

Table A: Ablation study of different components on generalization to other resolutions without fine-tuning.

Model	Resolution	MSE	MAE	RMSE							
				z500	t850	t2m	u10	v10	u500	v500	q700 (10^{-4})
ConvCNP	0.703125°	0.0378	0.1134	142.38	0.9106	0.8471	1.2264	1.1115	2.9765	2.6264	5.7900
FNP w/o NFL	0.703125°	0.0201	0.0781	105.06	0.7946	0.8154	0.7861	0.7771	1.6876	1.4217	5.7985
FNP w/o DAM	0.703125°	0.0163	0.0638	72.095	0.6720	0.7420	0.8366	0.7810	1.4279	1.3663	5.6424
FNP w/o SVD	0.703125°	0.0184	0.0687	39.801	0.6127	0.7964	0.7133	0.7152	1.4947	1.4261	5.7073
FNP	0.703125°	0.0150	0.0618	52.075	0.6021	0.7385	0.7052	0.6833	1.3723	1.3036	5.4333
ConvCNP	0.25°	0.0651	0.1514	234.50	1.3208	0.8705	1.7134	1.5122	4.1316	3.6655	6.6619
FNP w/o NFL	0.25°	0.0295	0.0984	183.26	1.0701	0.8368	1.0260	1.0154	2.3674	1.9632	6.7516
FNP w/o DAM	0.25°	0.0213	0.0769	106.61	0.7751	0.7570	1.0482	0.9327	1.8566	1.7139	6.3547
FNP w/o SVD	0.25°	0.0239	0.0793	64.238	0.7339	0.7522	0.9657	0.8948	1.8829	1.7431	6.5128
FNP	0.25°	0.0196	0.0729	84.516	0.6992	0.6912	0.9264	0.8687	1.8315	1.6723	6.1761

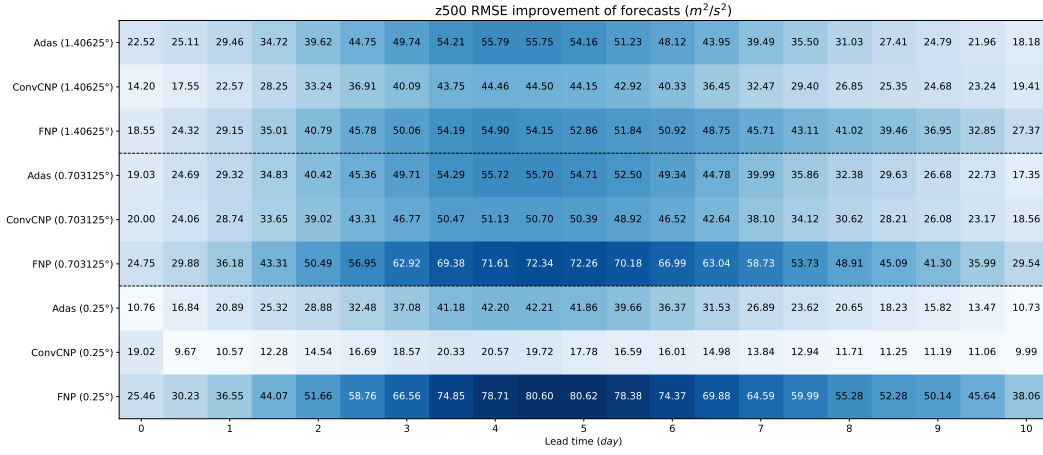


Figure A: Quantitative comparison of different data assimilation methods on the improvement of forecast errors for the next ten days.