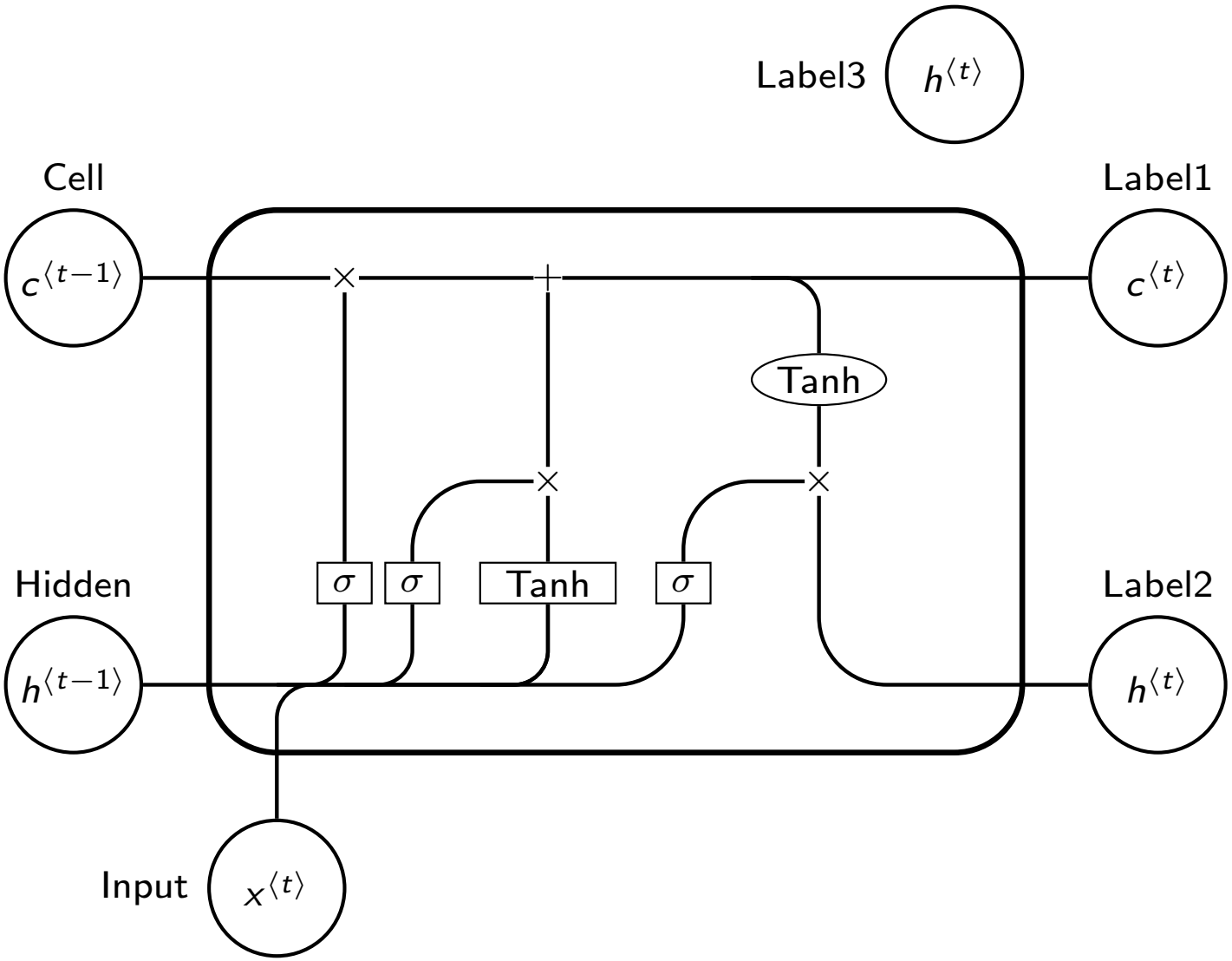
LSTM-RNN Results for GPP

January 28, 2019

Overview

- Use Recurrent Neural Network
- Need a Gated Type Method
  - LSTM (long short term memory)
  - GRU (gated reccurent unit)
- No longer need to deal with vanishing/exploding gradients
- Can handle history of time sequences

