(a) All interations

max monthly abs error (m3/s) vs daily mean abs error (m3/s), colorbar: iteration (0 to 8)

(b) Emulator performance

Emulator CV KGE' vs iteration, legend: GPR, RF

(c) Minimum rank for each iteration

Pareto rank vs iteration (defa, 0–8)

basinid: 467

hru_id: 9404450

lat_cen: 37.41291

lon_cen: -112.586
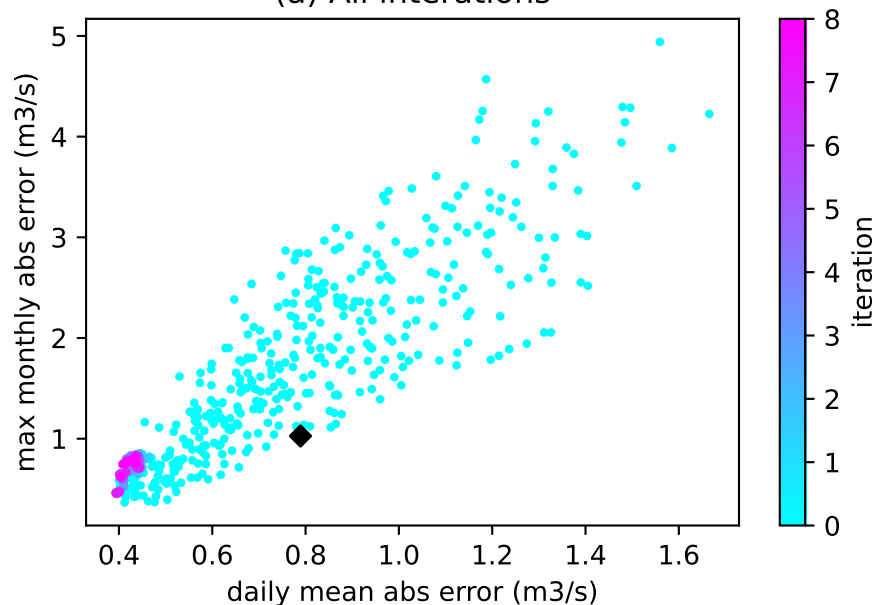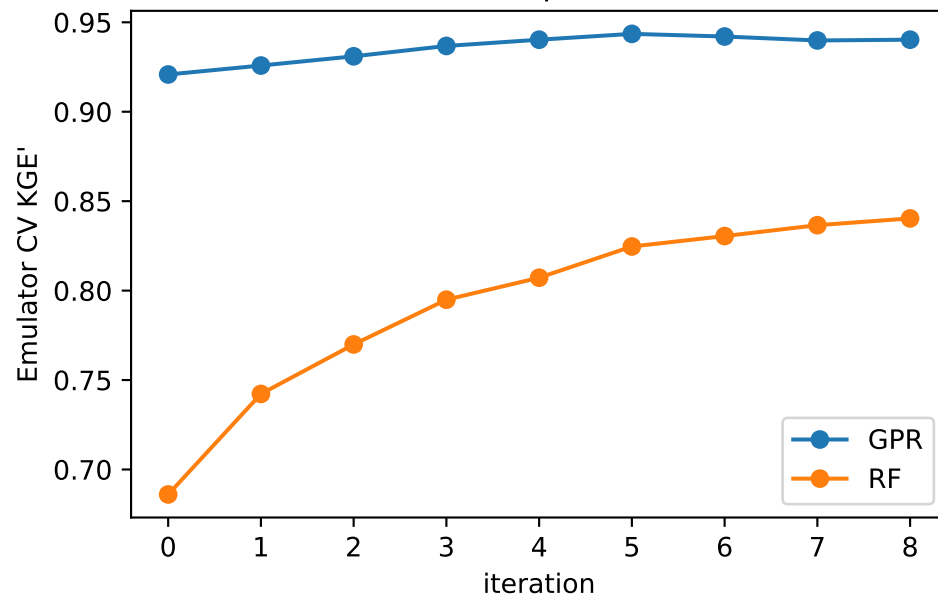
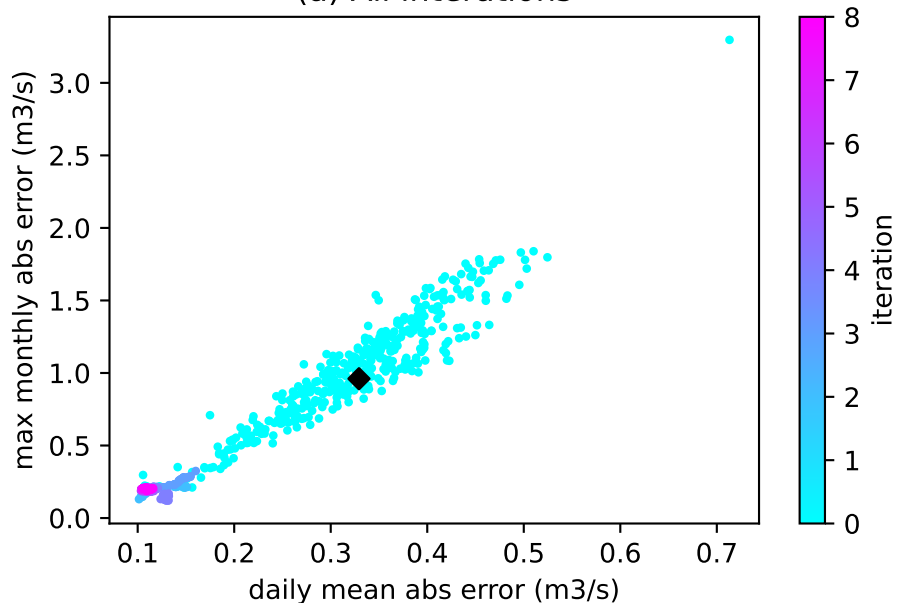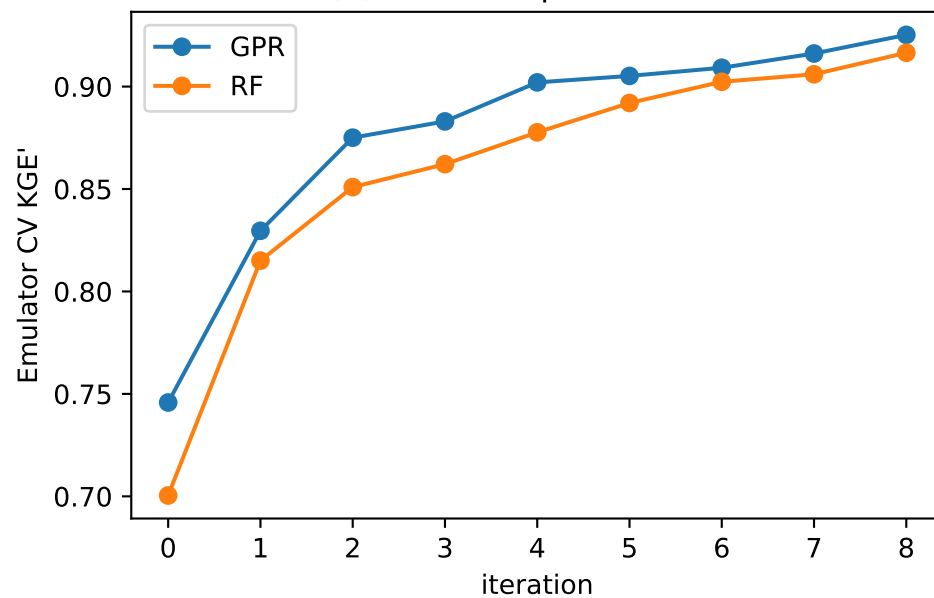AREA: 195.92 km2

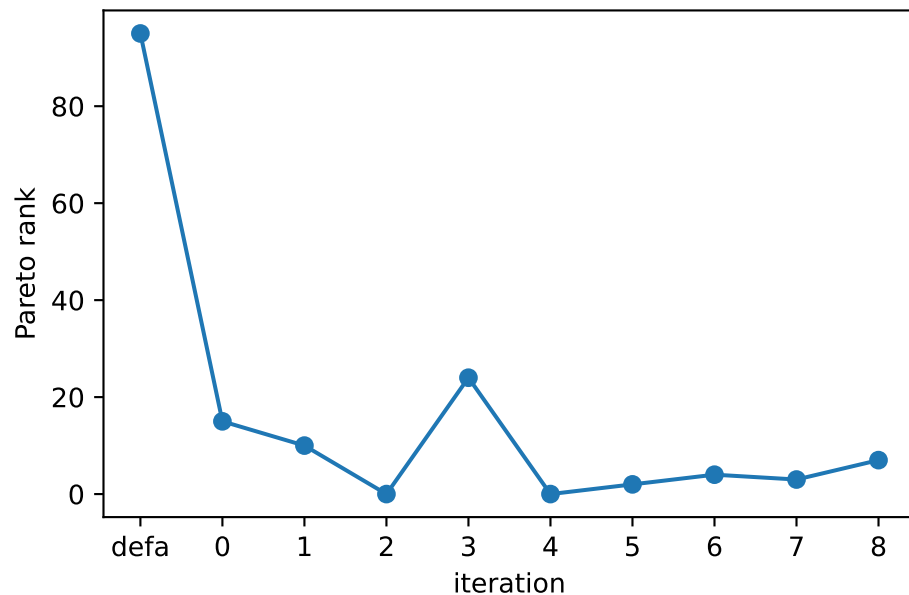elev_mean: 2213.69 m

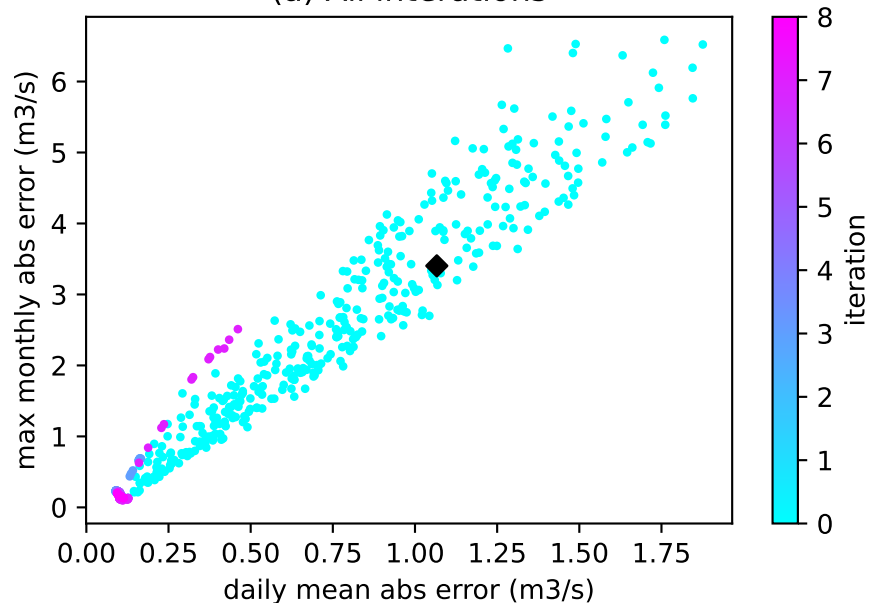**(a) All interations**

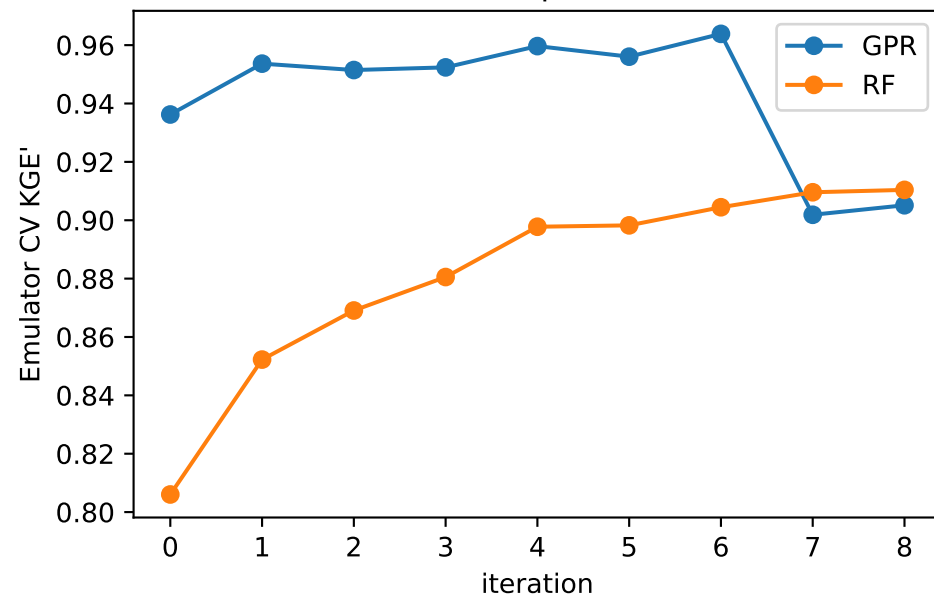**(b) Emulator performance**

(c) Minimum rank for each iteration

basinid: 494

hru_id: 10258000

lat_cen: 33.80652

lon_cen: -116.60202

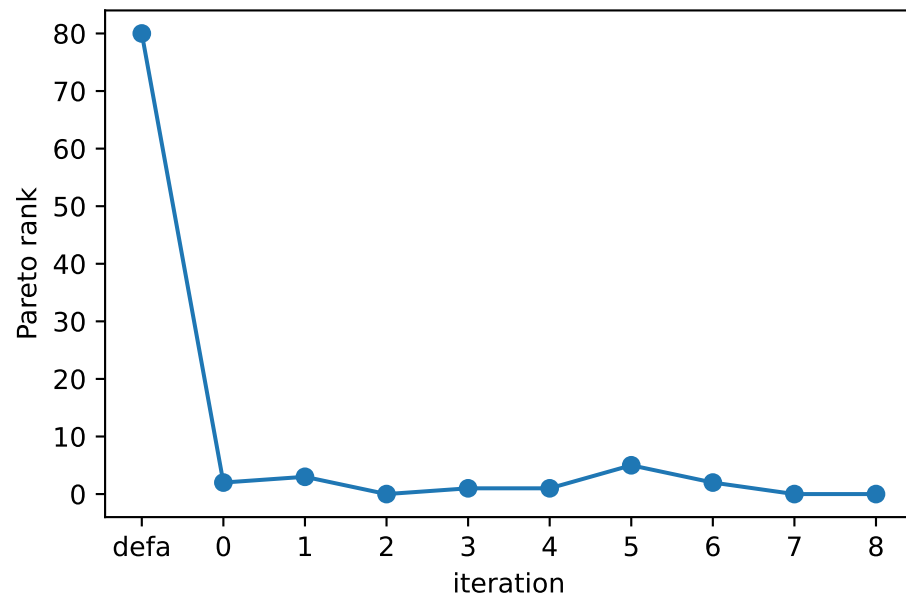AREA: 75.71 km2

elev_mean: 1455.85 m

(a) All interations

max monthly abs error (m3/s) vs daily mean abs error (m3/s)

iteration: 0–8

(b) Emulator performance

Emulator CV KGE' vs iteration

- GPR
- RF

(c) Minimum rank for each iteration

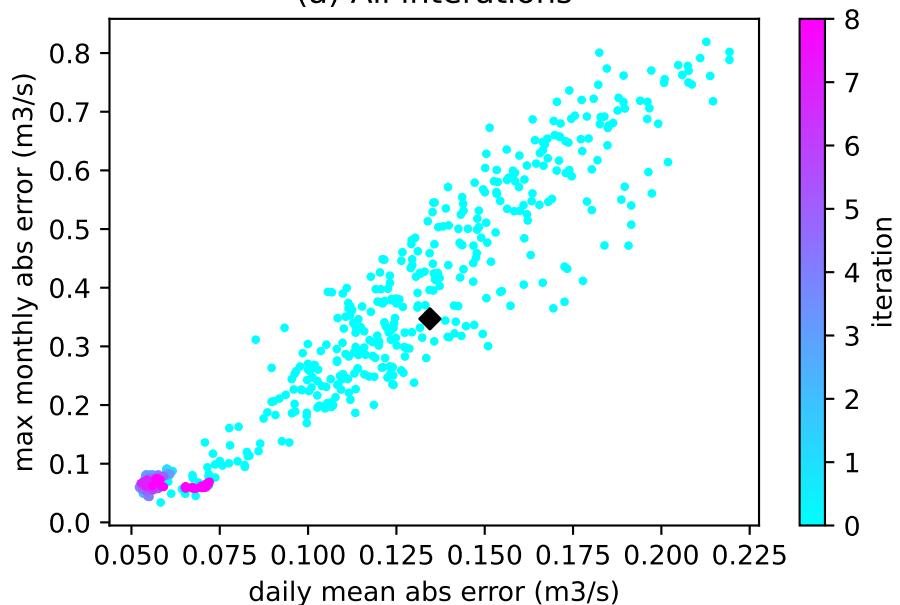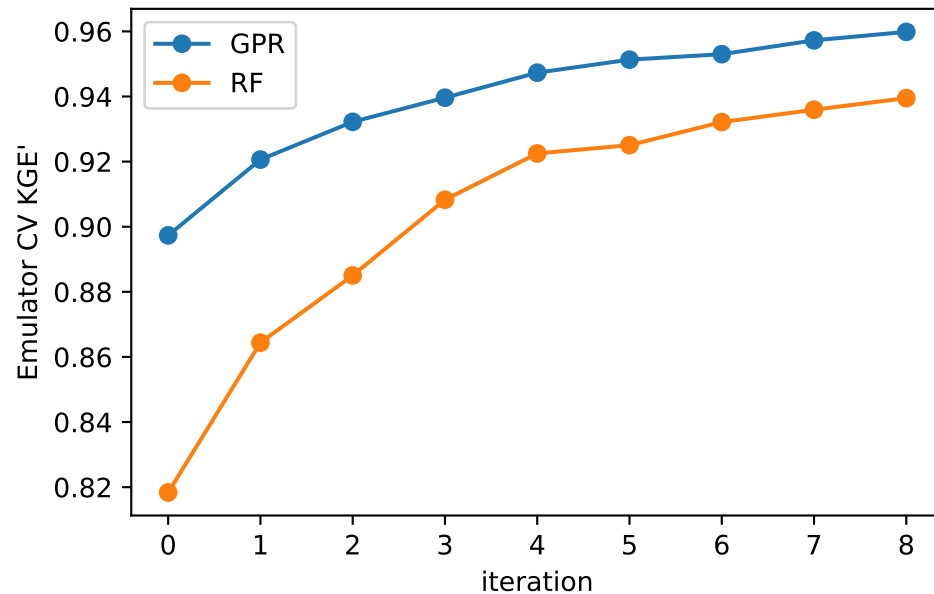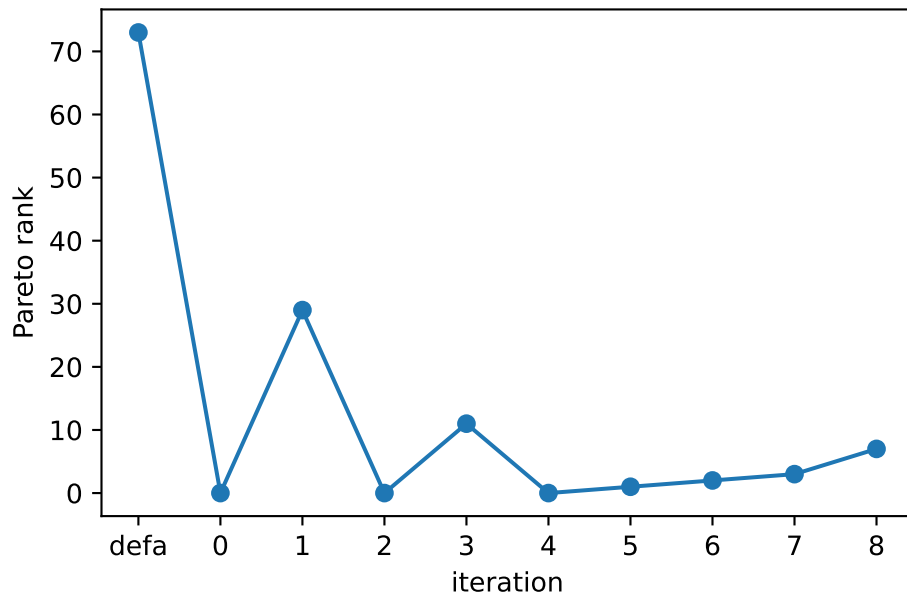Pareto rank vs iteration

basinid: 495

hru_id: 10258500

lat_cen: 33.65134

lon_cen: -116.5111

AREA: 285.41 km2
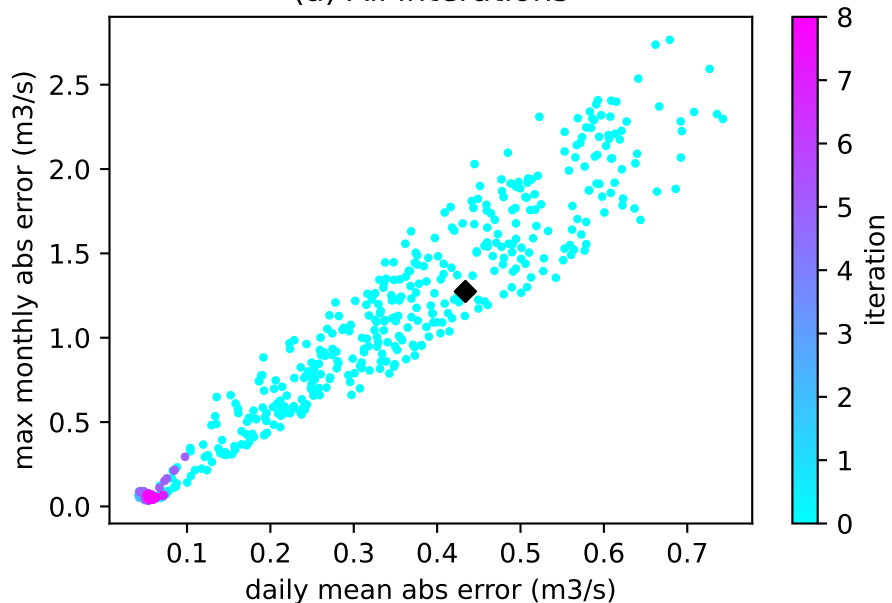
elev_mean: 1168.28 m

(a) All iterations — scatter plot of max monthly abs error (m3/s) versus daily mean abs error (m3/s), colored by iteration.

(b) Emulator performance — Emulator CV KGE' versus iteration for GPR and RF.

(c) Minimum rank for each iteration — Pareto rank versus iteration.
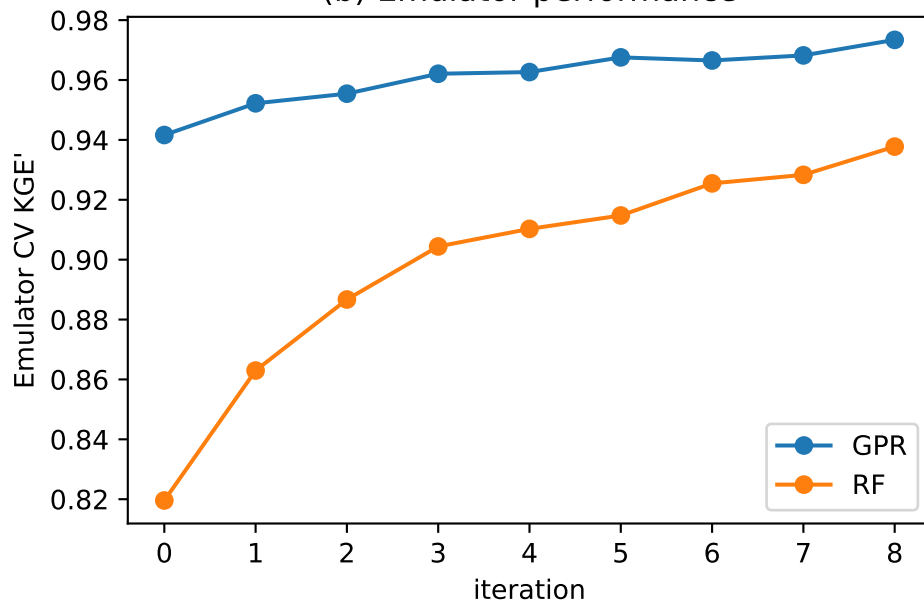
basinid: 496

hru_id: 10259000

lat_cen: 33.76269

lon_cen: -116.59863

AREA: 23.66 km2

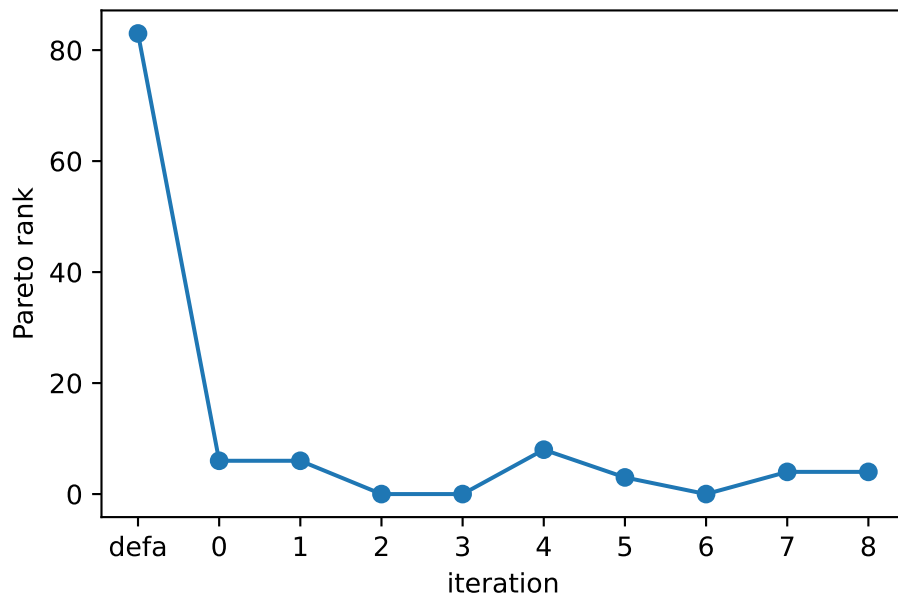elev_mean: 1362.23 m

(a) All interations
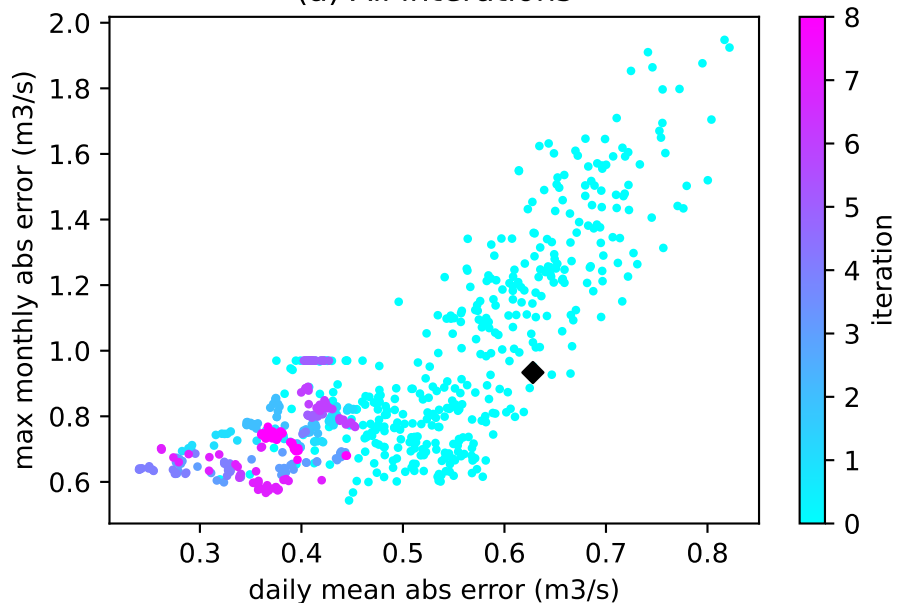
(b) Emulator performance
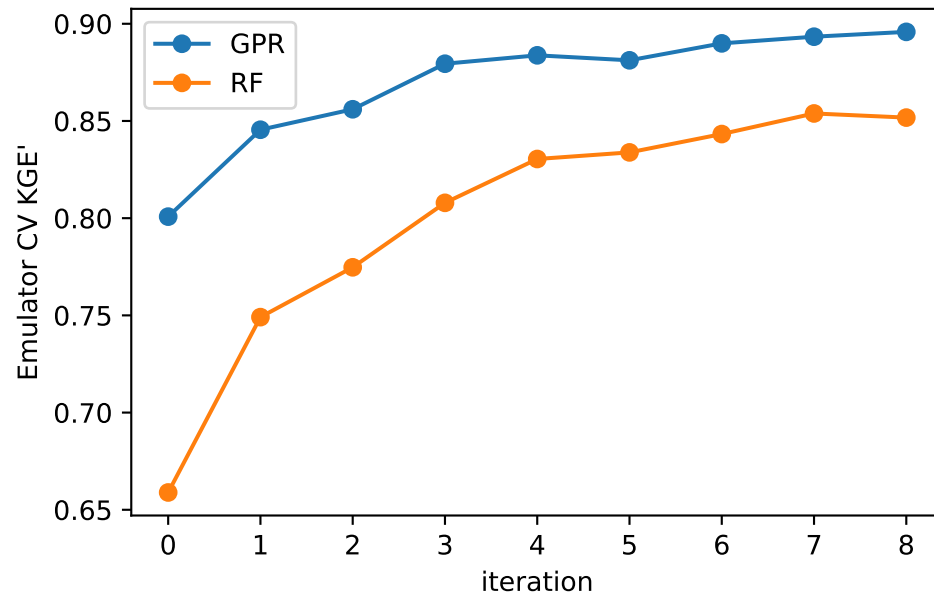
(c) Minimum rank for each iteration

basinid: 497

hru_id: 10259200

lat_cen: 33.56089

lon_cen: -116.3596

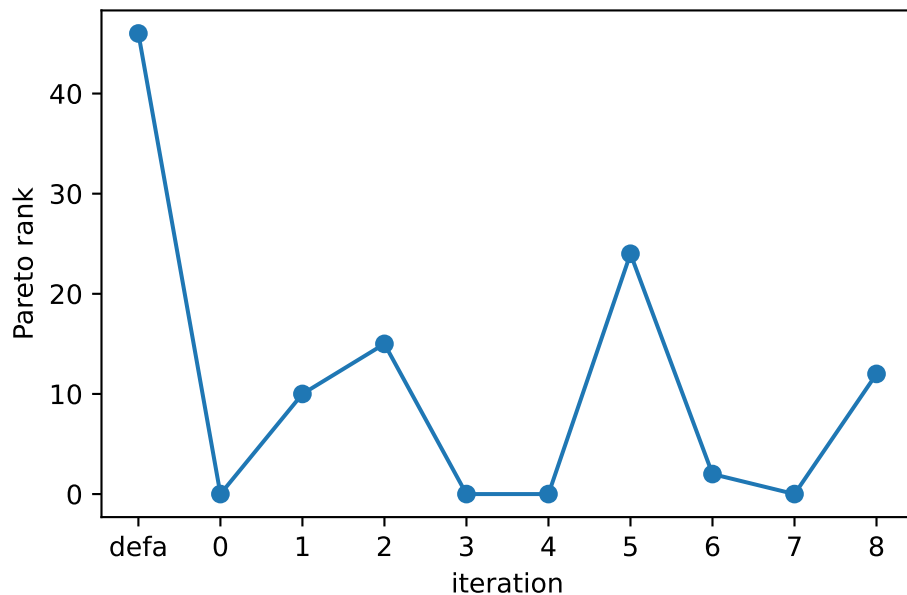AREA: 284.58 km2

elev_mean: 1192.72 m
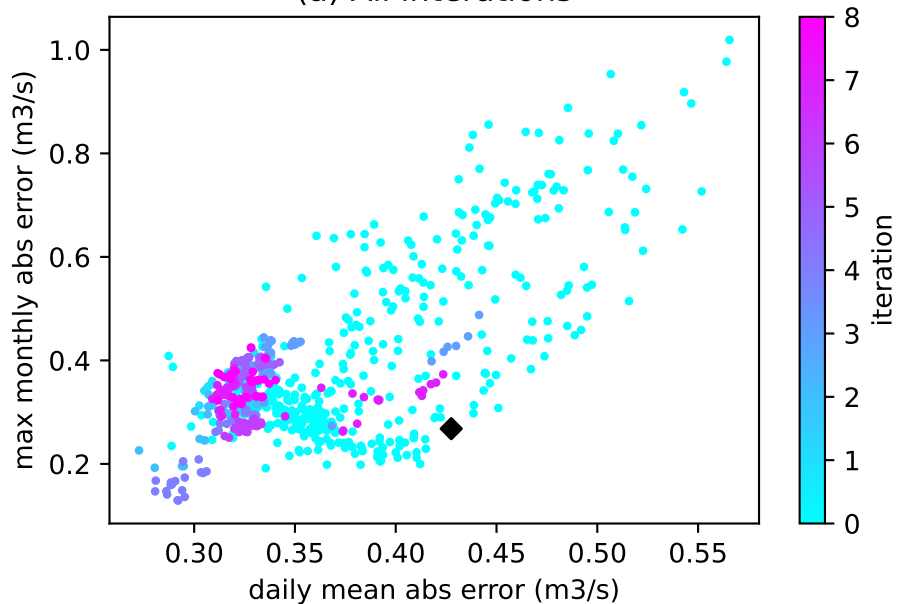
(a) All interations

