



Development of an erosion and transfer particulate phase pesticides model at the watershed scale

Tulio Soares-Lima, Nadia Carluer, Michaël Rabotin, Roger Moussa, Claire Lauvernet

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Tulio Soares-Lima, Nadia Carluer, Michaël Rabotin, Roger Moussa, Claire Lauvernet. Development of an erosion and transfer particulate phase pesticides model at the watershed scale. EGU General Assembly, Apr 2023, Vienne (Autriche), Austria. hal-04258064

HAL Id: hal-04258064

<https://hal.inrae.fr/hal-04258064>

Submitted on 25 Oct 2023

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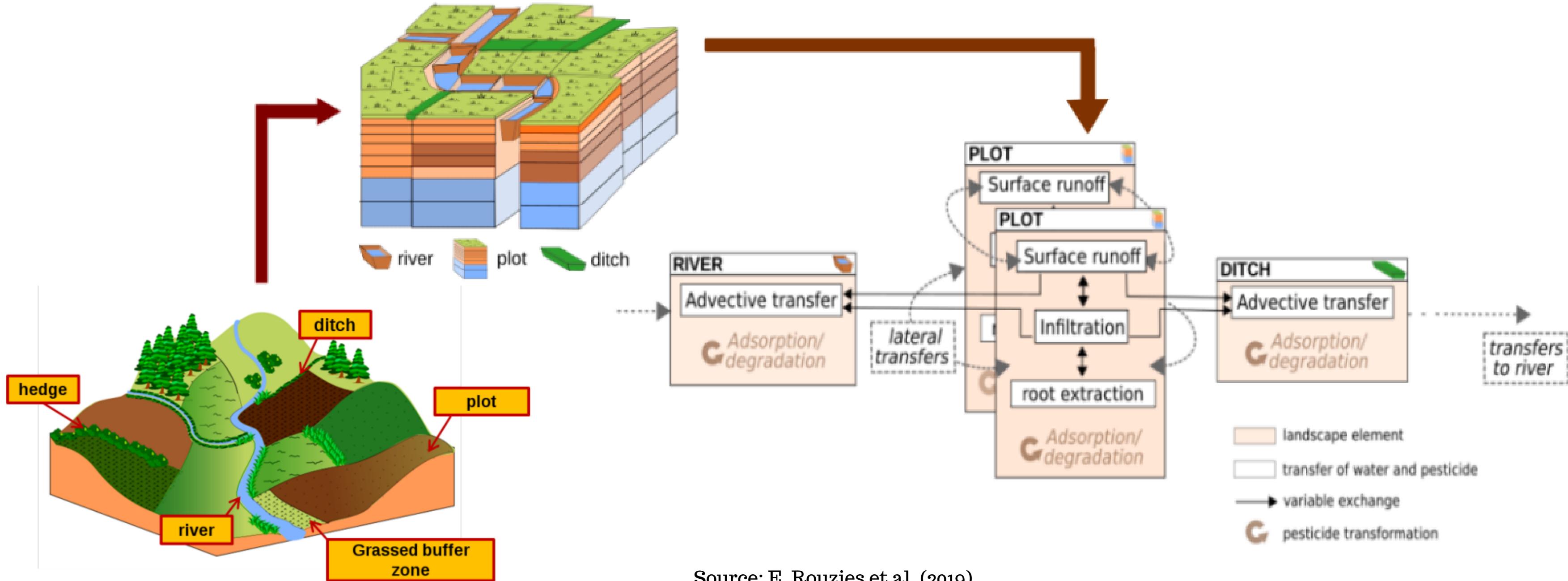
Session HS9.2 – Transfer of sediments and contaminants in catchments, rivers systems and lakes

Development of an erosion and transfer particulate phase pesticides model at the watershed scale

Tulio Lima, Nadia Carluer, Michael Rabotin, Roger Moussa, and Claire Lauvernnet

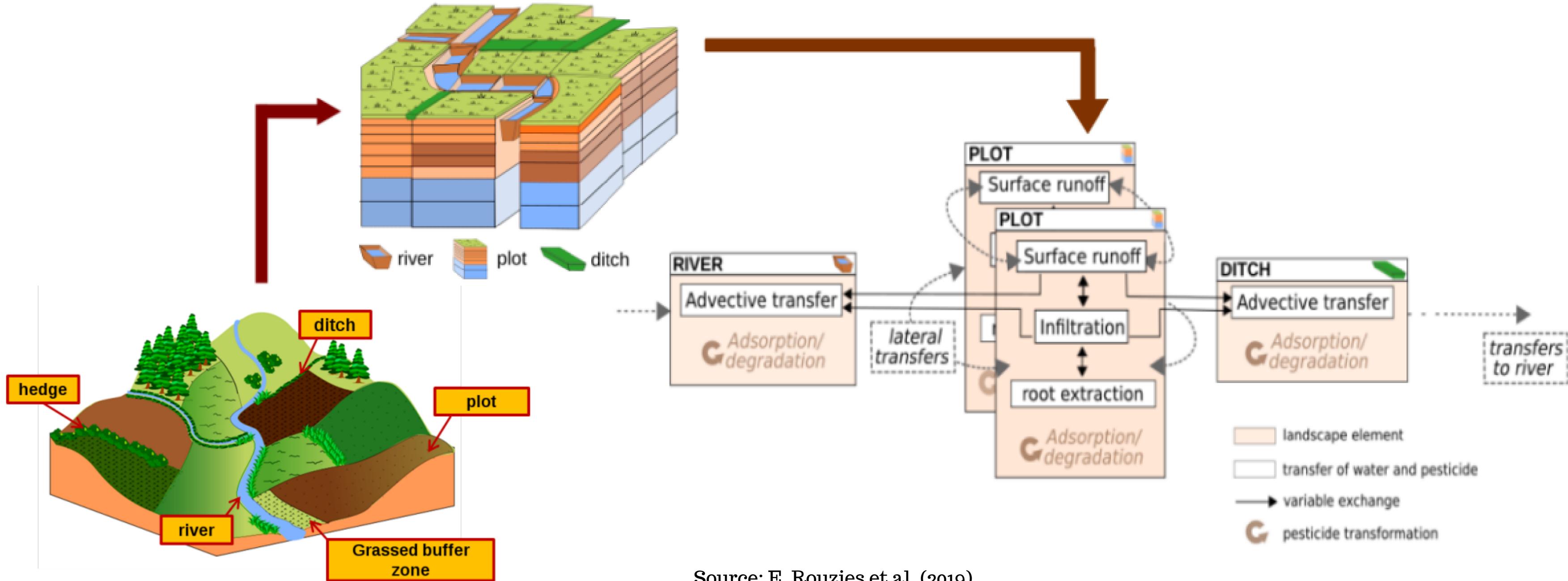
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- Simulate pesticide transfers (in solution) and fate on small agricultural catchments
- Simulations of heterogeneous landscapes
- Continuous dynamic simulations
- Modular structure to explore landscape management scenarios



