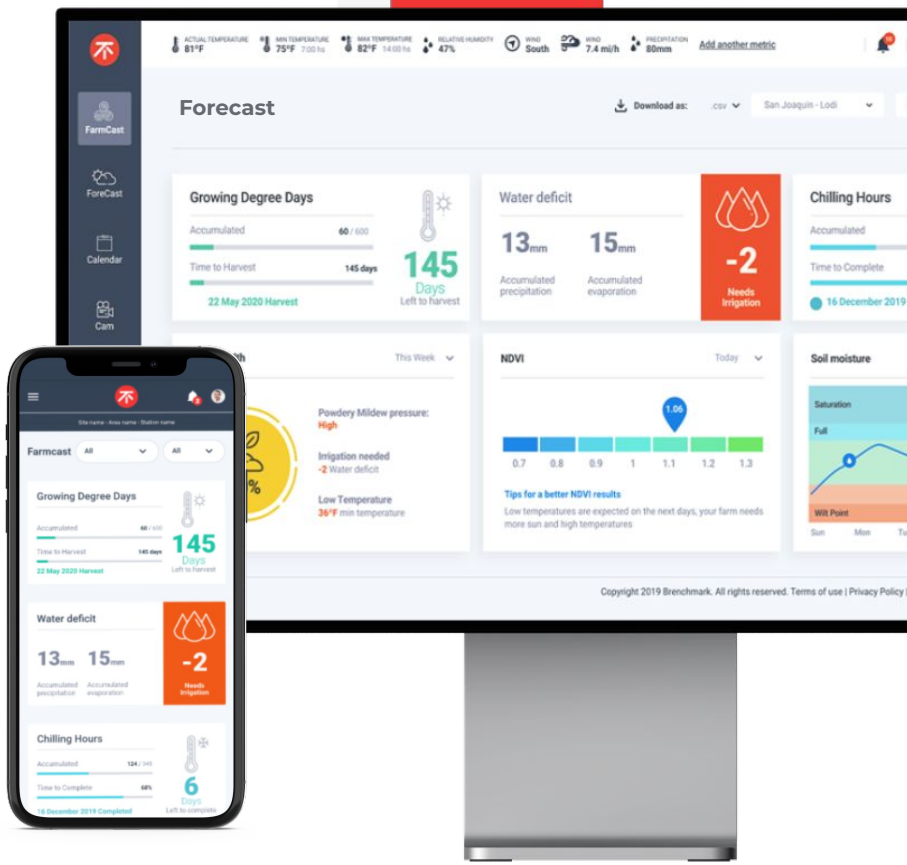
BENCHMARK LABS

Prescribed Fire Forecasting

Hyperlocal Weather



What is Benchmark Labs?

- Who we are + our mission
- What we do
- How we do it
- How *well* we do it

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Who are we?

Benchmark Labs is a leading provider of hyper-local environmental forecasts for high value land managers, typically within the agriculture, energy, and insurance sectors. We believe in advancing weather forecasting technology through artificial intelligence to improve controlled burn operations.

Why do we do it?

Current weather models aren't built for everyone

Farmers told us the National Weather Service wasn't representing their fields

They knew their farm, but the forecasts didn't

The Nature Conservancy told us the NWS wasn't representing their preserves

- **Couldn't rely on forecasts beyond a few days**
- **Forecasts didn't match observations**
- **Too many tabs open juggling different sources**

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Weather modeling has taken the same approach for the **last 80 years.**

