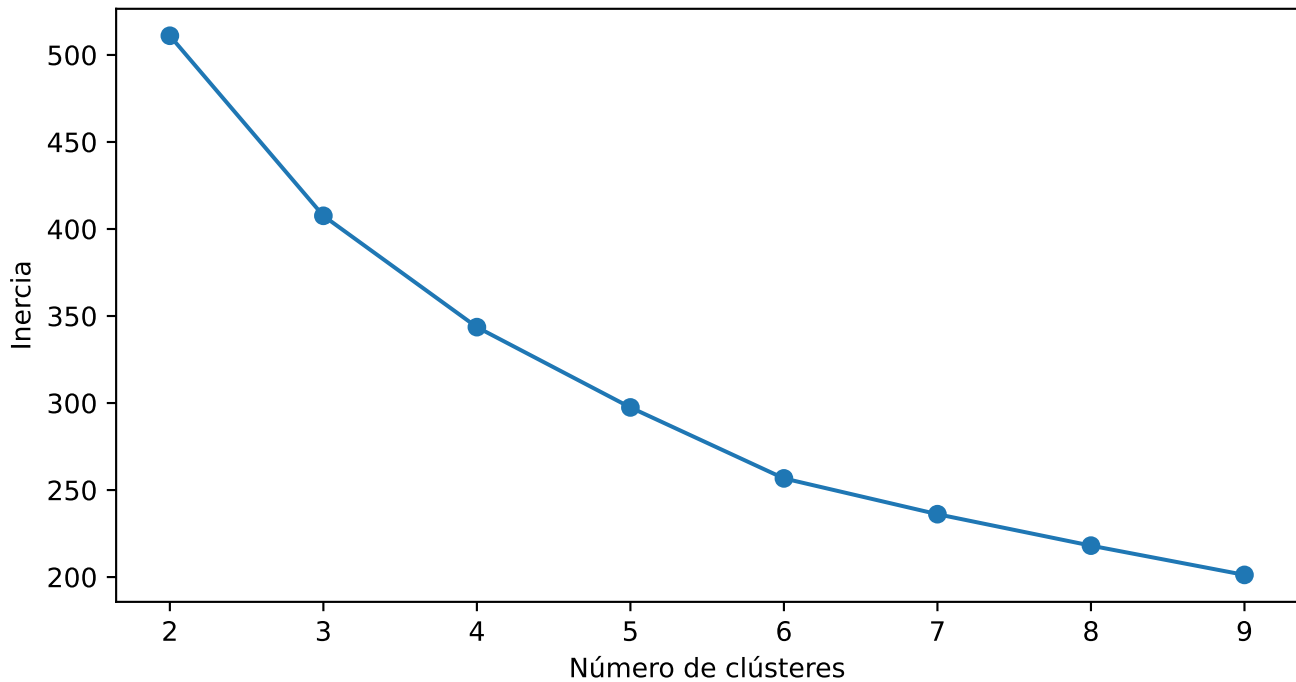
Comparación entre ET0 Real y Predicho — Toluca (2022)



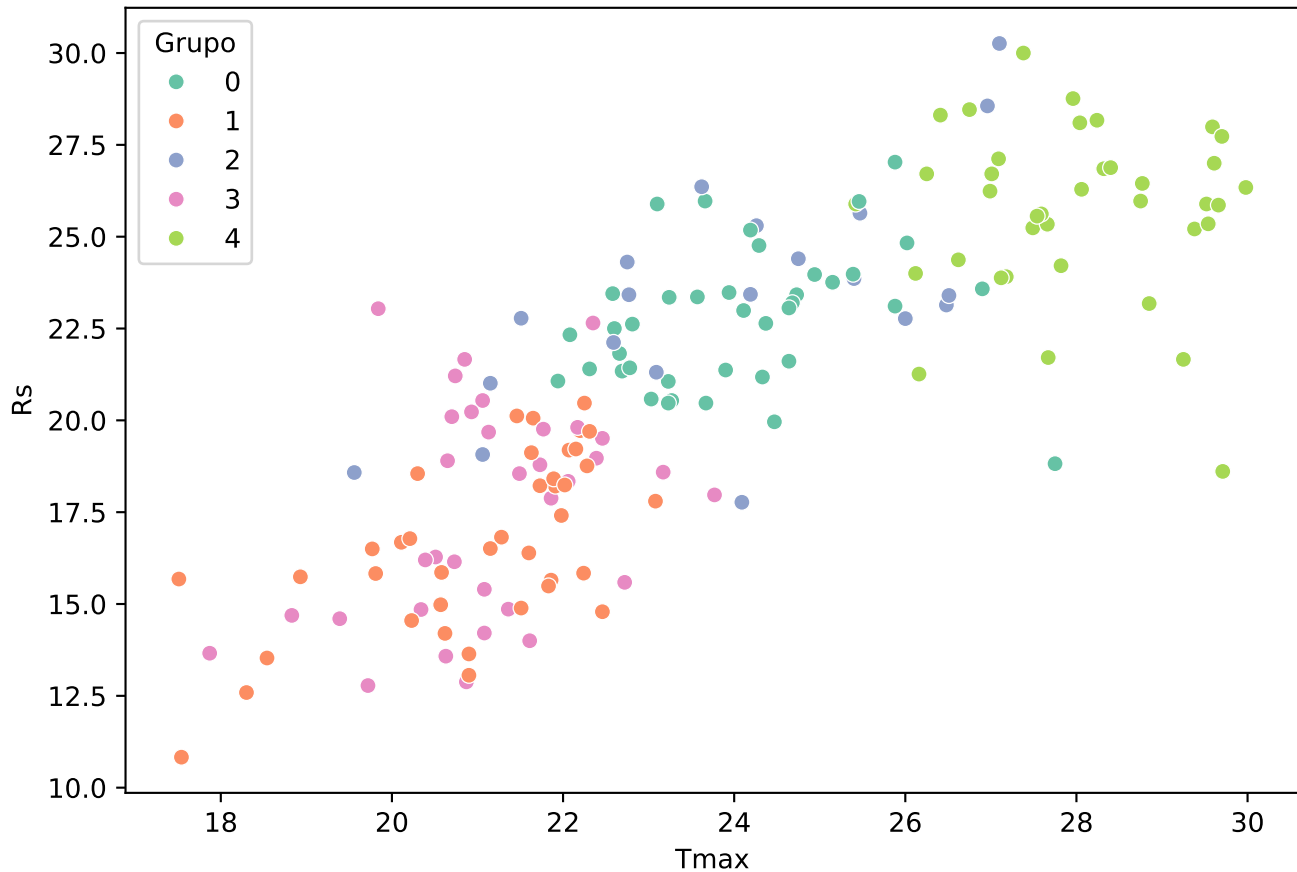
Importancia de variables (RF) — Toluca (2022)



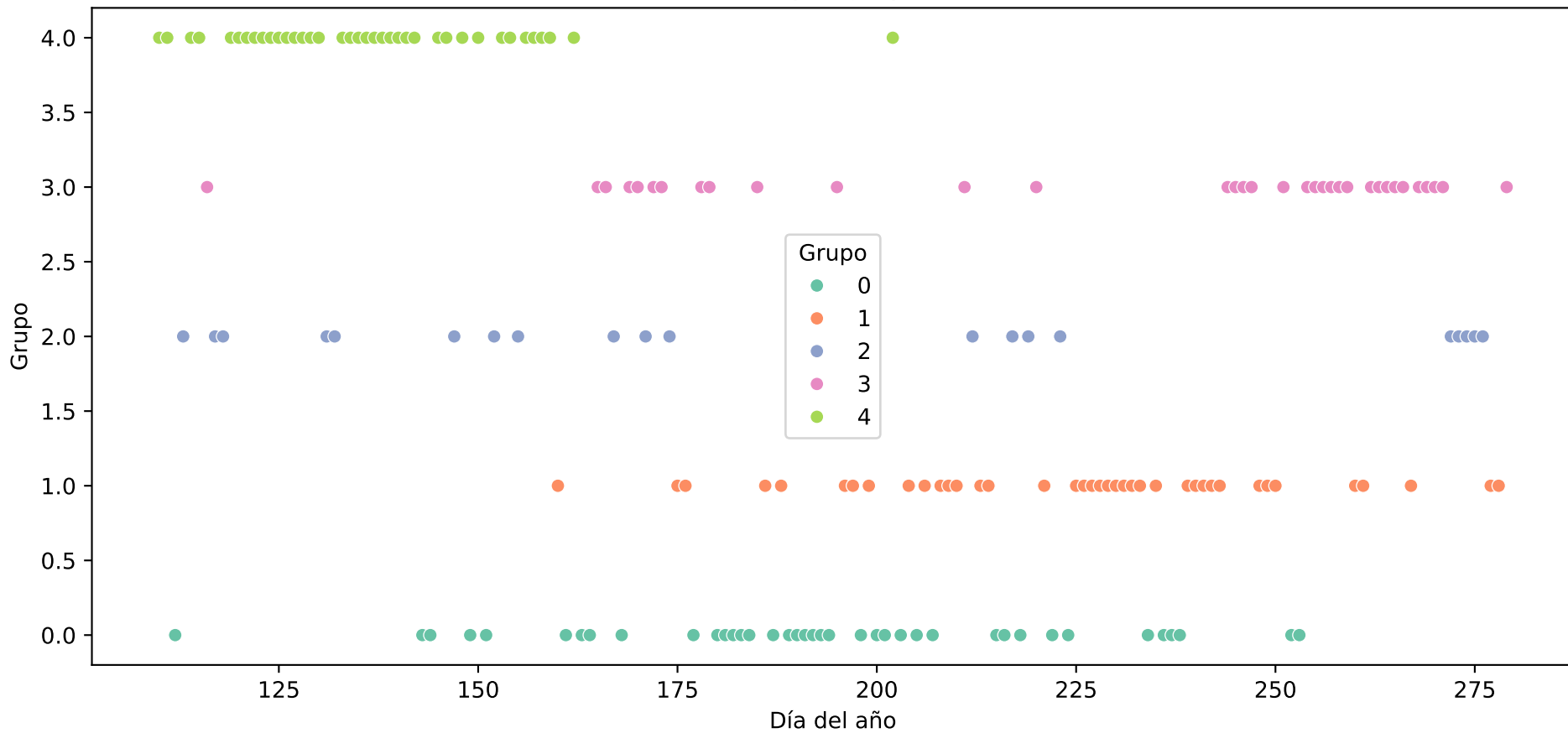
Método del codo



Clasificación de días climáticos — Toluca (2022)

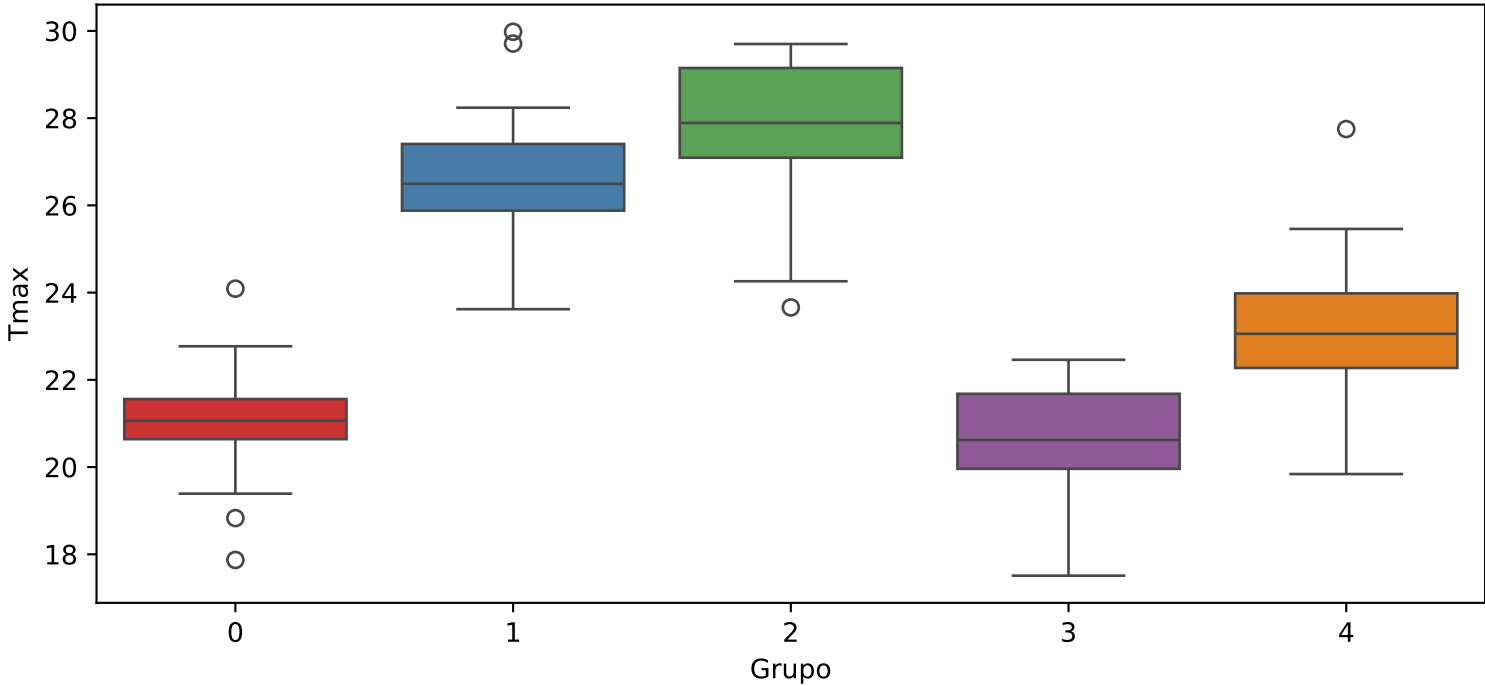


Distribución de días por grupo — Toluca (2022)

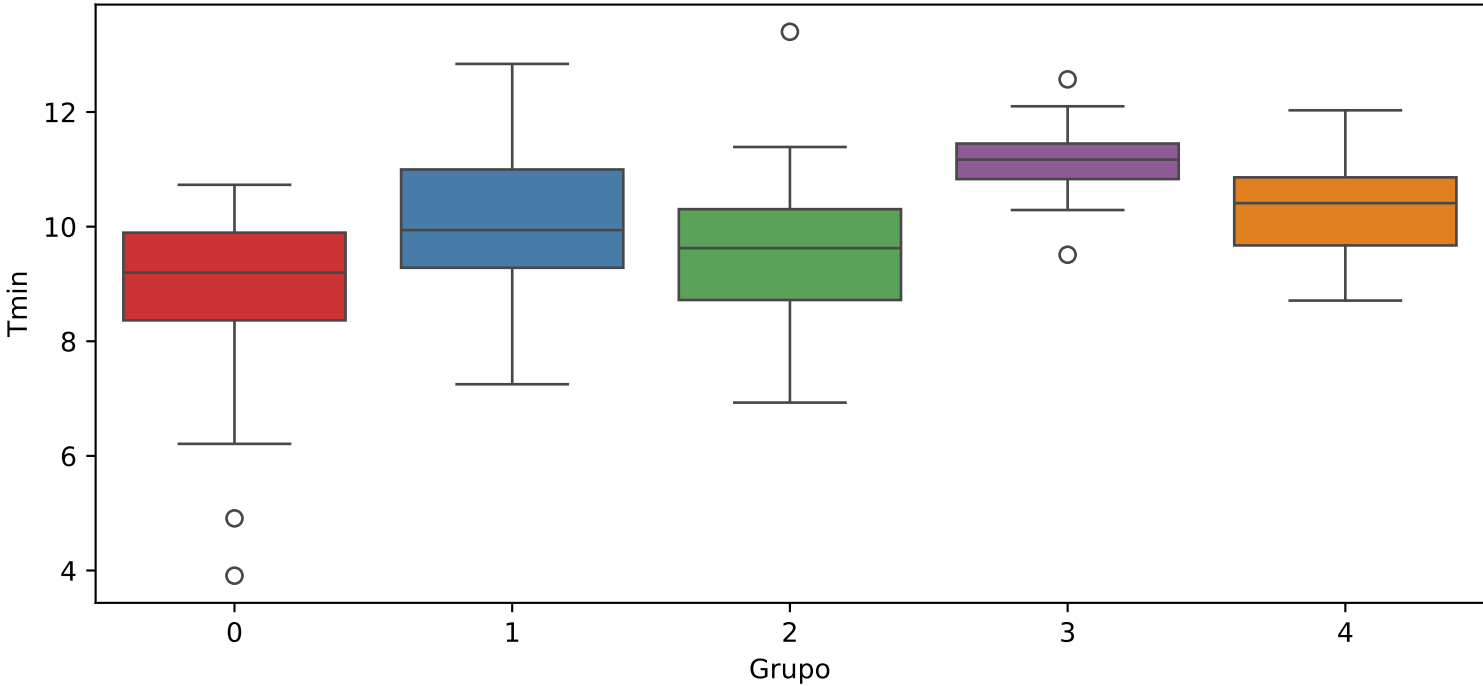


Boxplots por grupo — Toluca (2022)