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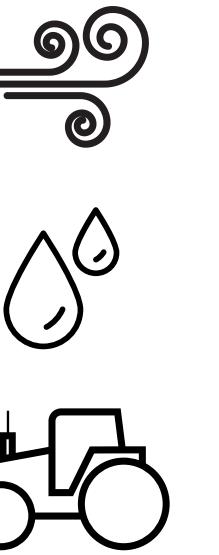
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Source: E. Rouzies et al. (2019)

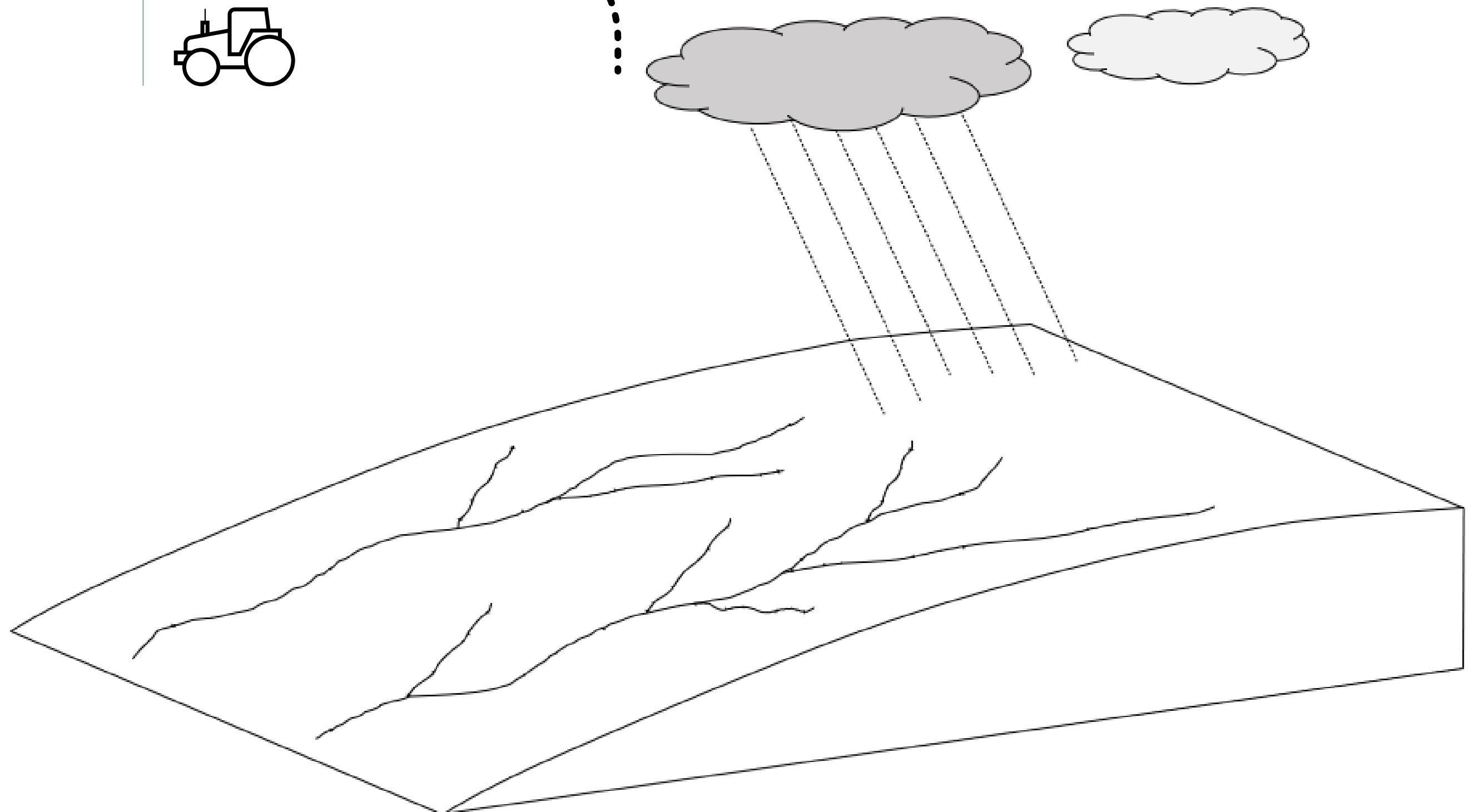
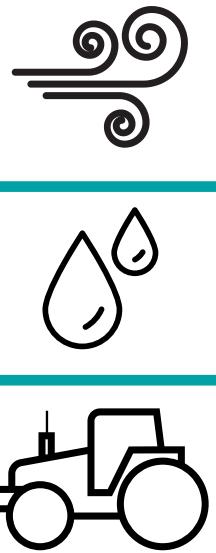
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EROSION MODEL



