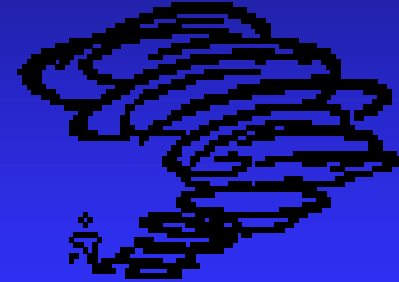
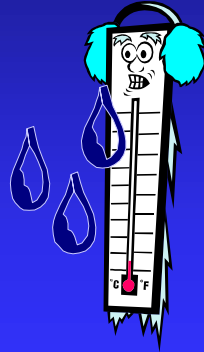


Maintenance Decision Support System



Premise: *Road maintenance personnel at all levels can benefit from more integrated, rapid, comprehensive and flexible tools that address road-weather conditions. Such a tool will speed decision making, while also making it more uniform and informed.*

MDSS Concept: *Generate a graphical tool that rapidly depicts in a simple format the state-of-the-art in road-weather condition prediction, especially as it relates to common maintenance activities. Coupled with the displayed road condition is a state-of-practice recommendation for maintenance, including expected outcomes for acceptance or user-selected alternative courses of action.*



MDSS

MDSS (GUI/platform)

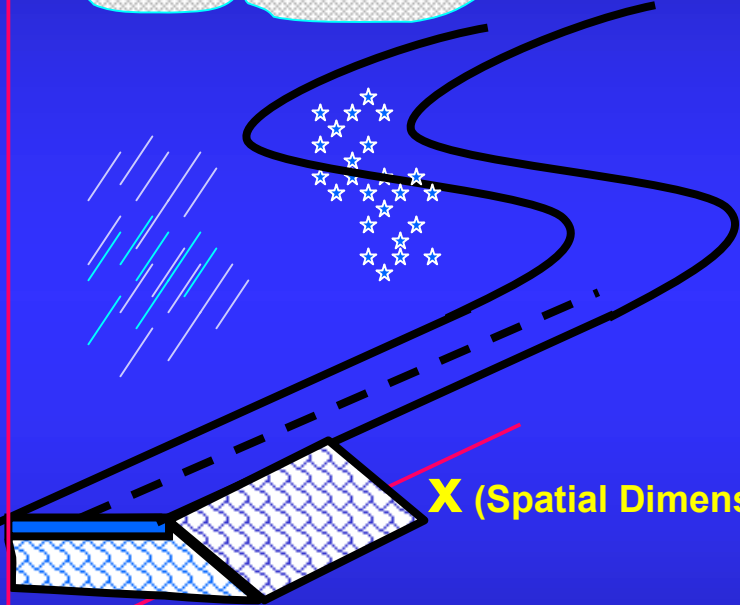
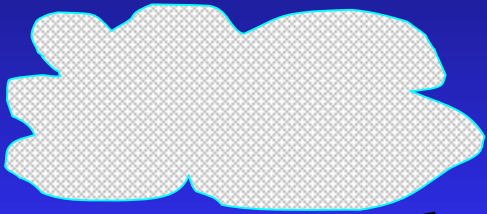
Weather
Ensemble Forecasting, Precipitation Type, Probabilities

Near Surface Environment
Snow Accumulation/Drifting, Visibility

Road Surface
Temperature, Chemical Concentration, Mobility Index

Road Subgrade
Temperature Profile, Frost, Strength

Z (Vertical Dimension)



