ALASKA OILFIELD PIPELINE APPLICATION

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INTRODUCTION

Project Goal: To create a web application that performs basic oilfield investigation with minimal user input.

Objectives: To provide a data pipeline based on Alaskan public data to petroleum engineers and small companies looking to perform an oilfield investigation for free.

METHODOLOGY

Preliminary Action

- Collect data from public Alaskan oilfield database

- Use a SQL database

- Clean data

Pipeline Outputs

- Production: rates, cumulatives, ratios

- Production: a setup for forecasting

- Injection: rates, cumulatives
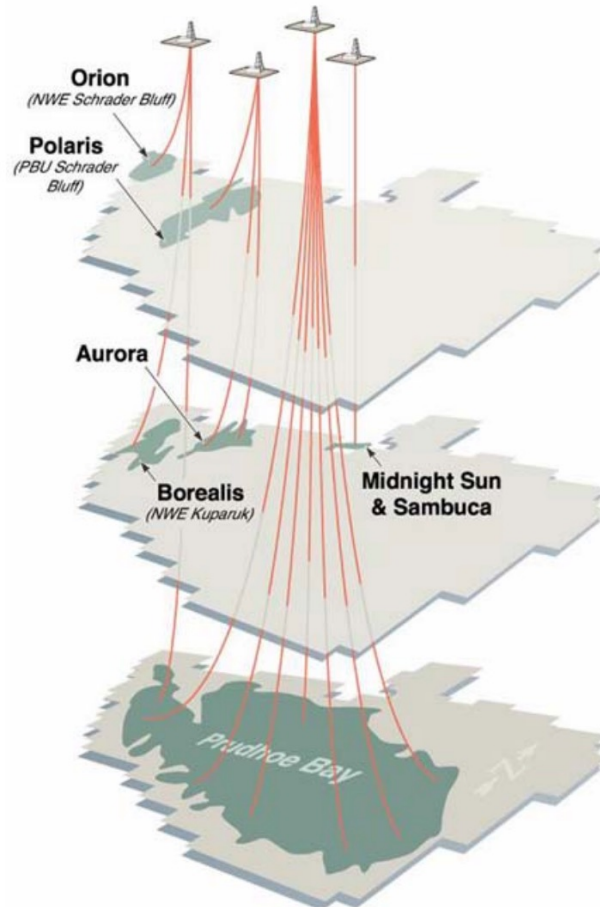
PIPELINE OPTIMIZATION

Importance:

- ~1.6 Million data points

- ~ 7,500 wells

- Earliest wells from ~1920

Key Techniques:

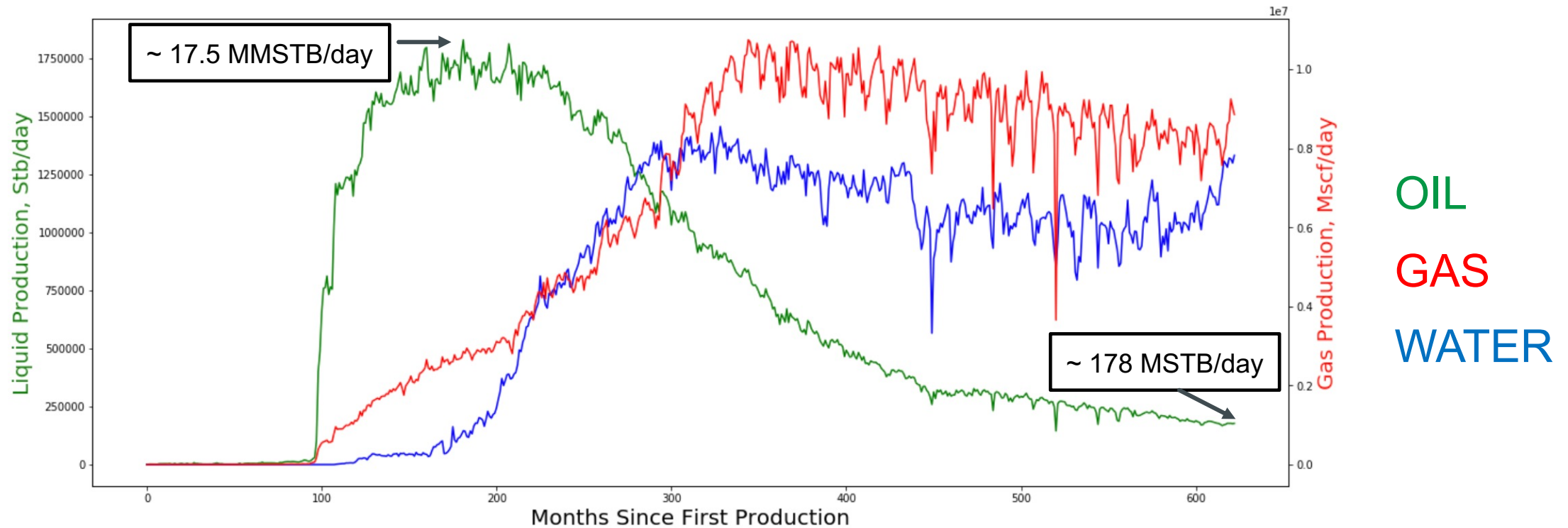- SQL querying to minimize data imports

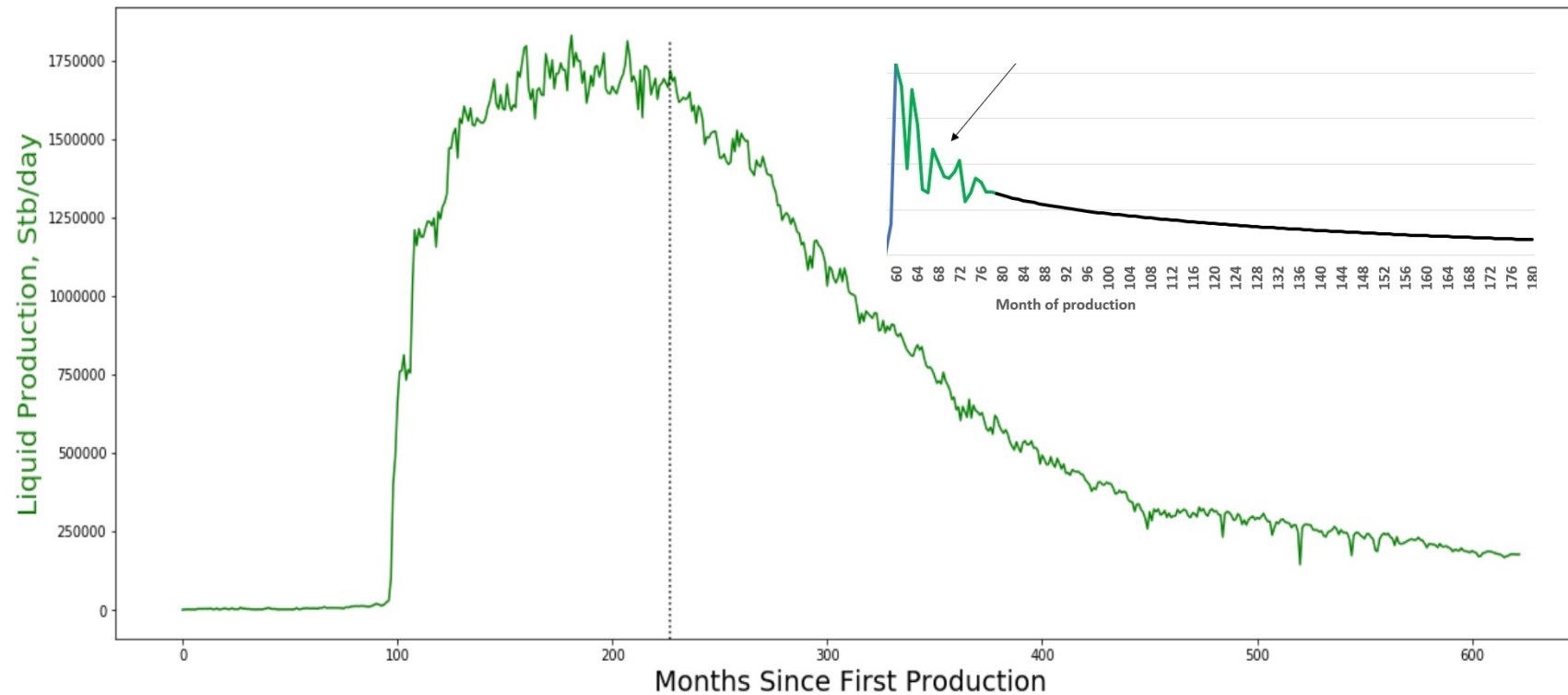- Lazy Evaluation

PRUDHOE BAY

Production start: ~1980

- OIL: 13.5 billion STB
- GAS: 110.8 trillion scf
- Water: 14.2 billion STB

PRODUCTION RATE

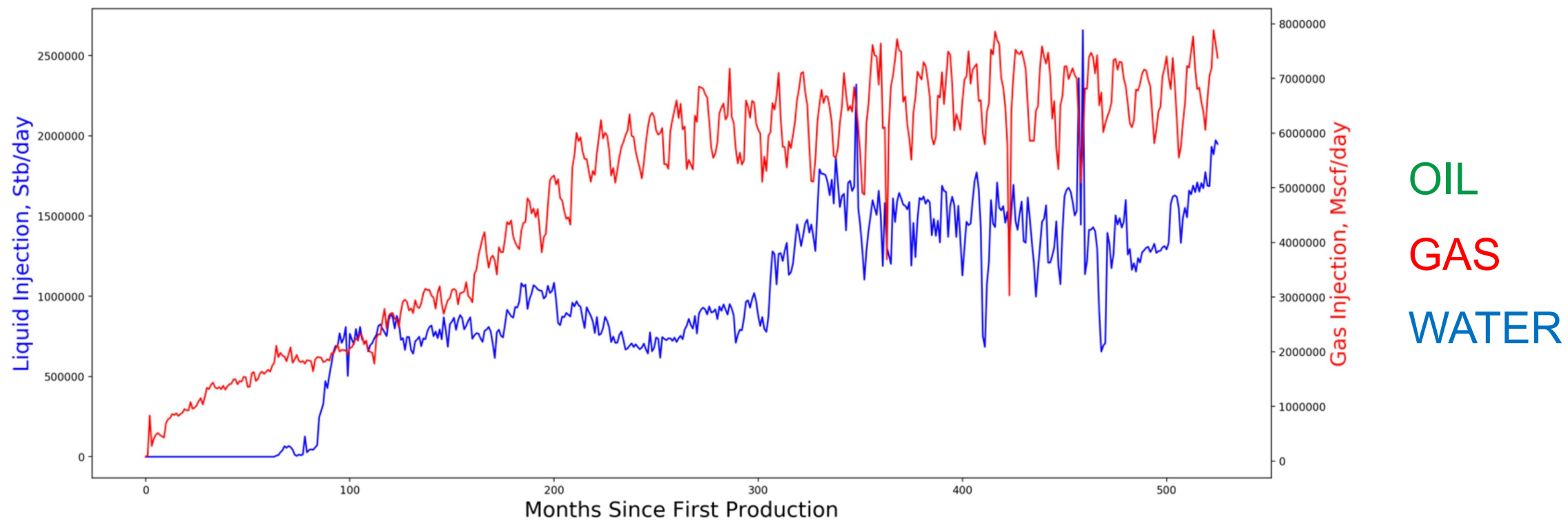**OIL**: 178 MSTB/day, **GAS**: 8.8 Bcf/day, **WATER**: 13.3 MMSTB/day

DECLINE FORECASTING

Decline Equation

$$d_i \left(\frac{q}{q_i} \right)^b$$

INJECTION RATE

GAS: 7.4 Bcf/day, **LIQUIDS**: 2 MMSTB/day

STREAMLIT APPLICATION

Click Here

FUTURE WORK

- Finish decline forecast

- Refine Streamlit user interaction

- Auto-update SQL database