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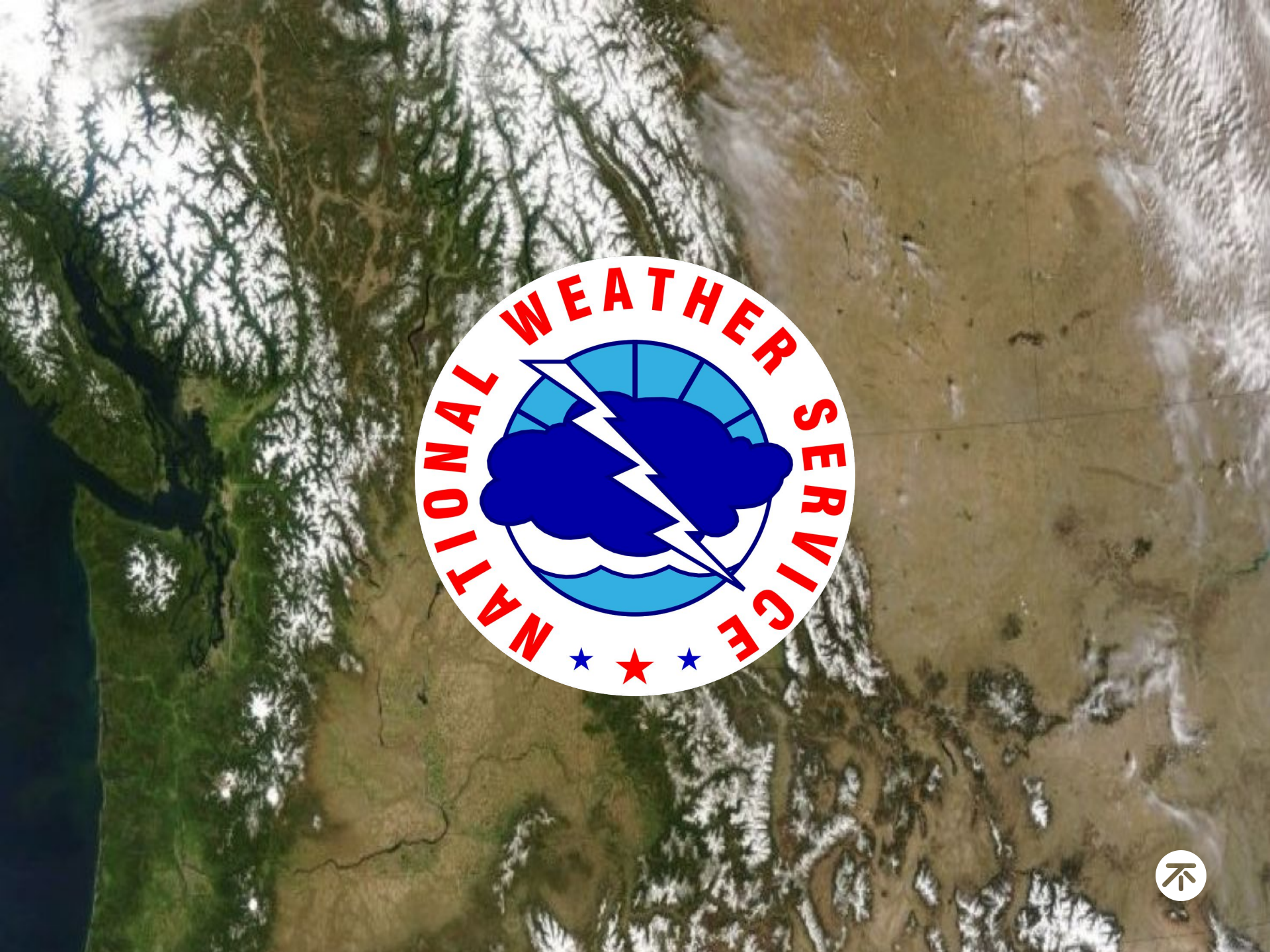
