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## 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**

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Submitted on 25 Oct 2023

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

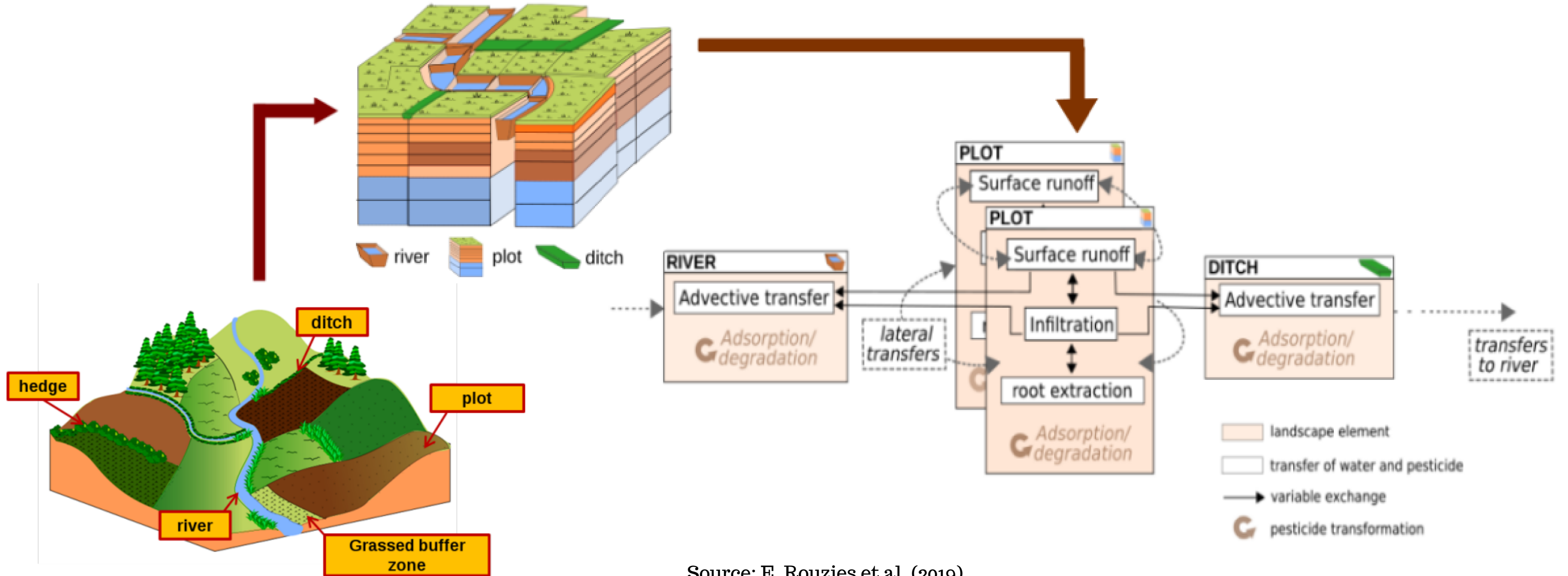
## **Development of an erosion and transfer particulate phase pesticides model at the watershed scale**

**Tulio Lima, Nadia Carluer, Michael Rabotin, Roger Moussa, and Claire Lauvernet**



# PESHMELBA

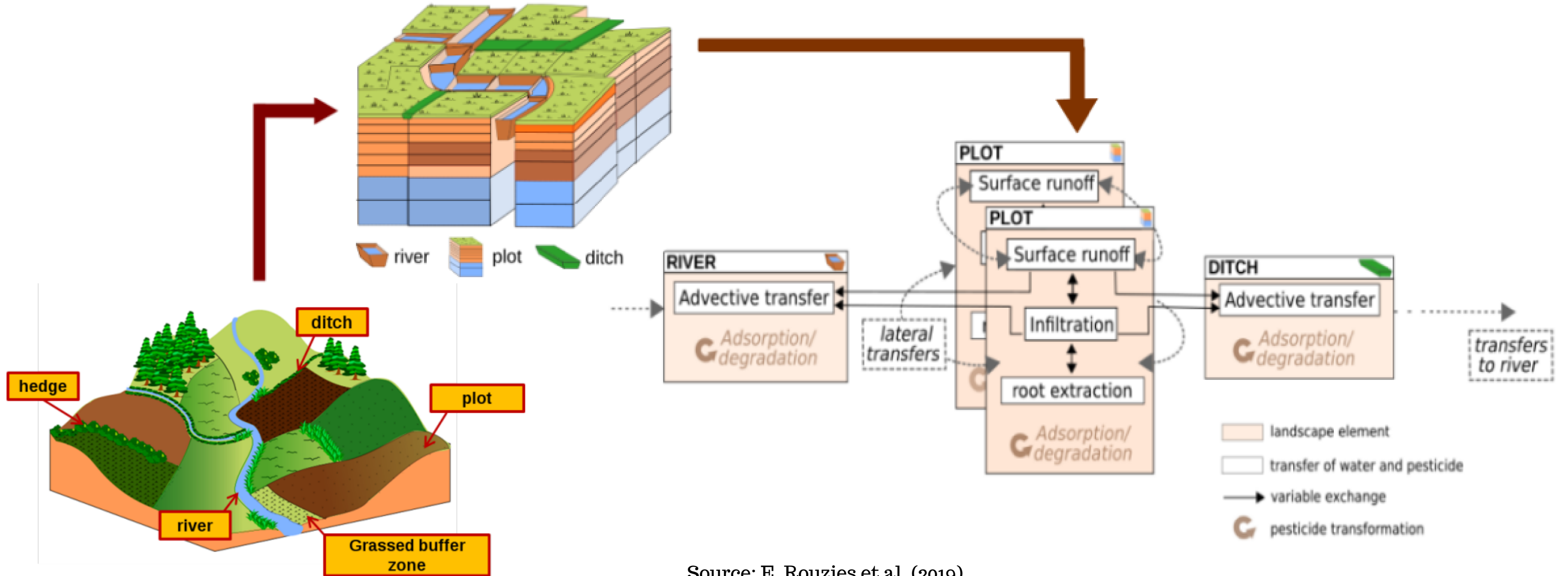
- Simulate pesticide transfers (in solution) and fate on small agricultural catchments
- Simulations of heterogenous landscapes
- Continuous dynamic simulations
- Modular structure to explore landscape management scenarios