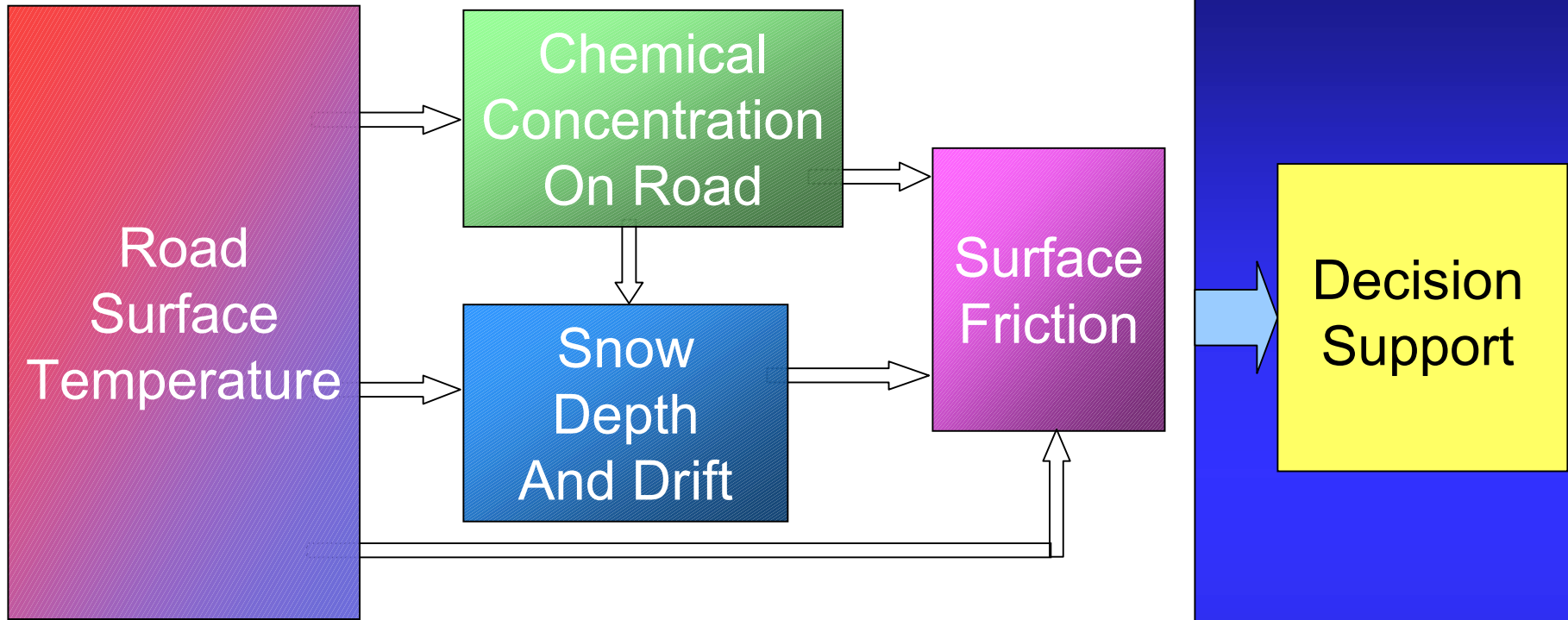
X (Spatial Dimension)

t (Temporal Dimension)



MDSS

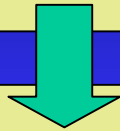
Road Condition Modules



RWFS - Weather Information



RWFS
**Weather &
Environment**



**ROAD
MODULES**
**Calculate Road
Condition**



**DECISION
SUPPORT**
**Determine
Maintenance
(recommended)**



GUI
**Display
Forecasts**



**DOT
INTERFACE**
**Collect
Maintenance
(actual)**



**DECISION
SUPPORT**
Determine
Maintenance
(recommended)

Integrated Maintenance Recommendations

Call @	Route	Segment	Driver	Truck ID	Dress & Load	Treat. Start Time Treat. Rate/TLM
9:00 pm	Monday				midnight Mon/Tue	3 :15 am Tuesday
	A	2,3,4	Sam Salter	Mack X	NaCl, pw-8g. CaCl	400 lbs
Notes: Drive reverse route						
9:00 pm	Monday				1:00 am Tuesday	3:15 am Tuesday
	C	8,9,10	Polly Plowgirl	Mack Z	Sand (ballast)	Plow only
9:00 pm	Monday				1:30 am Tuesday	3:30 am Tuesday
	B	6,7	Gary Grippy	Mack Y Ford	Sand; Seg. 7	1200 lbs
Notes: NaCl; Seg. 6 400 lbs						



Game Plan

-  Crew
-  Trucks
-  Material Stocks
- Truck Routes
- Standard
- Custom
- Road Status
- Logistics Matrix

