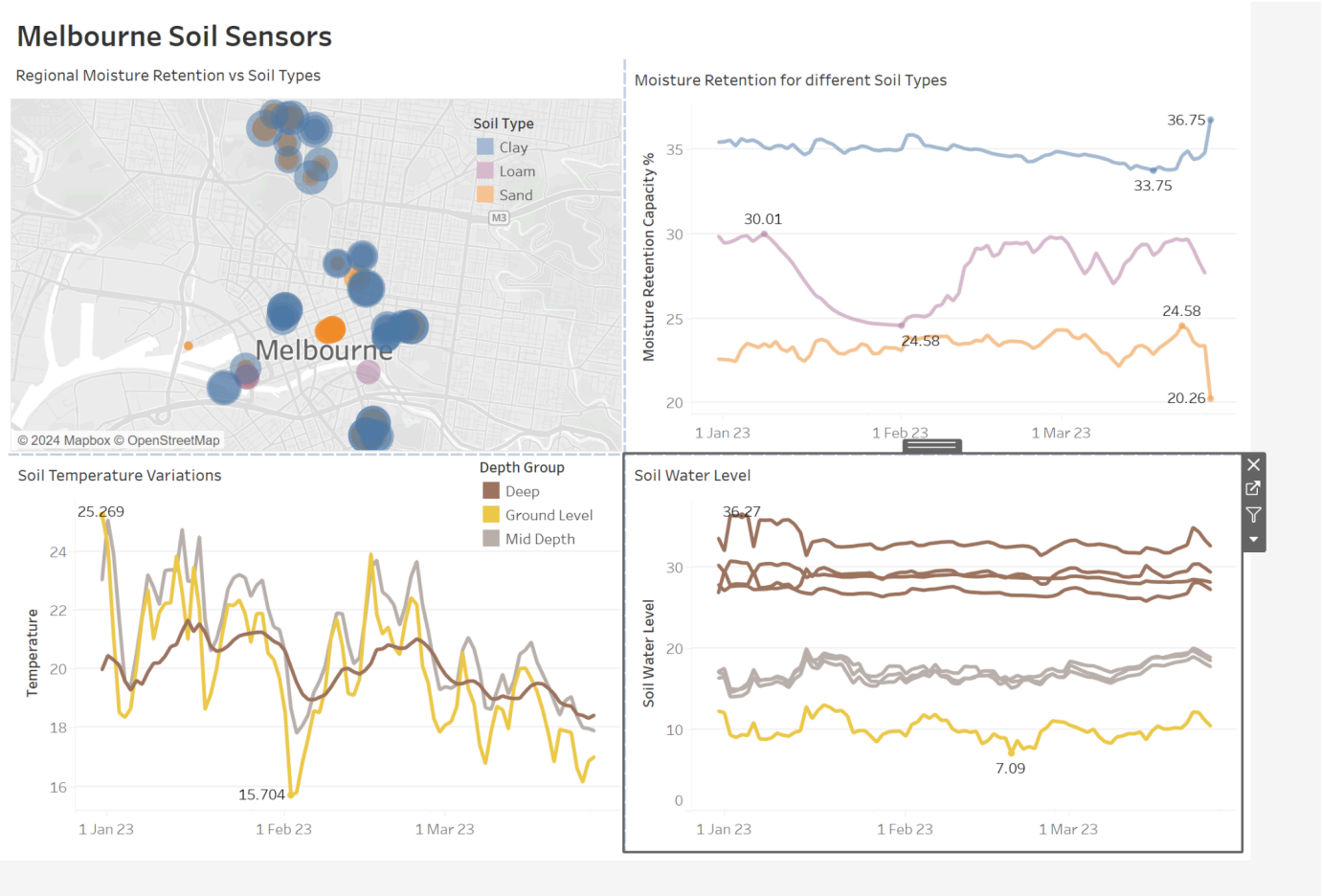

Industry 4.0 Integration of IoT in Agriculture

The graphs use consistent coloring across

- **Soil Type Classification**
  - Blue for Clay
  - Pink for Loam
  - Orange for Sand
- **Depth**
  - Brown for Deep
  - Light Brownish Yellow for Mid-level
  - Yellow for Ground Level

Regional Moisture Retention vs Soil Types Graph

Determining soil type is important to selecting crops that can be grown on that soil. Certain plants like cotton require clayey soil with high water retention capacity while carrots, radishes, and beets prefer sandy soil. The dataset provides

soil types in different regions in Melbourne. Plotting the soil distribution graph as a map provides additional details such as the water resources available.

This visual representation highlights the importance of IoT in mapping soil types. The detailed mapping can help identify suitable crops and maximize production. Including a larger ecosystem of such sensors, a single large farmland can be used to maximize yield/profit.

Moisture Retention for Different Soil Types

The line graph shows the moisture retention capacity percentage over time for different soil types. It is clear that moisture retention follows *clay > loam > sand* order
This graph highlights how IoT sensors provide real-time data on soil moisture, which is essential for AI to make informed irrigation decisions. By understanding moisture retention differences, smart systems can adjust water distribution, enhancing water use efficiency and crop health.

Soil Temperature Variations

The line graph tracks soil temperature variations over time at different depths
Monitoring soil temperature at various depths using IoT sensors aids in optimizing irrigation schedules and crop management. By integrating this data with AI, farmers can anticipate and mitigate stress conditions like frost or heat, improving overall crop resilience and yield.

Soil Water Level

The line graph shows the groundwater level over time at different depths
Real-time monitoring of soil water levels at various depths allows for precise irrigation control. This data supports the article’s point on how cloud computing and IoT facilitate real-time analysis and decision-making, leading to efficient water use and reduced manual intervention.