(b) Emulator performance

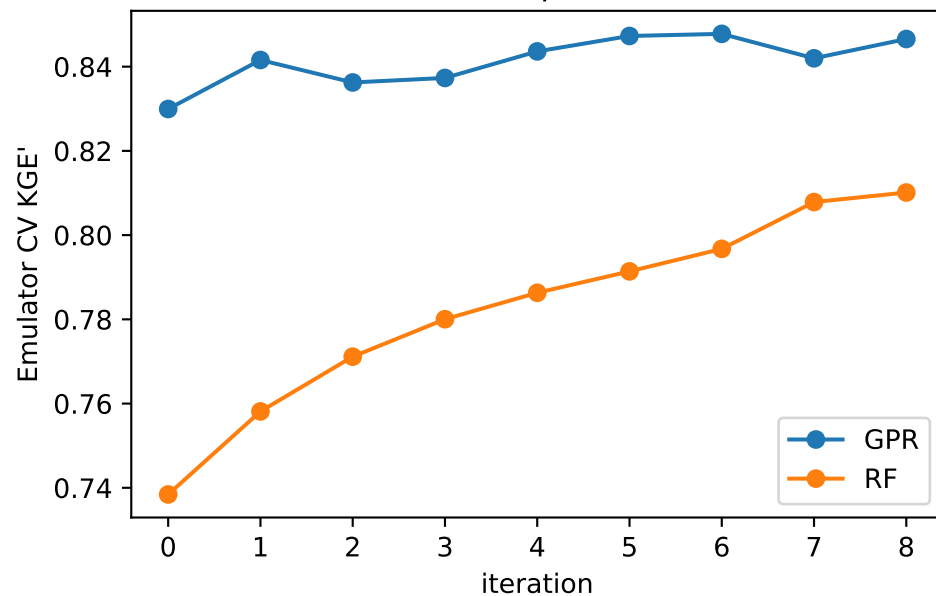(c) Minimum rank for each iteration

basinid: 498

hru_id: 10263500

lat_cen: 34.42903

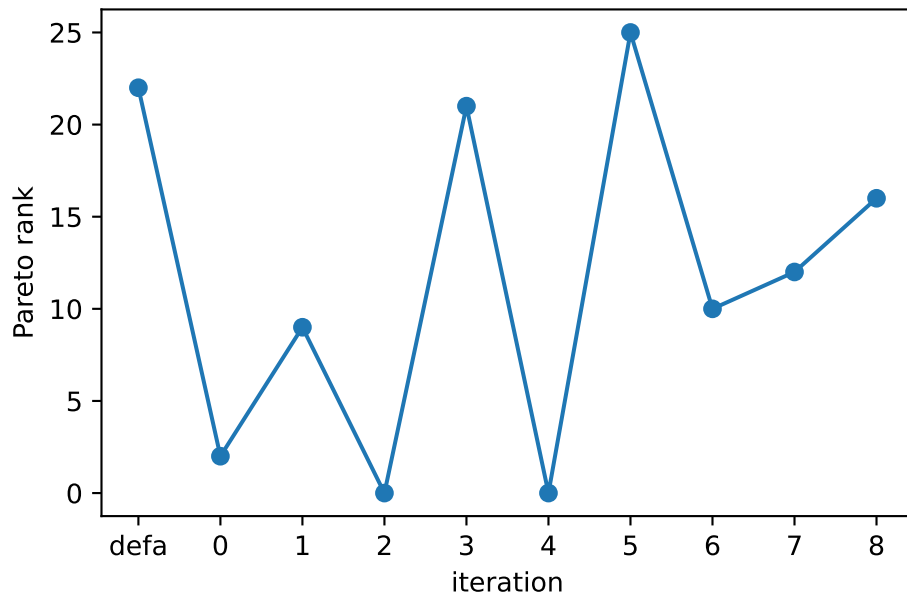lon_cen: -117.74868

AREA: 310.26 km2
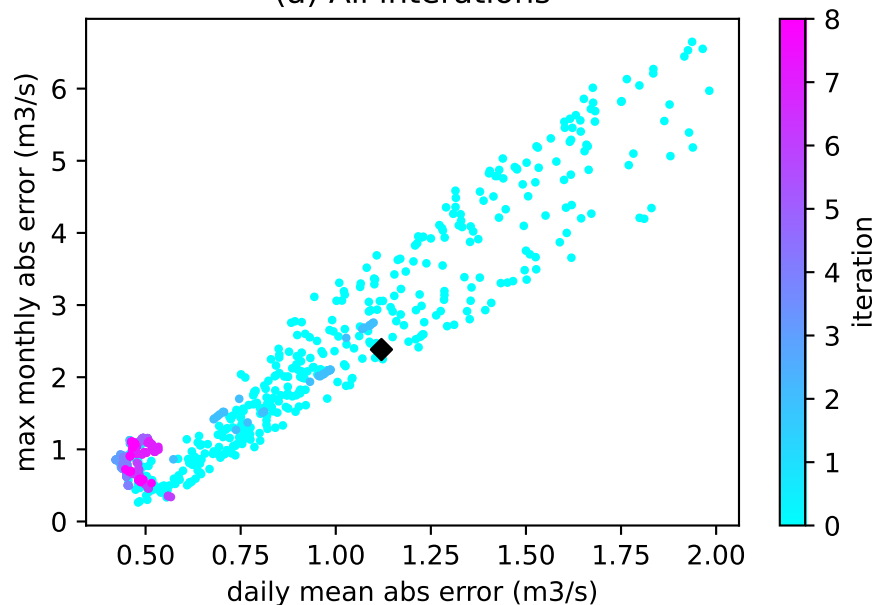
elev_mean: 1480.09 m

(a) All interations

max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'

iteration

GPR

RF

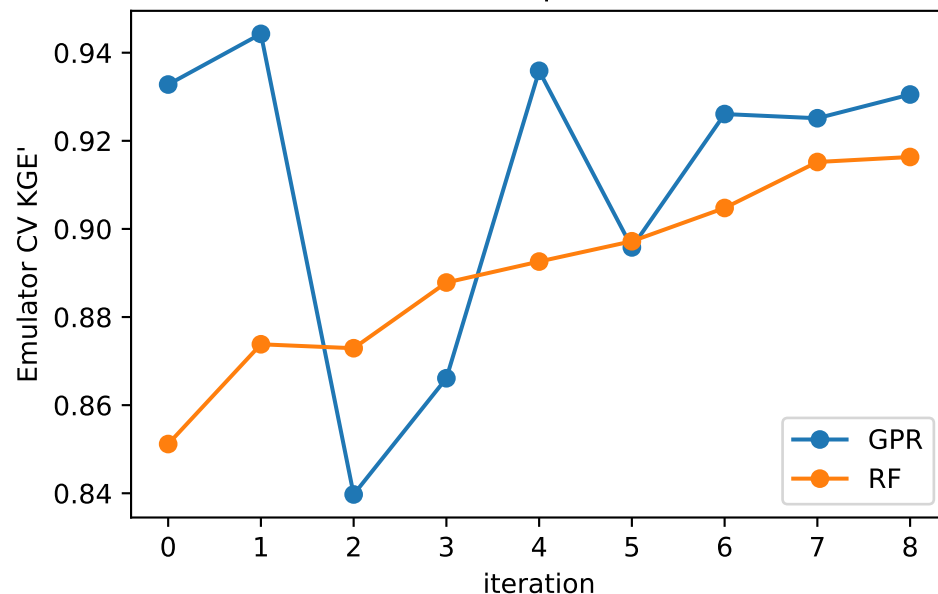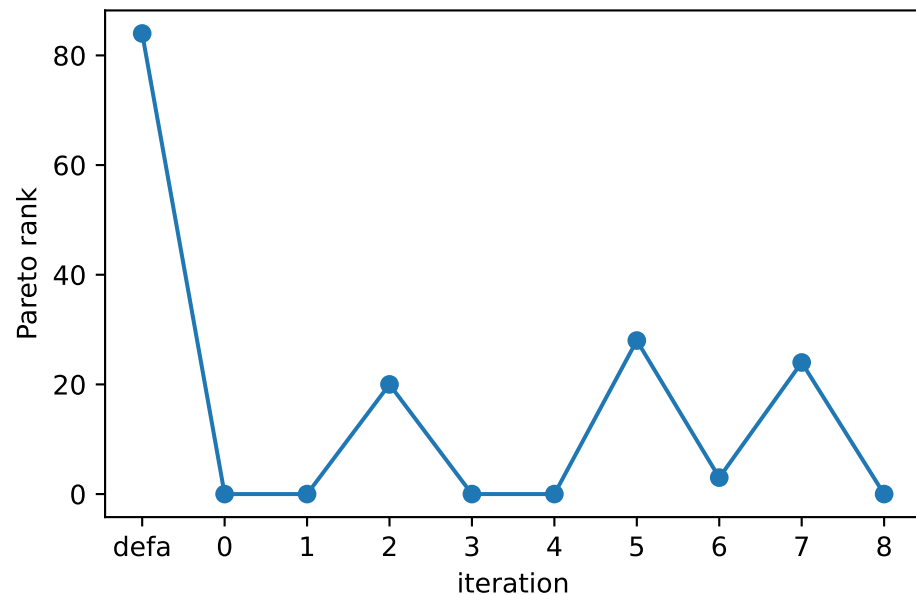**(c) Minimum rank for each iteration**

Pareto rank

iteration

defa 0 1 2 3 4 5 6 7 8

basinid: 508

hru_id: 11098000

lat_cen: 34.25045

lon_cen: -118.14938

AREA: 46.67 km2

elev_mean: 1066.28 m

(a) All interations

x-axis: daily mean abs error (m3/s)
y-axis: max monthly abs error (m3/s)
colorbar: iteration (0 to 8)

(b) Emulator performance

x-axis: iteration
y-axis: Emulator CV KGE'
legend: GPR, RF

(c) Minimum rank for each iteration
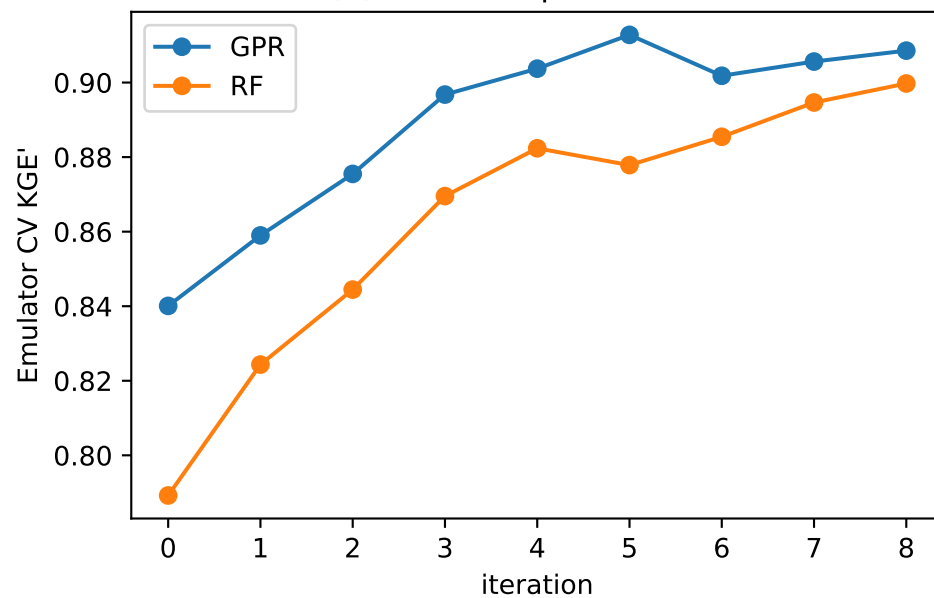
x-axis: iteration
y-axis: Pareto rank

basinid: 509

hru_id: 11124500

lat_cen: 34.65655

lon_cen: -119.78728

AREA: 192.51 km2
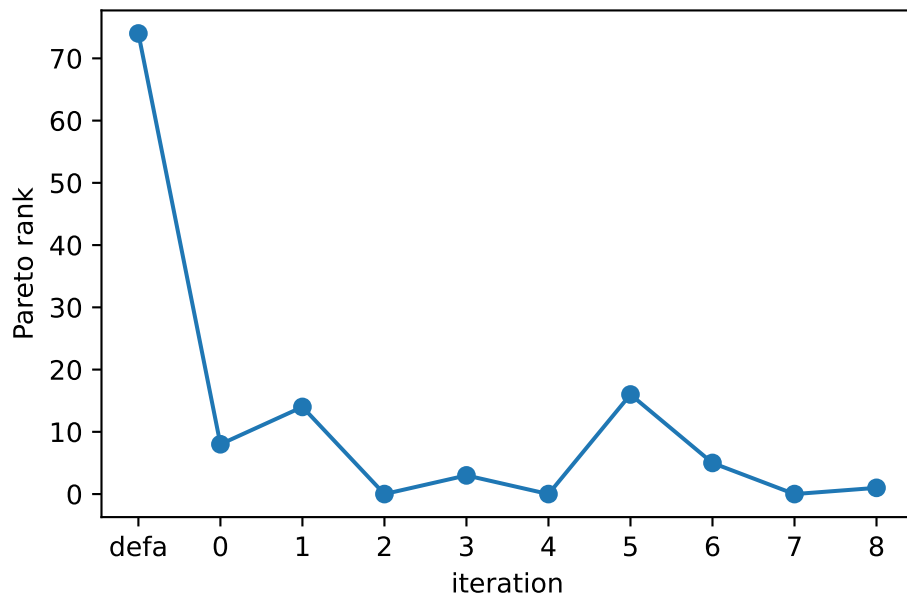
elev_mean: 1001.21 m

(a) All interations
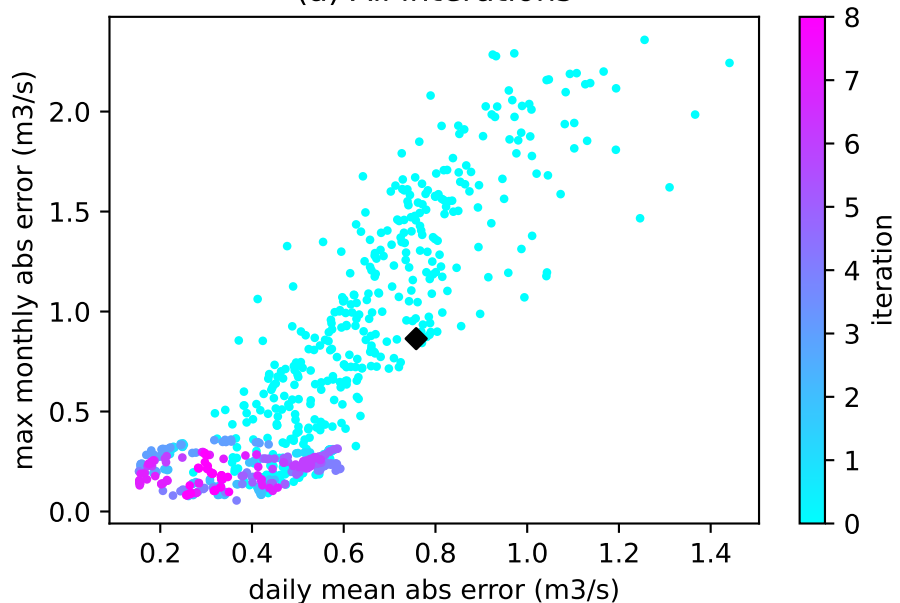
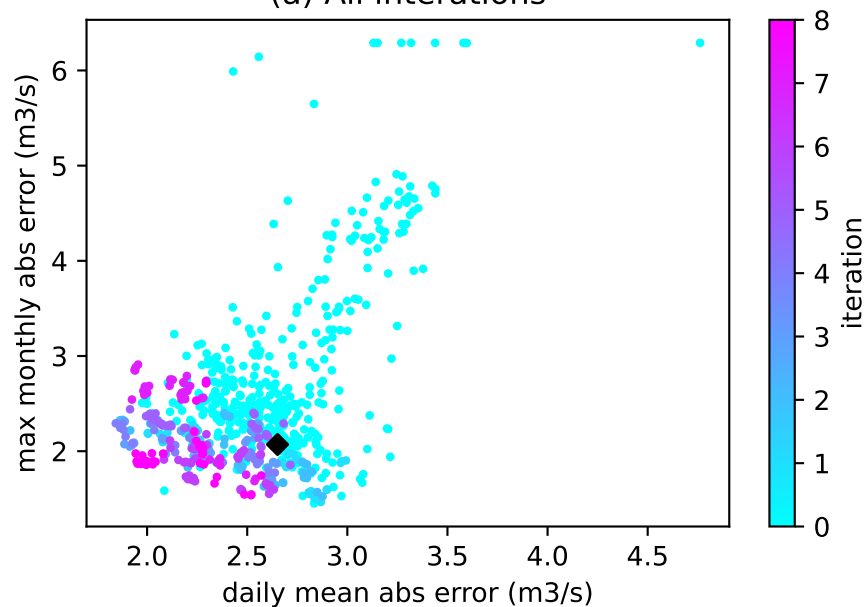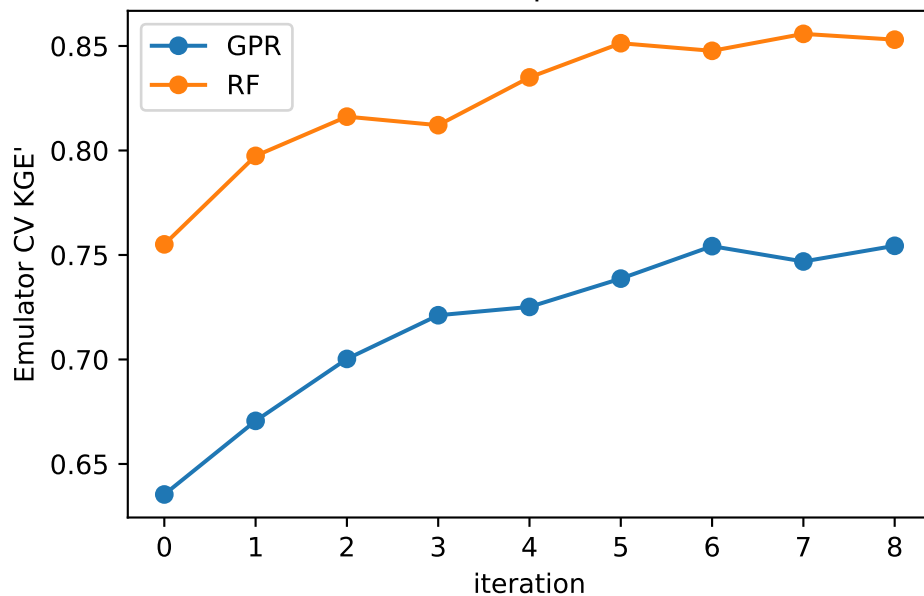**(b) Emulator performance**

(c) Minimum rank for each iteration

basinid: 510

hru_id: 11141280

lat_cen: 35.27825

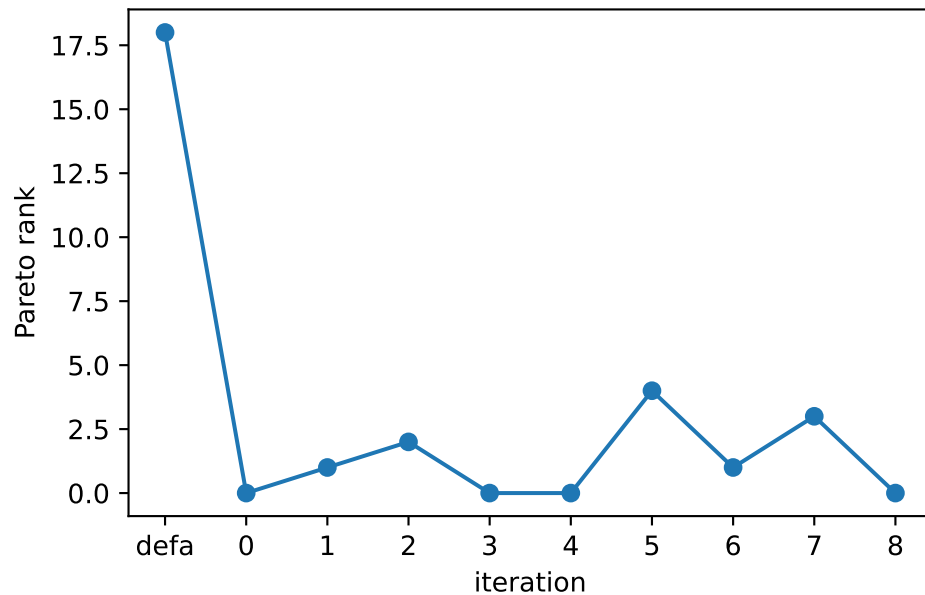lon_cen: -120.52704

AREA: 56.05 km2
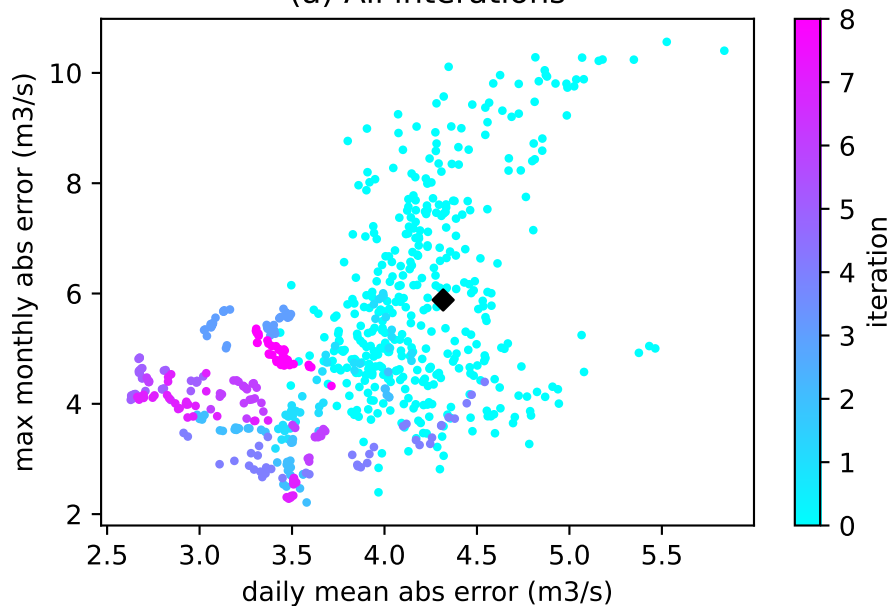
elev_mean: 562.46 m

(a) All interations

max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'

iteration

- GPR
- RF

(c) Minimum rank for each iteration
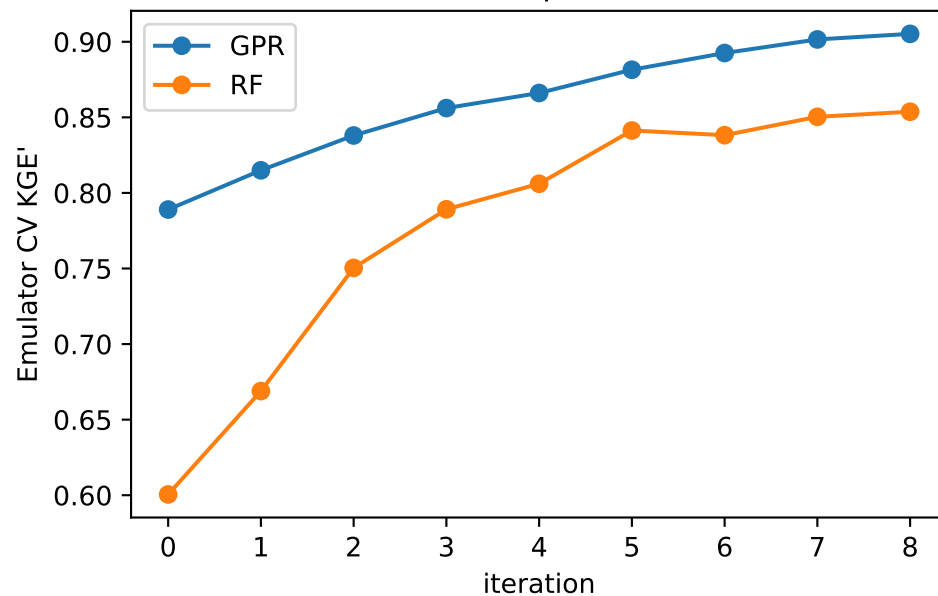
Pareto rank

iteration

basinid: 511

hru_id: 11143000

lat_cen: 36.24347

lon_cen: -121.68131

AREA: 121.32 km2

elev_mean: 770.22 m

(a) All iterations

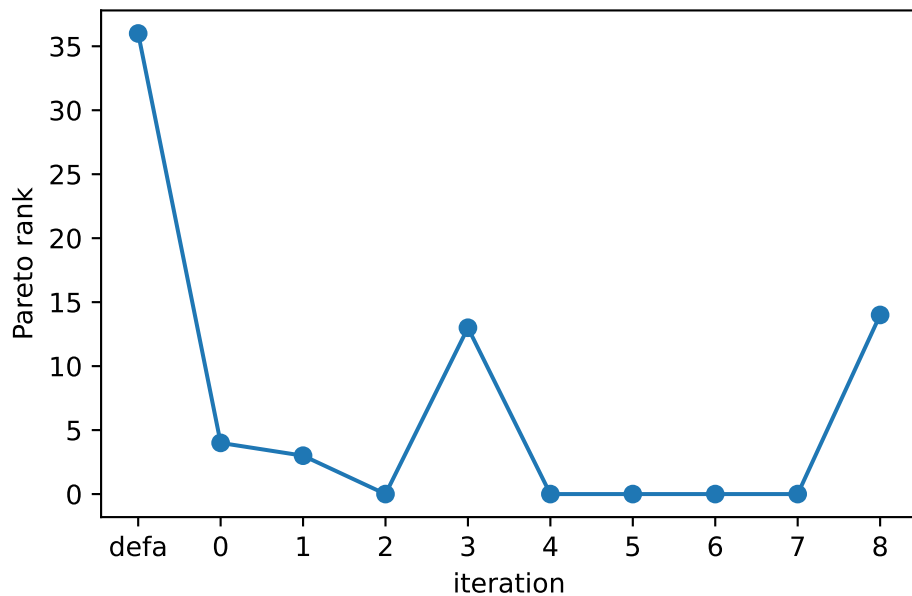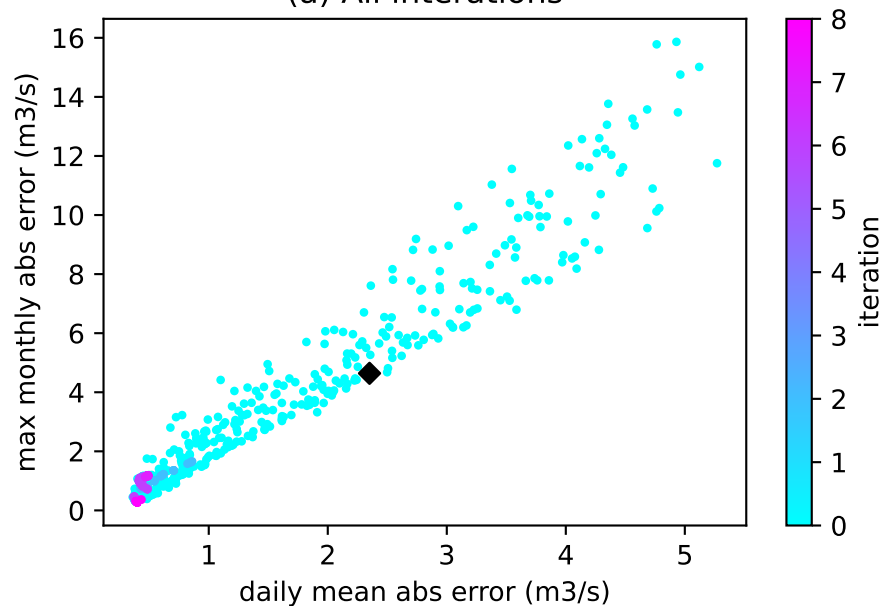(b) Emulator performance
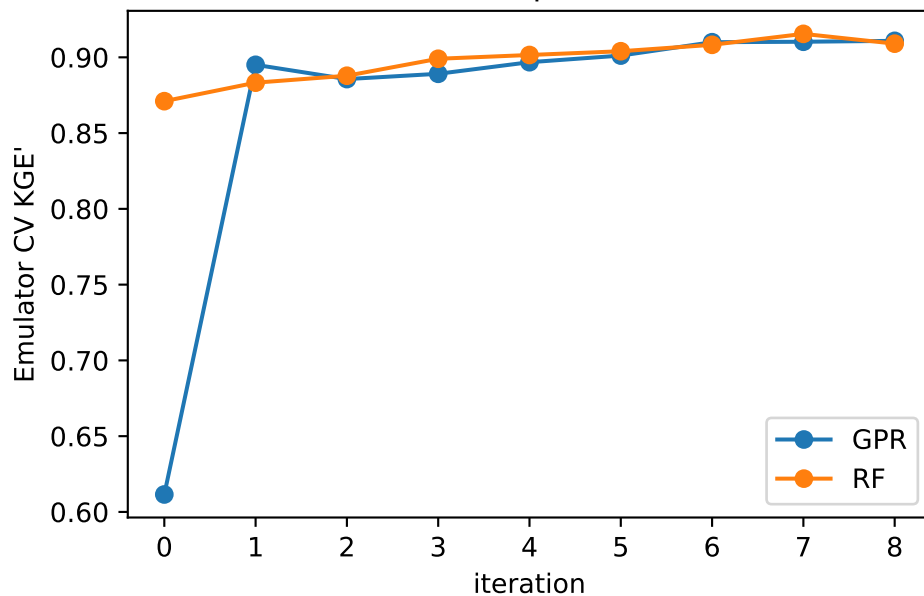
(c) Minimum rank for each iteration

