

LSTM plots

Until 08/19

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Shortcuts

- [Current LSTM Trial](#)

Parameters settings

Sequence Length: Length of input sequence = 10 by default

Model Architecture:

- Bidirectional LSTM Layer 1: 64 units
- Dropout Layer 1: 20%
- Bidirectional LSTM Layer 2: 64 units
- Dropout Layer 2: 20% dropout
- Dense Layer: 1 unit

Optimizer: Adam Optimizer with a learning rate of 0.001

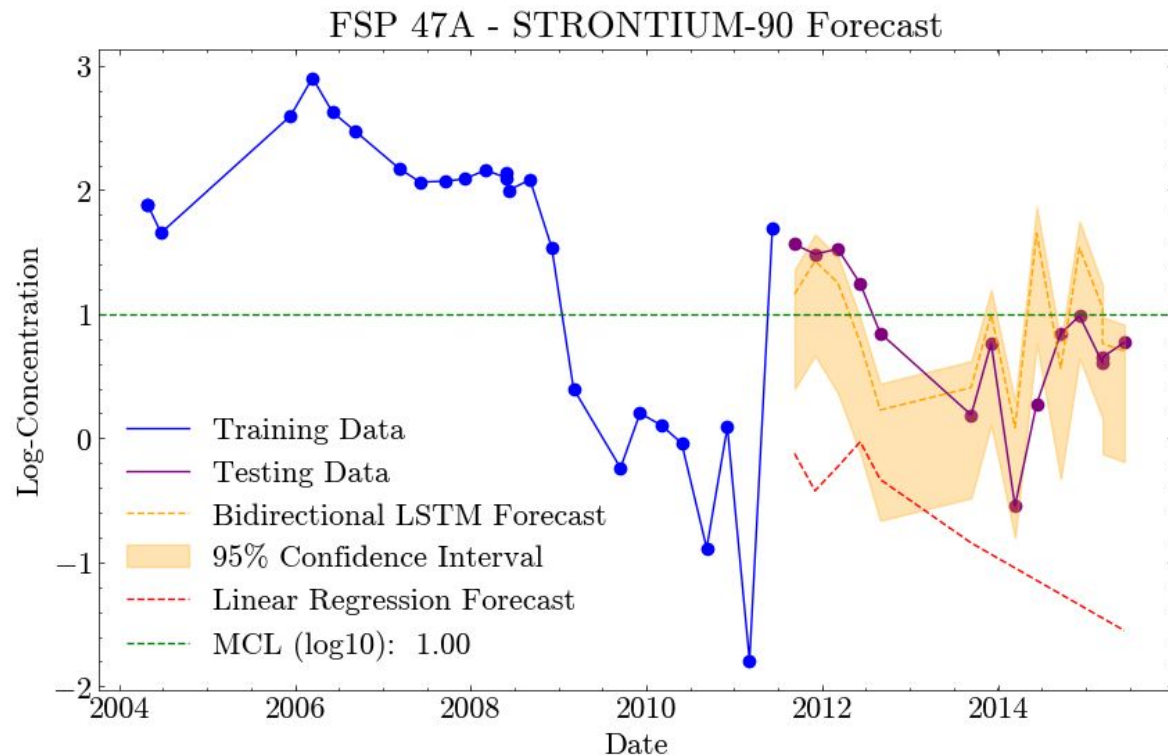
Training Settings:

- Epochs: The model trains for up to 200 epochs
- Batch Size: 32 samples per batch
- Validation Split: 20% of the training data

Time Interval for Testing Set: The testing set includes data from the last **4 years** before the most recent data point

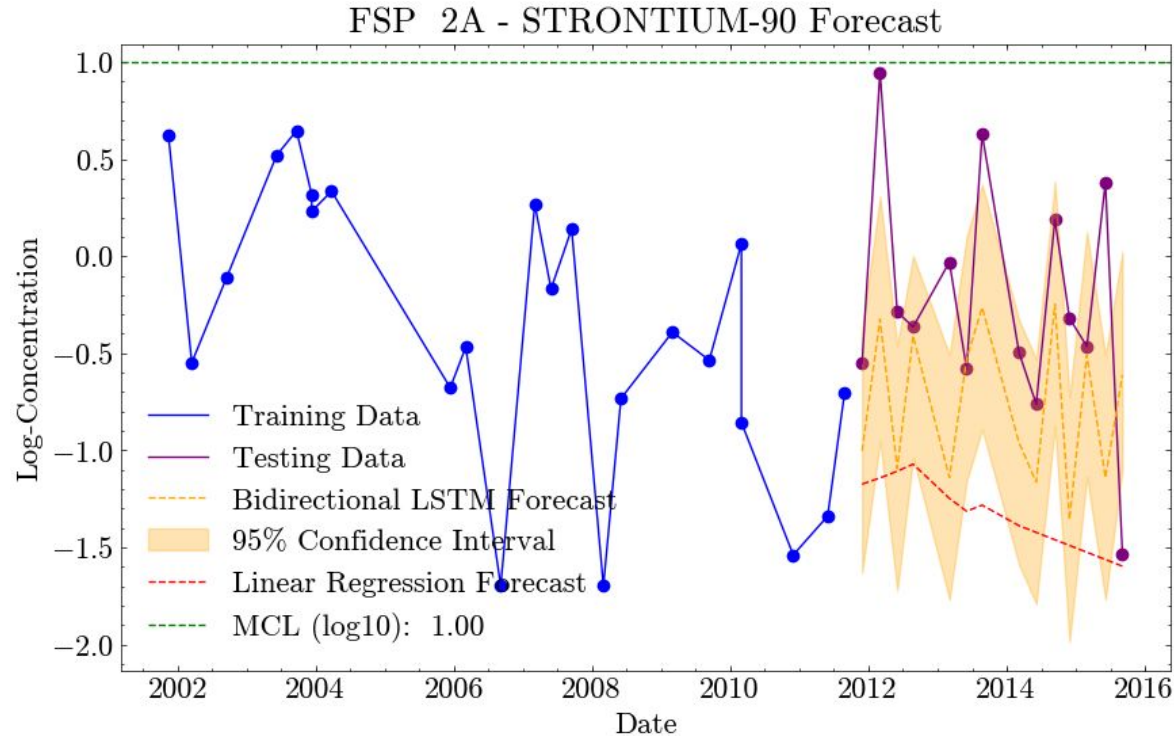
Results for Sr-90

Selected LSTM plot



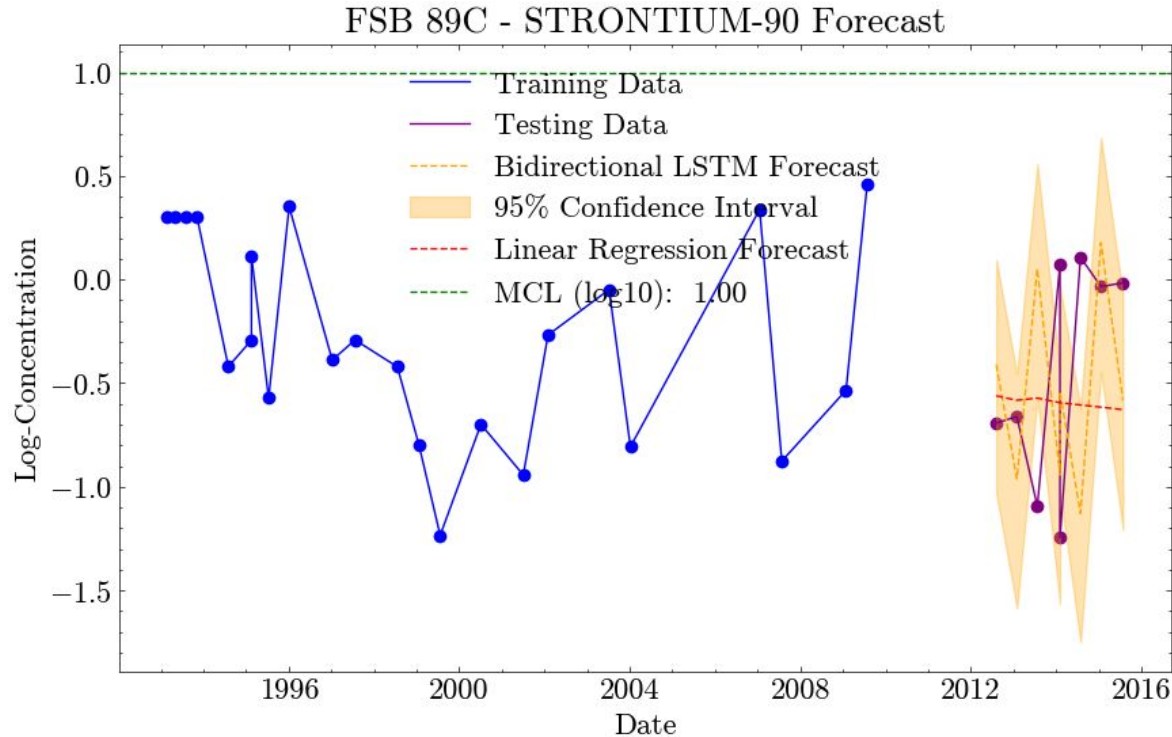
- MSE for well FSP 47A with Bidirectional LSTM: 0.10049667460824482
- R^2 for well FSP 47A with Bidirectional LSTM: 0.4116755557248295

Selected LSTM plot



- MSE for well FSP 2A with Bidirectional LSTM: 0.1027648720885447
- R^2 for well FSP 2A with Bidirectional LSTM: 0.592190031484684

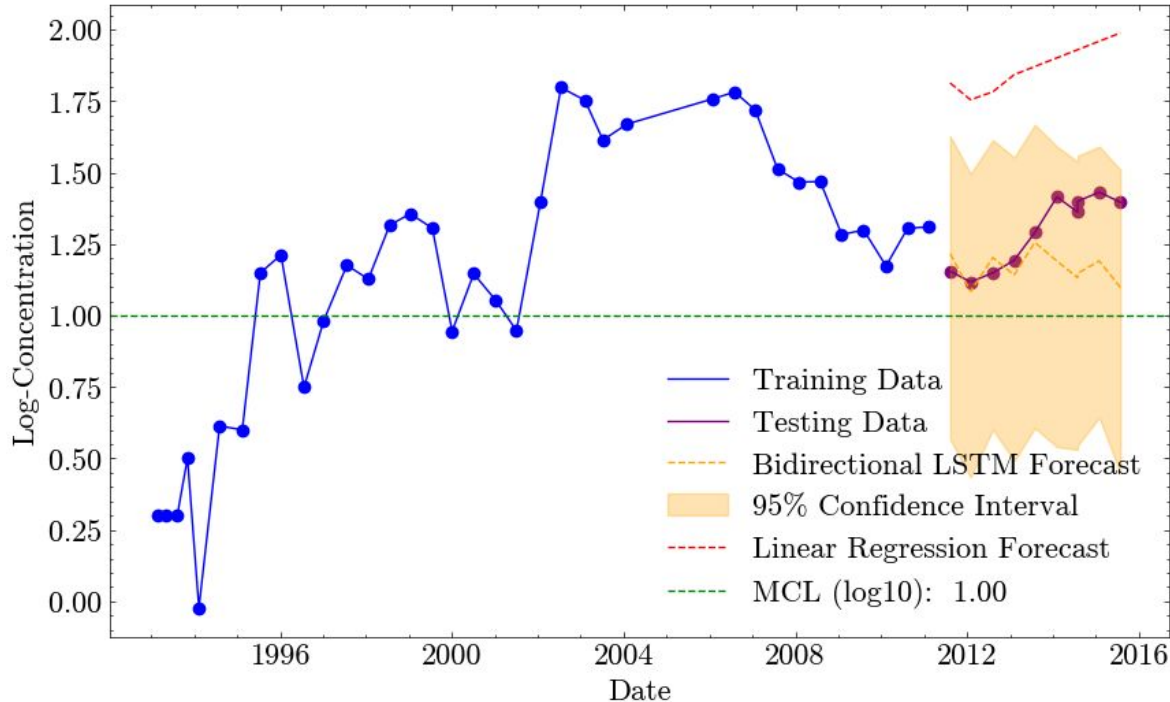
Selected LSTM plot



- MSE for well FSB 89C with Bidirectional LSTM: 0.08294491959949823
- R^2 for well FSB 89C with Bidirectional LSTM: 0.6530740885444999

