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(PM) Processing Modflow

(ANN)



Loaiciga and Leipnik (2001) Yeh (1992) Maddock (1974)

Karamouz et al. (2004)

.Karamouz (1999,2001)



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<sup>1</sup> Fitness





Graphic MODFLOW

PMWIN Groundwater

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<sup>1</sup> Cross over  
<sup>2</sup> Mutation  
Link



ANN PMWIN

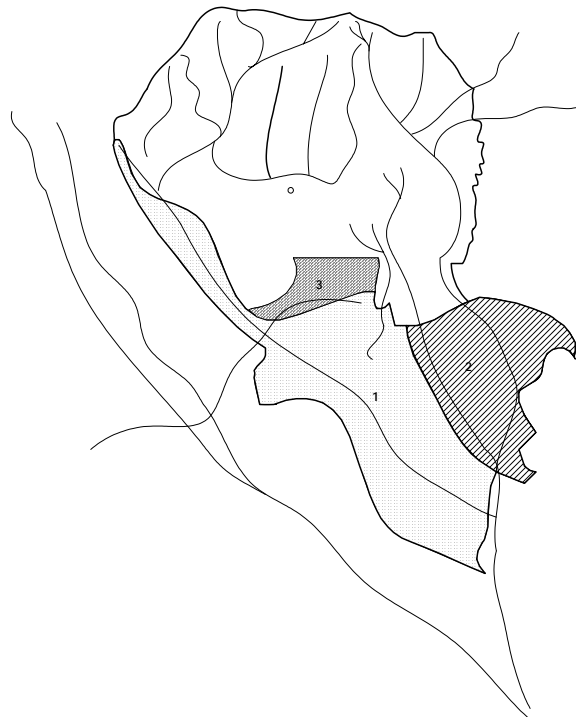
PMWIN .

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PMWIN

Processing Modeling for Windows



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PMWIN

(PMWIN)

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$$\text{Minimize } \left( \sum_{i=1}^2 \sum_{j=1}^{15} \sum_{t=1}^{12} \alpha_i (D_{ij}(i) - Q_{ij}(i) - G_{ij}(i)) / D_{ij}(i) + \sum_{j=1}^{15} \sum_{t=1}^{12} \alpha_3 (D_{ij}(3) - G_{ij}(3)) / D_{ij}(3) + \sum_{i=1}^3 \sum_{j=1}^{15} \sum_{t=1}^{12} \beta_i (G_{ij}(i) \cdot H_{ij}(i) / G_{\max}(i) \cdot H_{\max}(i)) + \sum_{i=1}^3 \sum_{j=1}^{15} \sum_{t=1}^{12} \gamma_i (\Delta L_{ij}(i) / \Delta L_{\max}(i)) \right)$$

Constraints :

$$\sum_{i=1}^3 \alpha_i = 1$$

$$\sum_{i=1}^3 \beta_i = 1$$

$$\sum_{i=1}^3 \gamma_i = 1$$

$$\sum_{i=1}^2 \sum_{j=1}^{15} \sum_{t=1}^{12} D_{ij}(i) \leq \sum_{i=1}^2 \sum_{j=1}^{15} \sum_{t=1}^{12} (Q_{ij}(i) + G_{ij}(i))$$

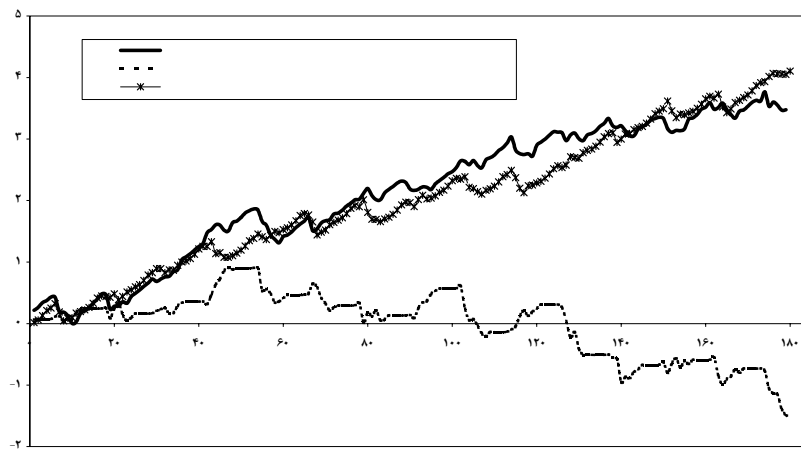
$$\sum_{i=1}^2 \sum_{j=1}^{15} \sum_{t=1}^{12} \Delta L_{ij}(i) \leq \Delta L_{\max}(i)$$

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