GUI
Display
Forecasts



GUI Display Forecasts

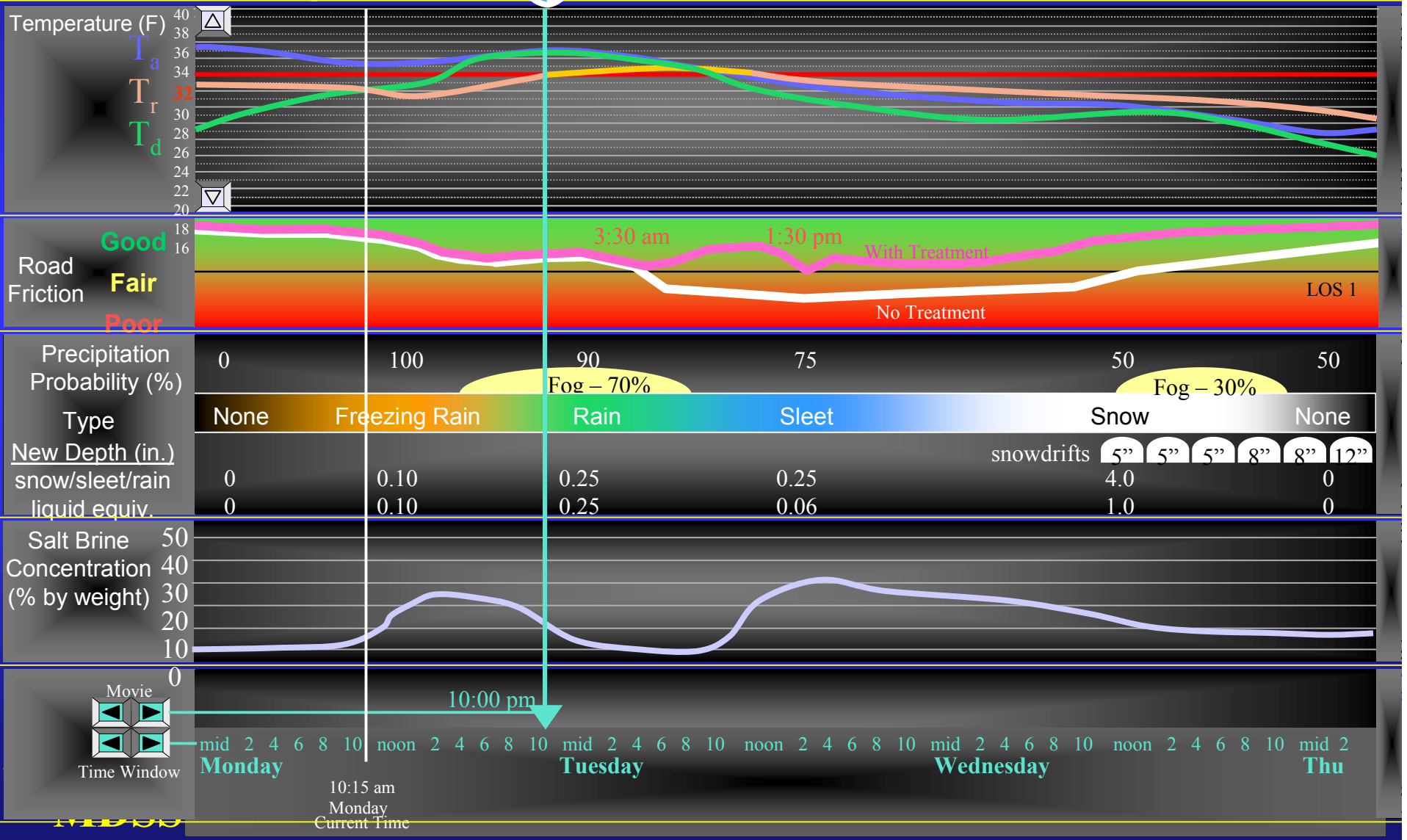
ROAD MODULES Calculate Road Condition