Source: E. Rouzies et al. (2019)

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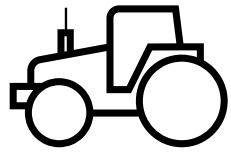
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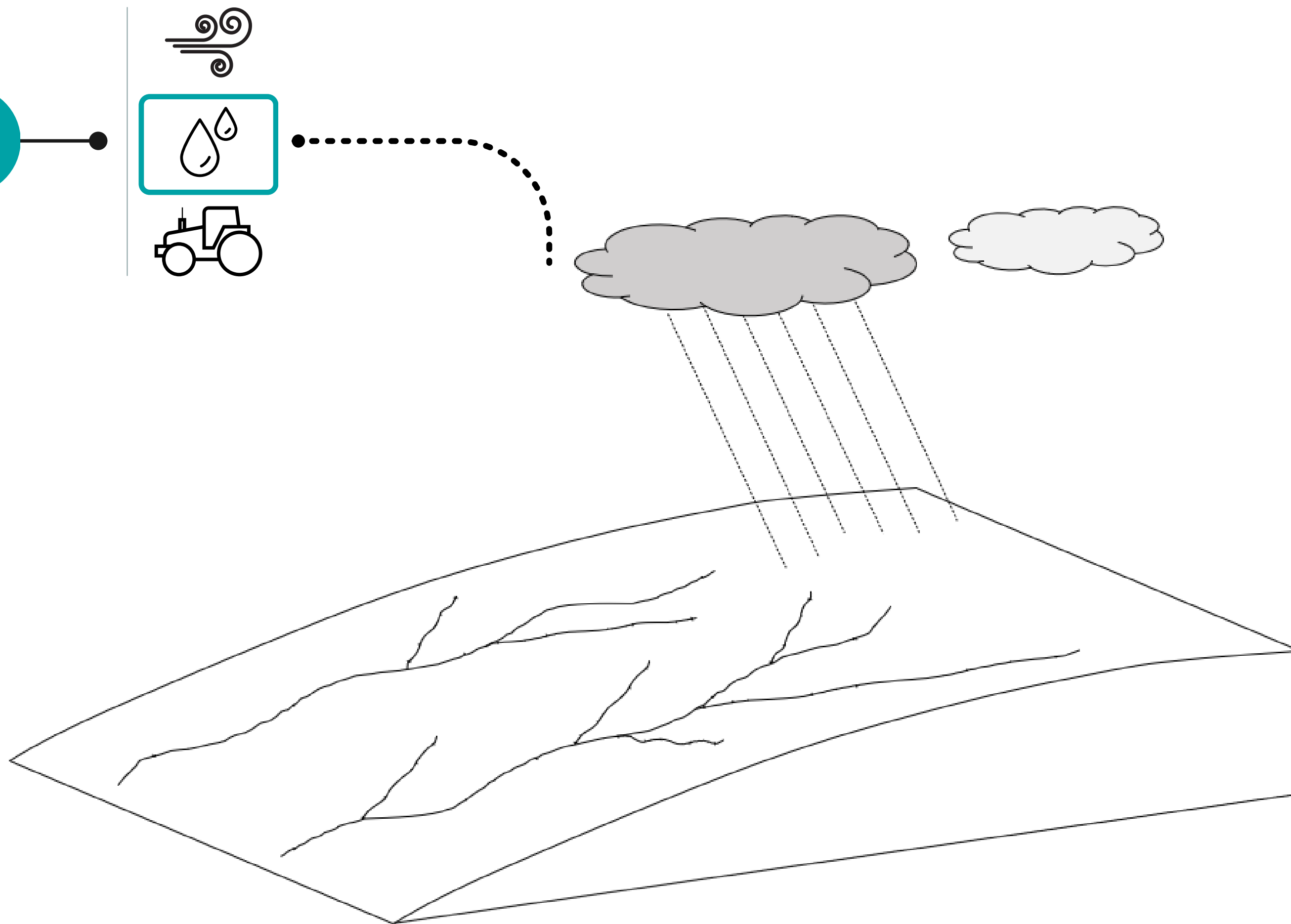
**PESHMELBA**

**EROSION MODEL**



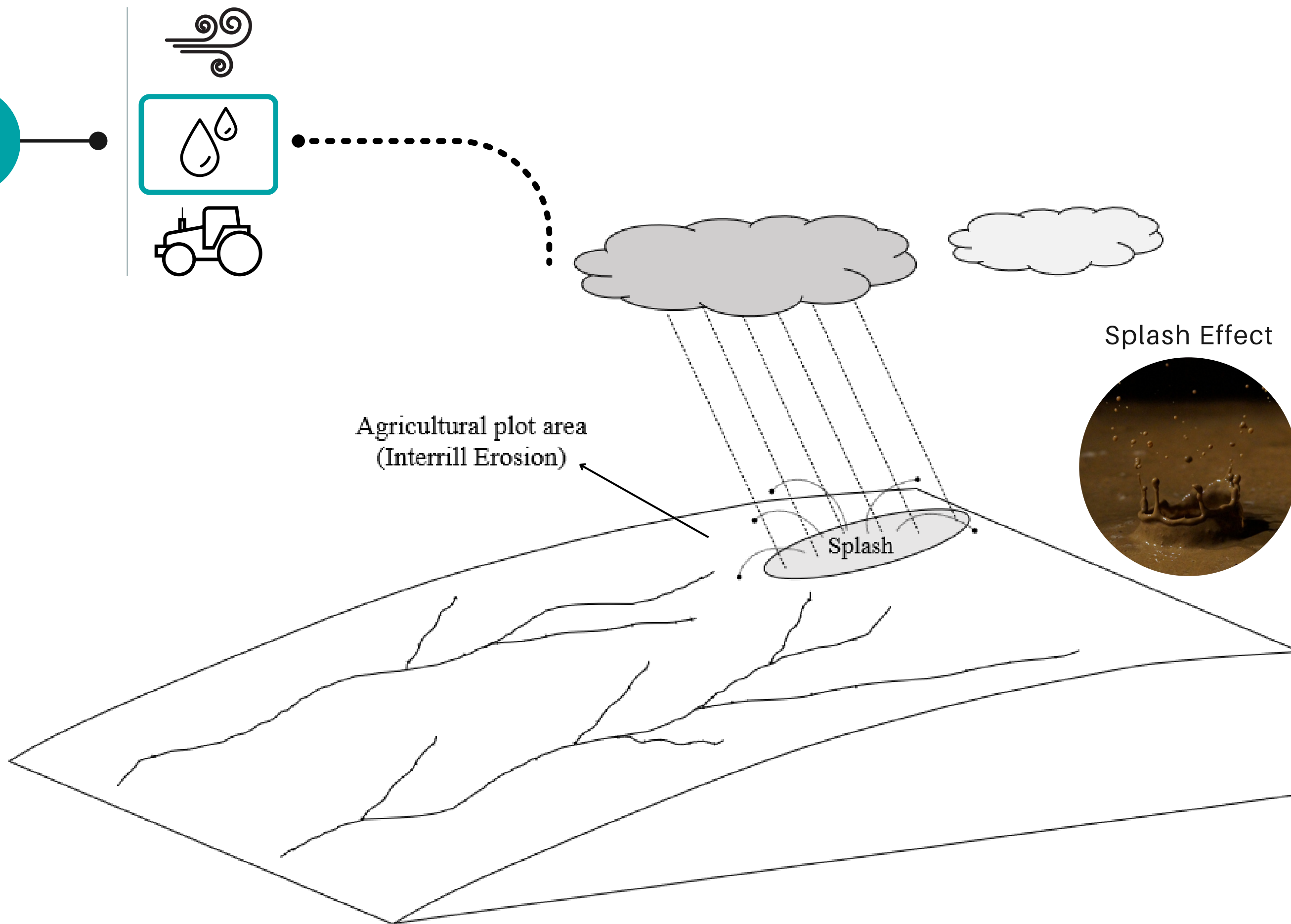
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**EROSION MODEL**



