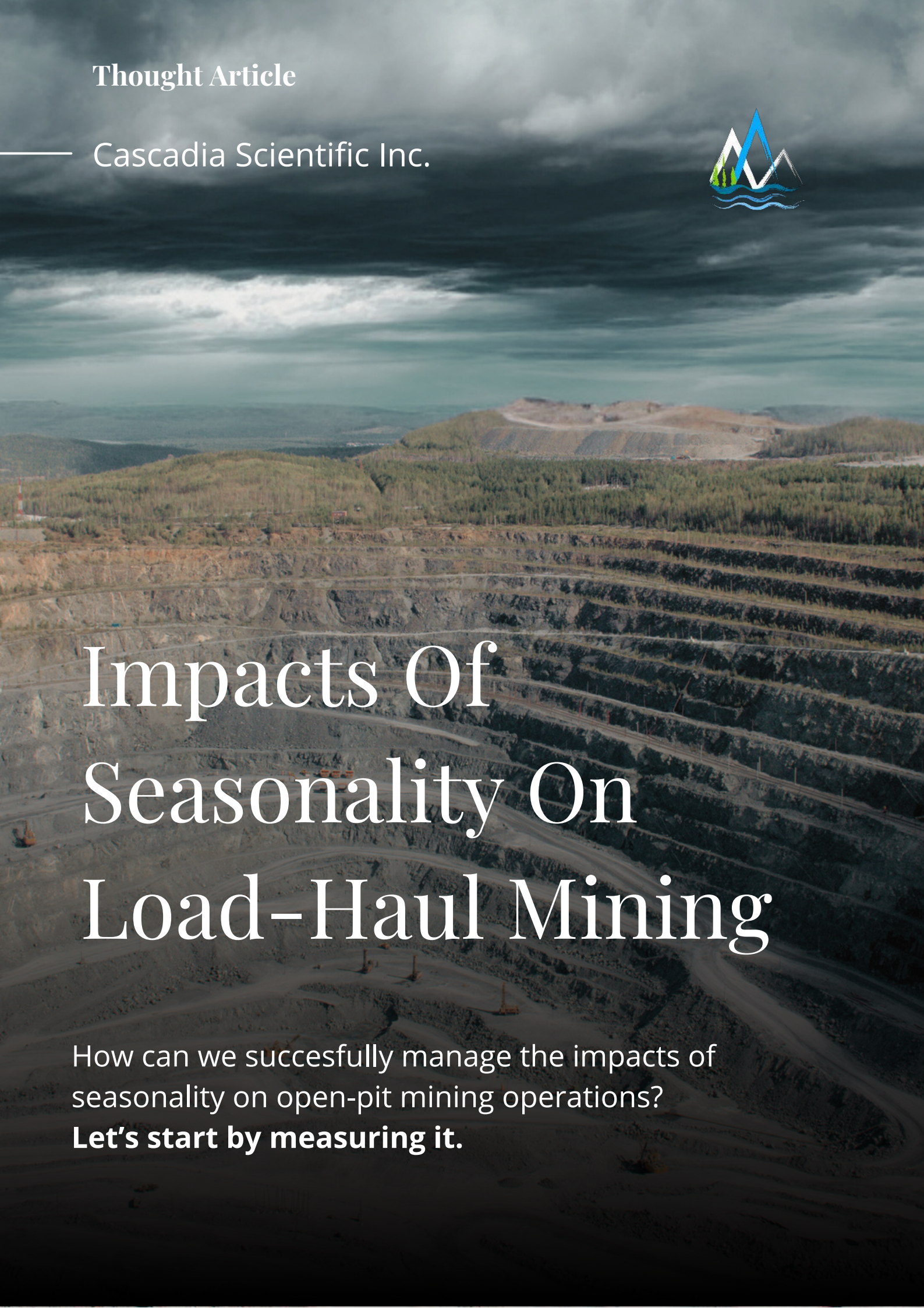


Thought Article

Cascadia Scientific Inc.