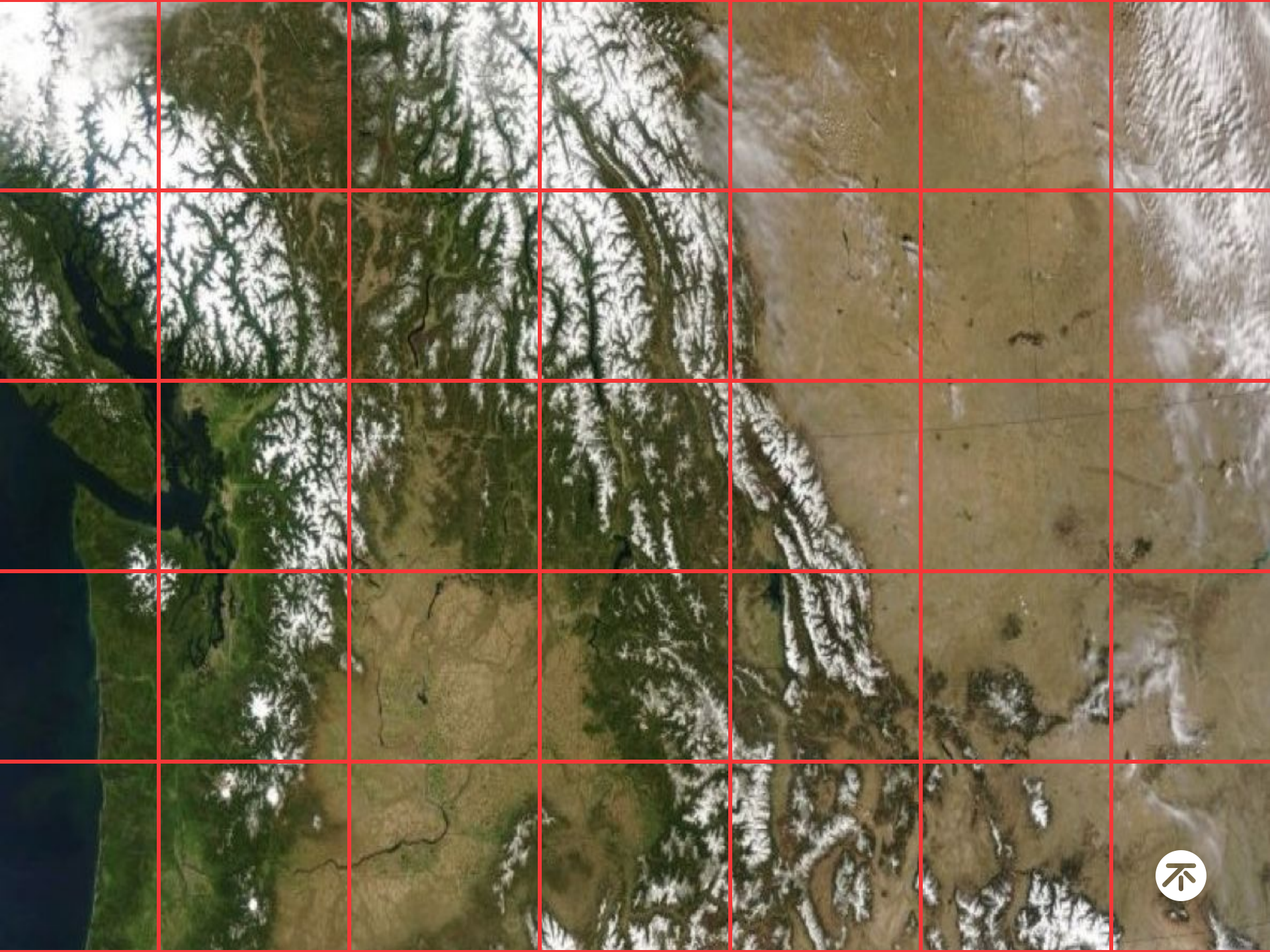
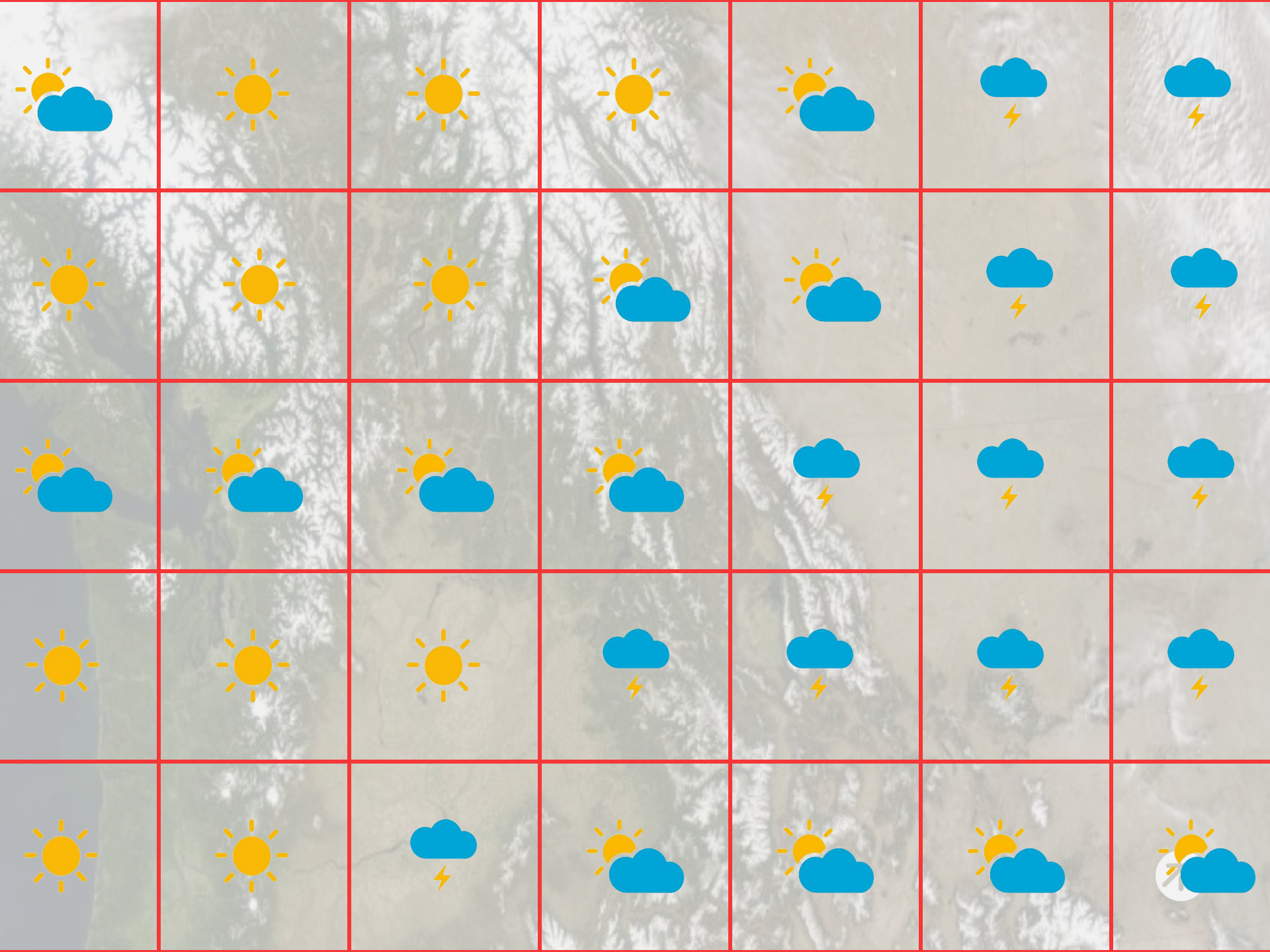

