Implementing the M-E Pavement Design Guide in Iowa

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Task 2 - Climatic

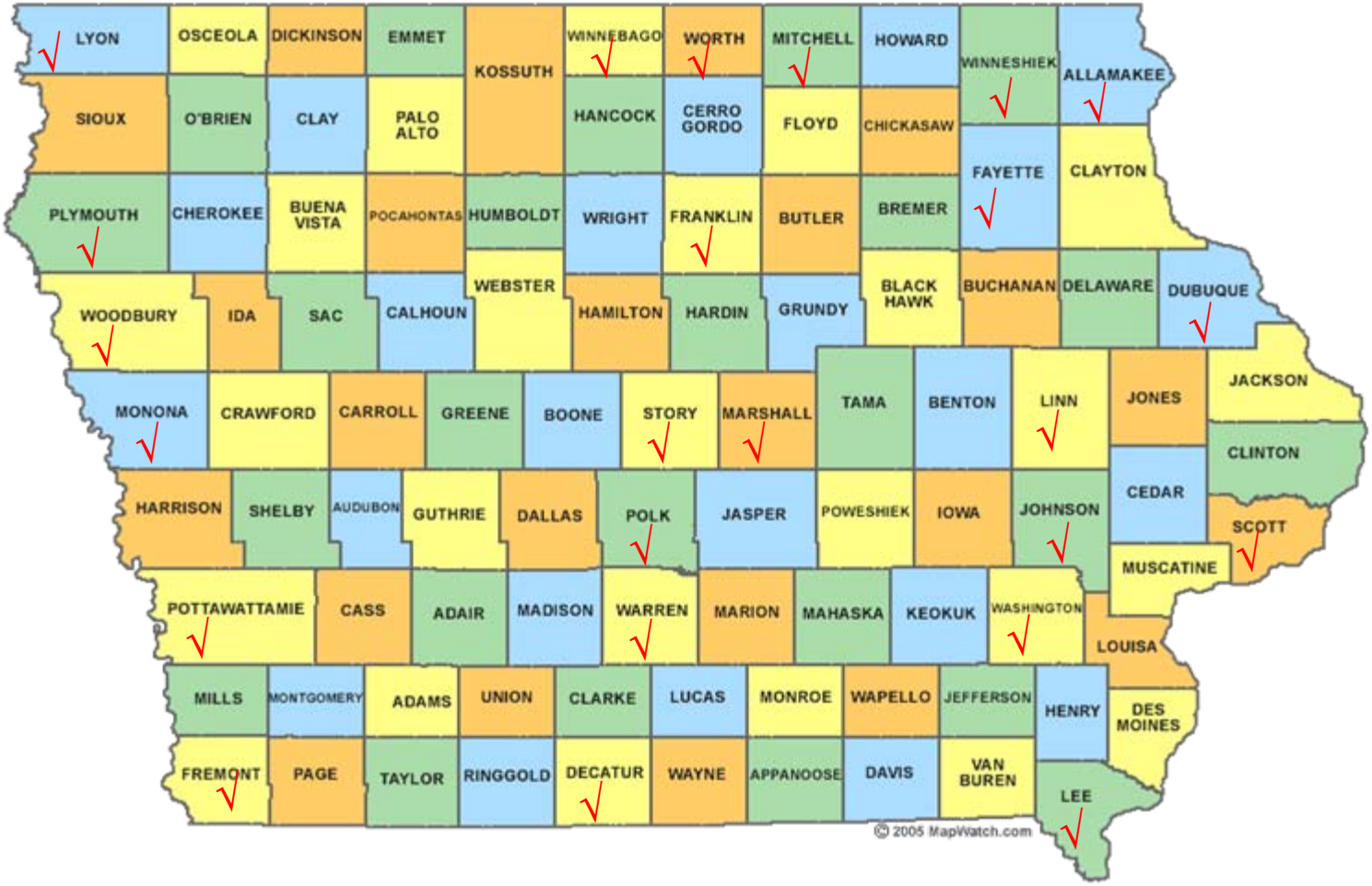
- Agronomy has developed 50-year historic climatic files for most of the 99 Iowa counties
- Compared 50-year historic data to M-EPDG
- Working on 50-year forecast – model is regional and not county based
- Will need to identify regions and benchmark forecast models to historic ones

Examining Climatic Information

- 24 Counties were selected to represent the state and were analyzed.
- Compare results achieved using files generated from historical data and from the data available in the design guide.

