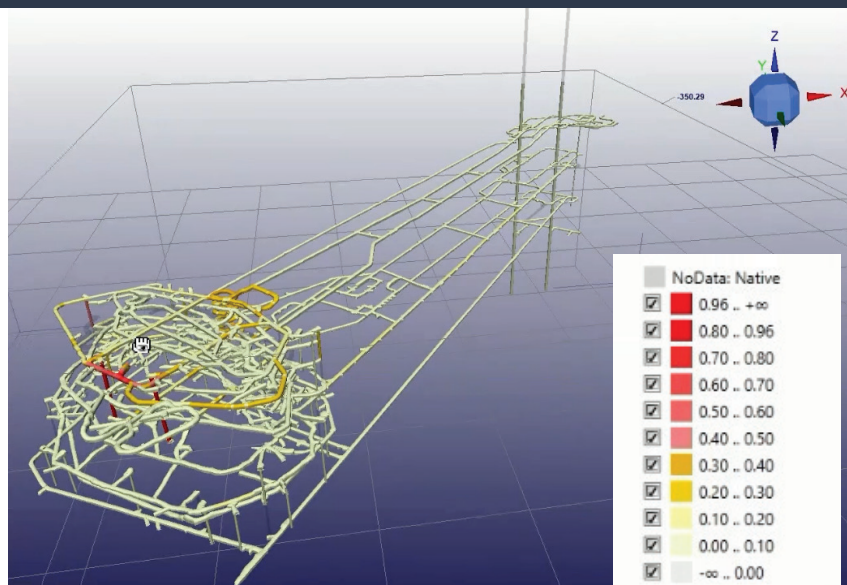
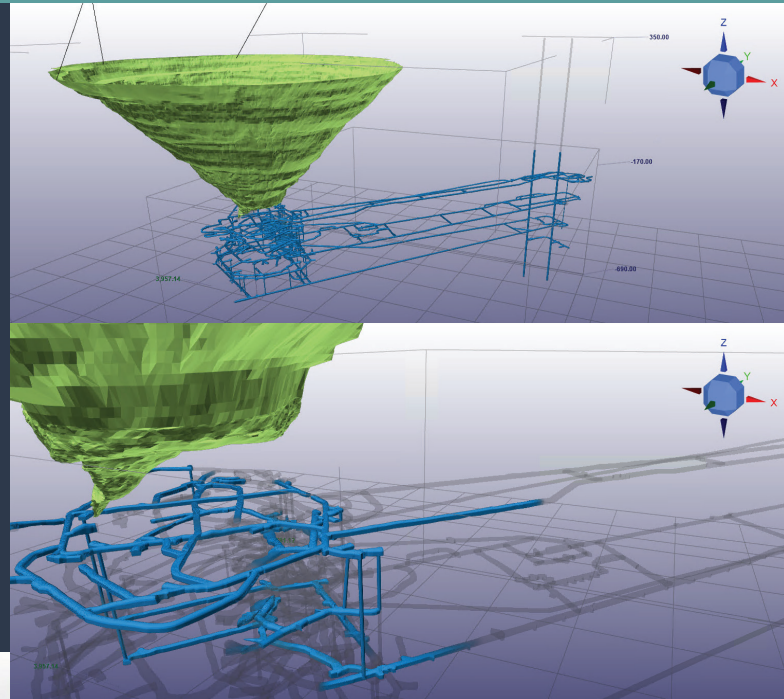


SIMULATION OF MINE FLOODING, GROUND FREEZING AND ROCK DISSOLUTION (IN CASE OF SOLUBLE ROCK)

OVERVIEW

The Mine Advisor™ Mine Flood Analyzer is a specialized application developed within the Mine Advisor™ platform for the simulation and analysis of underground mine flooding. Operating within a Digital Twin environment, the solution enables mining companies to evaluate flooding scenarios, predict flood propagation, assess operational risks, and support effective mitigation planning.

Using mine topology, hydrogeological conditions, and operational data, the system provides a comprehensive framework for flood risk assessment and emergency preparedness.



KEY CAPABILITIES

FLOOD SCENARIO MODELING

Simulate both controlled and uncontrolled flooding events resulting from water breakthroughs, aquifer interactions, infrastructure failures, or other operational incidents.

FLOOD TIMING ASSESSMENT

Estimate the time required for water to reach critical underground locations, working areas, escape routes, and infrastructure.

FLOOD PROPAGATION ANALYSIS

Analyze water movement through shafts, drifts, stopes, declines, raises, and interconnected underground workings.

PRESSURE AND FLOW SIMULATION

Model flooding under pressure and non-pressure conditions to evaluate different flooding behaviors and risk levels.