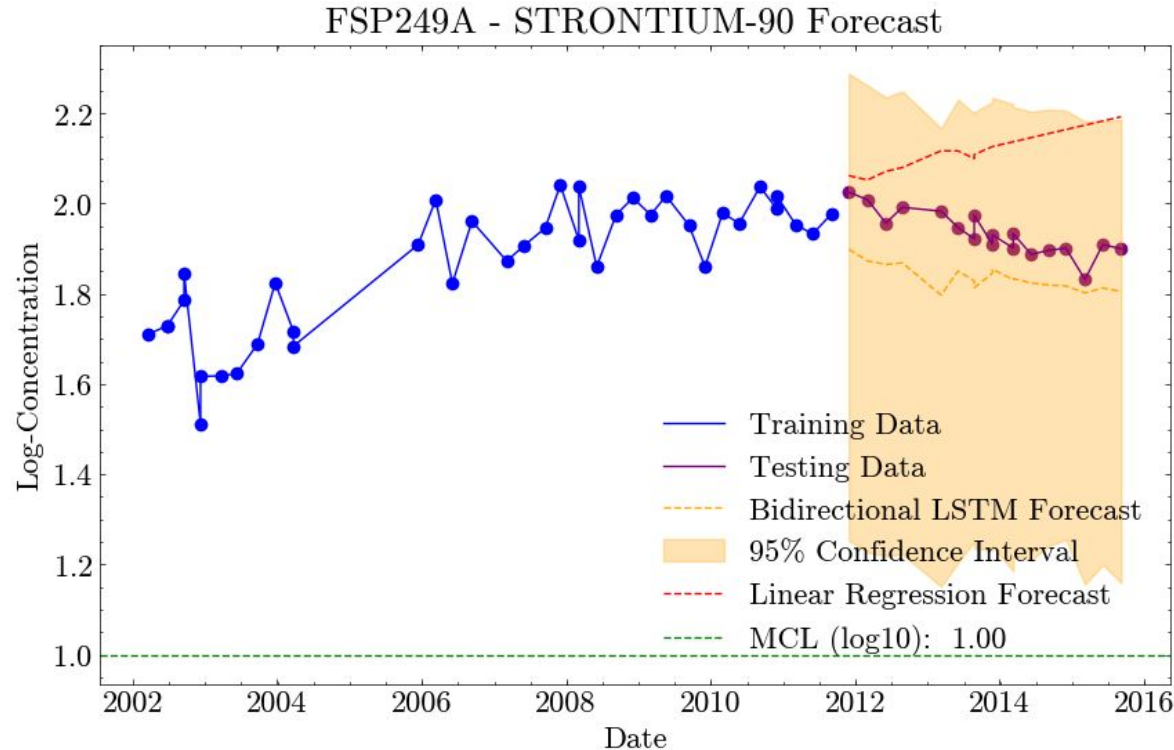
Selected LSTM plot

FSB 93C - STRONTIUM-90 Forecast



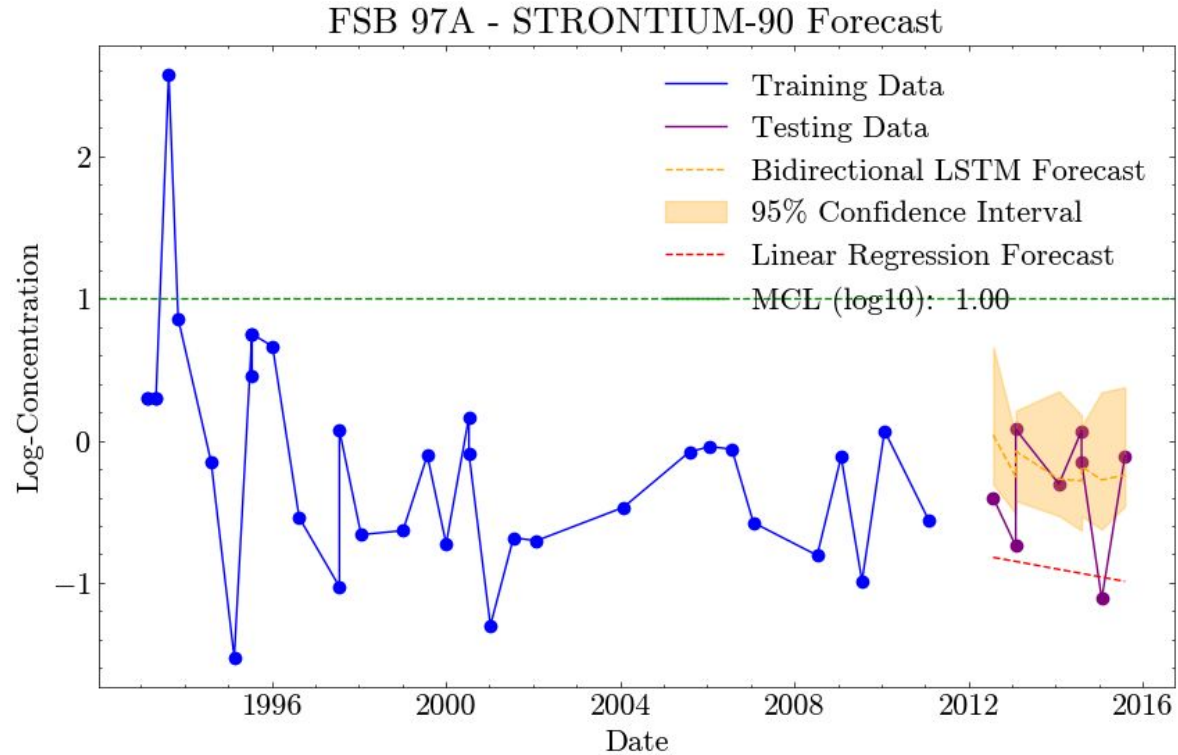
- MSE for well FSB 93C with Bidirectional LSTM: 0.08690169468435817
- R^2 for well FSB 93C with Bidirectional LSTM: 0.5303045898044172

Selected LSTM plot



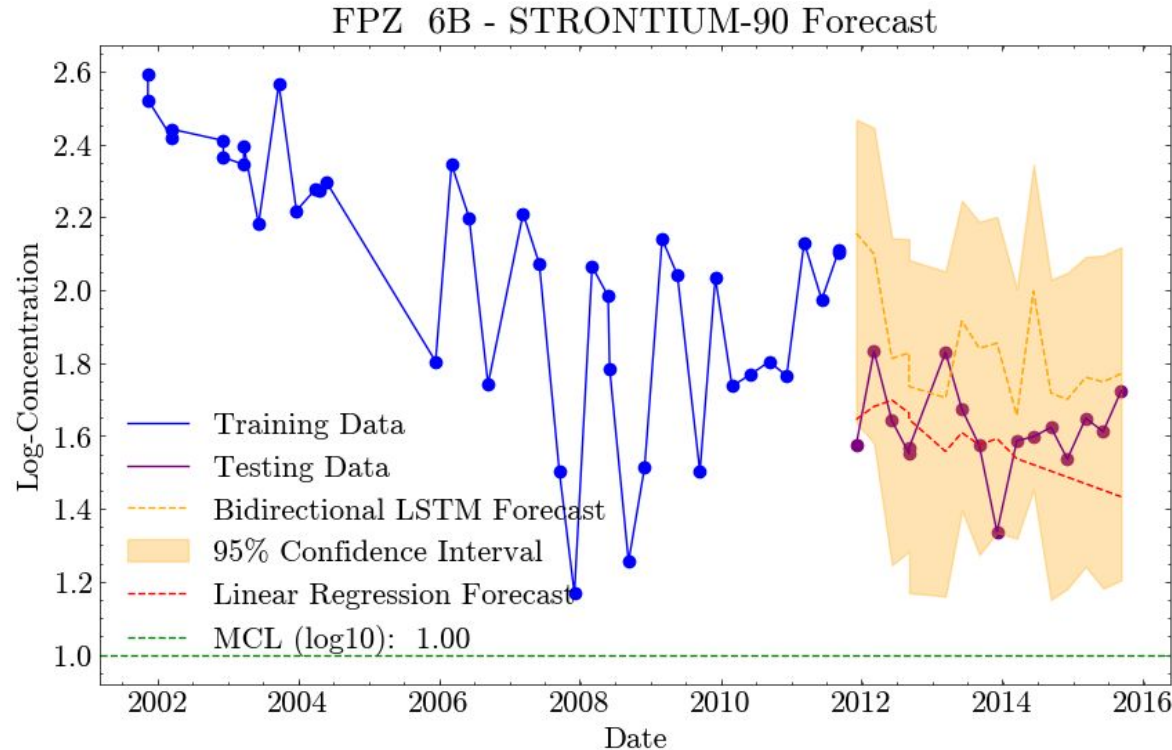
- MSE for well FSP249A with Bidirectional LSTM: 0.09132777833076479
- R^2 for well FSP249A with Bidirectional LSTM: 0.4067641012001586

Selected LSTM plot



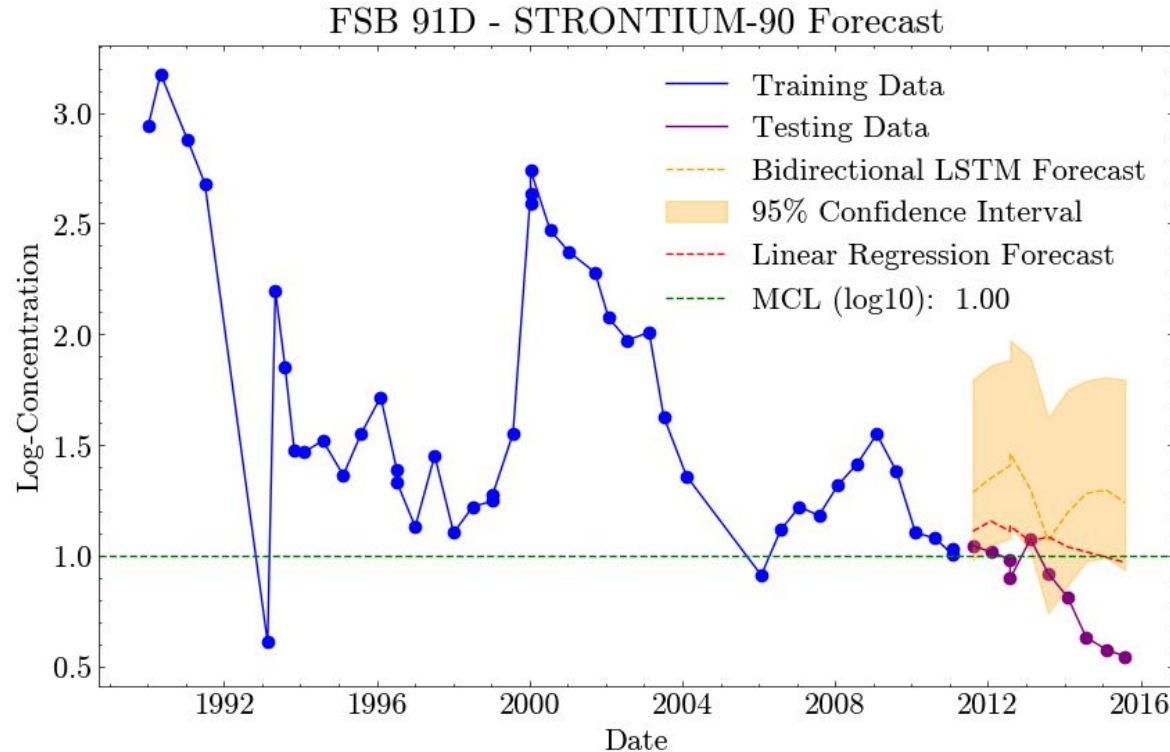
- MSE for well FSB 97A with Bidirectional LSTM: 0.043409139790034544
- R^2 for well FSB 97A with Bidirectional LSTM: 0.6120978275798437