NATIONAL WEATHER SERVICE





This **isn’t** how weather works

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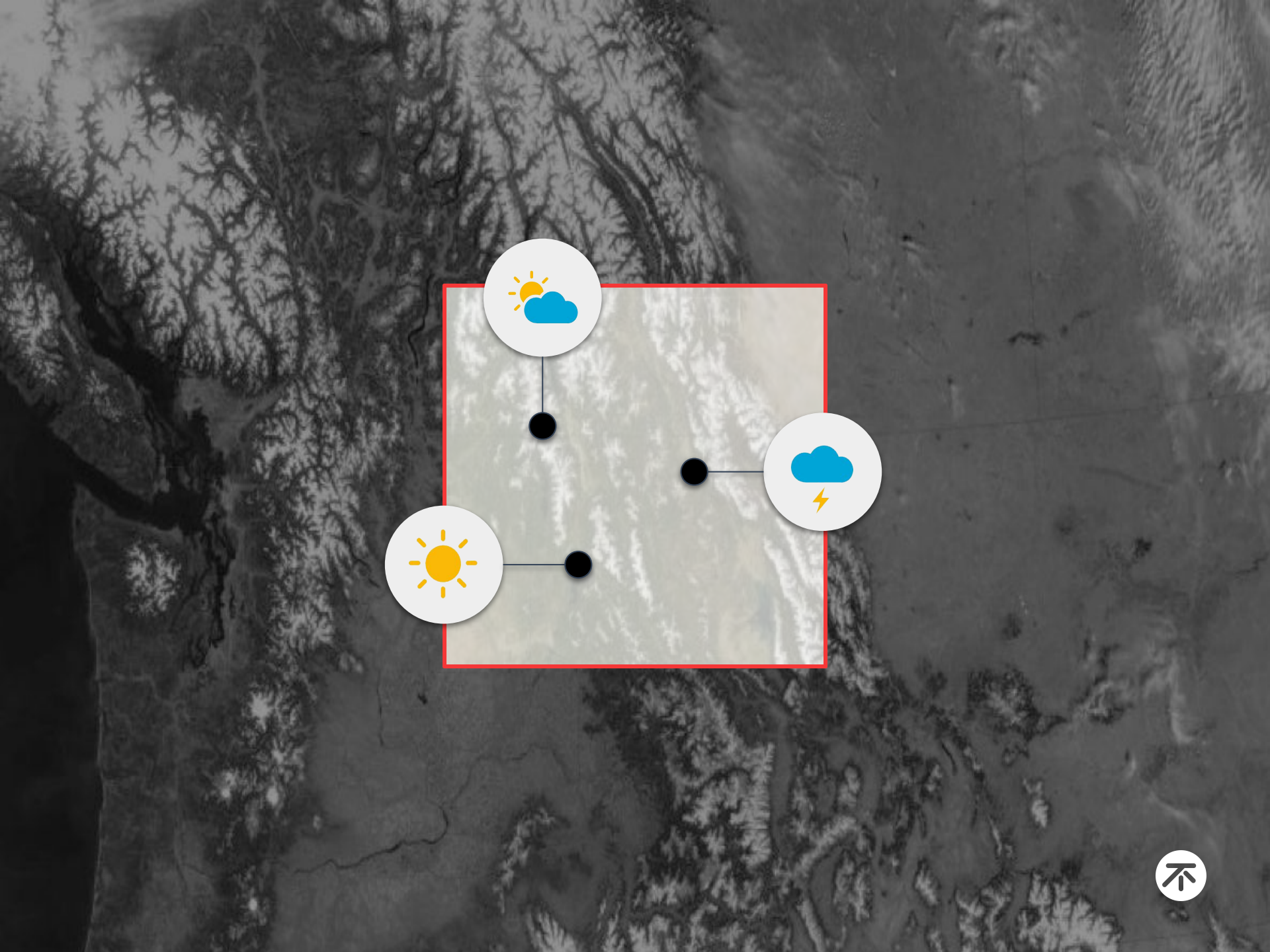
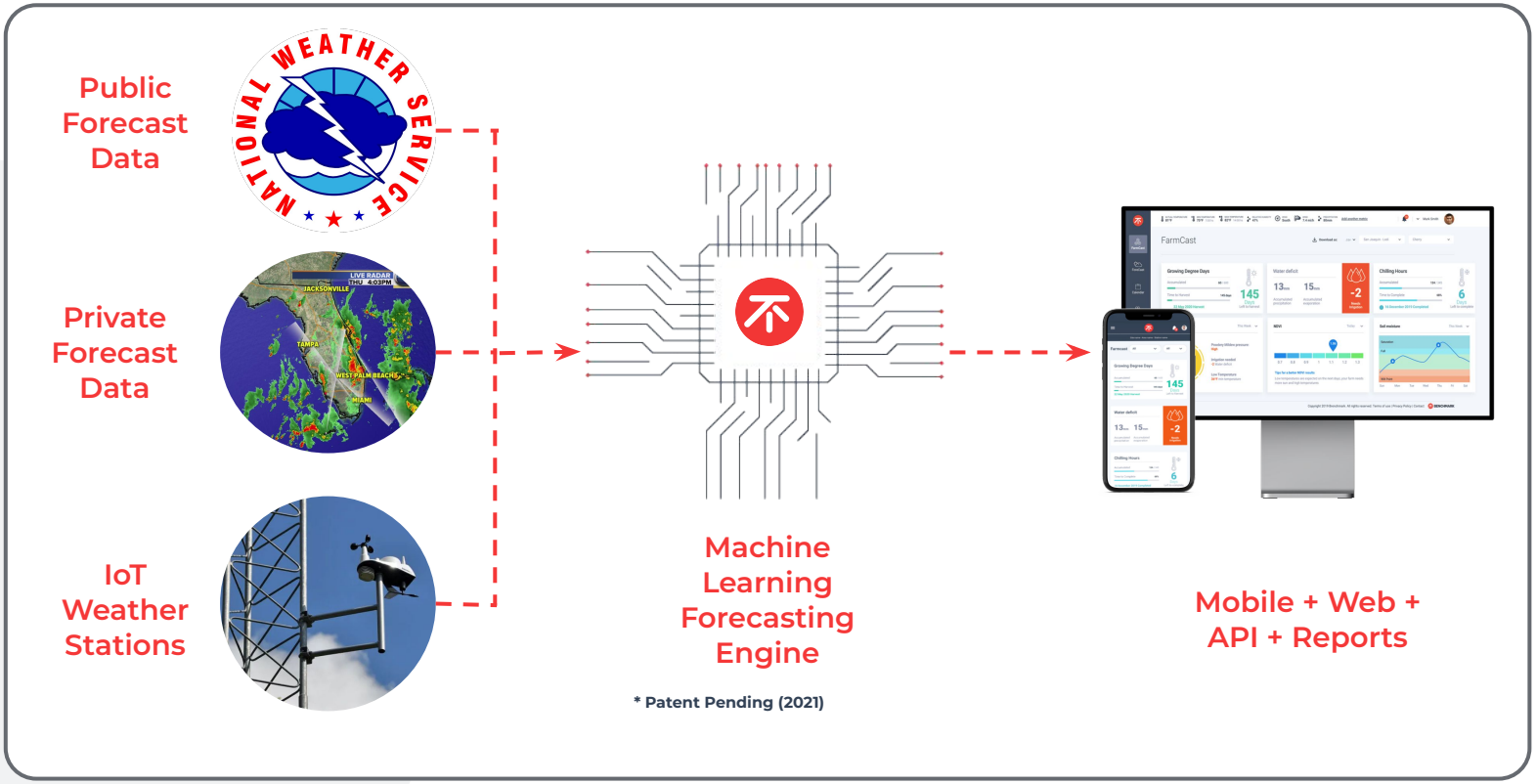


How do we do it?

Benchmark Labs' environmental forecasting approach leverages **publicly available information**, **private forecasts**, **in-field IoT sensor data**, and **machine learning based models** to produce hyper-local forecasts for the location of each individual sensor, instead of forecasts for a coarser area, like traditional approaches.



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What do you do?

Our forecast system can seamlessly integrate with personal IoT weather stations

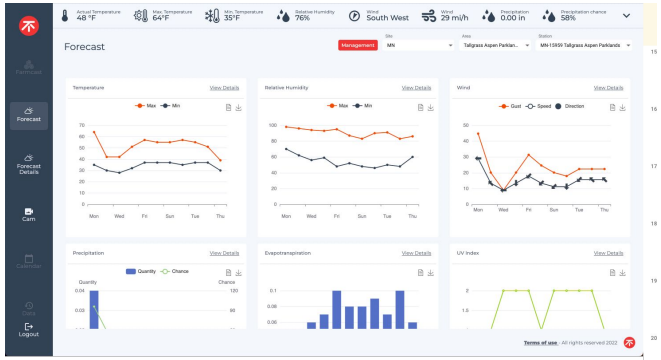
Your Weather Station

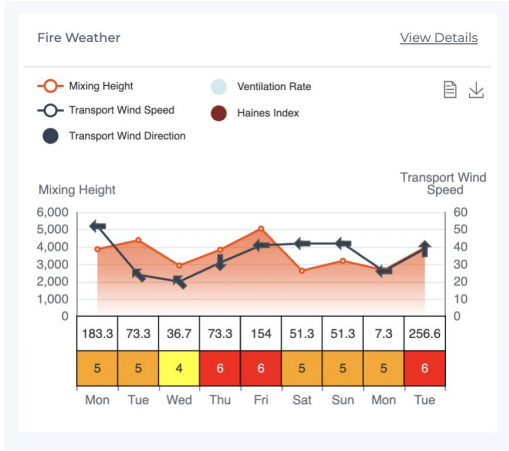
or

Nearby Public Station

Send Sensor Info to Your Benchmark Labs Deployed Engineer

Receive Your Benchmark Labs Forecasts





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15 day forecast
Hourly resolution
18 variables
(and counting...)

