

Energy Storage White Paper Appendix 1: Solar Irradiance Maps

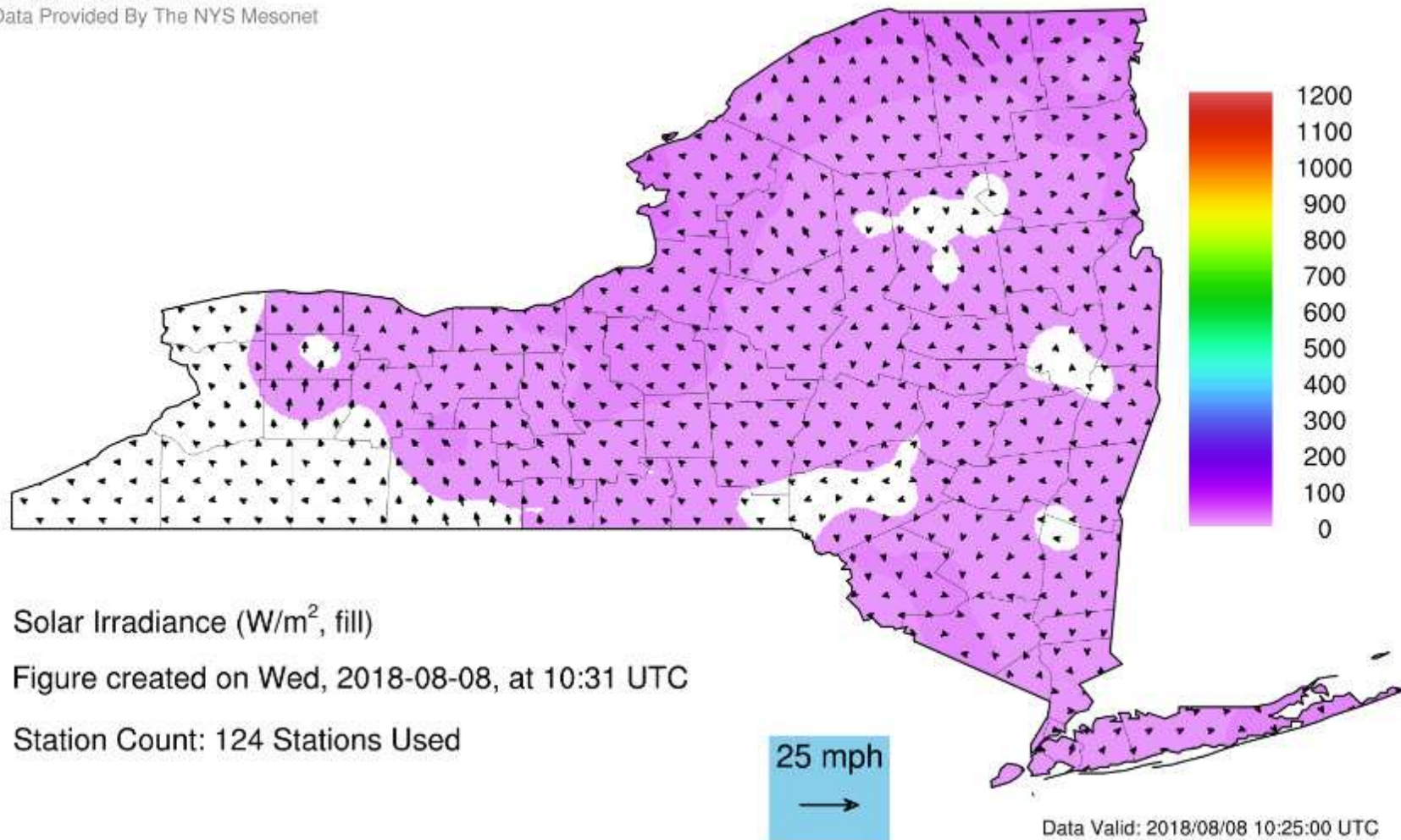
This appendix lists the solar irradiance maps used in the analysis.