Impacts Of Seasonality On Load-Haul Mining

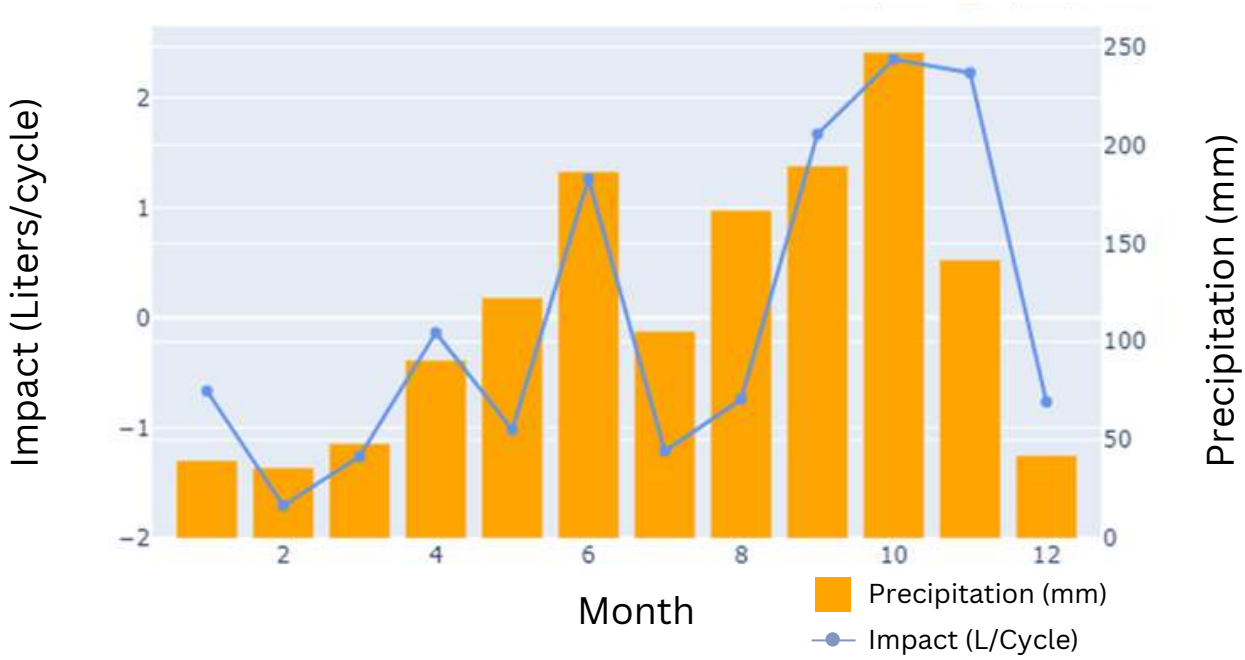
How can we succesfully manage the impacts of seasonality on open-pit mining operations?
Let's start by measuring it.

For open-pit operations weather is a significant factor in seasonal mining variations. Adverse weather conditions, such as heavy rainfall, snow, or freezing temperatures, can disrupt mining operations. Heavy rain can lead to flooding in open-pit mines, snow and freezing temperatures can affect equipment performance and safety, and extreme heat can impact worker safety and equipment reliability. So, how can we adequately manage the impacts of seasonality on mining operations? Let's start by measuring it.

Cascadia Scientific builds and maintains site-specific machine-learning models that describe mining activity. Models are built on haul cycle properties such as cycle distance, time, duration, payload, vertical travel, mining zone, month of the year, truck ID, and Operator ID. This allows the model to understand how influential each variable is on cycle efficiency and productivity.

By adding the month of the year as a variable into the model, we can understand how the operating conditions of a specific period influenced productivity and efficiency. Furthermore, if we add local weather data, we can quantify the impacts of weather conditions such as freezing, thawing, and rainfall.

Monthly Impact of Rainfall on Haulage Efficiency at an Open PIt Mine



Key Takeaways:

- **Monthly precipitation at this site varies from 35mm to 247mm, with an average of 118mm.**
- **For every 100mm increase in precipitation cycle fuel consumption increases by 1.6L on average.**

Cascadia Scientific Inc.

Successfully addressing seasonality in mining requires careful planning and the ability to adapt and remain flexible, ensuring that operations remain efficient and cost-effective despite seasonal changes. Partnering with Cascadia Scientific would allow you to:

1. Develop contingency plans to address adverse weather conditions.
2. Forecast fuel and production levels considering seasonal variations.
3. Prepare equipment to effectively cope with seasonal changes.

Have any questions?
Reach out to Stephen
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