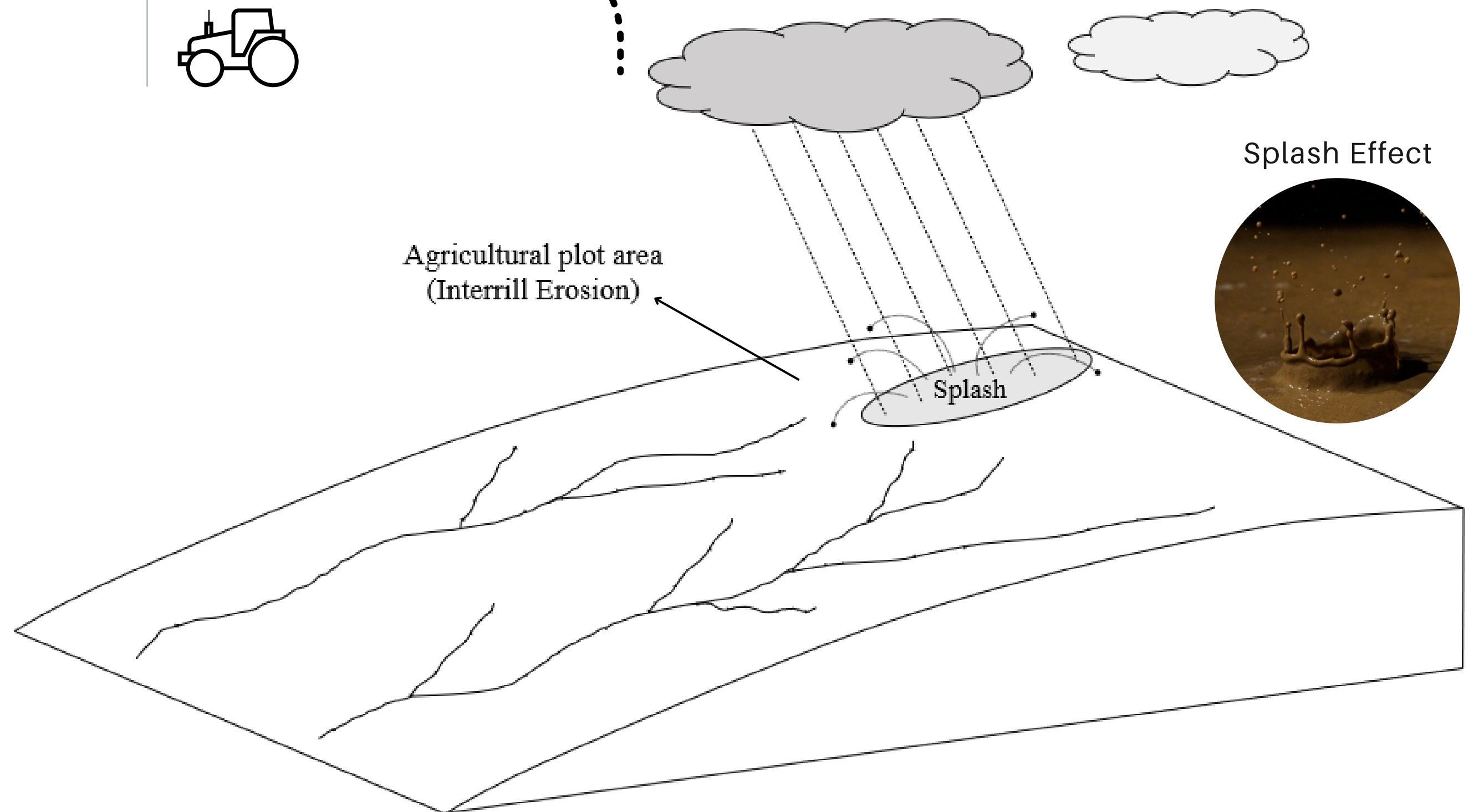
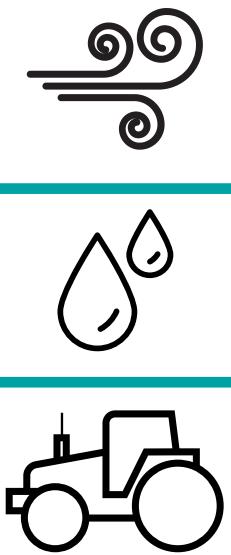
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EROSION MODEL



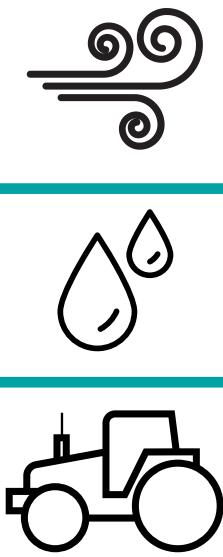
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EROSION MODEL



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EROSION MODEL



Rill Channels



Rill channels
(Rill Erosion and Deposition)

Agricultural plot area
(Interrill Erosion)