Selected LSTM plot



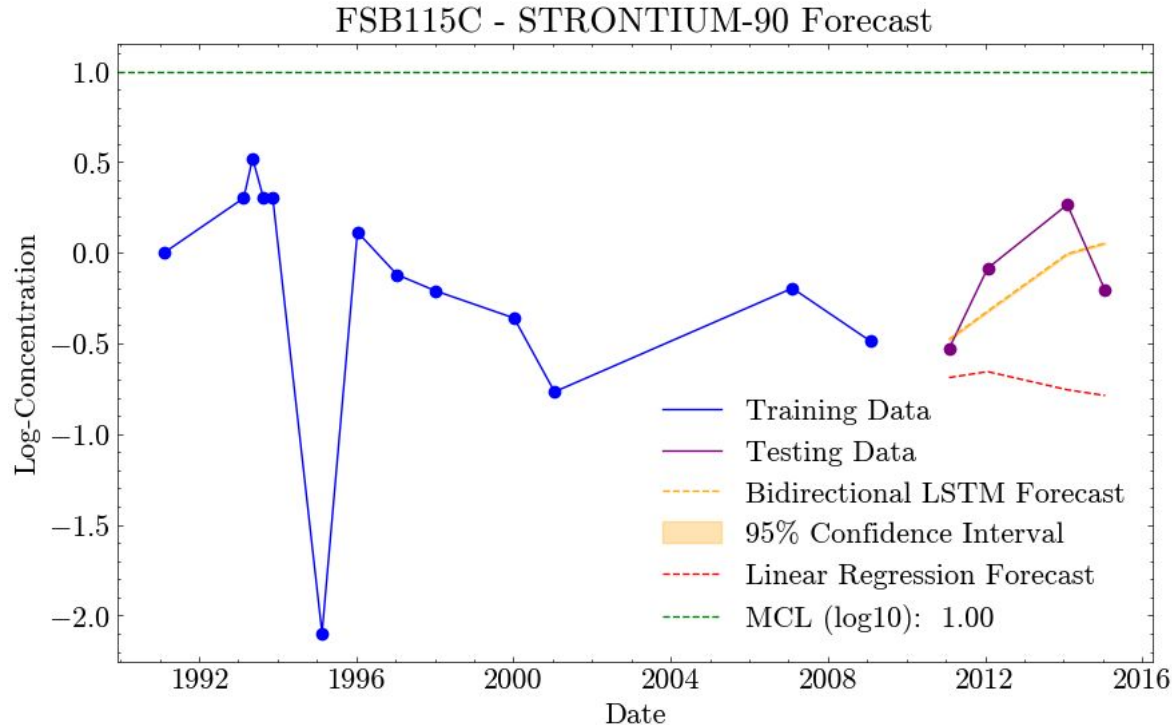
- MSE for well FPZ 6B with Bidirectional LSTM: 0.05145325666132188
- R^2 for well FPZ 6B with Bidirectional LSTM: 0.47553089583413355

Selected LSTM plot



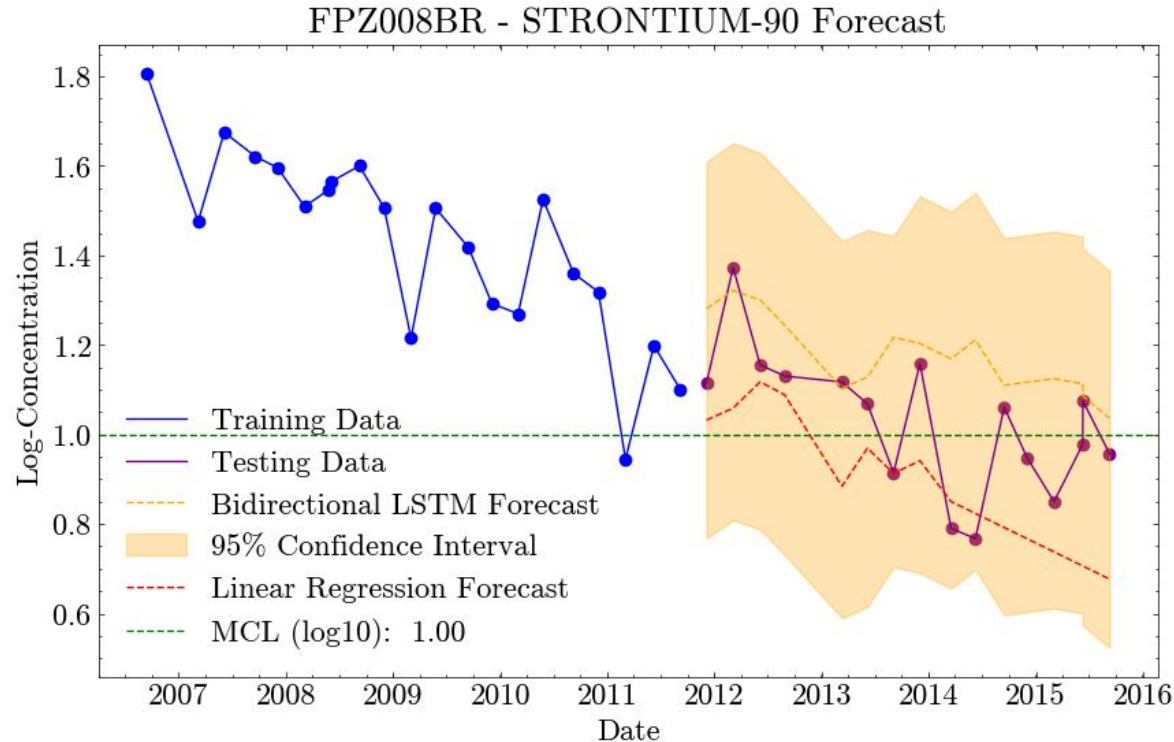
- MSE for well FSB 91D with Bidirectional LSTM: 0.05754566091478977
- R^2 for well FSB 91D with Bidirectional LSTM: 0.39967508726799916

Selected LSTM plot



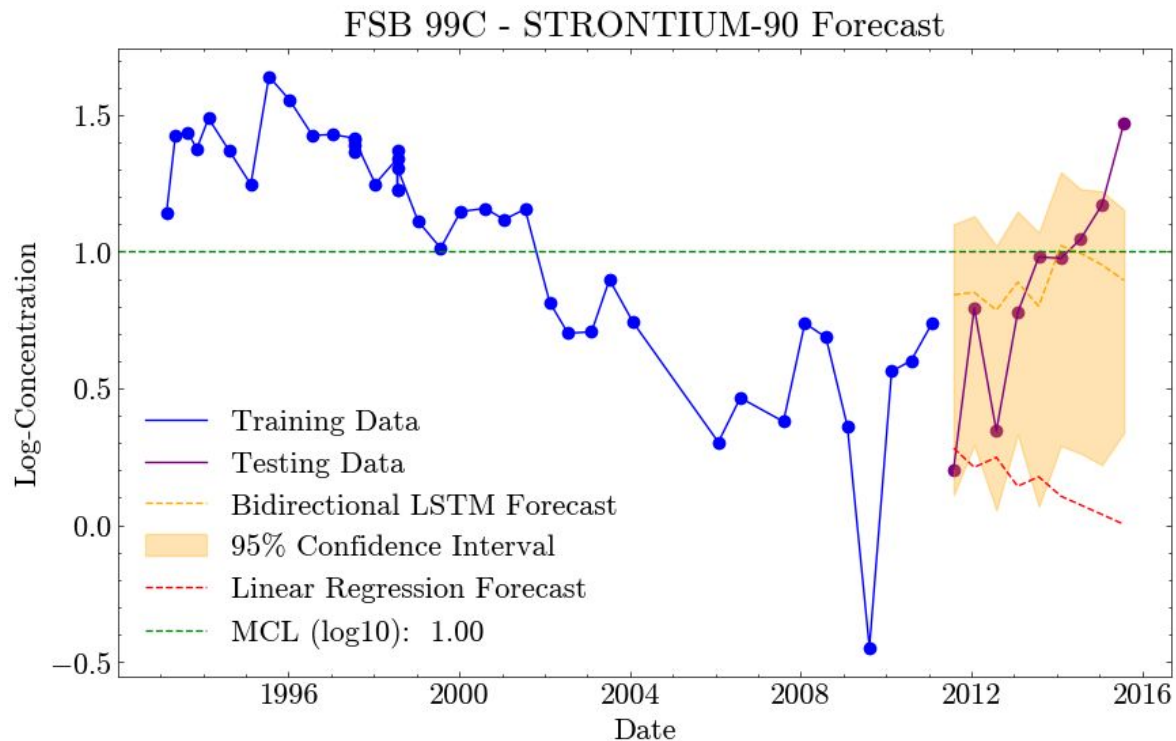
- MSE for well FSB115C with Bidirectional LSTM: $1.4441100144413518e-05$
- R^2 for well FSB115C with Bidirectional LSTM: 0.9991991223360452

Selected LSTM plot



- MSE for well FPZ008BR with Bidirectional LSTM: 0.05934691931111997
- R^2 for well FPZ008BR with Bidirectional LSTM: 0.28136401520207666

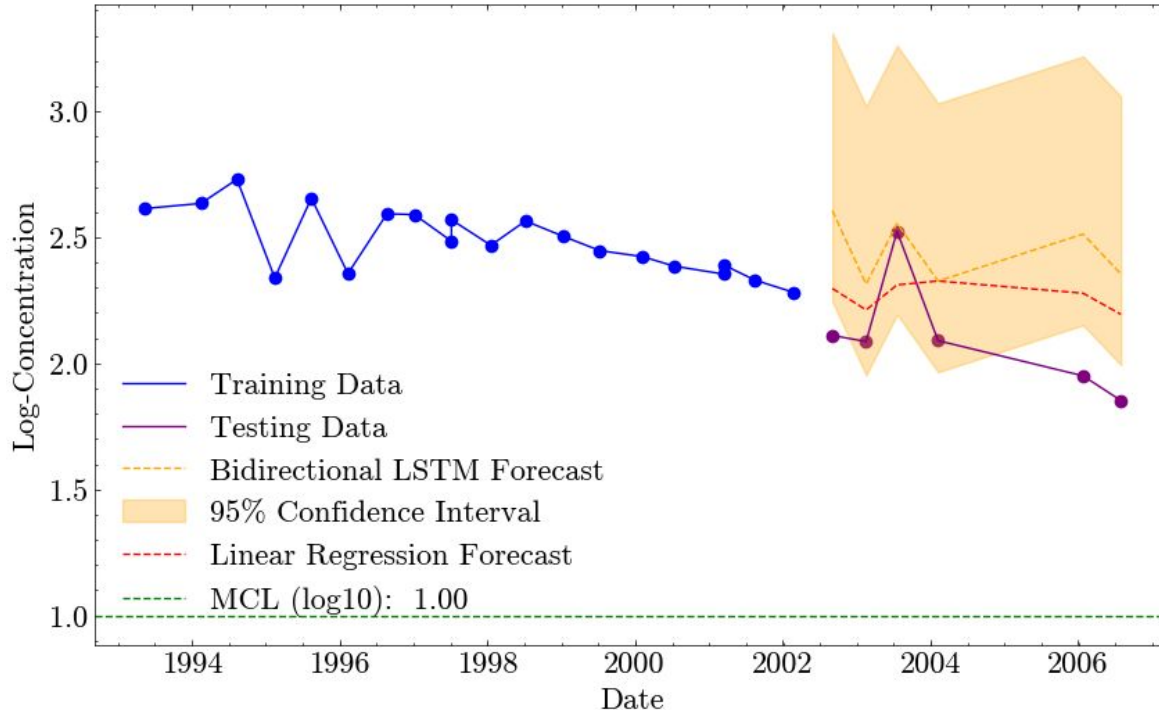
Selected LSTM plot



- MSE for well FSB 99C with Bidirectional LSTM: 0.0520635504850649
- R^2 for well FSB 99C with Bidirectional LSTM: 0.5478326061859156