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What do we do?

- TEMPERATURE
- RELATIVE HUMIDITY
- WIND DIRECTION
- WIND SPEED
- WIND GUST
- HAINES INDEX
- MIXING HEIGHT
- TRANSPORT WIND SPEED
- TRANSPORT WIND DIRECTION
- VENTILATION RATE
- PRECIPITATION CHANCE
- PRECIPITATION QUANTITY
- CLOUD COVER
- EVAPOTRANSPIRATION
- SOLAR RADIATION
- UV INDEX

BurnCast v1

- Schedule labor around burns
- Avoid false positives
- Improve safety of burns
- Increase quantity and efficacy of burns

BurnCast v2

- ADI, KBDI, FDFM
- ** *YOUR METRIC HERE* **
- Prescription ranges and alerts

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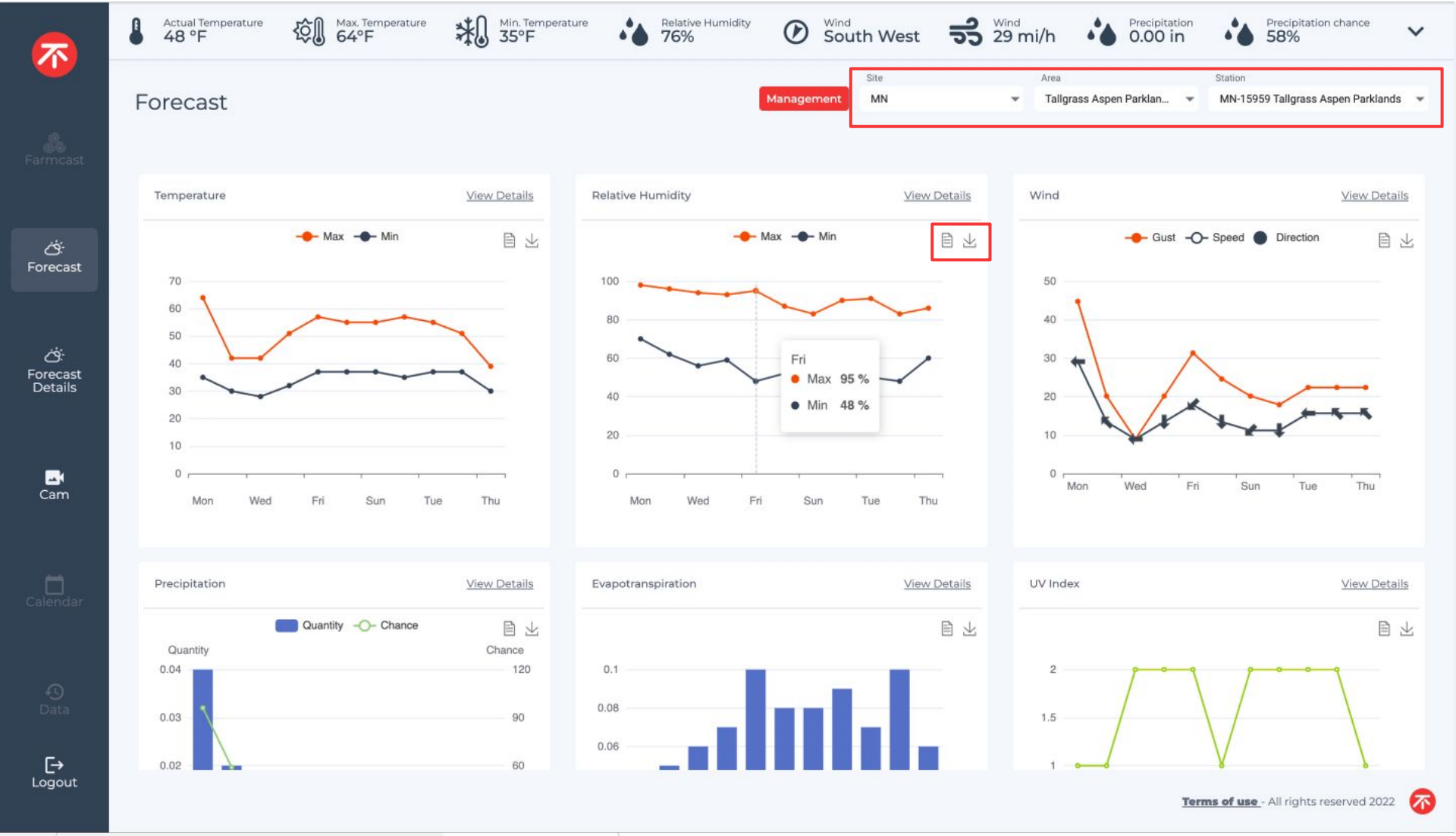
What do we do?