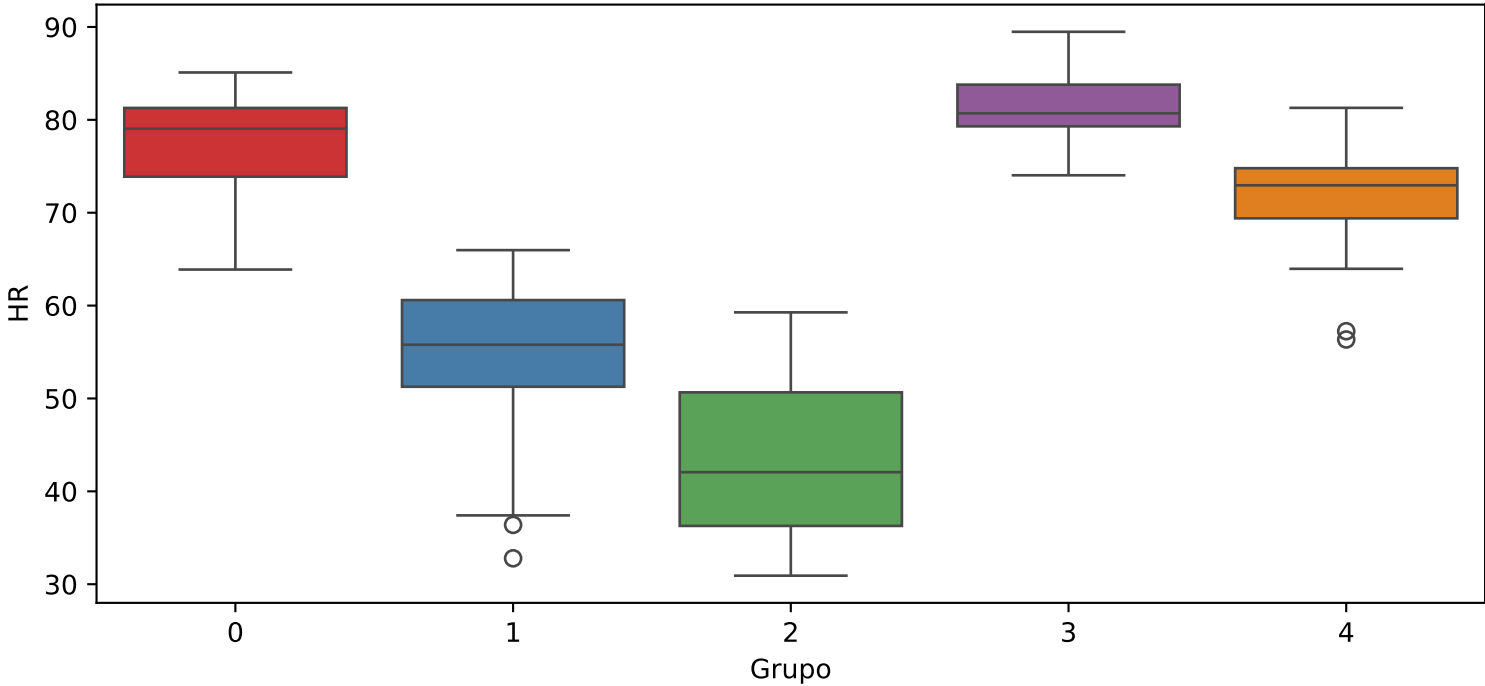
Distribución de Tmax por grupo



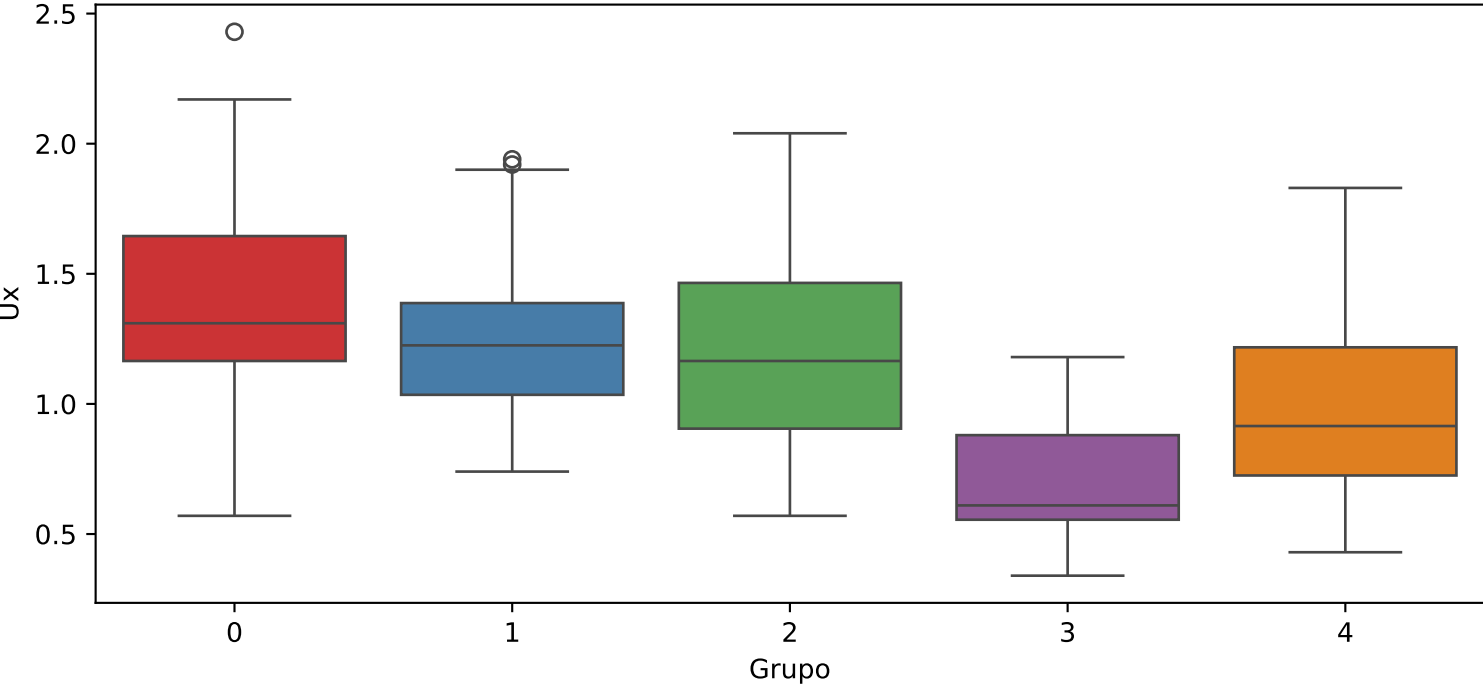
Distribución de Tmin por grupo



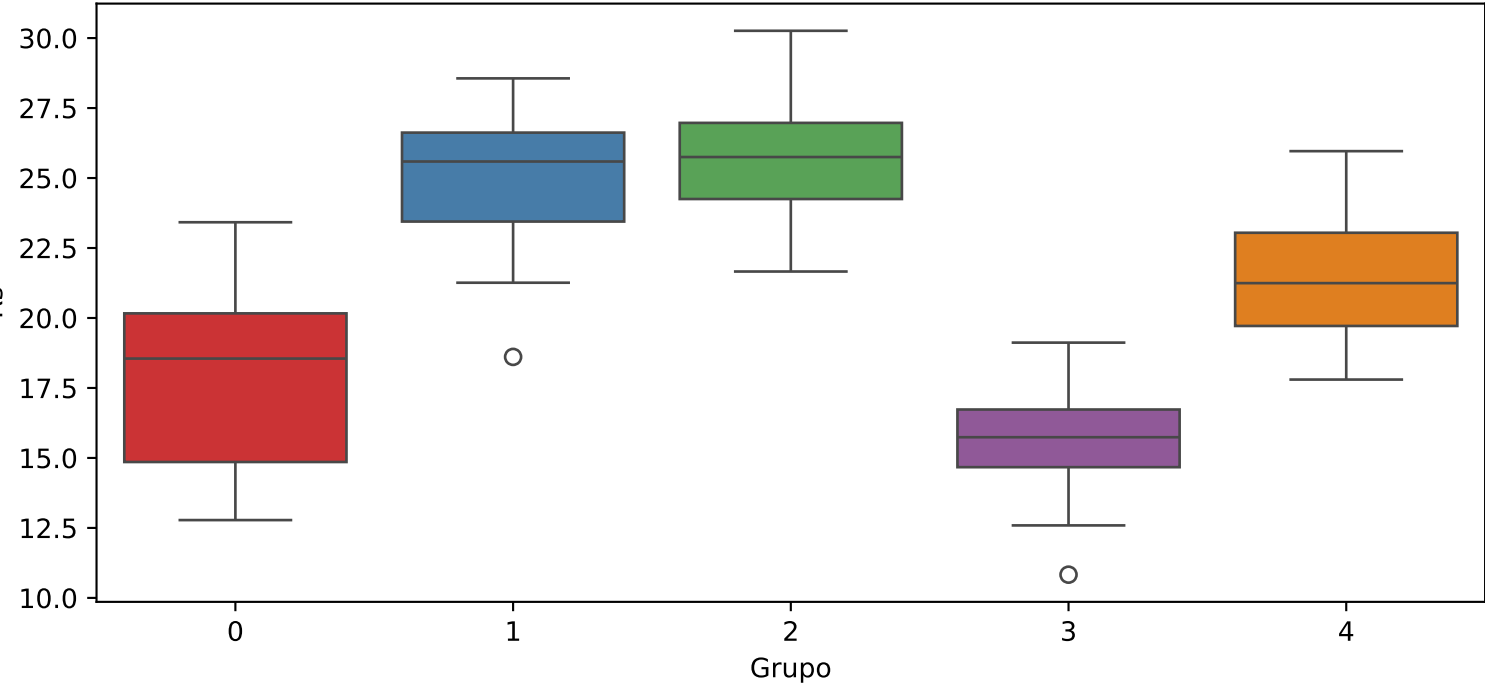
Distribución de HR por grupo



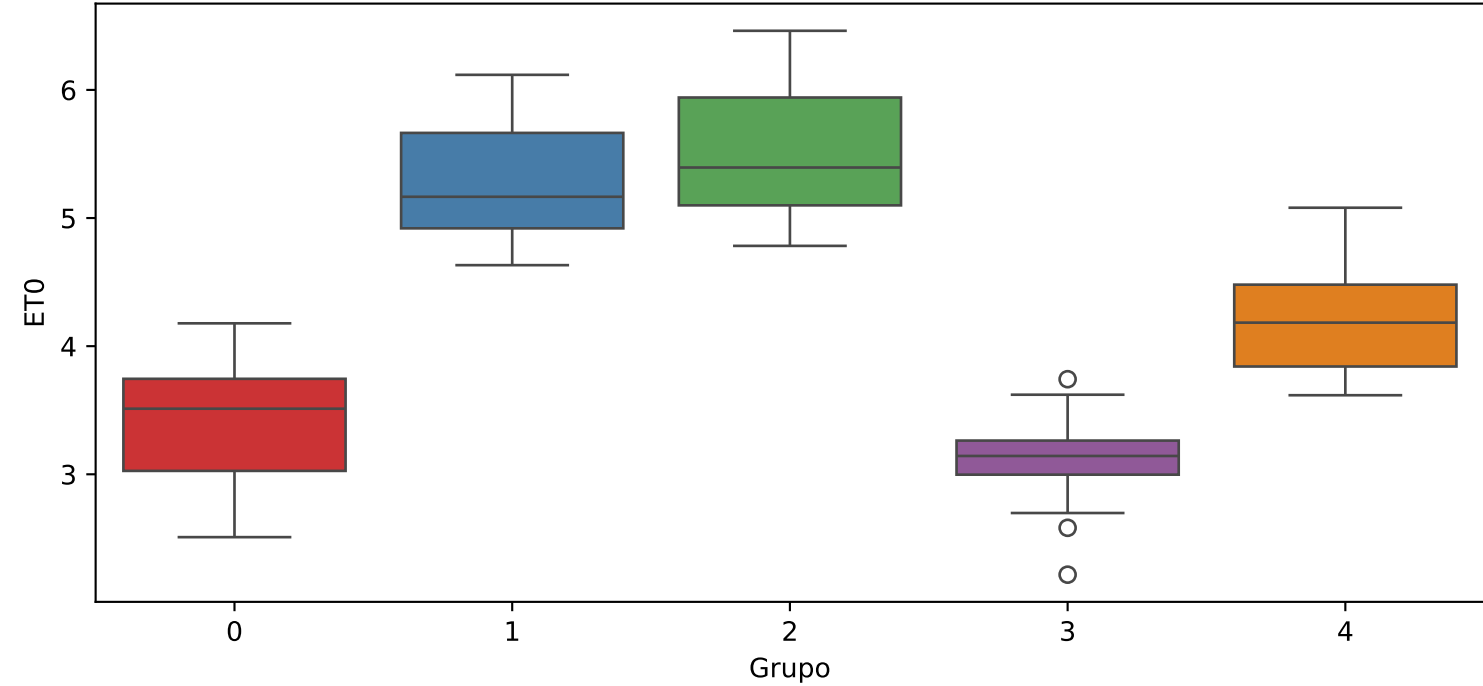
Distribución de Ux por grupo



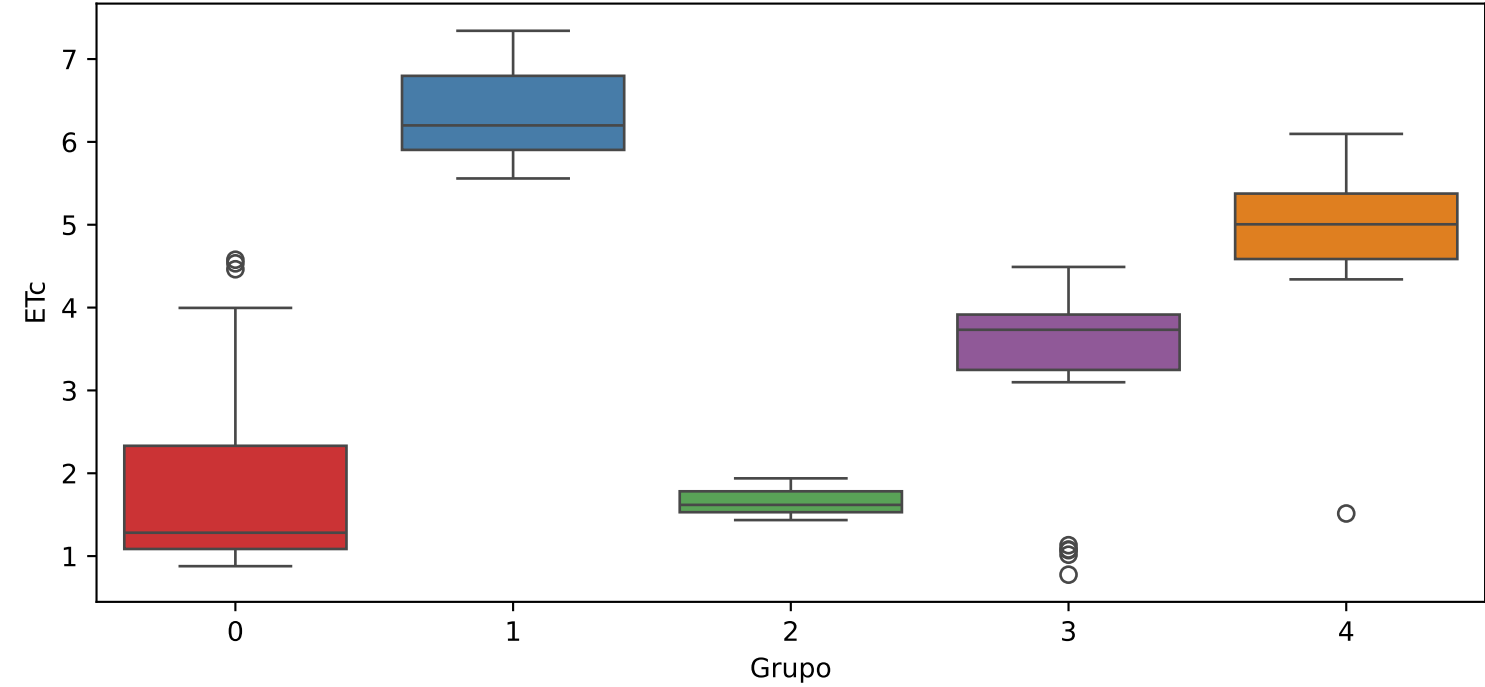
Distribución de Rs por grupo



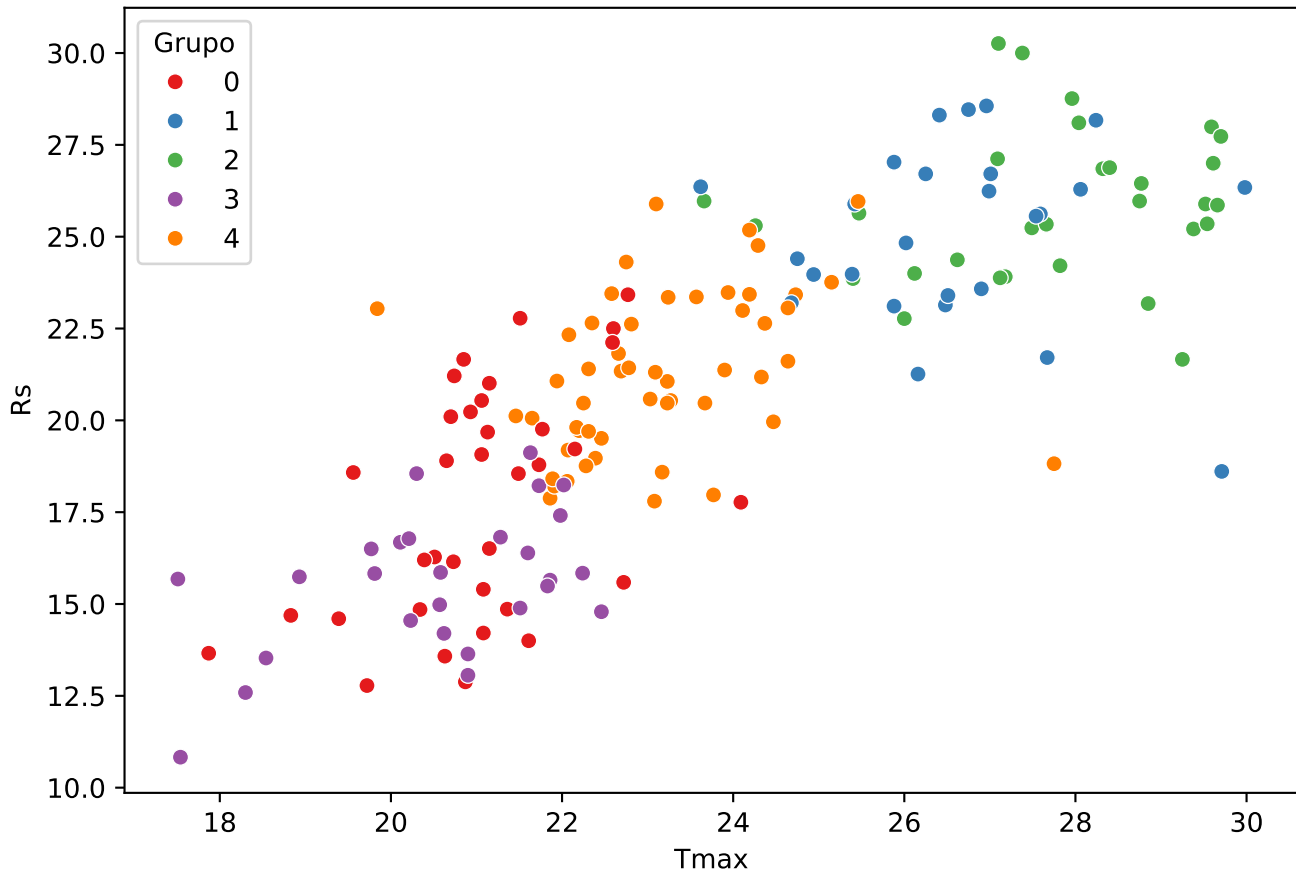
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2022)



Toluca — 2023

Días del ciclo: 170

ETc total [mm]: 688.8

ETverde total [mm]: 200.6

ETazul total [mm]: 488.2

Tmax / Tmin [°C]: 31.1 / 6.2

Toluca — 2023 · Resultados y métricas

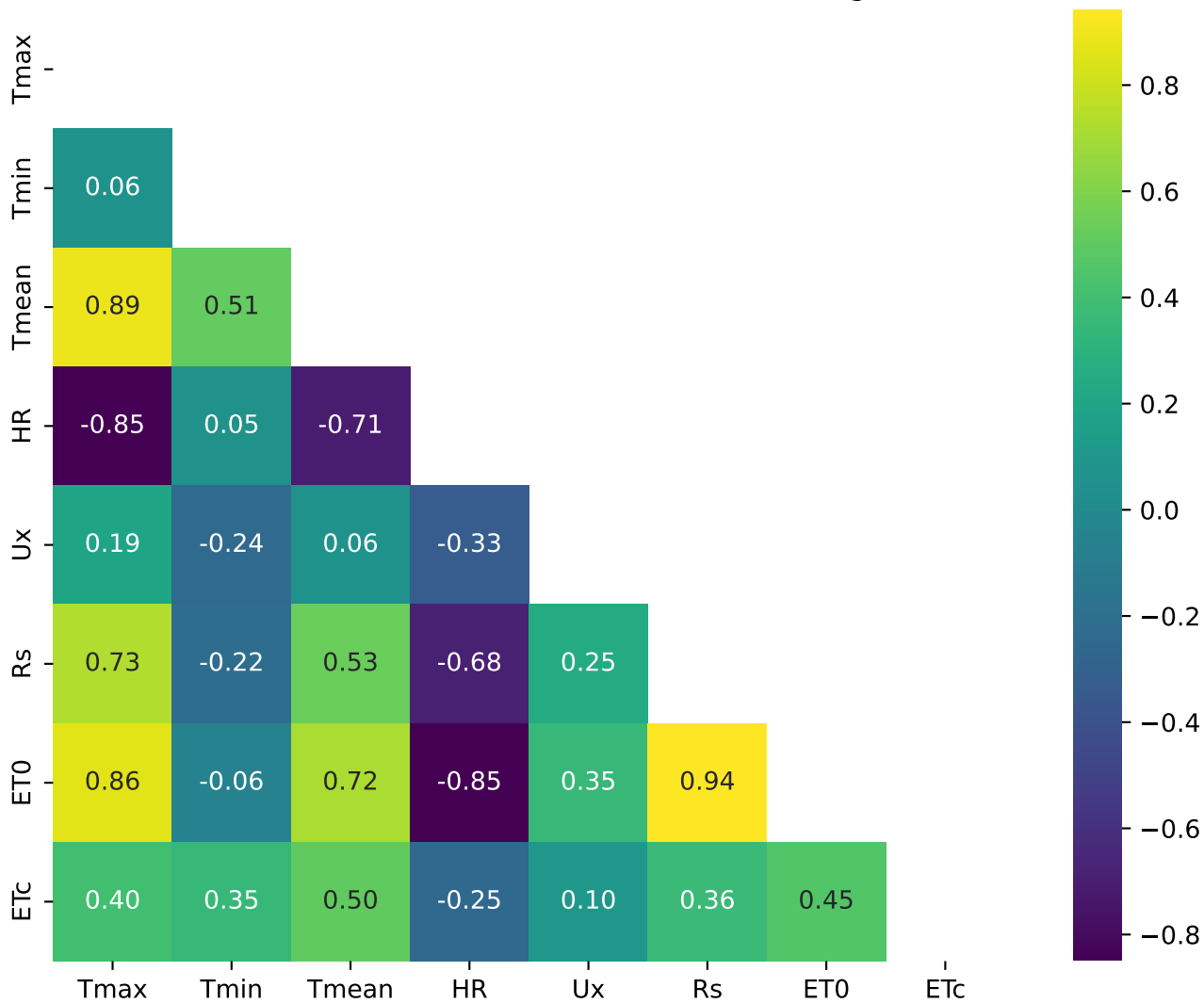
[Toluca 2023] Regresión Lineal ET0 — R²: 0.9942 MSE: 0.0063
[Toluca 2023] Random Forest ET0 — R²: 0.9748 MSE: 0.0276
Importancias: {'Tmax': 0.08743774858764318, 'Tmin': 0.0051421184537865415, 'HR': 0.09121197145347021, 'Ux': 0.007027330658515834, 'Rs': 0.8091808308465843}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	21.694103	10.879231	76.572564	1.046154	16.731282	3.384920	3.436213
1	26.149375	10.796563	62.098750	1.081875	24.987500	5.100543	6.120652
2	29.937895	11.648947	41.281579	1.362105	27.984737	6.292168	7.550602
3	25.516333	8.980333	55.153000	1.334333	25.273000	5.106144	1.642630
4	24.360800	11.549200	67.980400	0.897600	21.018600	4.259958	3.324100

