

Potential of **Nowcasting** and high resolution weather forecast to estimate key pest management variables.

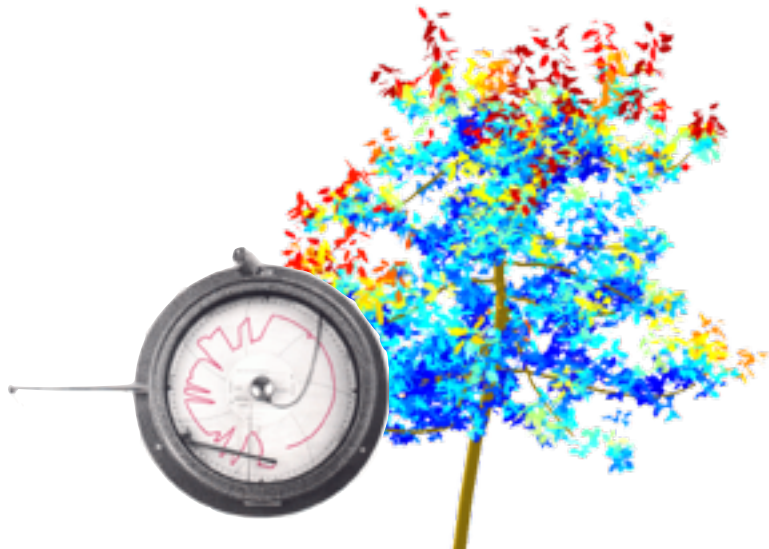
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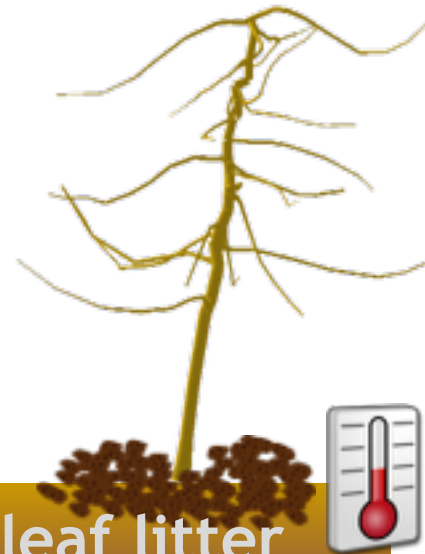


Our objectives

DEMATERIALIZED TOOLS
to predict:



leaf wetness
duration



leaf litter
temperature

Models currently depend on weather data...



from real time local data
(agrometeorological
stations)

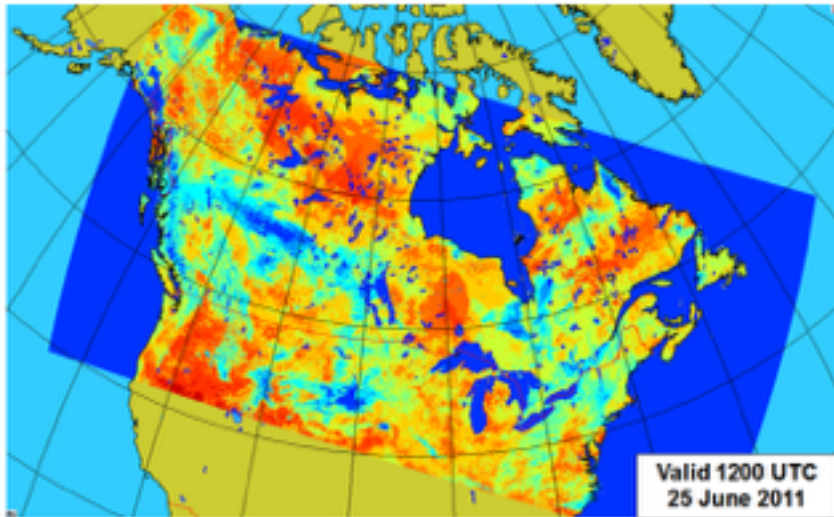
OR

???

How can we **REALLY** dematerialize ?

One promising answer

HRDPS : High Resolution Deterministic Prediction System



Source : S. Bélair, Environment Canada

- Data every **30 minutes**
- **2.5 km** mesh grid spacing
- Models using mainly satellite data
- 0 - 48 hrs forecast updated every 6 hours

Future improvements 15 minutes forecast time interval
200m mesh grid spacing

Does it work?

Hourly data VS downscaled forecast (Saint-Bruno)

Aug. 03, 2014 - Oct. 17, 2014

Variable	RMSE
<i>Air Temp. (° C)</i>	1.83
<i>Rel. Hum. (%)</i>	10.76
<i>Radiation (W/m²)</i>	112.26
<i>Wind Speed (km/h)</i>	4.38
<i>Rain qty (mm)</i>	0.86

RAIN

Rain predicted, none observed	10.76%
<i>Rain not predicted, rain observed</i>	2.65%
Mean absolute difference	0.17mm

SkyBit vs HRDPS

3 hours (rain 6 hrs) SkyBit
VS
3 hours (6hrs rain) - (downscaled) - HRDPS

Oct. 09, 2014 - Oct. 17, 2014

Variable	SkyBit RMSE	HRDPS RMSE
<i>Air Temp. (° C)</i>	2.51	1.84
<i>Rel. Hum. (%)</i>	8.34	9.70
<i>Radiation (W/m²)</i>	151.39	90.94
<i>Wind Speed (km/</i>	5.29	4.64
<i>Rain qty (mm)</i>	1.82	1.64

SkyBit vs HRDPS

3 hours (rain 6 hrs) SkyBit
VS
3 hours (6hrs rain) - (downscaled) - HRDPS

Oct. 09, 2014 - Oct. 17, 2014

Rain estimation	SkyBit	HRDPS
Rain predicted, none observed	12.00%	16.00%
<i>Rain not predicted, rain observed</i>	0.00%	4.00%