Splash Effect

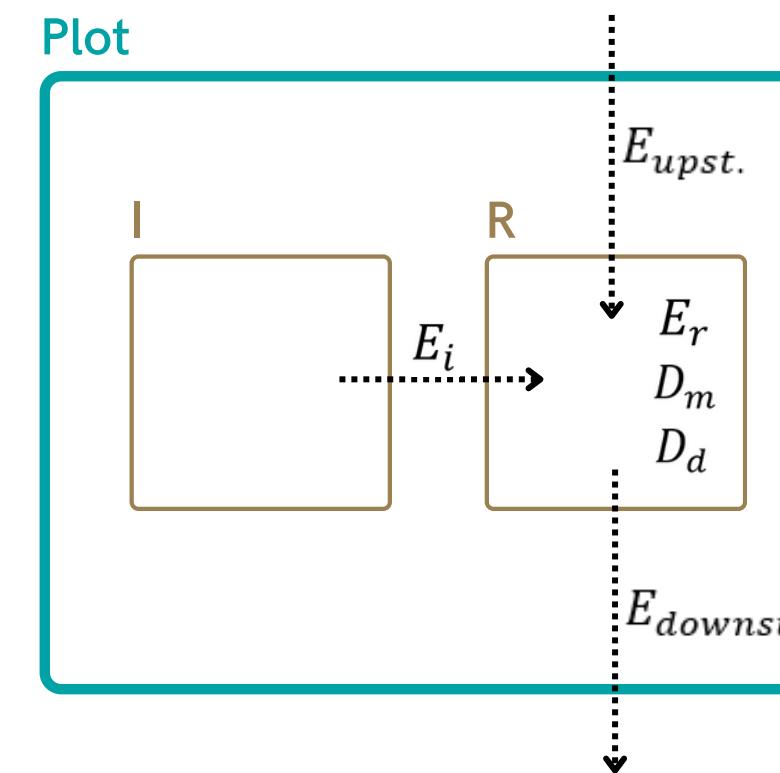


Flow direction

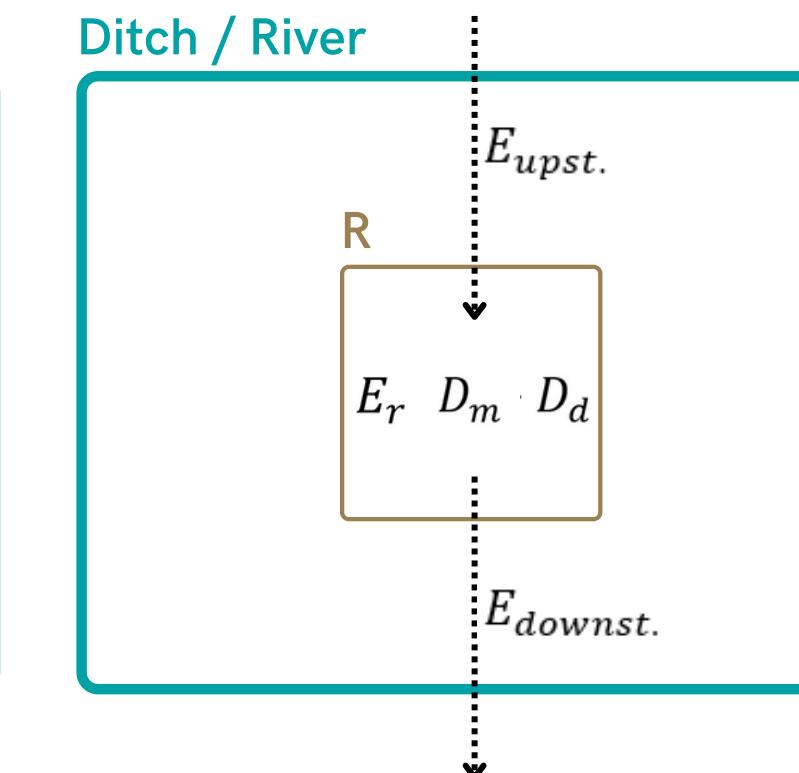
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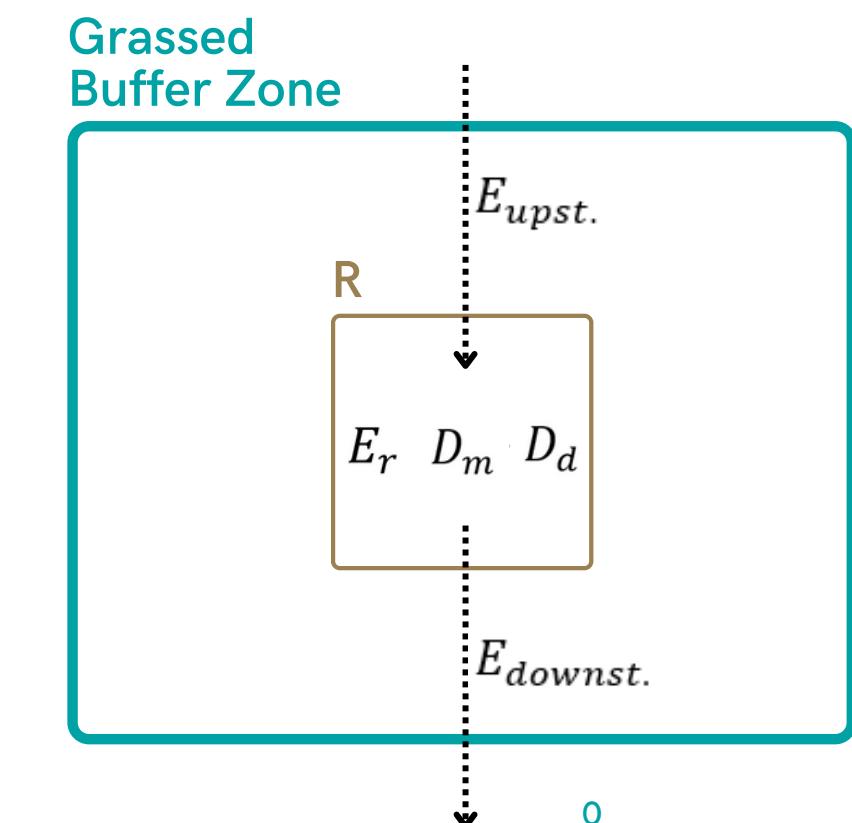
Processes representation for each landscape element:



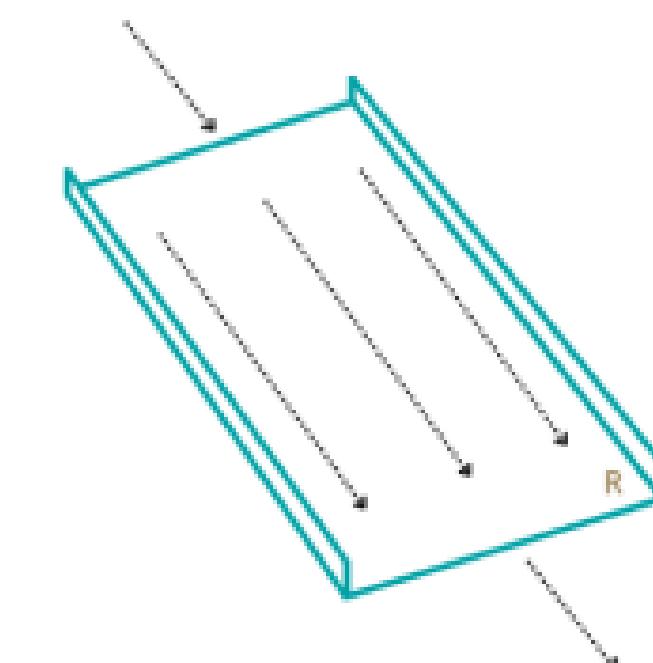
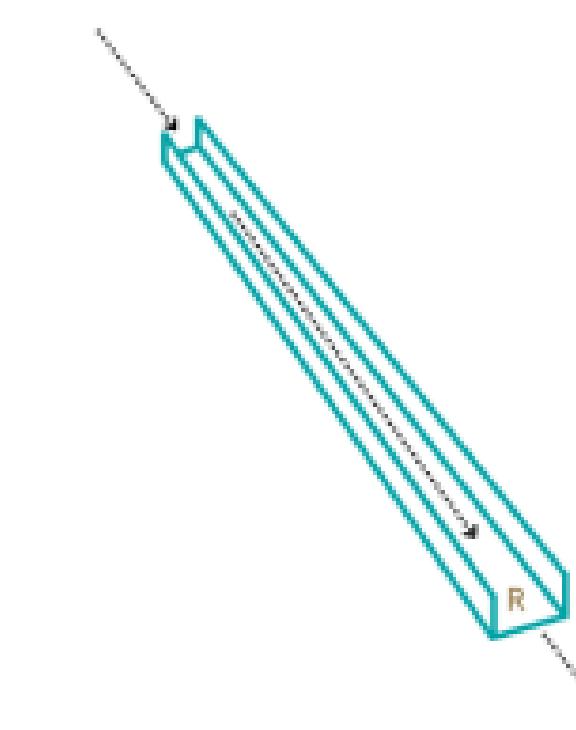
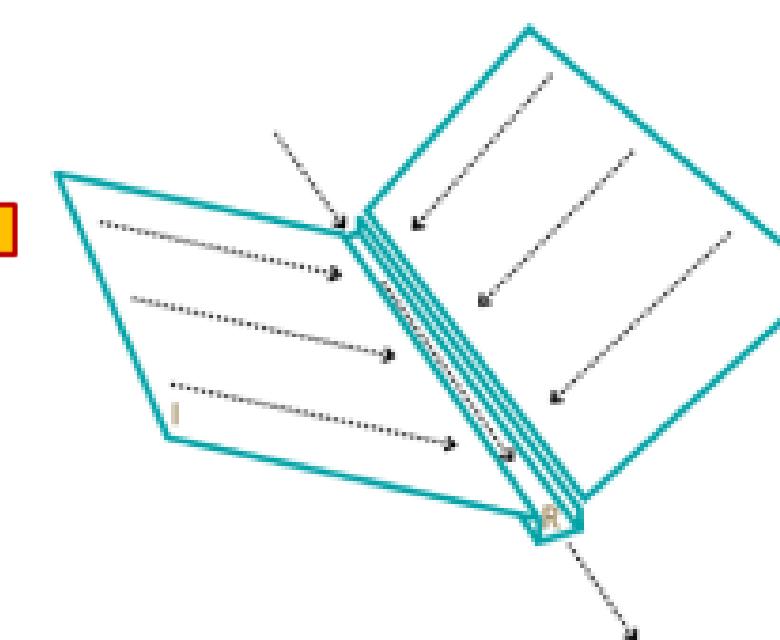
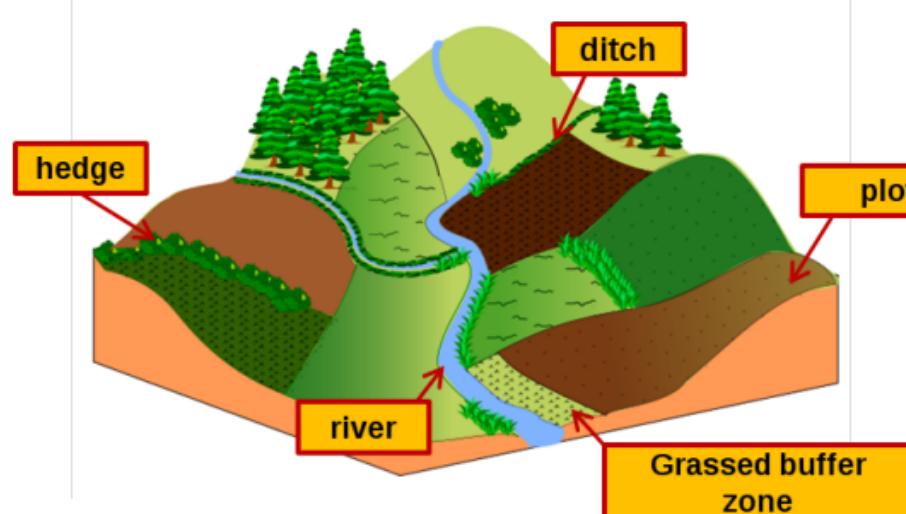
$$E_{downst.} = E_{upst.} + E_i + E_r + D_m - D_d$$