basinid: 512

hru_id: 11148900

lat_cen: 35.90448

lon_cen: -121.27133

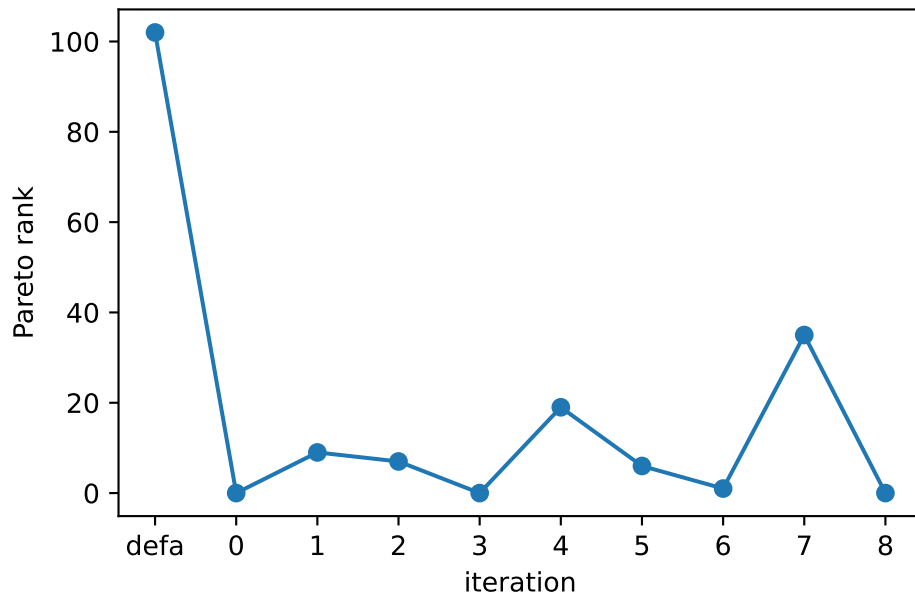AREA: 386.02 km2
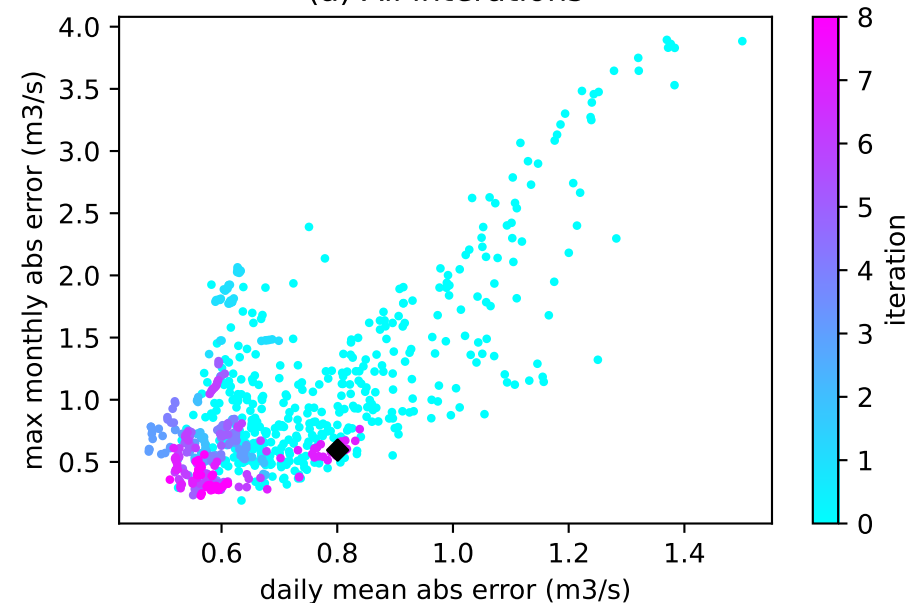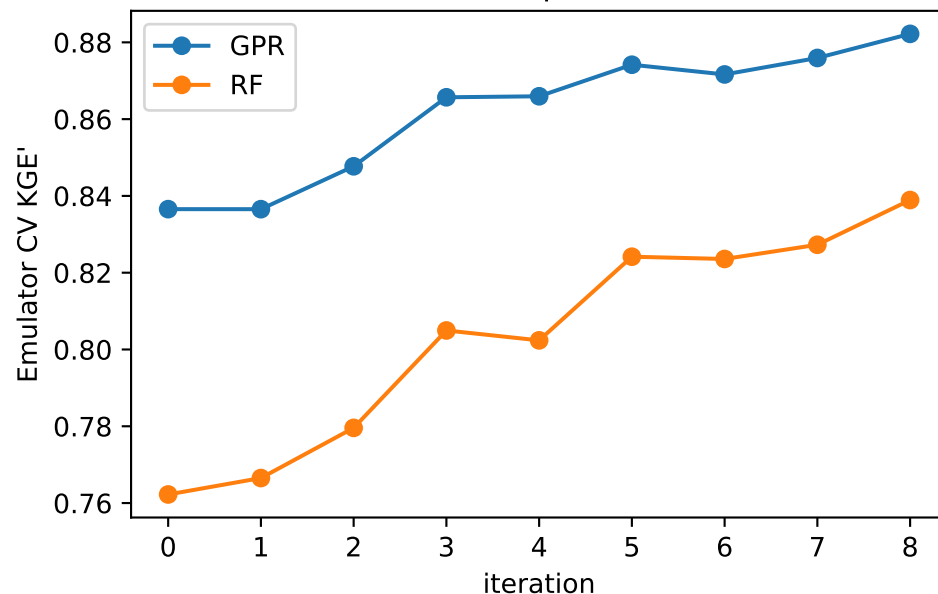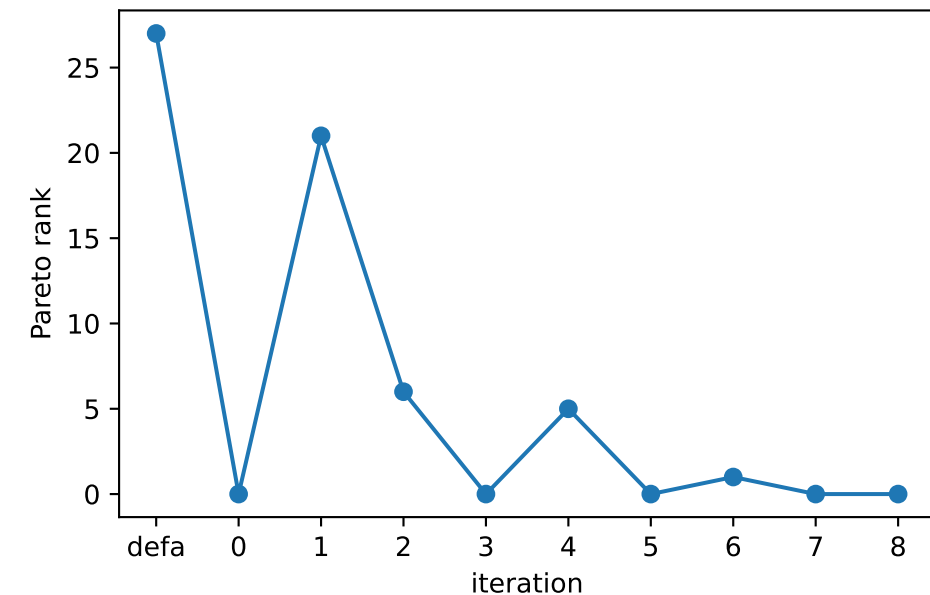
elev_mean: 564.24 m

(a) All iterations

max monthly abs error (m3/s) vs daily mean abs error (m3/s)

(b) Emulator performance

Emulator CV KGE' vs iteration

- GPR
- RF

(c) Minimum rank for each iteration

Pareto rank vs iteration

basinid: 513

hru_id: 11151300

lat_cen: 36.26131

lon_cen: -120.8604

AREA: 648.42 km2

elev_mean: 608.74 m

(a) All interations

max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'
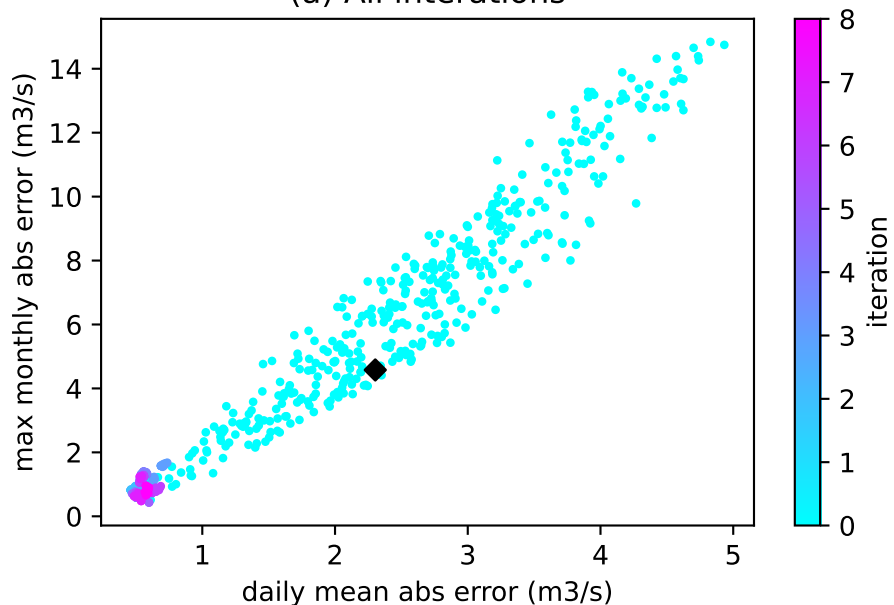
iteration

GPR
RF

(c) Minimum rank for each iteration
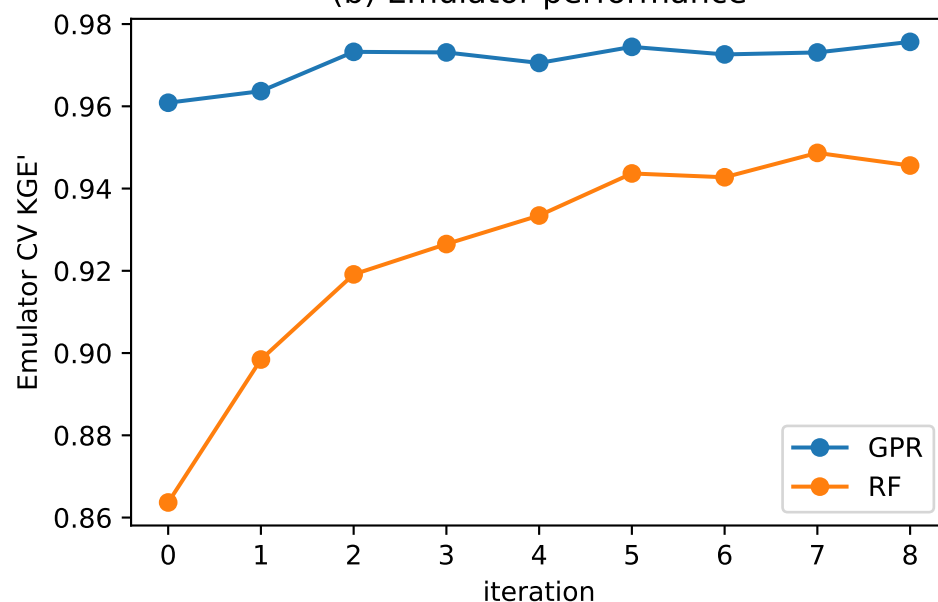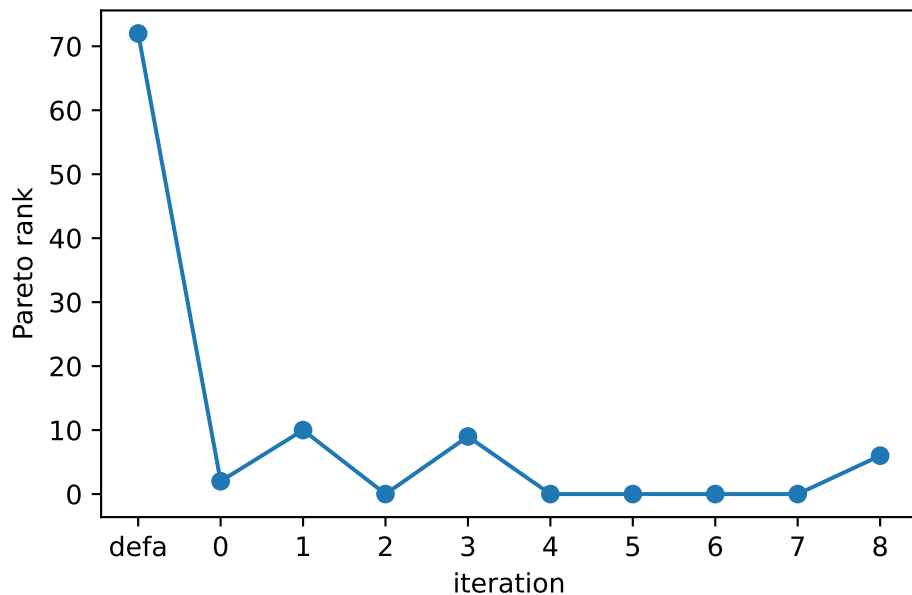
Pareto rank

iteration

basinid: 514

hru_id: 11162500

lat_cen: 37.25977

lon_cen: -122.21675

AREA: 119.20 km2

elev_mean: 340.37 m

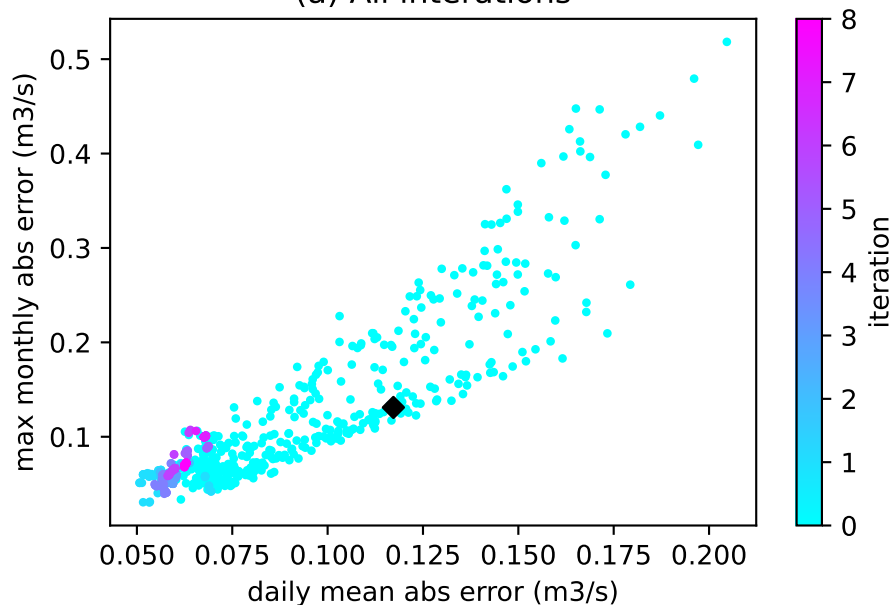(a) All iterations

(b) Emulator performance
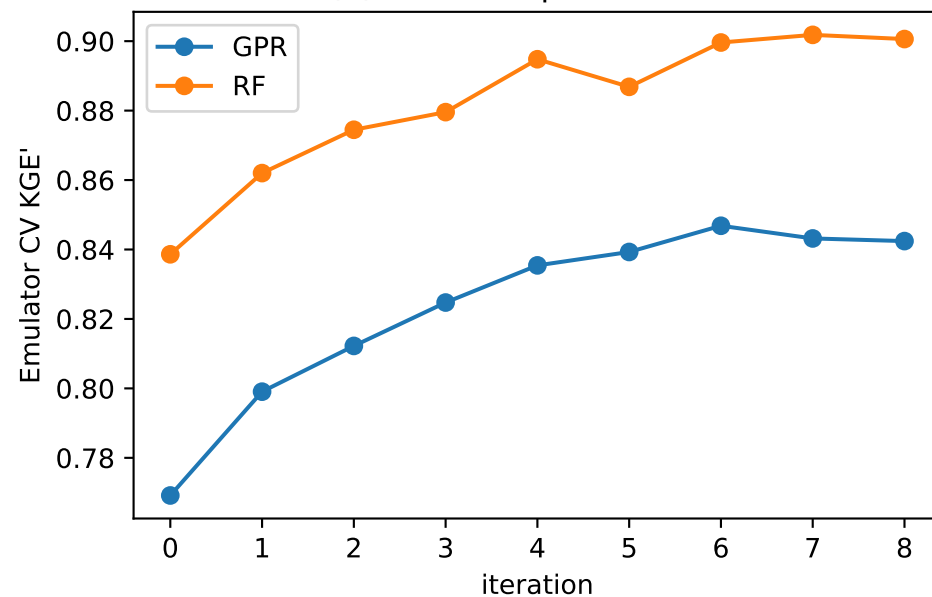
(c) Minimum rank for each iteration

basinid: 515

hru_id: 11176400

lat_cen: 37.4268

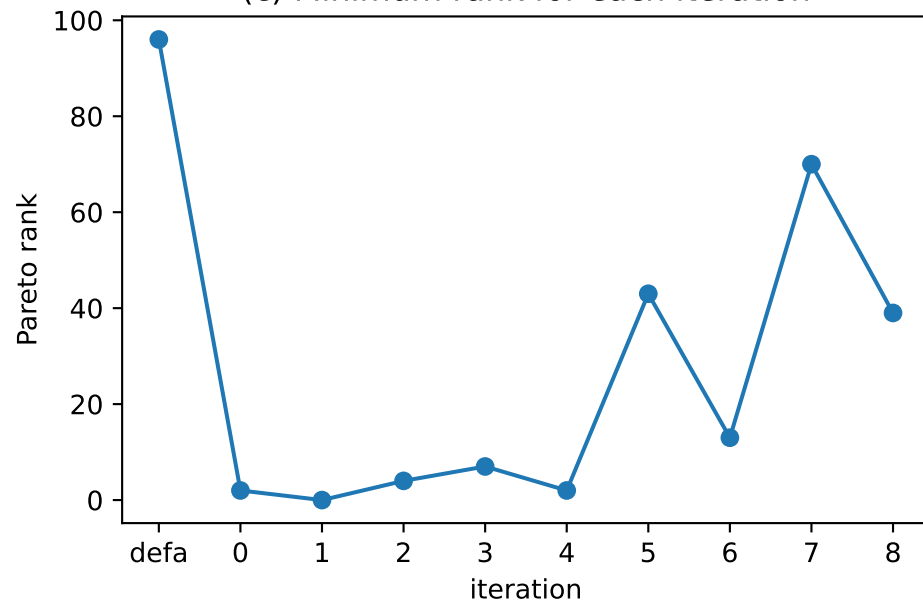lon_cen: -121.5492

AREA: 336.78 km2

elev_mean: 750.99 m

(a) All interations

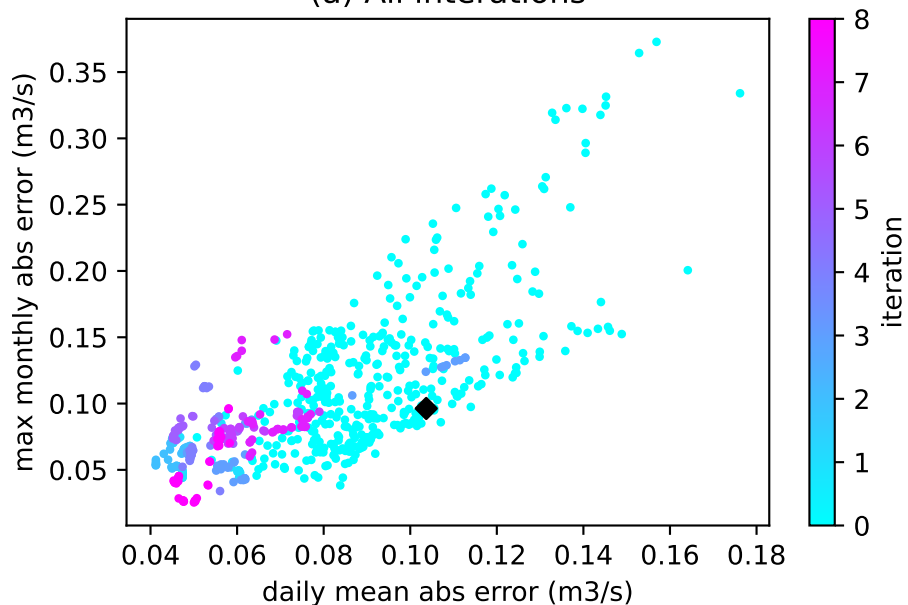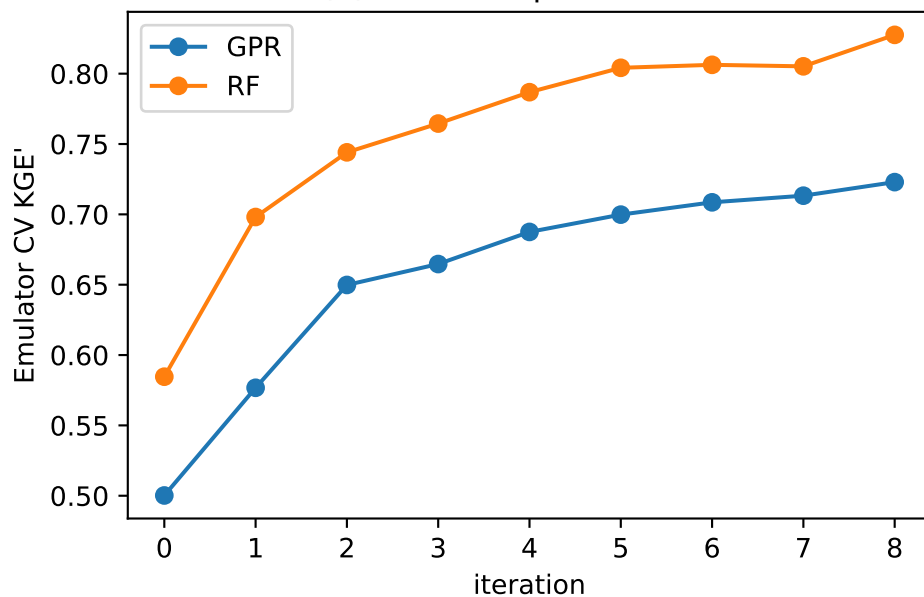**(b) Emulator performance**

(c) Minimum rank for each iteration

basinid: 516

hru_id: 11180500

lat_cen: 37.62082

lon_cen: -122.00207
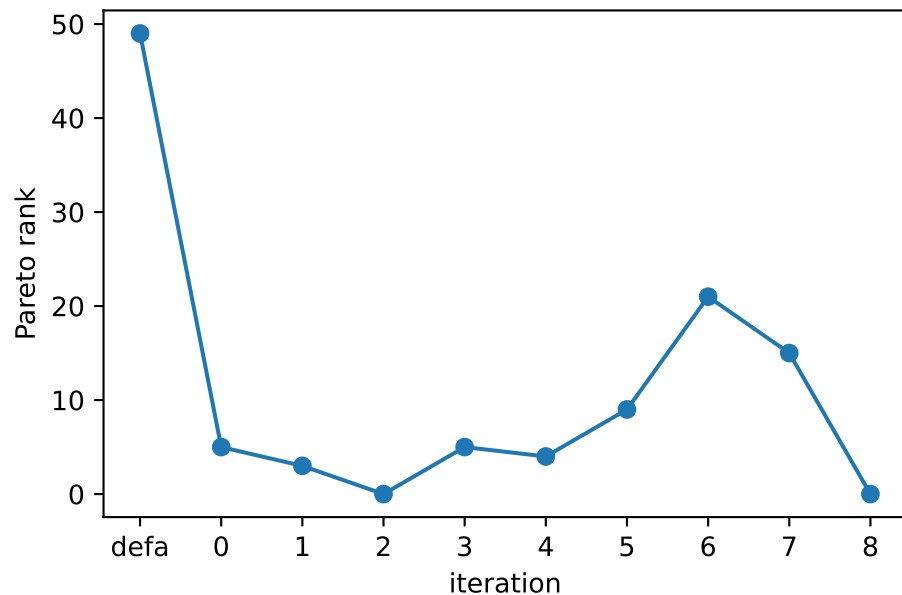
AREA: 27.03 km2

elev_mean: 245.17 m

(a) All interations

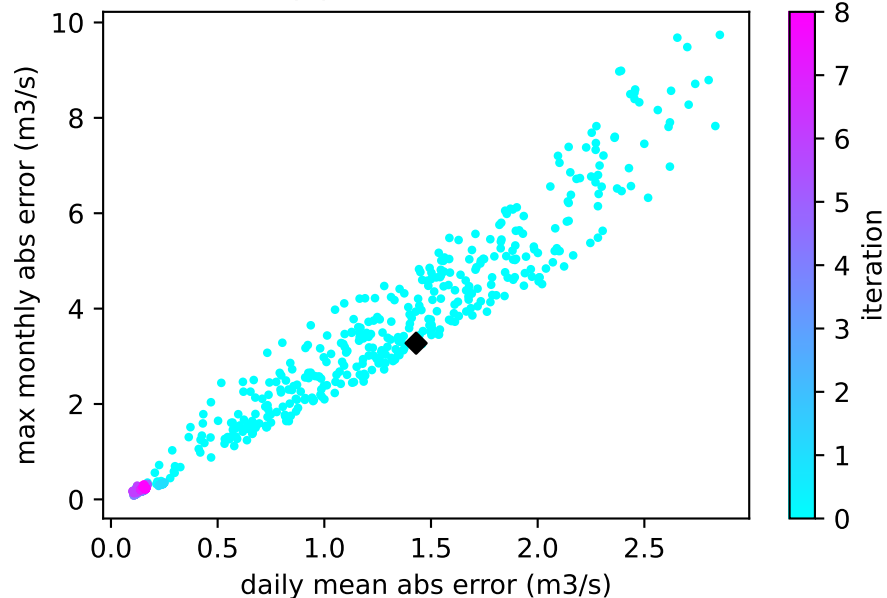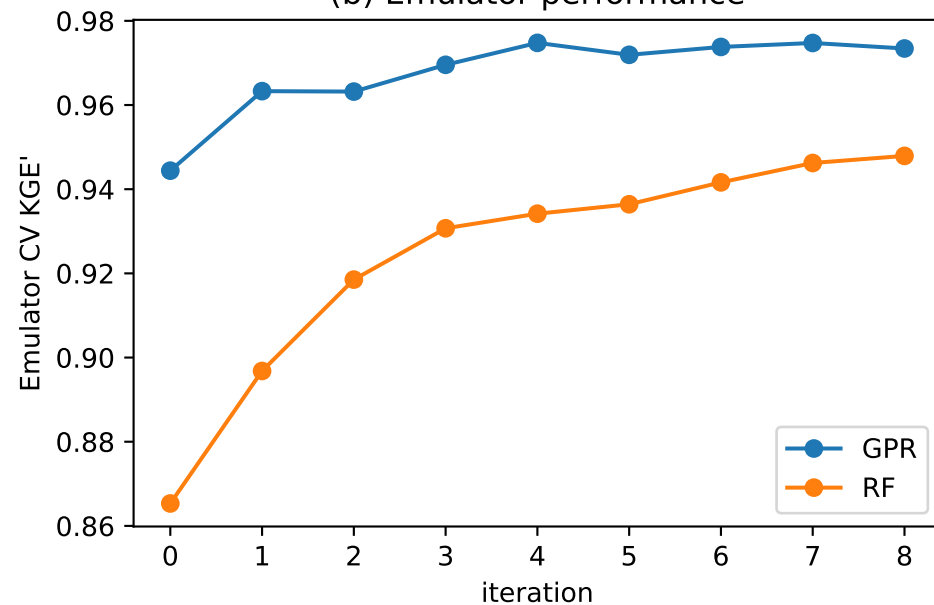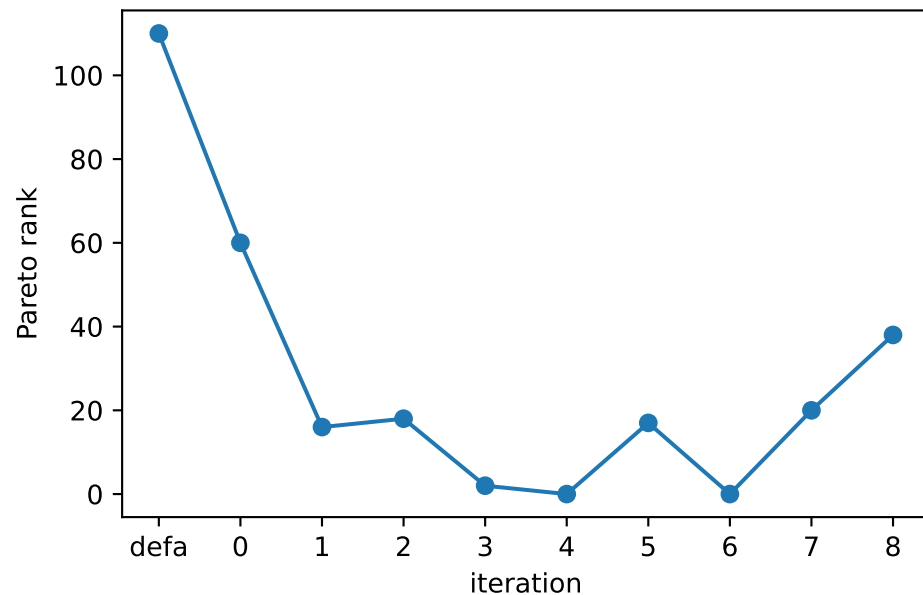max monthly abs error (m3/s) vs daily mean abs error (m3/s), colorbar: iteration (0–8)