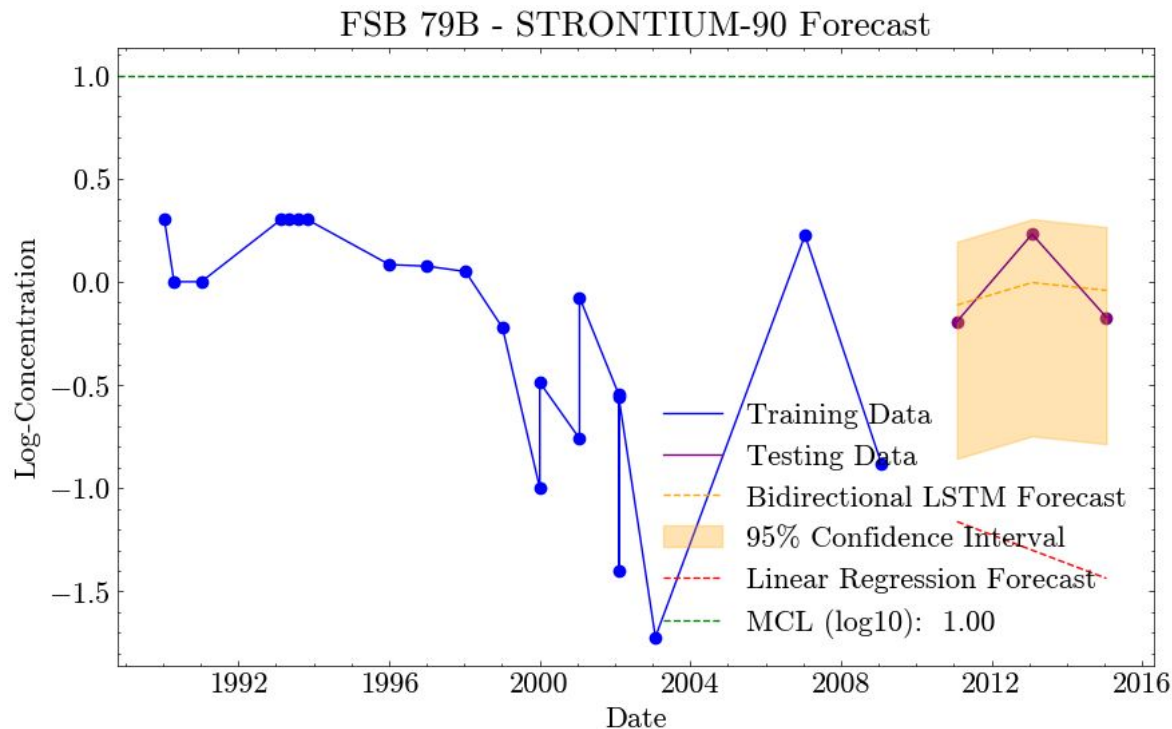
Selected LSTM plot

FSB105C - STRONTIUM-90 Forecast



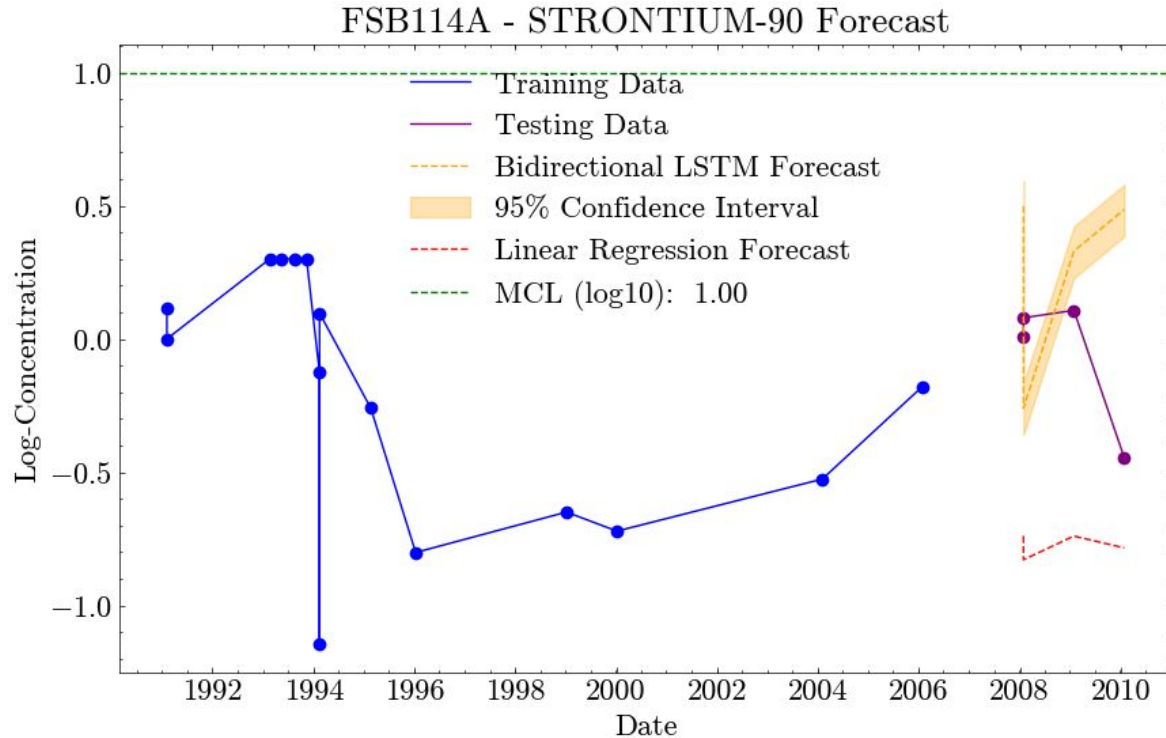
- MSE for well FSB105C with Bidirectional LSTM: 0.07804597944536482
- R^2 for well FSB105C with Bidirectional LSTM: 0.6520653364426234

Selected LSTM plot



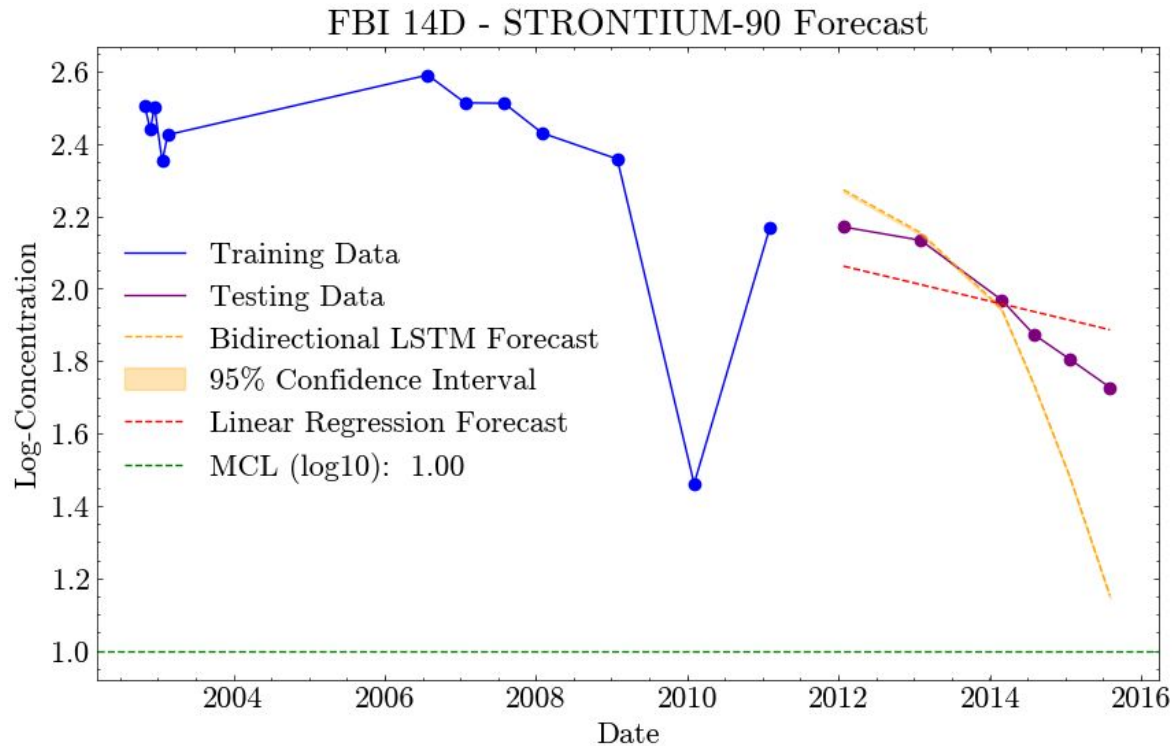
- MSE for well FSB 79B with Bidirectional LSTM: 0.08204263168329112
- R^2 for well FSB 79B with Bidirectional LSTM: 0.5612366831129918

Selected LSTM plot



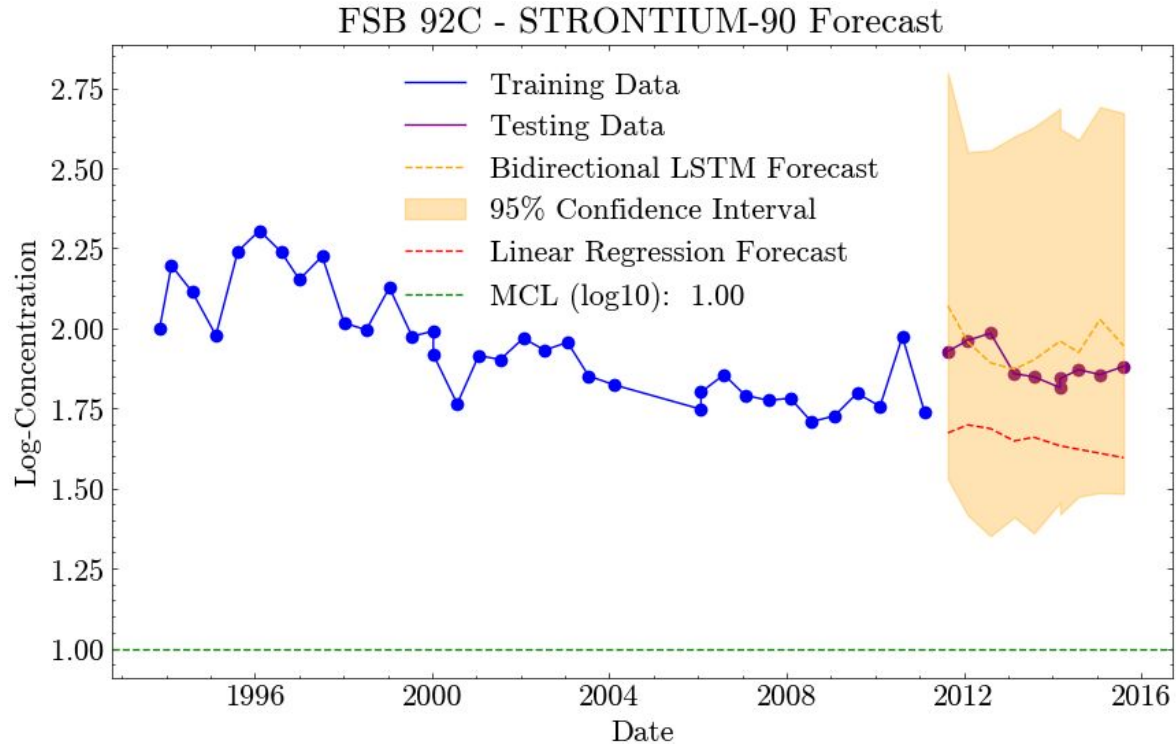
- MSE for well FSB114A with Bidirectional LSTM: 0.004001689885181597
- R^2 for well FSB114A with Bidirectional LSTM: 0.9902992479844547

Selected LSTM plot



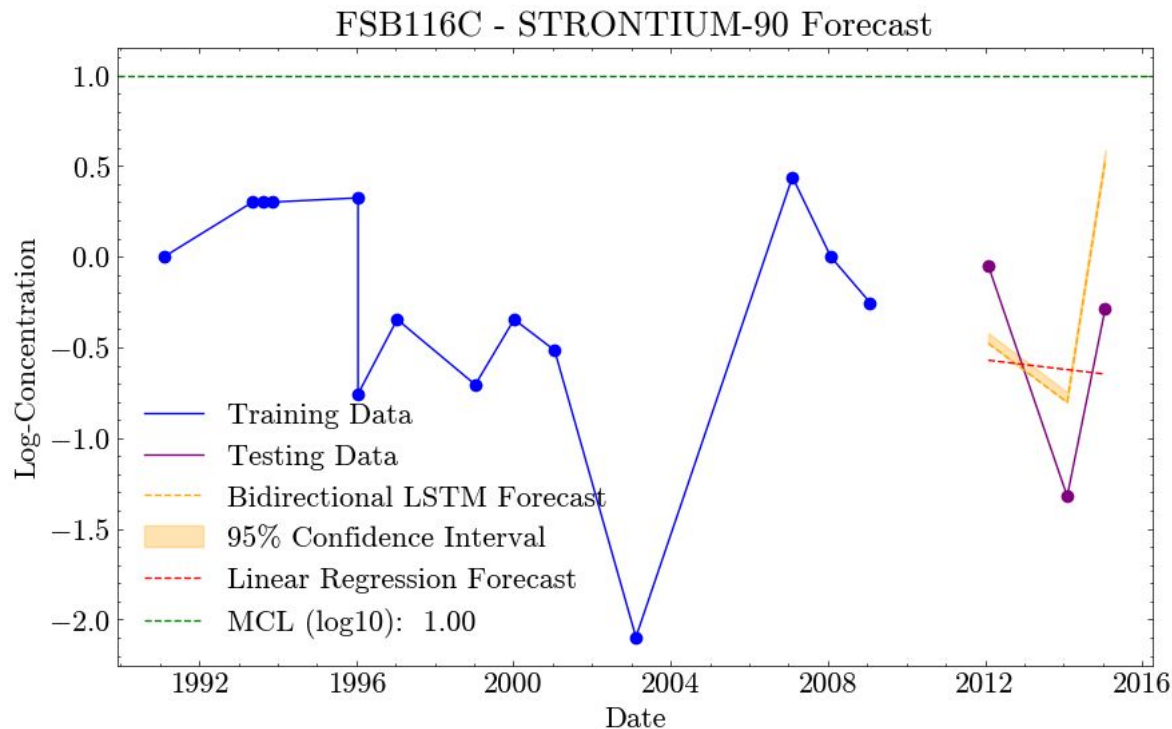
- MSE for well FBI 14D with Bidirectional LSTM: $3.249136631604432e-05$
- R^2 for well FBI 14D with Bidirectional LSTM: 0.9914293153981849