I downloaded solar irradiance maps from the spatial analysis directory in the NYS Mesonet [archive](#). Note that in addition to solar irradiation the maps also include gridded winds. Each map title lists the estimated state-wide irradiance. To do this right one would have to determine where the solar panels might be located and then use the observed values for those locations. However, for a first cut analysis this should be a reasonable guess. There is one other data issue. The 0925 EDT map was missing so the average irradiance of the map before and map after was used.

The listed irradiance values were used from the time of observation to the next time of observation to calculate the solar output. That calculation assumed that the 12,000 MW of solar cells produced 12,000 MW when the solar irradiation equals 800 watts per square meter (the PVUSA test condition). I did not account for any other factors such as the cell temperature or any losses. So my naïve formula for solar output was simply the observed input solar irradiation times 12,000 divided by 800.

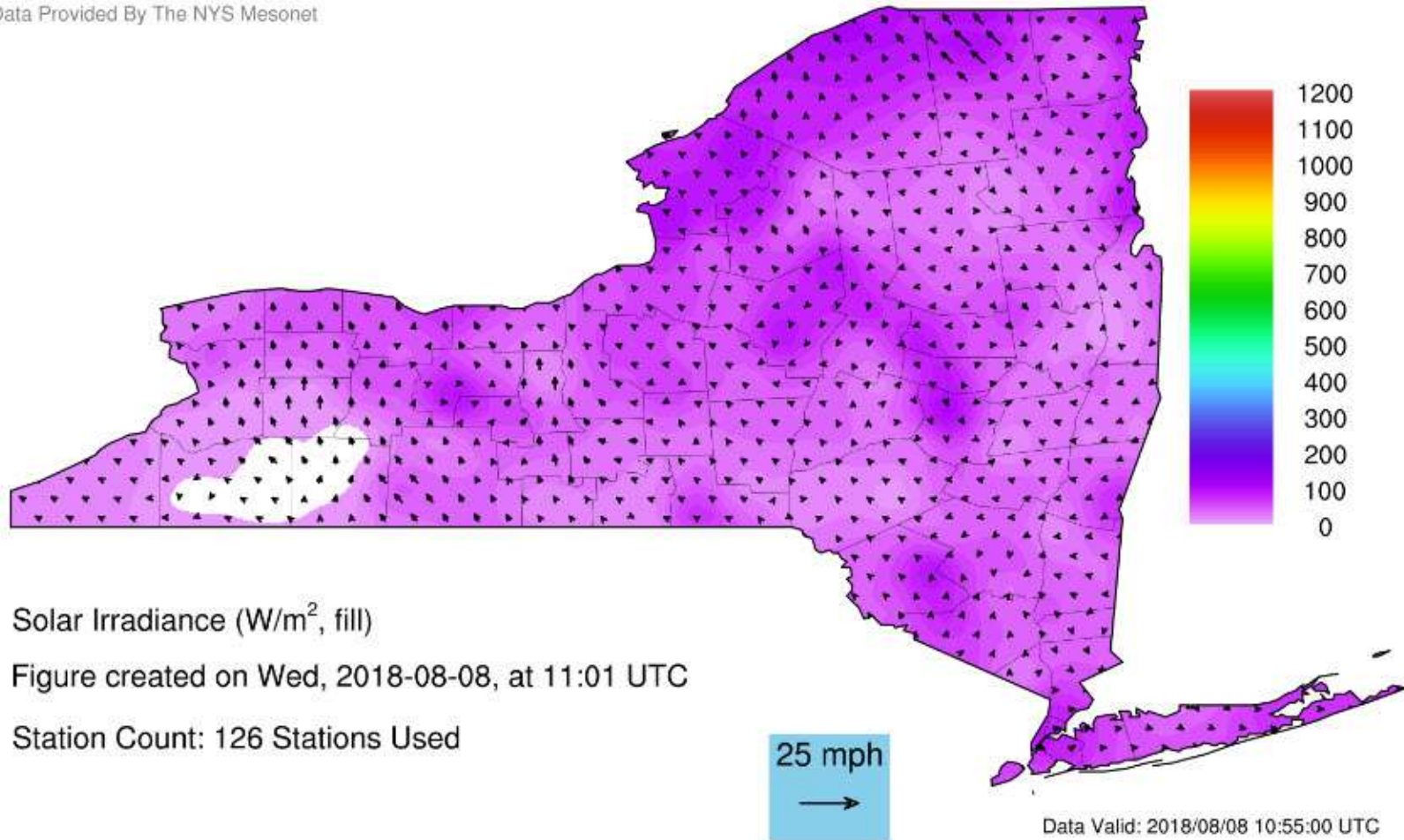
NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0625 EDT – estimated solar irradiance 50 W/m²

