MERRA Data to Support Pavement Performance Prediction

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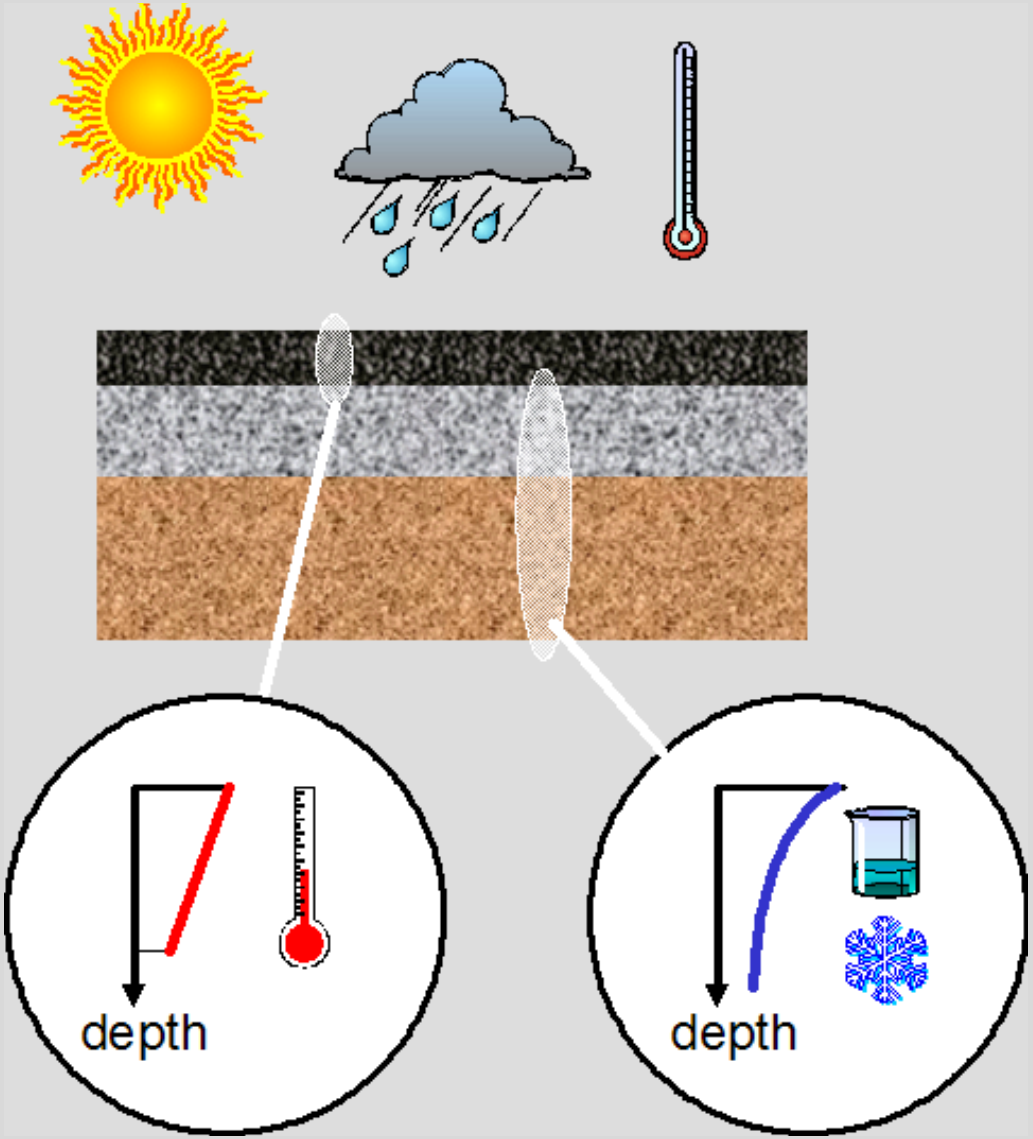
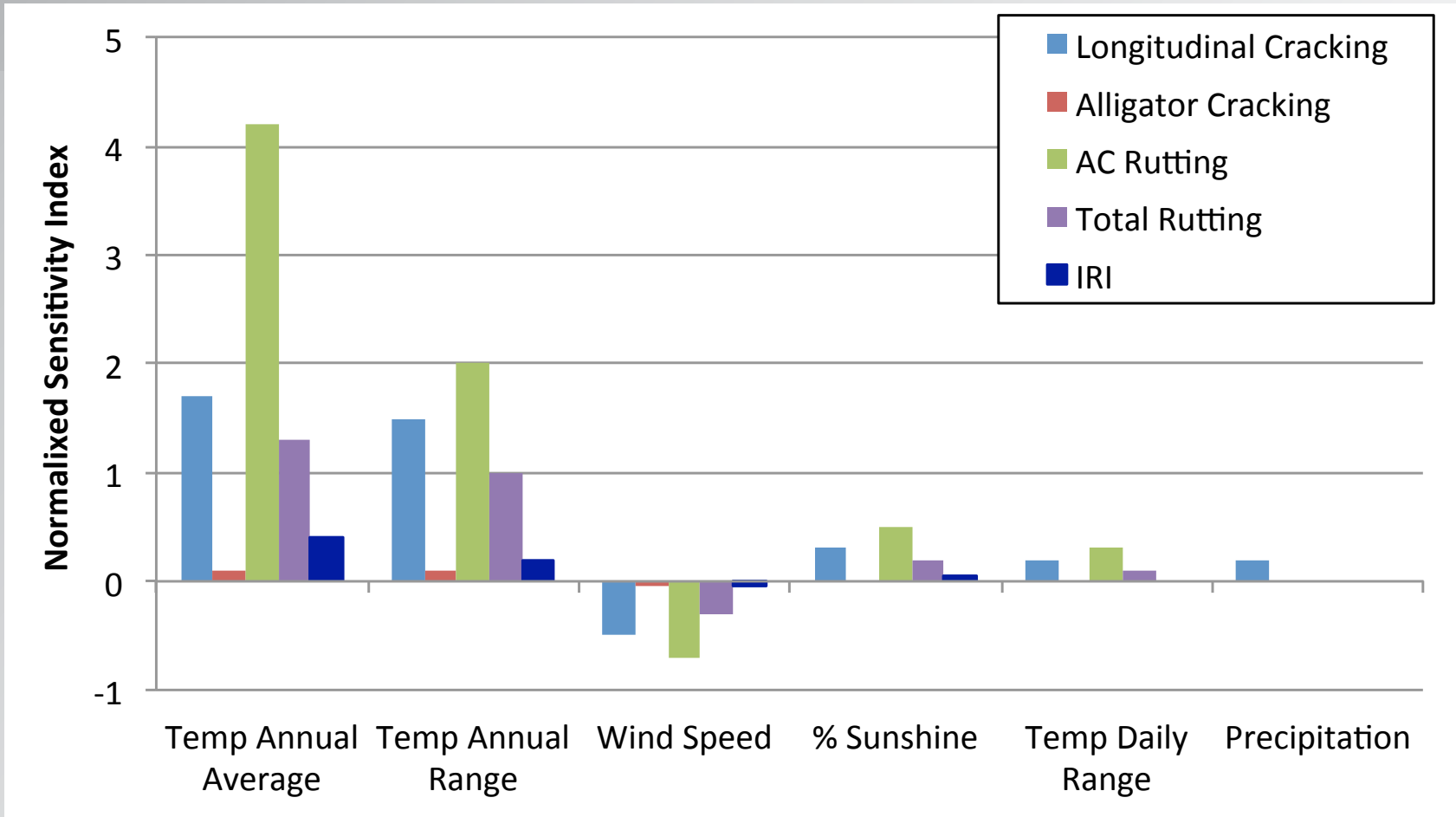