Counties Analyzed

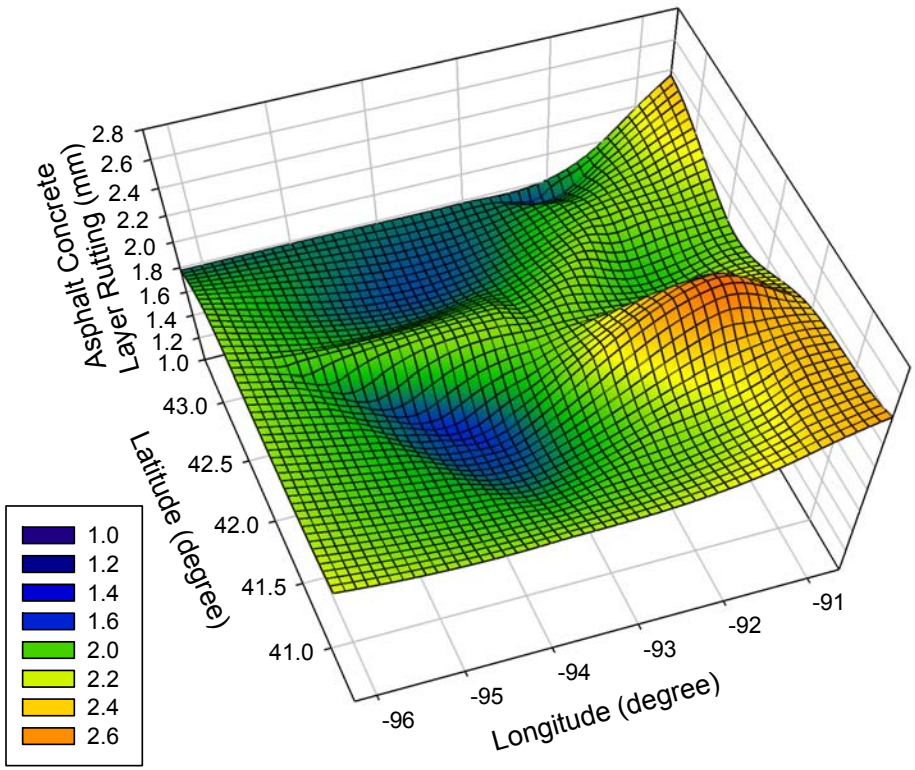
- http://www.mapwatch.com/multi-maps/full/iowa-county-map.gif



Low Volume Traffic

- Rutting in Asphalt Concrete Layer

Design Guide Climatic Files



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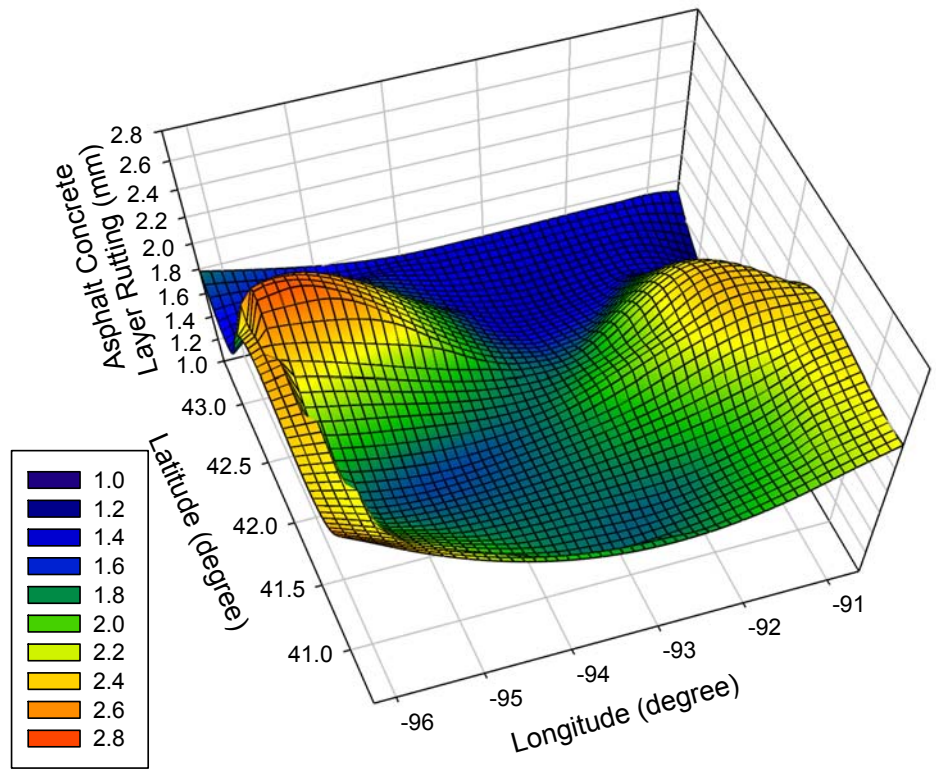