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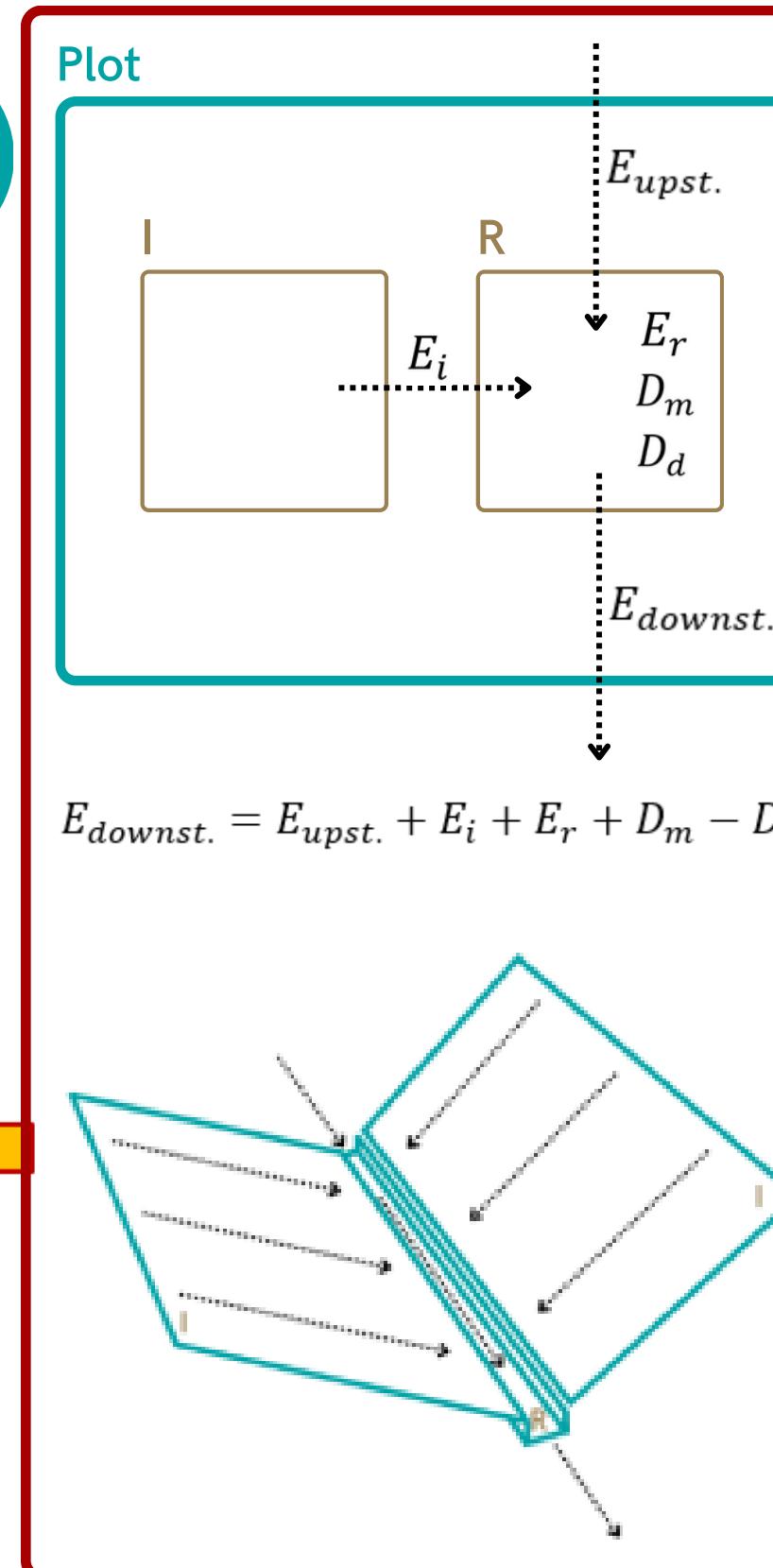
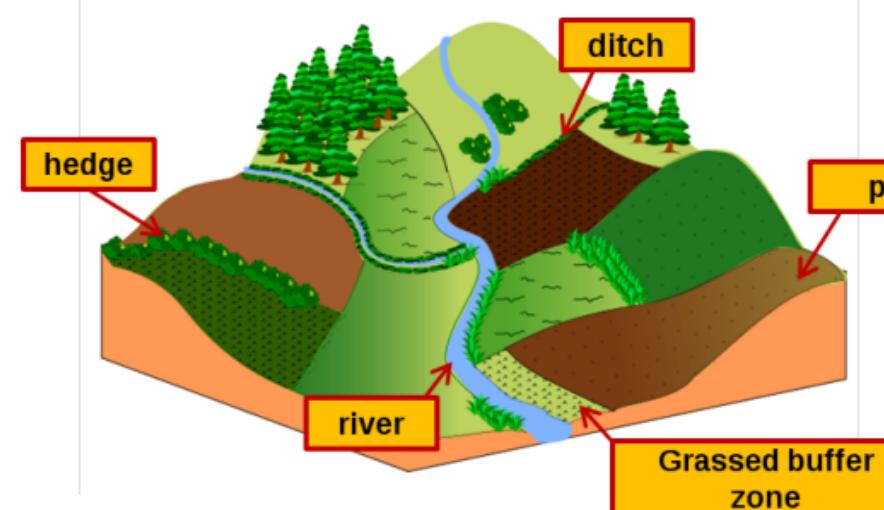
$$E_{downst.} = E_{upst.} + E_r + D_m - D_d$$



I = Interrill Process ; R = Rill Process

EROSION MODEL

Interrill Erosion, Rill Erosion and Deposition

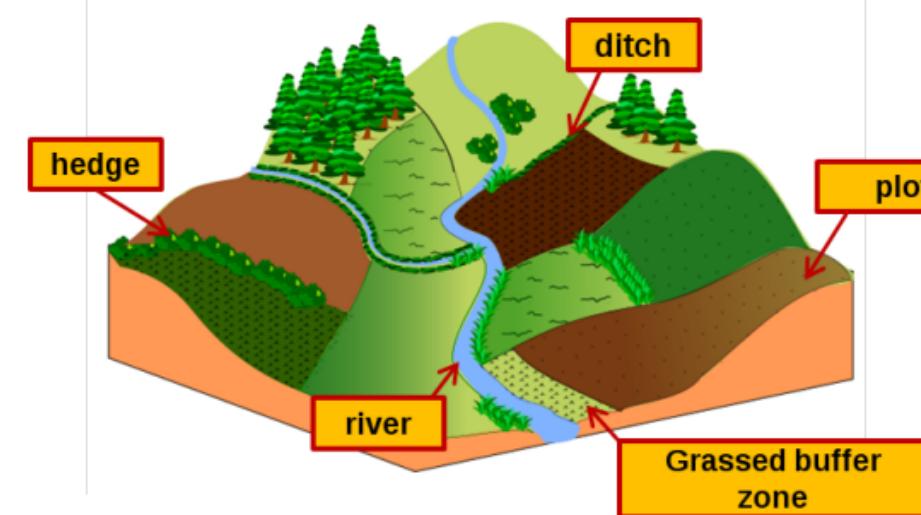


I = Interrill Process ; R = Rill Process

Processes representation for each landscape element:

