

## Dual-Forecaster: A Multimodal Time Series Model Integrating Descriptive and Predictive Texts

Table 9. Forecasting result on existing multimodal time series datasets (adding UniTime, AutoTimes and Chronos). The best result is highlighted in **bold** and the second best is highlighted in underlined.

Methods	Dual-Forecaster		Dual-Forecaster w/o Future Texts		DLinear		FITS		PatchTST		iTransformer		MM-TSFlib		TGForecaster		Time-LLM		UniTime		AutoTimes		Chronos	
Metric	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE	MSE	MAE
Weather-captioned   36	<b>0.0297</b>	<b>0.1174</b>	0.0337	<u>0.1306</u>	0.0677	0.1926	0.0628	0.1849	0.0525	0.1650	0.0558	0.1719	0.0575	0.1792	0.0600	0.1928	0.0449	0.1613	0.0506	0.1763	0.0521	0.1775	<u>0.0298</u>	<u>0.1087</u>
Time-MMD-Climate   8	<b>0.8619</b>	<b>0.7597</b>	<u>0.9896</u>	0.8106	2.9057	1.4165	1.5498	0.9776	1.0975	<u>0.8054</u>	1.1392	0.8194	1.1386	0.8212	1.0849	0.8114	1.3398	0.9217			1.4193	0.9431	1.0479	0.8404
Time-MMD-Economy   8	<b>0.1831</b>	<b>0.3389</b>	<u>0.1852</u>	<u>0.3425</u>	8.1634	2.5406	0.2766	0.4184	0.1960	0.3512	0.1963	0.3493	0.2066	0.3583	0.2108	0.3641	0.2310	0.3858			0.2410	0.3915	0.2749	0.4232
Time-MMD-SocialGood   8	<b>1.2554</b>	<b>0.5317</b>	<u>1.2768</u>	0.5627	4.3273	1.8199	1.7227	0.6789	1.7509	0.5761	1.7128	<u>0.5379</u>	1.8615	0.5550	1.5318	0.6074	1.5172	0.6106			1.5850	0.6438	1.4734	0.6090
Time-MMD-Traffic   8	<b>0.1802</b>	0.3039	<u>0.1824</u>	0.3089	4.3517	1.8561	0.3542	0.4570	0.1828	<u>0.2591</u>	0.1917	0.2503	0.1892	<b>0.2491</b>	0.2168	0.3052	0.2299	0.3370			0.2894	0.4023	0.3891	0.4919
Time-MMD-Energy   12	<b>0.0936</b>	<b>0.2162</b>	<u>0.0937</u>	<u>0.2206</u>	1.2069	0.8204	0.2893	0.4086	0.1031	0.2217	0.1123	0.2415	0.1146	0.2472	0.1482	0.2911	0.1263	0.2619	0.1158	0.2527	0.2940	0.4070	0.1200	0.2301
Time-MMD-Health-US   12	<b>0.9515</b>	<b>0.6160</b>	1.0255	0.6391	2.2140	1.0484	2.2509	1.1193	1.1000	0.7233	1.0467	0.6573	<u>0.9710</u>	<u>0.6308</u>	1.3074	0.7823	1.1728	0.7331	1.0753	0.7117	2.4537	1.1330	1.5416	0.7668
Time-MMD-Health-AFR   12	<u>0.0049</u>	0.0540	0.0049	0.0541	0.0572	0.2002	0.0076	0.0650	0.0072	0.0707	0.0057	0.0577	0.0052	0.0550	0.0057	0.0532	0.0058	0.0547	0.0049	<u>0.0502</u>	0.0344	0.1347	<b>0.0044</b>	<b>0.0465</b>

Table 10. Ablation study results of different pre-trained models on ETTm2 dataset.

		<i>RoBERTa</i>		GPT2	
Metric		MSE	MAE	MSE	MAE
ETTM2	96	0.8469	0.5756	0.8522	0.5749