Selected LSTM plot



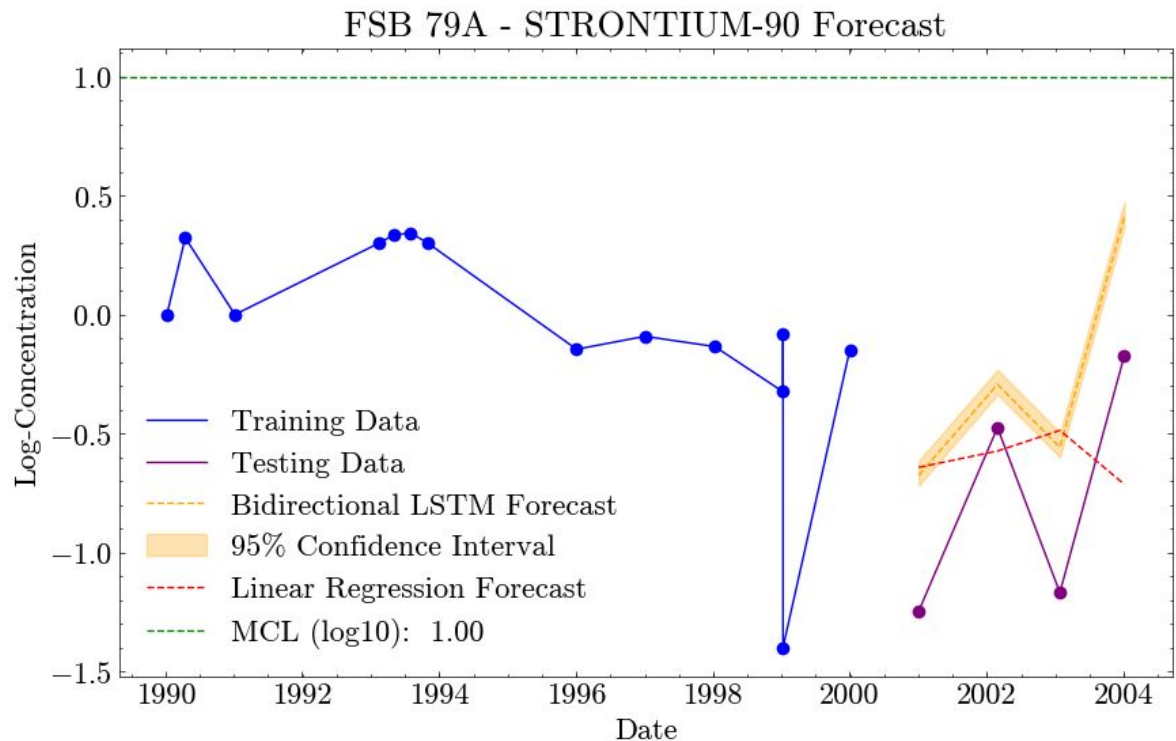
- MSE for well FSB 92C with Bidirectional LSTM: 0.11421207604013742
- R^2 for well FSB 92C with Bidirectional LSTM: 0.33308422927241776

Selected LSTM plot



- MSE for well FSB116C with Bidirectional LSTM: 0.0013148277586107976
- R^2 for well FSB116C with Bidirectional LSTM: 0.9924262081368996

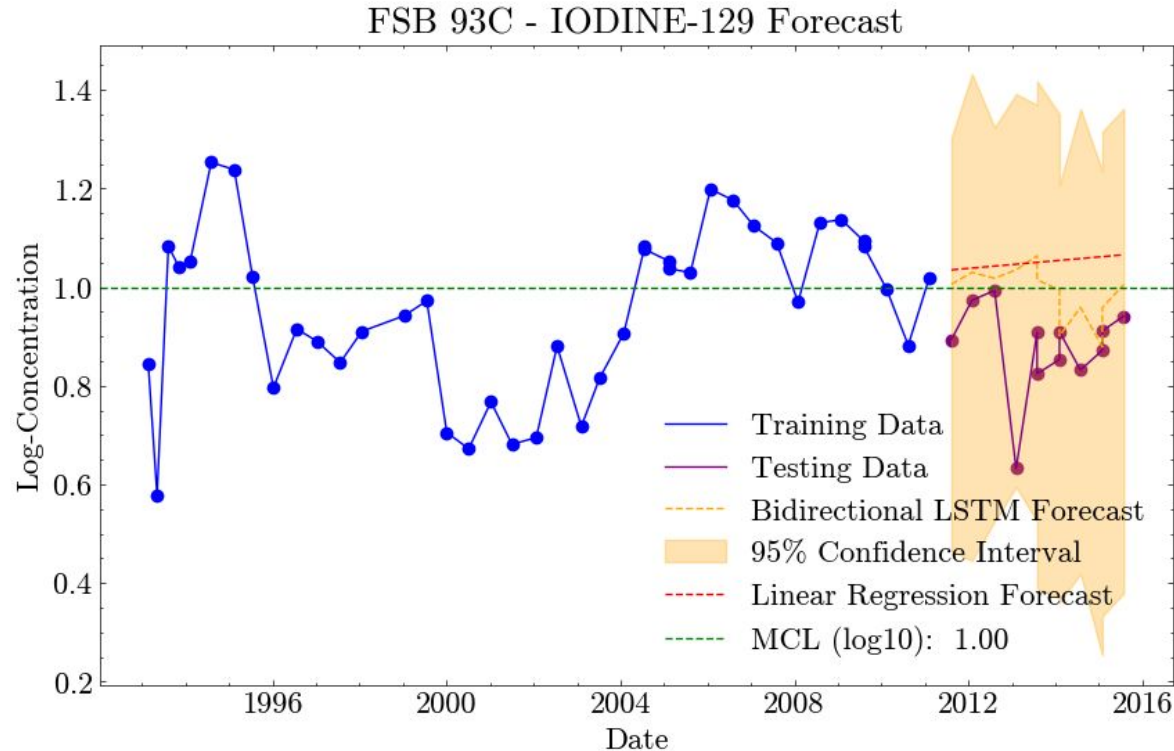
Selected LSTM plot



- MSE for well FSB 79A with Bidirectional LSTM: 0.001683583850931063
- R^2 for well FSB 79A with Bidirectional LSTM: 0.9943917253811829

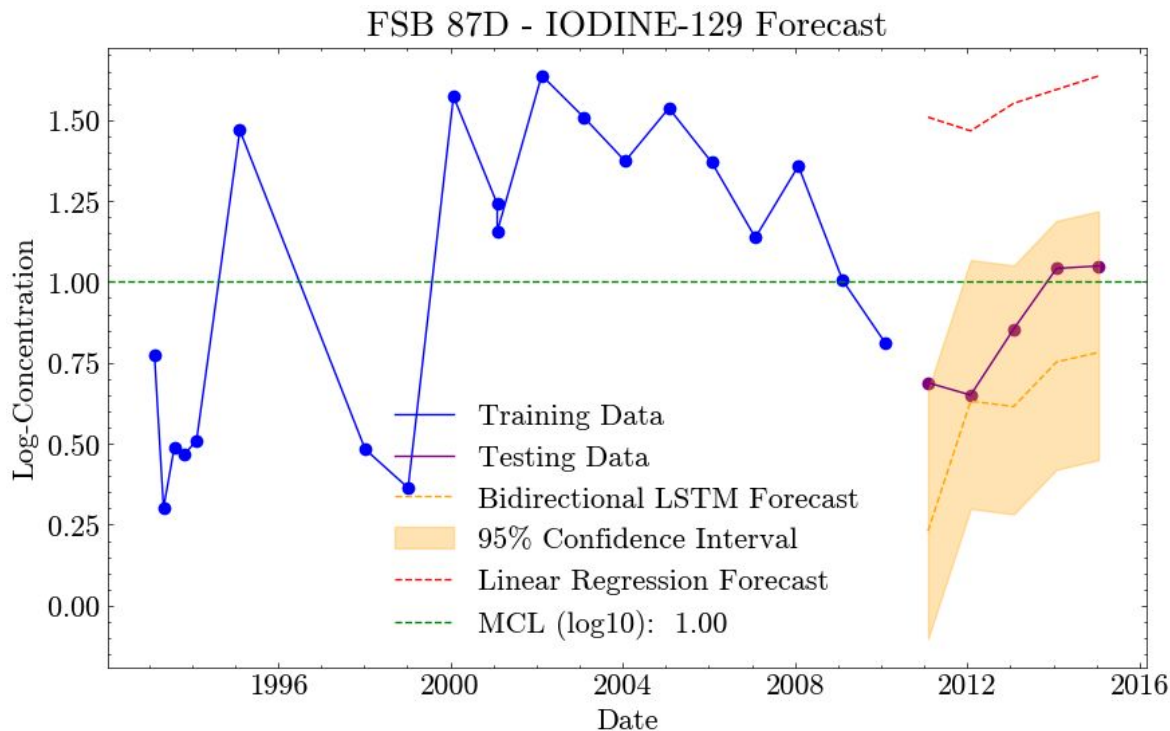
Results for I-129

Selected LSTM plot



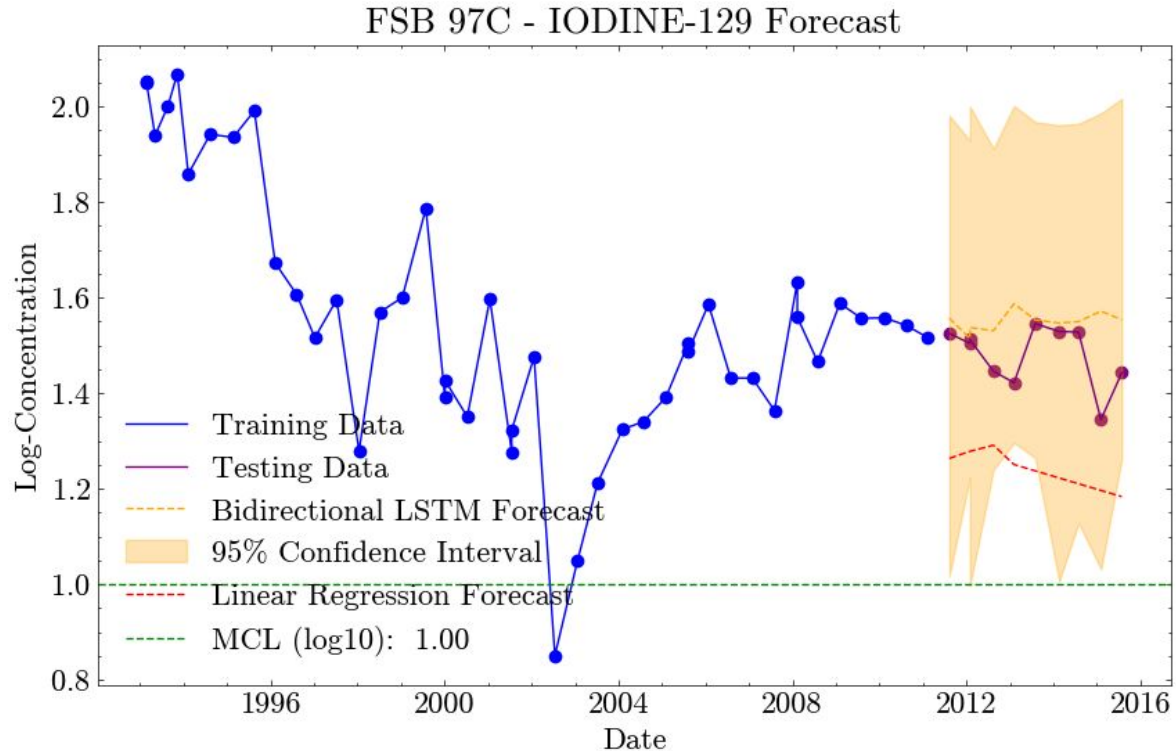
- MSE for well FSB 93C with Bidirectional LSTM: 0.06809699224597059
- R^2 for well FSB 93C with Bidirectional LSTM: 0.4319630201268706