HRDPS VS SkyBit – in brief

SkyBit is quite good at forecasting weather

HOWEVER

HRDPS is :FREE (governmental products)

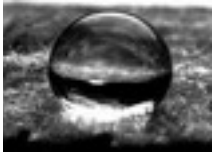
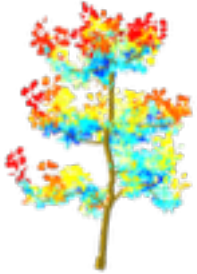
MORE ACCURATE (for most of the weather variables)

EVOLVING FAST (several research teams improving the model)

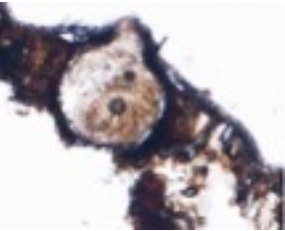
COVERING ALL NEW YORK & NEW ENGLAND STATES AND CANADA

About our models

See you next year to discover how :



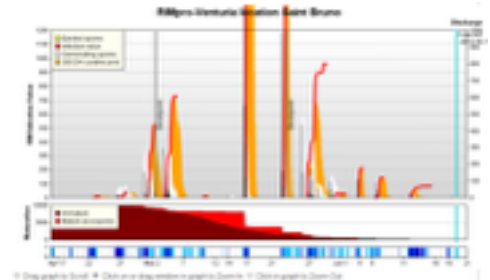
We model Leaf Wetness Duration with wettability and architectural parameters



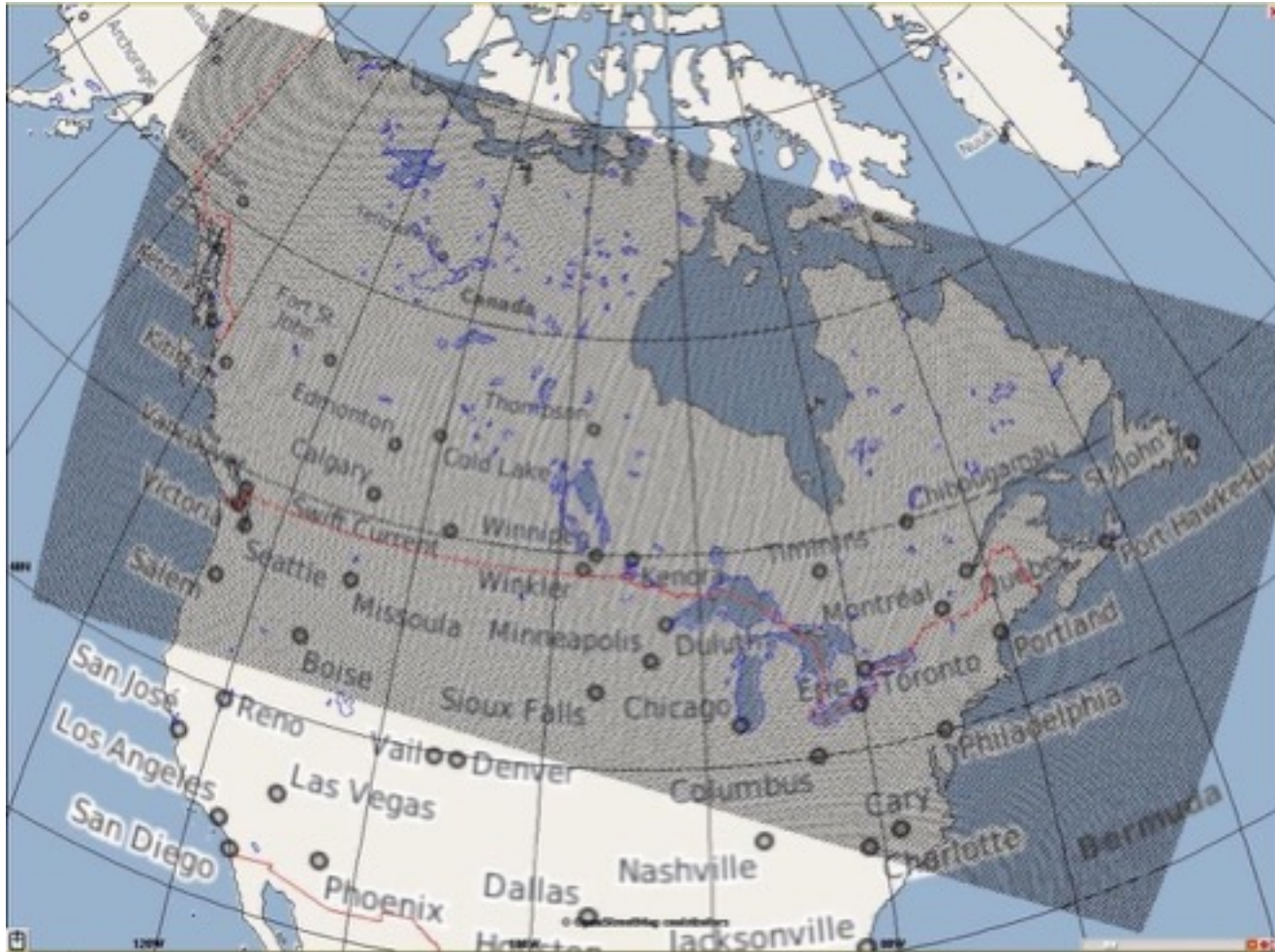
We estimate the temperature of leaf litter and how it could improve pest maturation models



We try our best to design easy-to-use and generic tools for a better orchard microclimate description



HRDPS coverage



Source : M. Abrahamowicz, Environment Canada