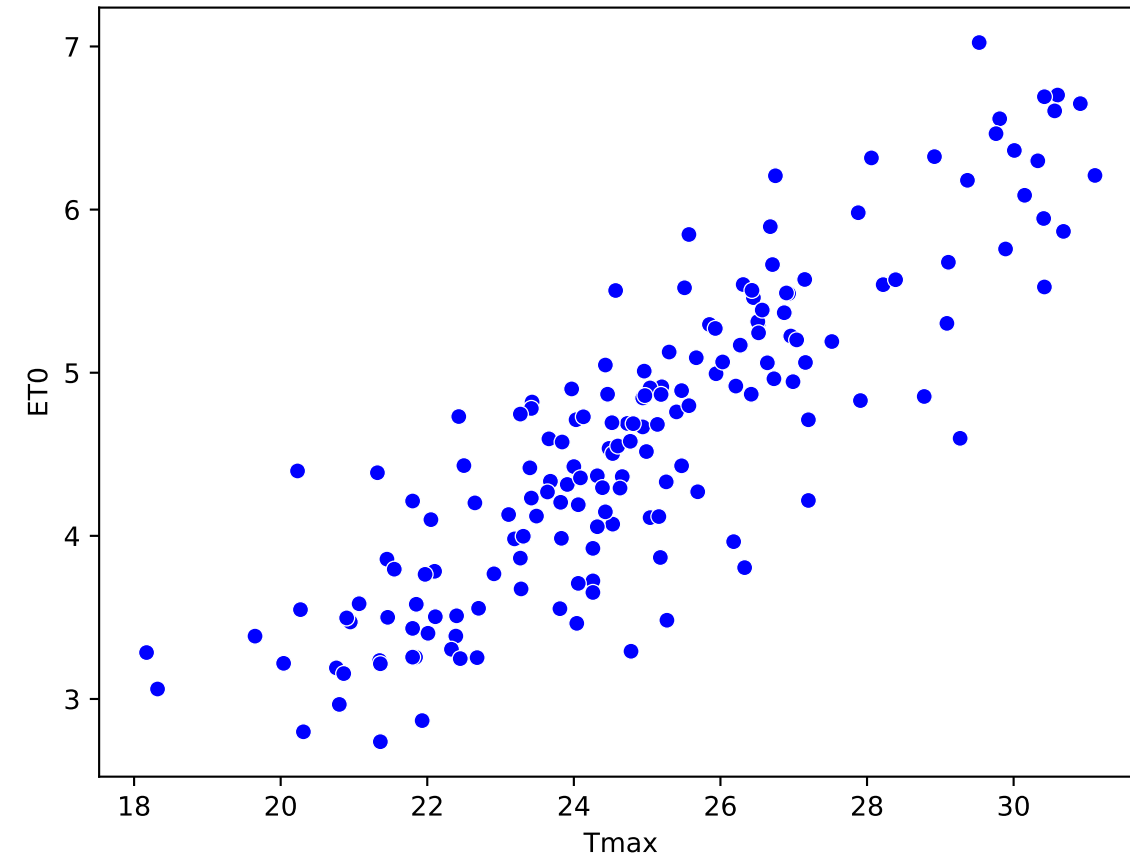
Toluca — 2023

Matriz de Correlación entre Variables Meteorológicas

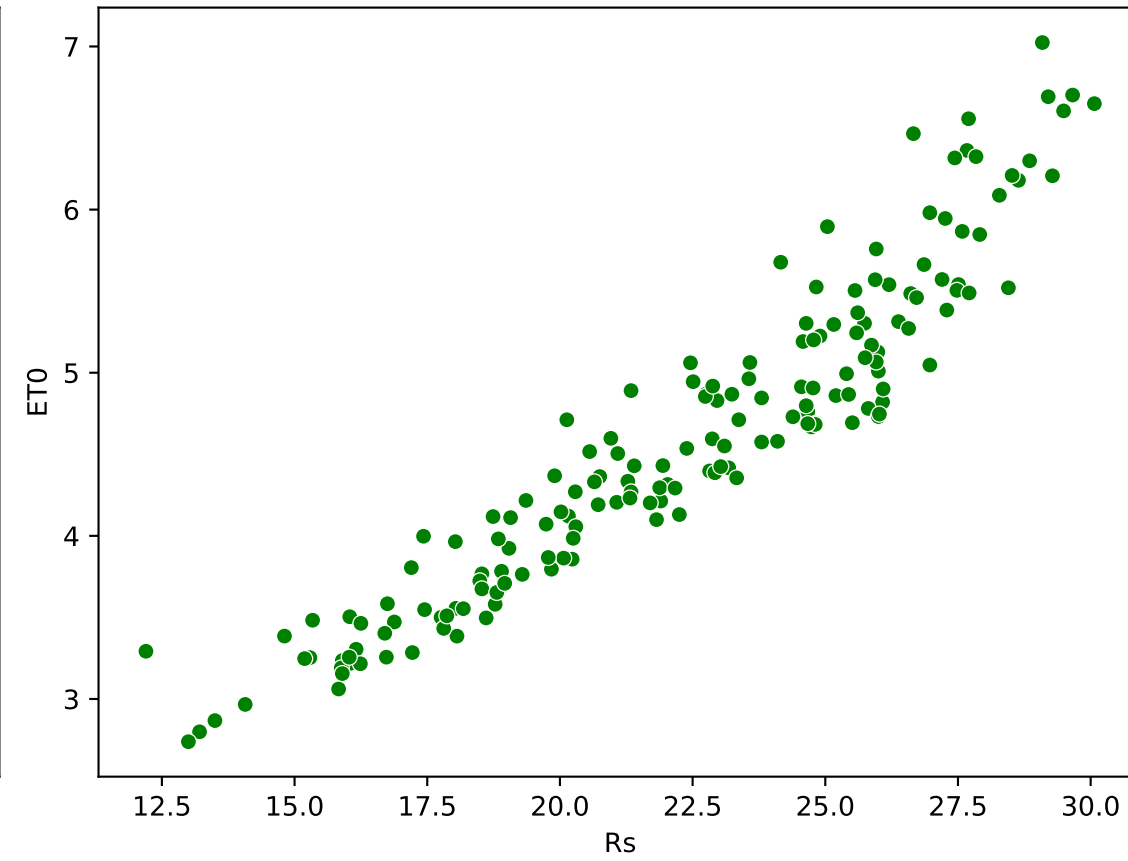


Dispersión — Toluca (2023)