Image Created By Nick Bassill
Data Provided By The NYS Mesonet



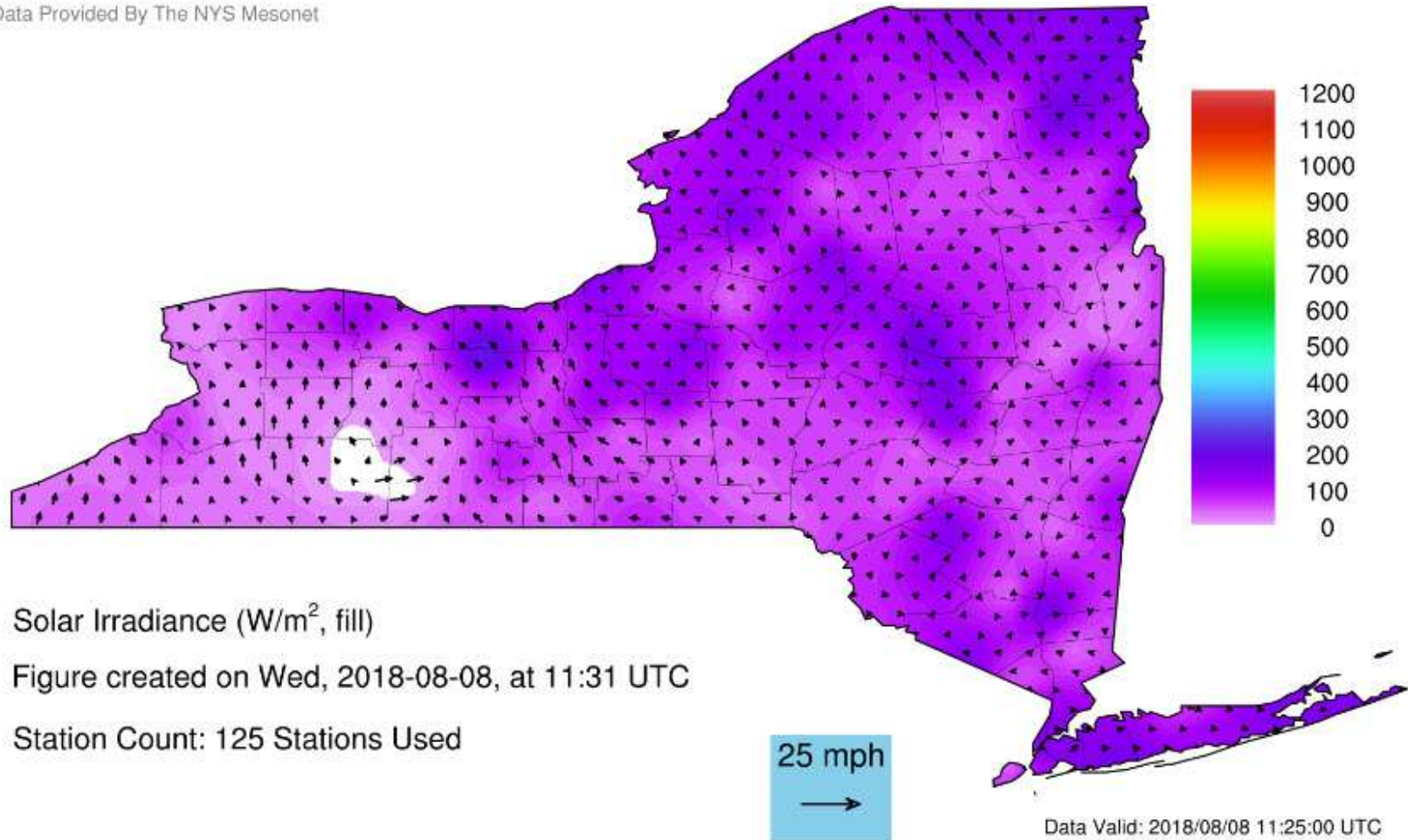
NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0655 EDT – estimated solar irradiance 150 W/m²