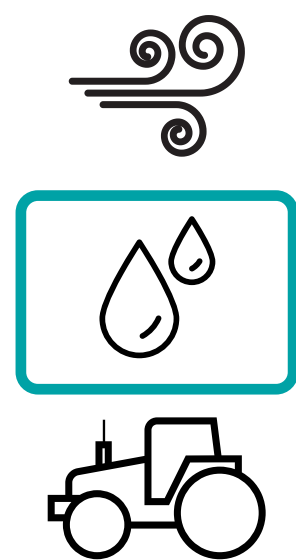
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**EROSION MODEL**



**PESHMELBA**

**EROSION MODEL**



Rill Channels

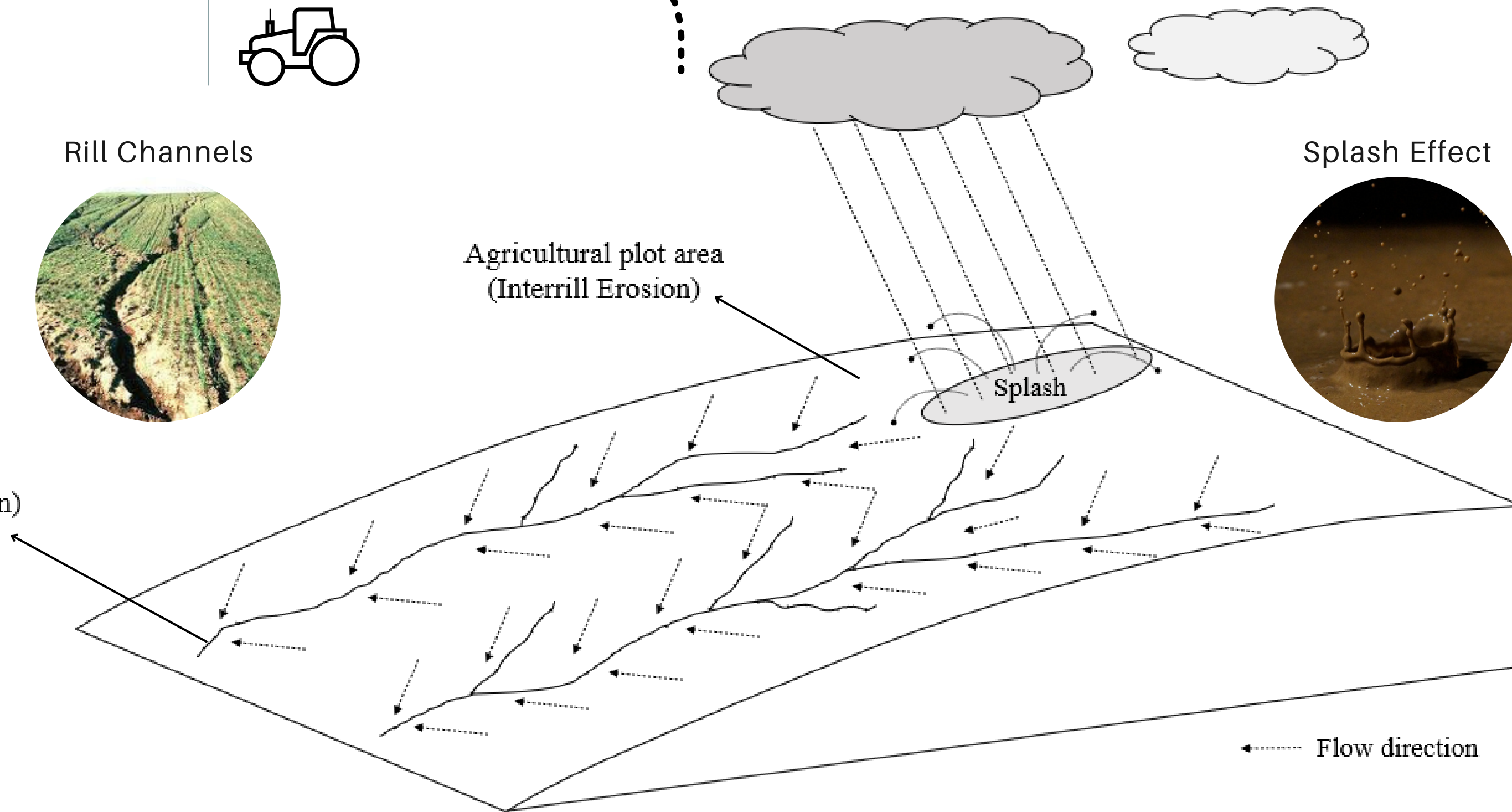


Agricultural plot area  
(Interrill Erosion)