Selected LSTM plot



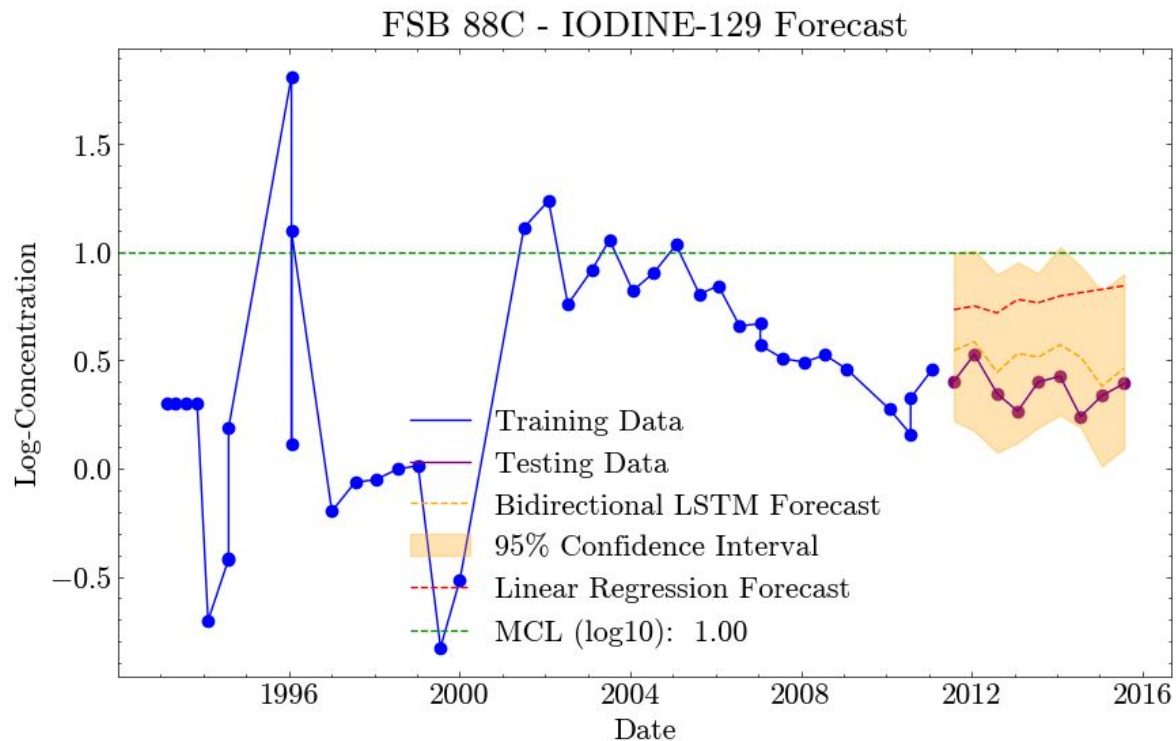
- MSE for well FSB 87D with Bidirectional LSTM: 0.05924556937928259
- R^2 for well FSB 87D with Bidirectional LSTM: 0.6812866869111112

Selected LSTM plot



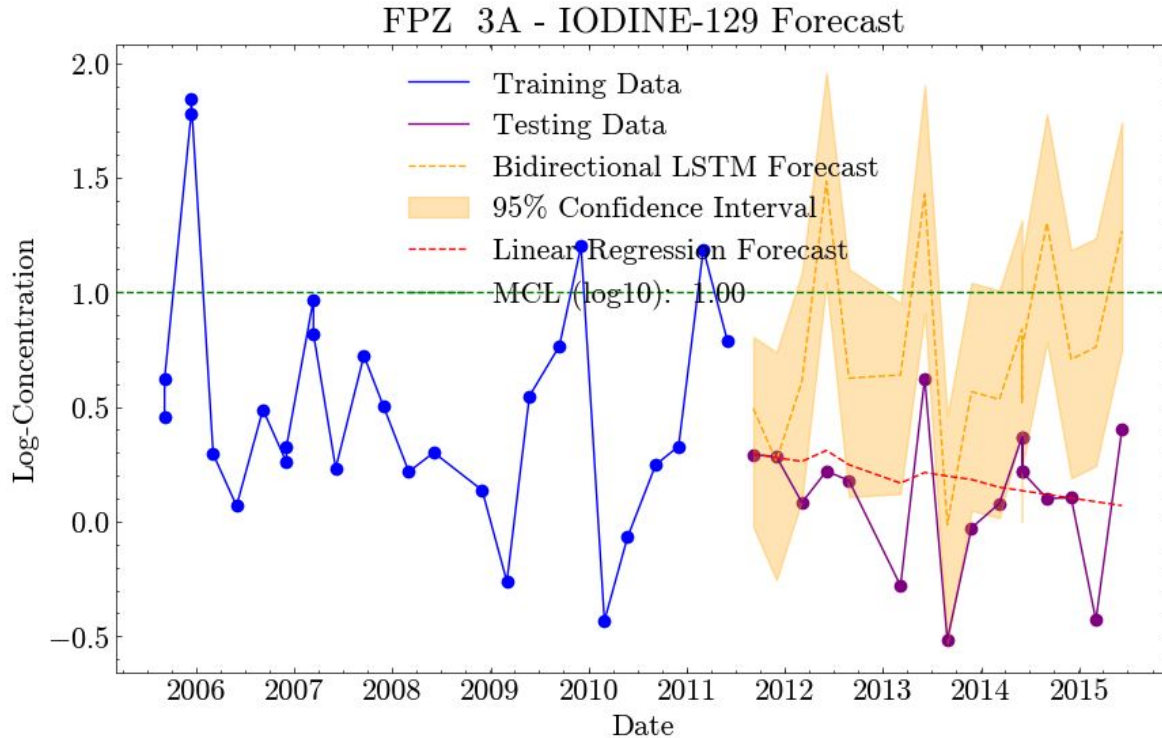
- MSE for well FSB 97C with Bidirectional LSTM: 0.0500588127399661
- R^2 for well FSB 97C with Bidirectional LSTM: 0.6441821795983314

Selected LSTM plot



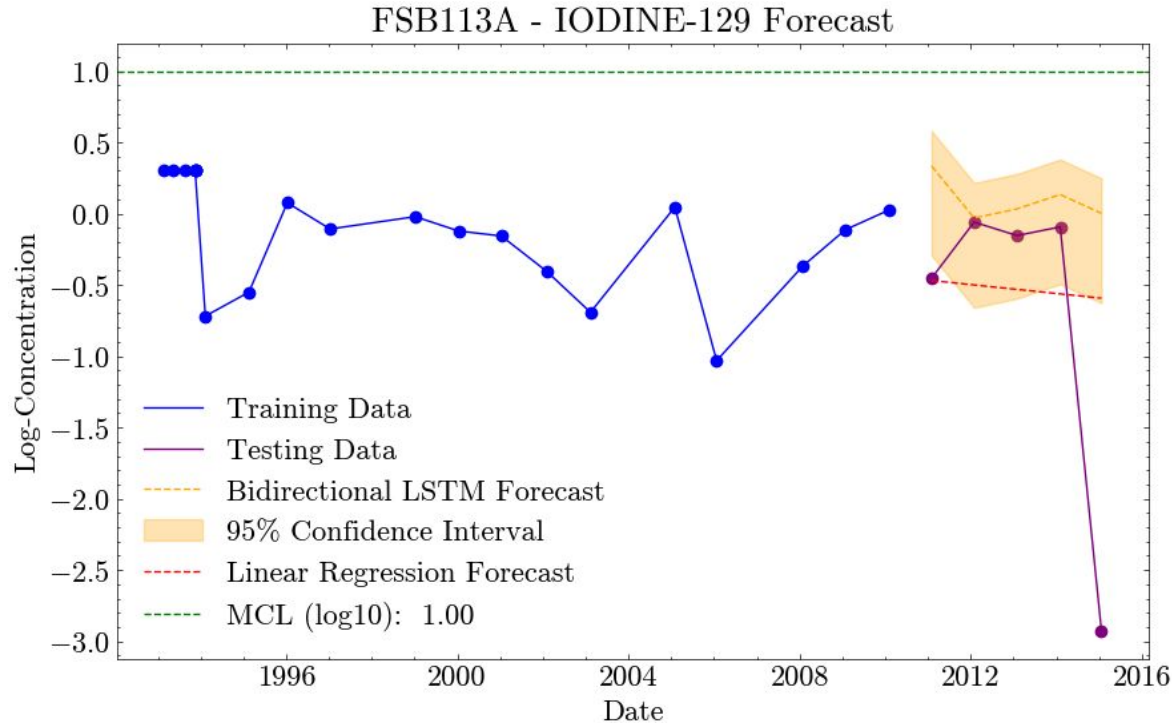
- MSE for well FSB 88C with Bidirectional LSTM: 0.04312468147781202
- R^2 for well FSB 88C with Bidirectional LSTM: 0.40974832759516333

Selected LSTM plot



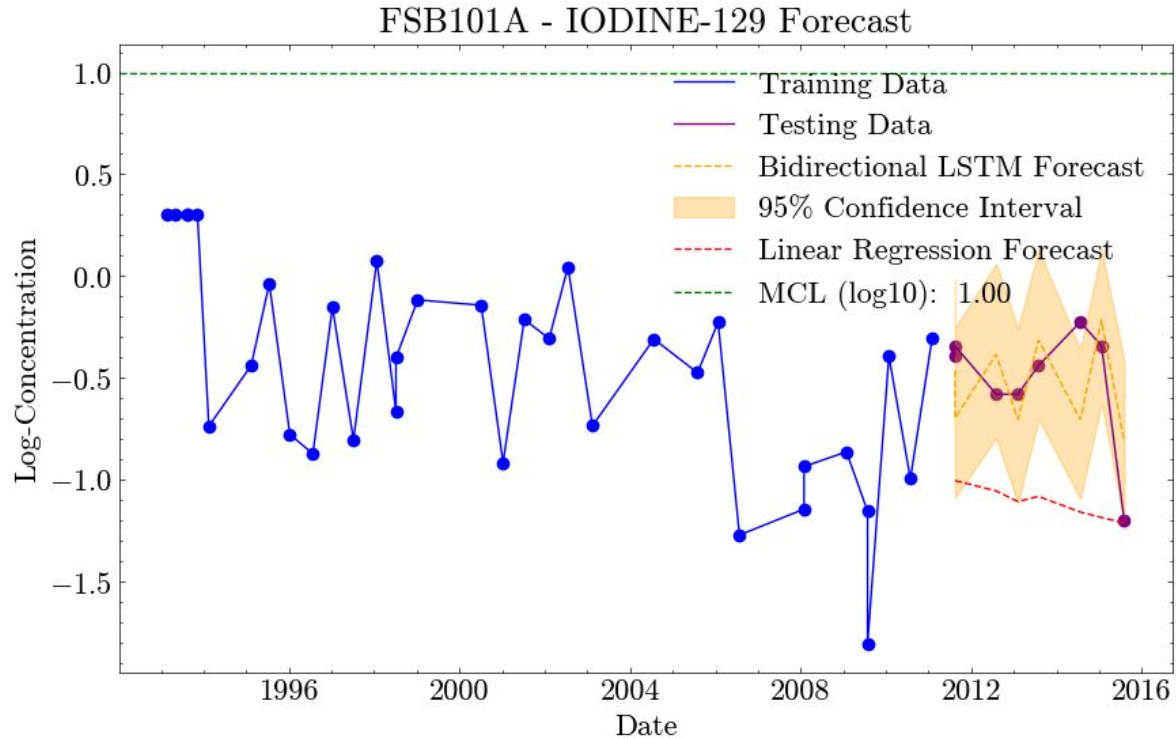
- MSE for well FPZ 3A with Bidirectional LSTM: 0.06579628645636806
- R^2 for well FPZ 3A with Bidirectional LSTM: 0.5414145368403327

Selected LSTM plot



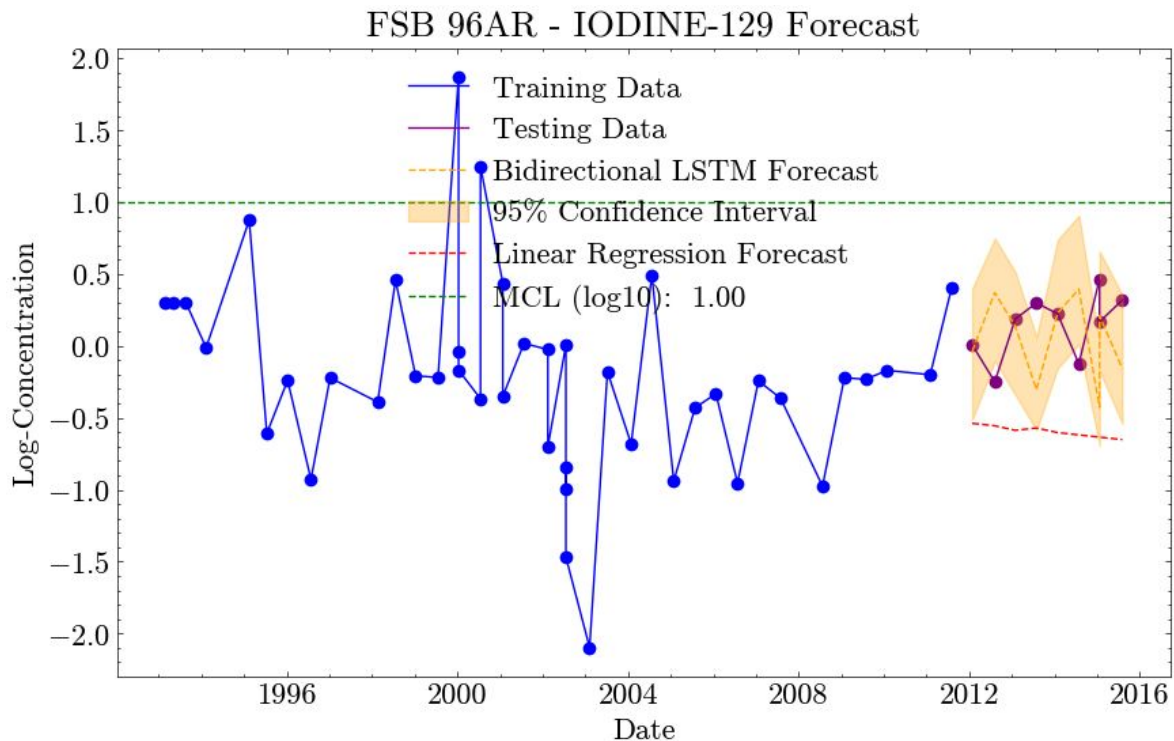
- MSE for well FSB113A with Bidirectional LSTM: 0.06287380792486613
- R^2 for well FSB113A with Bidirectional LSTM: 0.5404006017752239

