Istanbul Baraj Projesi - Guncel Durum ve Cikti Ozeti (2026-03-18)

Ozet

Bu rapor, mevcut model gelistirme durumunu, son test sonuclarini, uretmis oldugumuz ana ciktilari ve guncel deneyleri tek belgede toplar. Egitim-test kurgu su sekildedir: 2015 sonuna kadar egitim, 2016-2020 holdout test.

Yeni odak: iklim ciktilarini (sicaklik, yagis, nem) netlestirip ET0 (FAO Penman-Monteith) ve basit su dengesi (giren-cikan su) ile proje omurgasini kurmak. Insan davranisi ve isletme kararlari bu turda modelin disinda tutuluyor.

En Iyi Modeller (Holdout 2016-2020)

- hybrid_physics_stacked_exog: MAPE 9.52%, RMSE 6.58, Pearson 94.22%
- quantile_regressor_plus: MAPE 9.86%, RMSE 7.78, Pearson 91.40%
- hybrid_physics_ensemble_phys_old: MAPE 10.47%, RMSE 7.77, Pearson 93.24%
- water_balance_v4_corrected: MAPE 11.55%, RMSE 8.70, Pearson 94.43%
- prophet_regressor_exog: MAPE 24.92%, RMSE 17.96, Pearson 61.88%

Holdout Ozet Tablosu (ilk 10 satir)

model	rmse_pp	mae_pp	mape_pct	smape_pct	pearson_corr_pct	spearm
hybrid_physics_stacked_exog	6.580649091139963	5.311002662707452	9.523445322804566	10.043801978804352	94.21532642248675	95.5043
quantile_regressor_plus	7.781408402610931	5.9008026283590285	9.859026669987475	9.976279907648932	91.4027488985479	90.6751
hybrid_physics_ensemble_phys_old	7.773890522819784	6.000657070913325	10.474449077252649	9.828667957597132	93.24176889774876	93.4661
water_balance_v4_corrected	8.703889909998326	6.897682747074565	11.551826571743634	10.730825184658974	94.43183531111052	94.6033
prophet_regressor_exog	17.96326300551316	14.358897954591082	24.921312563486534	27.71533796937452	61.87548387471165	61.0502

2040 Sonu Baz Senaryo Uc Degerleri

model	pred_fill	pred_fill_pct
hybrid_physics_stacked_exog	0.1492568561494105	14.92568561494105
hybrid_physics_ensemble_phys_old	0.3578001102160605	35.78001102160605
water_balance_v4_corrected	0.029021234582677	2.9021234582677056
quantile_regressor_plus	0.4764826421385766	47.648264213857665
prophet_regressor_exog	0.391468949390547	39.1468949390547

MAPE 5 Hedefi Ic■n Kisa Holdout Direkt Arama

Bu arama, kisa vade one-step dogruluk icin agresif blend aramasidir. Uzun vadeli projeksiyon omurgasi degildir.

model	rmse_pp	mae_pp	mape_pct	smape_pct	pearson_corr_pct	spearman_cor
evo_direct_level_exog_blend	4.898806673277172	3.2729485823161952	5.617946651410206	5.610397597107901	96.43813167915712	95.5487635454
gbr_d2_lr002	5.835730868647406	4.459084450438441	7.972740485690652	7.593334811226747	96.43813167915712	95.5487635454
gbr_d3_lr0015	5.937048324227103	4.458547130020621	8.390930516034897	7.849258430117942	96.12766056588434	94.8485690469
et_mid	5.887215651848968	4.720859389190134	9.11386601884326	8.448476570419615	96.57152450606982	95.5209780494
et_deep	6.019703275706171	4.802070785316378	9.2834152990556	8.59882428254586	96.32190153214977	95.226451732