Environment Effects on Pavements



Sensitivity to Weather Data

Flexible Pavements



- AC, Total Rutting most sensitive distresses (outputs)
- Annual temp, temp range most impactful inputs

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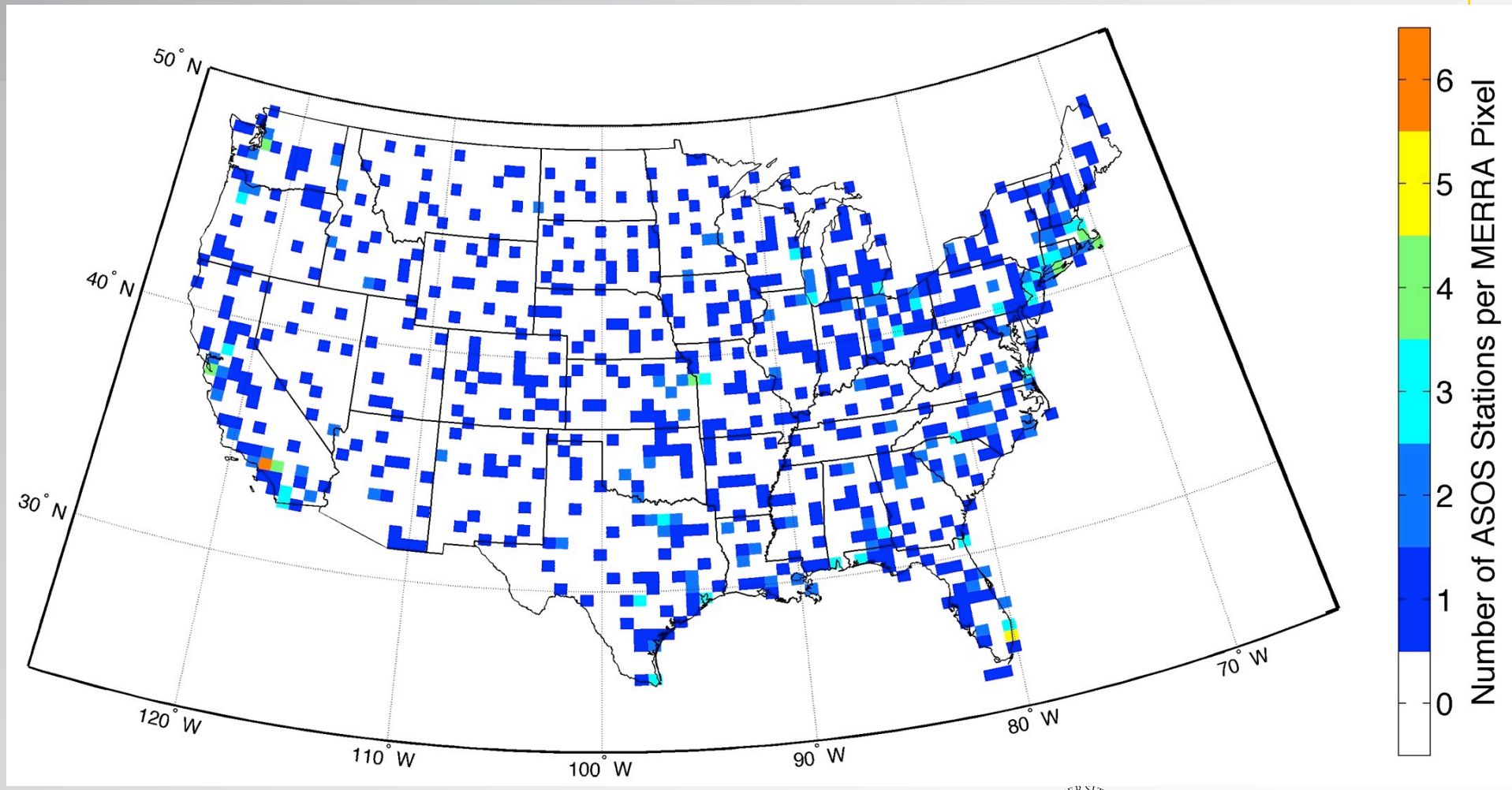
MERRA vs. ASOS Coverage



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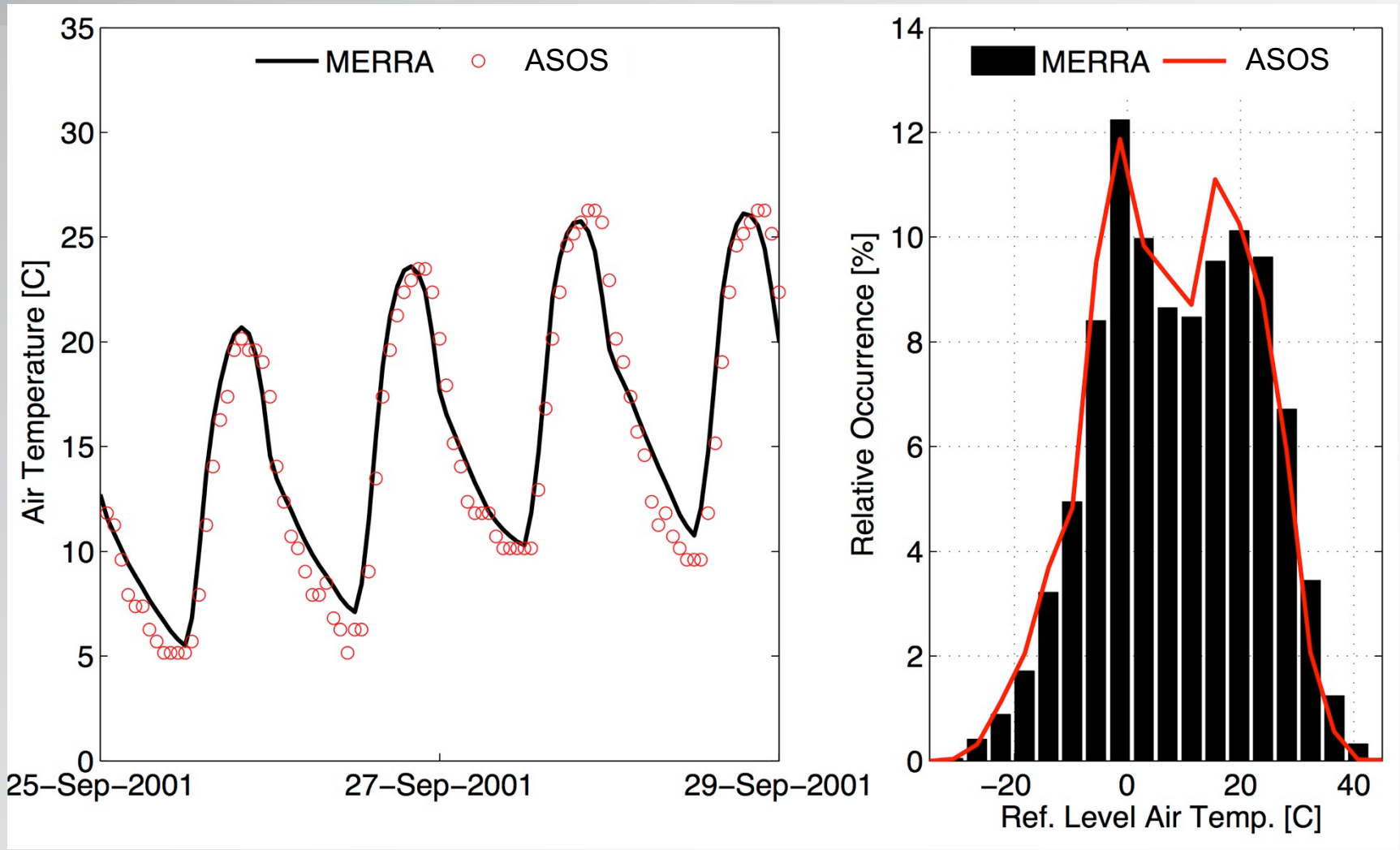
