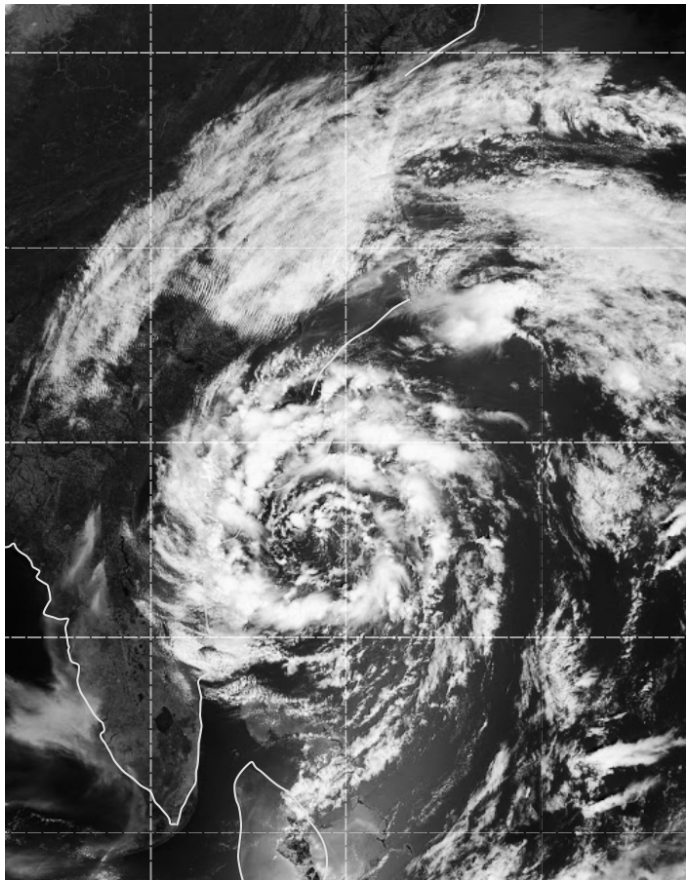
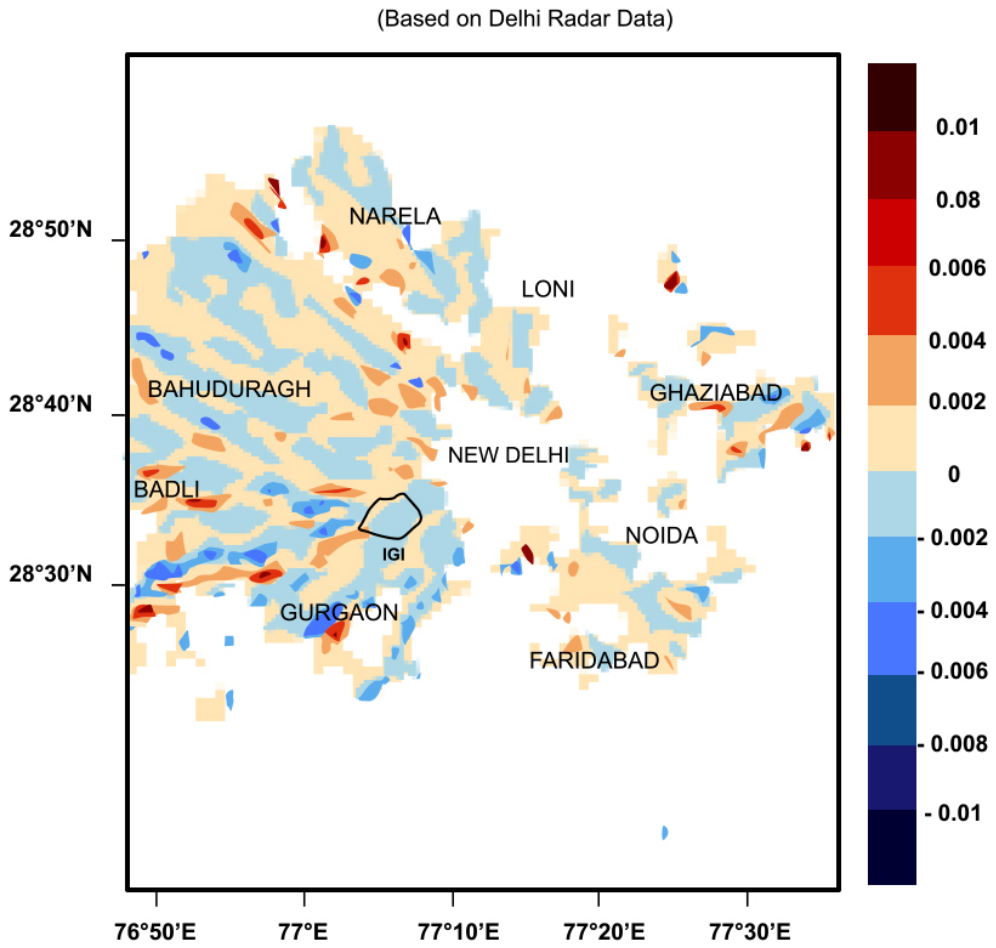
How do we forecast?