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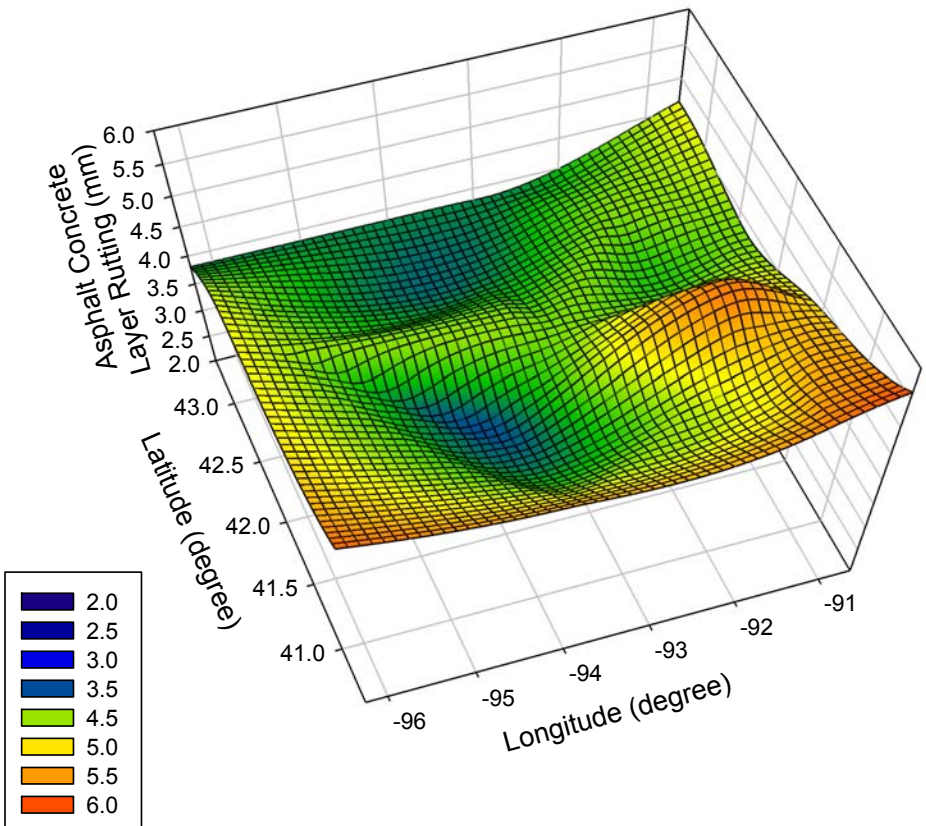