(b) Emulator performance

Emulator CV KGE' vs iteration — GPR, RF

(c) Minimum rank for each iteration

Pareto rank vs iteration (defa, 0–8)

basinid: 517

hru_id: 11180960

lat_cen: 37.76372

lon_cen: -122.05706

AREA: 17.99 km2

elev_mean: 242.76 m

(a) All interations

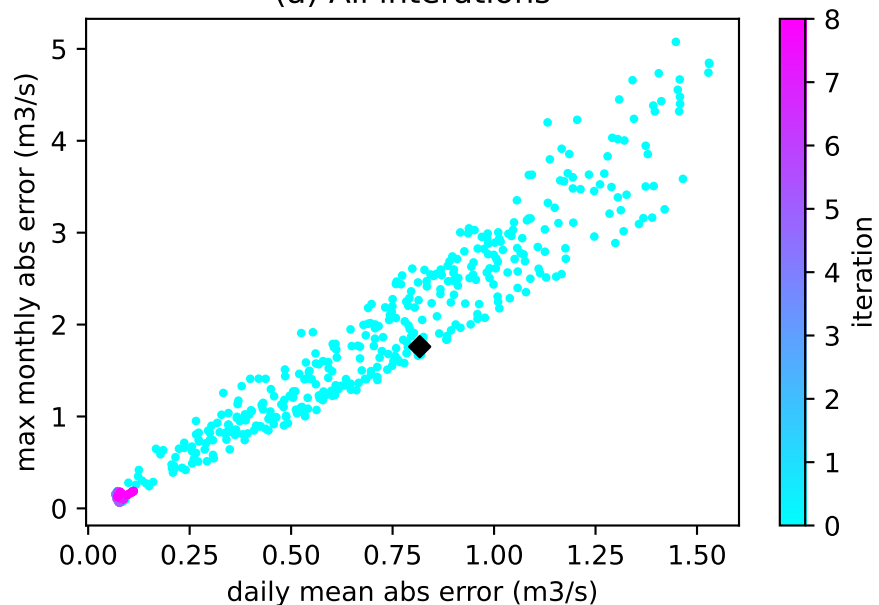max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'

iteration

GPR
RF
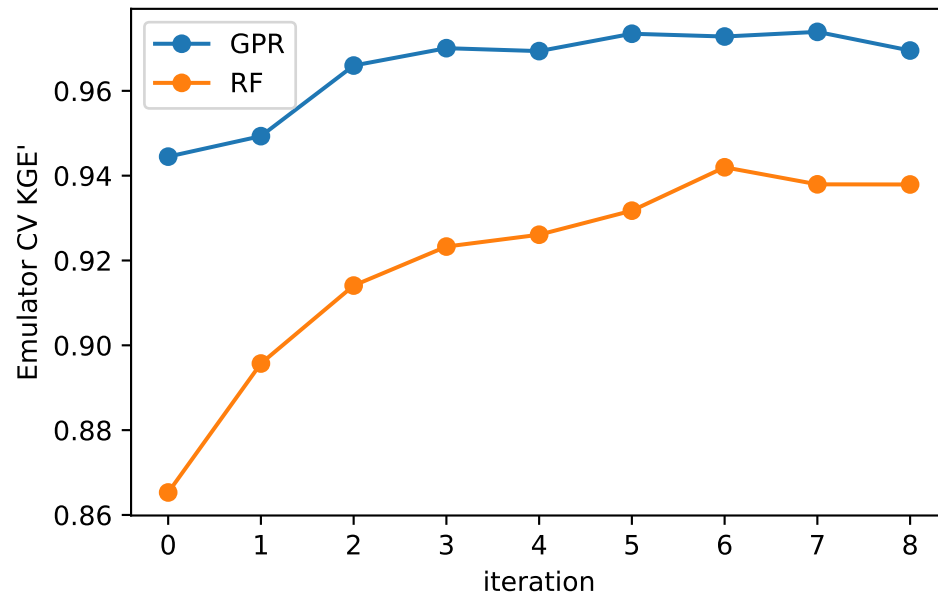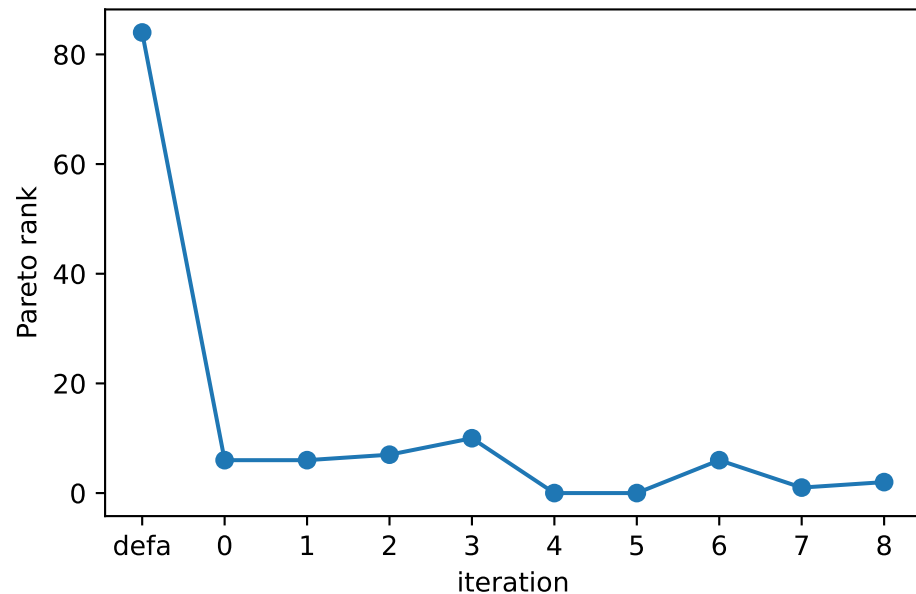
(c) Minimum rank for each iteration

Pareto rank

iteration

basinid: 518

hru_id: 11224500

lat_cen: 36.2753

lon_cen: -120.53071

AREA: 325.25 km2
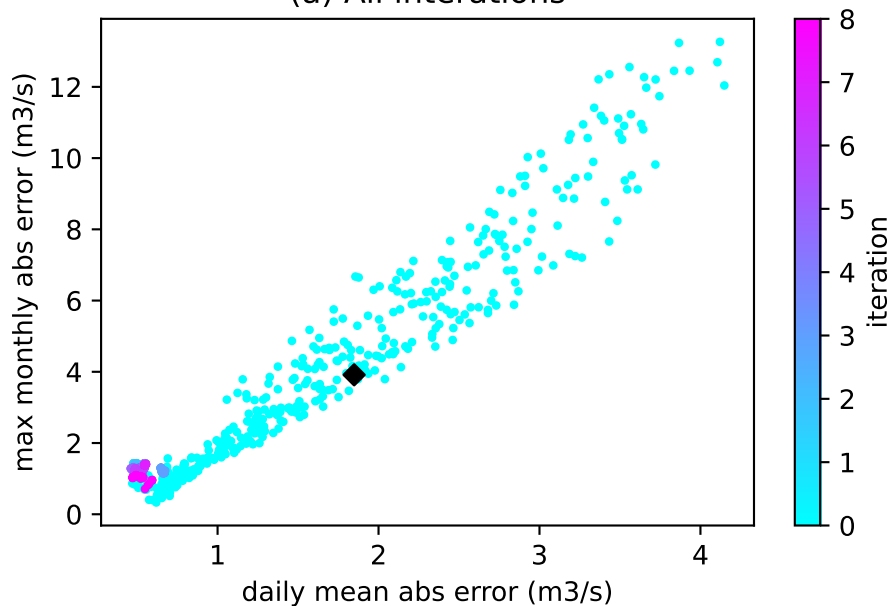
elev_mean: 797.46 m

(a) All interations

max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'

iteration

GPR
RF

(c) Minimum rank for each iteration

Pareto rank

iteration

basinid: 521

hru_id: 11253310

lat_cen: 36.39478
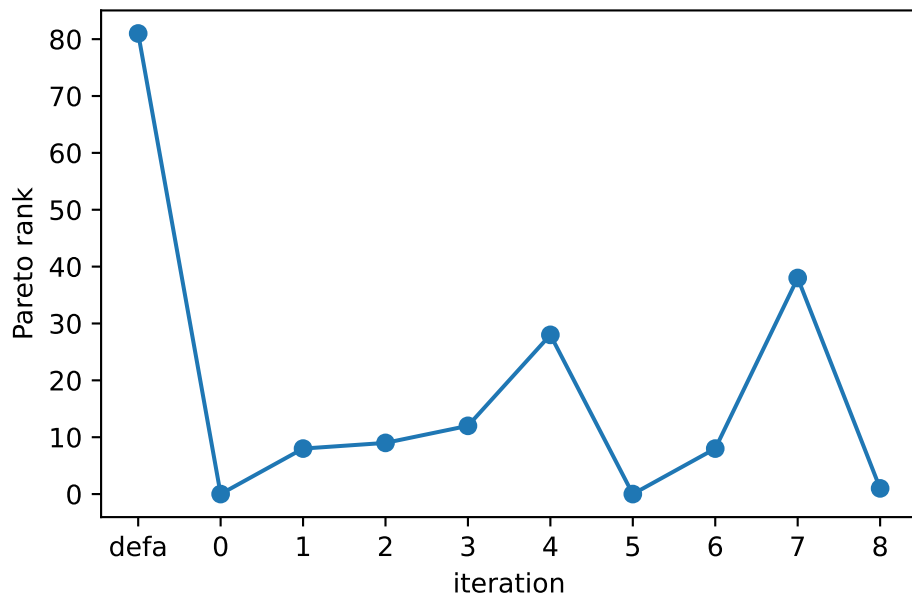
lon_cen: -120.51718

AREA: 235.92 km2

elev_mean: 681.59 m

(a) All interations

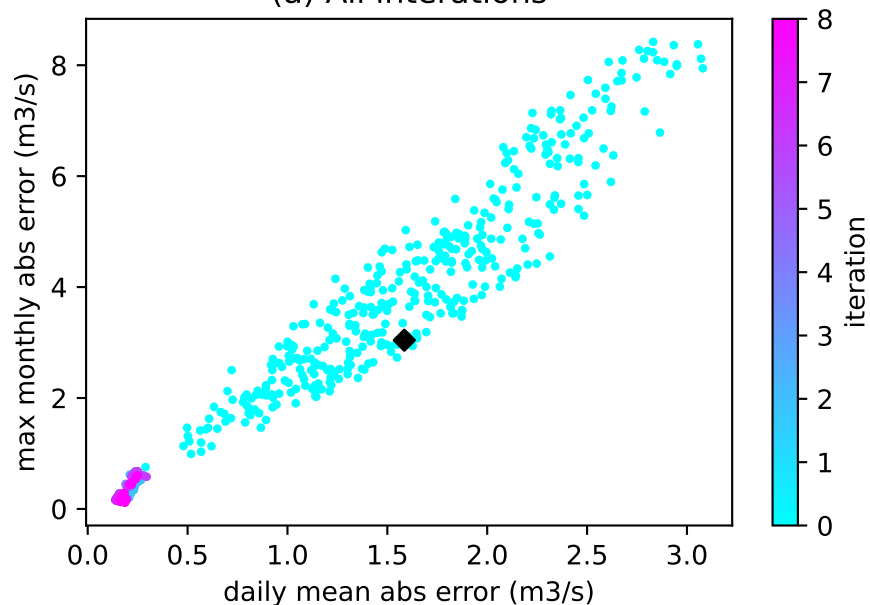max monthly abs error (m3/s) vs daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE' vs iteration

GPR
RF

(c) Minimum rank for each iteration
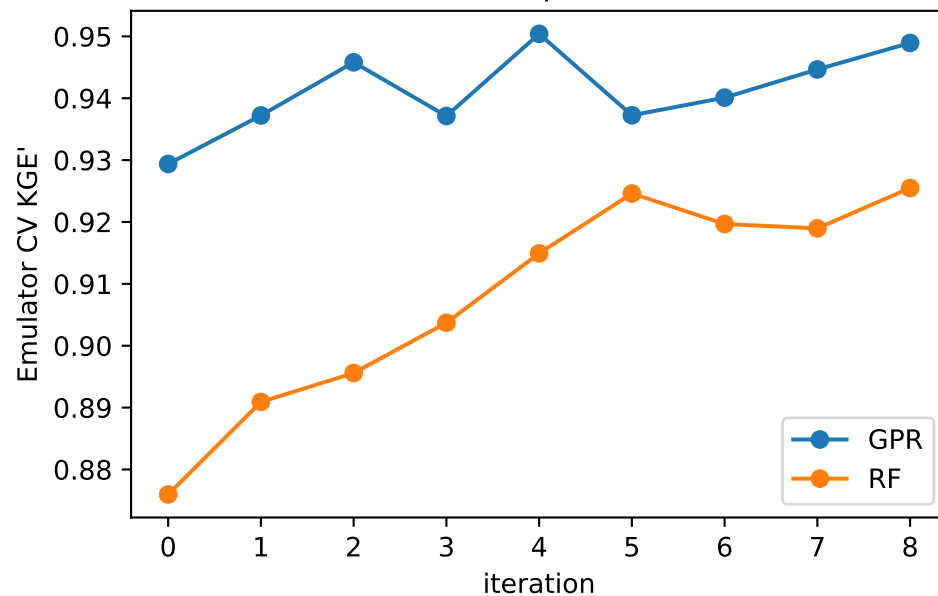
Pareto rank vs iteration

basinid: 523

hru_id: 11274500

lat_cen: 37.28551

lon_cen: -121.2949

AREA: 530.17 km2

elev_mean: 439.07 m

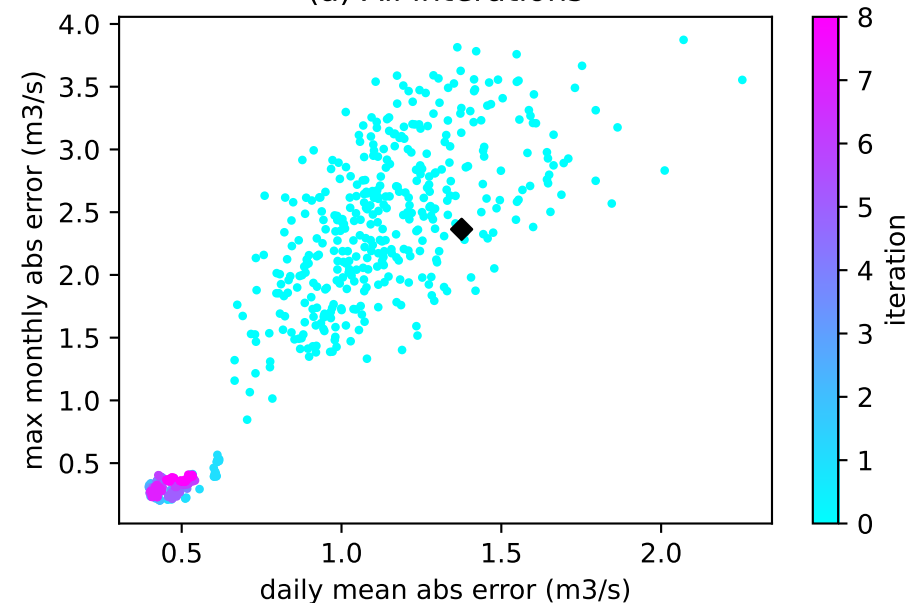**(a) All interations**

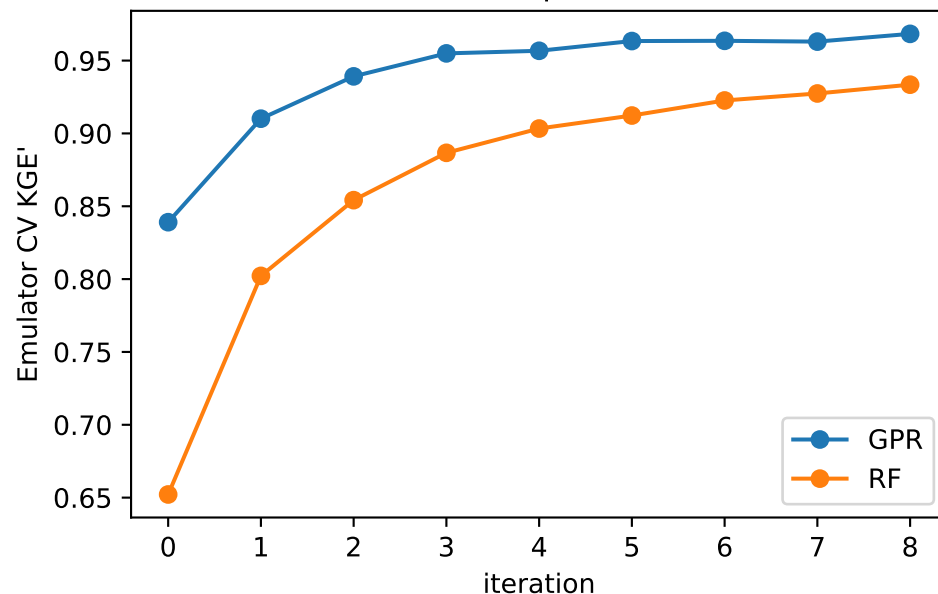**(b) Emulator performance**
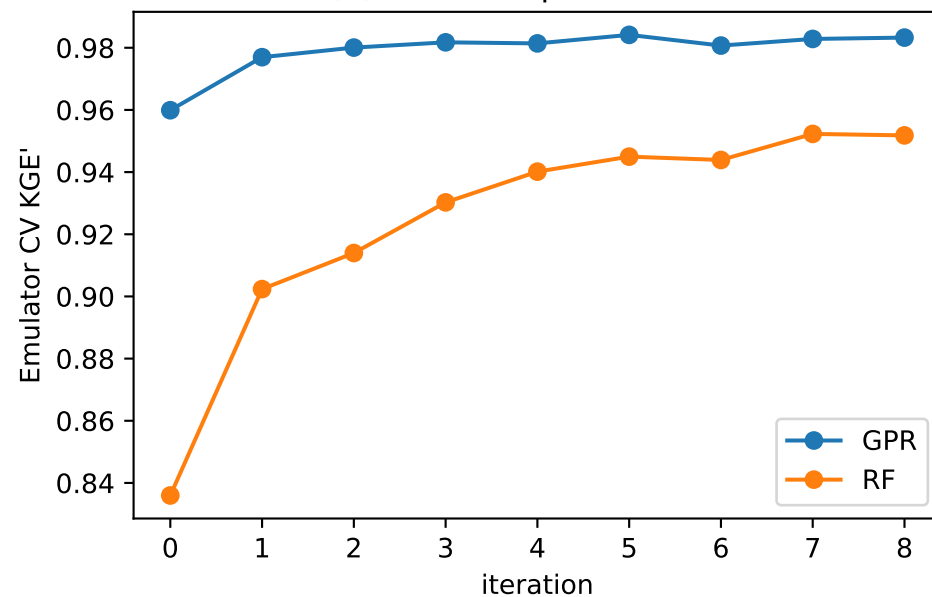
(c) Minimum rank for each iteration
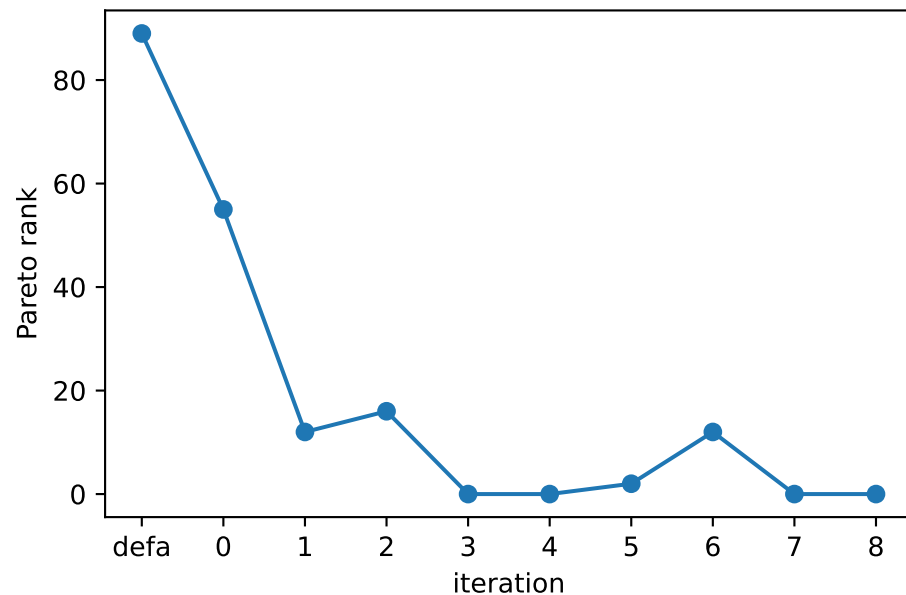
basinid: 524

hru_id: 11274630

lat_cen: 37.44805

lon_cen: -121.34566

AREA: 284.39 km2

elev_mean: 547.28 m

(a) All interations

(b) Emulator performance
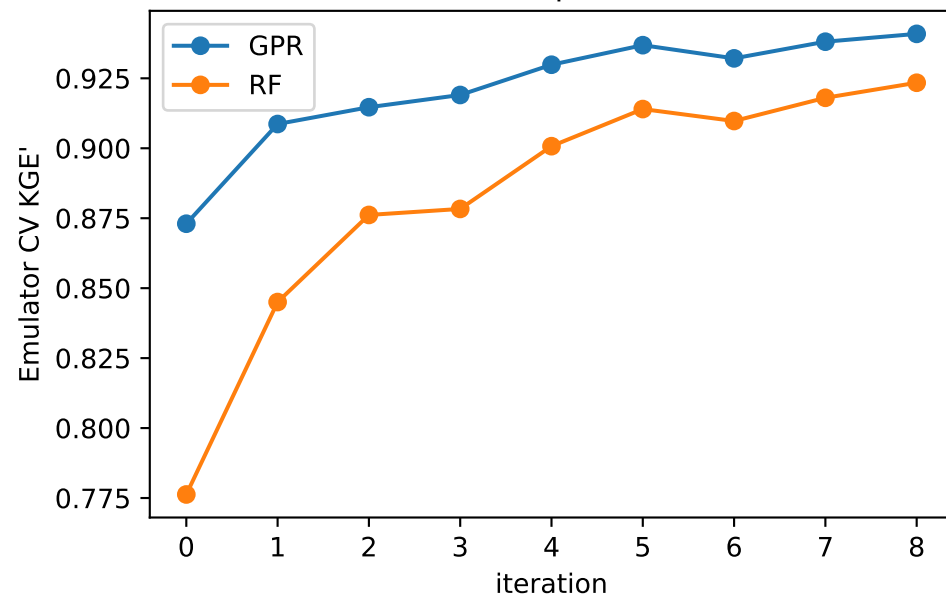
(c) Minimum rank for each iteration
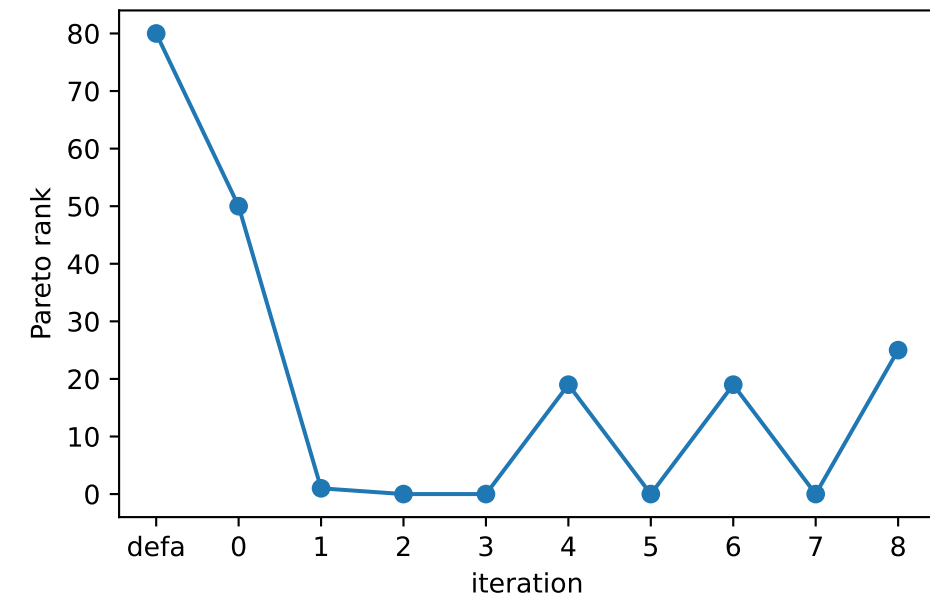
basinid: 525

hru_id: 11284400

lat_cen: 37.81537

lon_cen: -120.14274

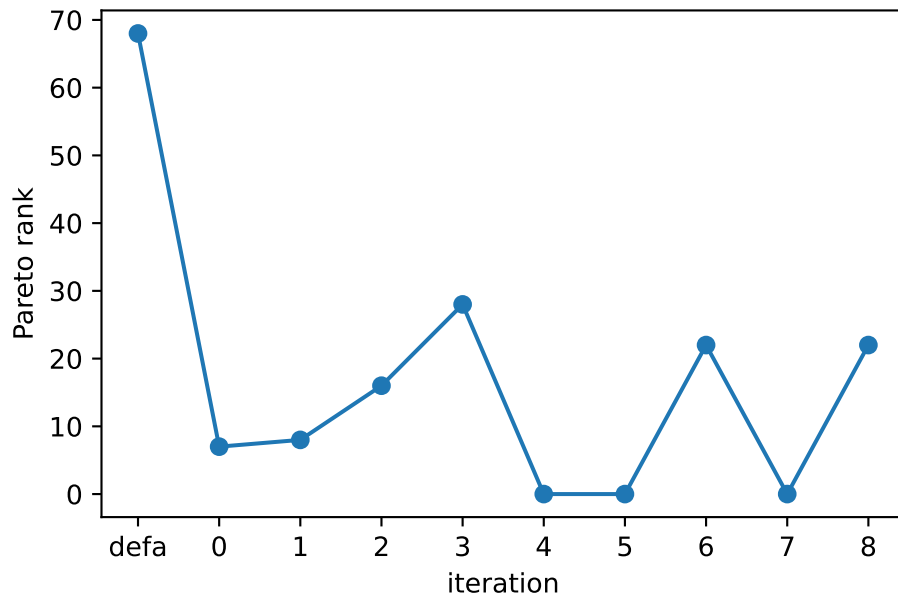AREA: 41.71 km2

elev_mean: 966.79 m
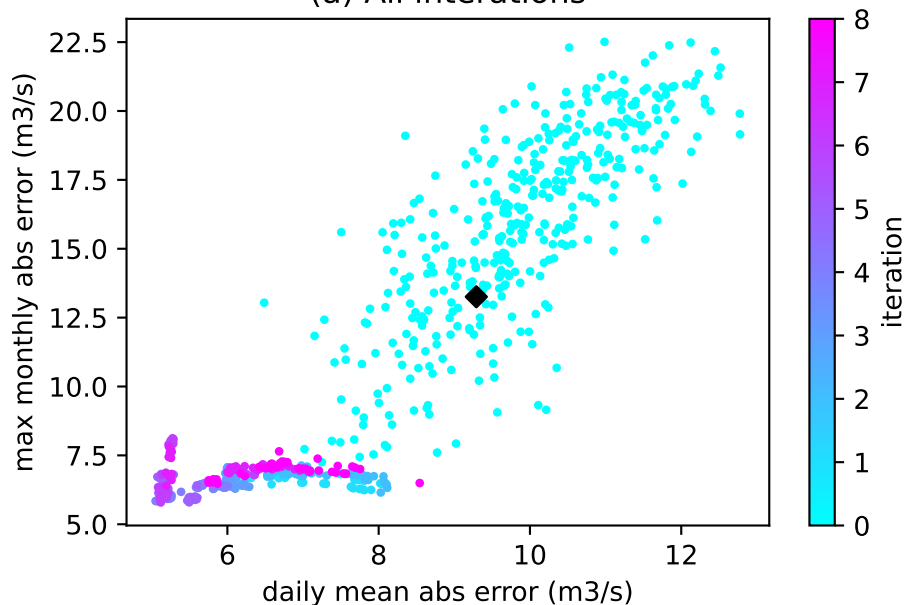
(a) All interations
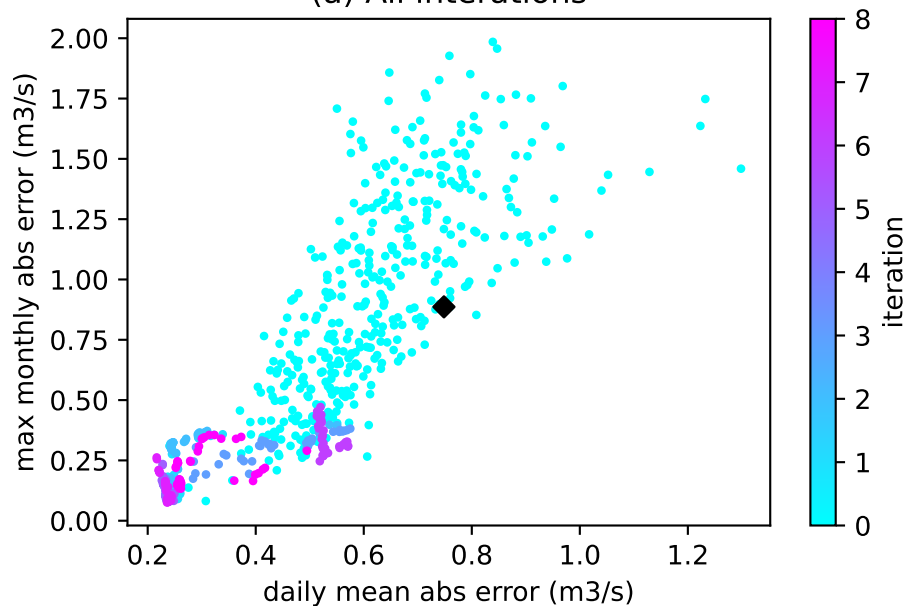
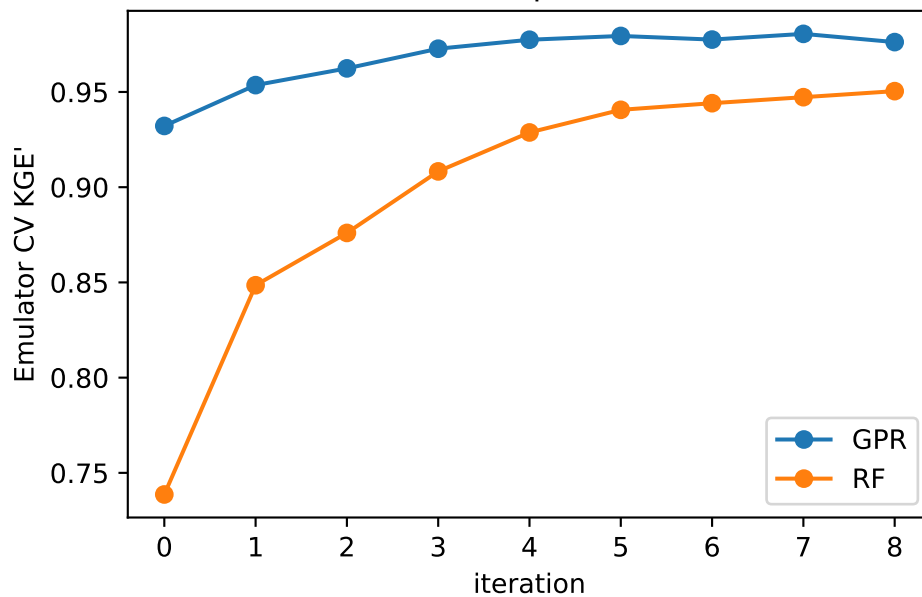(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 526