Prediction Background 1



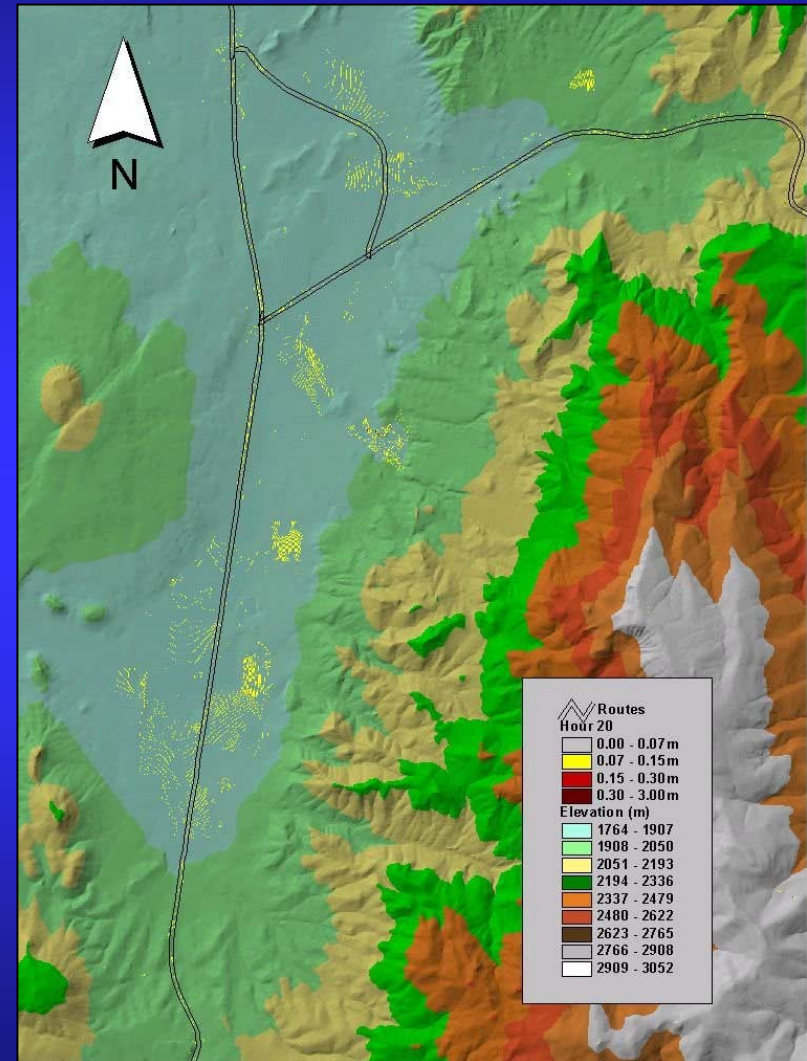
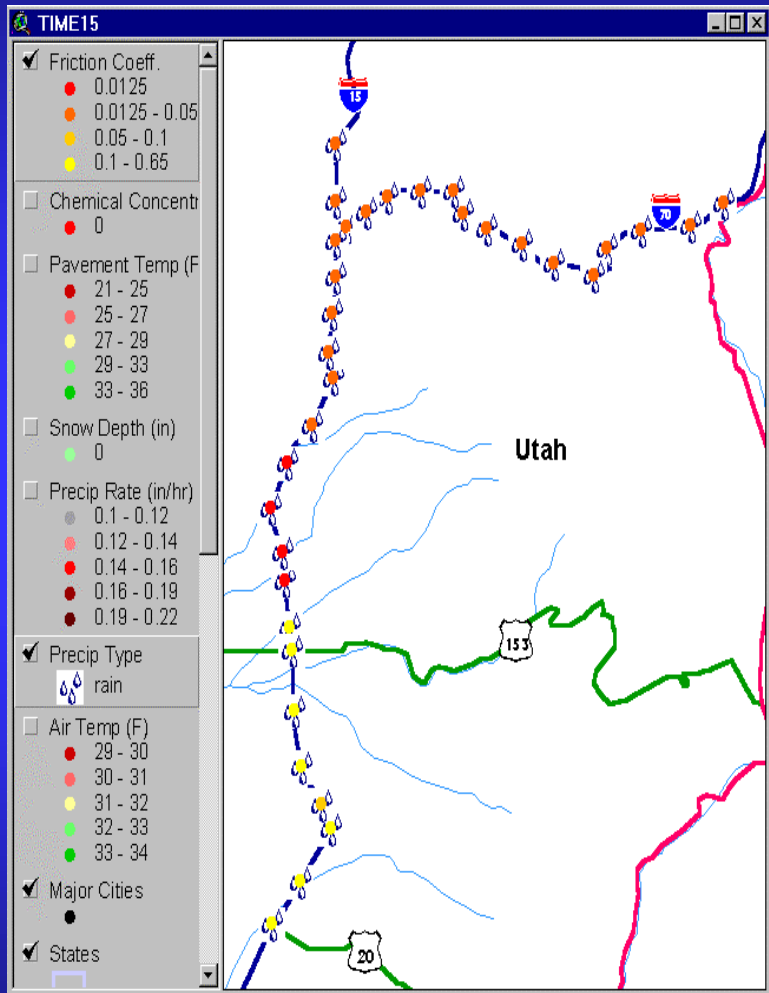
Mile Marker 245