DISSOLUTION AND VOID ANALYSIS

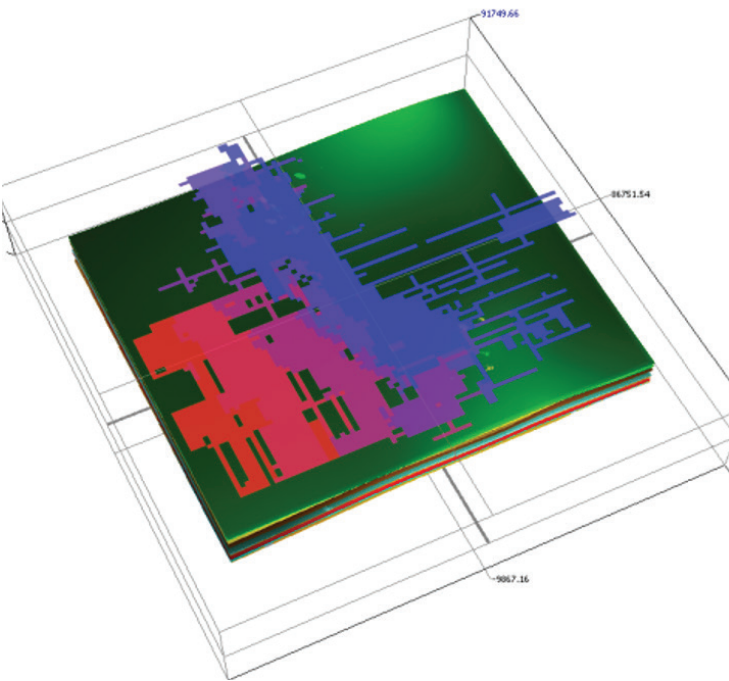
Assess the effects of water interactions with soluble rock formations and evaluate underground cavities and air pockets that may influence flood dynamics.

MULTIPLE WATER INTRUSION SOURCES

Evaluate flooding scenarios involving multiple inflow points, varying inflow rates, and changing hydrogeological conditions.

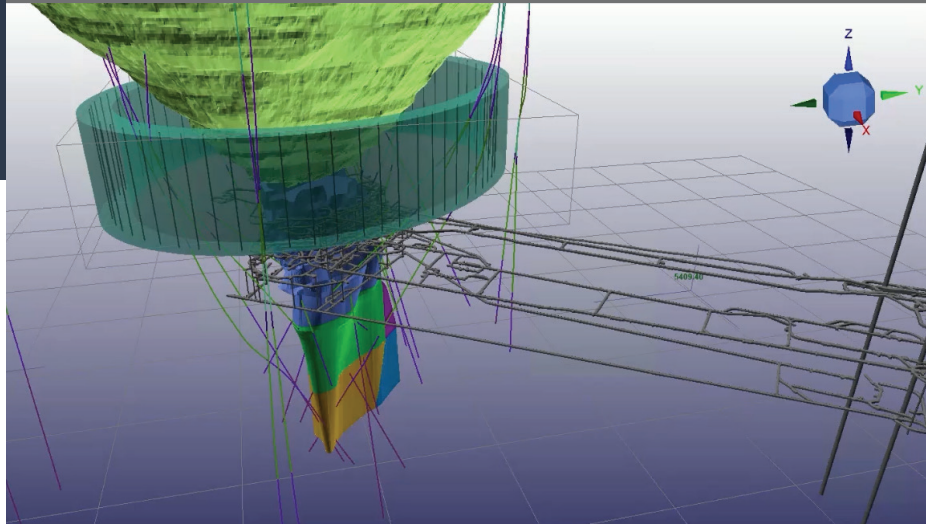
CORE FUNCTIONALITIES

- Controlled and uncontrolled flooding simulation
- Flood timing and propagation analysis
- Water intrusion modeling
- Aquifer interaction assessment
- Pressure and non-pressure flow simulation
- Air pocket and cavity analysis
- Dissolution process modeling
- Multi-source flooding scenarios
- Digital Twin visualization and reporting



NATIVE MINE ADVISOR™ EXTENSION

The Mine Flood Analyzer Extension is a specialized Mine Advisor™ application developed for underground mining operations. Built on the Mine Advisor™ platform, it utilizes shared geological, survey, infrastructure, and operational information within a unified Digital Twin environment, providing a single source of truth for flood risk assessment and mitigation planning.



FROM RISK ASSESSMENT TO RISK MITIGATION

The Mine Flood Analyzer Extension helps mining organizations better understand flooding risks, evaluate prevention and response strategies, and improve the safety and resilience of underground operations through simulation-based analysis and visualization.



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