Splash Effect



Rill channels  
(Rill Erosion and Deposition)



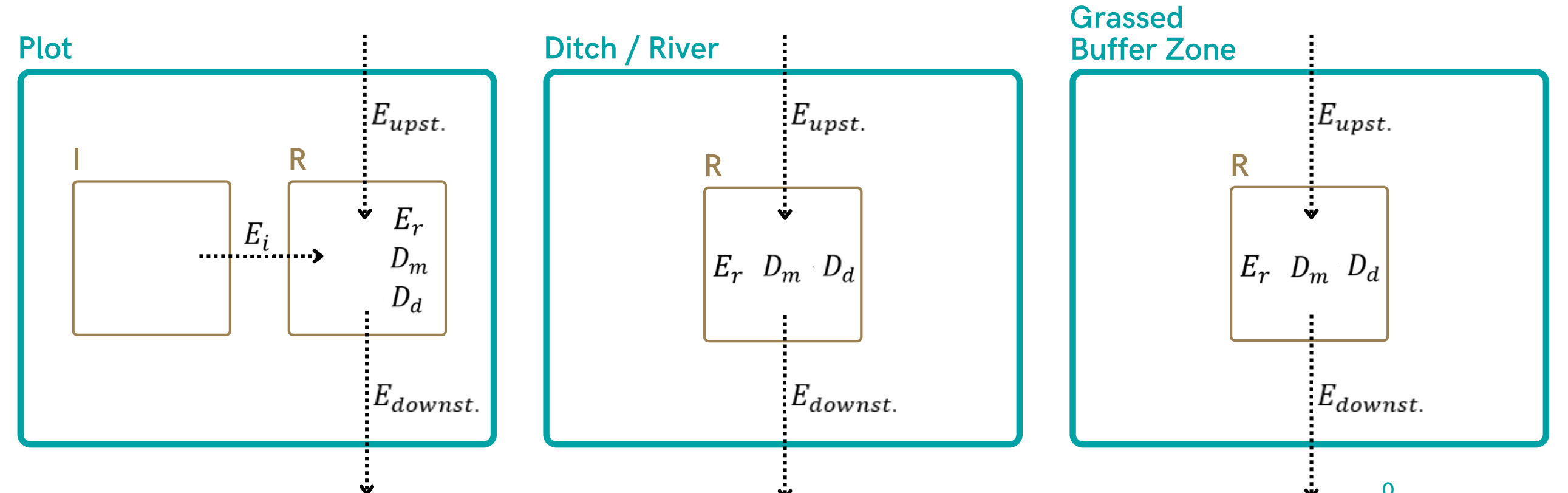
←..... Flow direction



# PESHMELBA

Processes representation for each landscape element:

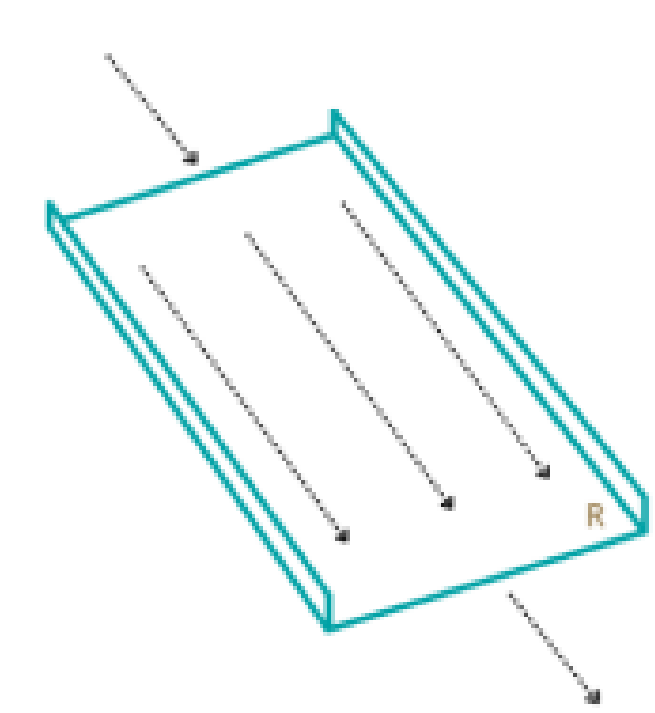
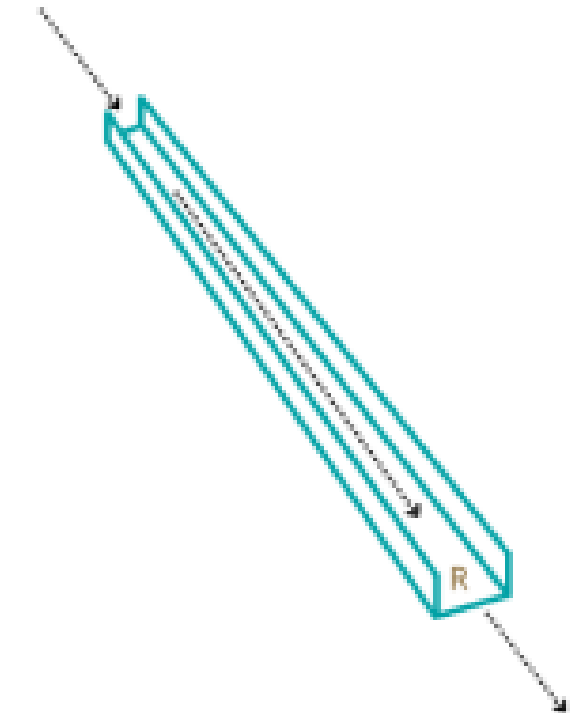
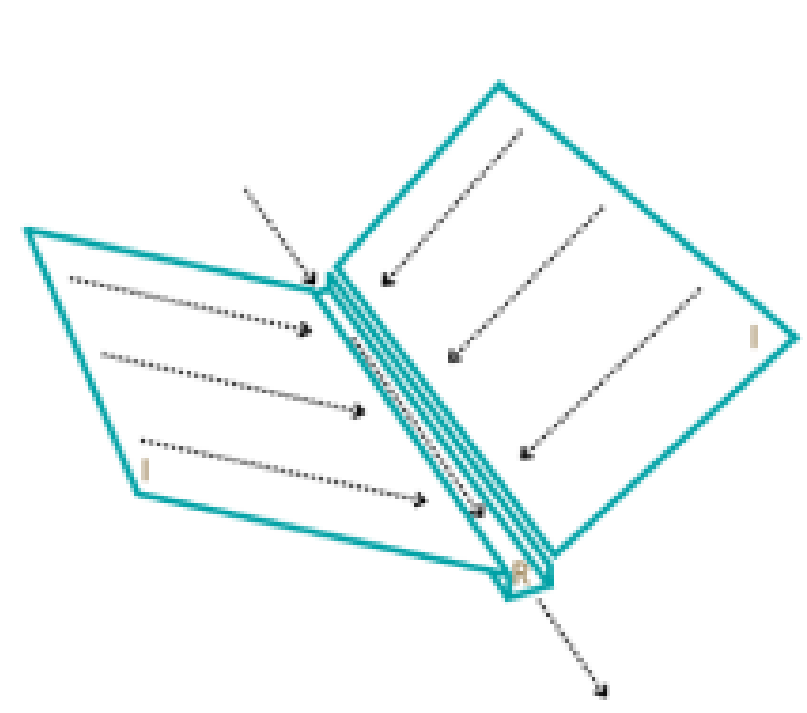
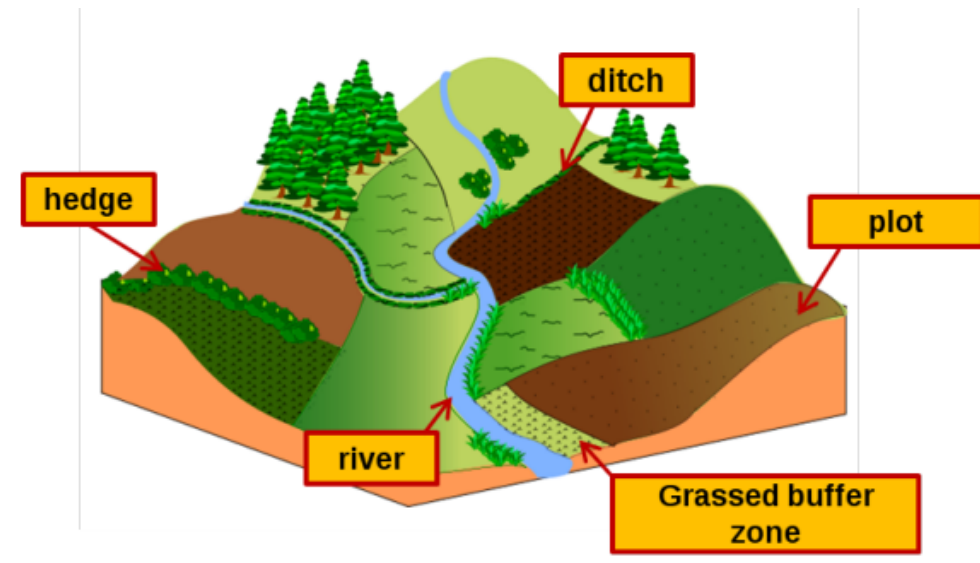
## EROSION MODEL