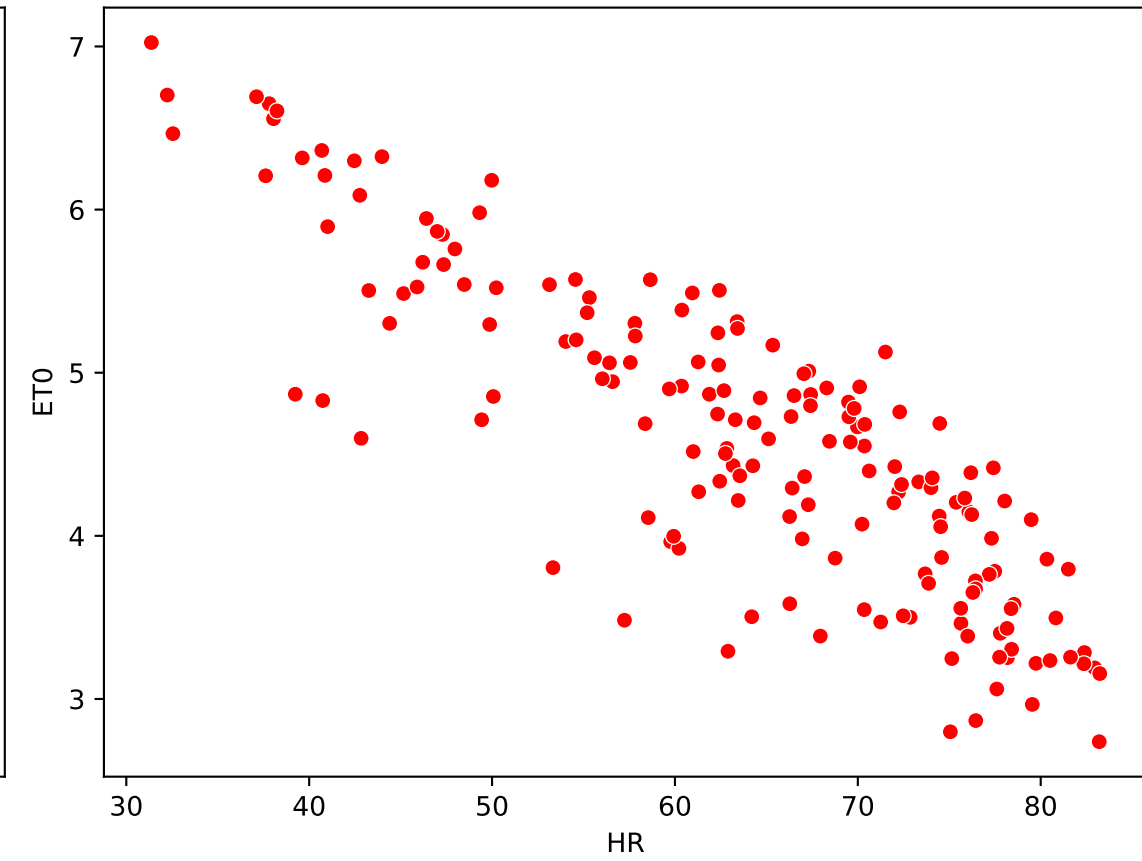
Tmax vs ET0



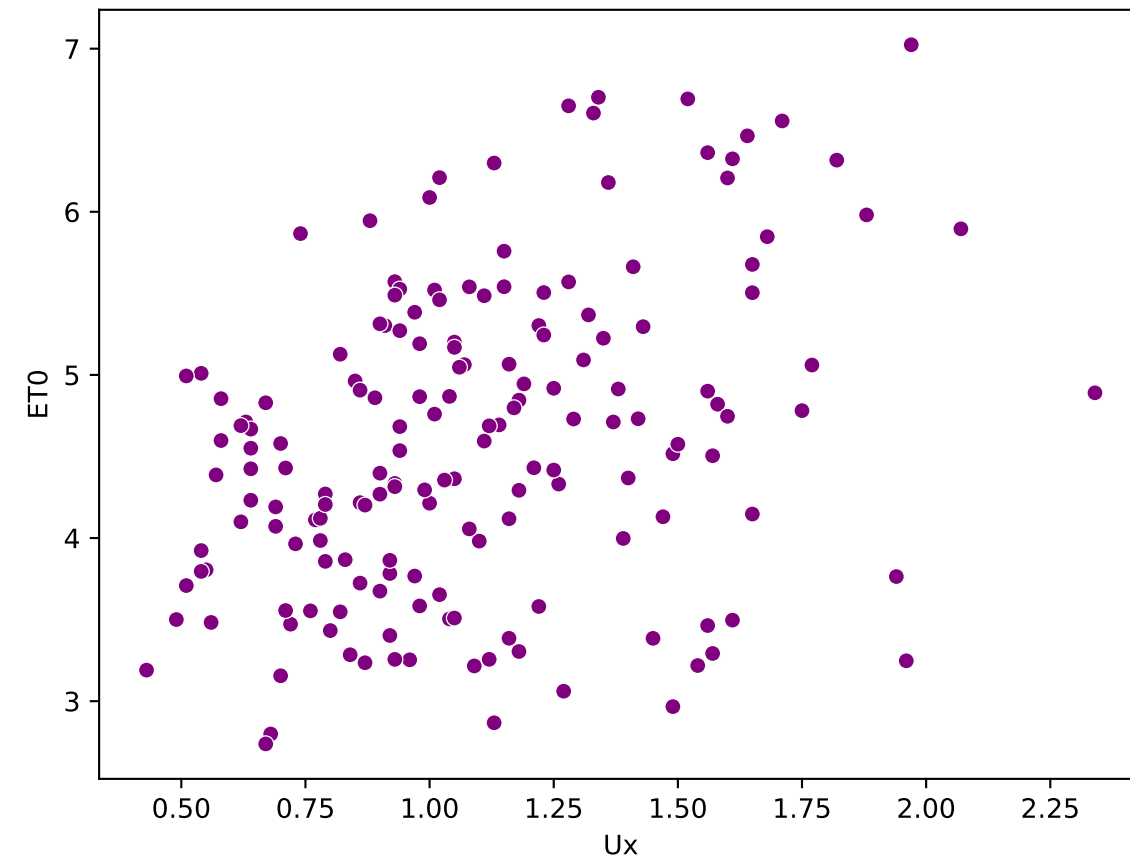
Rs vs ET0



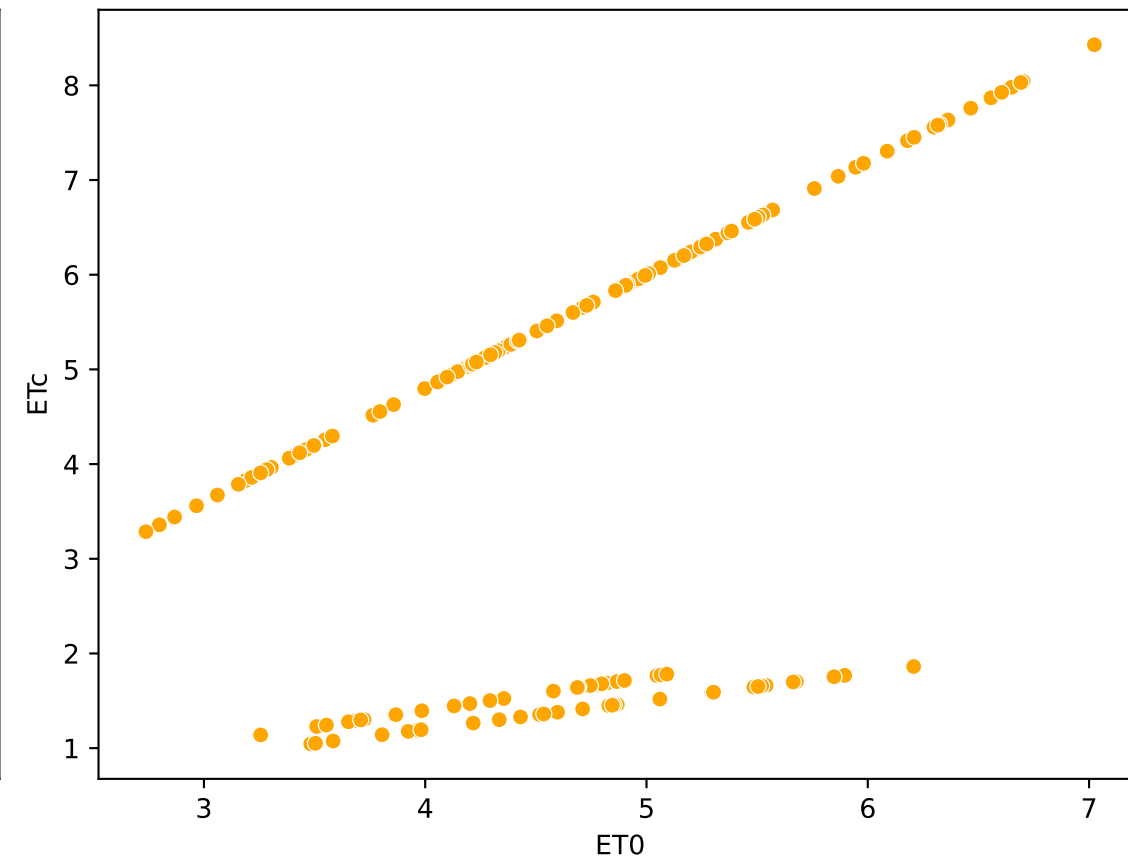
HR vs ET0



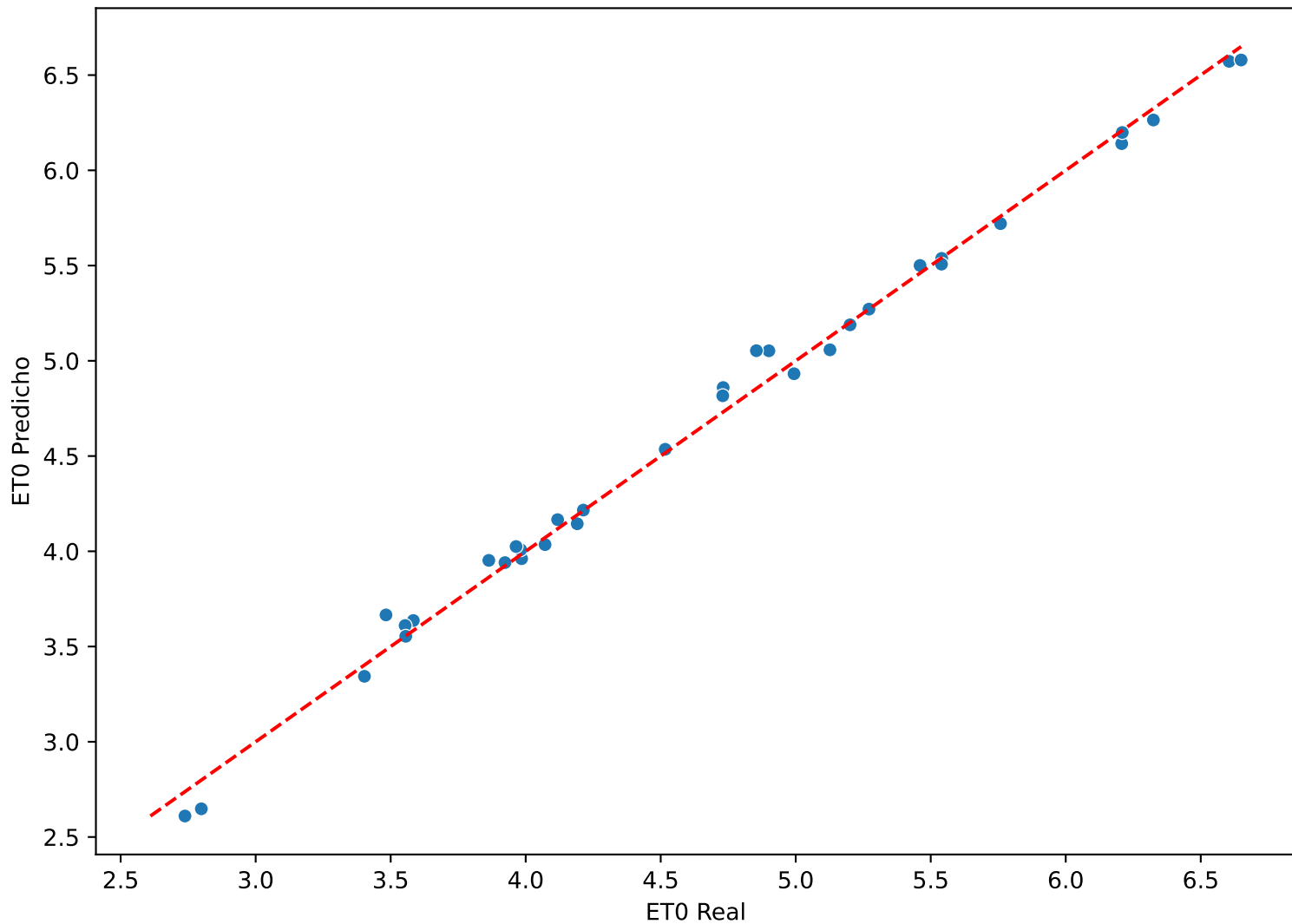
Ux vs ET0



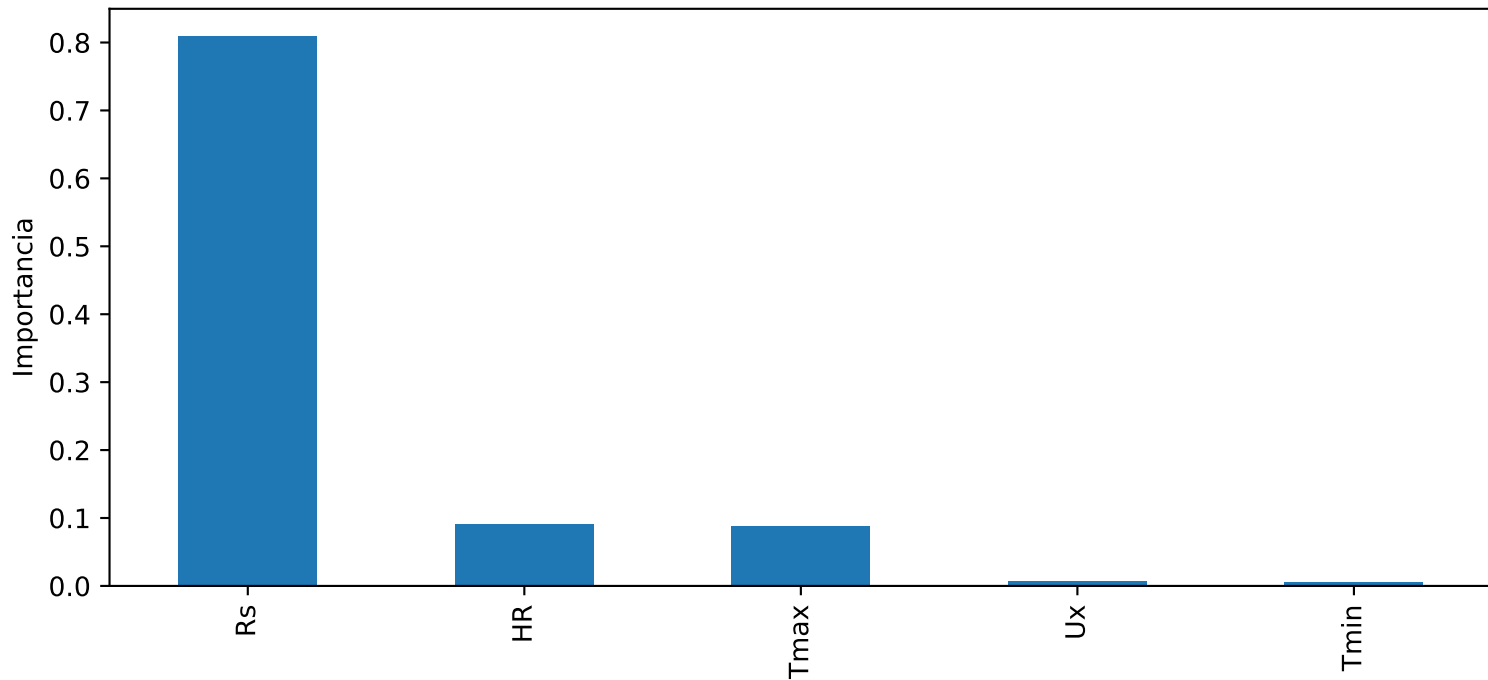
ET0 vs ETc



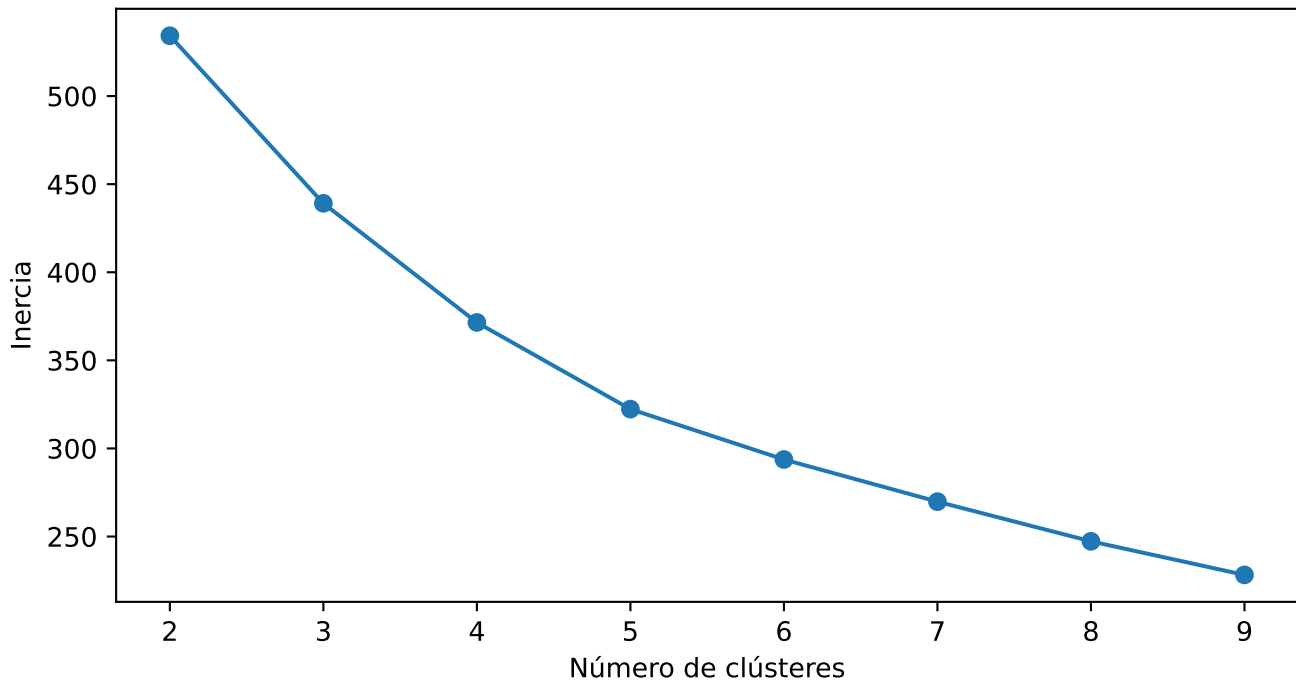
Comparación entre ET0 Real y Predicho — Toluca (2023)



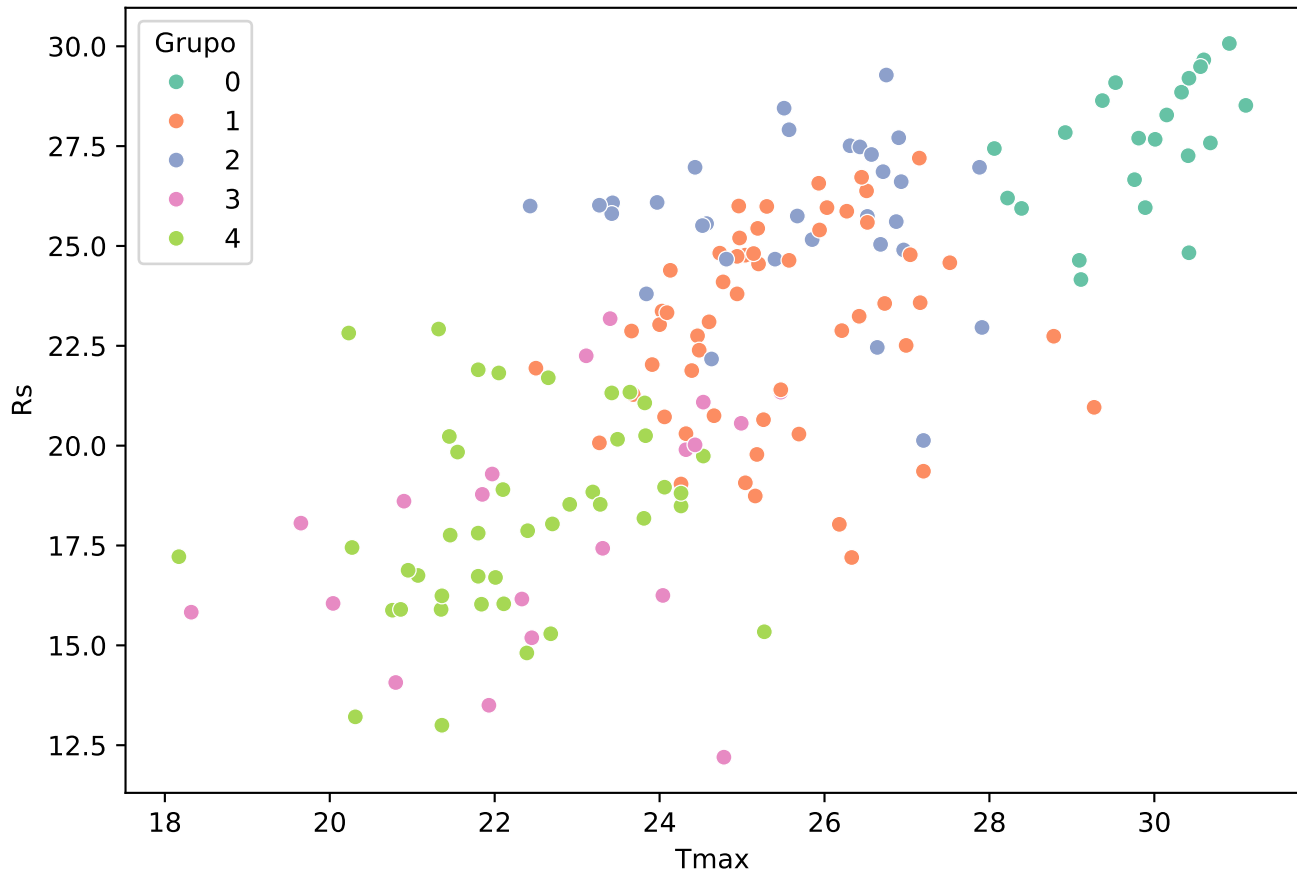
Importancia de variables (RF) — Toluca (2023)



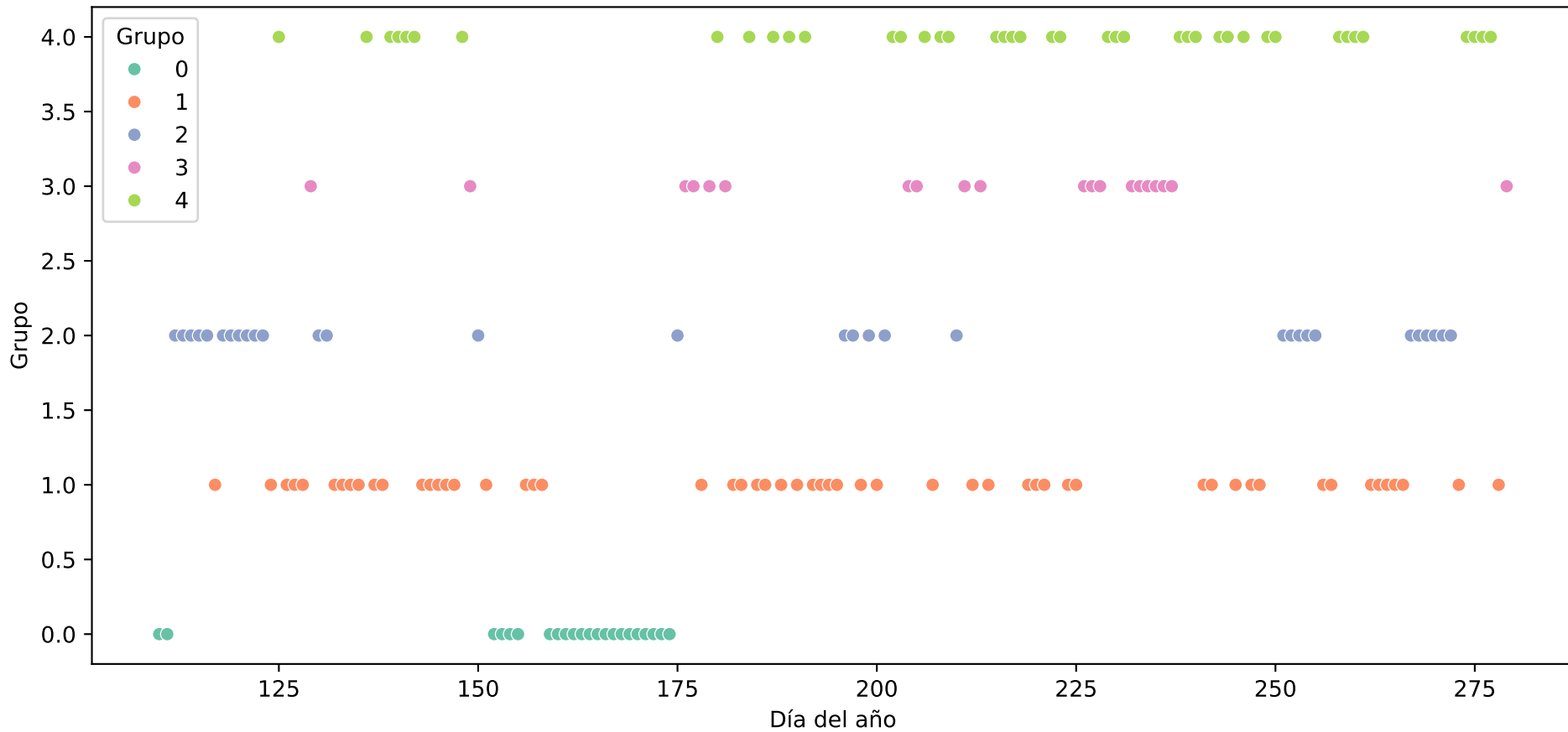
Método del codo



Clasificación de días climáticos — Toluca (2023)

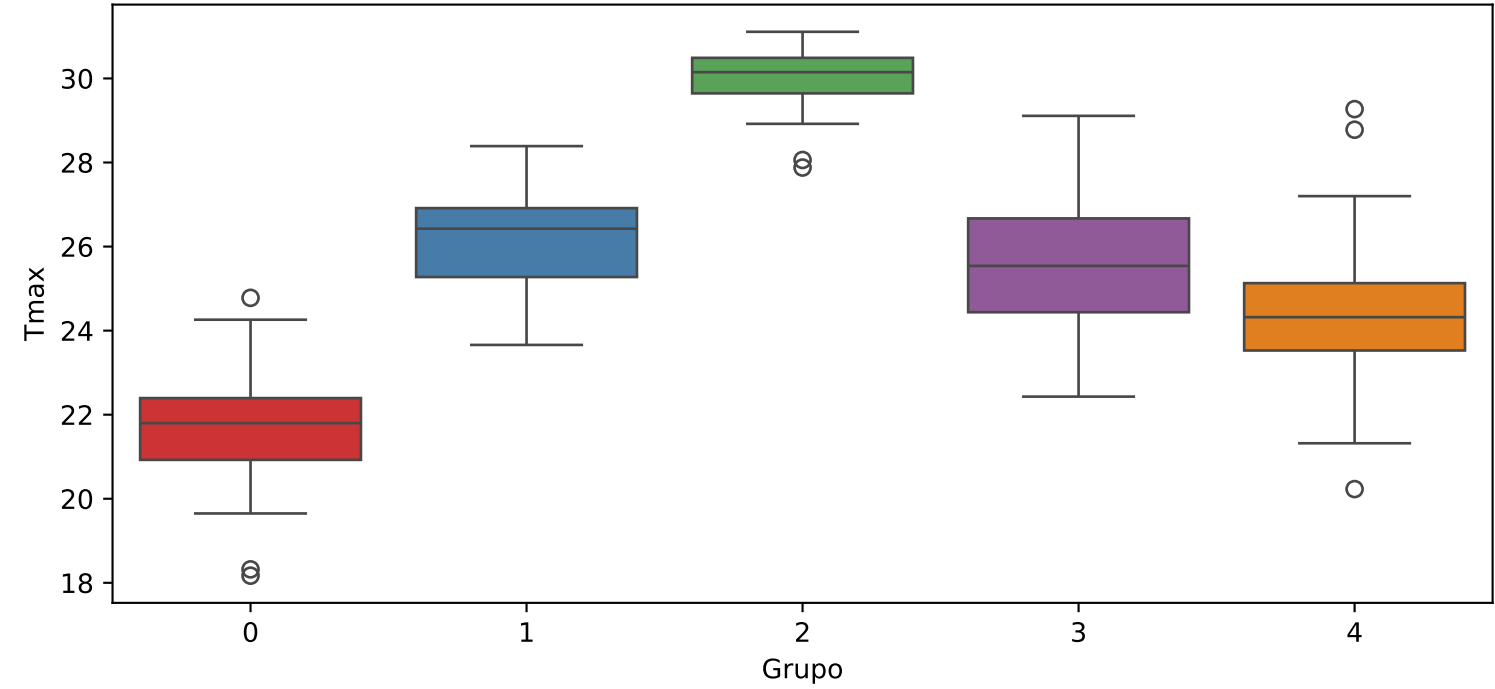


Distribución de días por grupo — Toluca (2023)

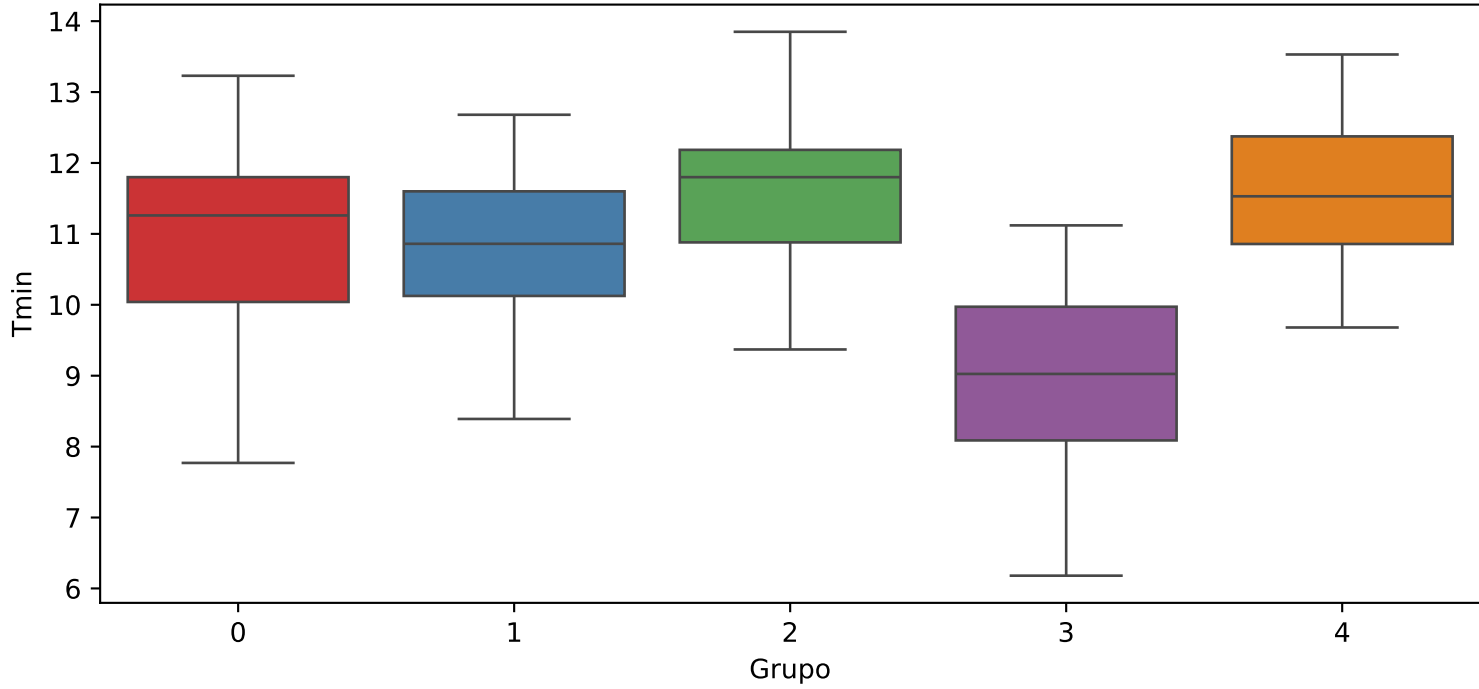


Boxplots por grupo — Toluca (2023)

