

Performance analysis of solar power plants

Quantification of soiling
losses



Our background



Lisa Crowther

Biomedical research/
Molecular Biology



Marcus Lindberg

Clinical research/
Bioinformatics



Lina Siegrist

Pharmacy /
Biomedical research/
Full-stack web development



- The company

Monitoring and reporting for maximization of energy production at renewable energy plants

- The challenge

Identify solar plant output losses due to soiling, in absence of soiling sensor data

Business problem

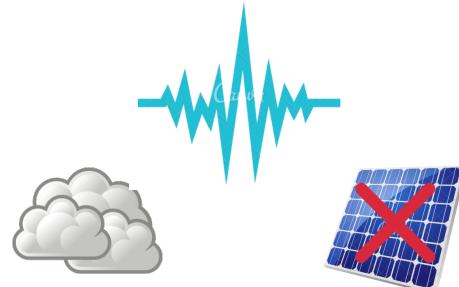


When to clean the panels?

- cost of cleaning panels
(large scale power plants)
- balance against soiling loss



- Determine performance of panels
- Remove non-soiling related changes
- Detect rate of soiling losses



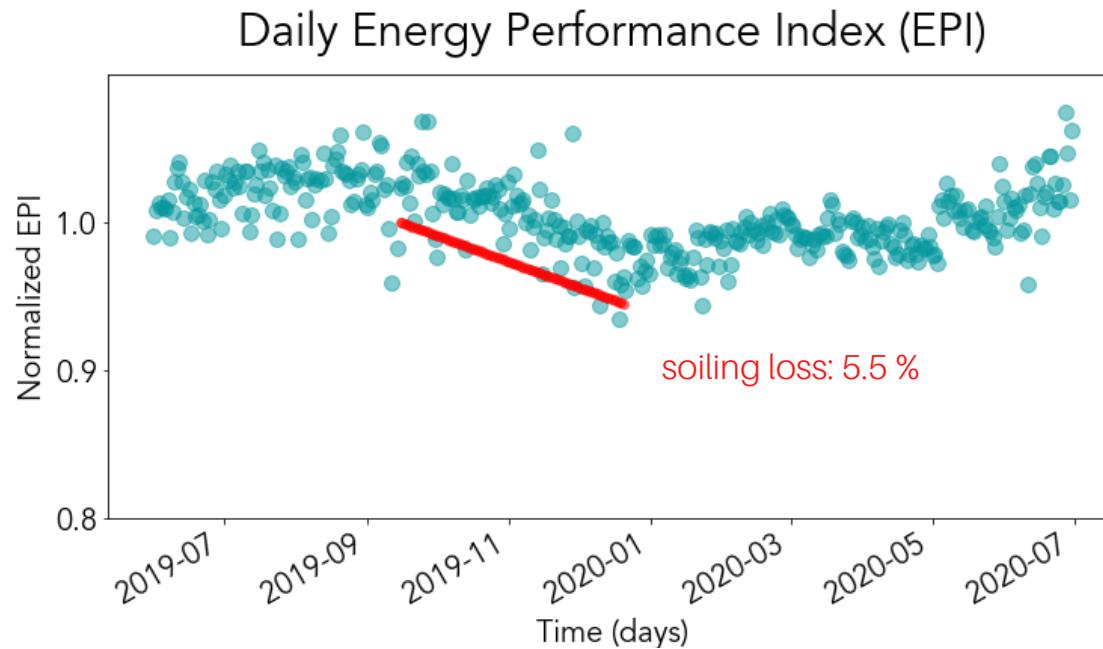
Solution

- Analysis workflow
- Park-wide soiling trends and soiling of individual solar panel modules