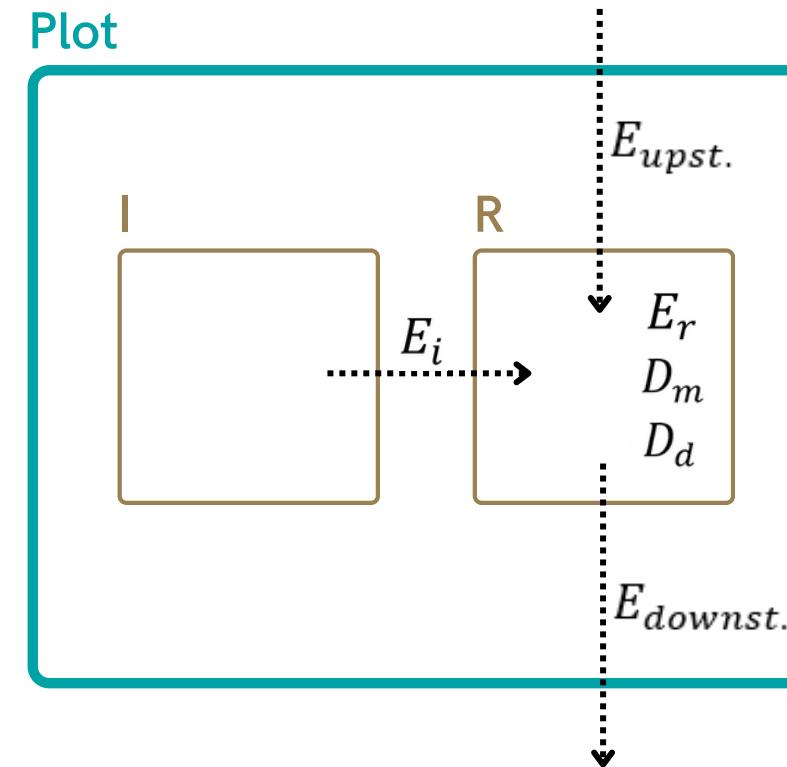
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EROSION MODEL