hru_id: 11299600

lat_cen: 37.99671

lon_cen: -120.61621

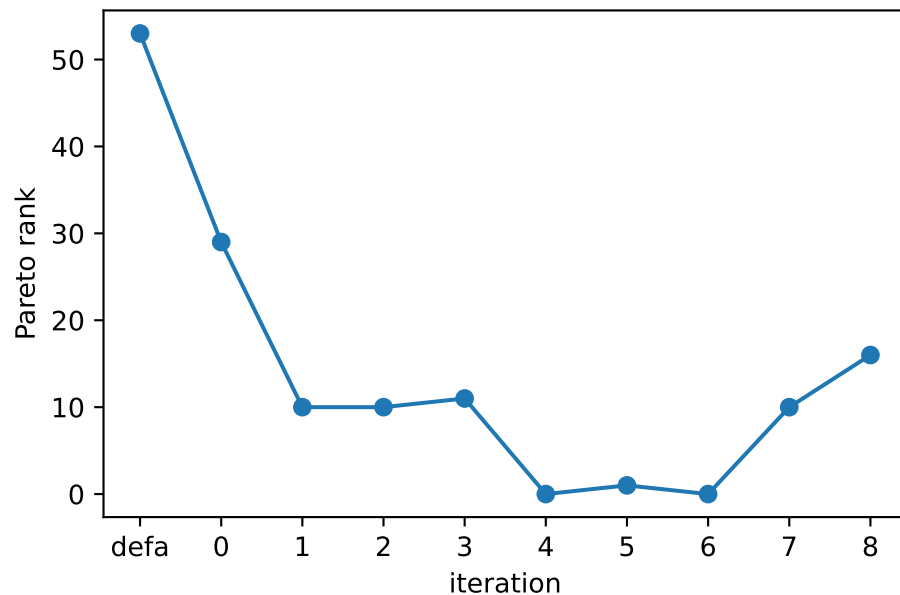AREA: 41.12 km2

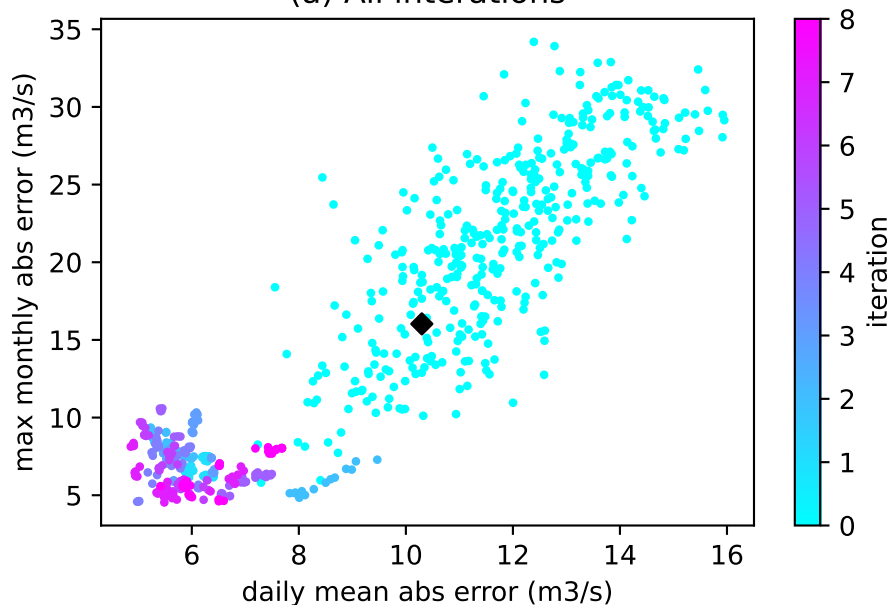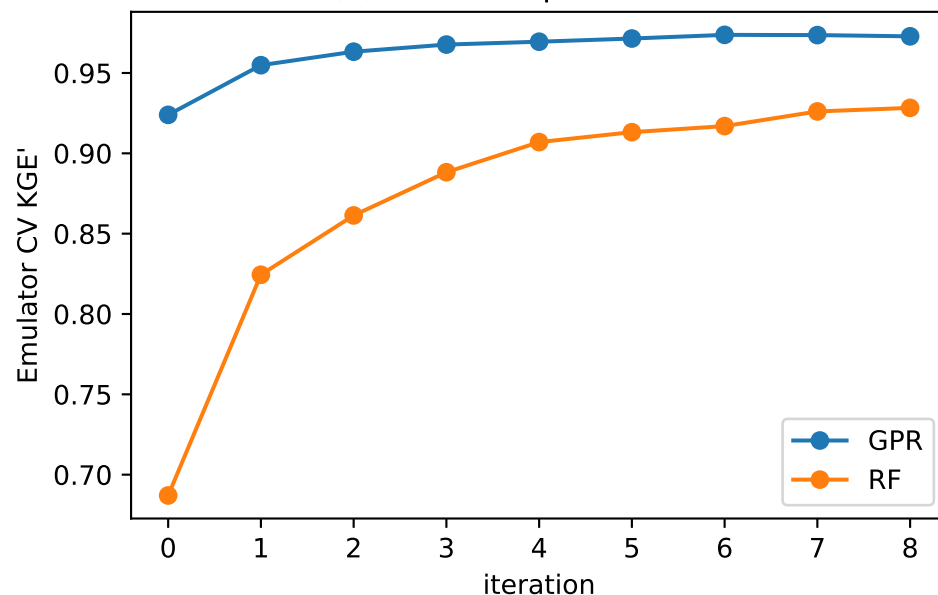elev_mean: 424.52 m

(a) All interations

(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 527

hru_id: 11381500

lat_cen: 40.23865

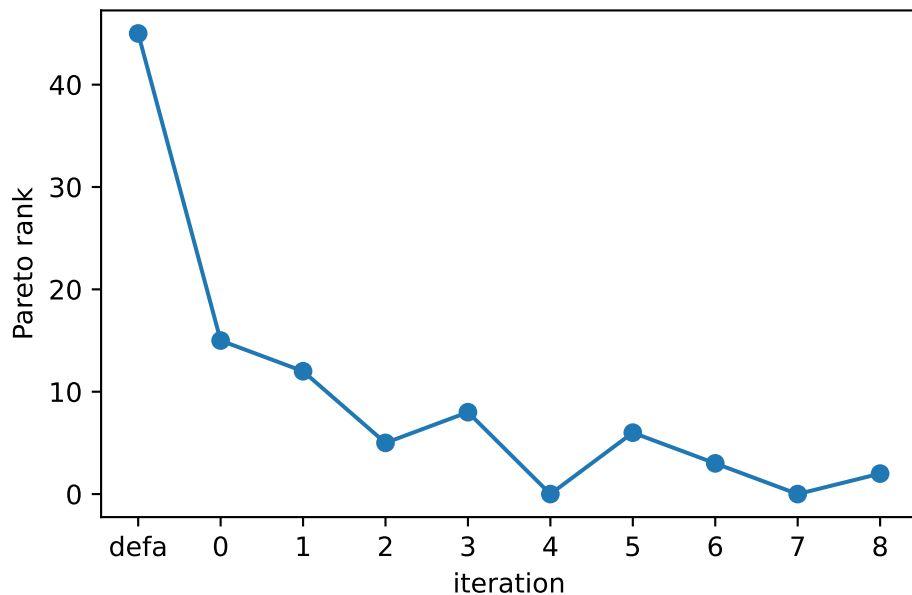lon_cen: -121.67376

AREA: 341.30 km2

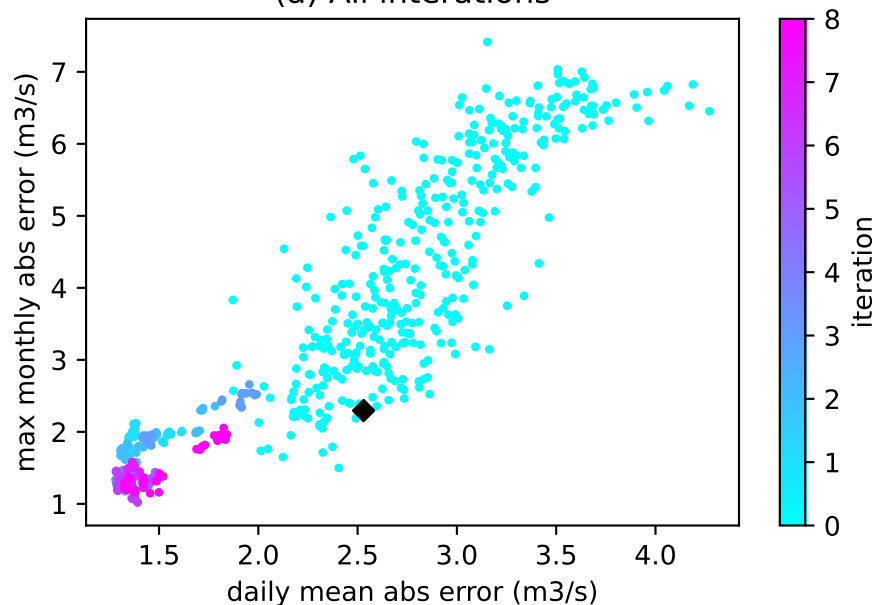elev_mean: 1200.01 m

(a) All interations

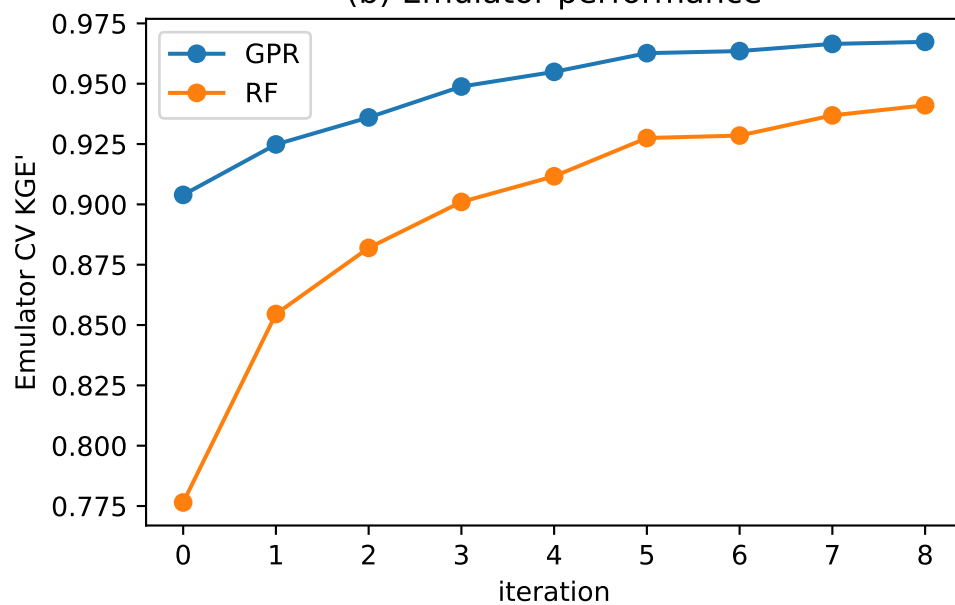(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 528

hru_id: 11383500

lat_cen: 40.15139

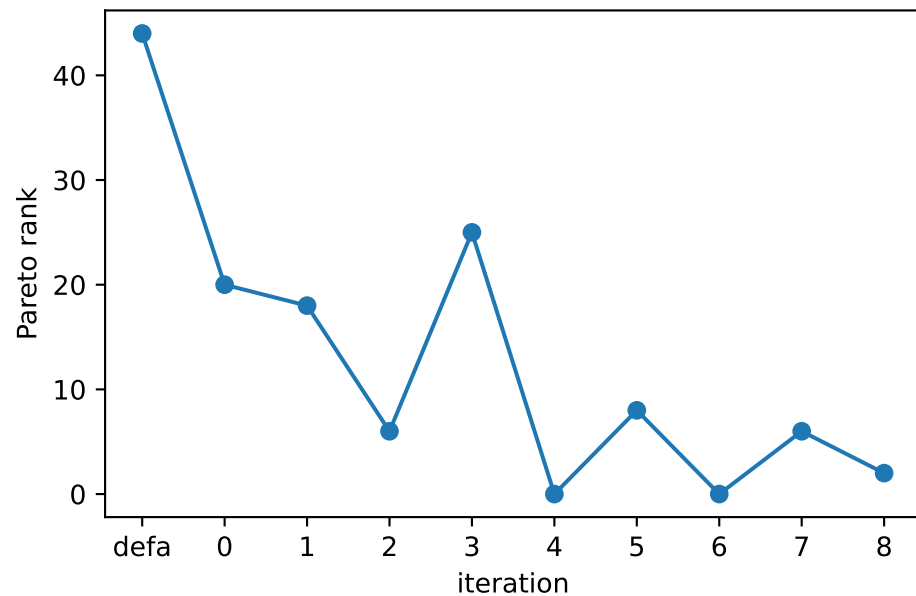lon_cen: -121.61053

AREA: 634.10 km2

elev_mean: 1168.12 m

(a) All interations
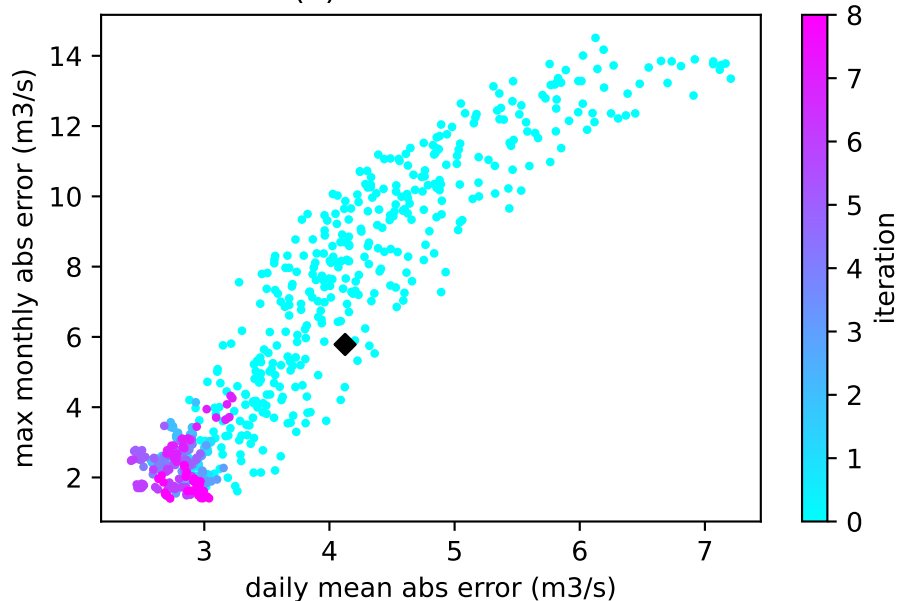
(b) Emulator performance
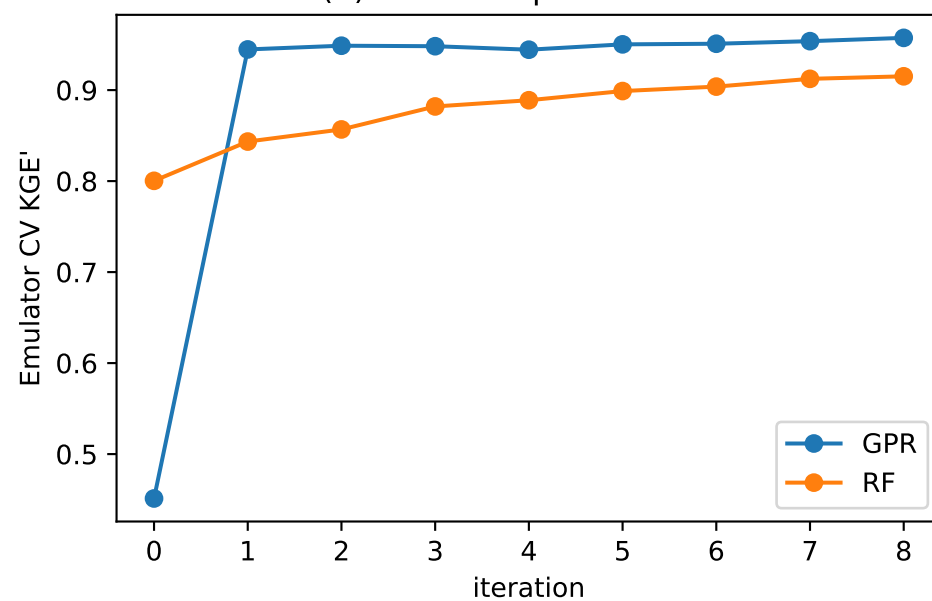
(c) Minimum rank for each iteration

basinid: 529

hru_id: 11451100

lat_cen: 39.19985

lon_cen: -122.72945

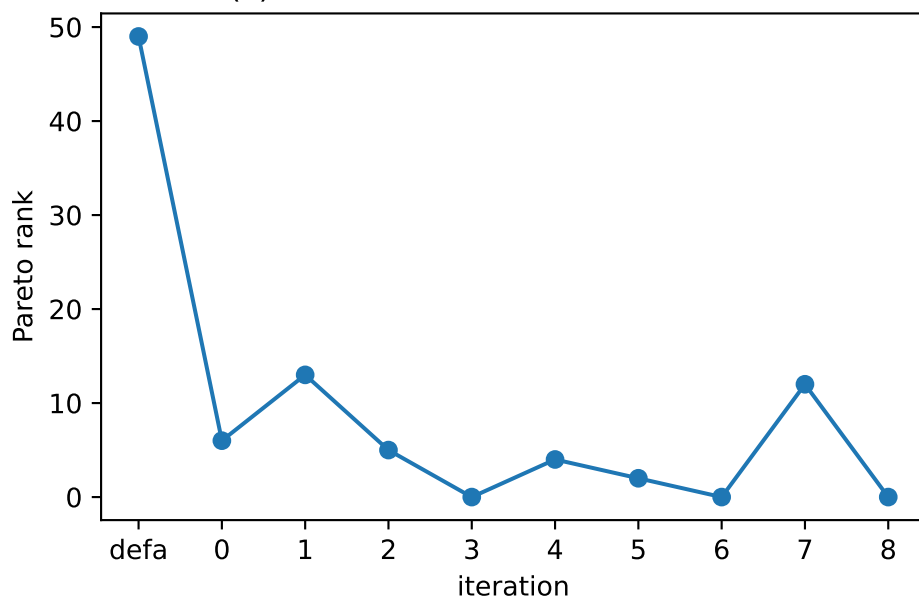AREA: 155.47 km2

elev_mean: 911.99 m

(a) All interations

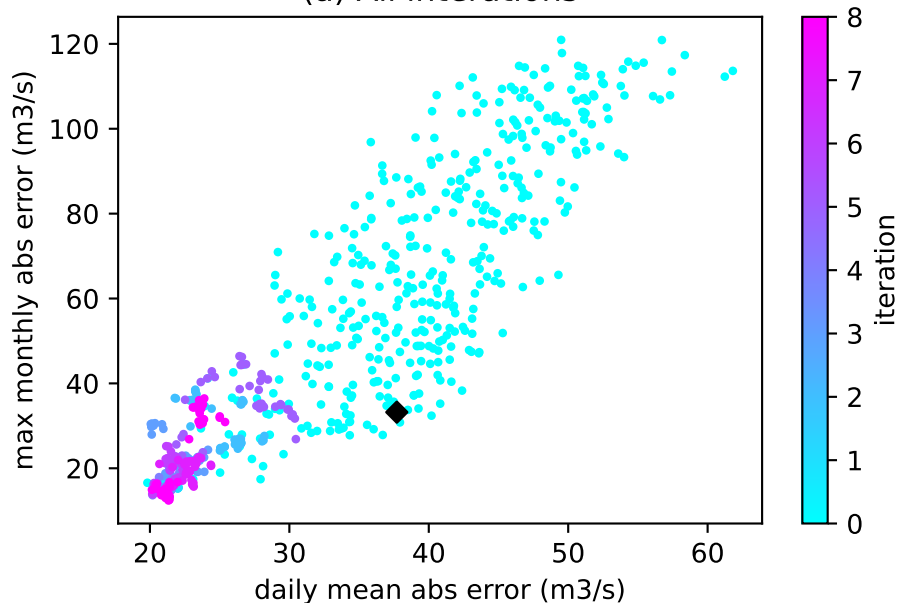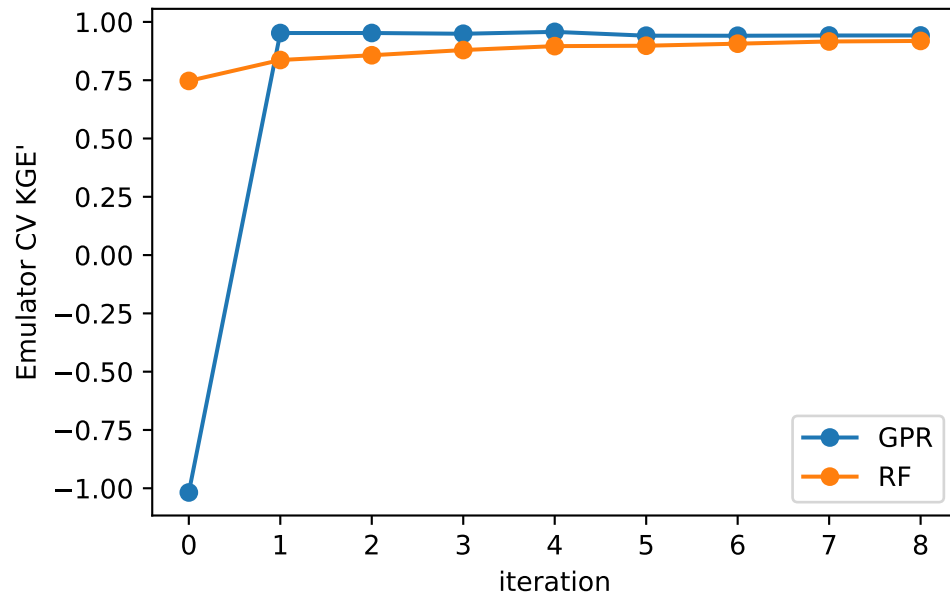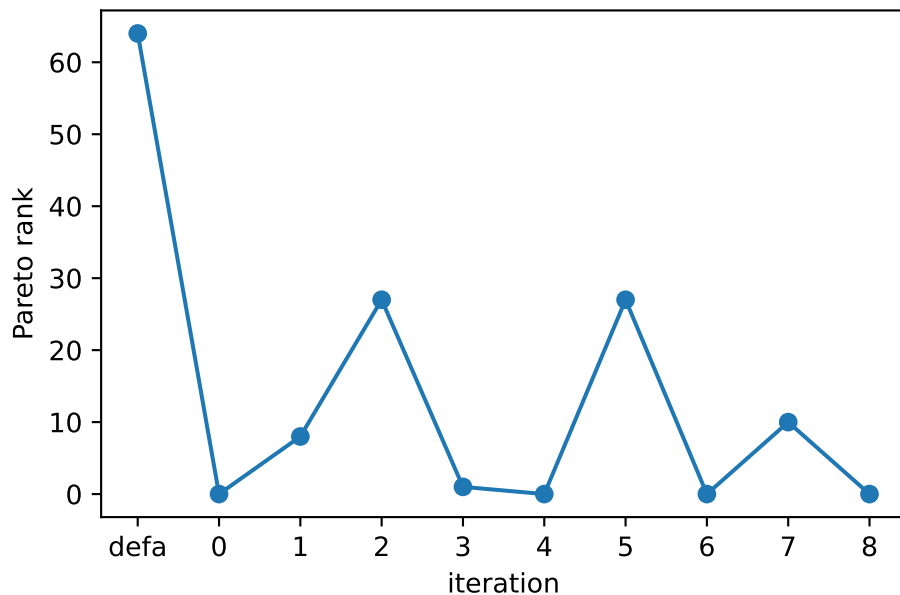max monthly abs error (m3/s) vs daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE' vs iteration

GPR
RF

(c) Minimum rank for each iteration

Pareto rank vs iteration

basinid: 530

hru_id: 11468500

lat_cen: 39.43312

lon_cen: -123.56776

AREA: 273.61 km2

elev_mean: 283.59 m

(a) All interations

(b) Emulator performance
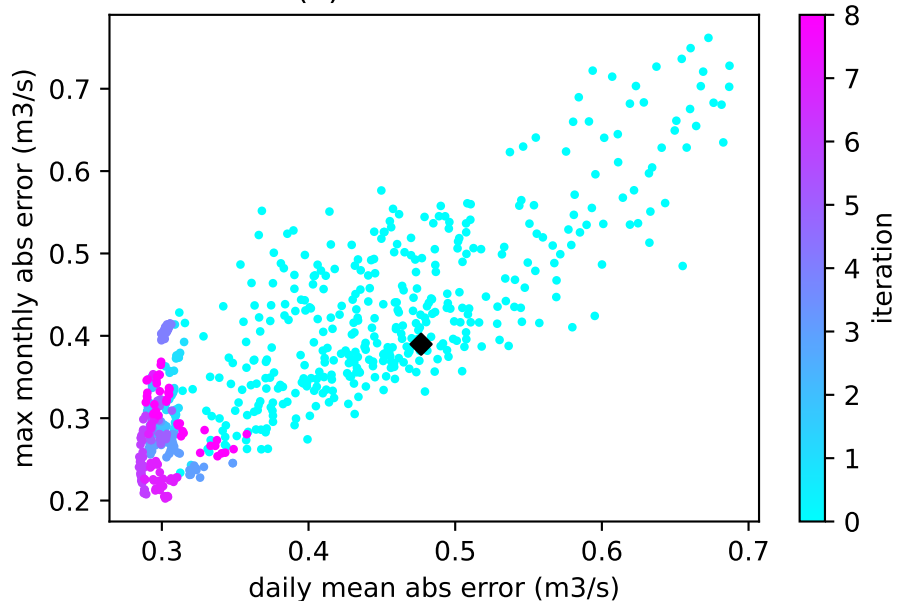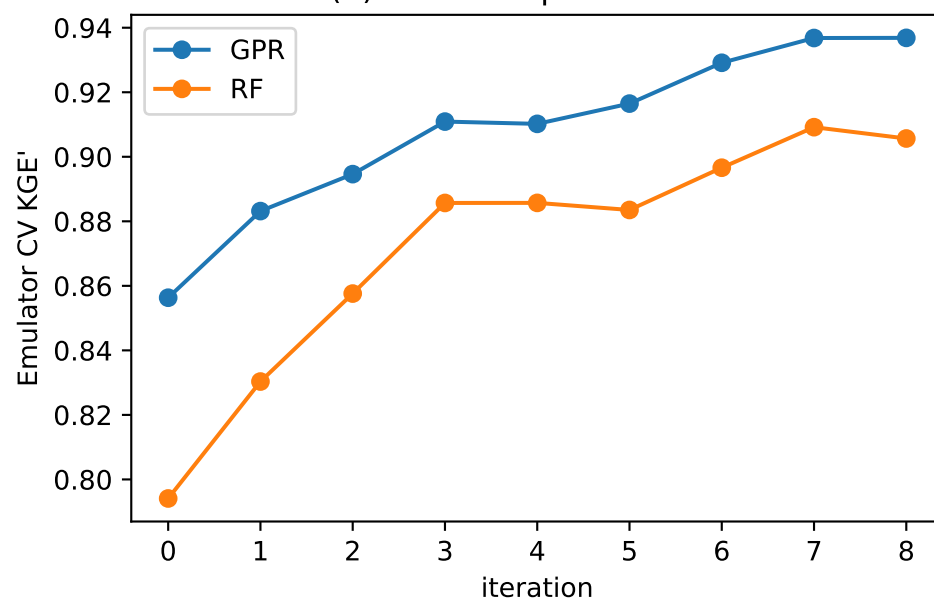
(c) Minimum rank for each iteration

basinid: 531

hru_id: 11473900

lat_cen: 39.78906

lon_cen: -123.0736

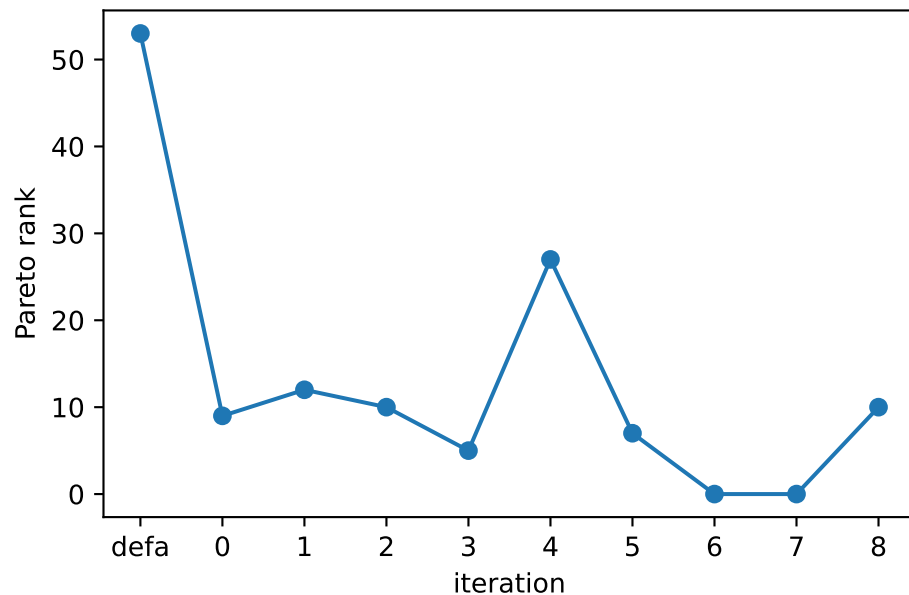AREA: 1930.44 km2

elev_mean: 1117.93 m

(a) All interations
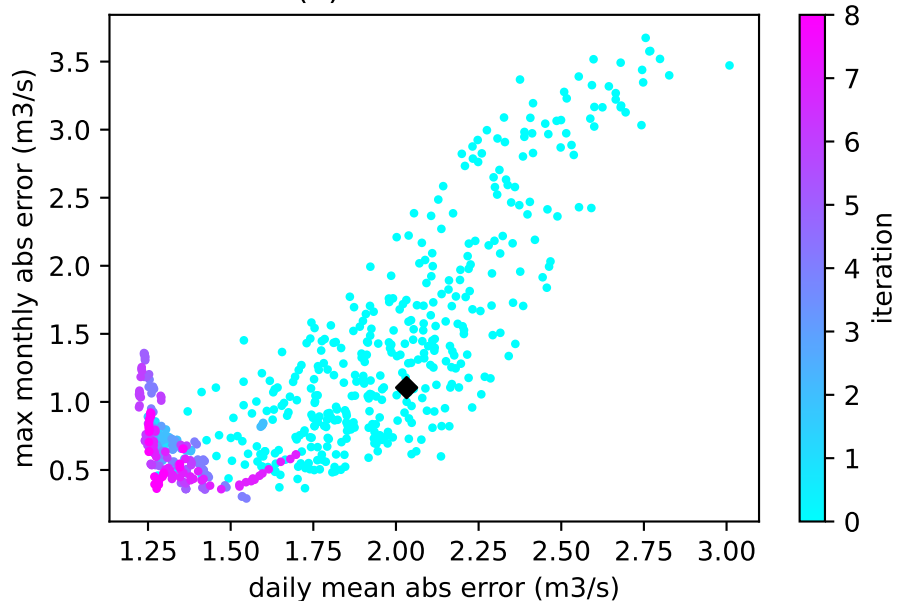
(b) Emulator performance
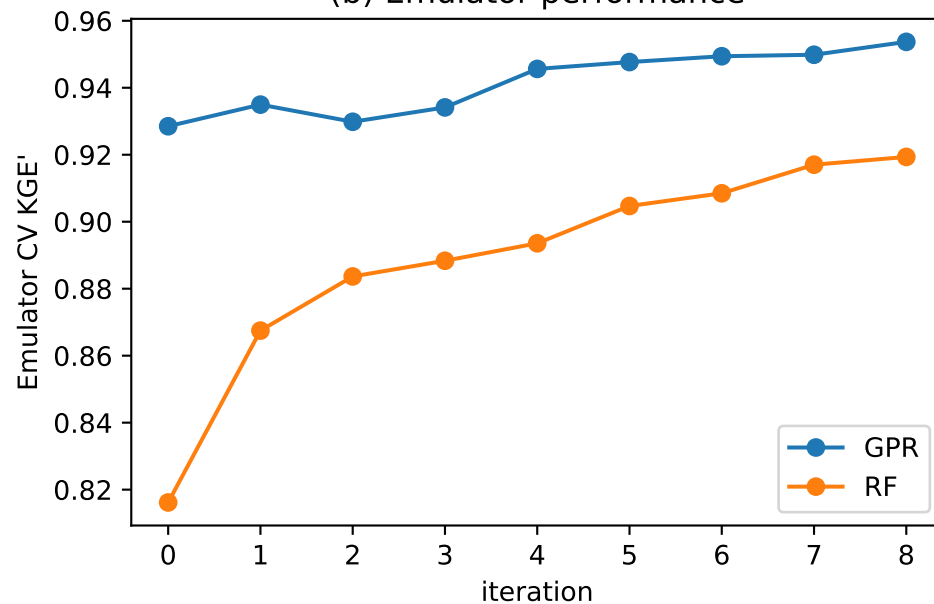
(c) Minimum rank for each iteration