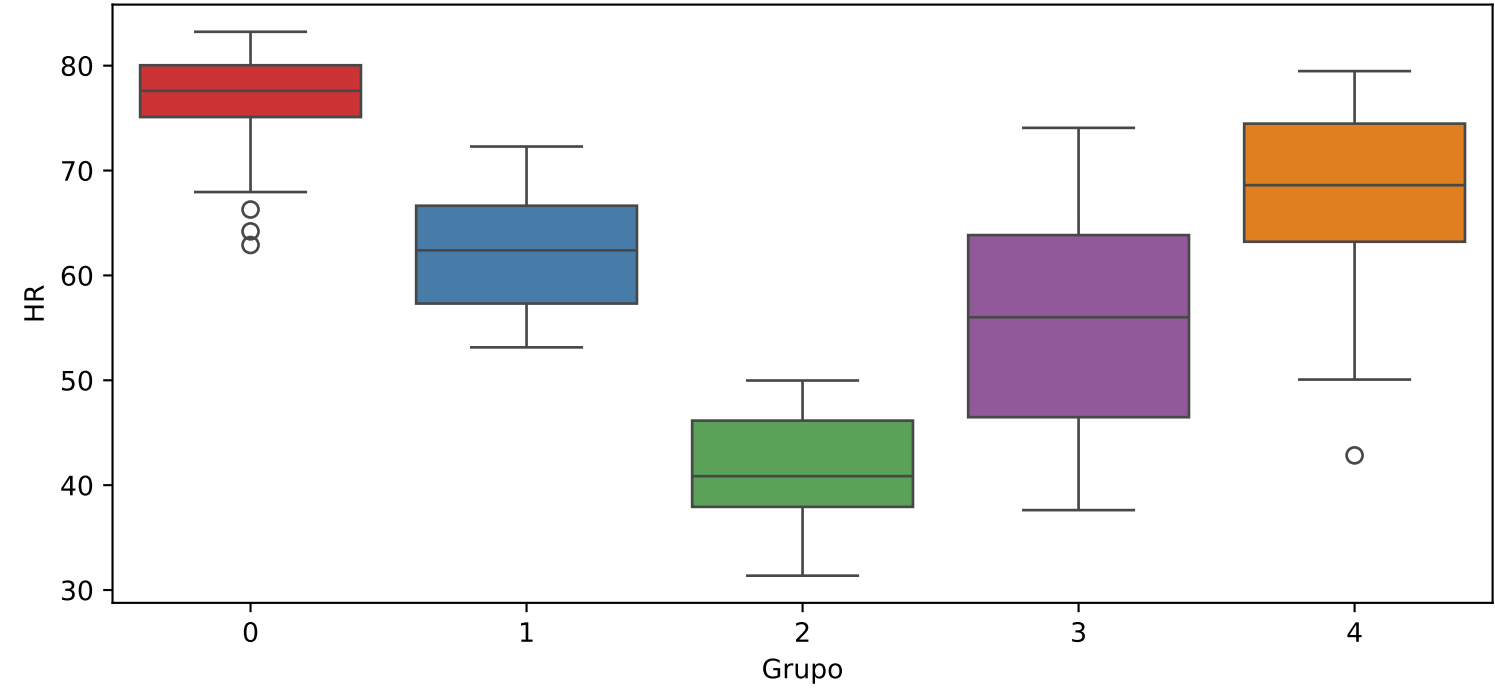
Distribución de Tmax por grupo



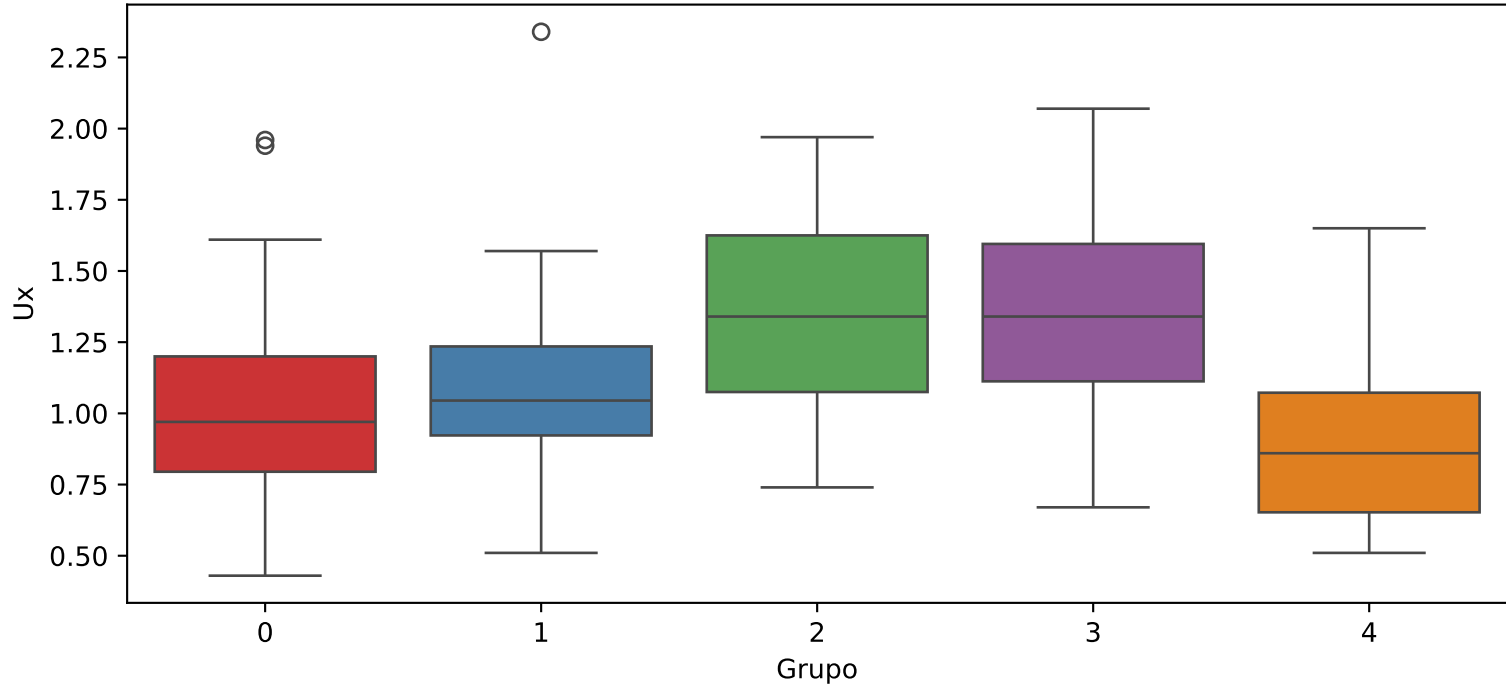
Distribución de Tmin por grupo



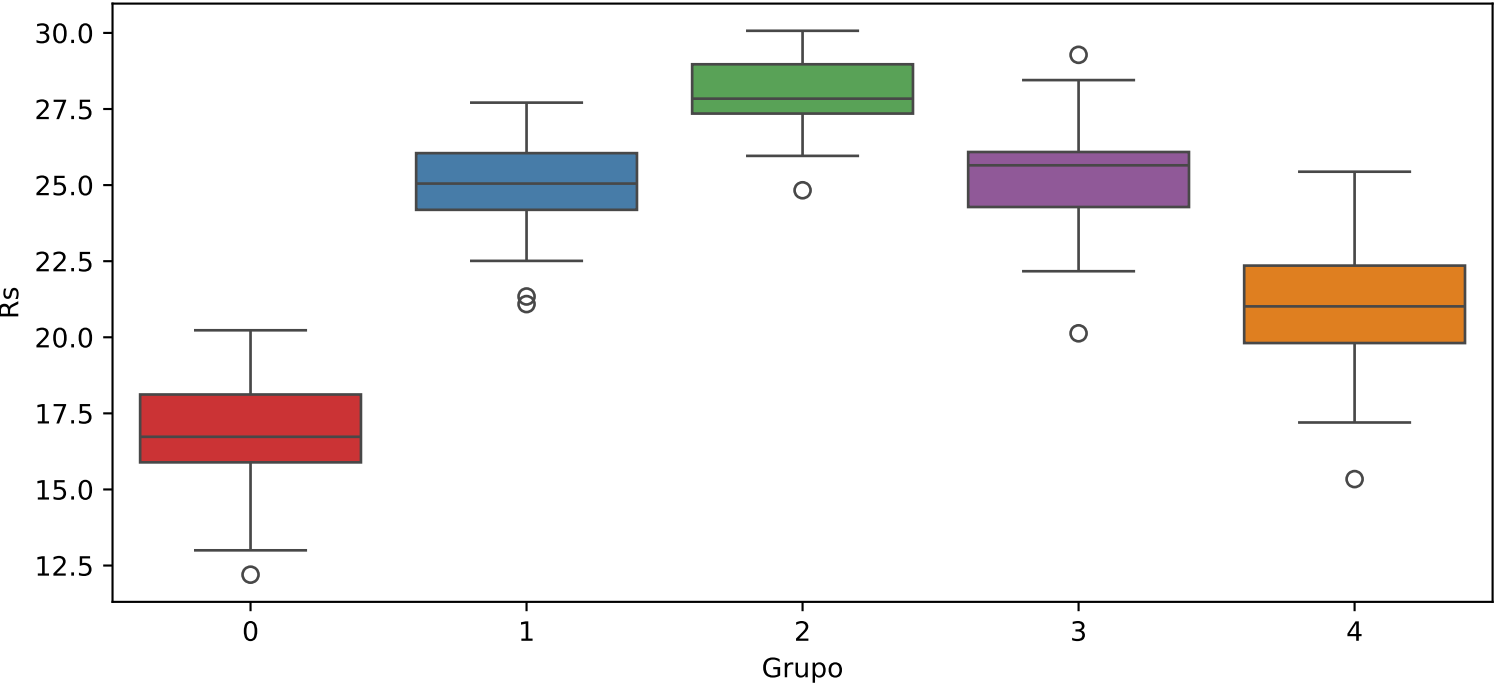
Distribución de HR por grupo



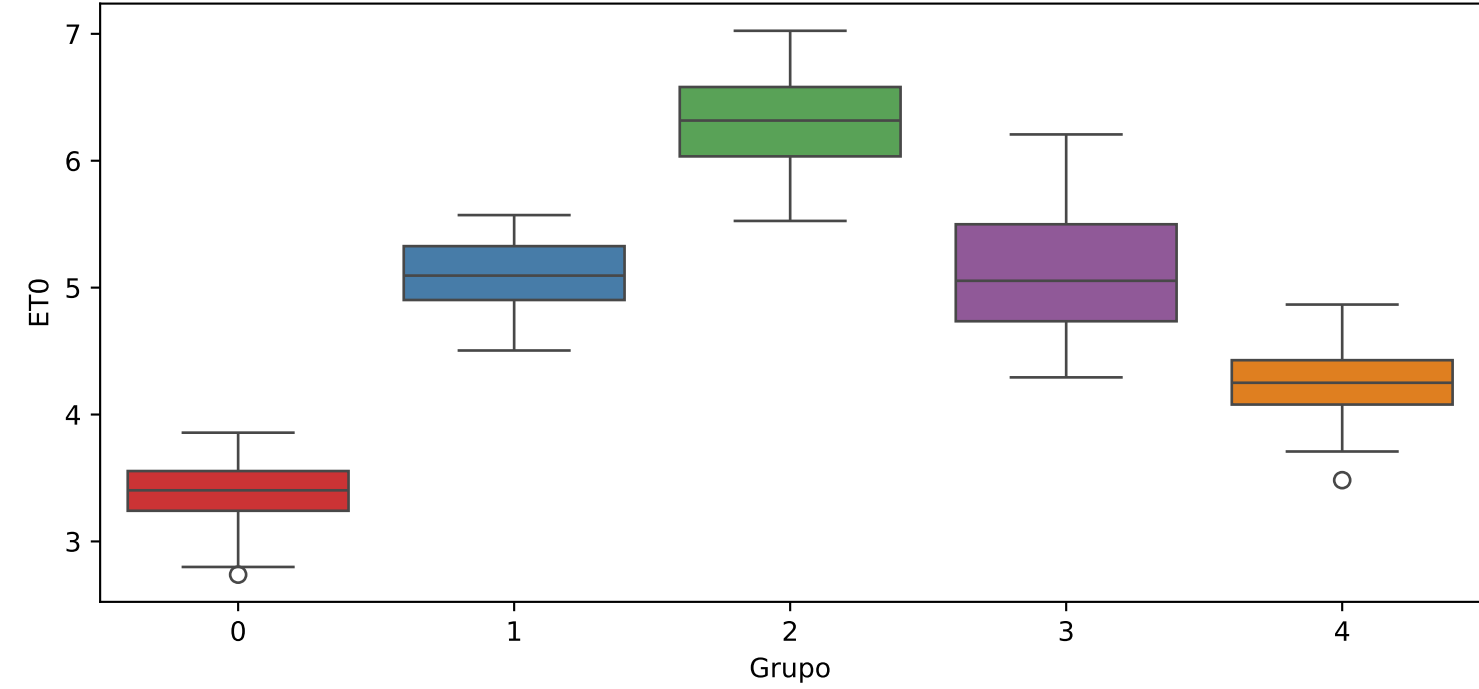
Distribución de Ux por grupo



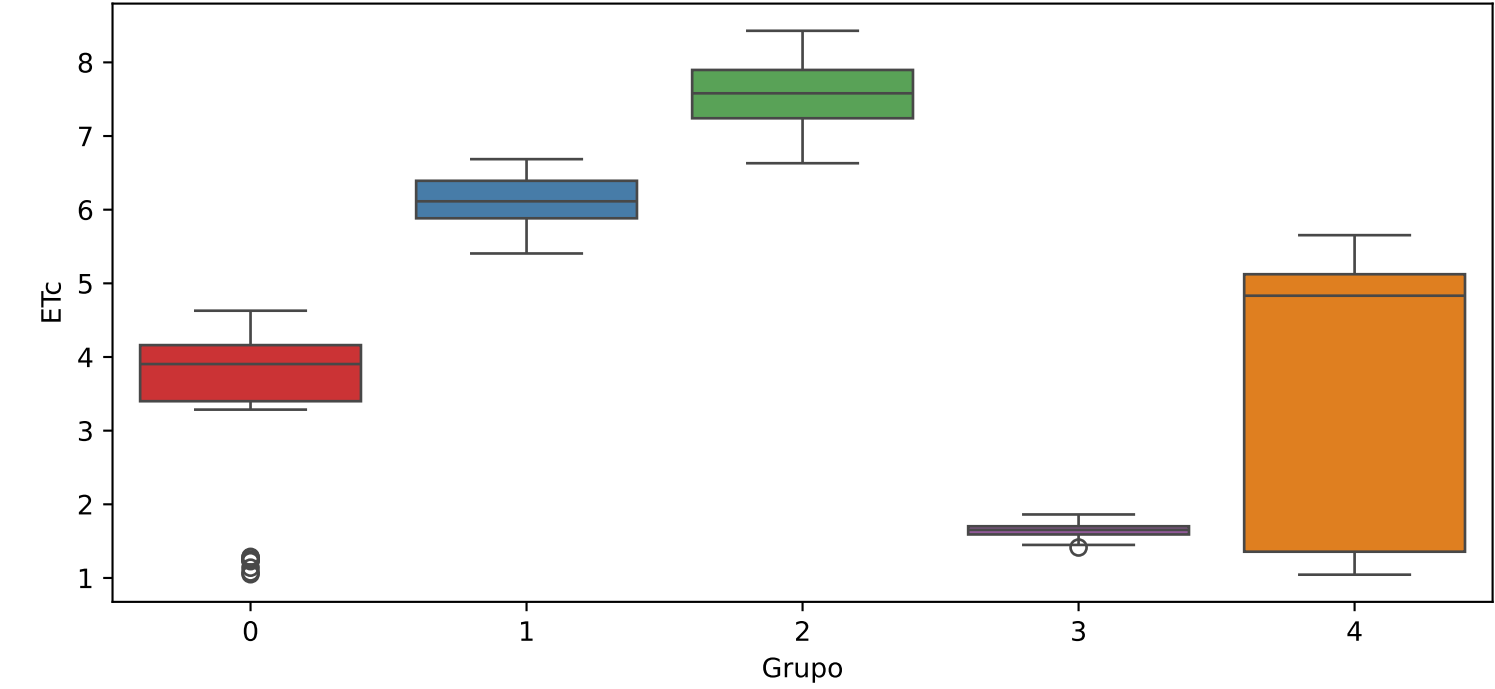
Distribución de Rs por grupo



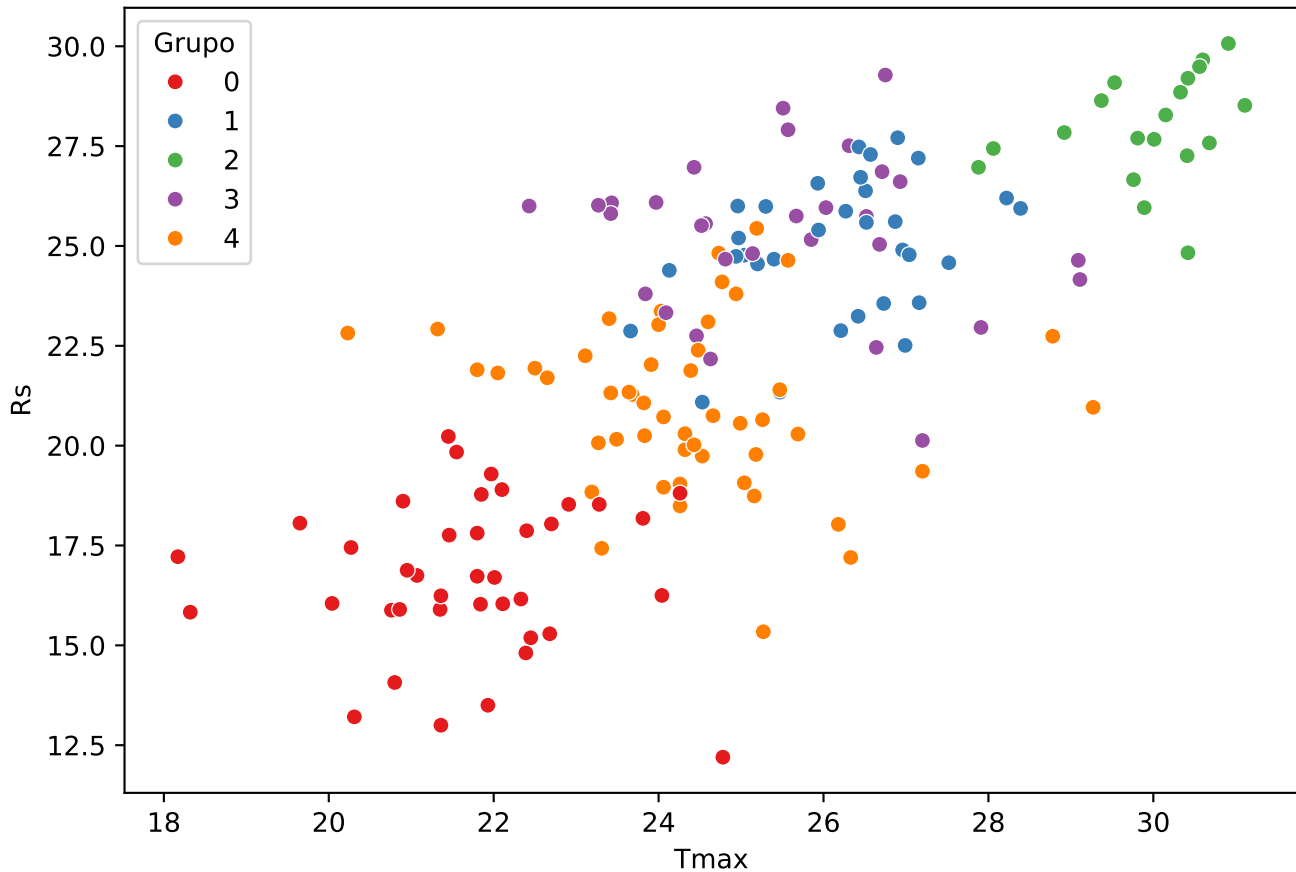
Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2023)