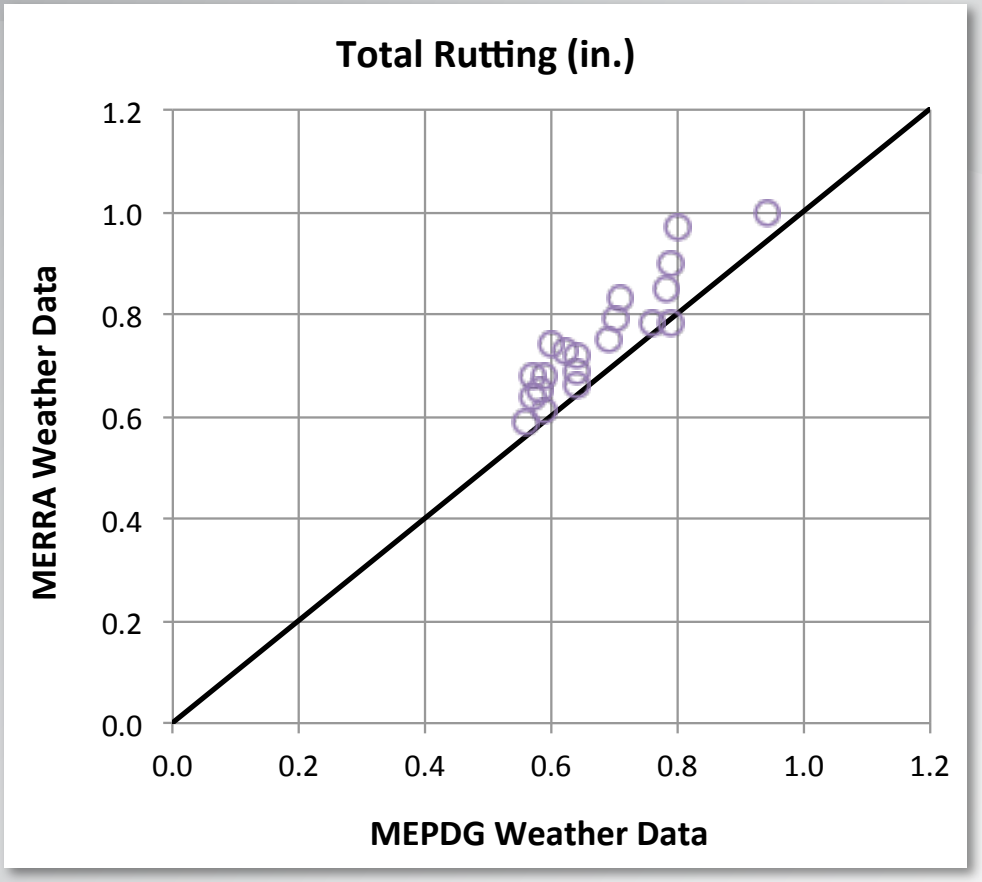
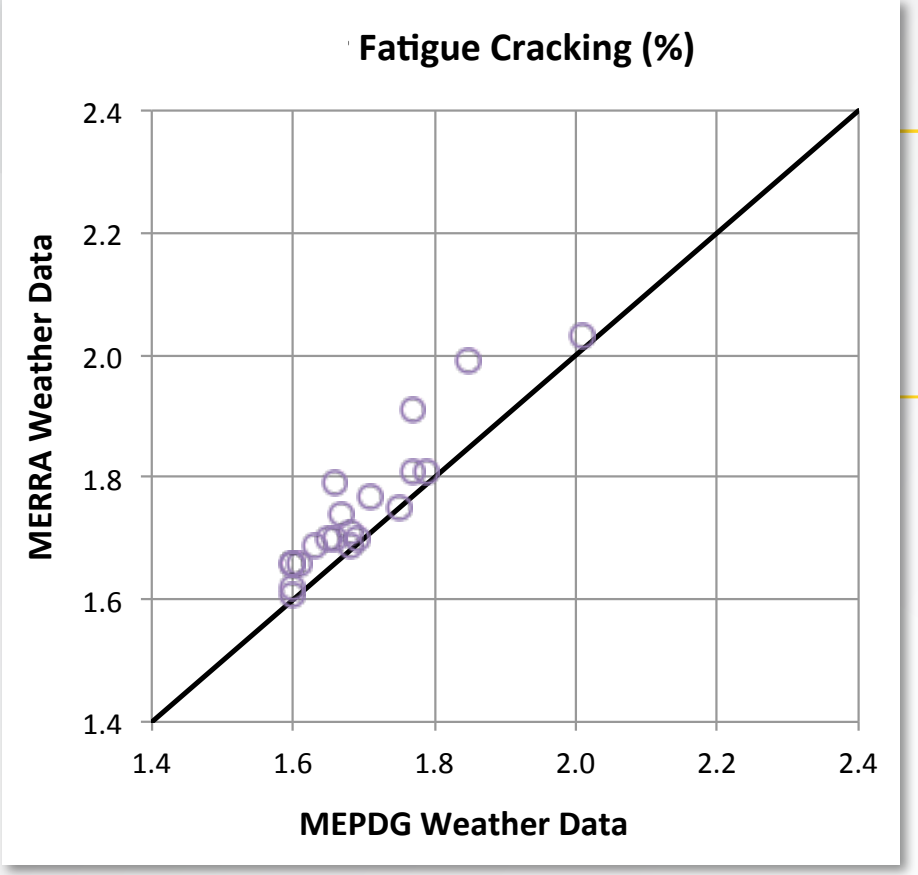
MERRA vs. ASOS

Temperature: Typical Short Term Comparison



Asphalt Pavement Distresses





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