Weather Forecasting



Satellite Image of a Storm



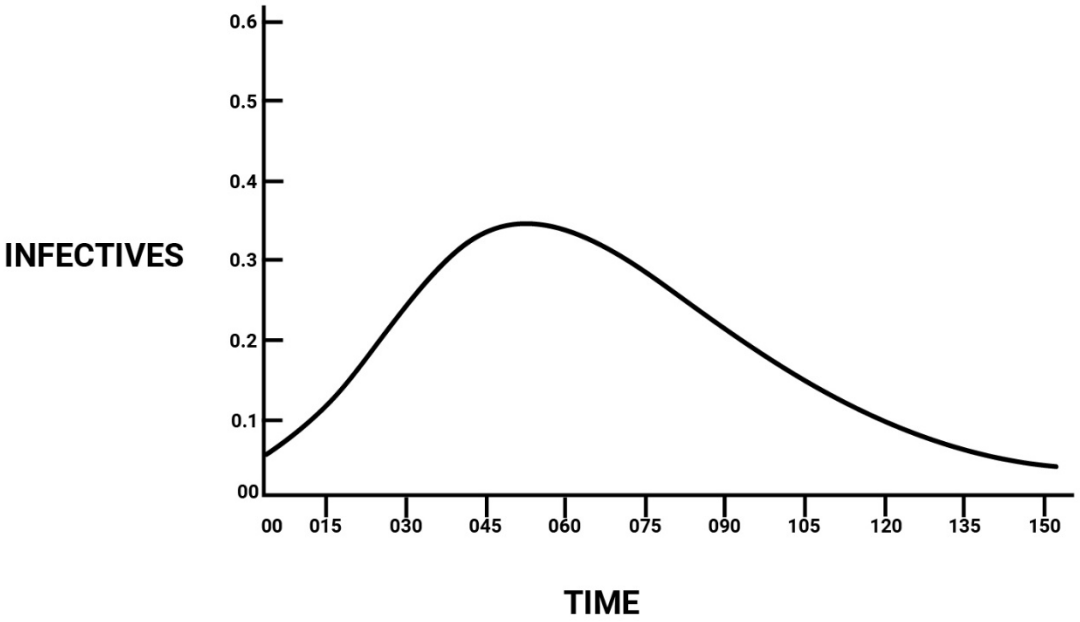
Wind Shear at 750m

Epidemic Model

S-I-R model

$$S'(t) = -\lambda SI$$
$$I'(t) = \lambda SI - \gamma I$$
$$S(0) = S_0 > 0, \quad I(0) = I_0 > 0.$$