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

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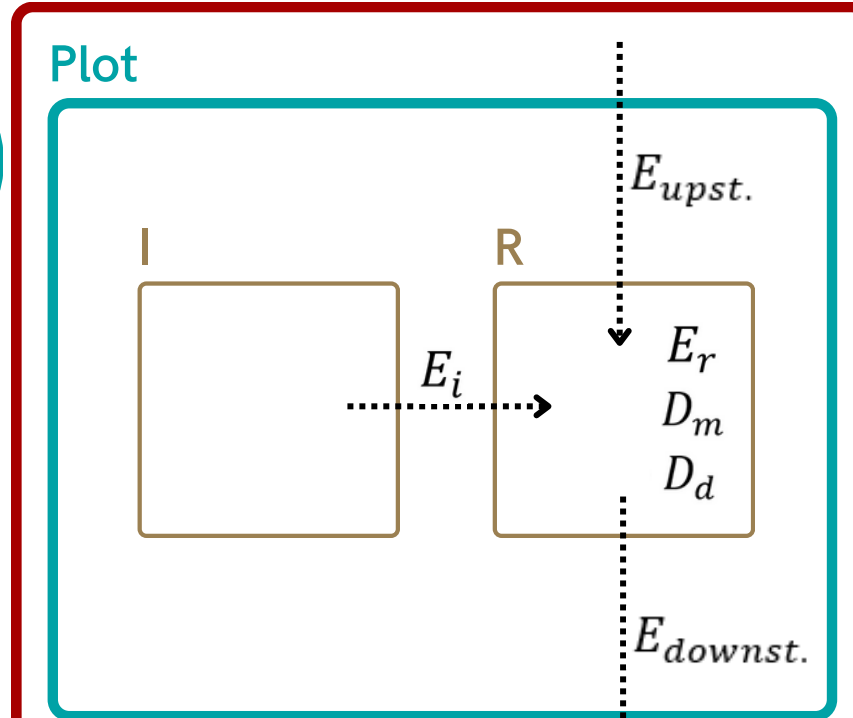
I = Interrill Process ; R = Rill Process