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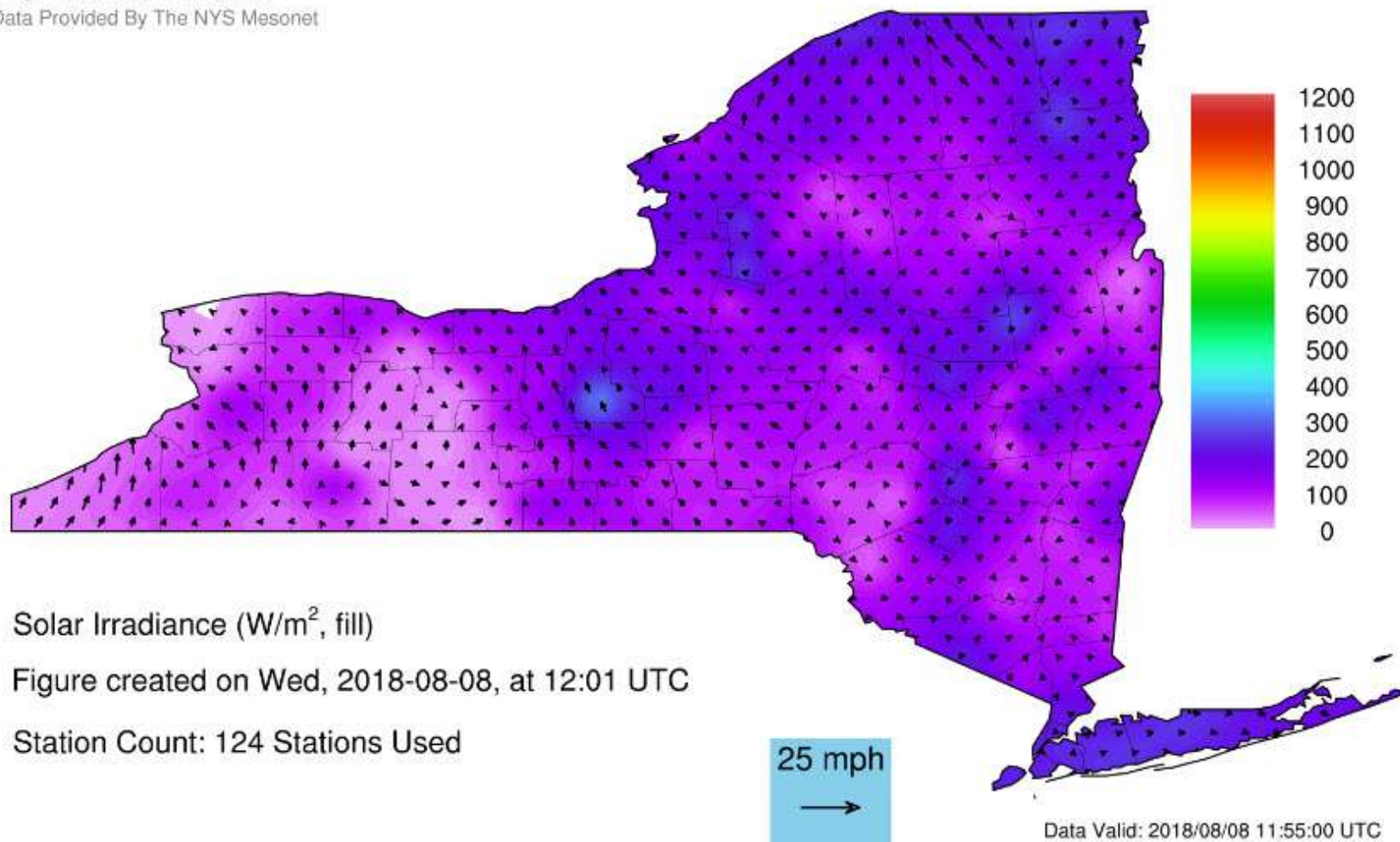
NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0725 EDT – estimated solar irradiance 200 W/m²