Selected LSTM plot



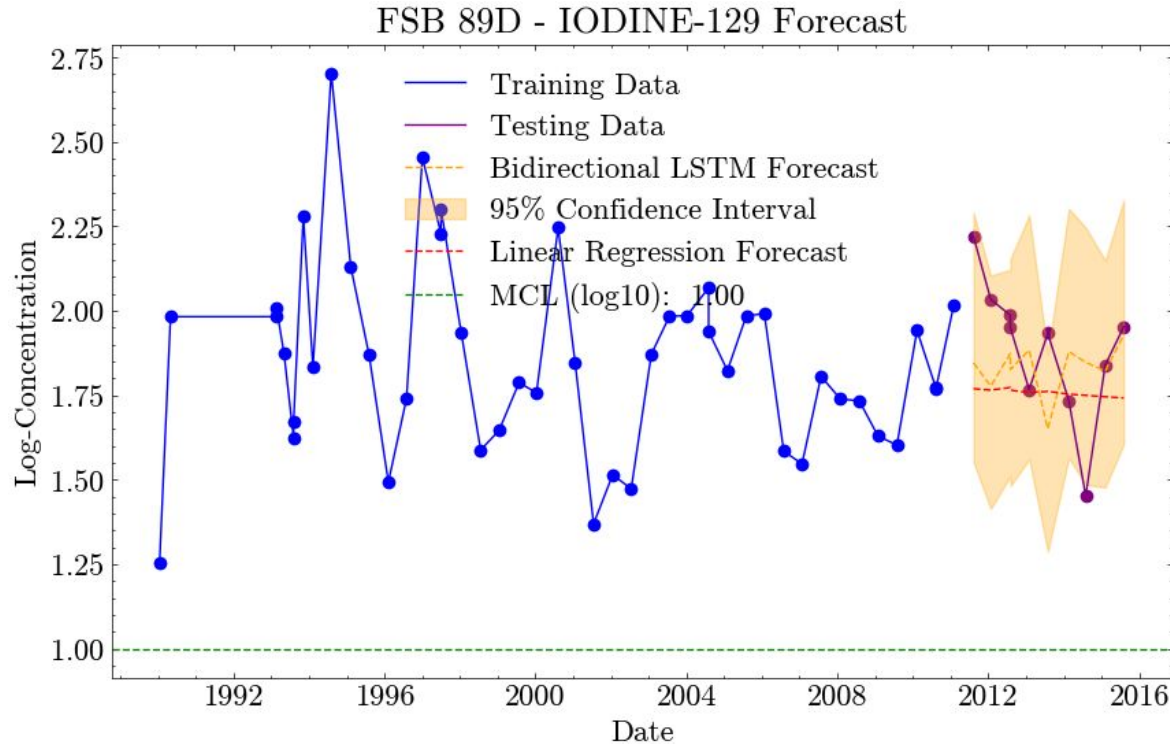
- MSE for well FSB101A with Bidirectional LSTM: 0.04986410491229674
- R^2 for well FSB101A with Bidirectional LSTM: 0.5801360579820687

Selected LSTM plot



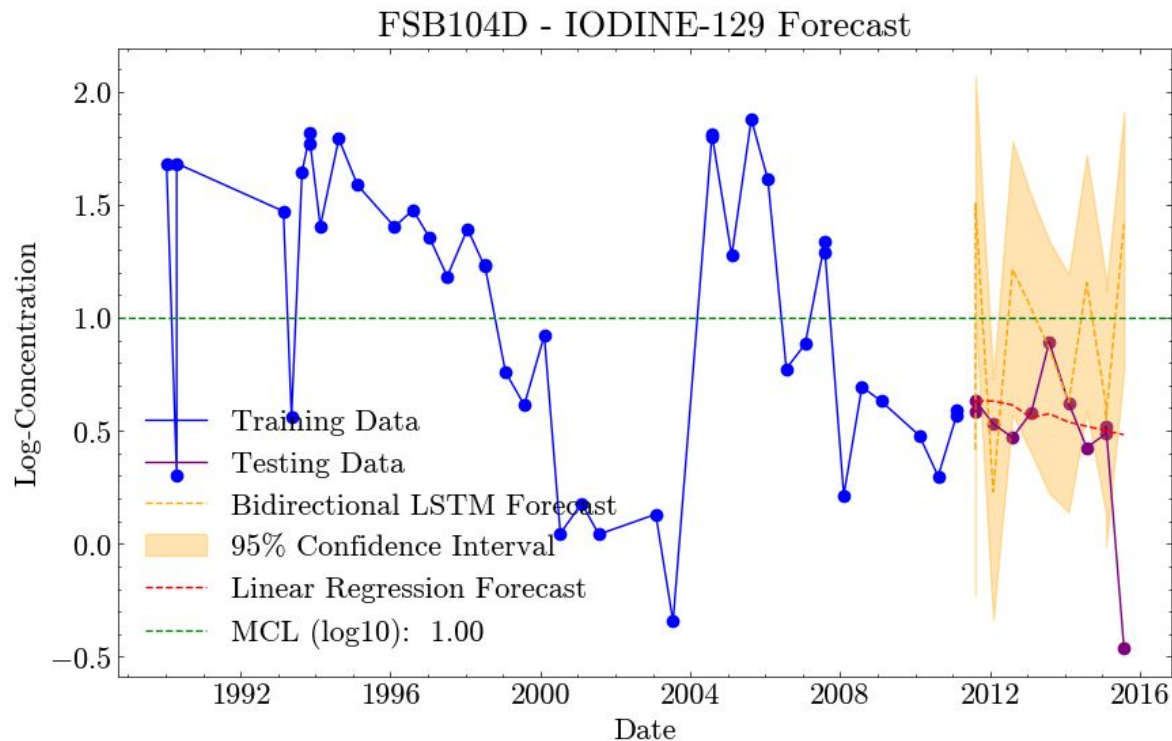
- MSE for well FSB 96AR with Bidirectional LSTM: 0.03924861581800149
- R^2 for well FSB 96AR with Bidirectional LSTM: 0.4375407578018776

Selected LSTM plot



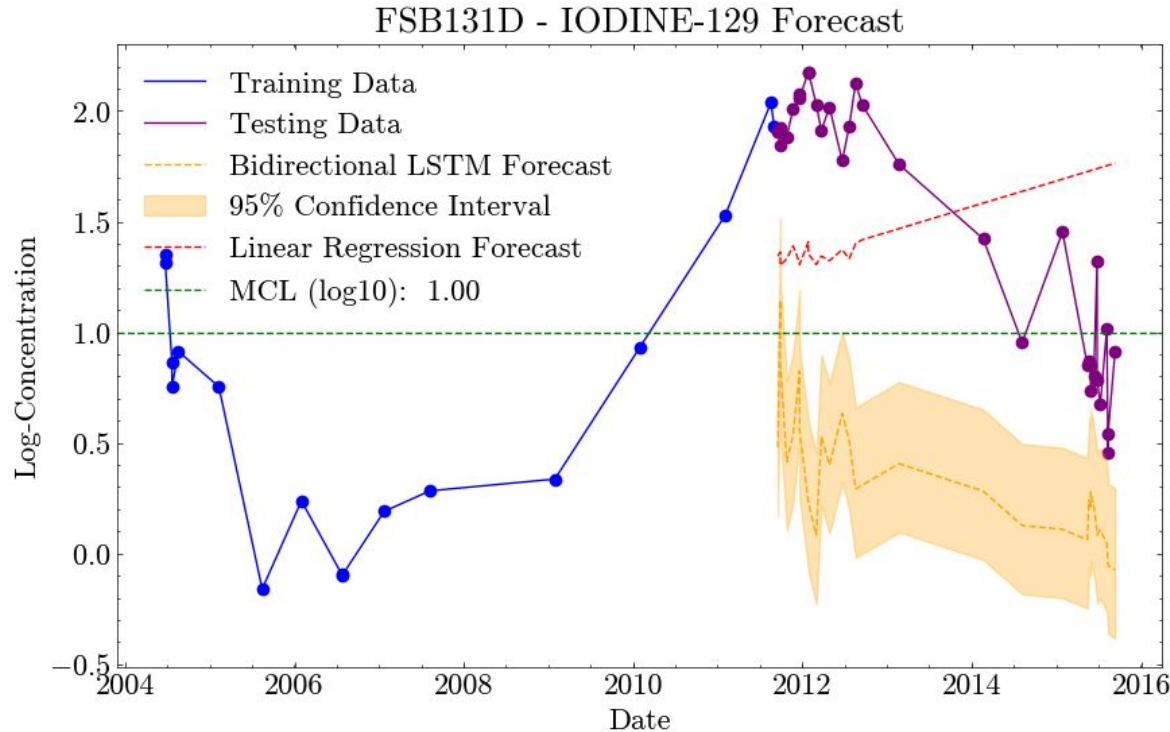
- MSE for well FSB 89D with Bidirectional LSTM: 0.03377030479444068
- R^2 for well FSB 89D with Bidirectional LSTM: 0.5878648108409736

Selected LSTM plot



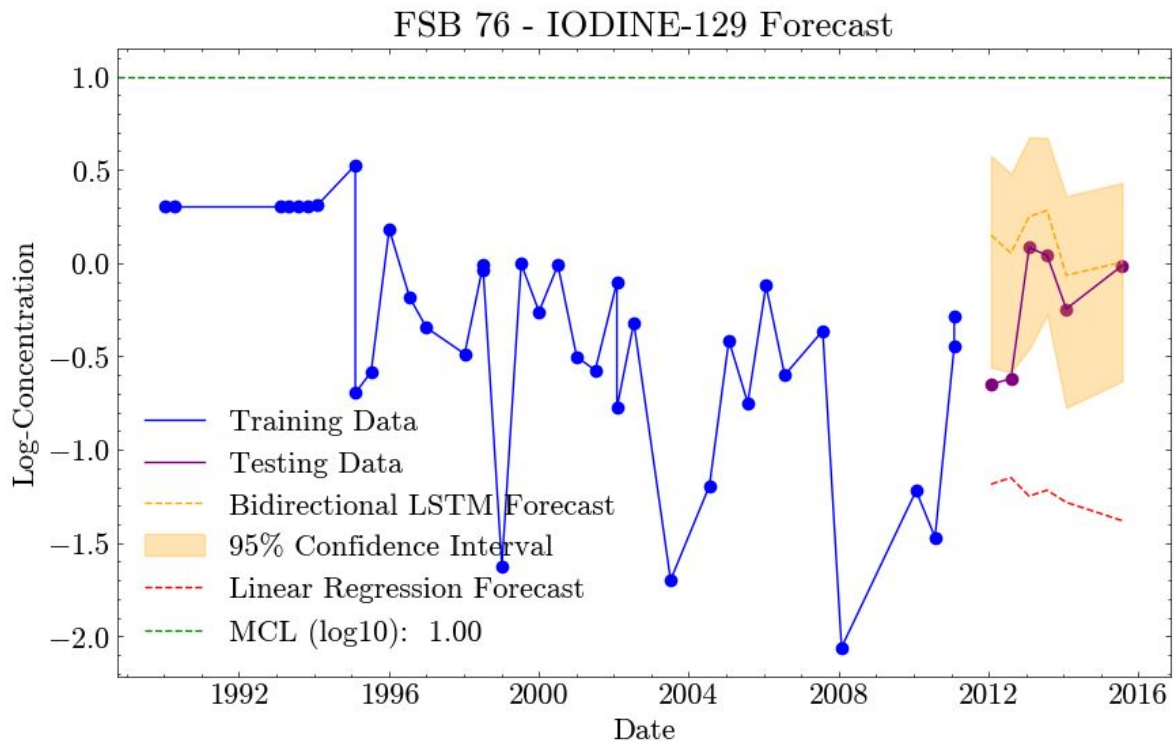
- MSE for well FSB104D with Bidirectional LSTM: 0.07133016316811112
- R^2 for well FSB104D with Bidirectional LSTM: 0.6346640379948825