# PESHMELBA

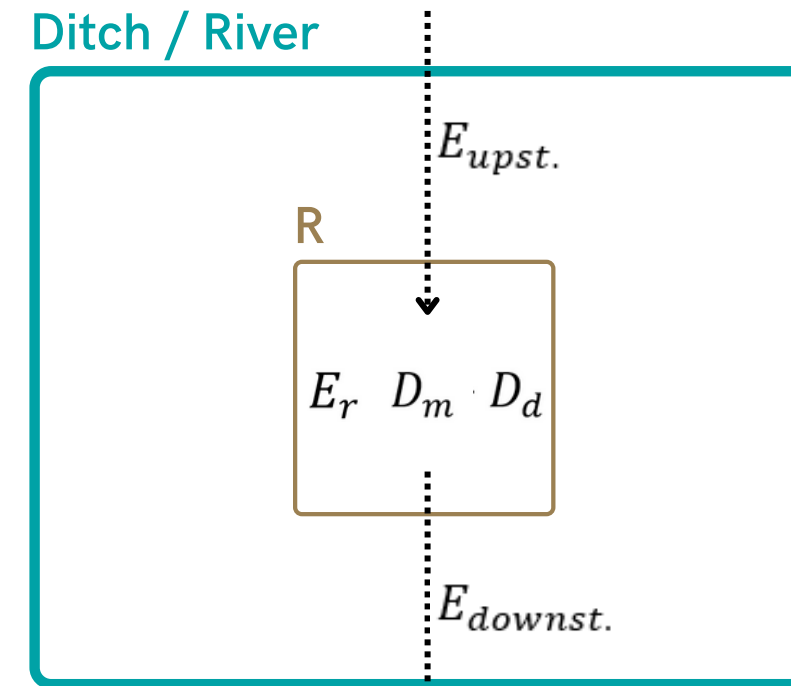
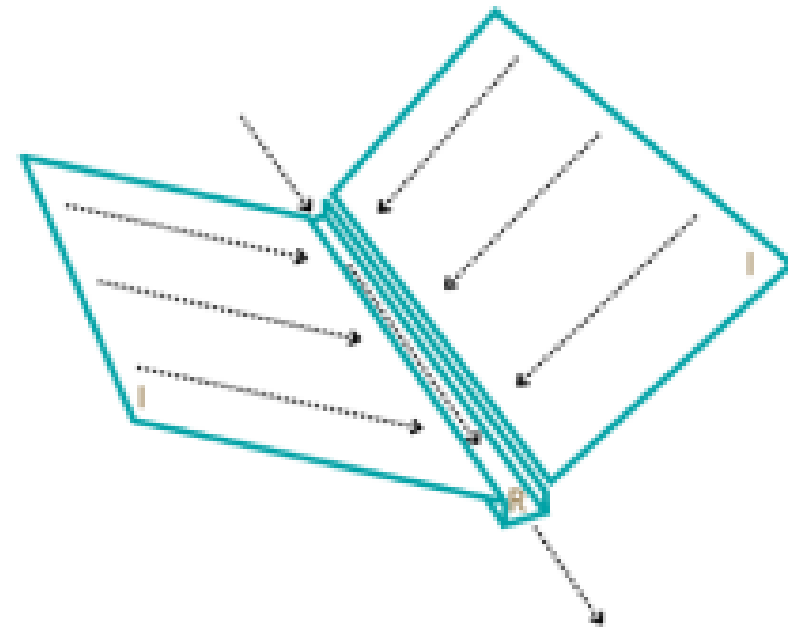
## Processes representation for each landscape element:

### Interrill Erosion, Rill Erosion and Deposition

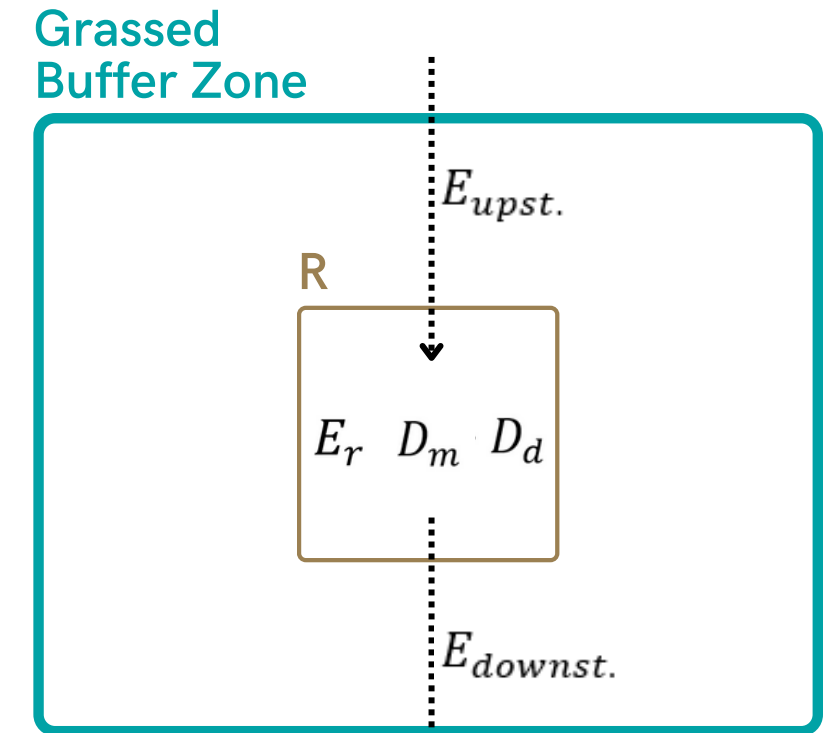
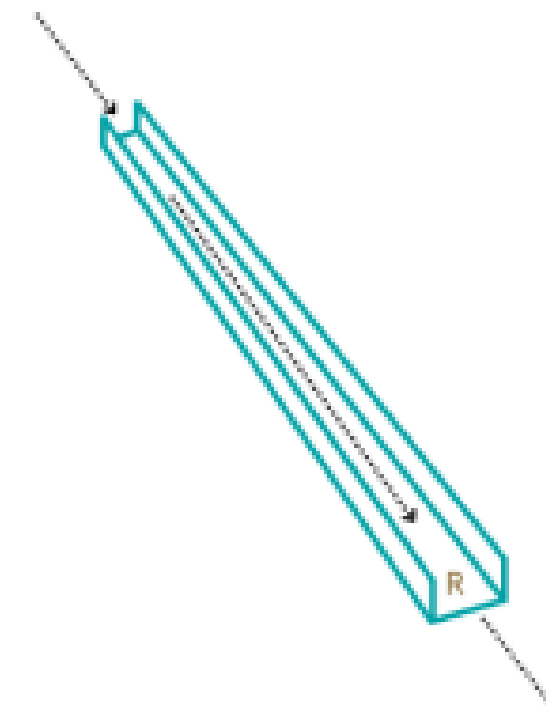
## EROSION MODEL