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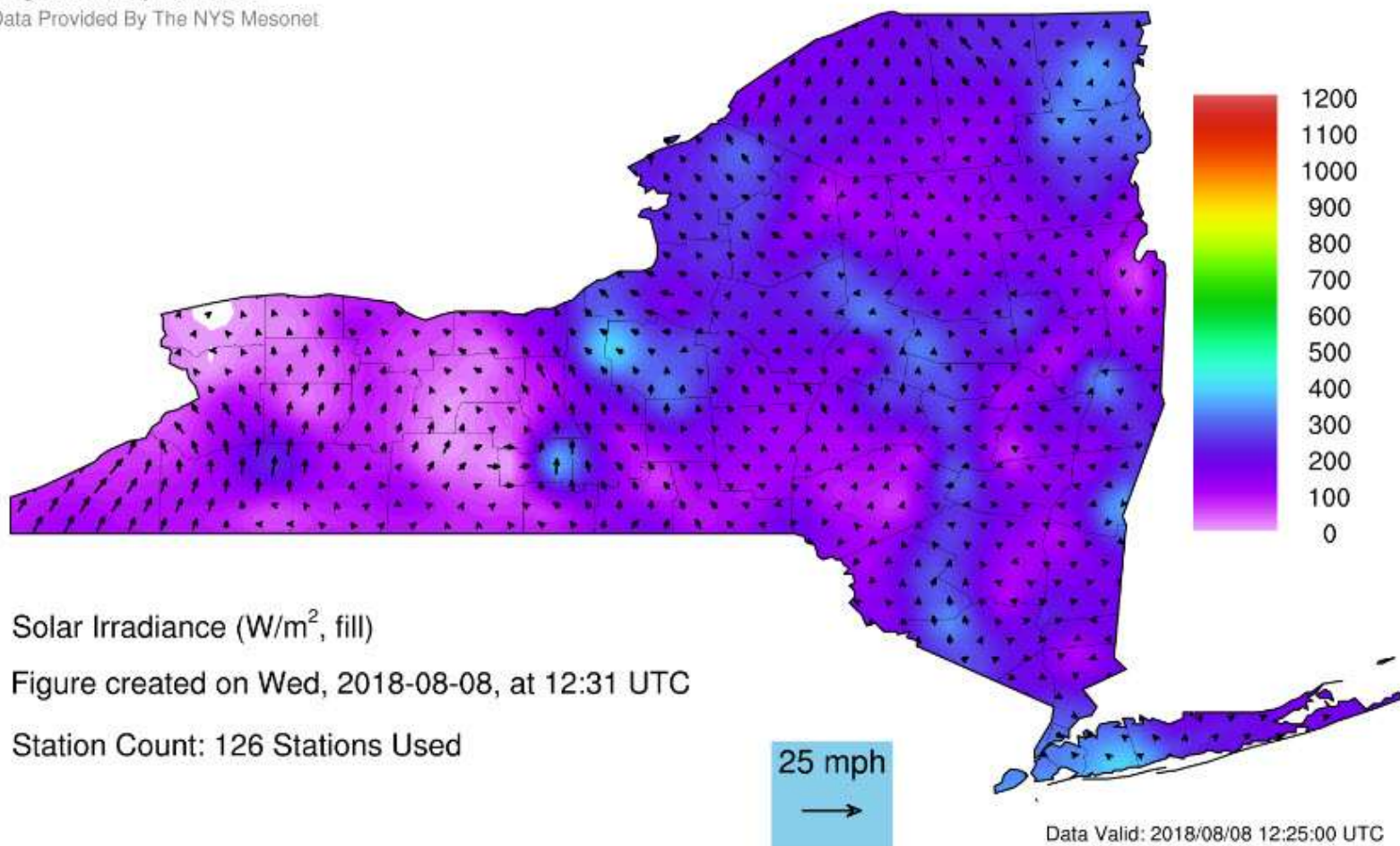
NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0755 EDT – estimated solar irradiance 250 W/m²