Toluca — 2024

Días del ciclo: 170

ETc total [mm]: 622.8

ETverde total [mm]: 305.6

ETazul total [mm]: 317.1

Tmax / Tmin [°C]: 32.7 / 5.7

Toluca — 2024 · Resultados y métricas

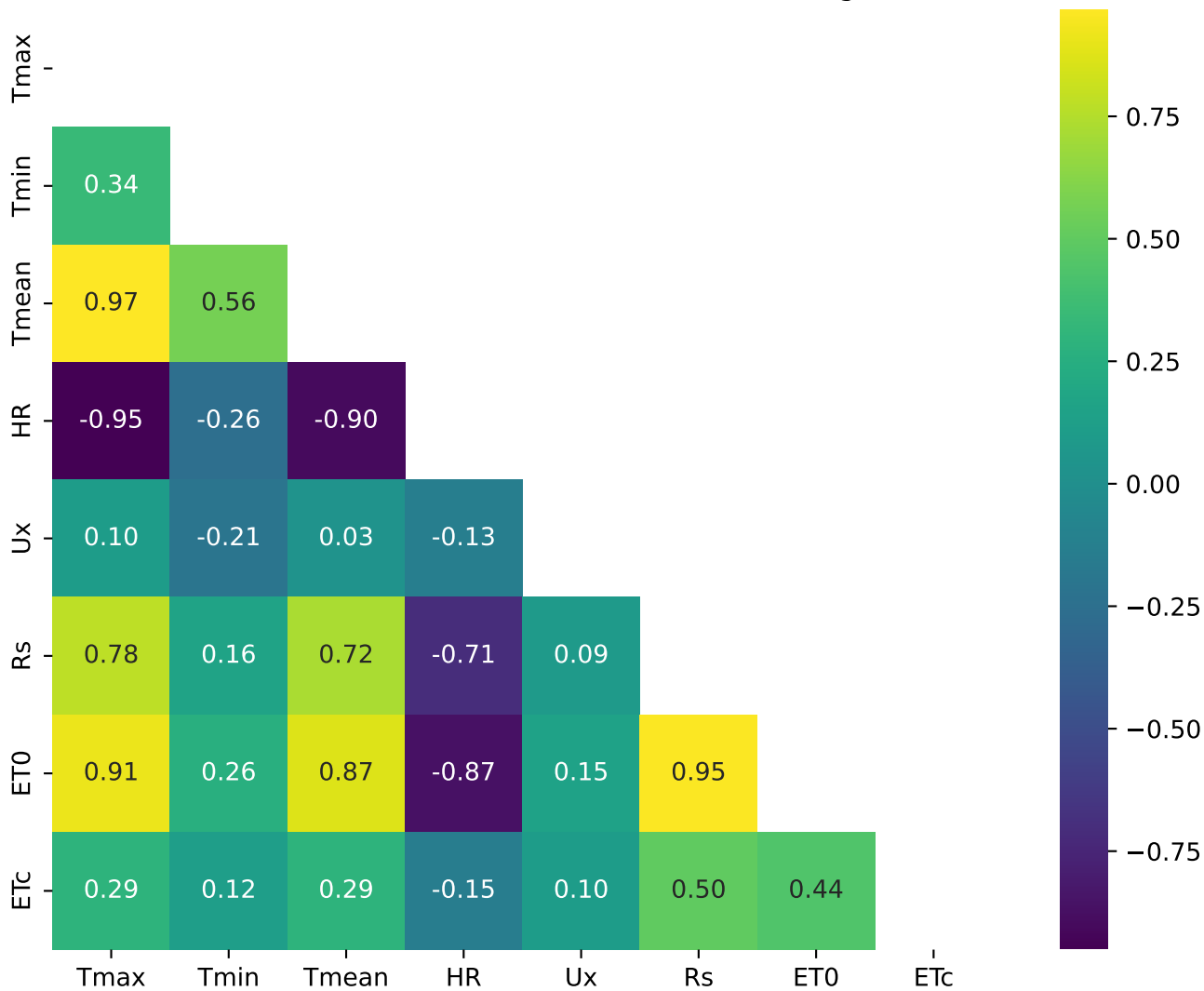
[Toluca 2024] Regresión Lineal ET0 — R²: 0.9875 MSE: 0.0182
[Toluca 2024] Random Forest ET0 — R²: 0.9848 MSE: 0.0221
Importancias: {'Tmax': 0.3798394104822879, 'Tmin': 0.0032926915663919953, 'HR': 0.07131838798910167, 'Ux': 0.008330111707732396, 'Rs': 0.537219398254486}

Estadísticas descriptivas por grupo (medias):

	Tmax mean	Tmin mean	HR mean	Ux mean	Rs mean	ET0 mean	ETc mean
cluster							
0	19.474286	9.855238	84.694762	1.412857	12.270952	2.466487	1.445293
1	22.698462	10.903846	75.838205	1.063333	21.434103	4.164346	4.901402
2	29.853333	11.933333	35.724333	1.074000	24.206333	5.552621	1.665786
3	30.018000	12.211200	45.612800	1.247600	26.278400	5.879253	7.055103
4	20.858364	12.077455	83.734000	0.778727	16.807273	3.303780	3.179893

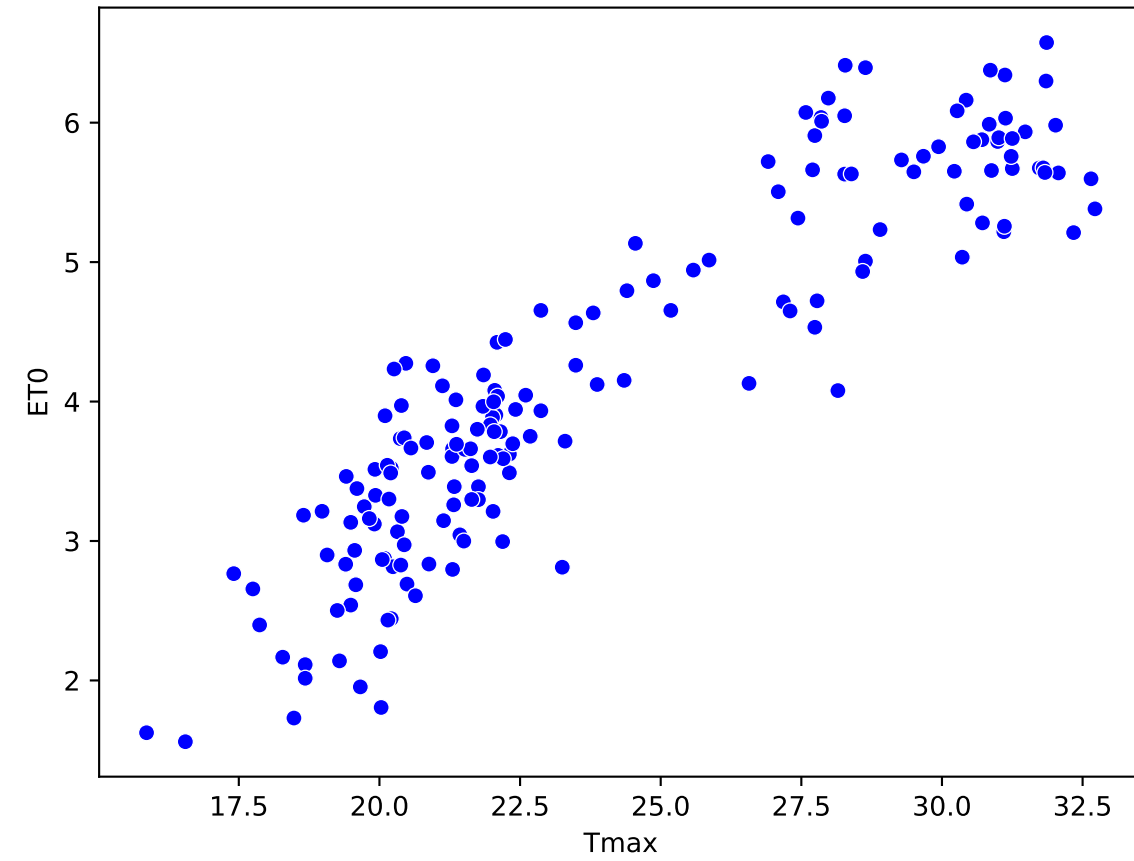
Toluca — 2024

Matriz de Correlación entre Variables Meteorológicas

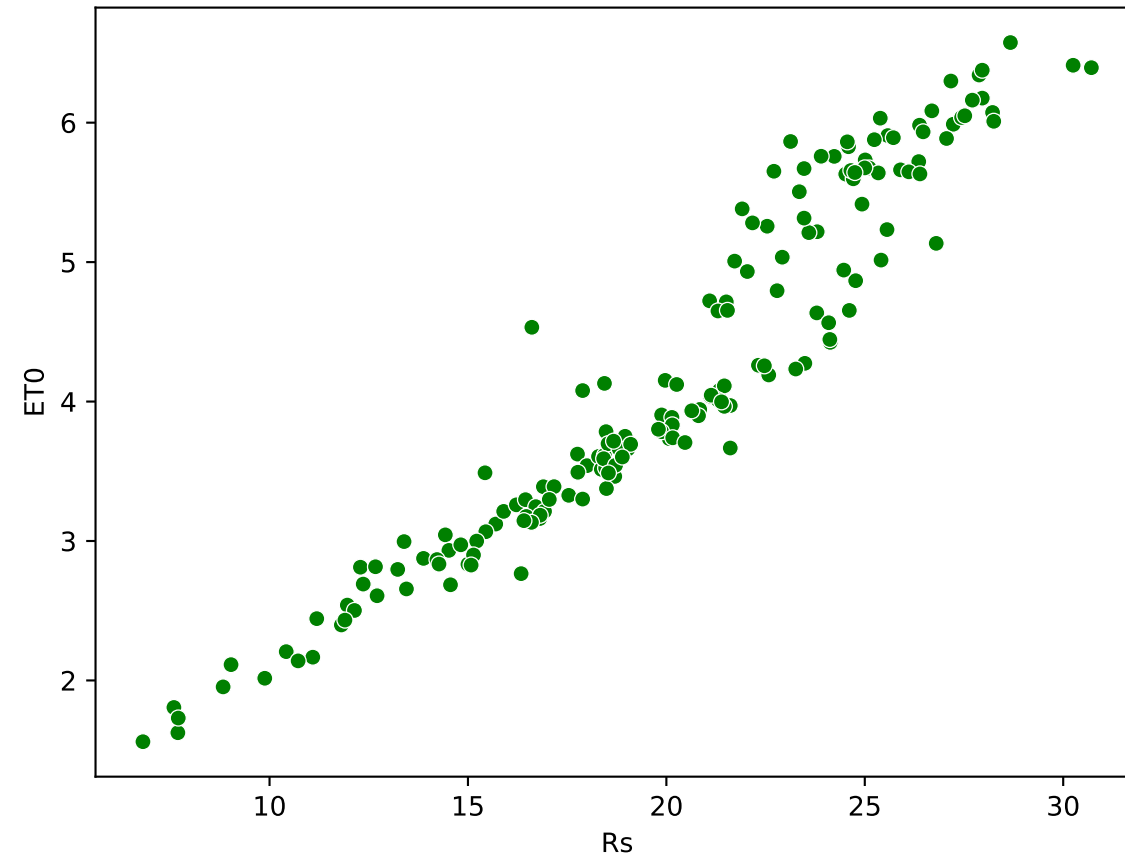


Dispersión — Toluca (2024)