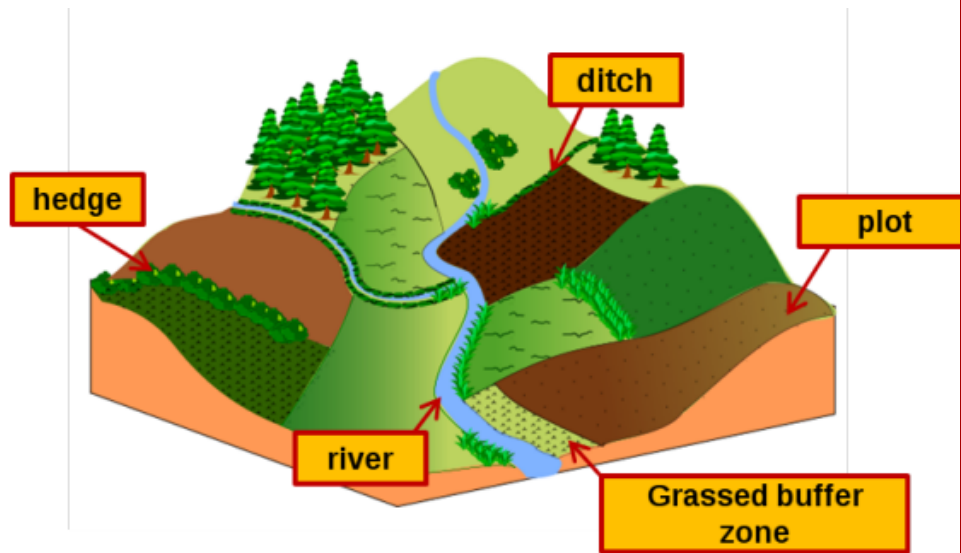
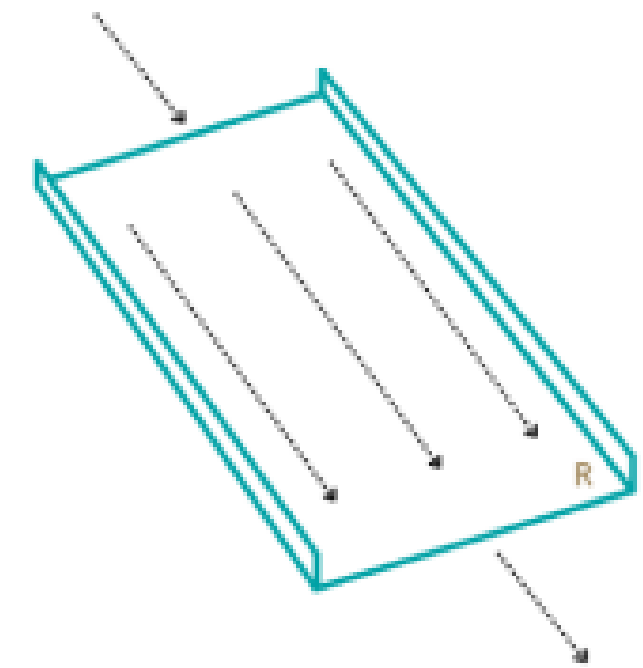
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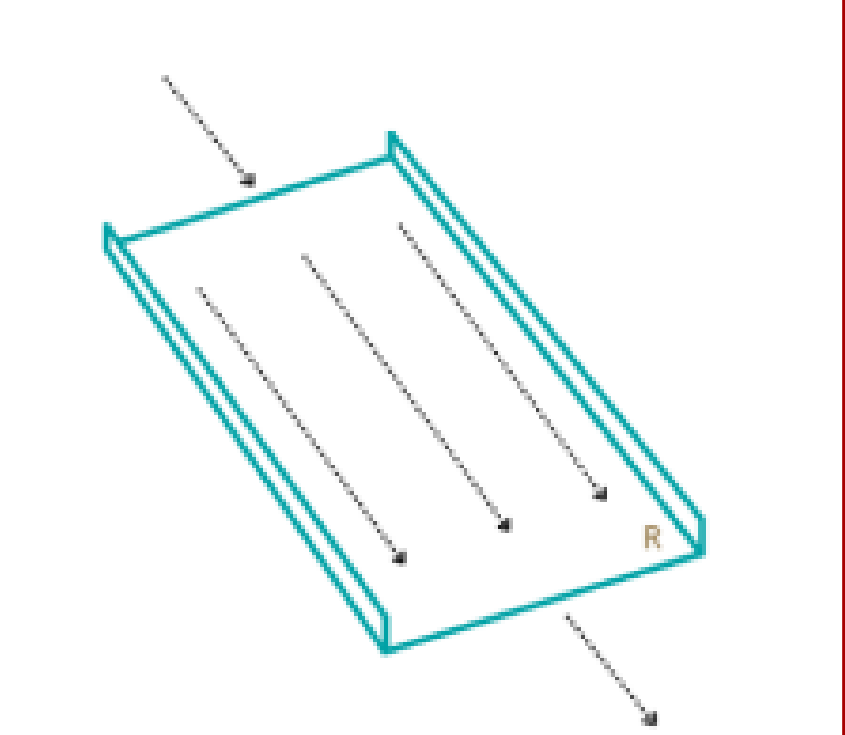