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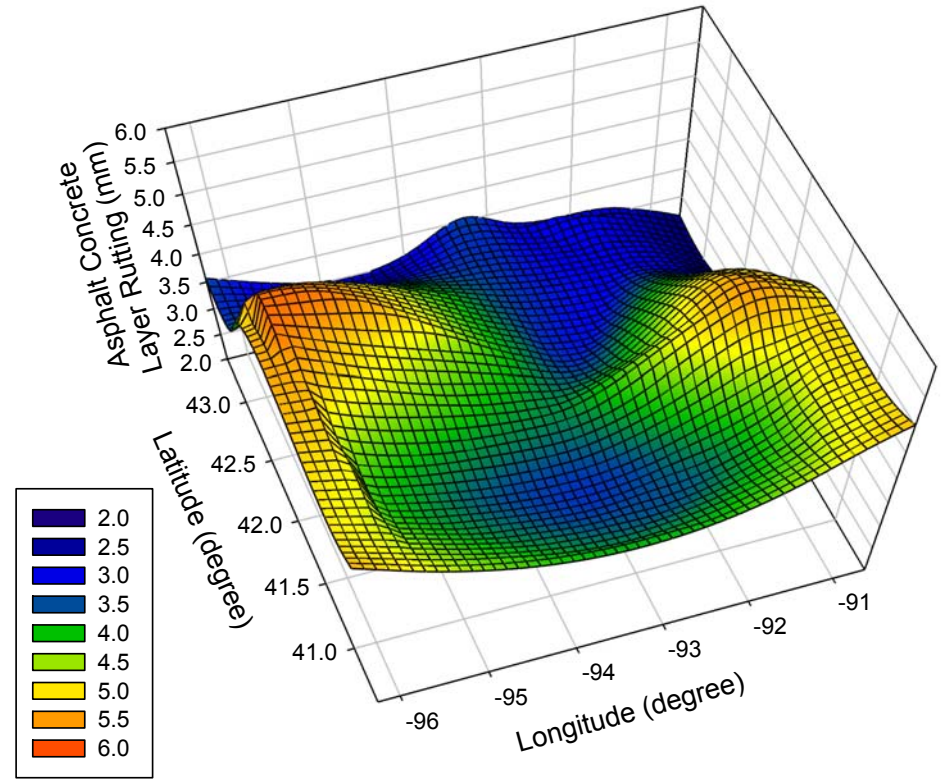

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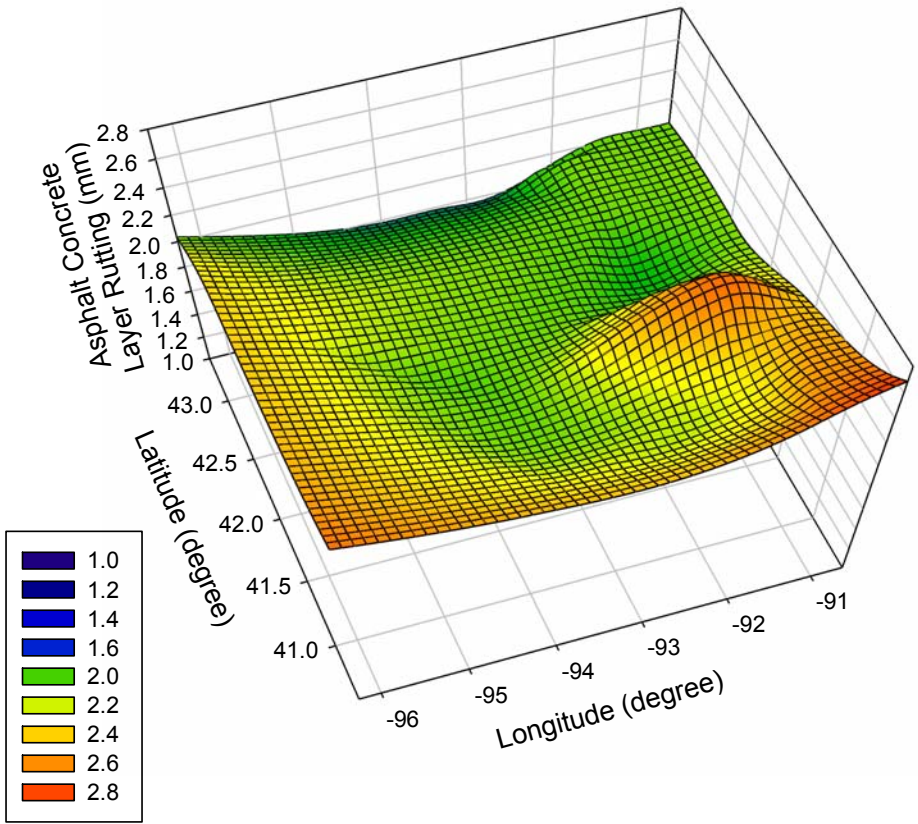