Selected LSTM plot



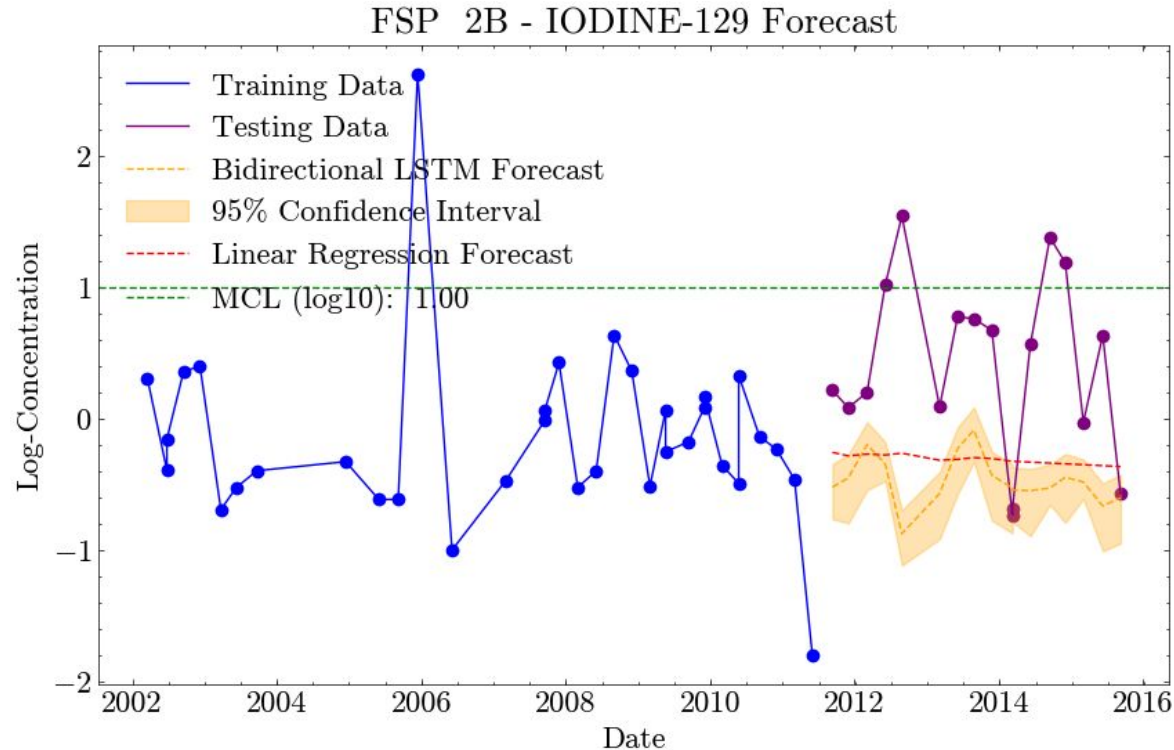
- MSE for well FSB131D with Bidirectional LSTM: 0.04952164531356339
- R^2 for well FSB131D with Bidirectional LSTM: 0.43096044591001303

Selected LSTM plot



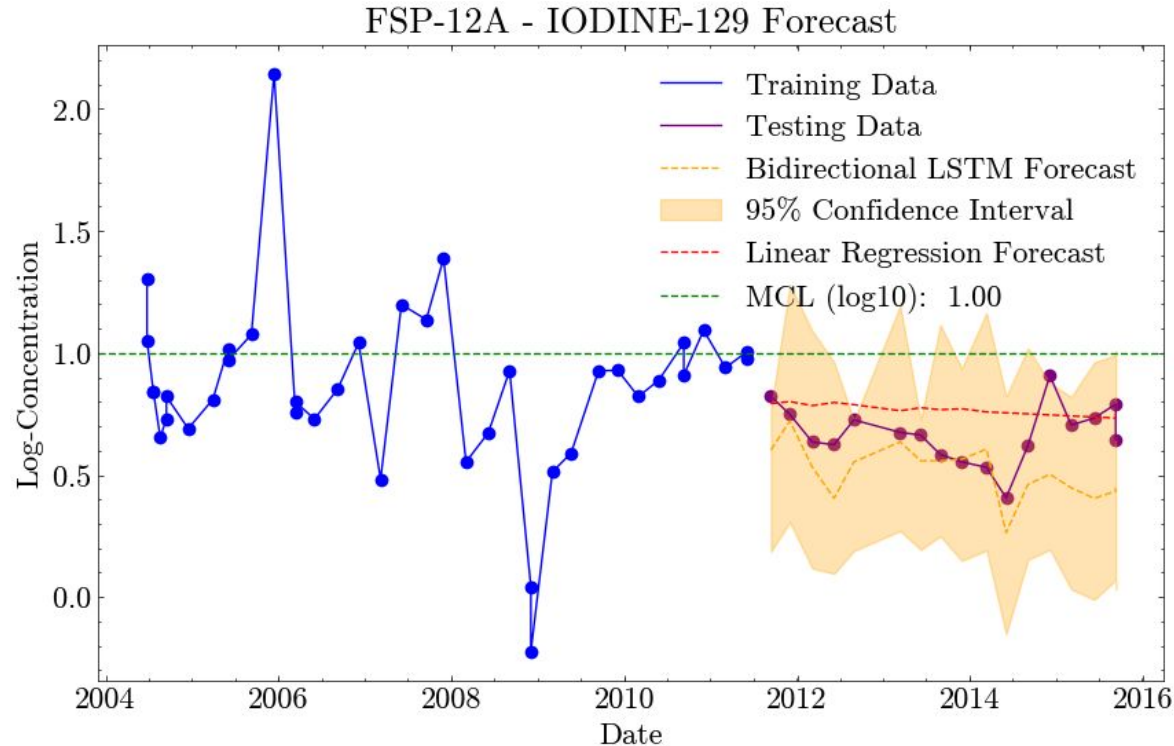
- MSE for well FSB 76 with Bidirectional LSTM: 0.06915356452781073
- R^2 for well FSB 76 with Bidirectional LSTM: 0.4539838970092892

Selected LSTM plot



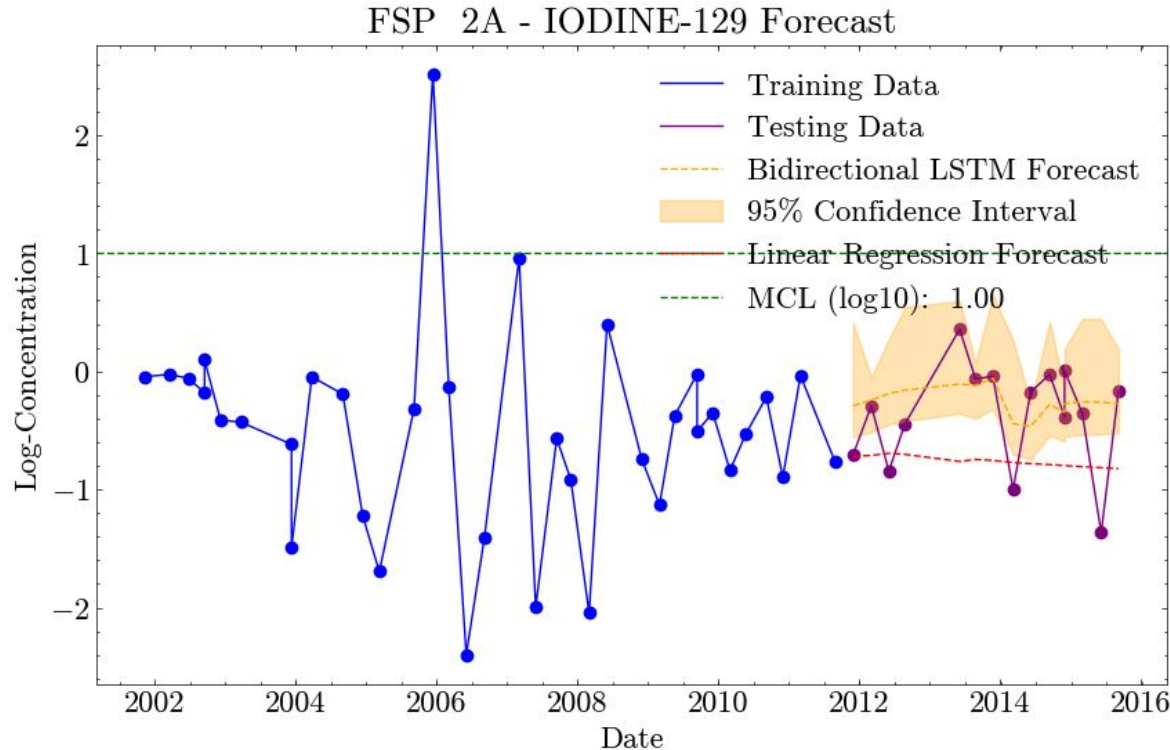
- MSE for well FSP 2B with Bidirectional LSTM: 0.012280640506423135
- R^2 for well FSP 2B with Bidirectional LSTM: 0.3983305844020253

Selected LSTM plot



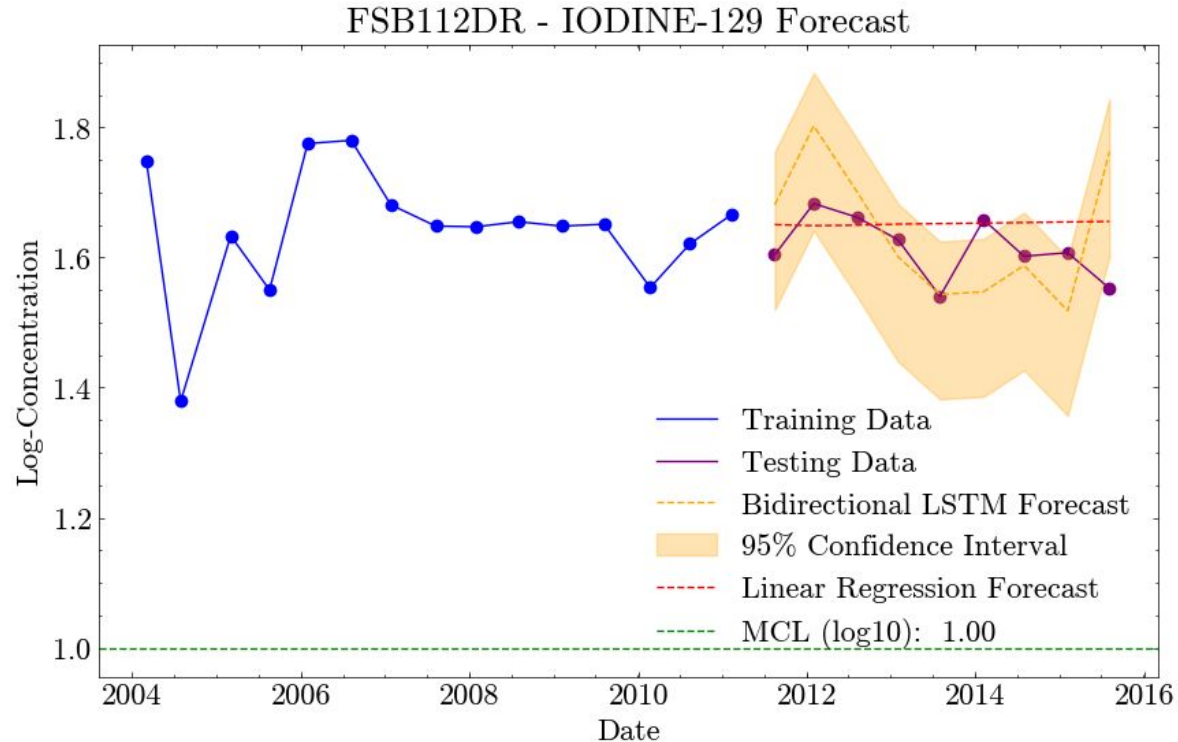
- MSE for well FSP-12A with Bidirectional LSTM: 0.0280049957143662
- R^2 for well FSP-12A with Bidirectional LSTM: 0.3197605299759424

Selected LSTM plot



- MSE for well FSP 2A with Bidirectional LSTM: 0.035160281913409655
- R^2 for well FSP 2A with Bidirectional LSTM: 0.4315778646004992

Selected LSTM plot



- MSE for well FSB112DR with Bidirectional LSTM: 0.01387524660753032
- R^2 for well FSB112DR with Bidirectional LSTM: 0.9341629774306223

General results

Sr-90

- **108 wells examined**
- Average MSE: 0.07338432502568959
- Average R^2 : 0.4401299845560487

I-129

- **114 wells examined**
- Average MSE: 0.06547161176590813
- Average R^2 : 0.4375060493561634