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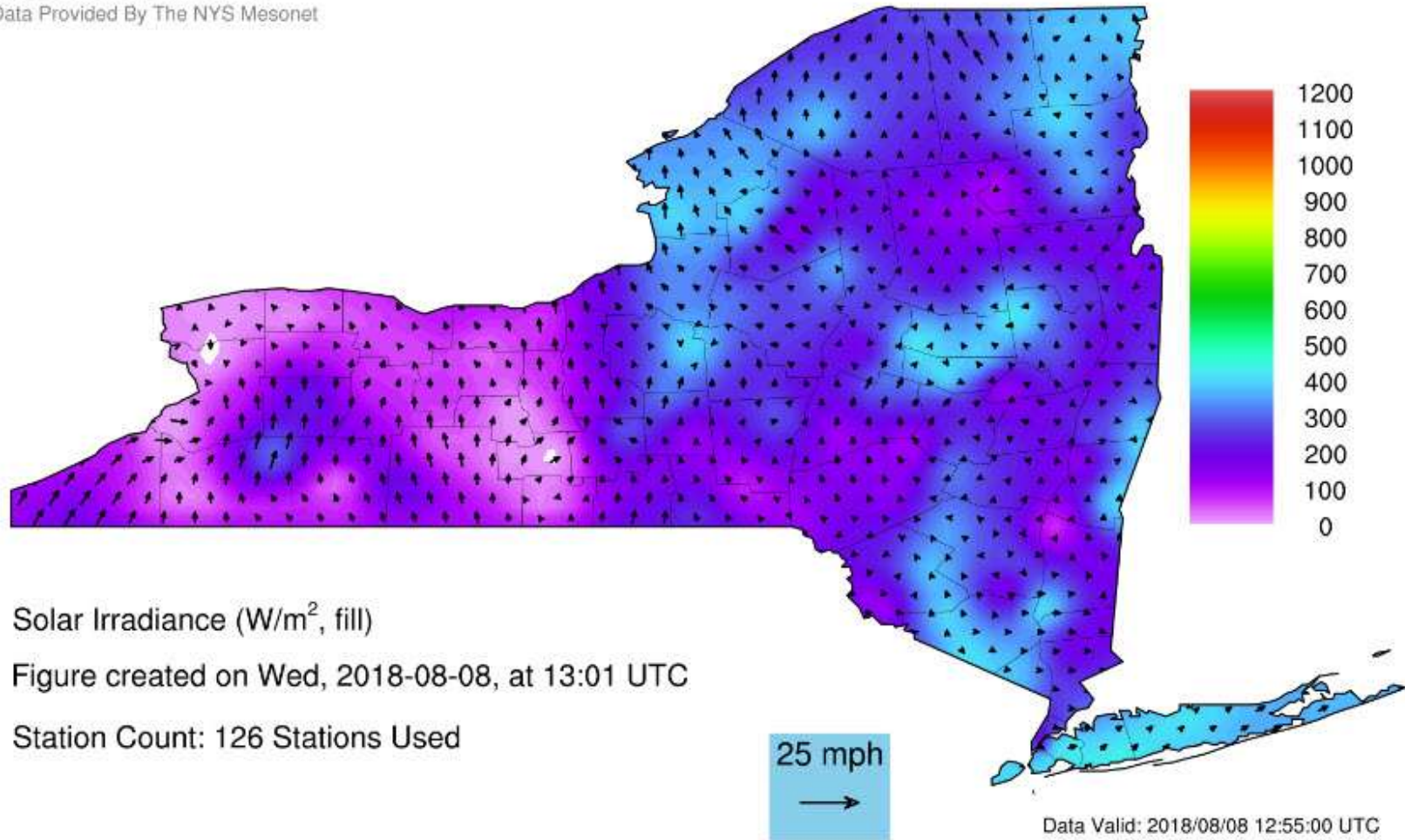
NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0825 EDT – estimated solar irradiance 300 W/m²

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NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0855 EDT – estimated solar irradiance 450 W/m²

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NYS Mesonet [Archive](#) Solar Irradiance Map Valid at 8 August 2018 at 0955 EDT – estimated solar irradiance 550 W/m²

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