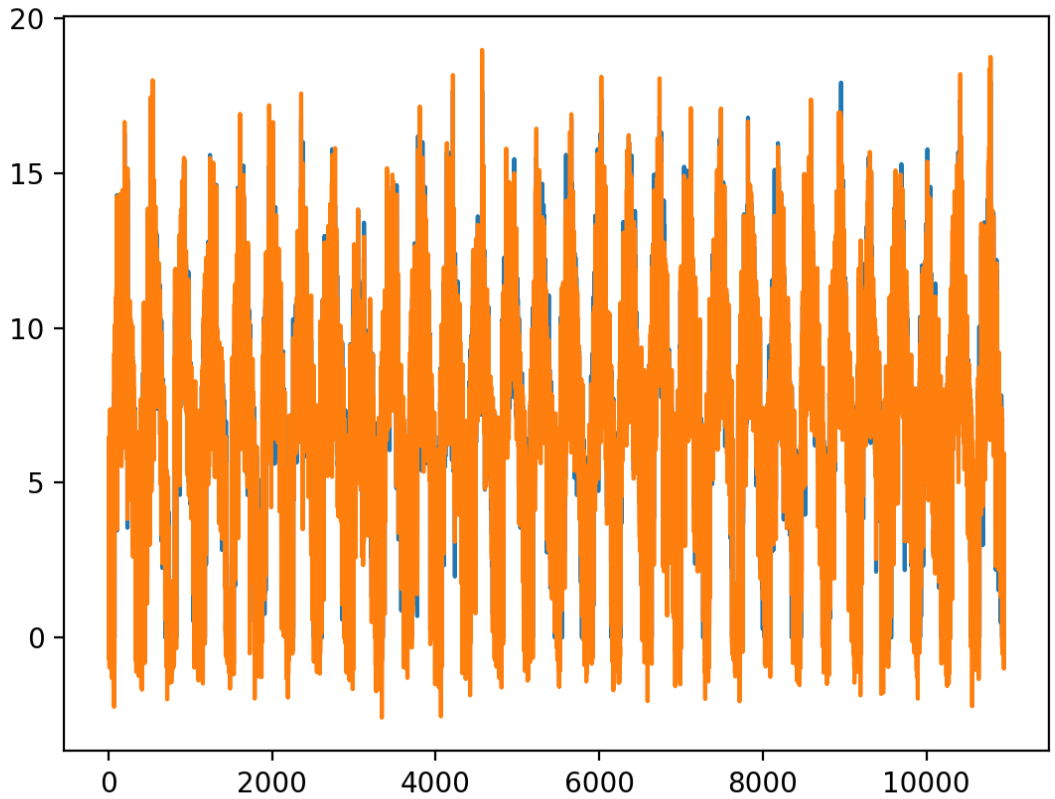
Bullet Points



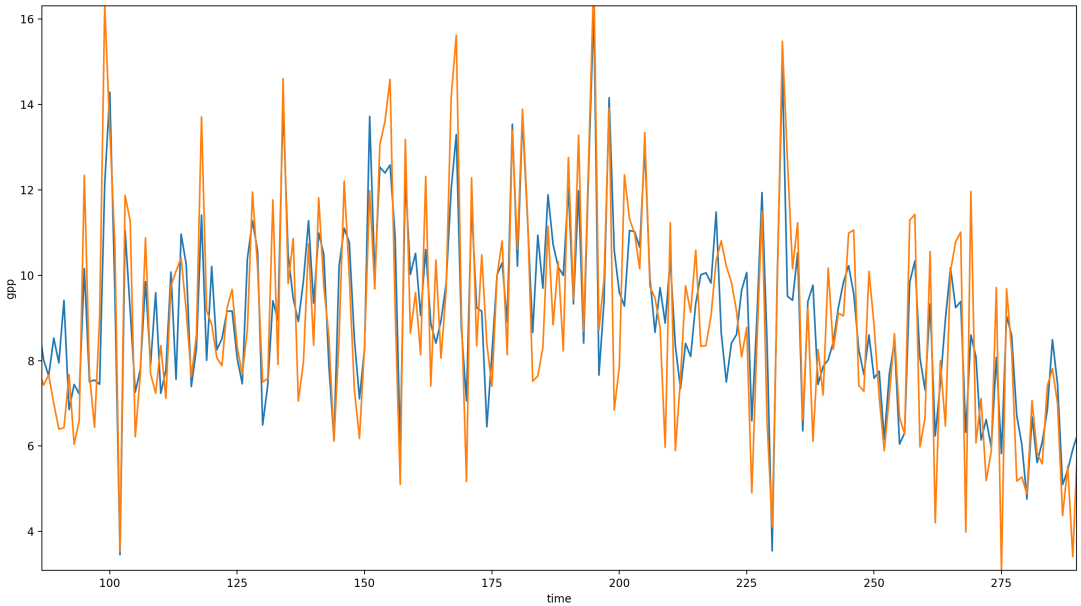
LSTM Cell summary

$$
\begin{aligned}
f_t &= \sigma(W_f x + U_f h_{t-1} + b_f) \\
i_t &= \sigma(W_i x + U_i h_{t-1} + b_i) \\
o_t &= \sigma(W_o x + U_o h_{t-1} + b_o) \\
c_t &= f_t \odot c_{t-1} + i_t \odot \sigma_c(W_c x_t + U_c c_{t-1} + b_c) \\
h_t &= o_t \odot \sigma_h(c_t)
\end{aligned}
\tag{1}
$$