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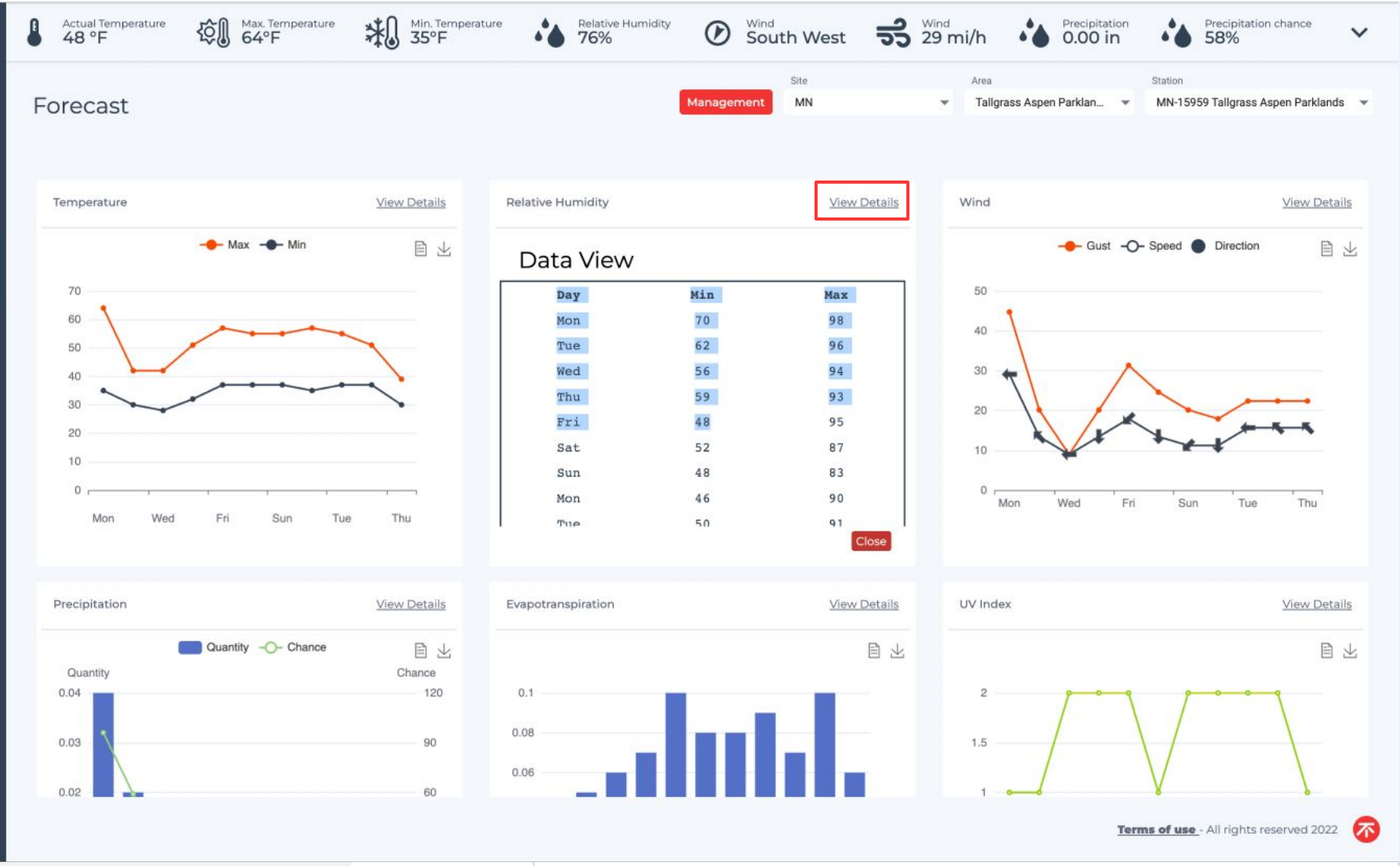
What do we do?



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What do we do?

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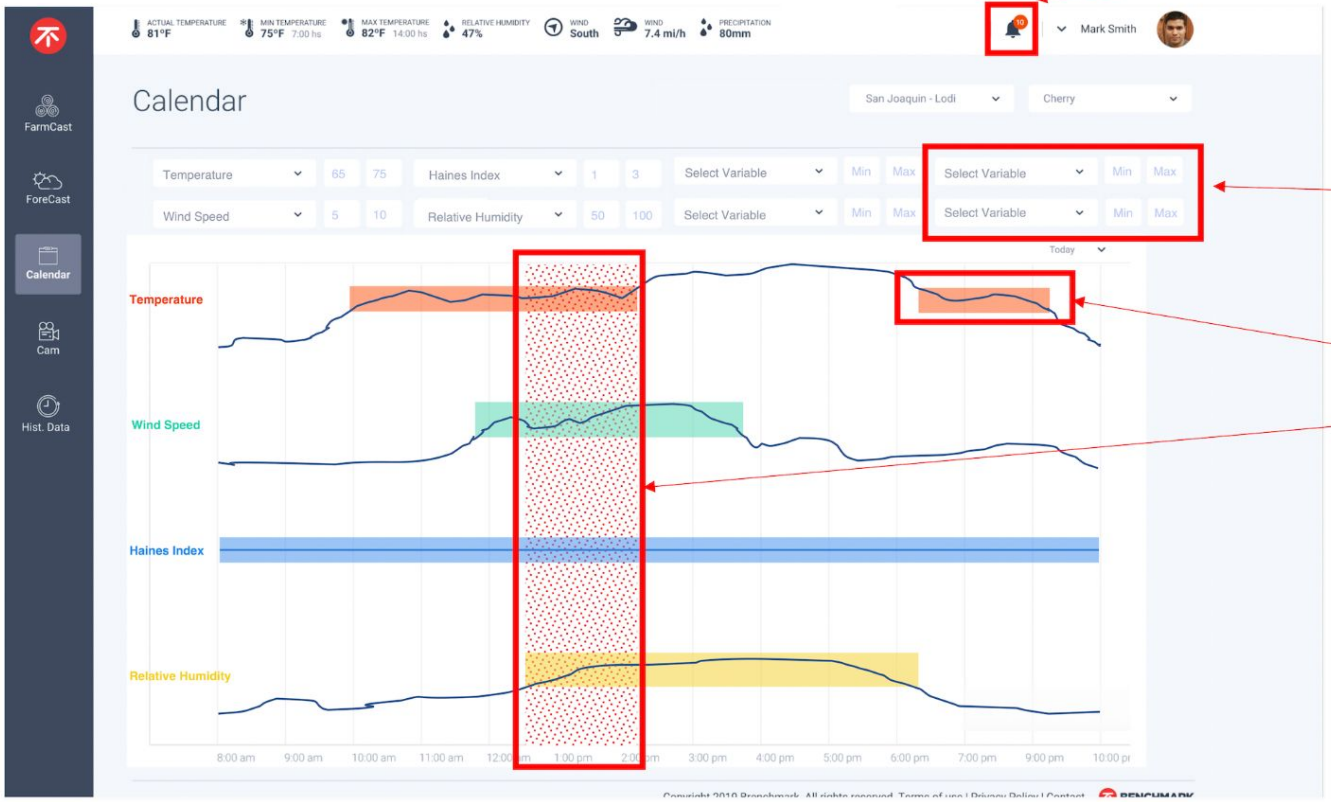
Coming up next...

