Supplement

Eq. (3) should be written as $E[\underline{e}] = E[E[\underline{e}|\underline{y}_s]]$, while eq. (4) should be written as $\underline{y} = E[\underline{y}|y_s] + \underline{\varepsilon}$. Here we underlined random variables (Hemelrijk 1966).

Secondly from eqs. (1) and (2)

$$\underline{y} := \underline{y}_s + \underline{e} \tag{1}$$

$$\underline{e} := E[\underline{e}|y_s] + \underline{\varepsilon} \tag{2}$$

we obtain

$$\underline{y} = \underline{y}_s + E[\underline{e}|y_s] + \underline{\varepsilon} \Rightarrow \tag{3}$$

$$\underline{y} = \underline{y}_s + E[\underline{y} - \underline{y}_s|y_s] + \underline{\varepsilon} \Rightarrow \tag{4}$$

$$\underline{y} = E[\underline{y}|y_s] + \underline{\varepsilon} + \underline{y}_s - y_s \tag{5}$$

which is not identical to eq. (4) of the manuscript.

Furthermore, from eq. (2) of the manuscript we obtain

$$E[\underline{\varepsilon}] = E[\underline{e}] - E[E[\underline{e}|y_s]] \Rightarrow \tag{6}$$

$$E[\underline{\varepsilon}] = E[\underline{e}] - E[\underline{e}|y_s] \Rightarrow \tag{7}$$

$$E[\underline{\varepsilon}] \neq 0 \tag{8}$$

Therefore, n of eq. (8) of the manuscript must be checked whether it is a standard variable. On the other hand, if we use $\underline{y}_s$, instead of y_s then eq. (4) of the manuscript is confirmed and $E[\underline{\varepsilon}] = 0$.