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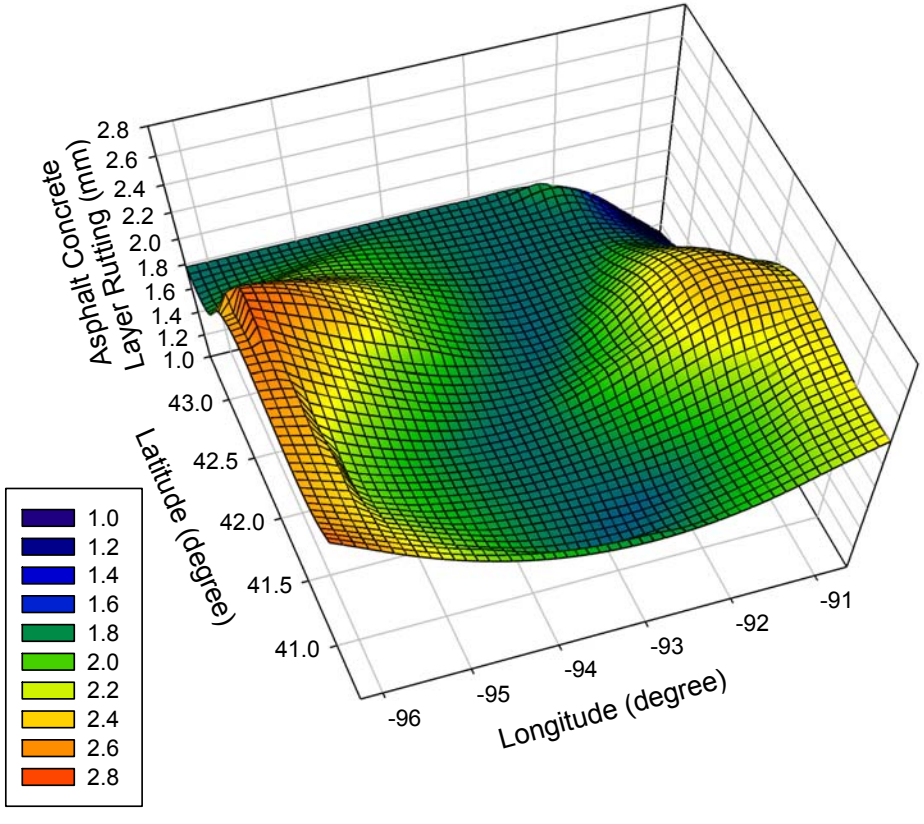

Low Volume Traffic

- International Roughness Index (IRI)

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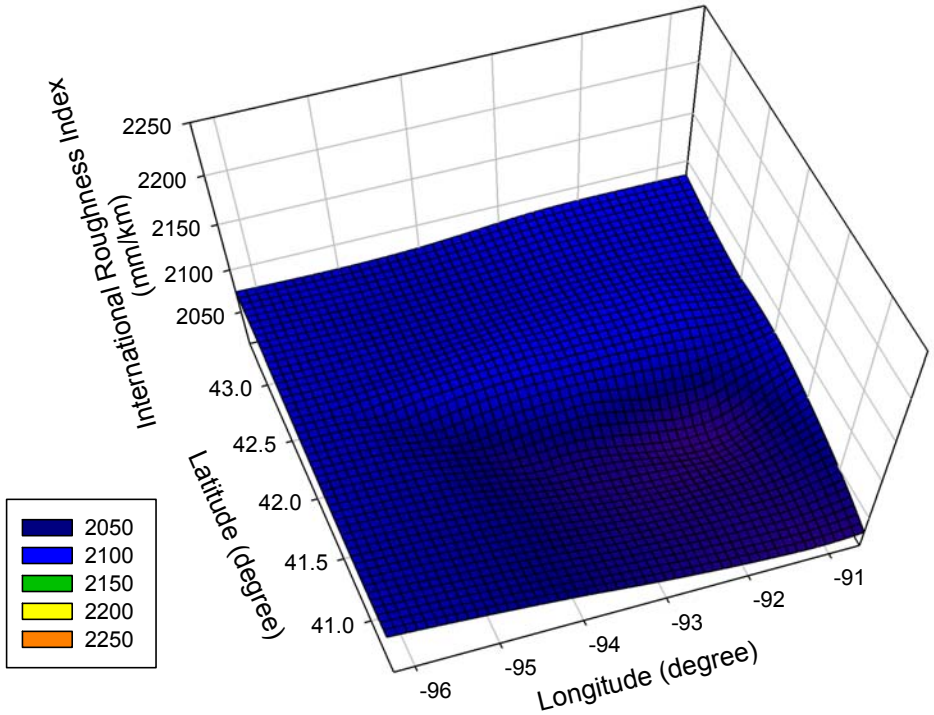