Burncast

v2 – Productivity – Better Planning Tool



3

Set alerts to know when forecast conditions change

1

Select the variables and levels you care about

2

Easily visualize when these variables meet your criteria

How *well* do we do it?

What are we comparing?

- Two preserves from our Nature Conservancy pilot
- Comparing Benchmark Labs vs. NOAA (over 700+ forecasts each)
- Mean Absolute Error (MAE) = Forecast - Observation

  (The difference between what you expect and what you get)
- Temperature, Relative Humidity, Wind Speed

“How do Benchmark Labs Forecasts compare to the National Weather Service X days out?”

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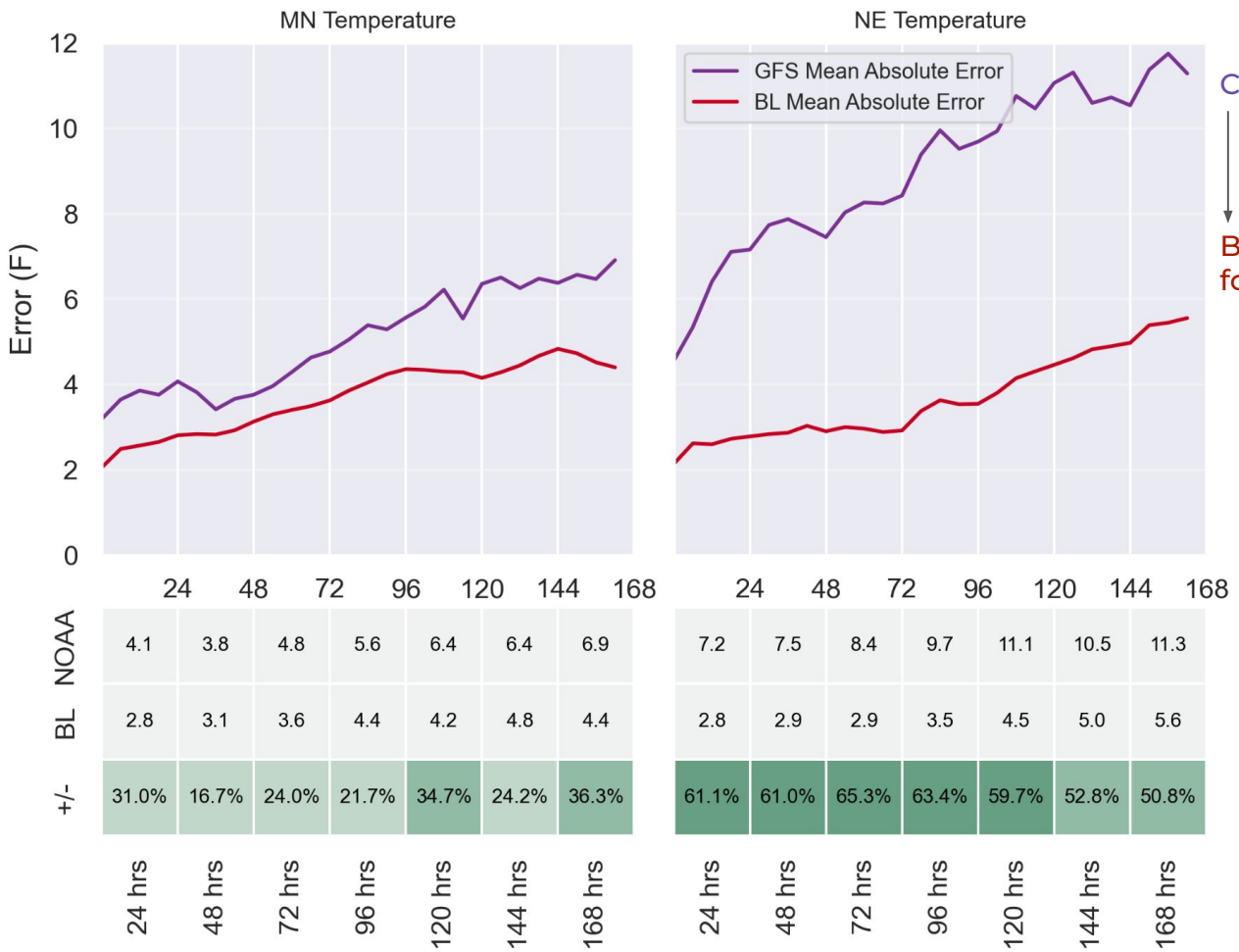
How *well* do we do it?