Roads Overlays Treatments TimeLine Resources



GUI Display Forecasts

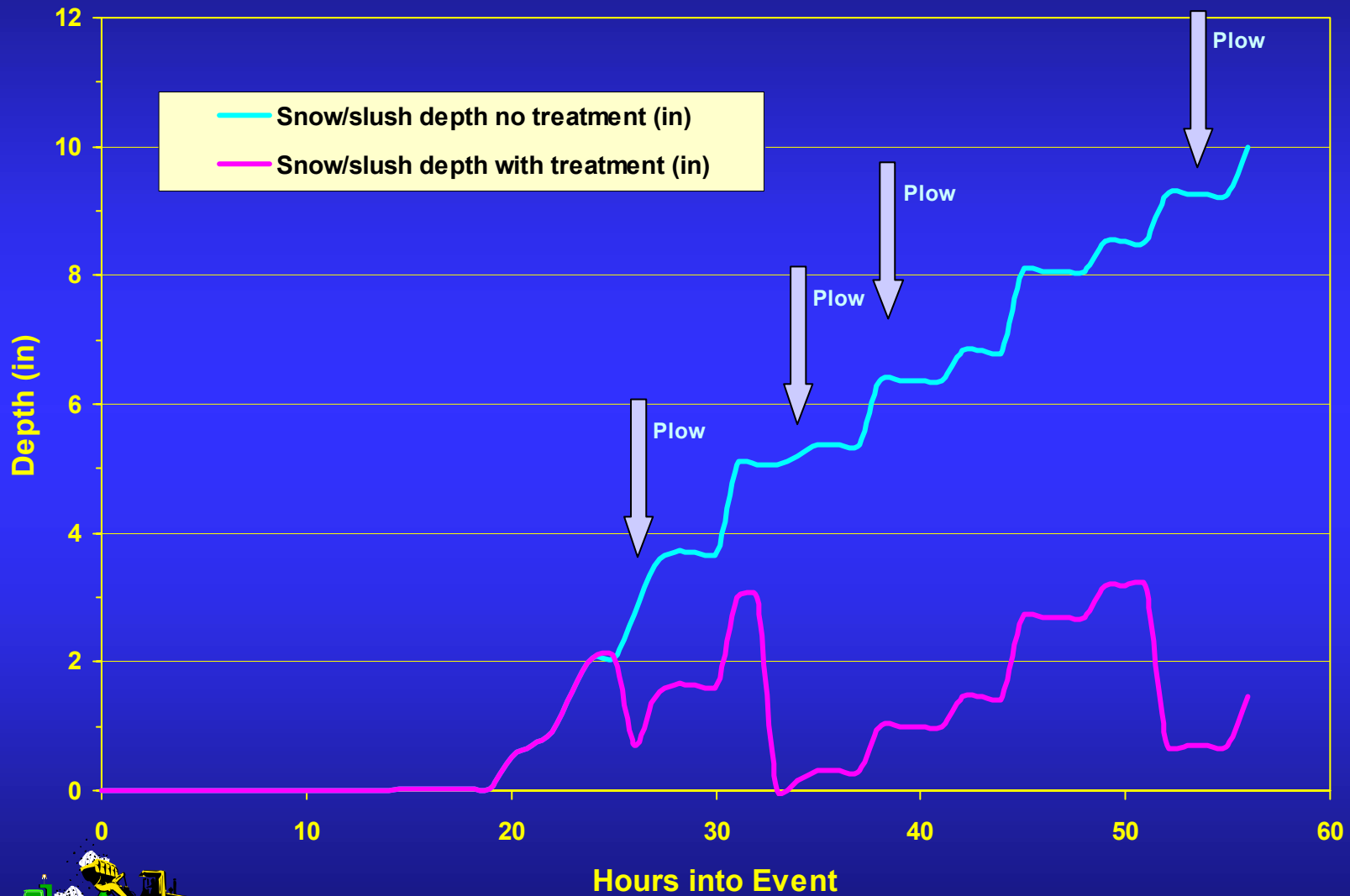
ROAD MODULES Calculate Road Condition