basinid: 532

hru_id: 11475560

lat_cen: 39.71402

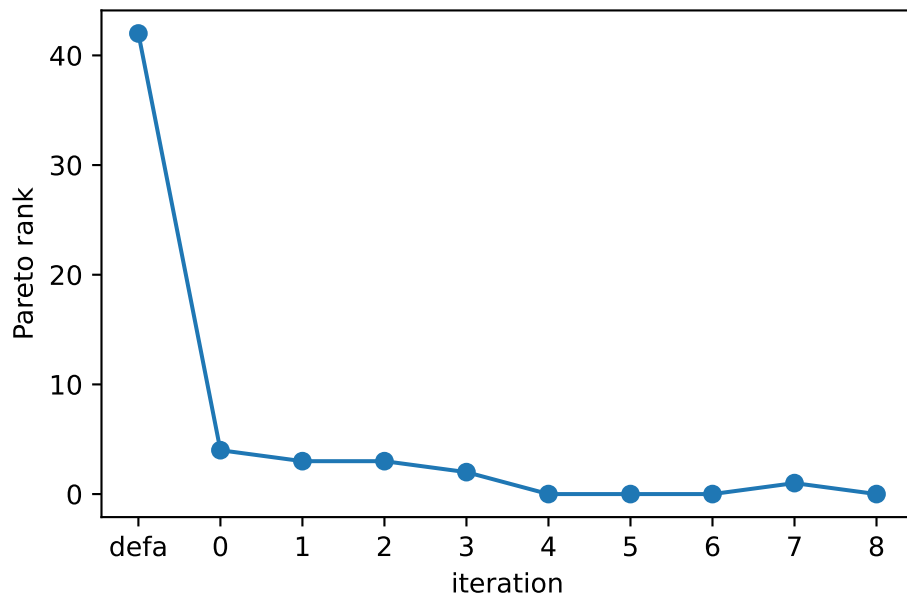lon_cen: -123.60395

AREA: 16.87 km2

elev_mean: 863.74 m

(a) All interations

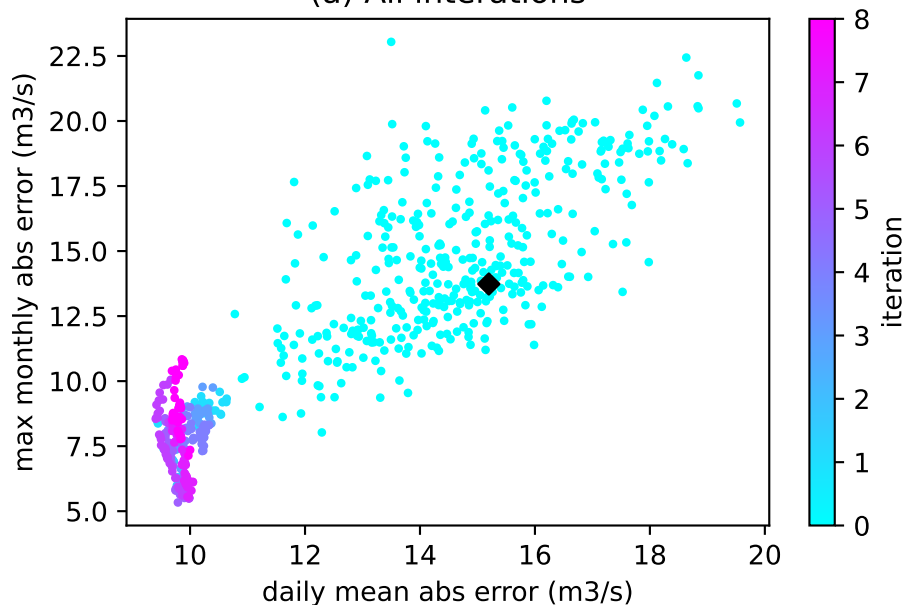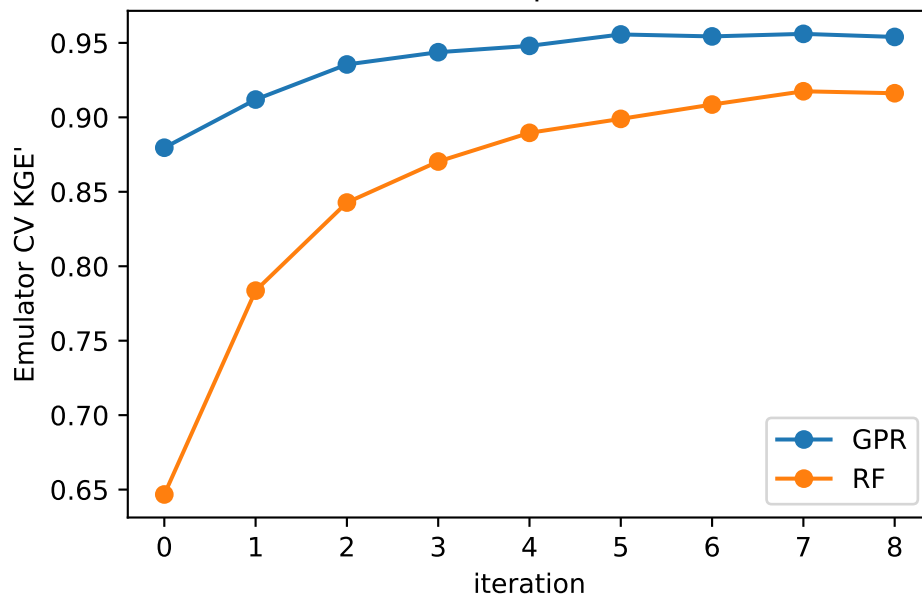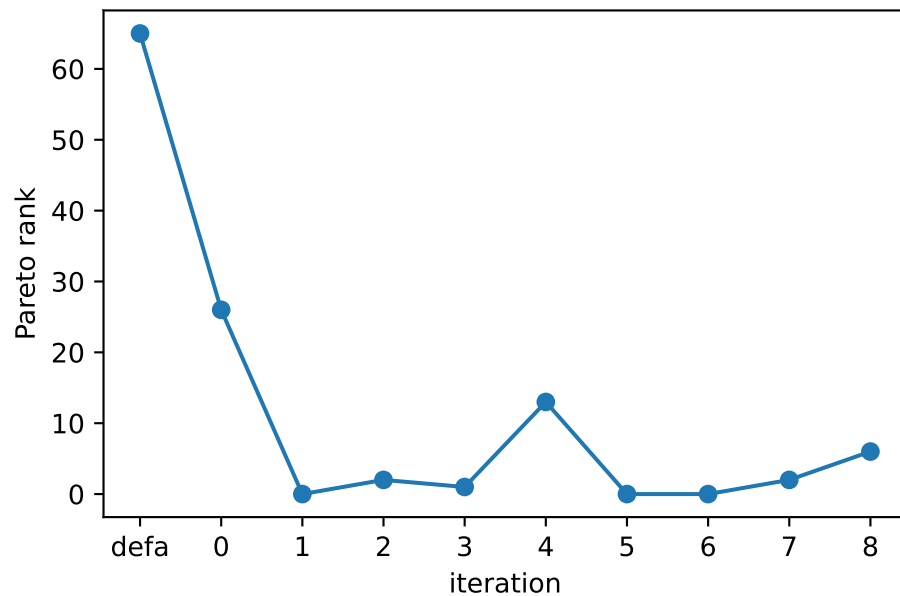max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'

iteration

GPR
RF

(c) Minimum rank for each iteration

Pareto rank

iteration

defa 0 1 2 3 4 5 6 7 8

basinid: 533

hru_id: 11476600

lat_cen: 40.31625

lon_cen: -124.02728

AREA: 72.29 km2
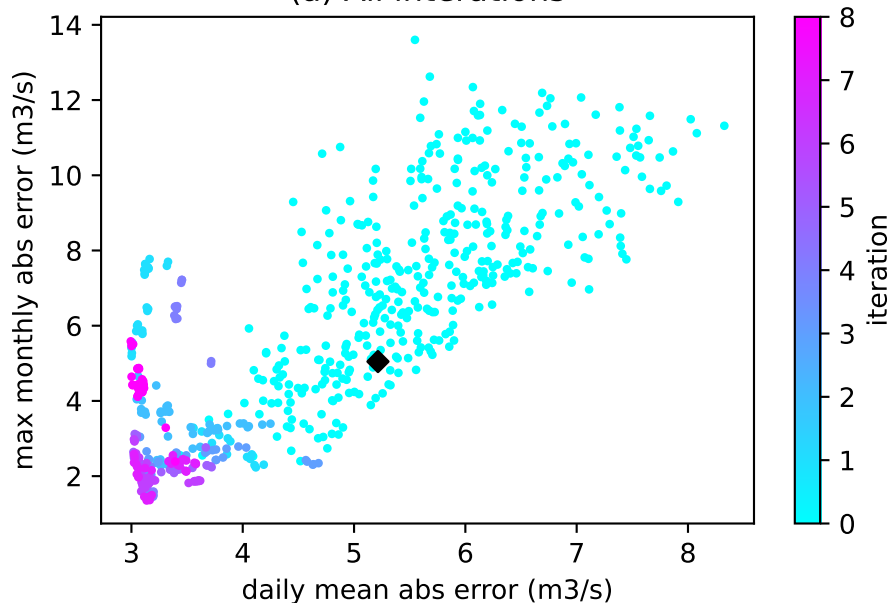
elev_mean: 492.66 m

(a) All iterations

max monthly abs error (m3/s) vs daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE' vs iteration

GPR
RF

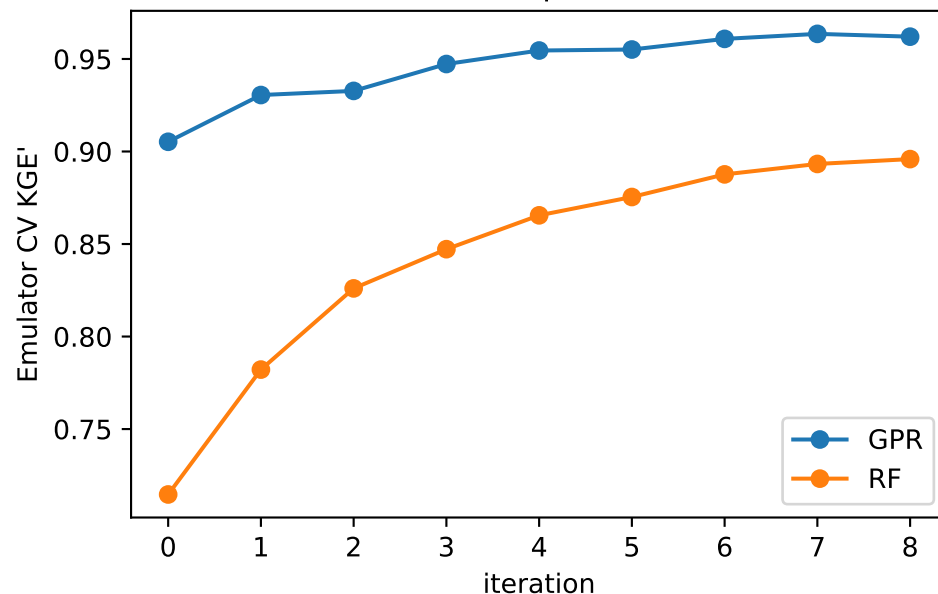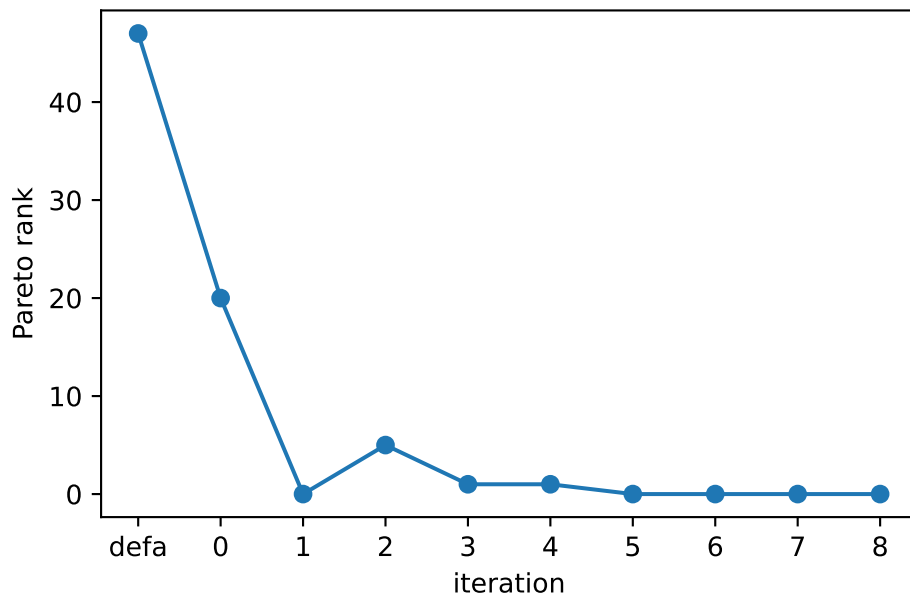**(c) Minimum rank for each iteration**

Pareto rank vs iteration

basinid: 534

hru_id: 11478500

lat_cen: 40.42245

lon_cen: -123.63329

AREA: 574.99 km2

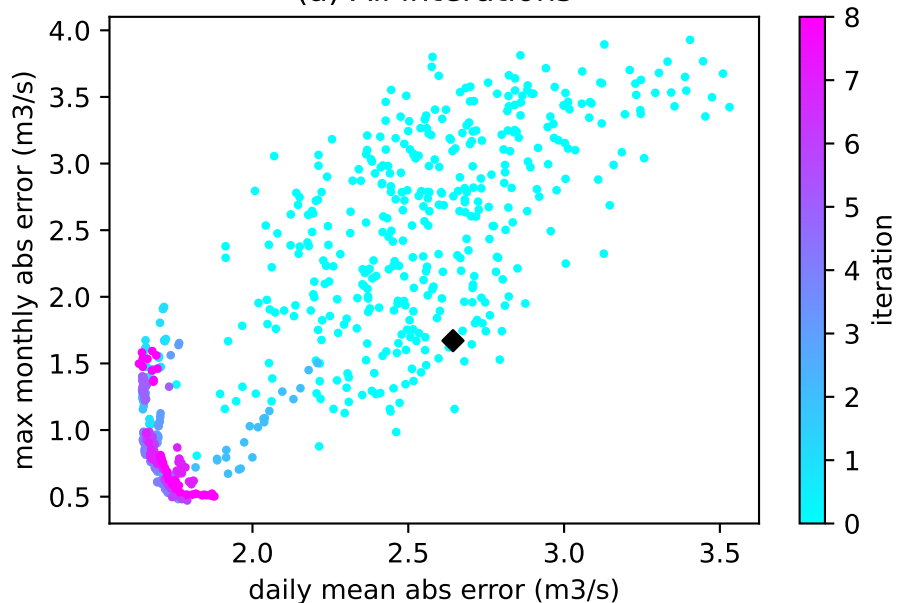elev_mean: 929.22 m

(a) All interations

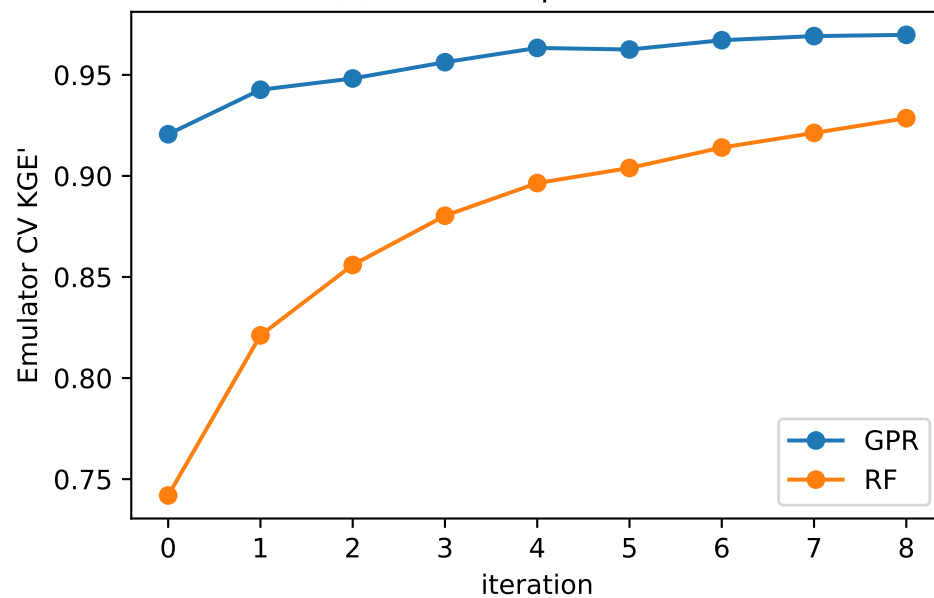(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 535

hru_id: 11480390

lat_cen: 40.19288

lon_cen: -123.24386

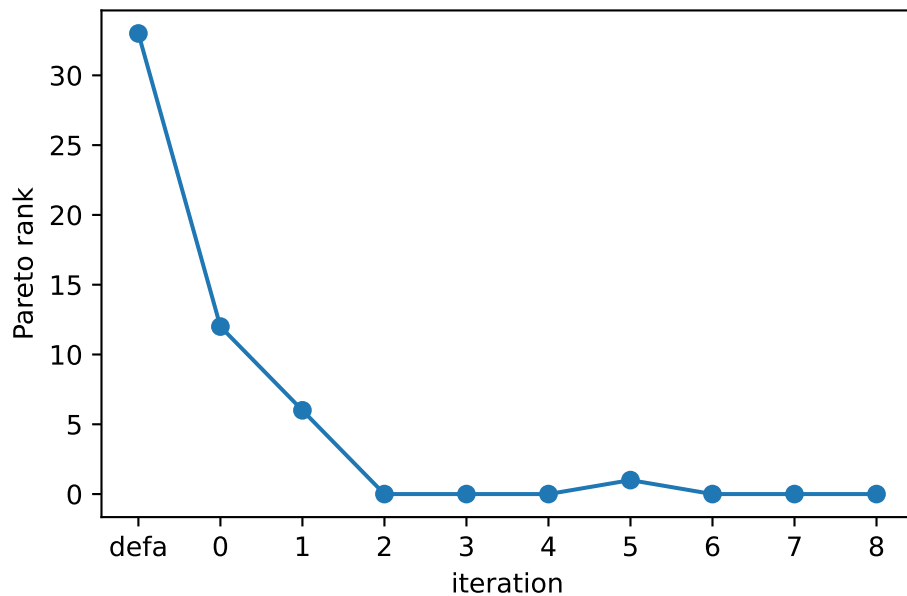AREA: 243.15 km2

elev_mean: 1124.45 m

(a) All interations

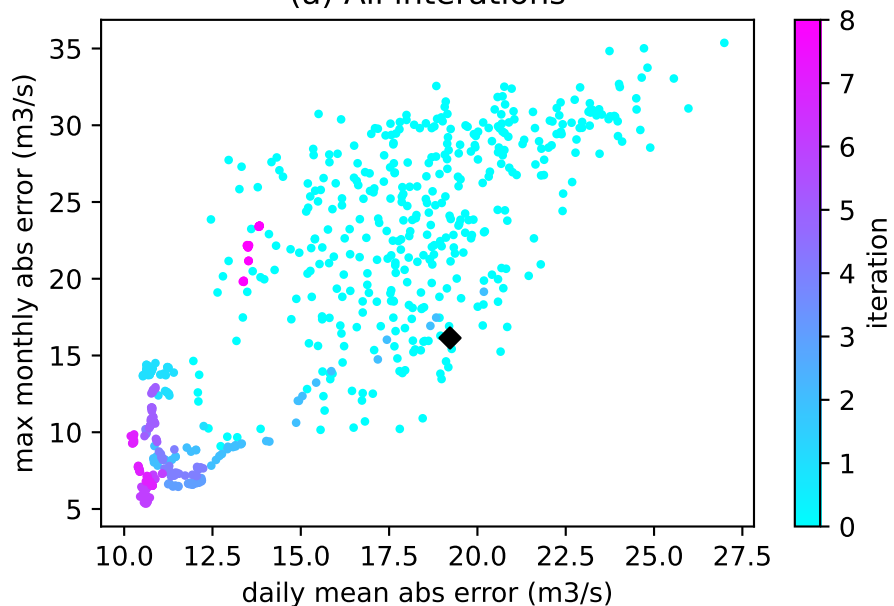(b) Emulator performance

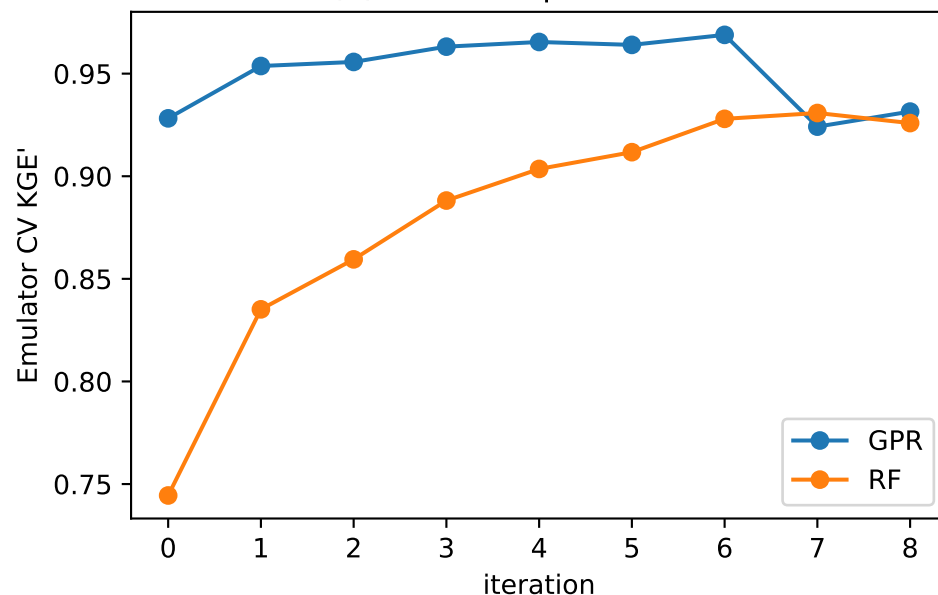(c) Minimum rank for each iteration

basinid: 536

hru_id: 11481200

lat_cen: 41.02266

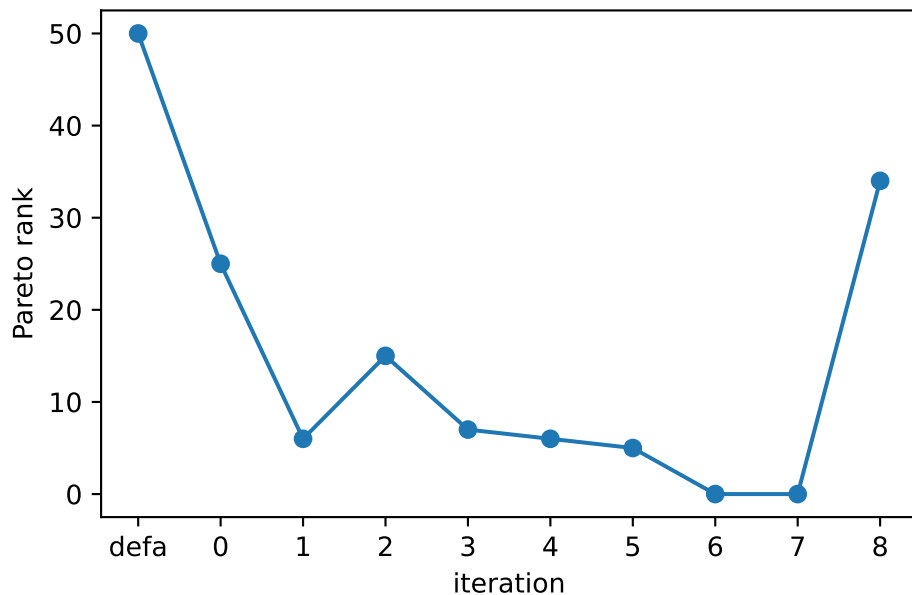lon_cen: -123.99714

AREA: 106.85 km2

elev_mean: 313.88 m

(a) All interations
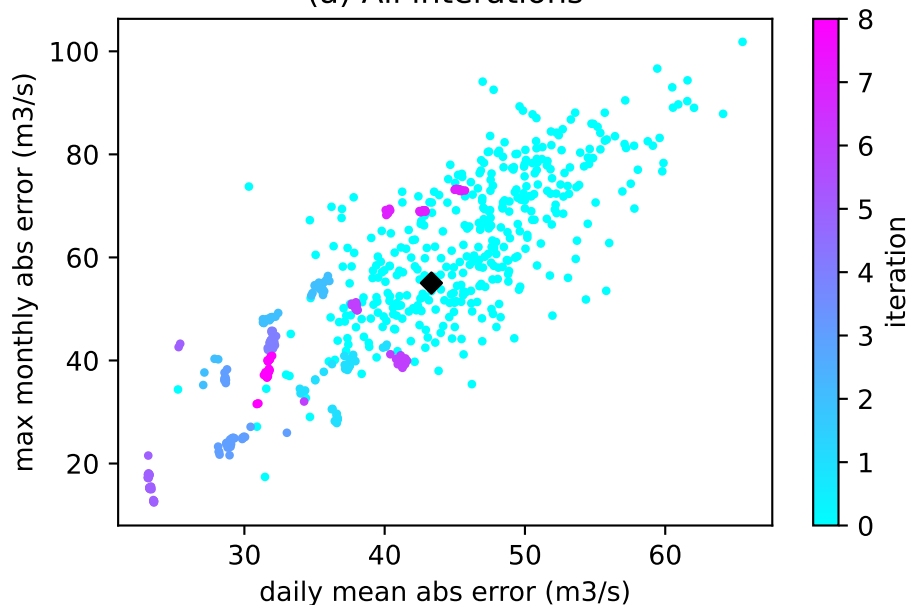
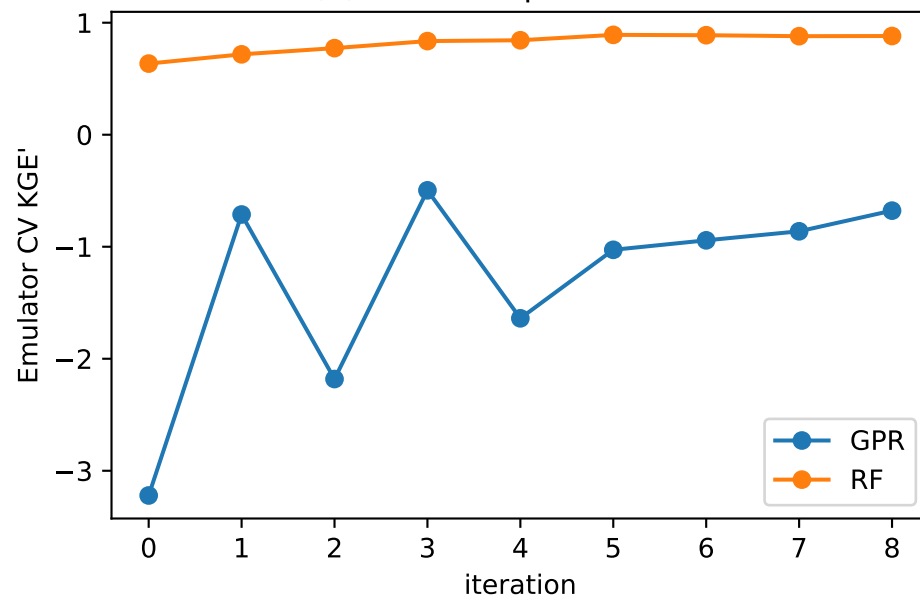(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 537