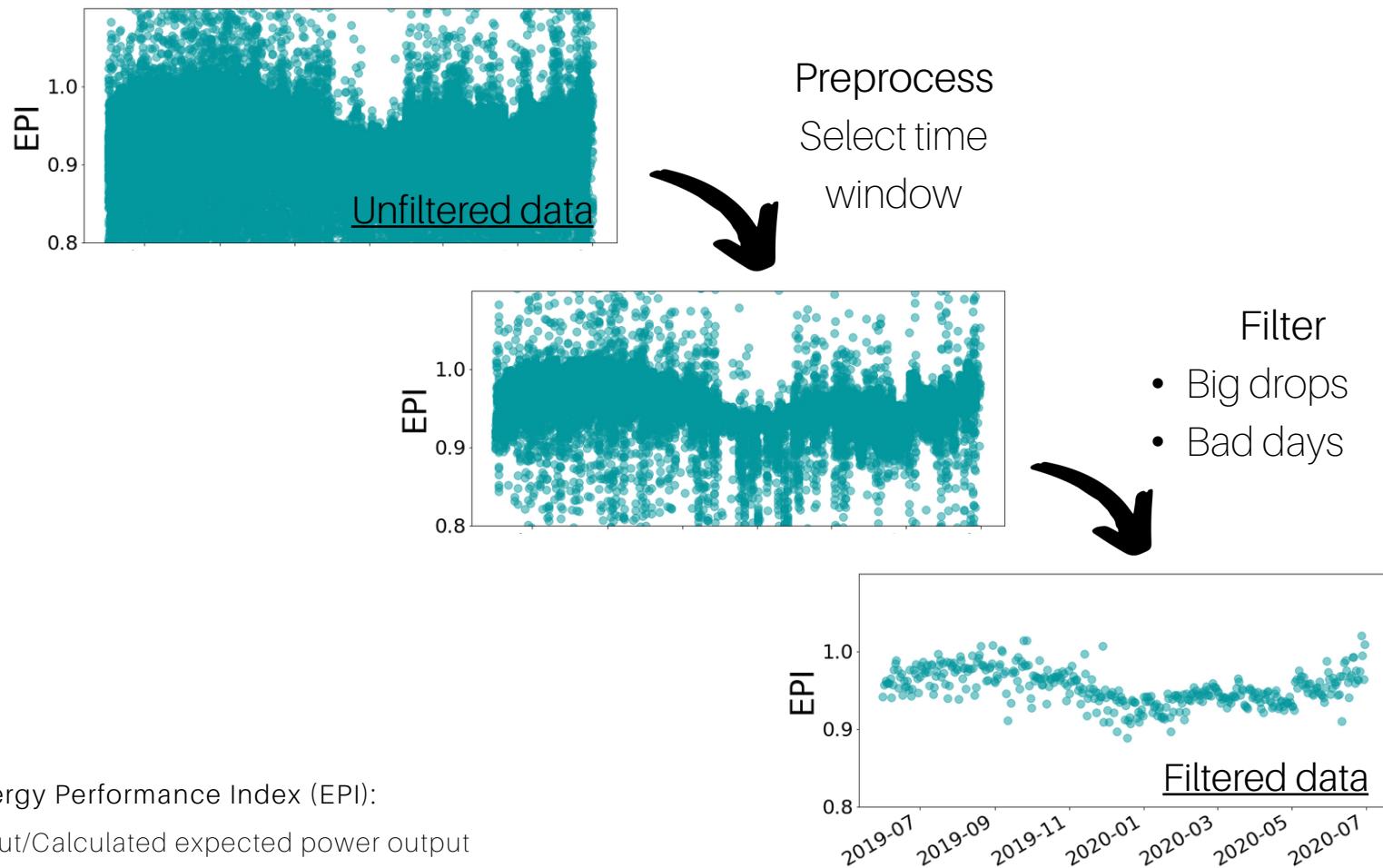


Image adapted from :<https://www.electricalindia.in/automated-solar-panel-cleaning/>