MDSS

Contaminate Build-Up Over Course of Storm Station #10

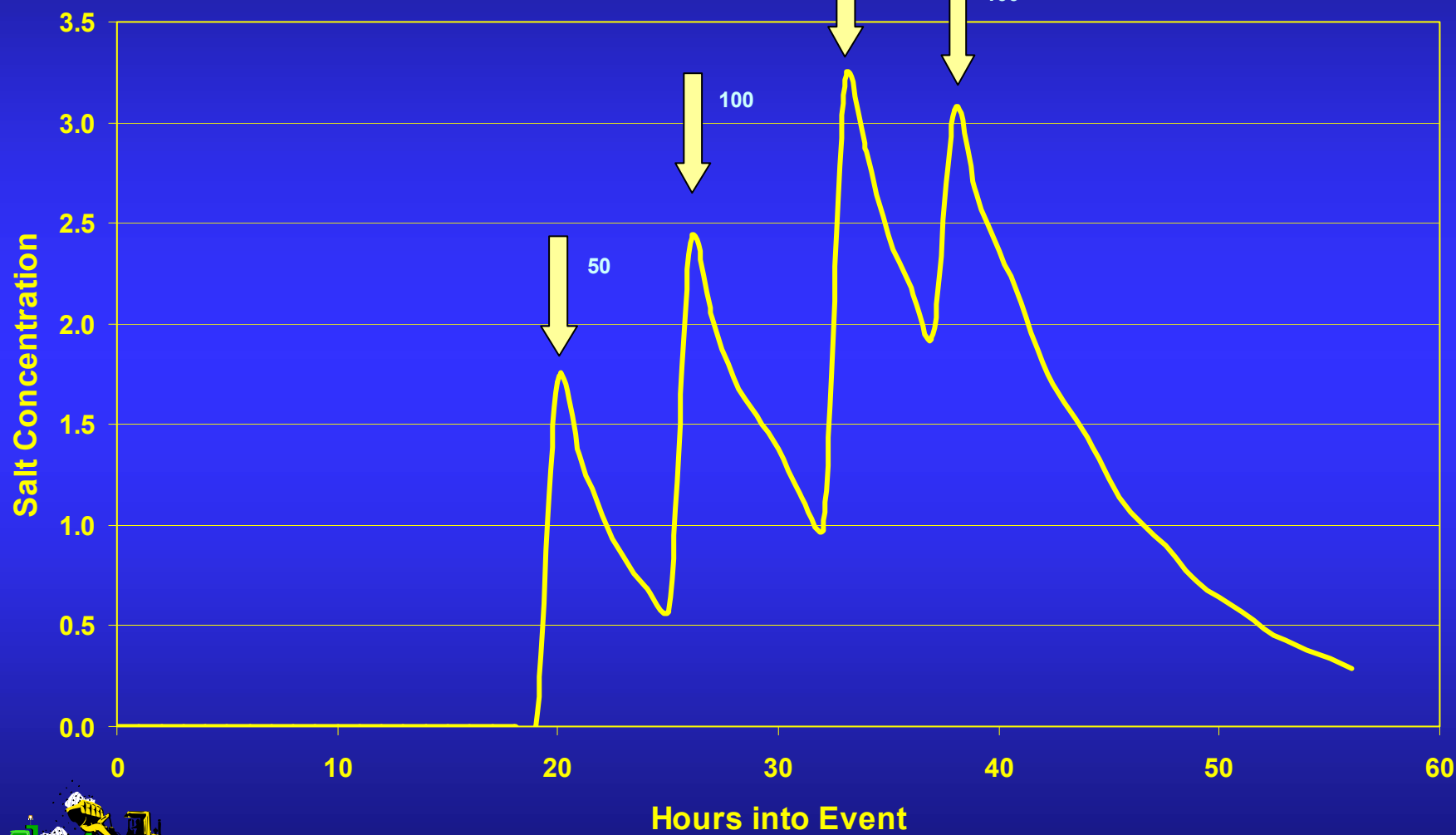
**ROAD
MODULES
Calculate Road
Condition**