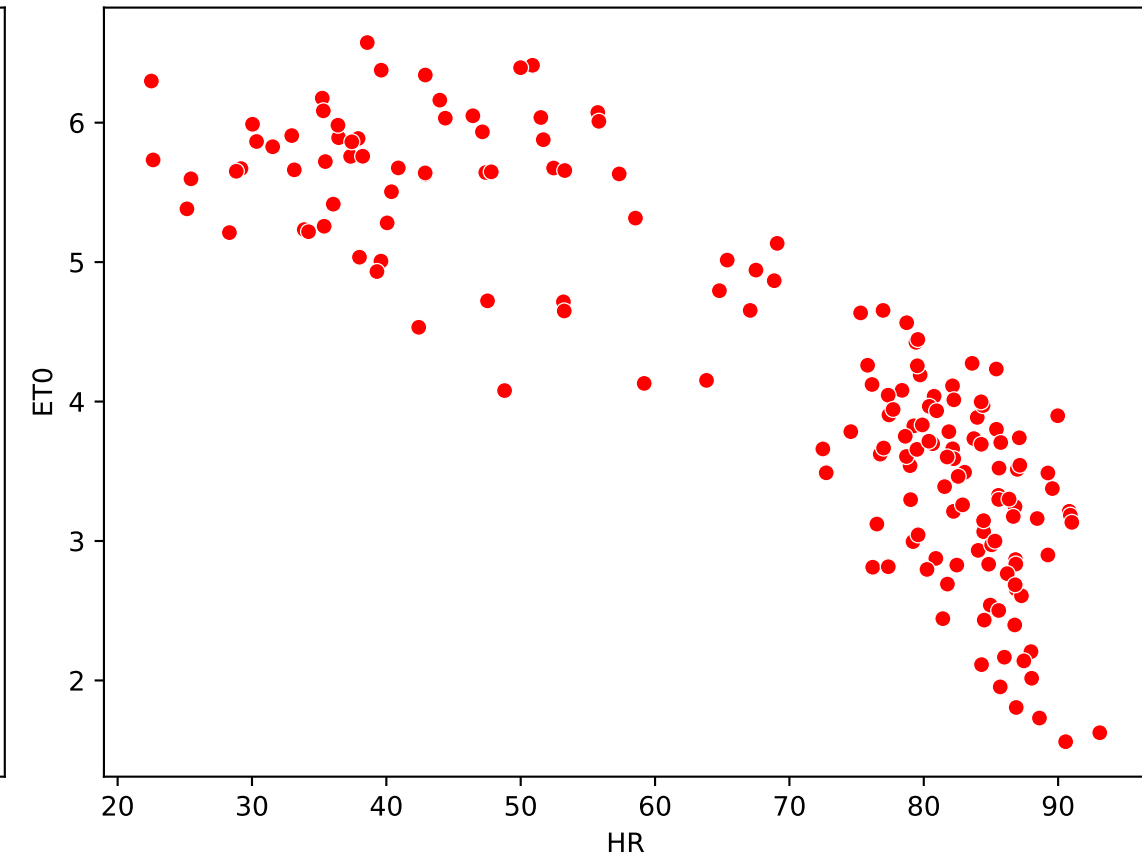
Tmax vs ET0



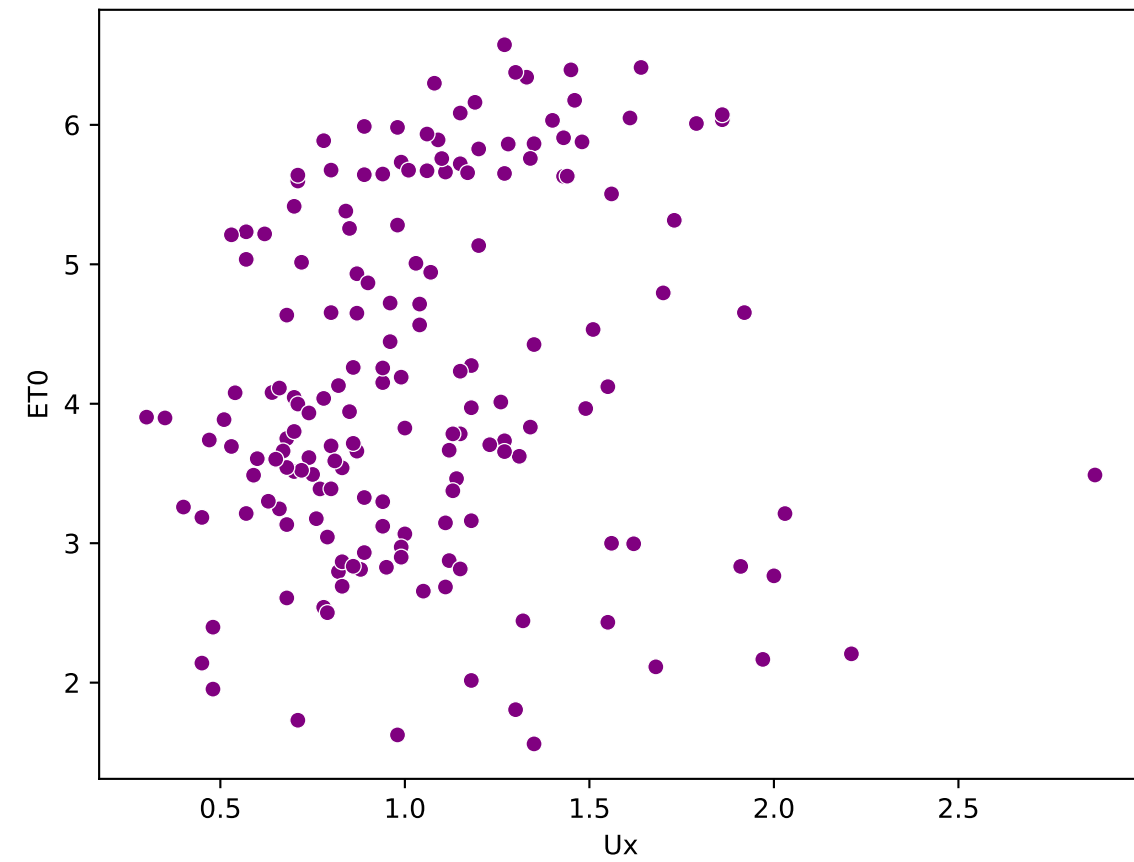
Rs vs ET0



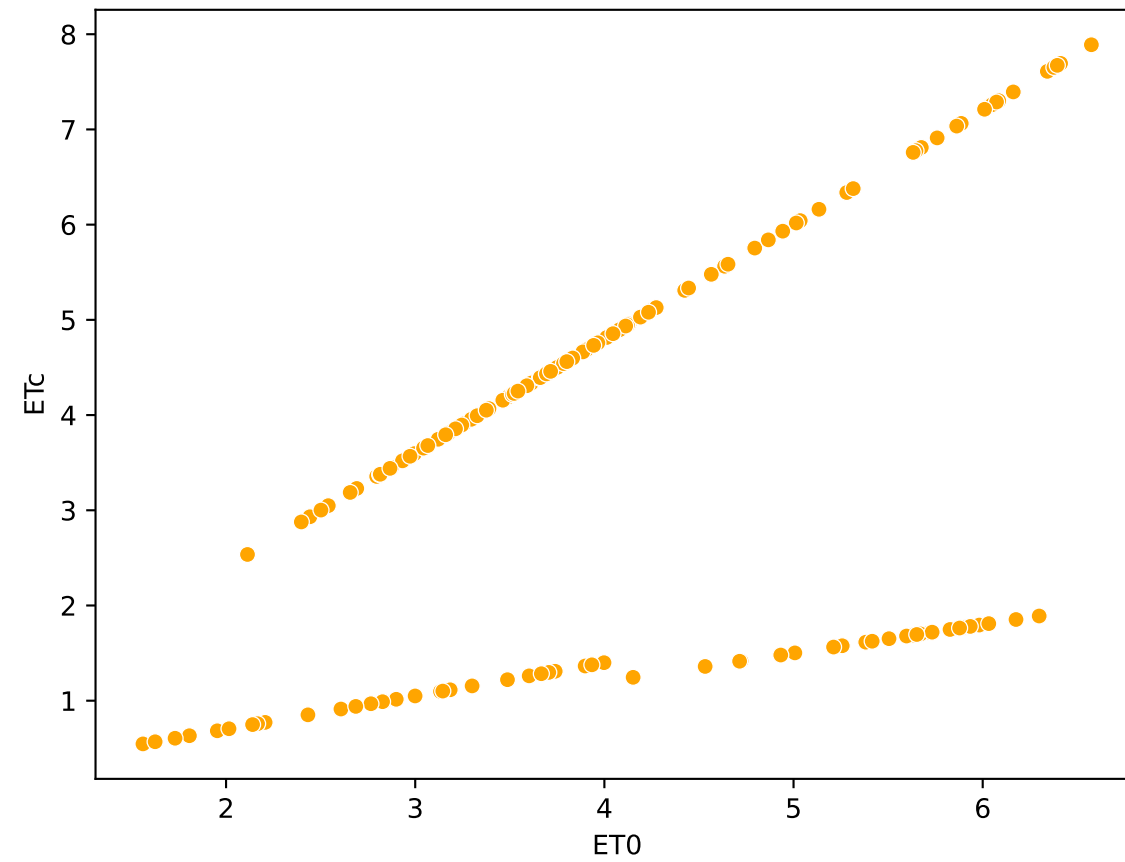
HR vs ET0



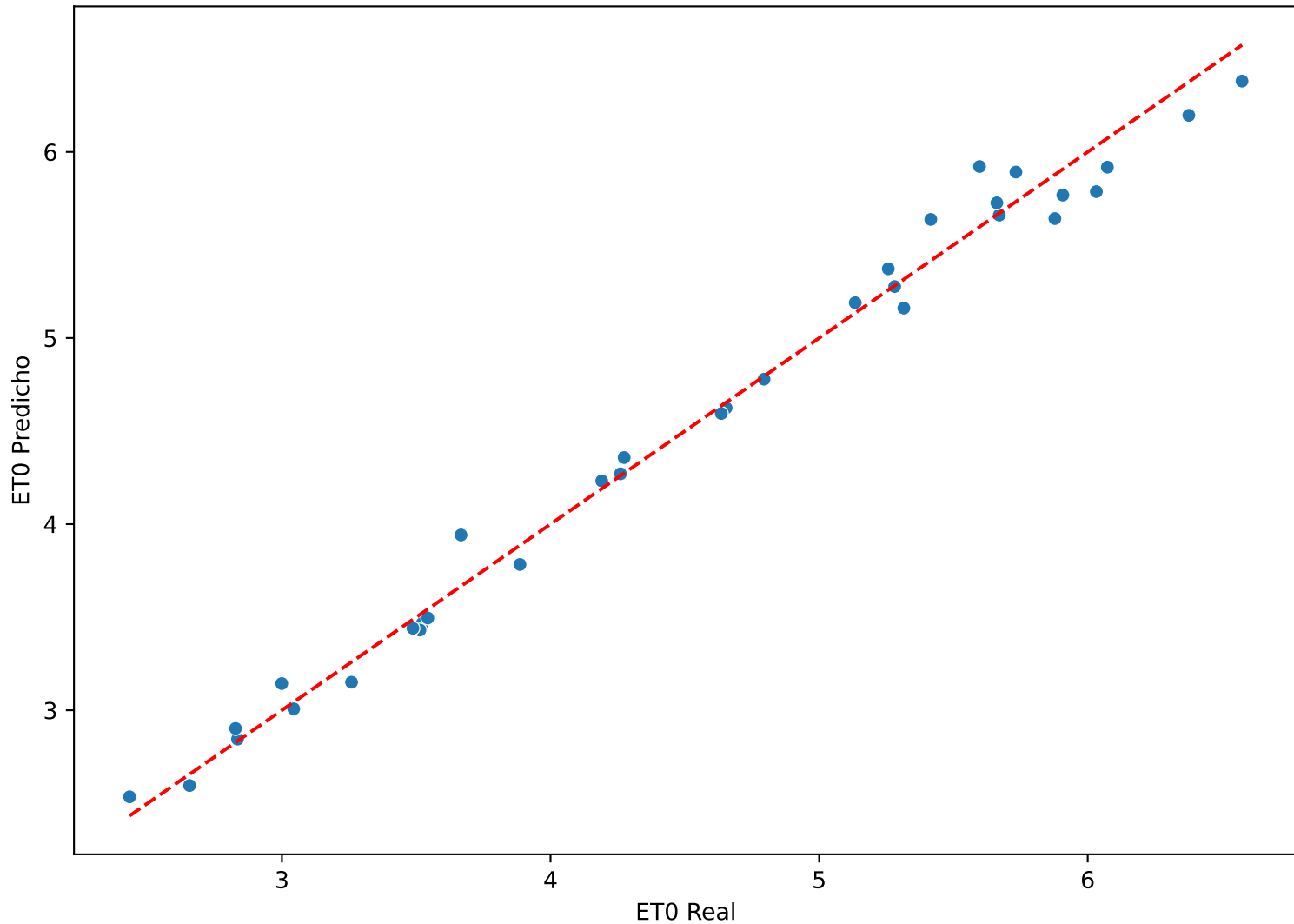
Ux vs ET0



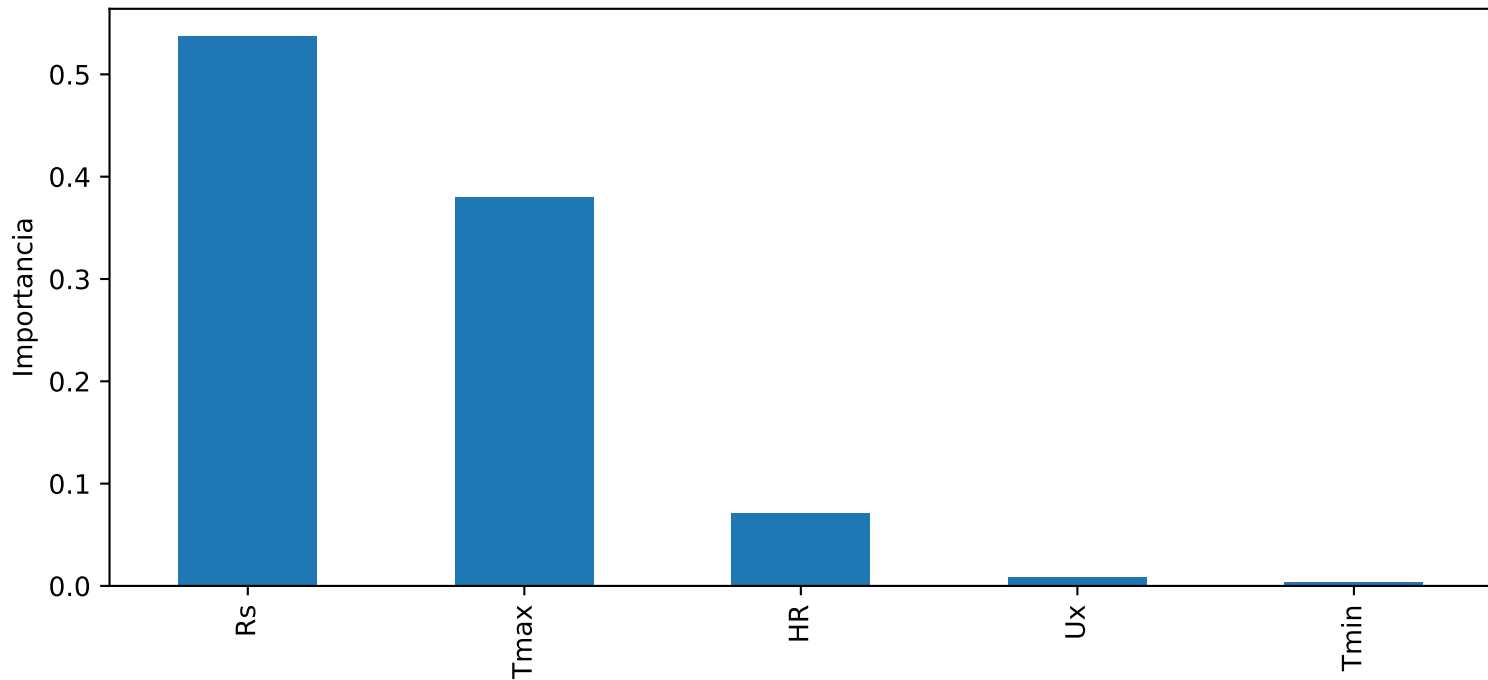
ET0 vs ETc



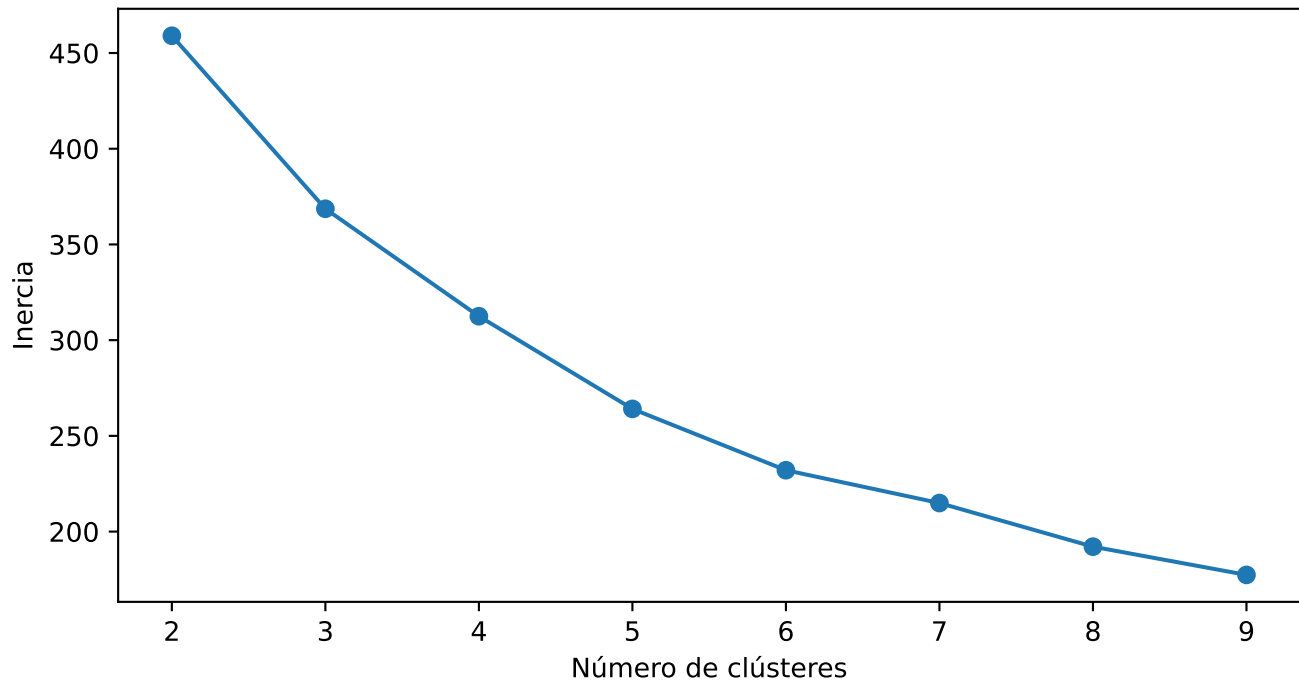
Comparación entre ET0 Real y Predicho — Toluca (2024)



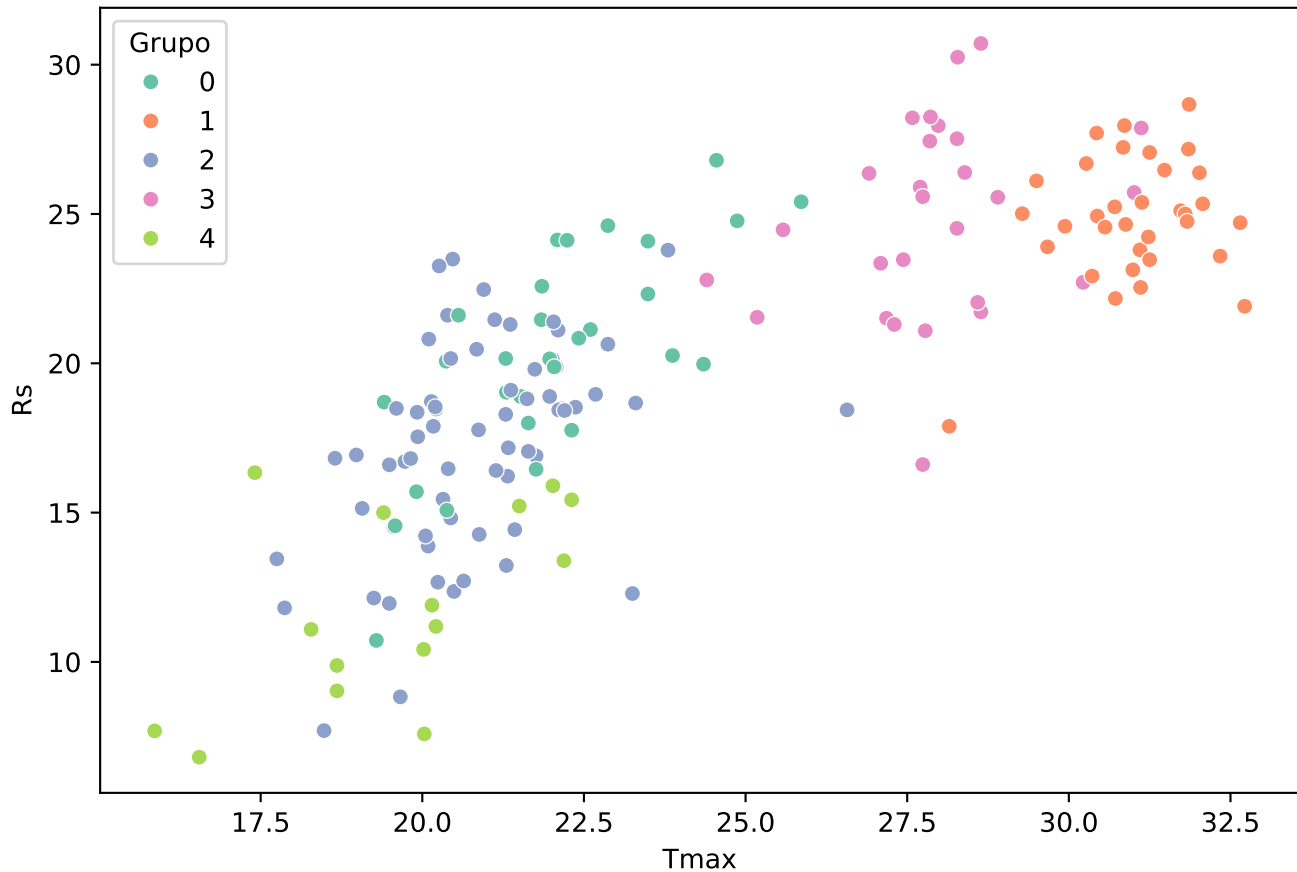
Importancia de variables (RF) — Toluca (2024)



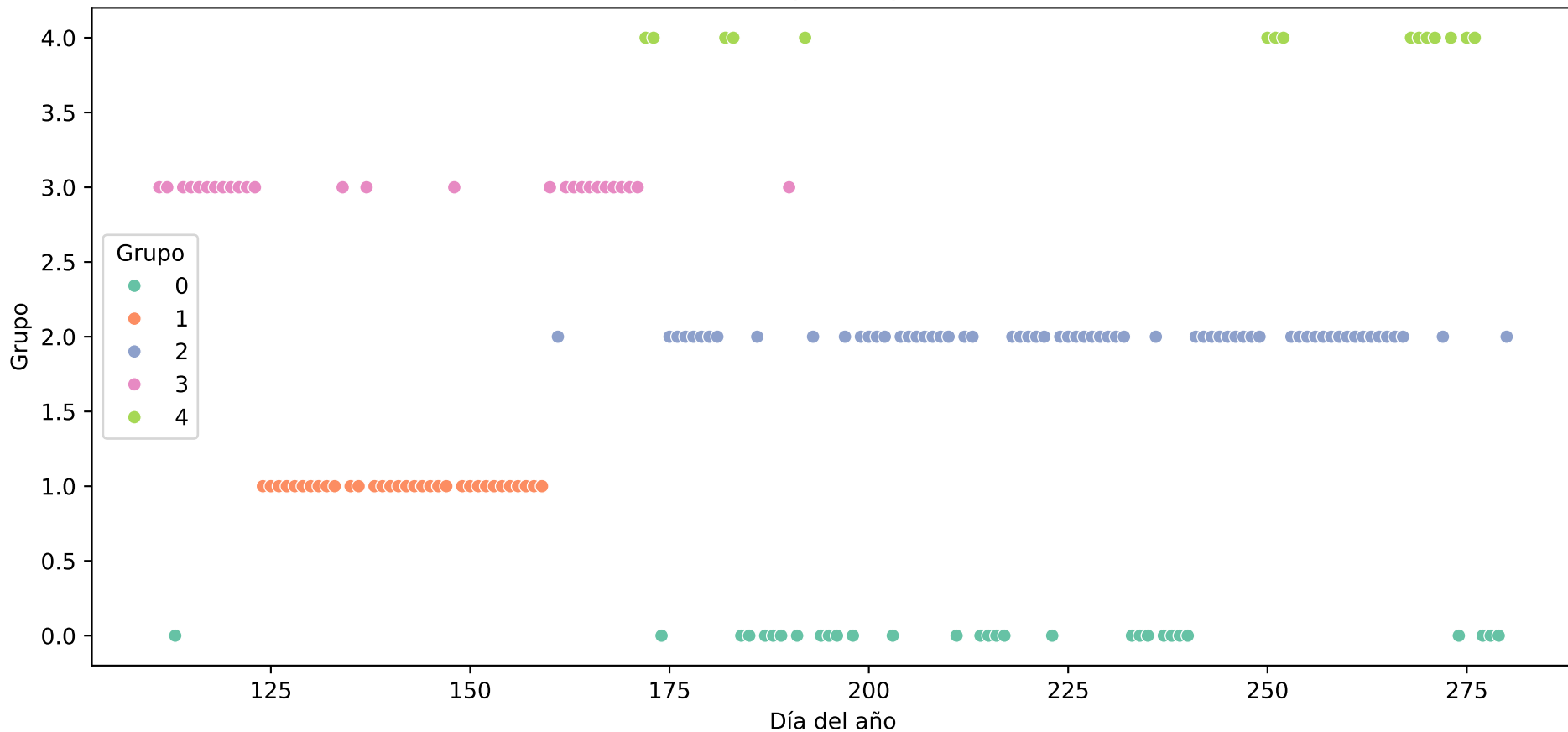
Método del codo



Clasificación de días climáticos — Toluca (2024)

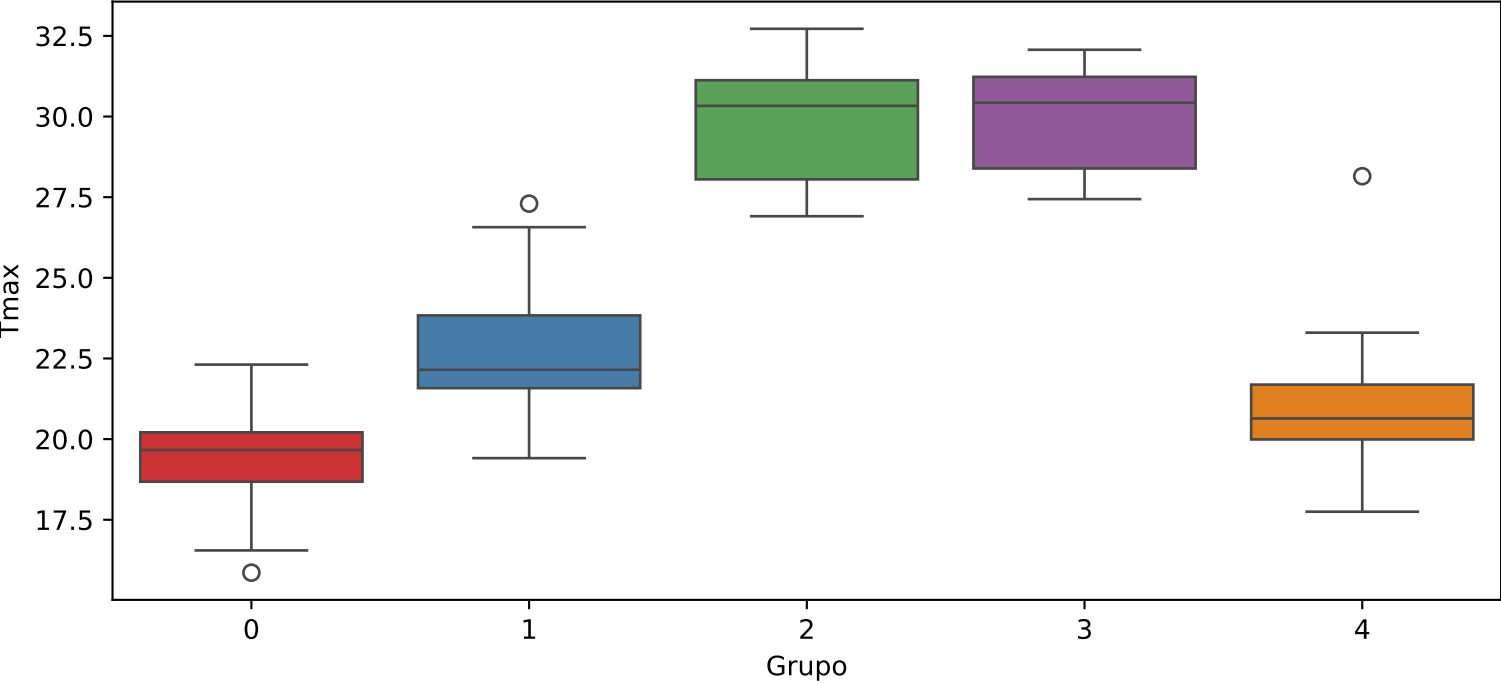


Distribución de días por grupo — Toluca (2024)

