**Contact information:**
Thijs van den Berg
Managing Director - SITMO

web: www.sitmo.com
email: thijs@sitmo.com
phone: +31 6 24110061

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# Historical Open-High-Low-Close Volatility: Rogers Satchell

created by **Thijs van den Berg**

$$\sigma = \sqrt{\frac{Z}{n} \sum \left[ \ln \frac{H_i}{C_i} \ln \frac{H_i}{O_i} + \ln \frac{L_i}{C_i} \ln \frac{L_i}{O_i} \right]}$$

The Roger and Satchell historical volatility estimator allows for non-zero drift, but assumed no opening jump.

## Symbol list:

| | |
|---|---|
| $\sigma$ | Volatility |
| Z | Number of closing prices in a year |
| n | Number of historical prices used for the volatility estimate |
| $O_i$ | The opening price |
| $H_i$ | The high |
| $L_i$ | The low |
| $C_i$ | The close |