MDSS

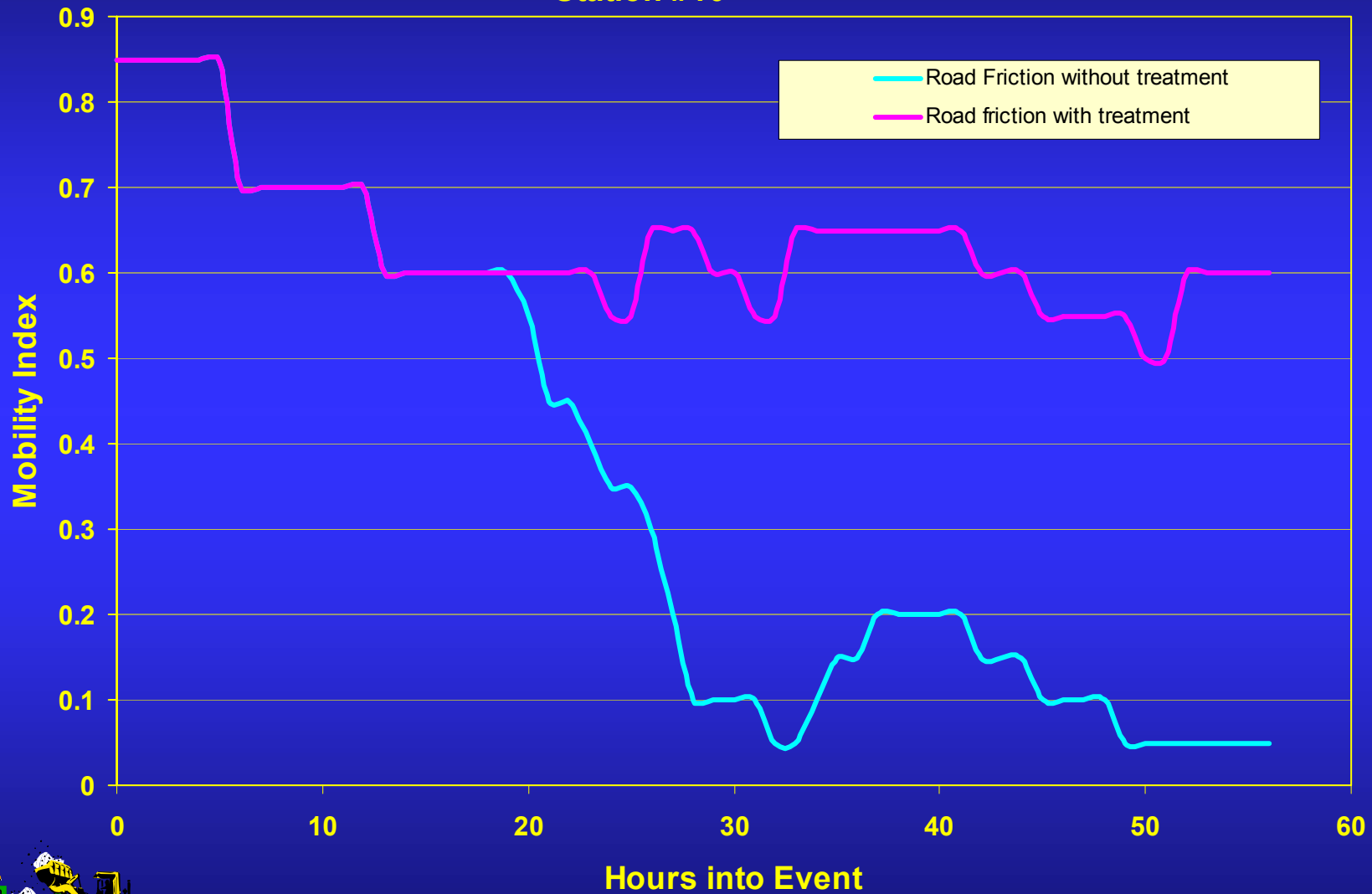
**ROAD
MODULES**
Calculate Road
Condition

**Salt Concentration Over Course of Storm
Station #10**



**ROAD
MODULES
Calculate Road
Condition**

**Mobility Index over Course of Storm
Station #10**



MDSS

Purpose of MDSS is

***Not to replace experienced road maintenance personnel,
But to provide all levels of road maintenance decision makers with a tool that will quickly and flexibly ...***

- Integrate Useful Information***
- Integrate Point Analyses***
- Integrate Maintenance Recommendations***



MDSS