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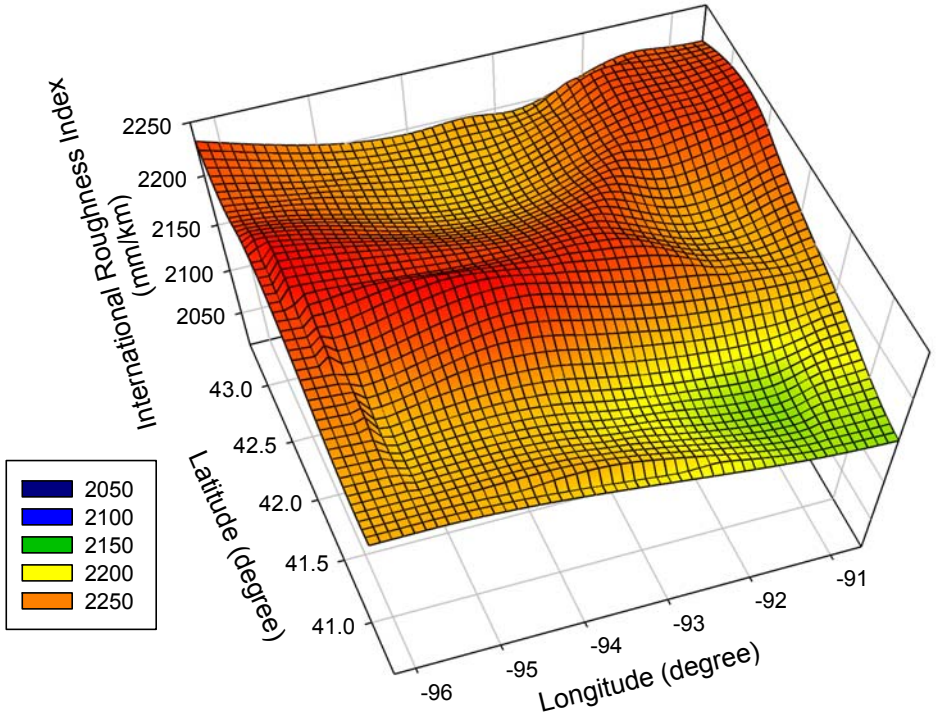

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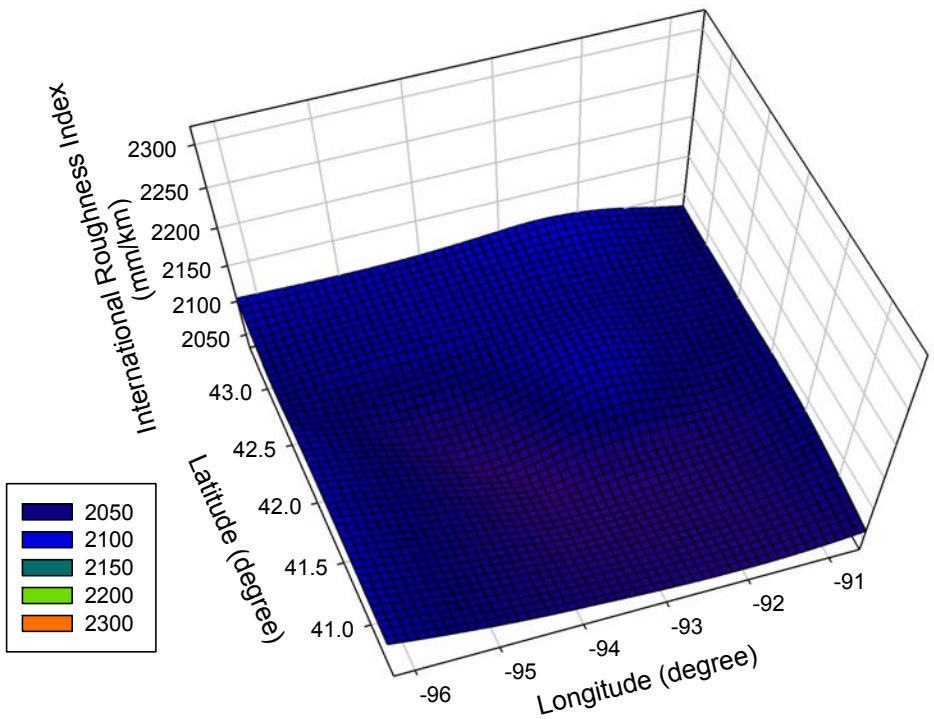