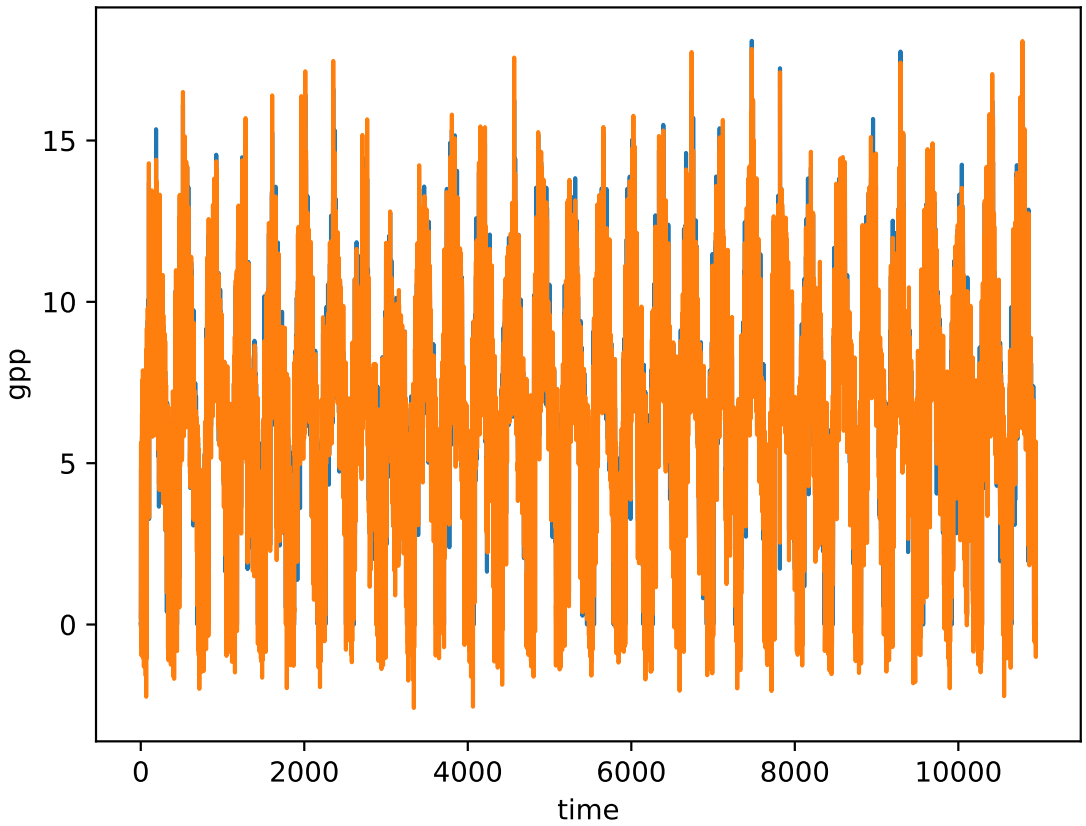
Model 1



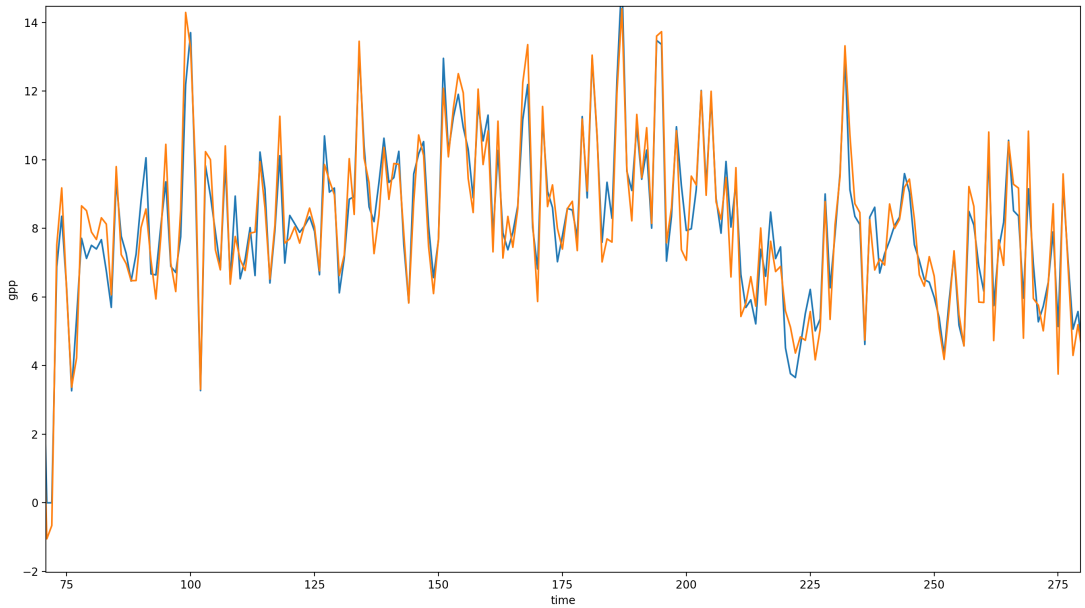