Temperature



Current forecasts

50-60% error reduction

Benchmark Labs forecasts

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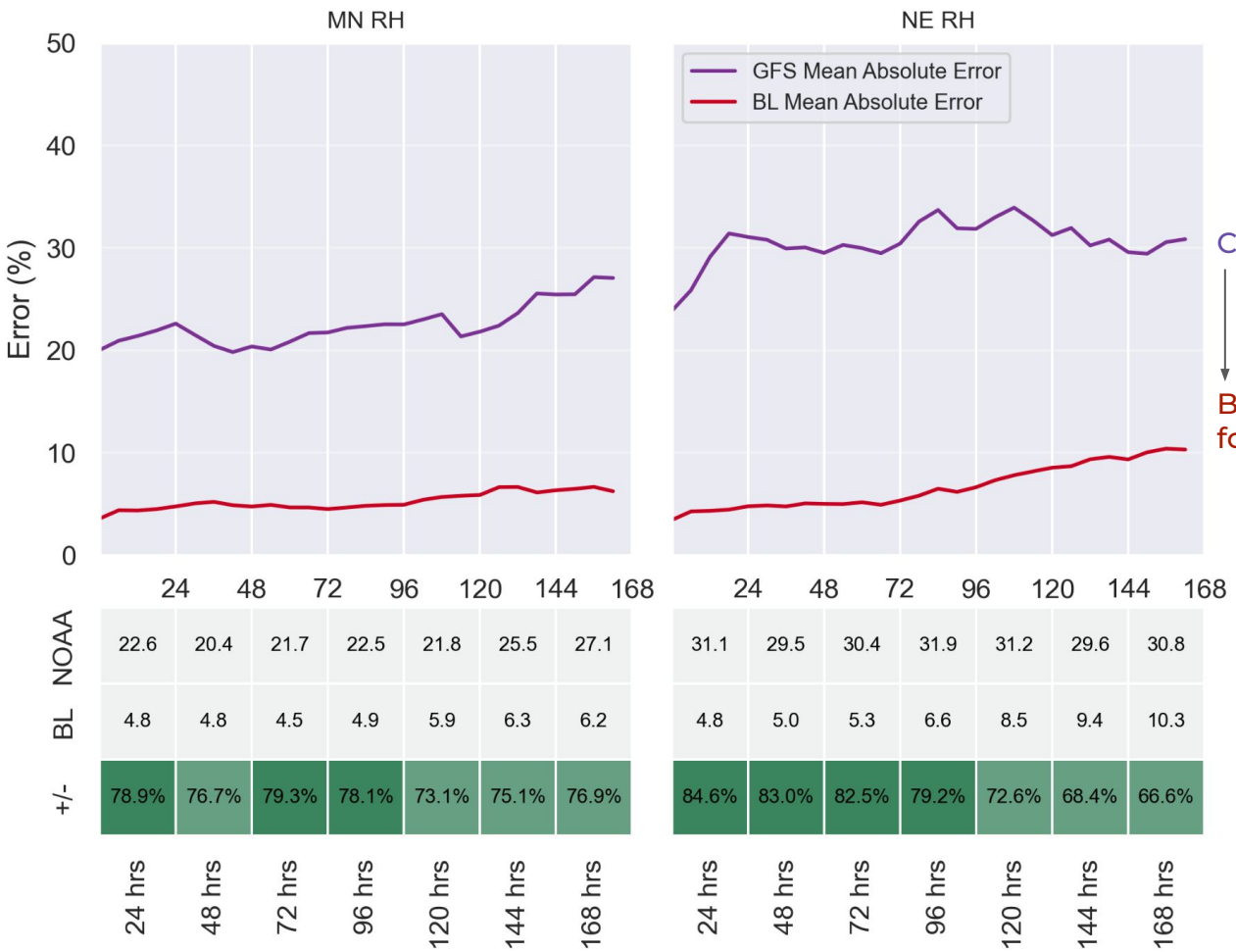
How *well* do we do it?

Relative Humidity



Current forecasts

70-80% error reduction

Benchmark Labs forecasts

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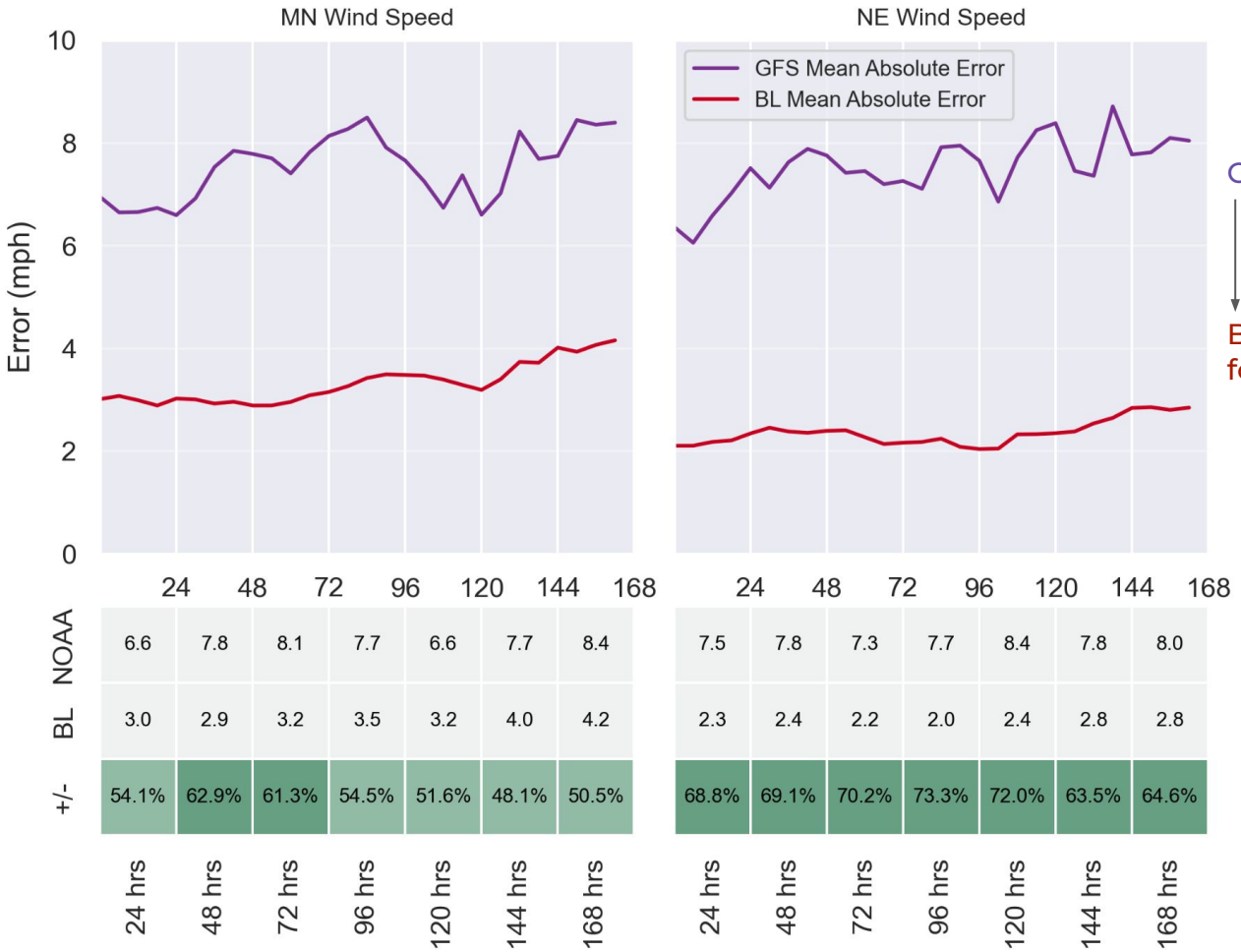
How *well* do we do it?

Wind Speed



Current forecasts

60-70% error reduction

Benchmark Labs forecasts

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Our forecasts can help you:

Burn safer
Burn more
Stress less

Accuracy Productivity Compliance

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