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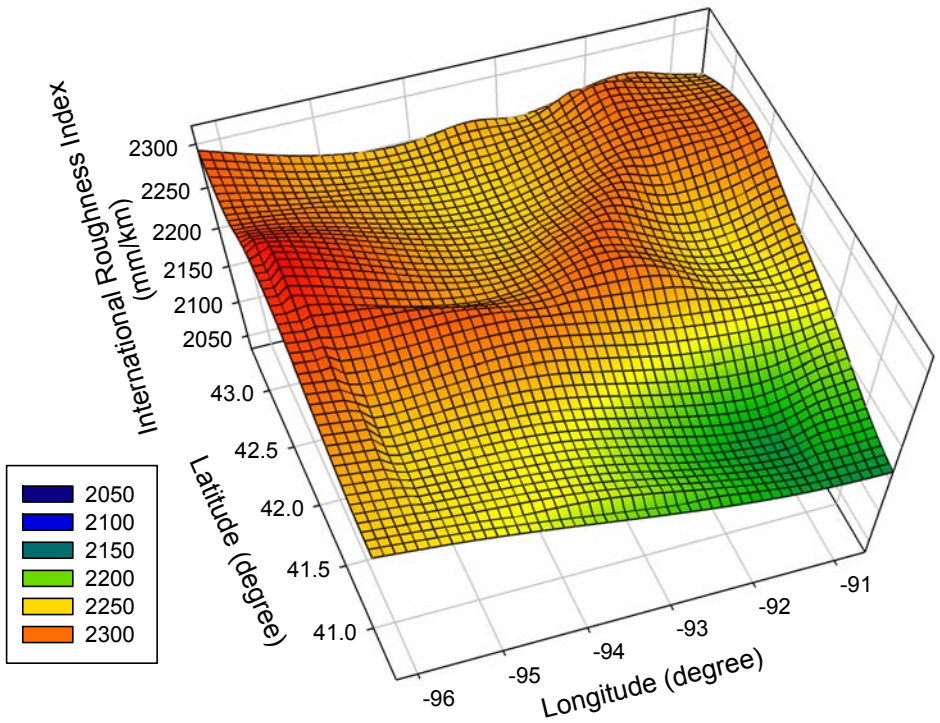