Time t and differential equations

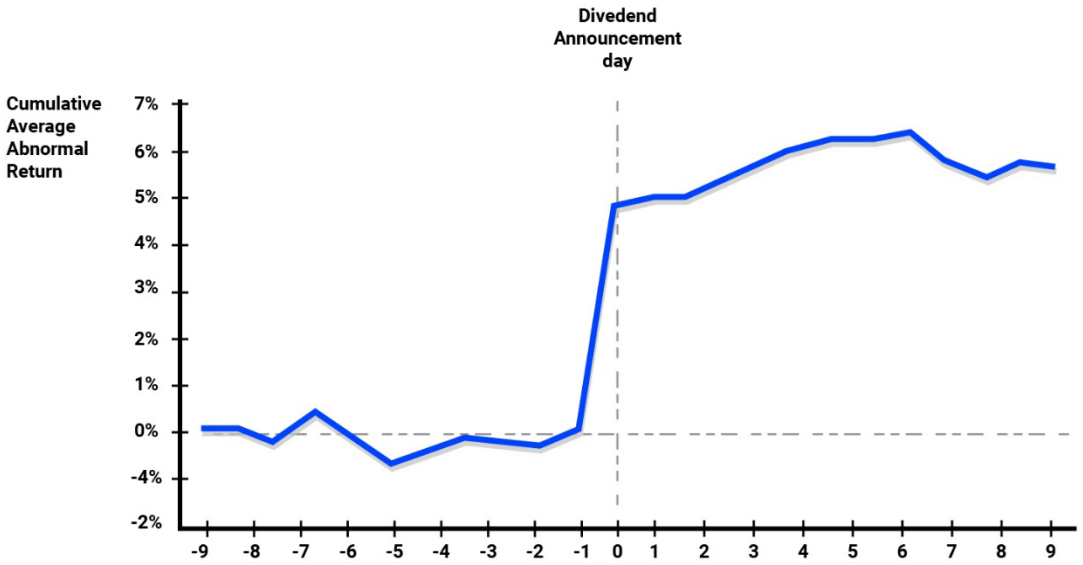


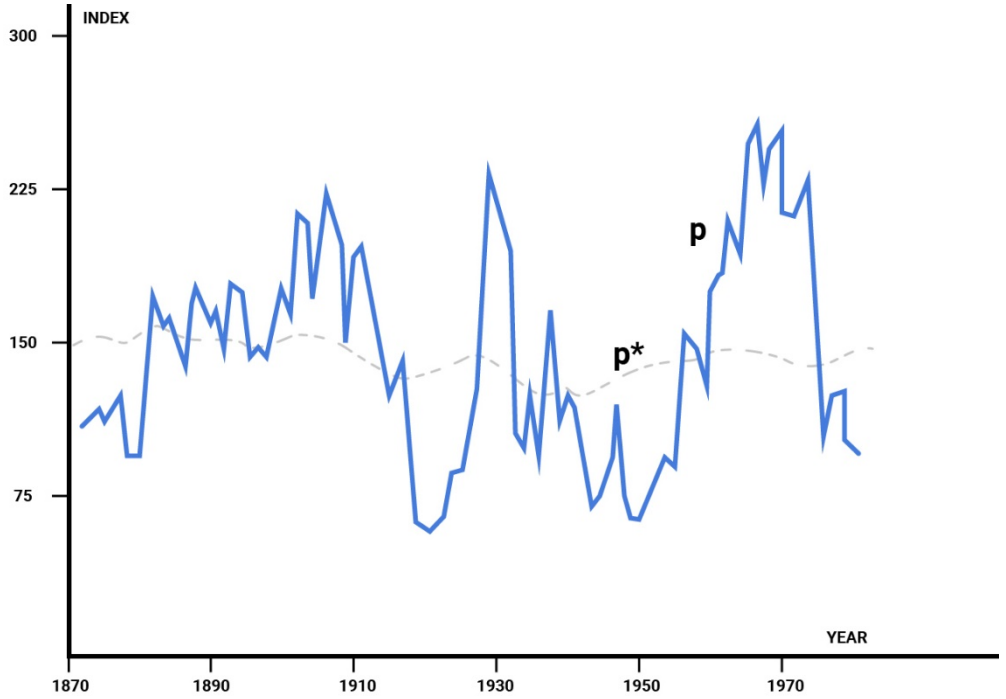
"Flattening the curve"

