Supplementary Materials

Algebraic and automated targeting for intra- and inter-regions problems in terrestrial carbon management network

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Superstructure model for total site EW networks may be adopted from the equivalent water recovery problem proposed by Chew et al. (2008). The LP model is re-formulated as follows:

Minimise

$$\sum_i \sum_j (\alpha + \beta_{ij}) \left(P_i r_{ij} + P_i r_{CSij}\right)$$

Subject to:

$$\sum_j r_{ij} + \sum_j r_{CSij} \leq S_i \quad \forall i$$

$$\sum_i r_{ij} + \sum_i r_{CSij} \leq D_j \quad \forall j$$

$$\sum_i P_i r_{ij} + \sum_i P_i r_{CSij} \leq C_j \quad \forall j$$

$$r_{ij} \leq 0 \quad \forall ij$$

$$r_{CSij} \leq 0 \quad \forall ij$$

where α is the carbon sequestration factor measured in CO_2 removal per unit of crushed rock applied, β_{ij} is the CO_2 footprint per unit of crushed rock allocated from source i to sink j, P_i is the operating life of operation of source i, r_{ij} is the annual flowrate of crushed rock from source i to sink j, r_{CSij} is the flowrate of crushed rock sent from source i to sink j, S_i is the maximum annual production rate of source i, D_j is the maximum annual application rate at sink j, and C_j is the maximum cumulative amount of crushed rock that can be applied to sink j.