

13_Predictive_Modeling_Spec

13 — Predictive Modeling Spec (Phase 2)

Objectives

- 7–14 day SST anomaly outlook with uncertainty; regional focus options.

Data

- ERSST historical; NDBC station series; optional reanalysis features.

Methods (progressive)

1. **Baselines**: climatology, persistence, simple AR.
2. **Classical**: ARIMA/ETS; Prophet-style trend/seasonality.
3. **ML**: gradient boosting for regional signals.
4. **DL (experimental)**: seq2seq or temporal CNN.

Evaluation

- Metrics: RMSE/MAE, CRPS for probabilistic forecasts.
- Cross-validation by region and season.

Model Card

- Purpose, data, limitations, failure modes, update cadence.

MLOps

- Versioned datasets; reproducible notebooks; drift monitors; canary rollouts.