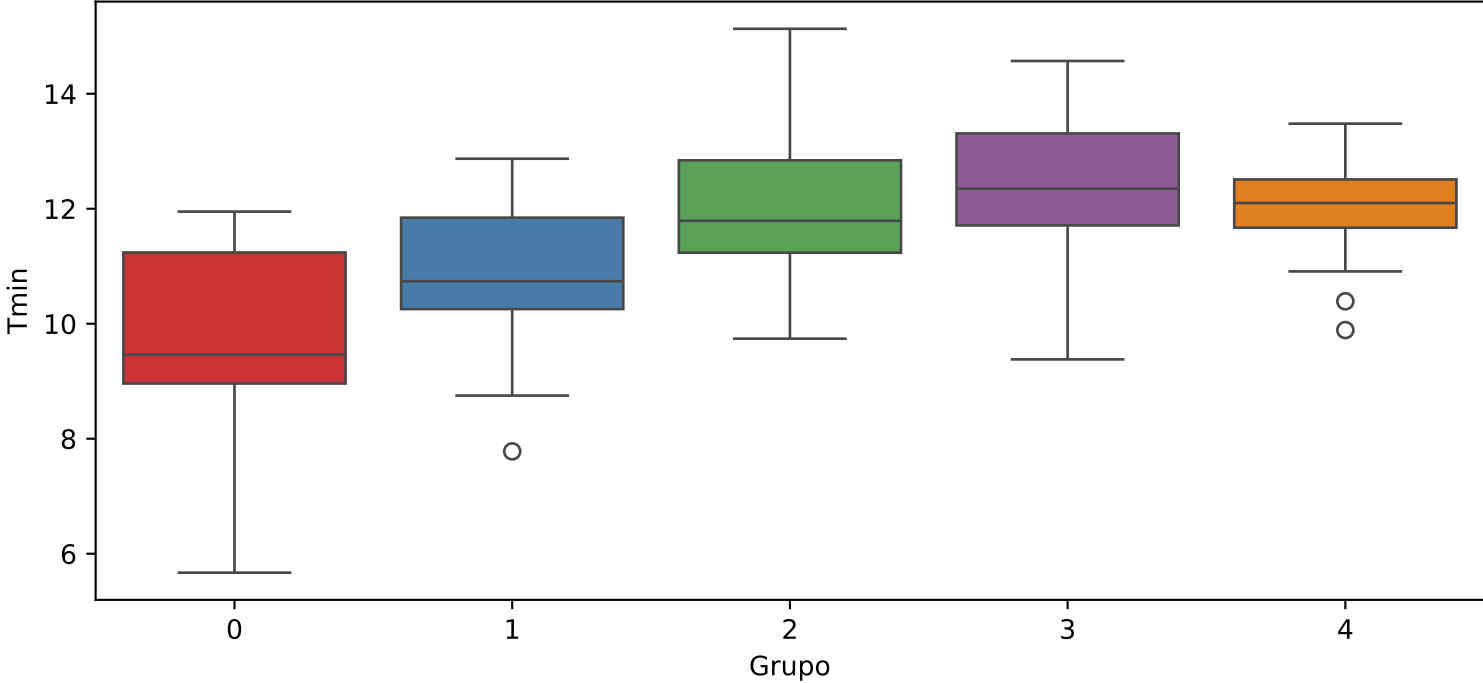


Boxplots por grupo — Toluca (2024)

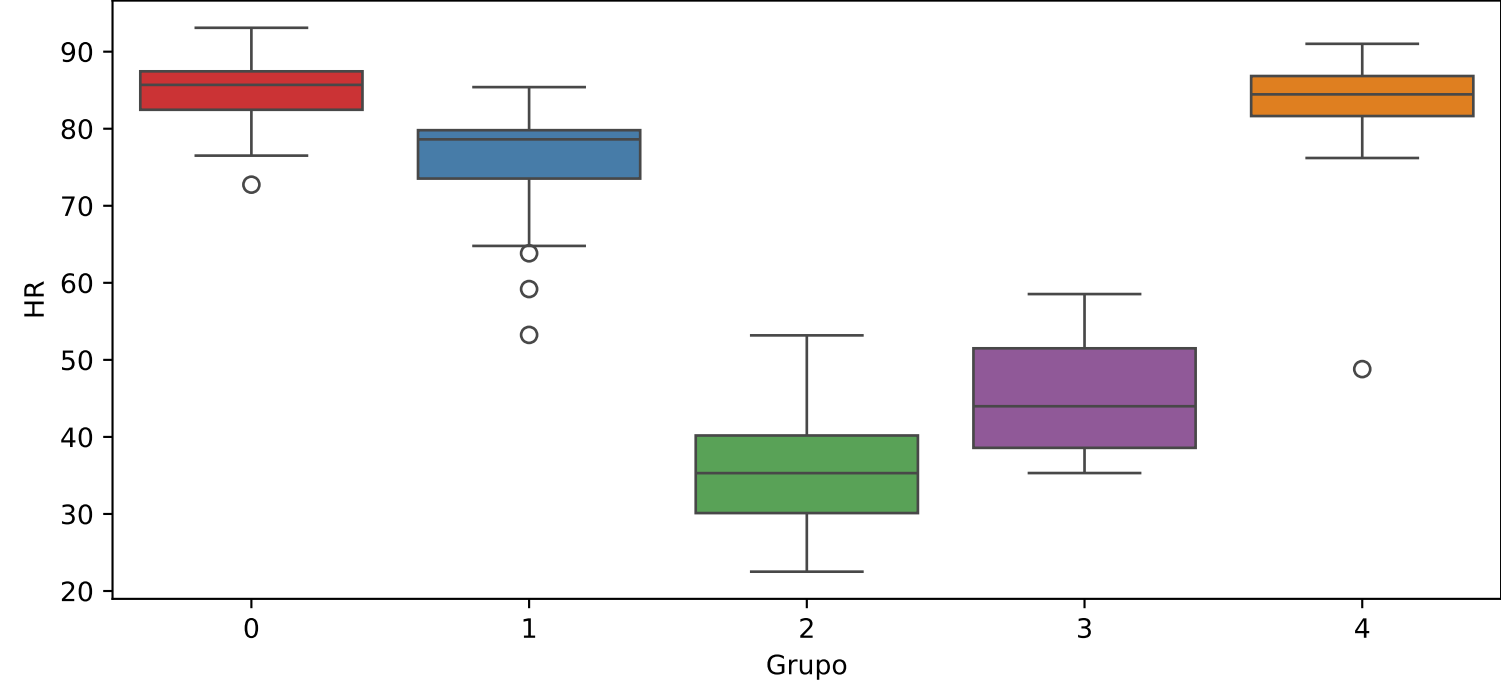
Distribución de Tmax por grupo



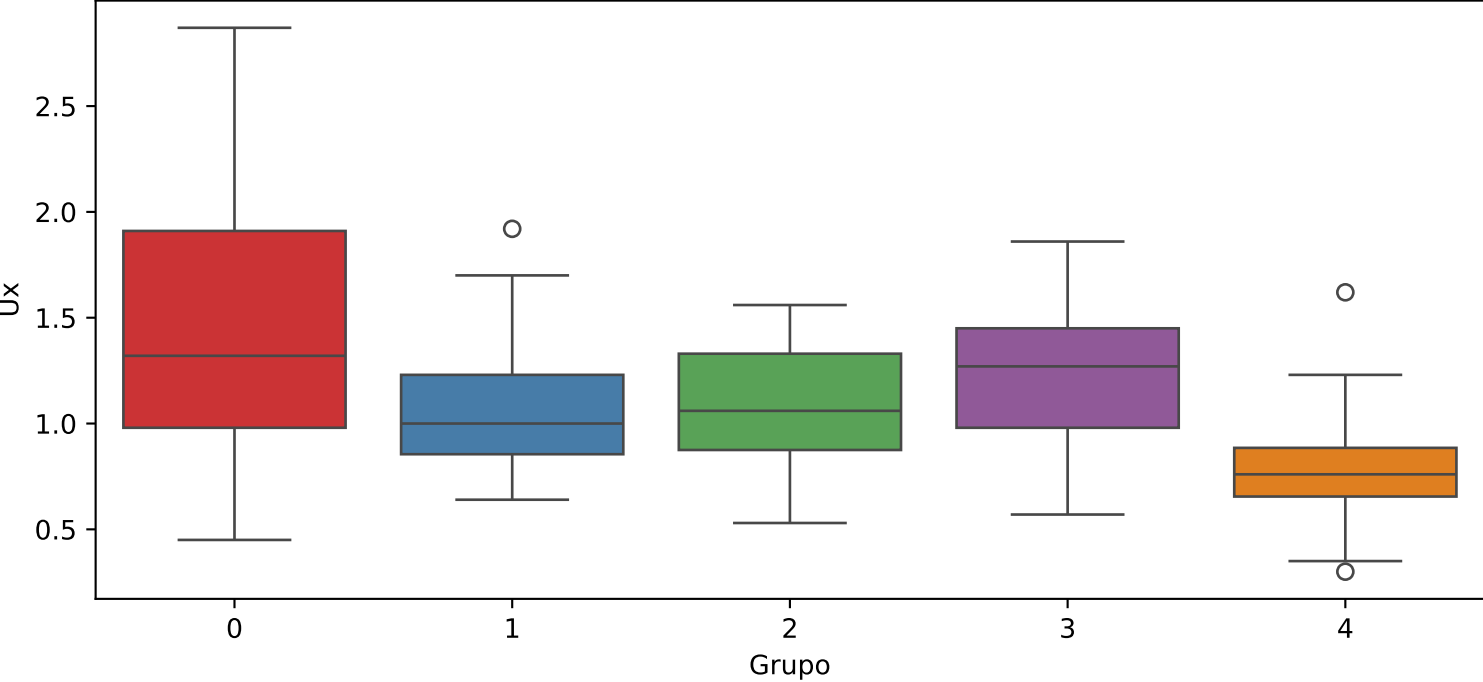
Distribución de Tmin por grupo



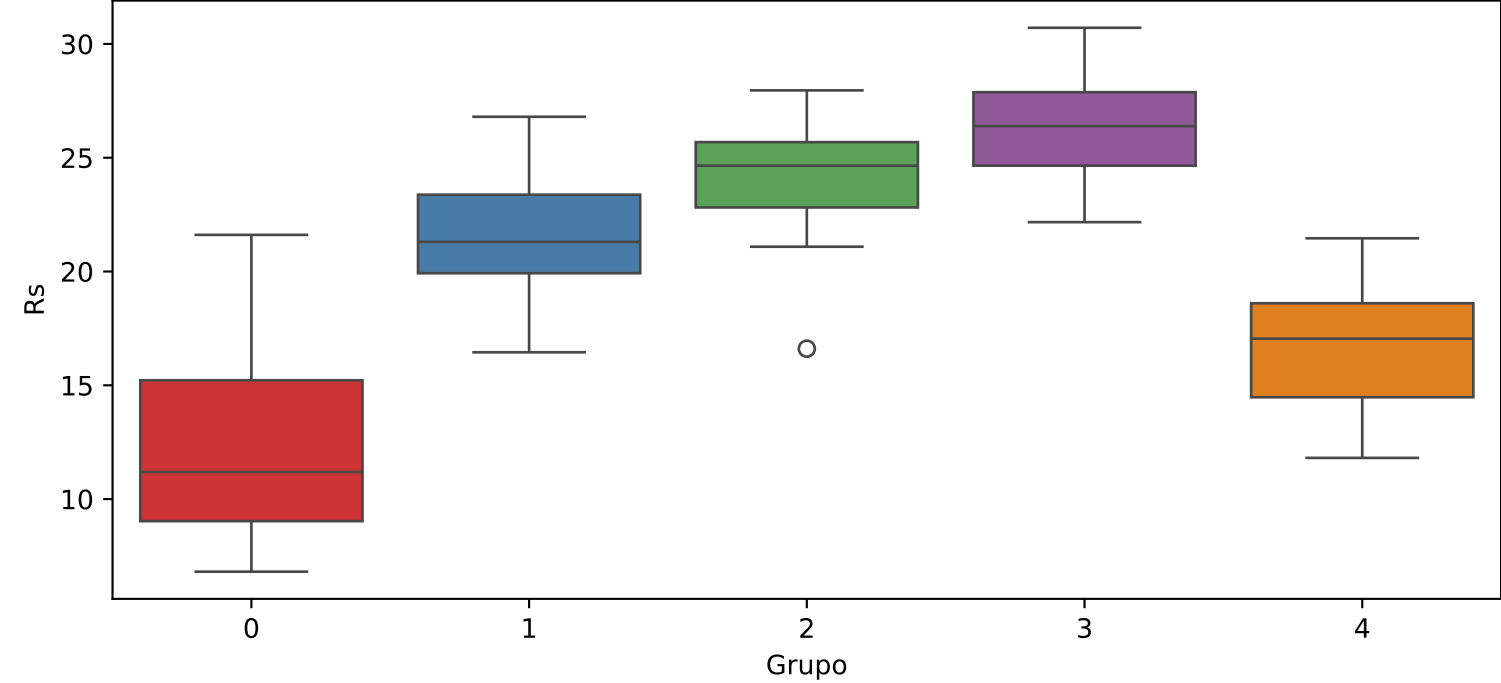
Distribución de HR por grupo



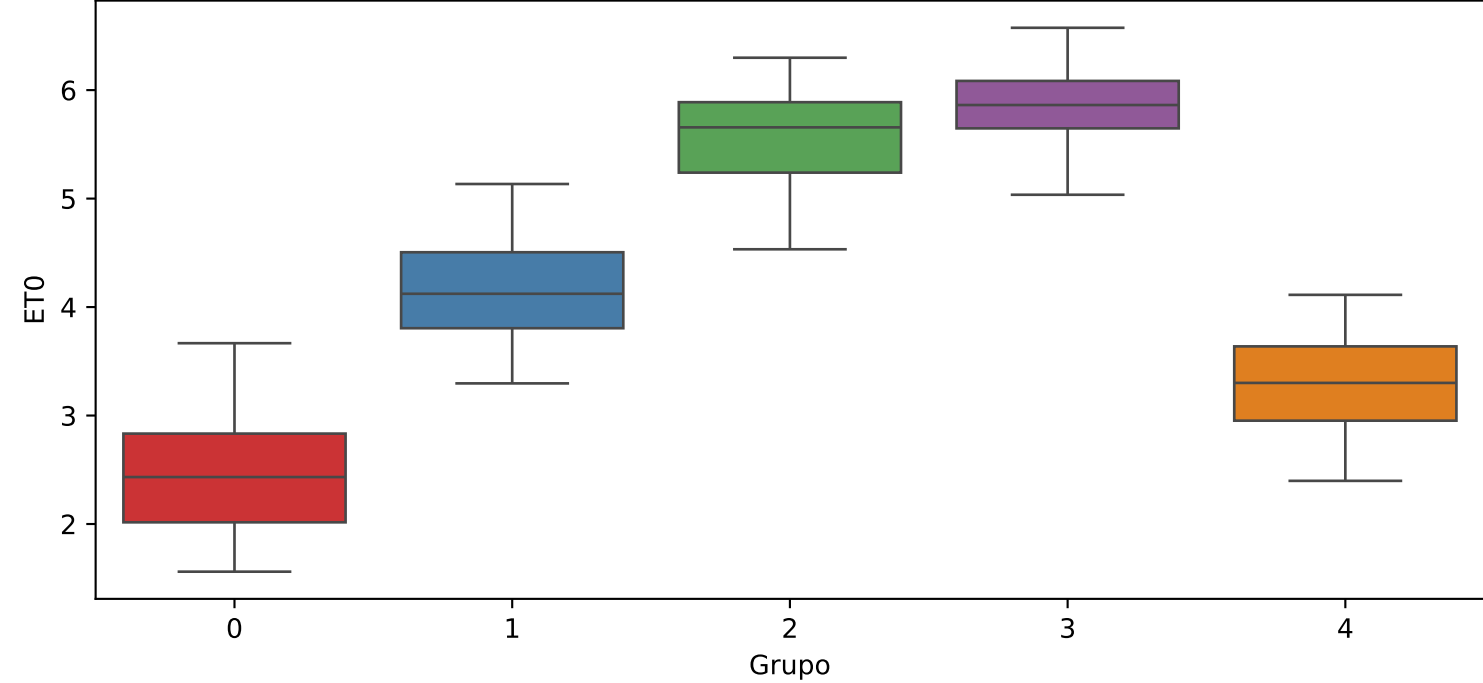
Distribución de Ux por grupo



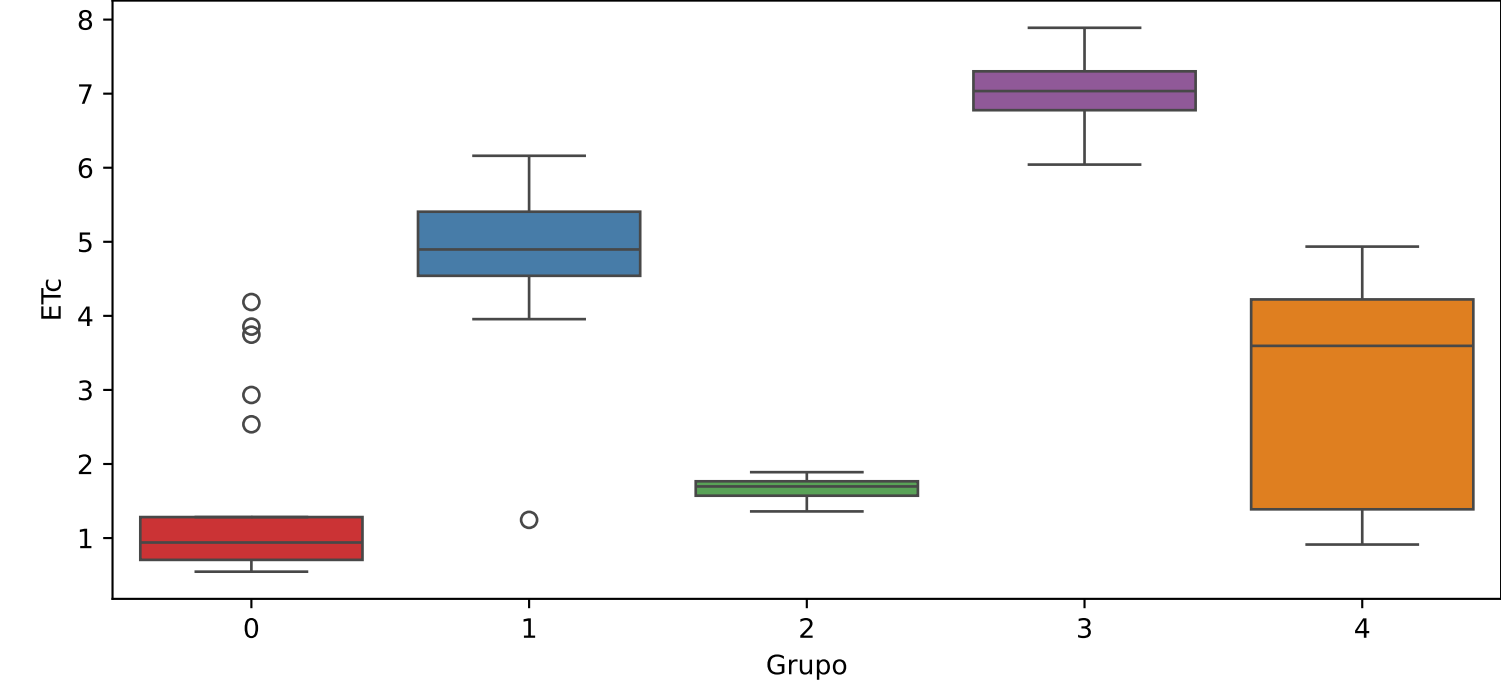
Distribución de Rs por grupo



Distribución de ET0 por grupo



Distribución de ETc por grupo



Clasificación de días climáticos (ET0/ETc incluidos) — Toluca (2024)