Model 1 zoom



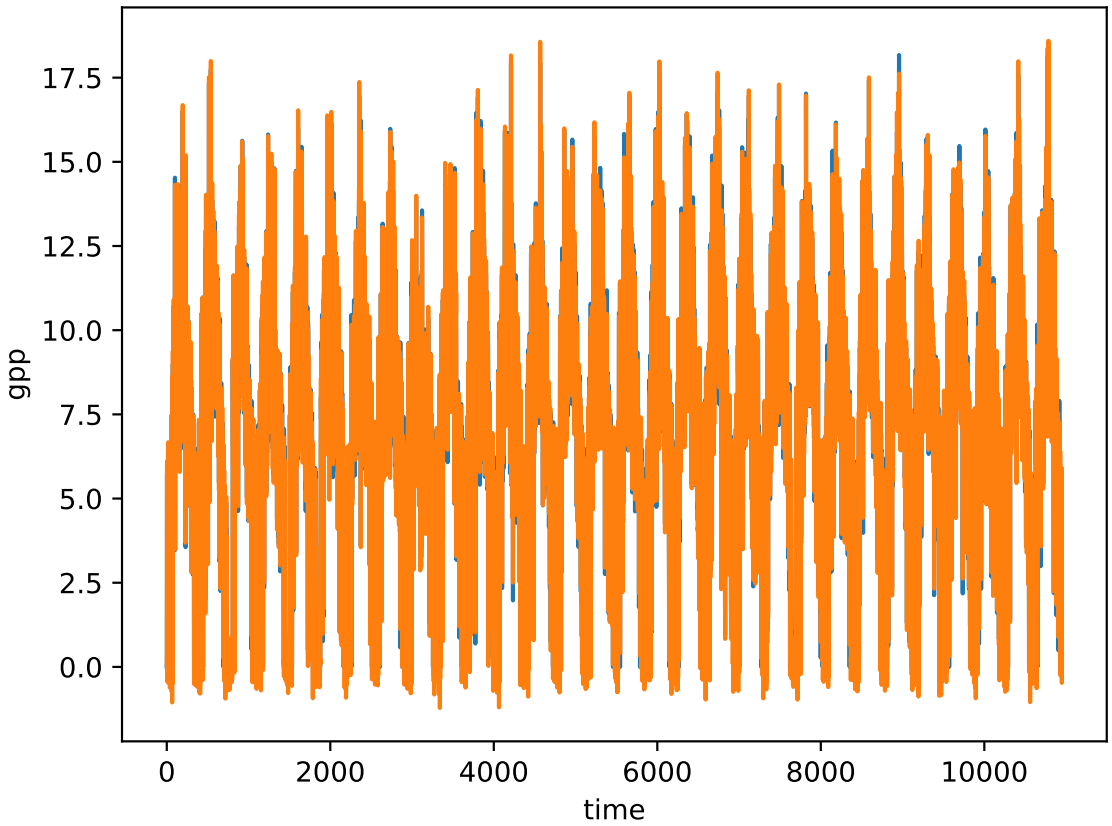