Other considerations

- *Births and natural deaths*
- *Immunity and vaccination*

Stock Prices



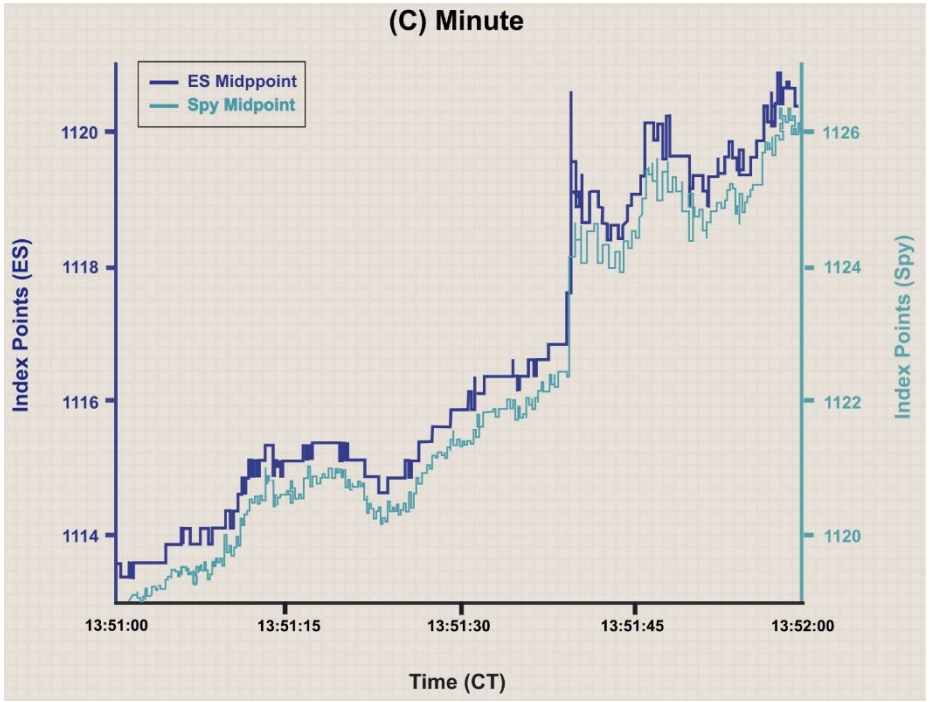


"Predictability is absent in the short run …

but there is predictability in the long run"

Efficient markets *to* *Behavioral finance*

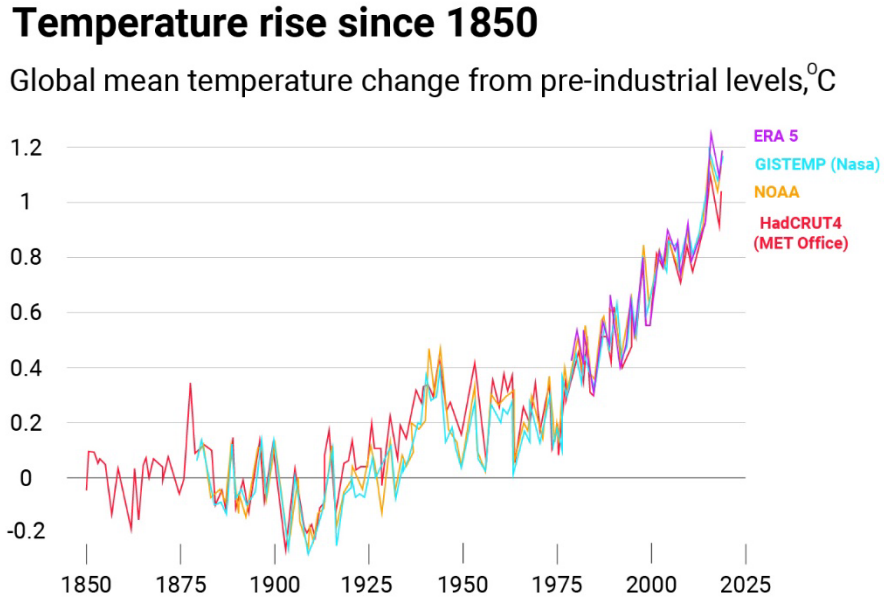
From seconds



Algorithmic trading

To centuries

Climate change



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Power Ahead

Thank you