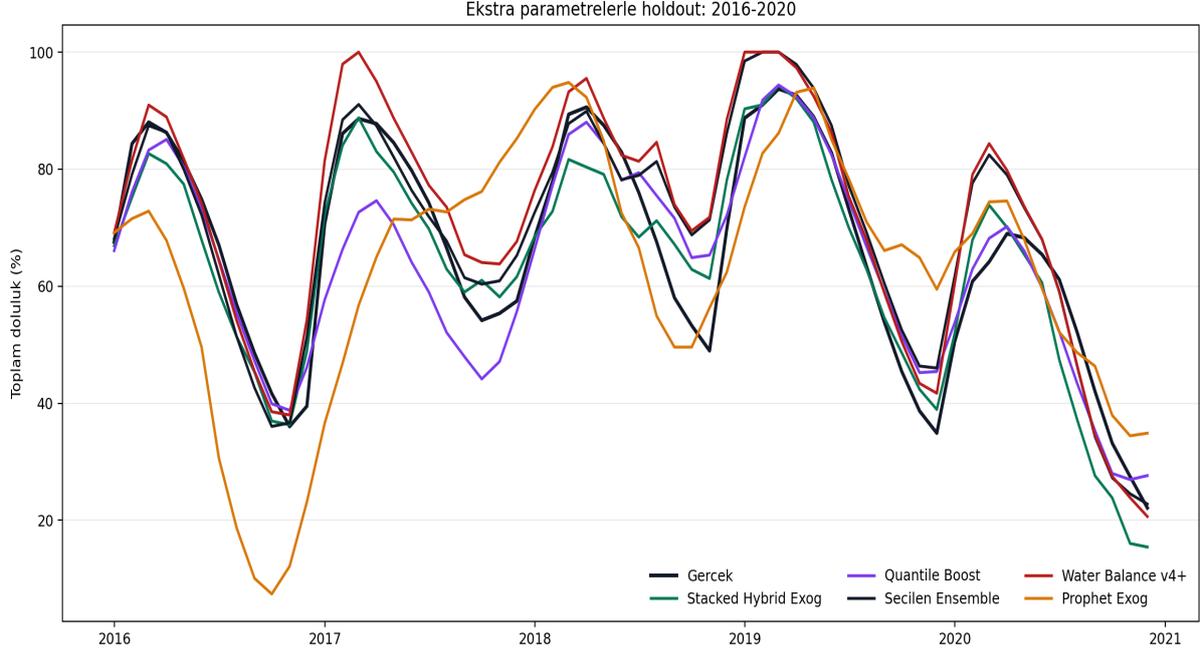|					
hgbr_mid	6.917888051989912	5.369229318895122	9.591472958121193	9.18850586629846	93.57293051836812	92.570158377
catboost_d4_lr003	6.103881647774073	4.795158555150639	9.909095907308489	8.955019336016942	97.68090869725783	96.732425673
catboost_d4_lr002	6.509189053352535	5.075015754072004	10.571272650410764	9.466119510775805	97.68502640670744	96.460127813
catboost_d5_lr002	6.852003459064616	5.4120823259857875	11.10418084642938	9.942092456956717	97.35709340062468	95.793275909
catboost_d6_lr015	7.904935784760711	6.261104291300097	12.930757983201197	11.401229874915678	96.42212554795806	94.248402333

Water-Balance Denemeleri (Round 5)

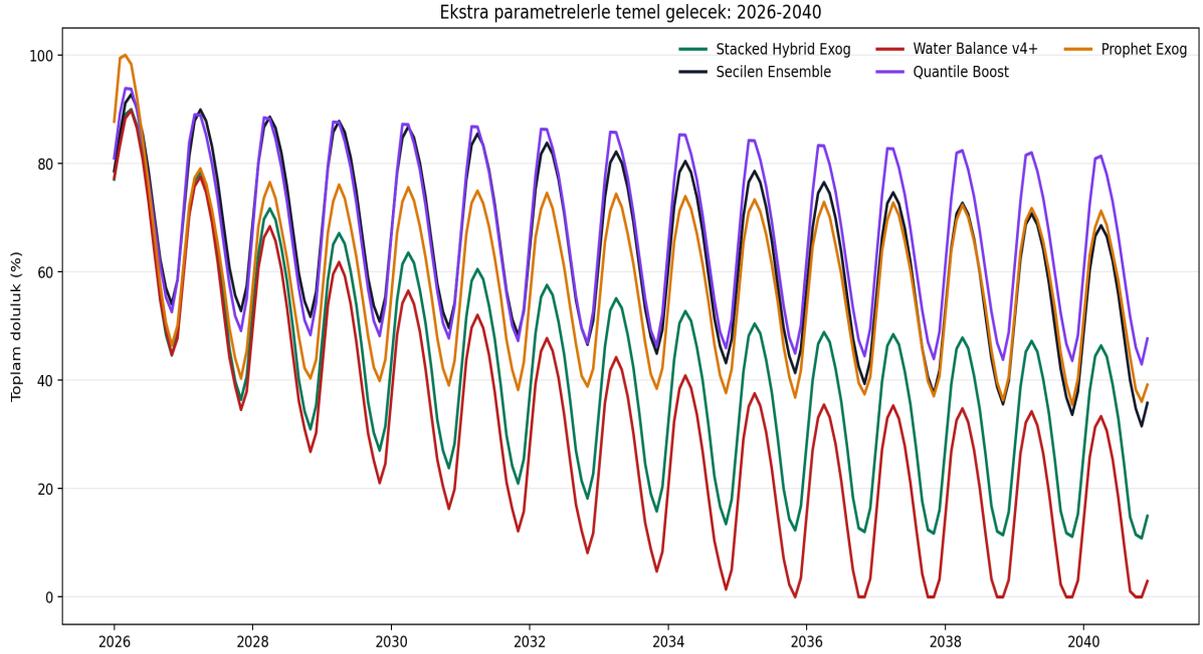| model	rmse_pp	mape_pct	pearson_pct	base_2040_pct	decision
water_balance_v4_corrected	8.70389	11.551827	94.431835	2.902123	baseline_wb_best_so_far
water_balance_v6_ops_curve	11.363206918641266	15.409930326322003	92.3282992532975	6.213523530421872	reject
water_balance_v7_ops_residual	10.631368325062382	13.778137277006728	93.16868103216356	28.96952858814955	reject_but_less_bad_than_v6

Ana Cikti Klasorleri

- output/final_delivery/istanbul_baraj_final_paket - output/istanbul_models_extra_params_2026_03_12 - output/istanbul_mape5_push_and_longhorizon_2026_03_12 - output/istanbul_hybrid_physics_sourceaware_ensemble_2040 - output/istanbul_preferred_projection_2040

Gorsel: extra_param_models_holdout.png

Gorsel: extra_param_models_future.png

Gorsel: extra_param_improvement_vs_previous.png

Ekstra parametre etkisi - RMSE degisimi

Ekstra parametre etkisi - MAPE degisimi