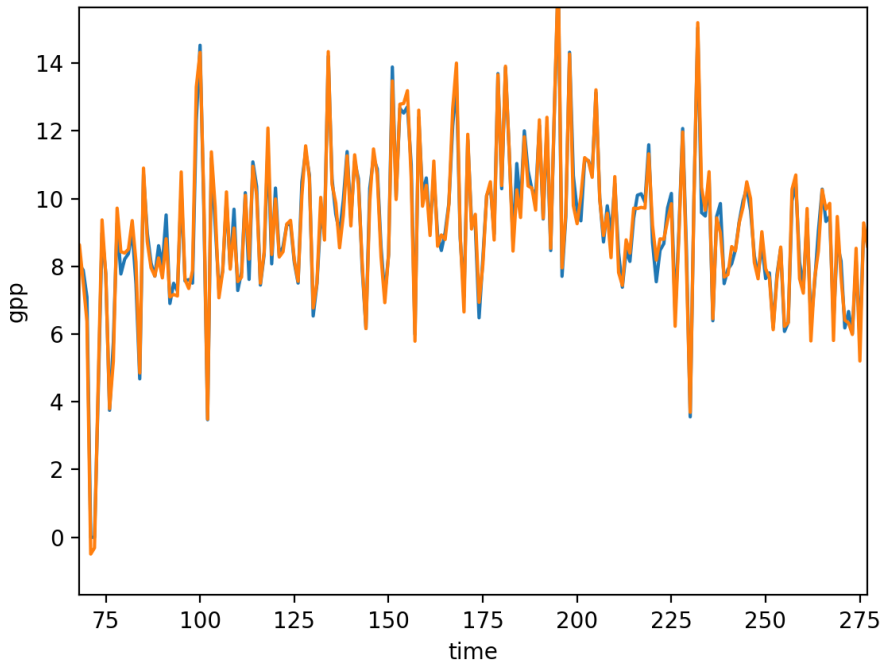
Model 2



Model 2 zoom



Model 3



Model 3 zoom