hru_id: 11482500

lat_cen: 41.06113

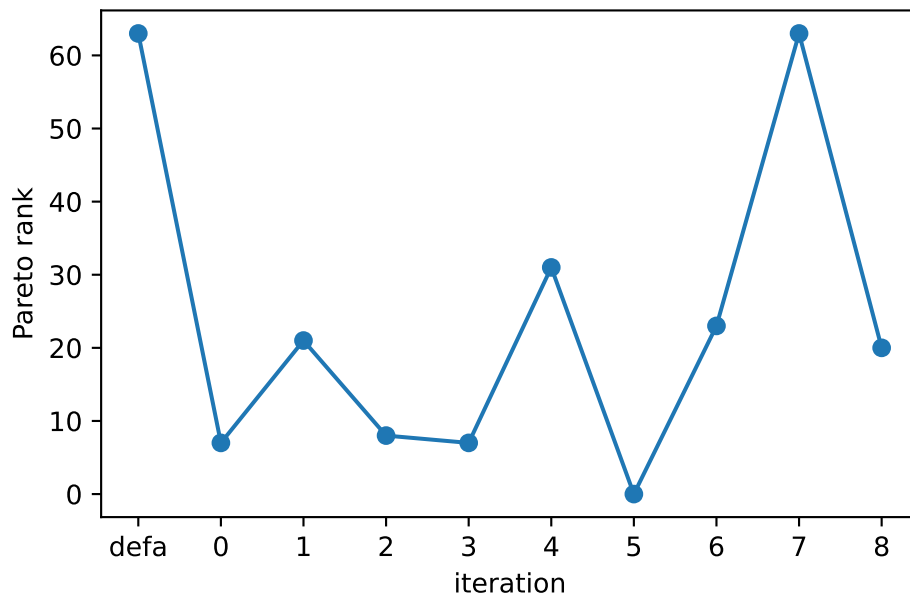lon_cen: -123.89077

AREA: 724.01 km2

elev_mean: 567.17 m

(a) All interations

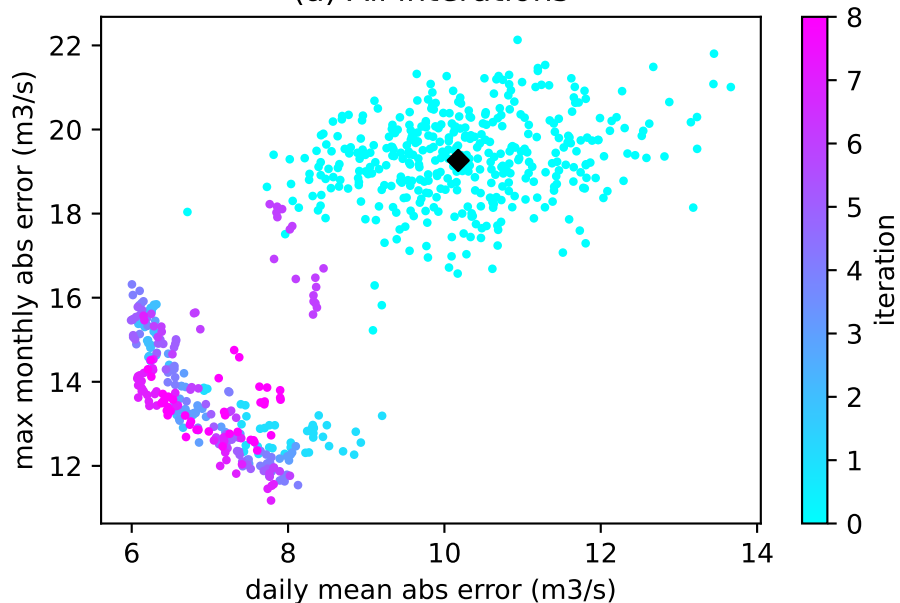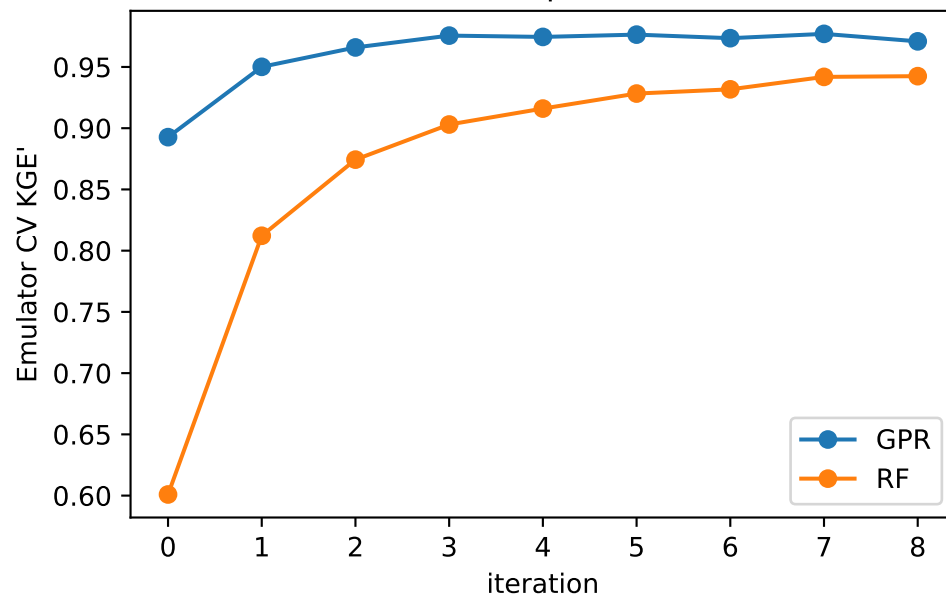(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 538

hru_id: 11522500

lat_cen: 41.29337

lon_cen: -123.19039

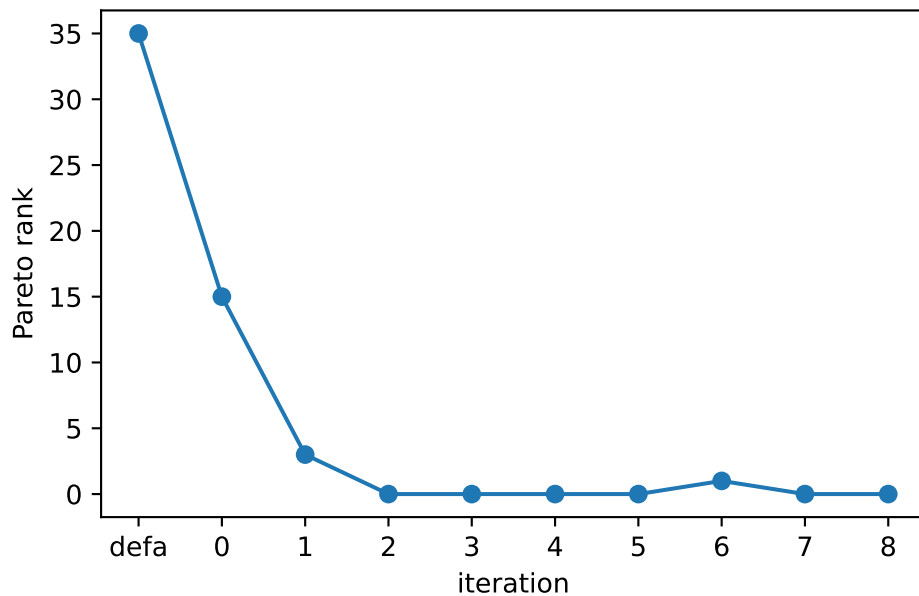AREA: 1946.34 km2

elev_mean: 1292.88 m

(a) All interations

(b) Emulator performance

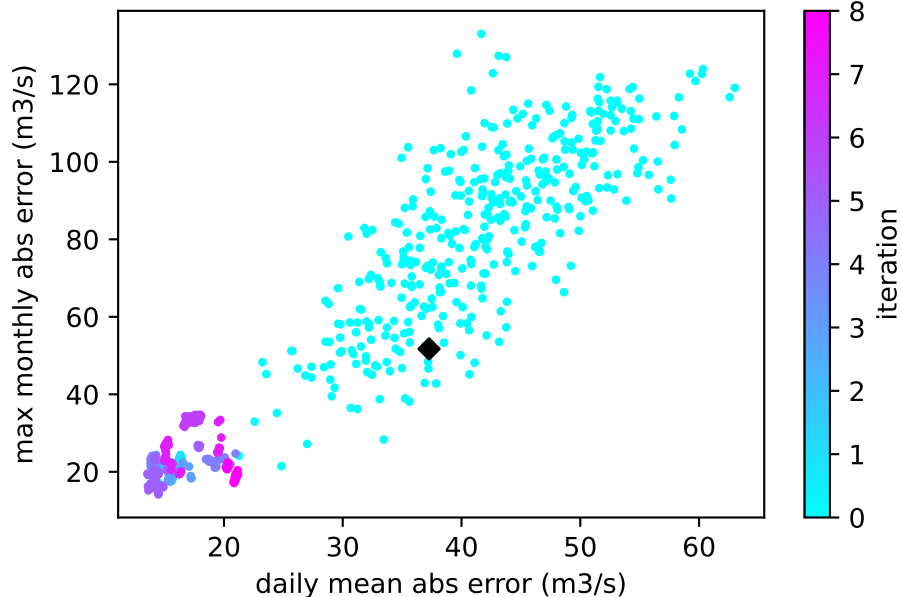(c) Minimum rank for each iteration

basinid: 539

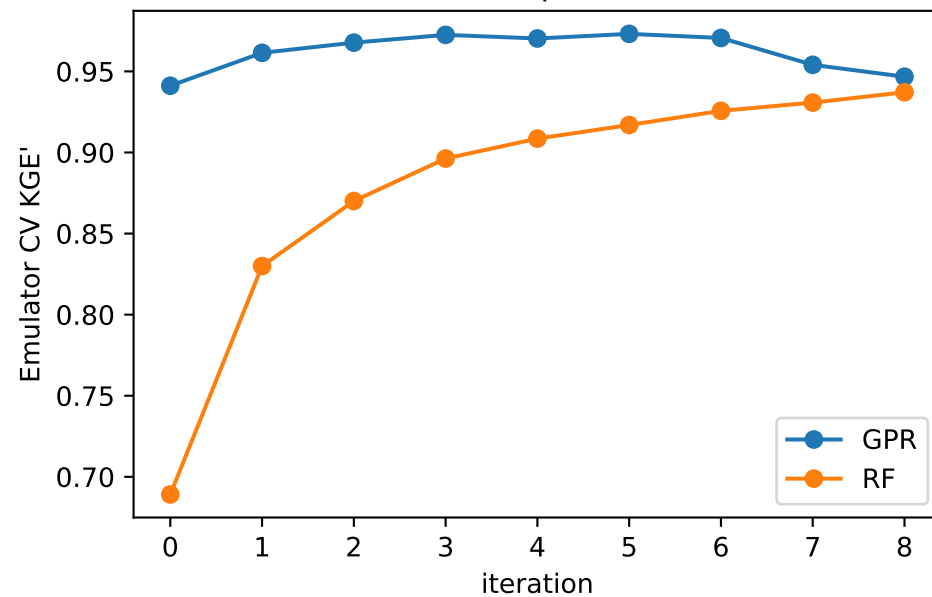hru_id: 11523200

lat_cen: 41.22828

lon_cen: -122.64033
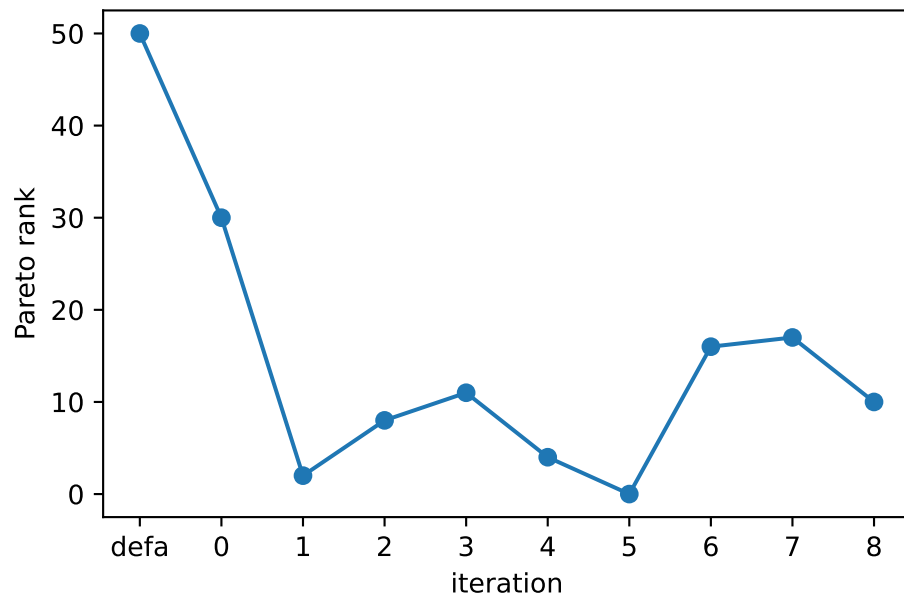
AREA: 385.09 km2

elev_mean: 1623.57 m

(a) All interations
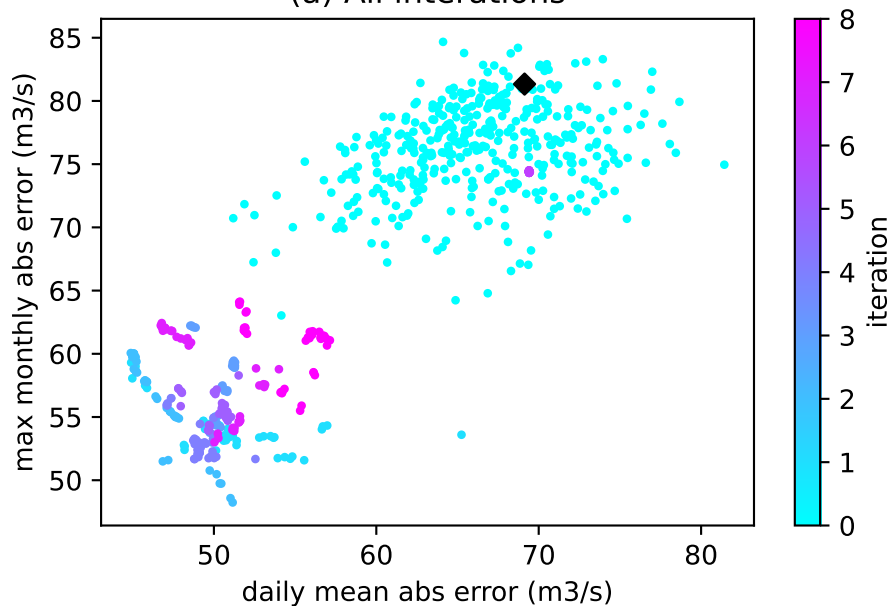
(b) Emulator performance
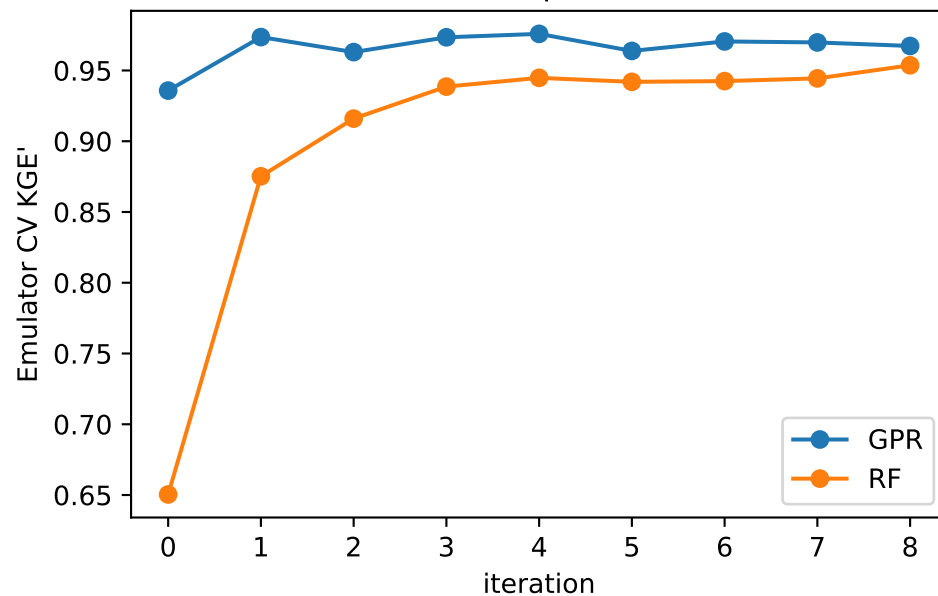
(c) Minimum rank for each iteration

basinid: 540

hru_id: 11528700

lat_cen: 40.47025

lon_cen: -123.23007
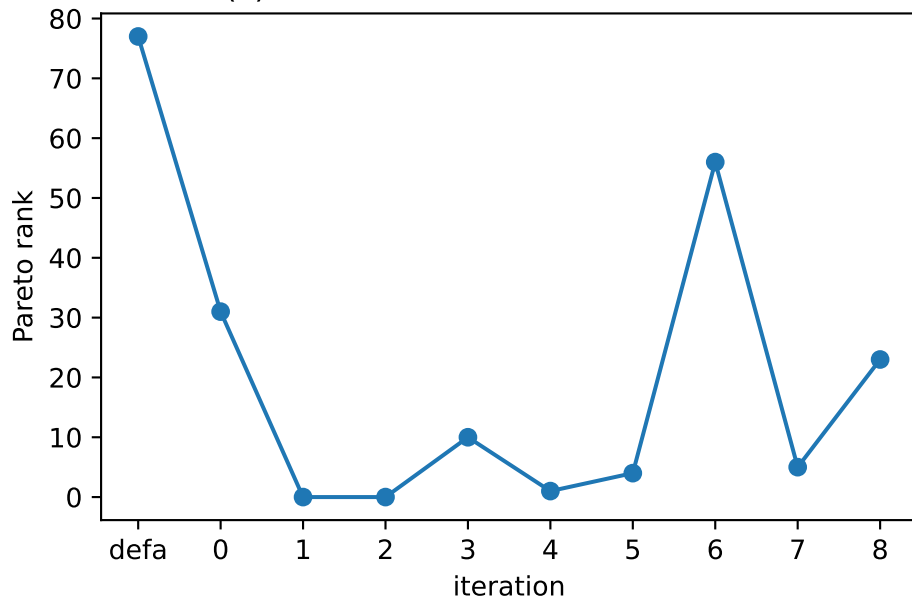
AREA: 1982.58 km2

elev_mean: 1125.05 m

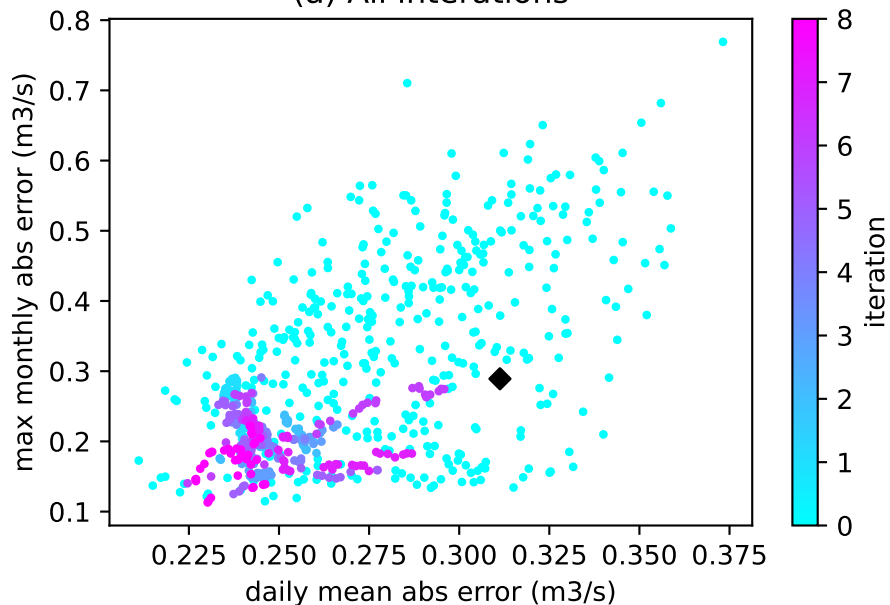(a) All interations

(b) Emulator performance
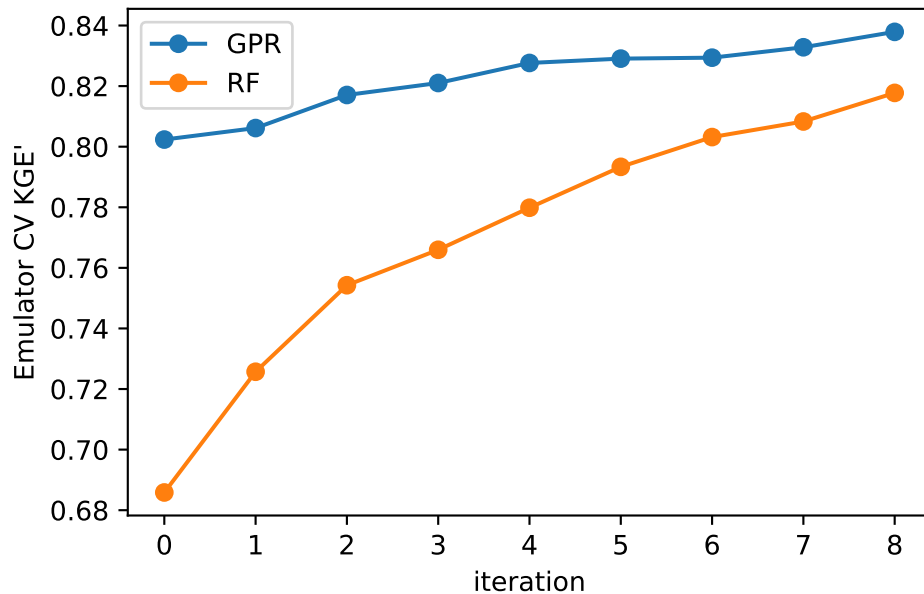
(c) Minimum rank for each iteration

basinid: 541

hru_id: 11532500

lat_cen: 41.82748

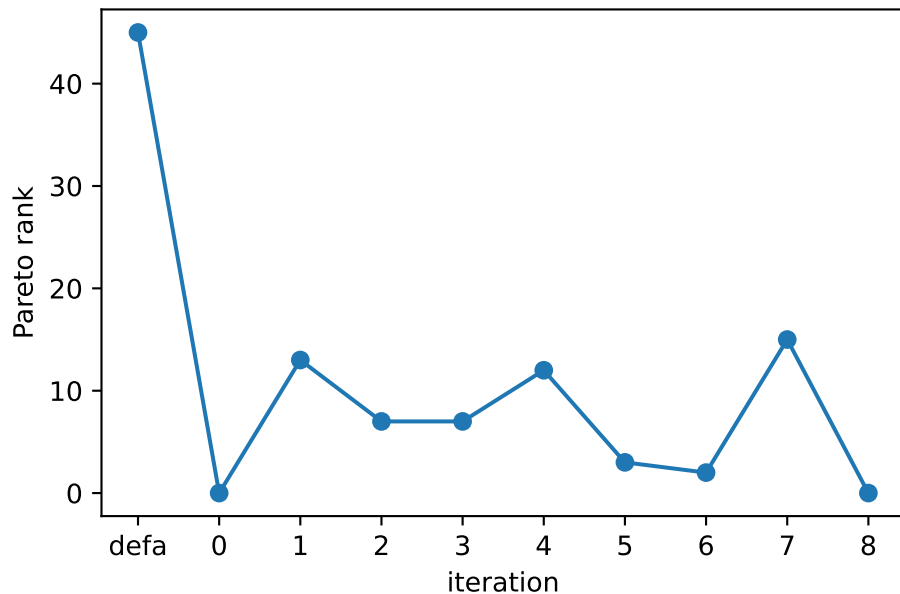lon_cen: -123.86791

AREA: 1590.19 km2

elev_mean: 762.08 m

(a) All interations

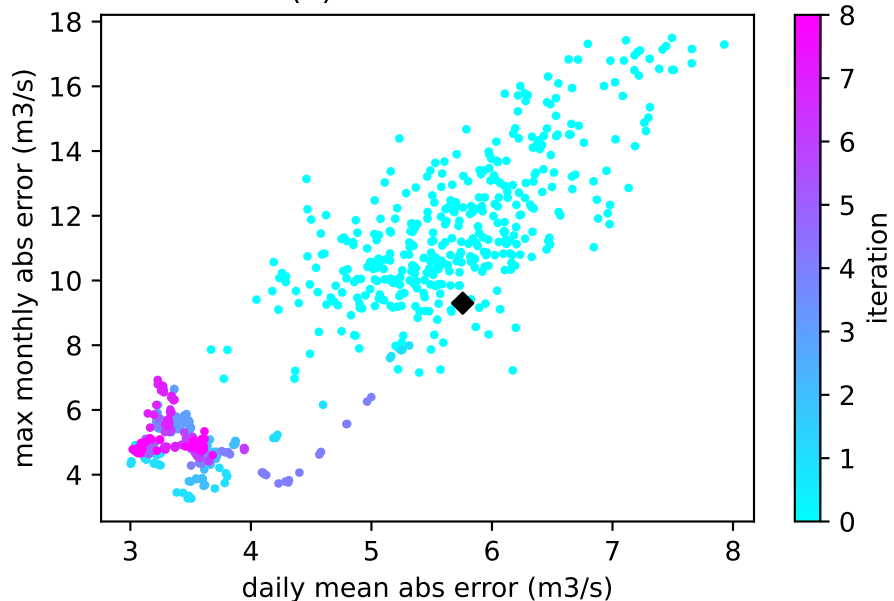### (b) Emulator performance

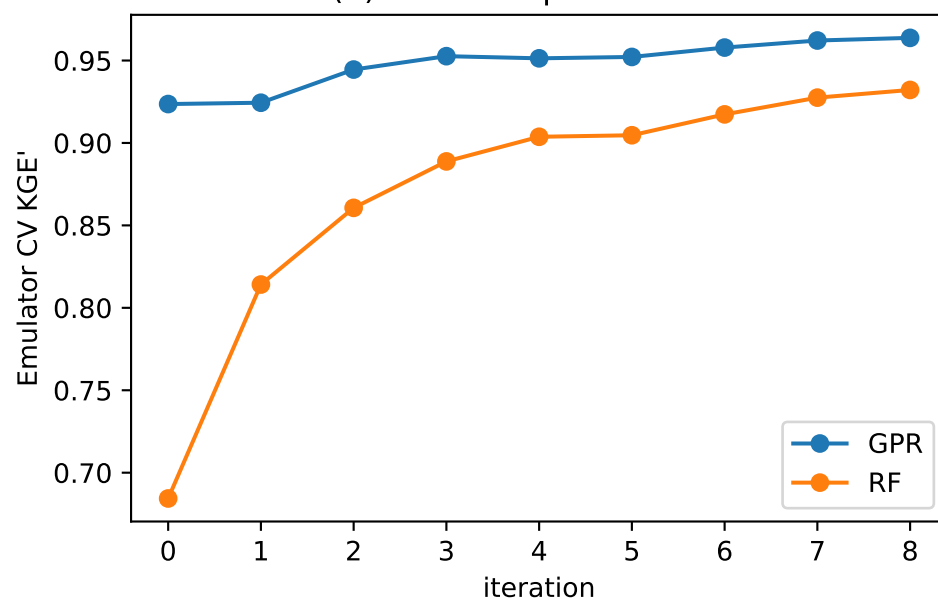### (c) Minimum rank for each iteration

basinid: 554

hru_id: 12073500

lat_cen: 47.42608
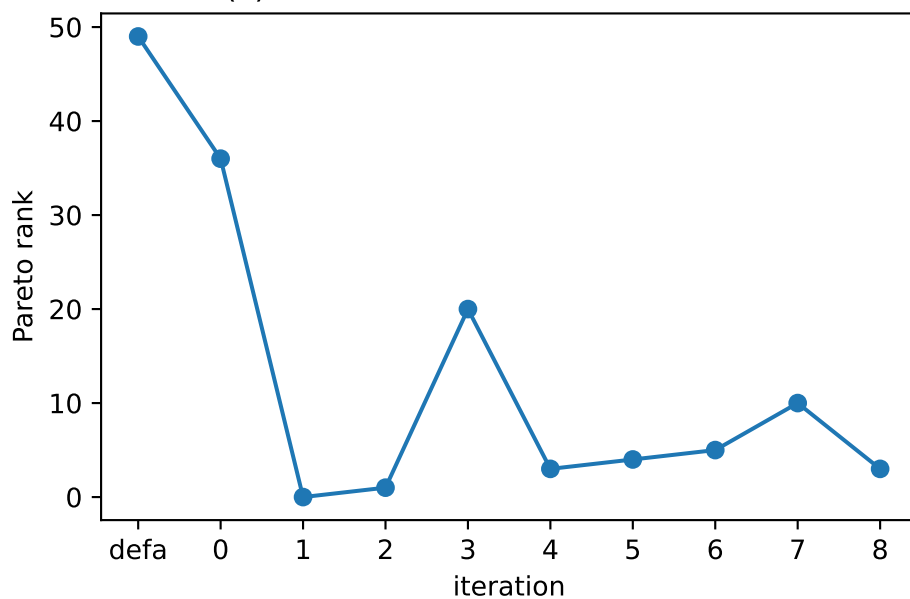
lon_cen: -122.70479

AREA: 15.82 km2

elev_mean: 101.14 m

(a) All interations

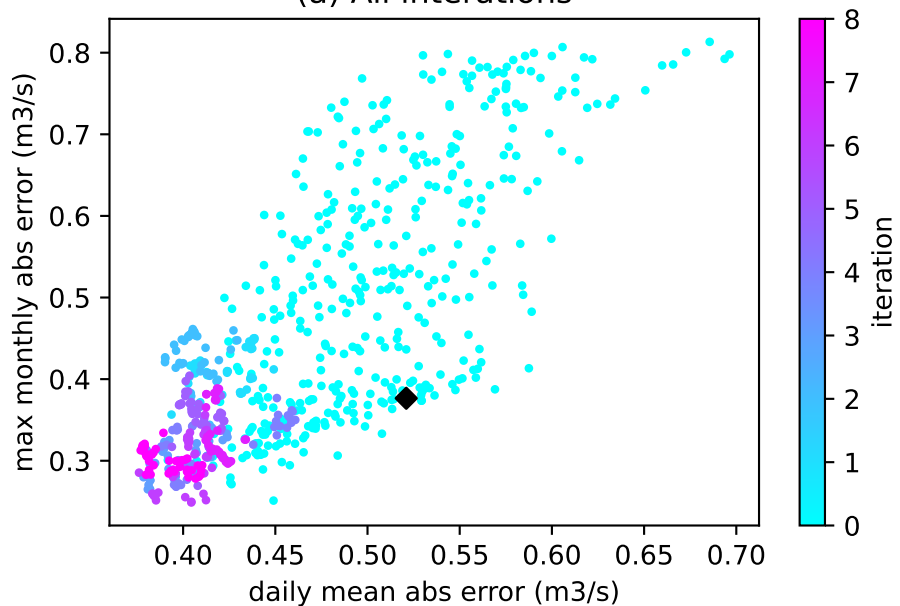**(b) Emulator performance**
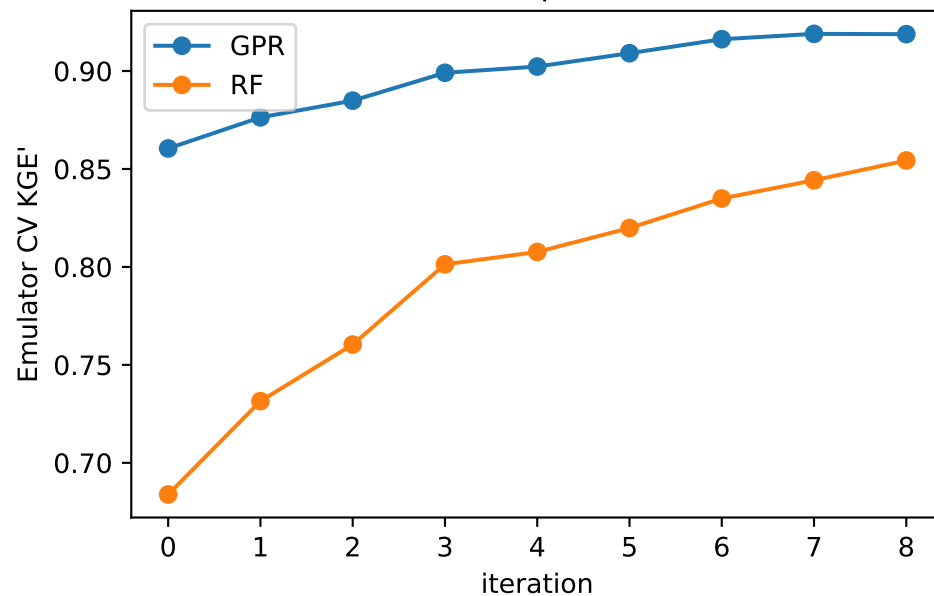
(c) Minimum rank for each iteration

basinid: 609

hru_id: 14166500

lat_cen: 44.10252
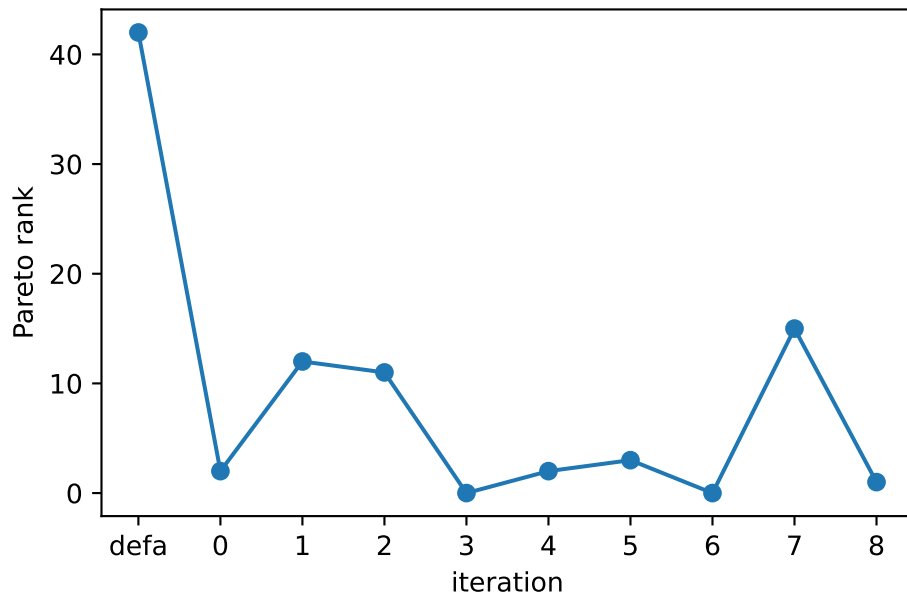
lon_cen: -123.45066

AREA: 238.14 km2

elev_mean: 255.89 m

(a) All interations

max monthly abs error (m3/s)

daily mean abs error (m3/s)

iteration

(b) Emulator performance

Emulator CV KGE'