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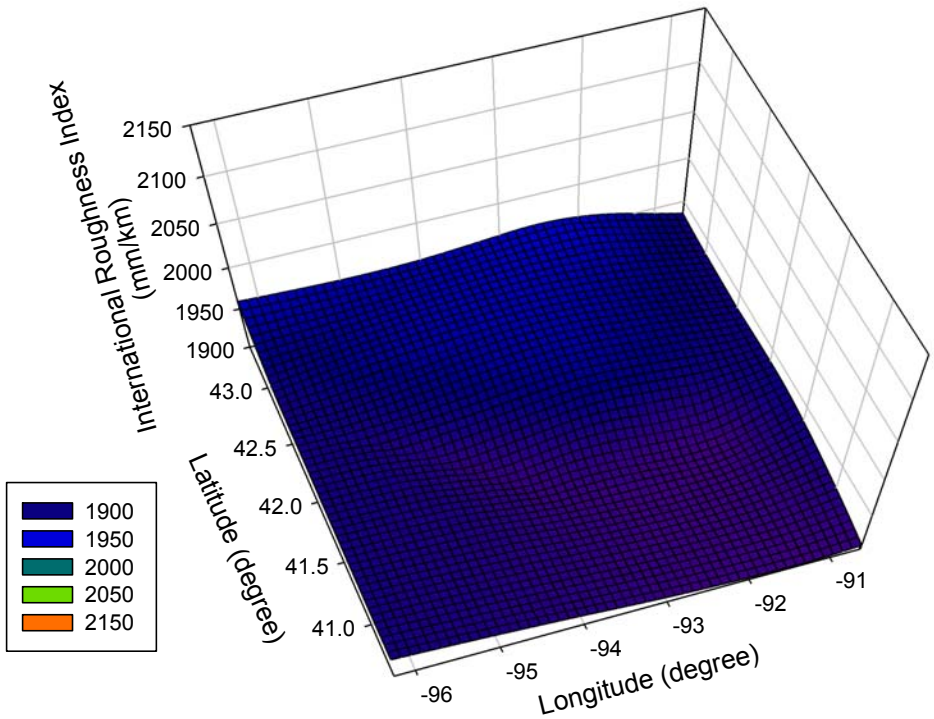

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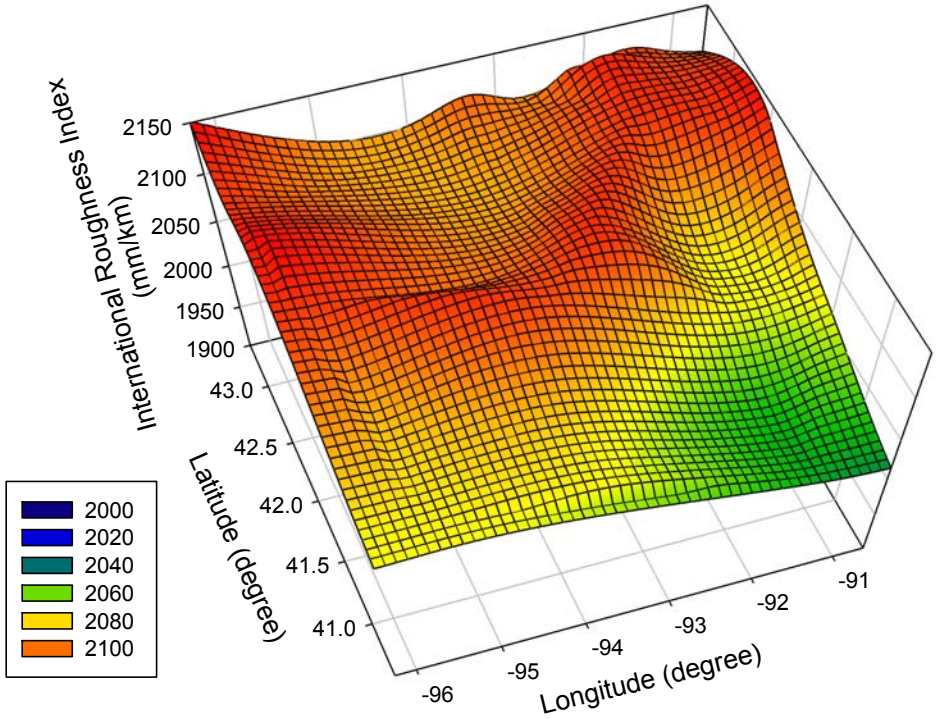

Conclusions

- Interpolated climatic files could not be created for three counties out of the 24 under analysis. The three counties (Fremont, Monona, and Pottawattamie) are in the western part of the state.
- The climatic files that were interpolated from the data available within the design guide predicted higher rutting for the northern part of the state compared to the files created.

Conclusions (Cont'd)

- The climatic files that were interpolated from the data available within the design guide predicted lower thermal cracking compared to the files created.
- The climatic files that were interpolated from the data available within the design guide predicted lower IRI compared to the files created.
- IRI vales are about 10% higher with actual 50-year historic data as compared to the default M-EPDG files.

Summary

- Climatic input in the Guide can shift the network level of pavement performance……. It should be more substantially considered!
- Forecast models show differences between historical data and the future……climate change has an impact!

Questions!