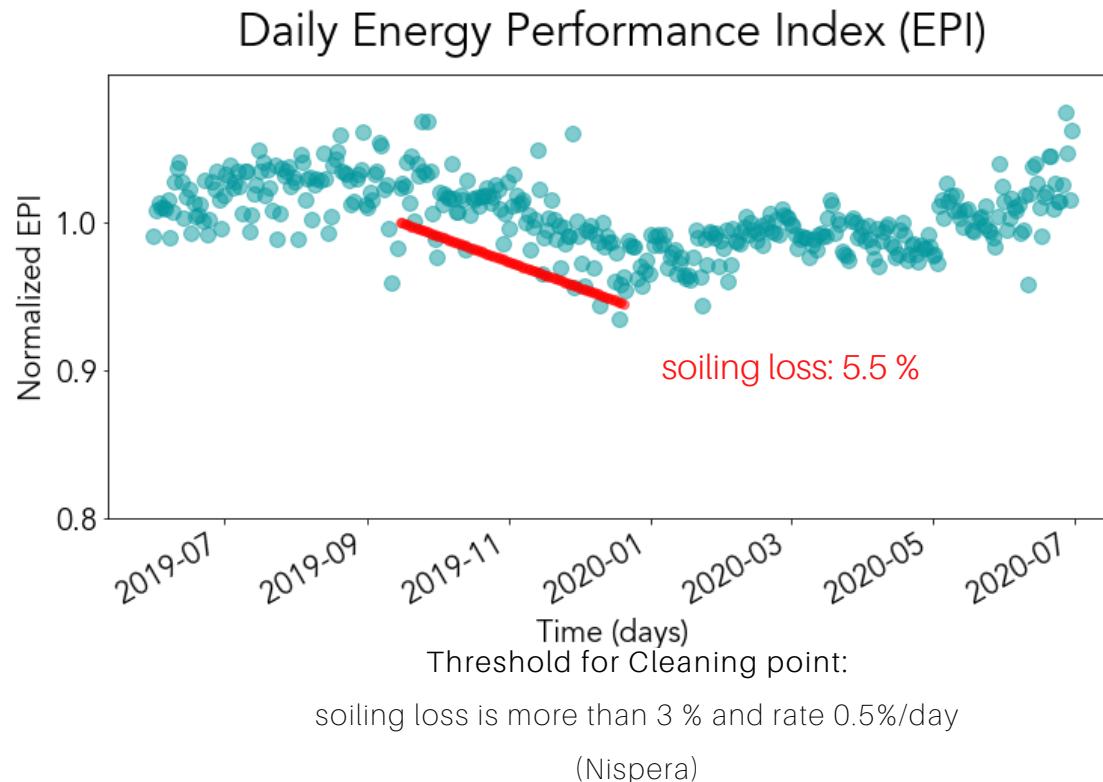
Quantification of soiling losses



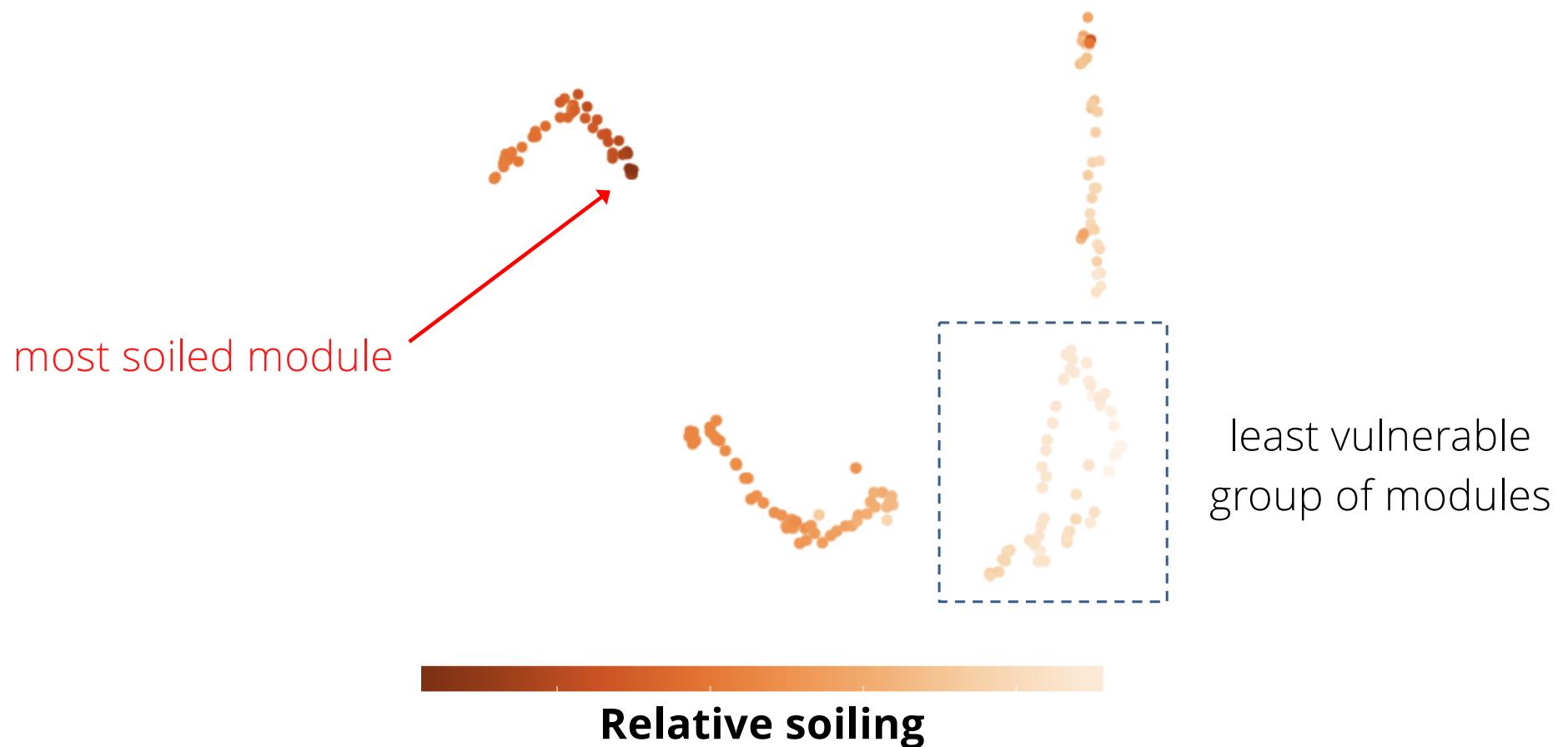
Data filtering



Quantification of soiling losses



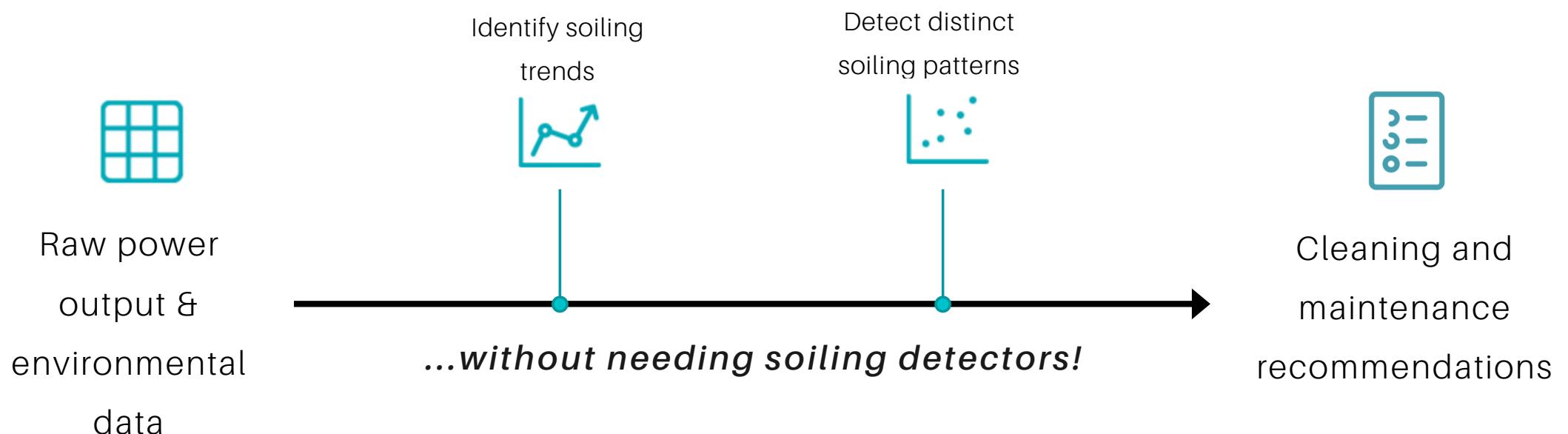
Module Clustering: Soiling



Conclusions

Soiling-dependent performance loss:

5.5%



Outlook



Automate soiling
detection workflow



Adapted from: <https://www.paradisesolarenergy.com/blog/do-solar-panels-need-to-be-cleaned>



Generate client report
with recommendations

Contacts



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