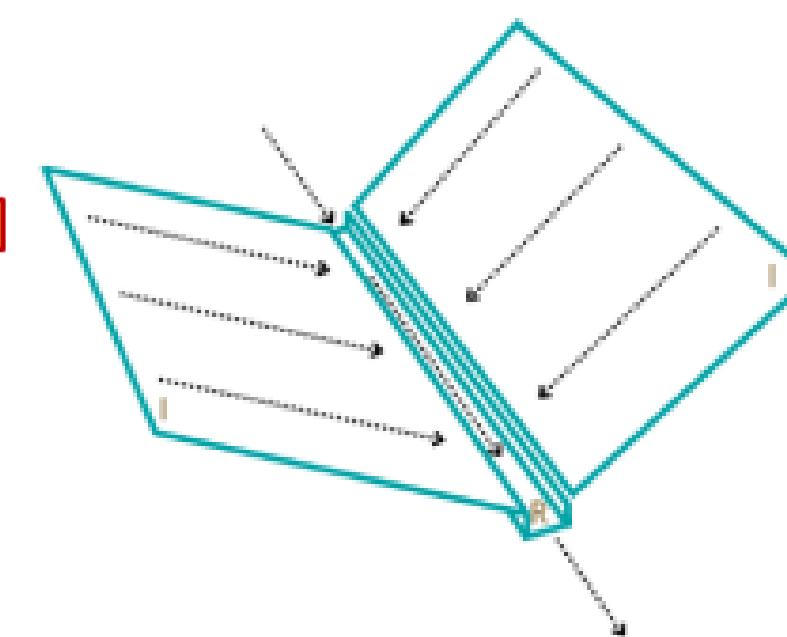


Processes representation for each landscape element:
Rill Erosion and Deposition

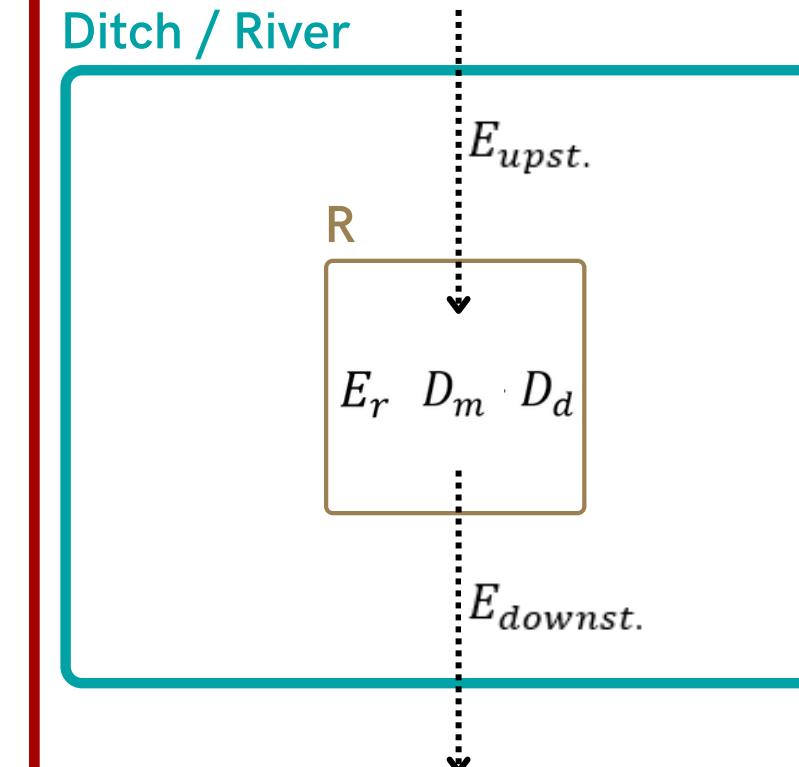
Plot



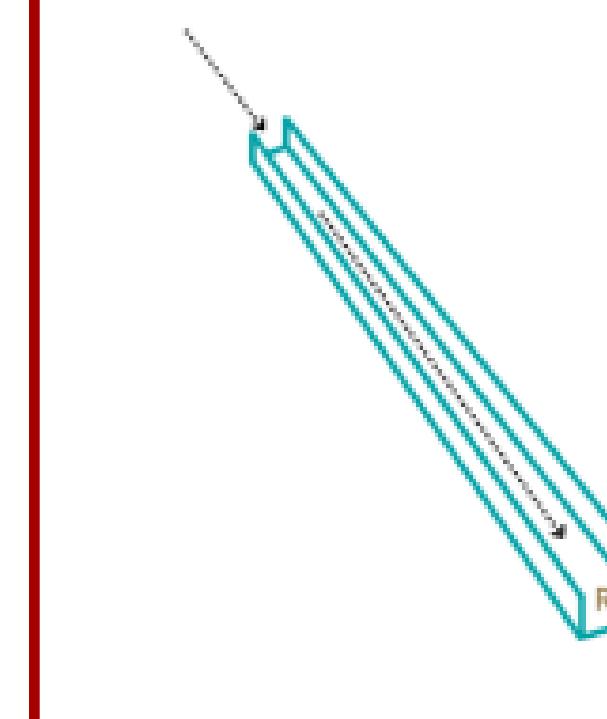
$$E_{downst.} = E_{upst.} + E_i + E_r + D_m - D_d$$



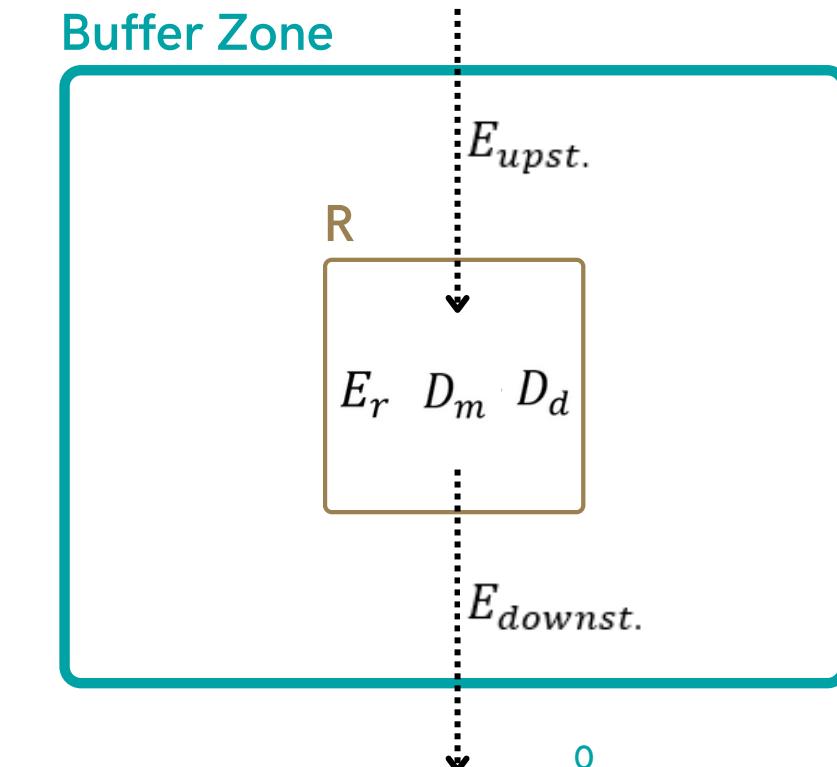
Ditch / River



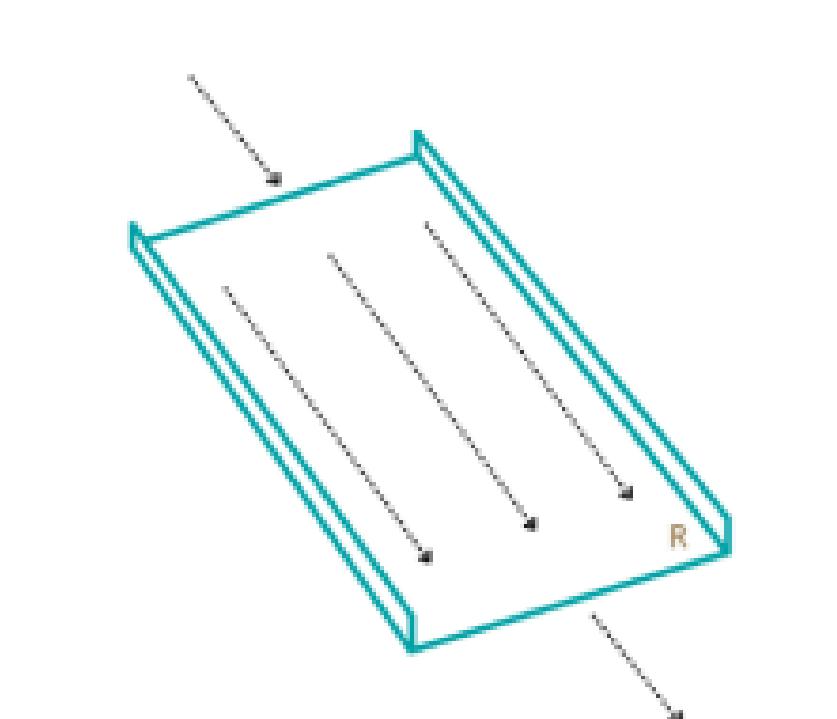
$$E_{downst.} = E_{upst.} + E_r + D_m - D_d$$



Grassed Buffer Zone



$$E_{downst.} = E_{upst.} + E_r + D_m - D_d$$



I = Interrill Process ; R = Rill Process

PESHMELBA

EROSION MODEL

Testing phase

Innovative, continuous, and
dynamic model

**Strong potential to represent erosive
processes in a more realistic way !**



Questions?
Thank you very much!