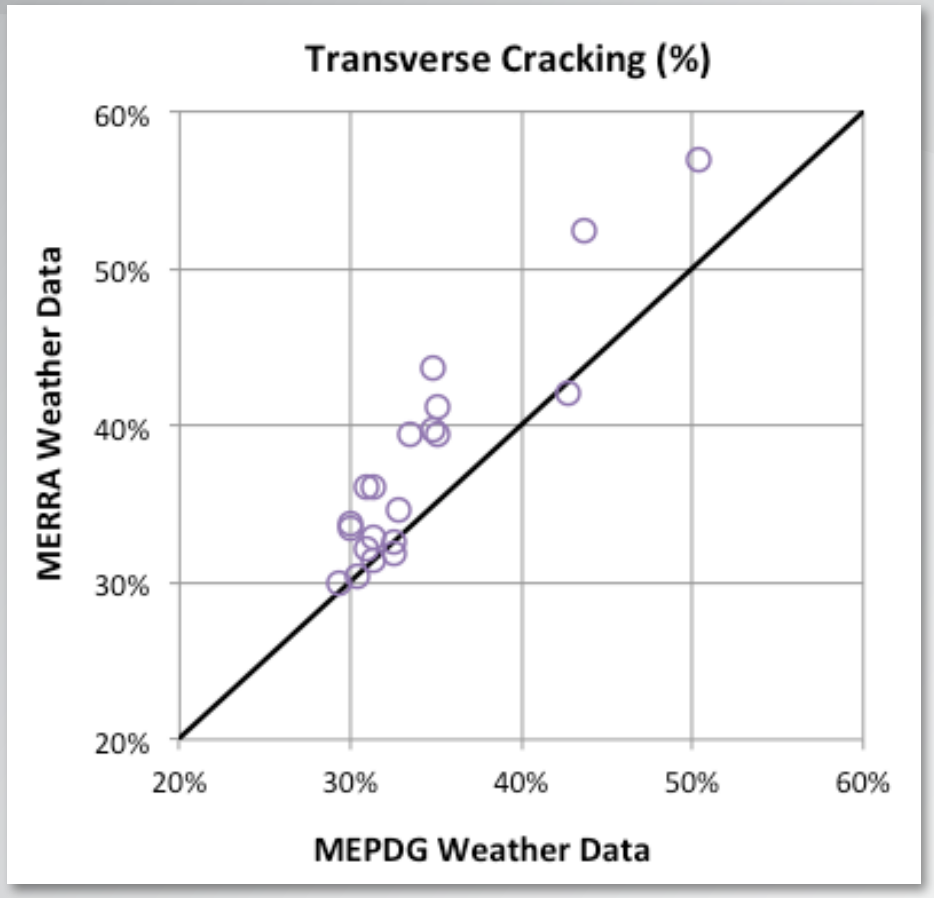
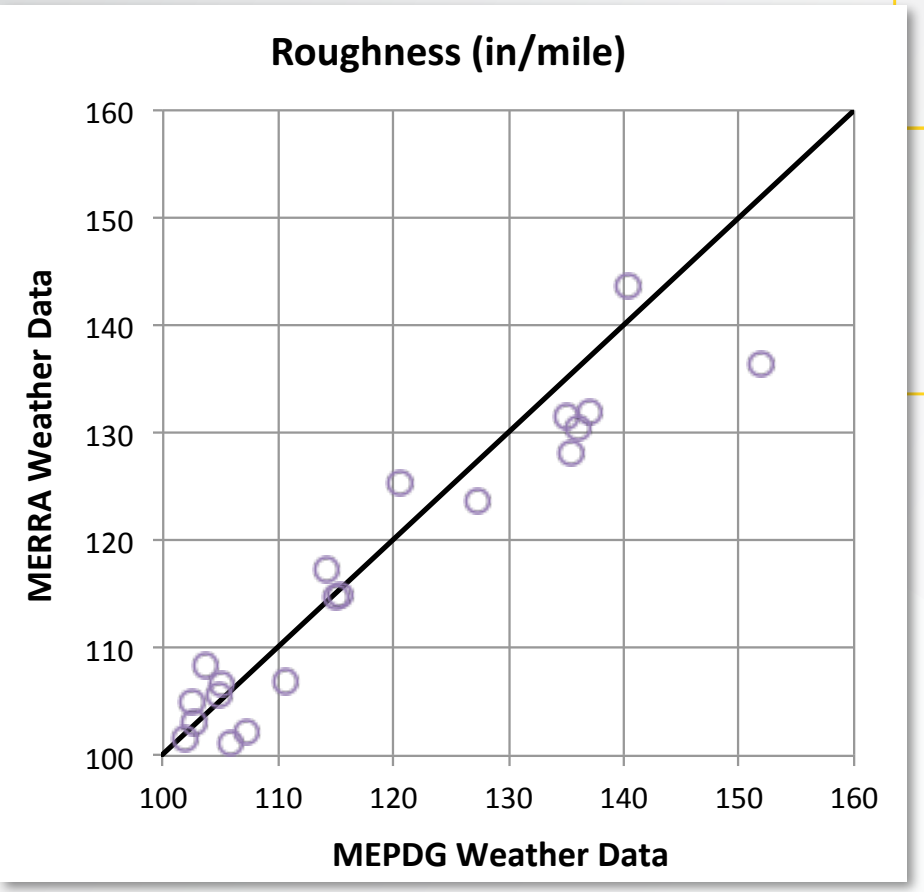
Concrete Pavement Distresses





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Benefits of MERRA

- Closer, more uniform spatial coverage
  - 1000 ASOS vs. 3000+ MERRA grid points in contiguous
  - Vast areas of US without ASOS
- Better temporal frequency and continuity
  - Continuous hourly data since 1979 ➔ no gaps
- Better data consistency and quality
- Focuses on fundamental quantities
  - E.G., Solar radiation rather than %sunshine

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