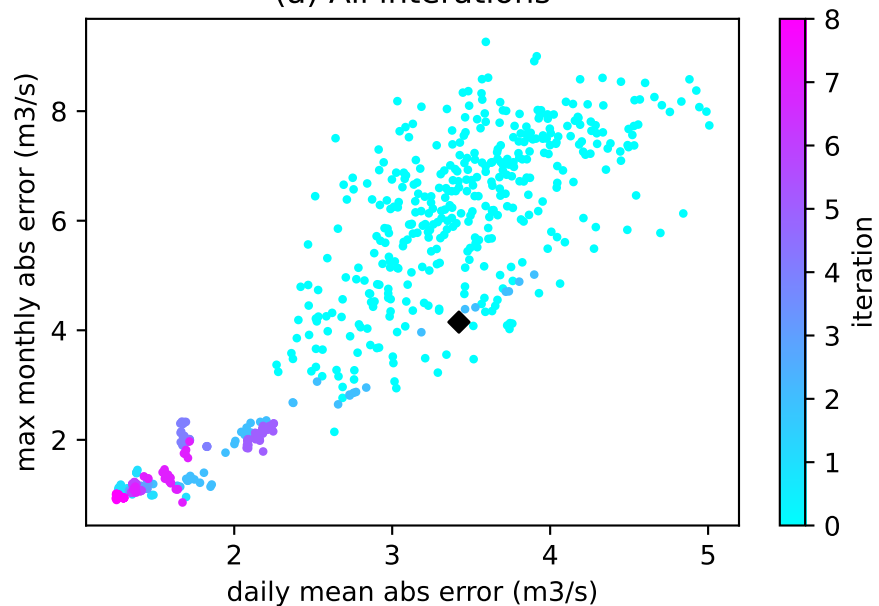iteration

- GPR
- RF

(c) Minimum rank for each iteration
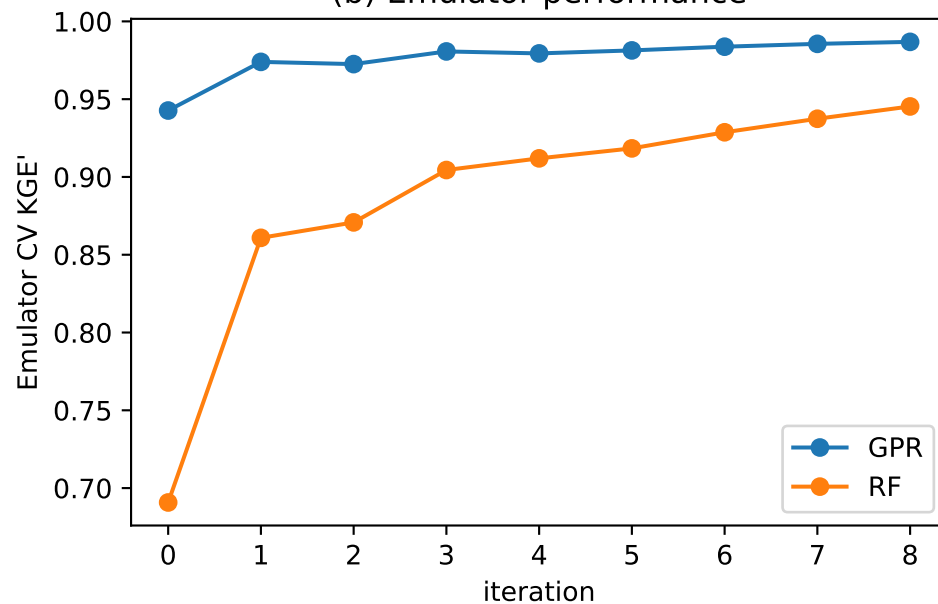
Pareto rank

iteration

basinid: 620

hru_id: 14306340

lat_cen: 44.26003

lon_cen: -123.60289

AREA: 14.76 km2

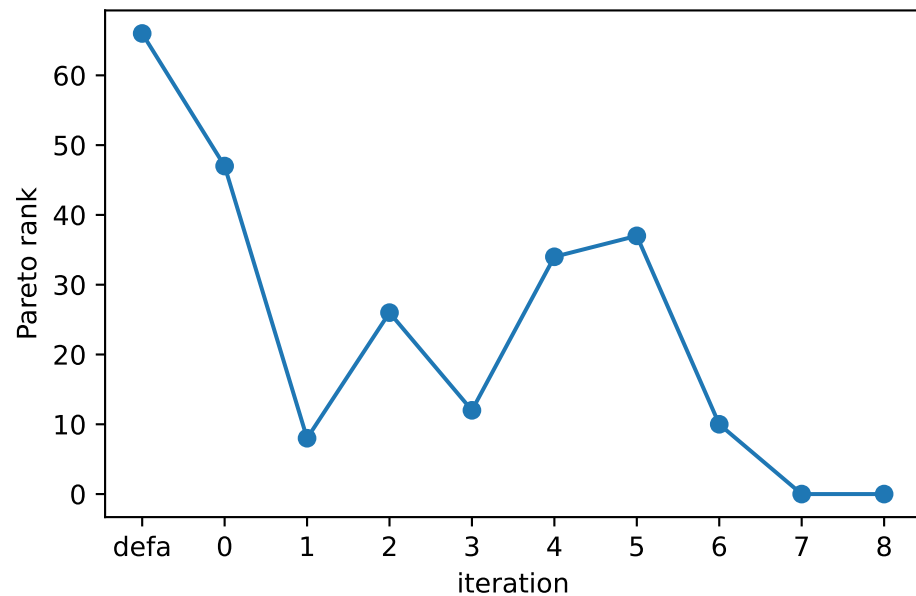elev_mean: 507.50 m

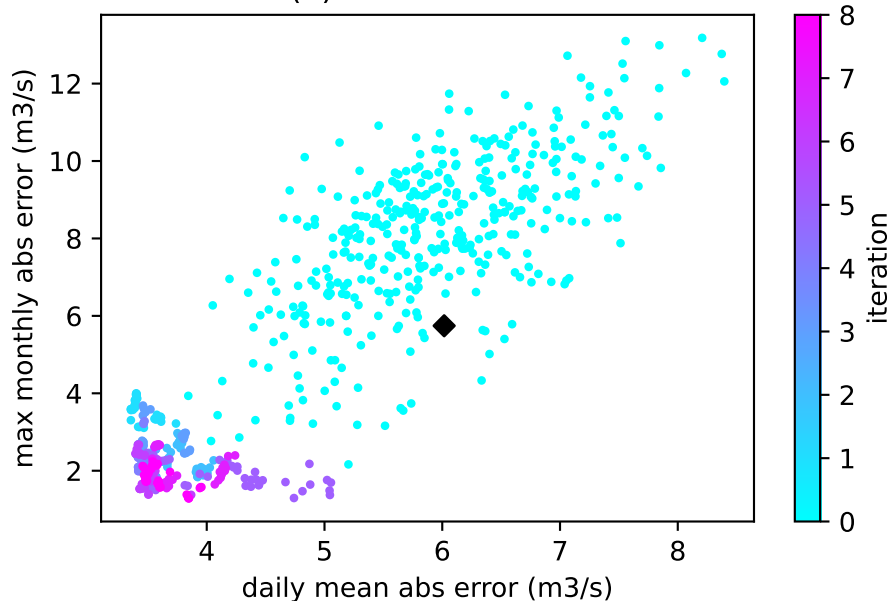**(a) All interations**

(b) Emulator performance
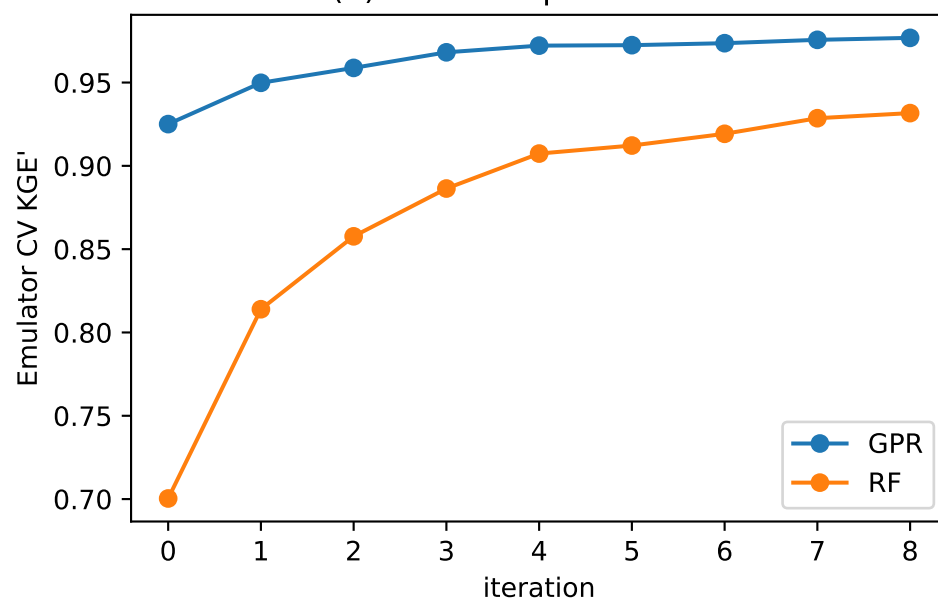
(c) Minimum rank for each iteration

basinid: 621

hru_id: 14308990

lat_cen: 42.79438

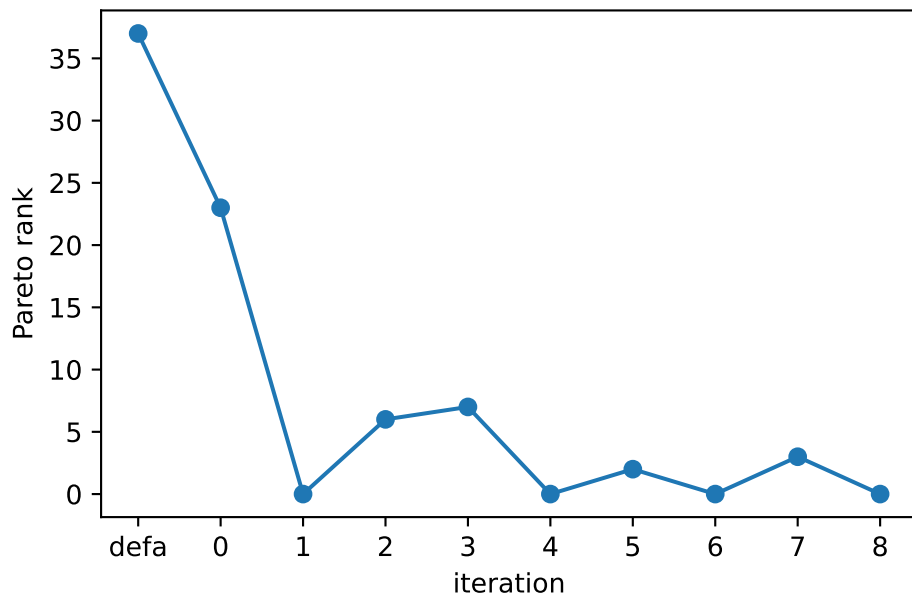lon_cen: -123.04089

AREA: 171.31 km2

elev_mean: 909.36 m

(a) All interations

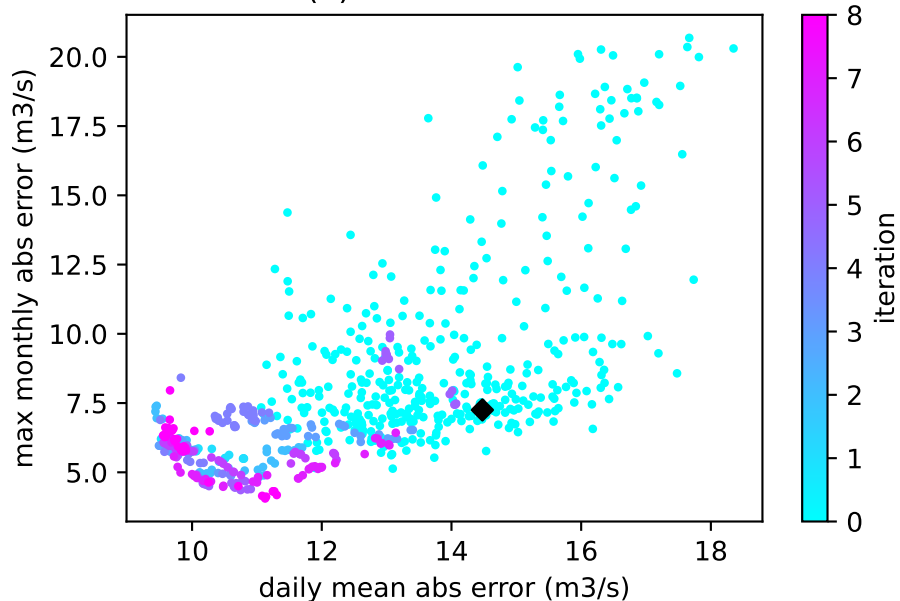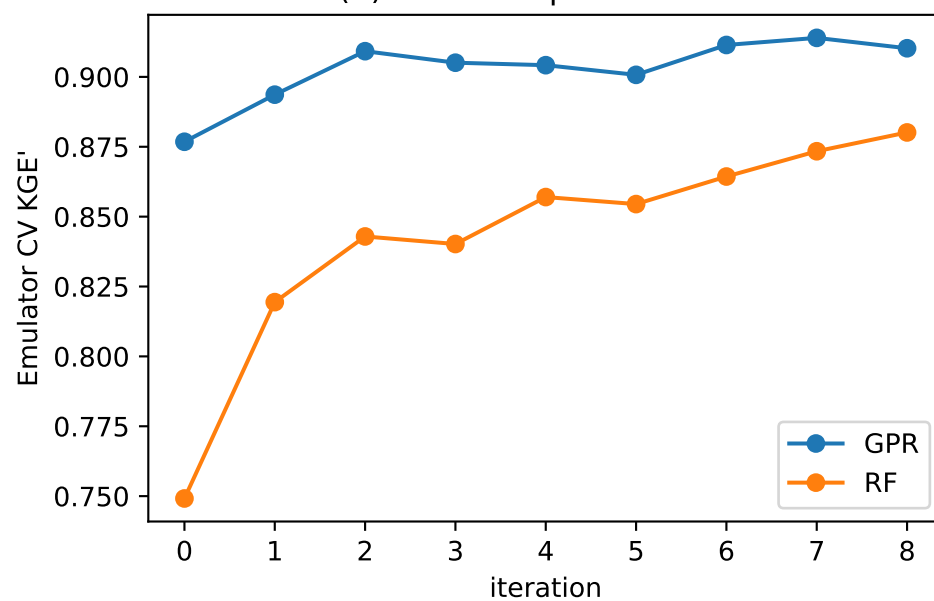(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 622

hru_id: 14309500

lat_cen: 42.83017

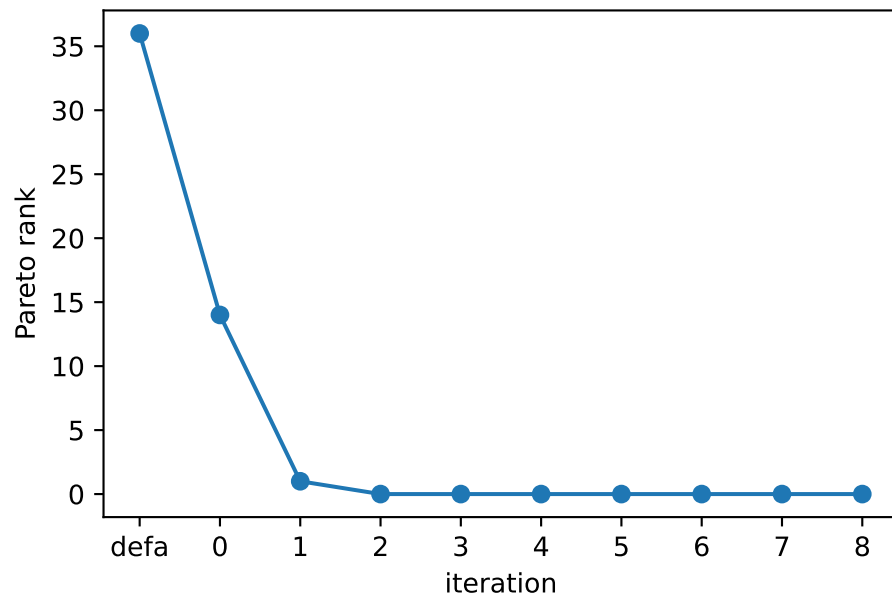lon_cen: -123.74216

AREA: 226.31 km2

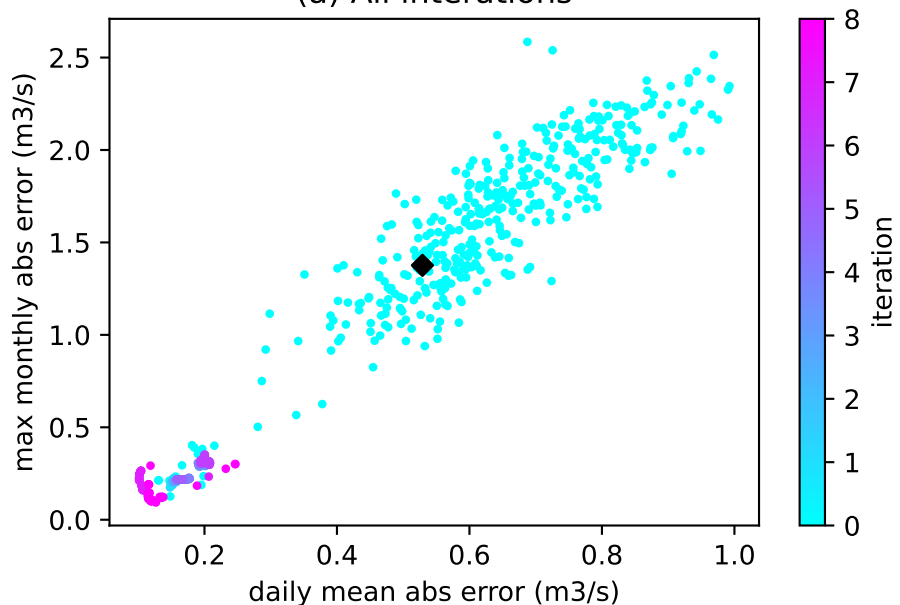elev_mean: 737.62 m

(a) All interations

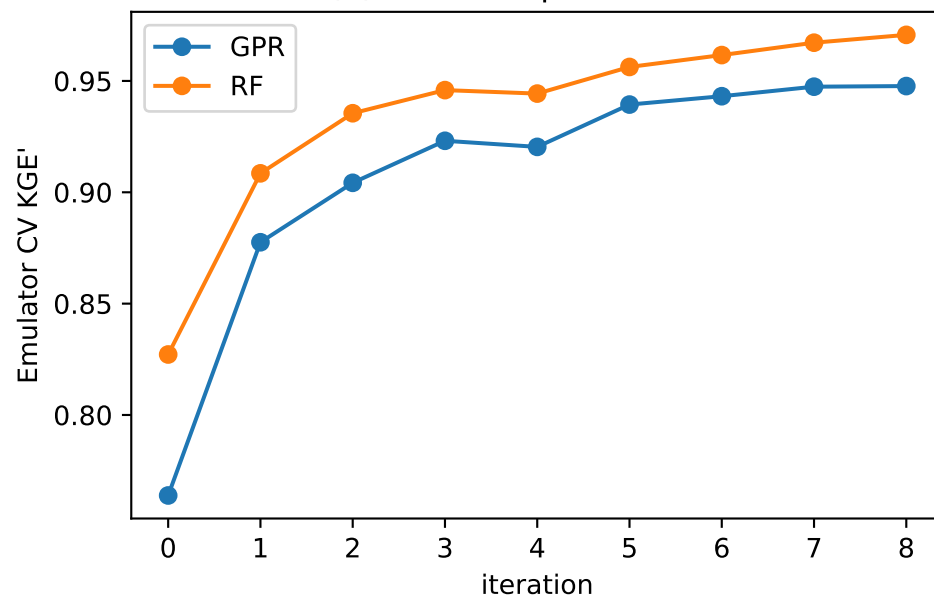(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 624

hru_id: 14325000

lat_cen: 42.79249

lon_cen: -124.02763

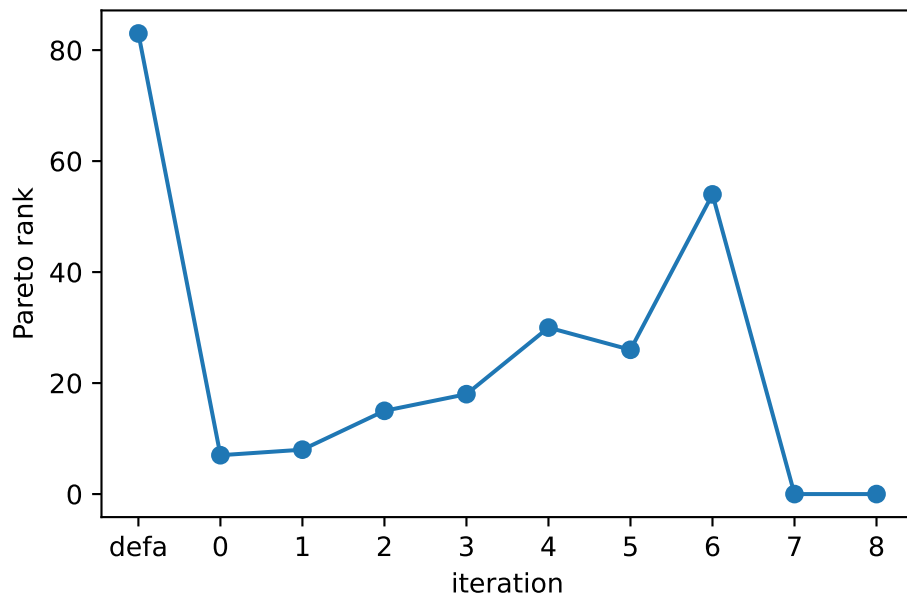AREA: 444.93 km2

elev_mean: 649.24 m

(a) All interations
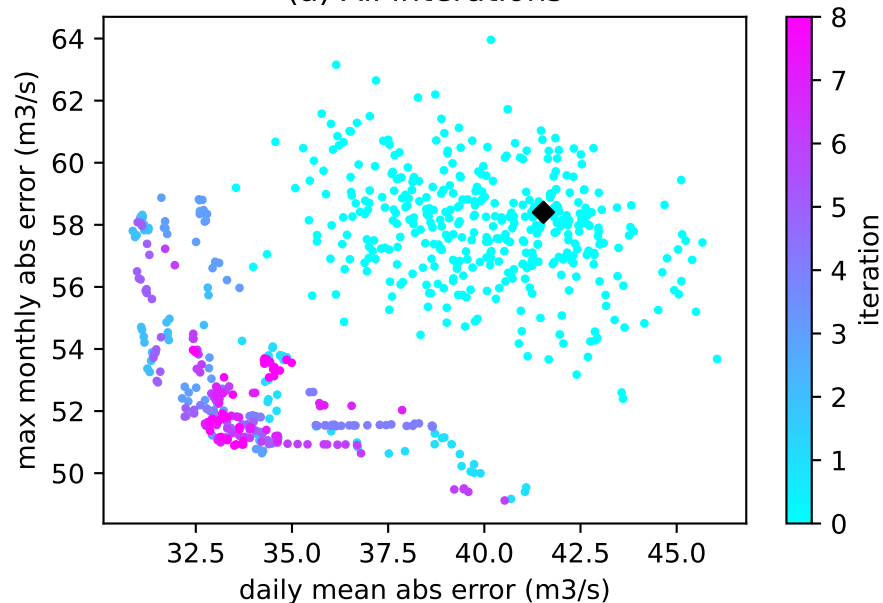
(b) Emulator performance
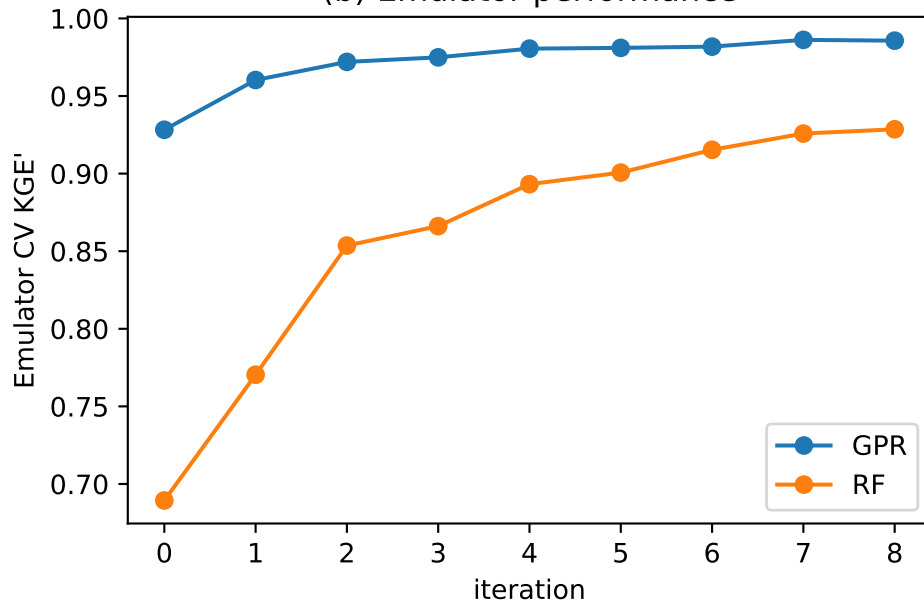
(c) Minimum rank for each iteration

basinid: 625

hru_id: 14362250

lat_cen: 42.16583

lon_cen: -123.12535
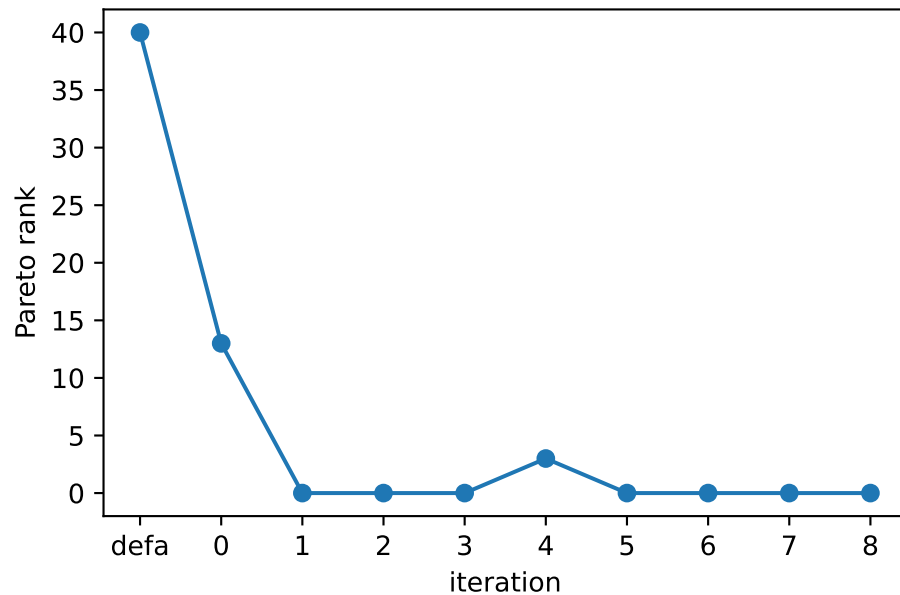
AREA: 43.88 km2

elev_mean: 939.58 m

(a) All interations

(b) Emulator performance

(c) Minimum rank for each iteration

basinid: 626

hru_id: 14400000

lat_cen: 42.23303

lon_cen: -124.00527

AREA: 703.39 km2

elev_mean: 668.43 m