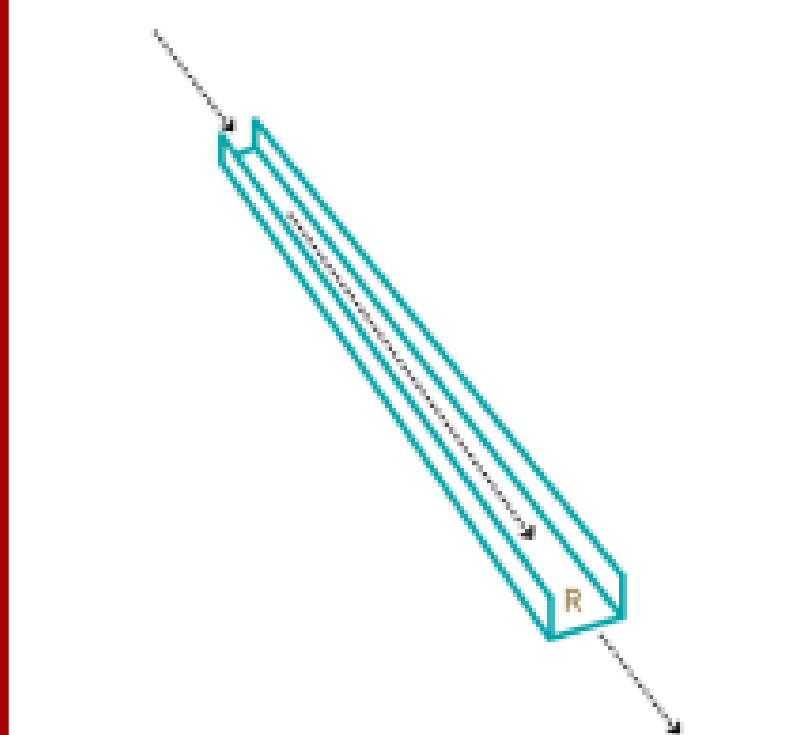
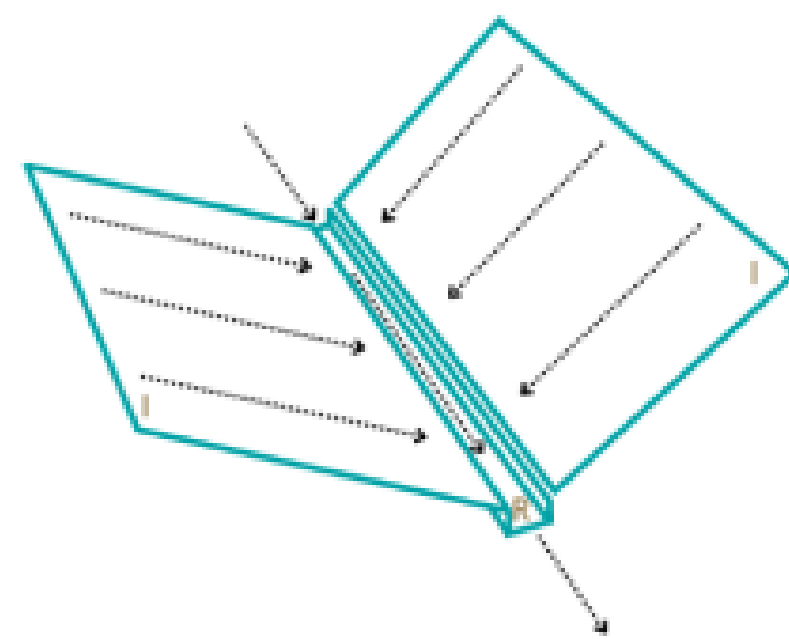
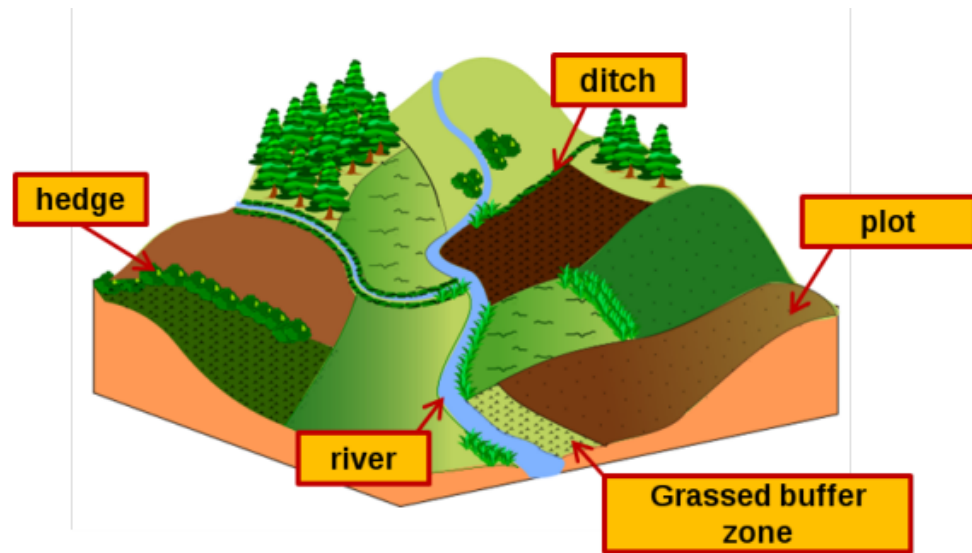
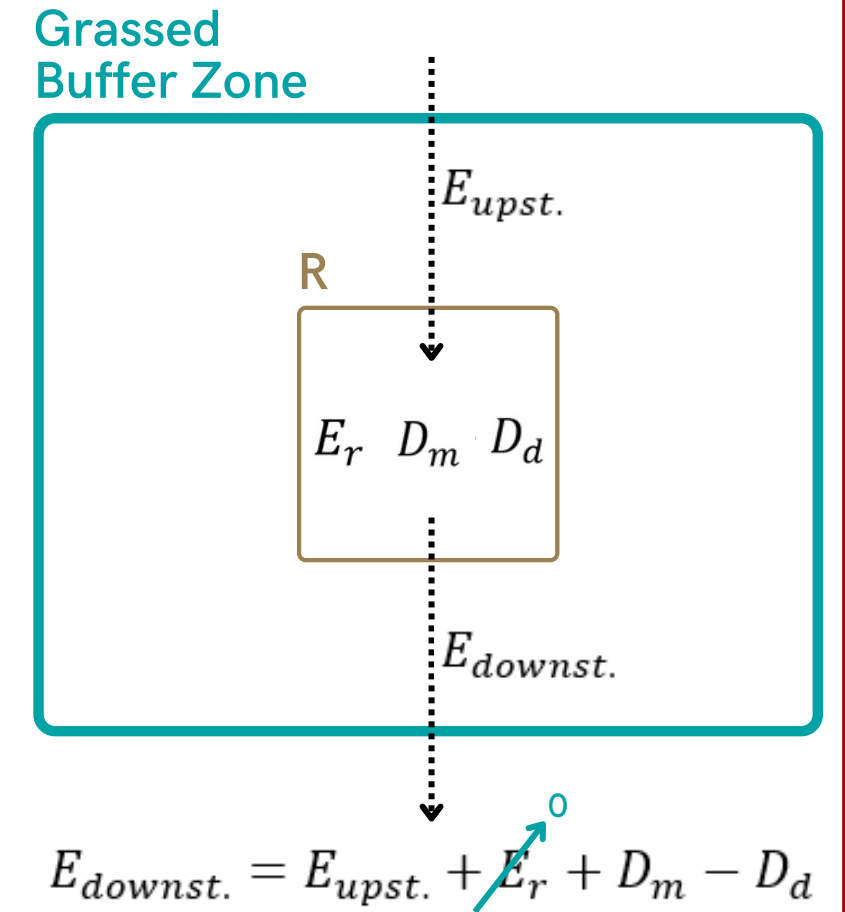
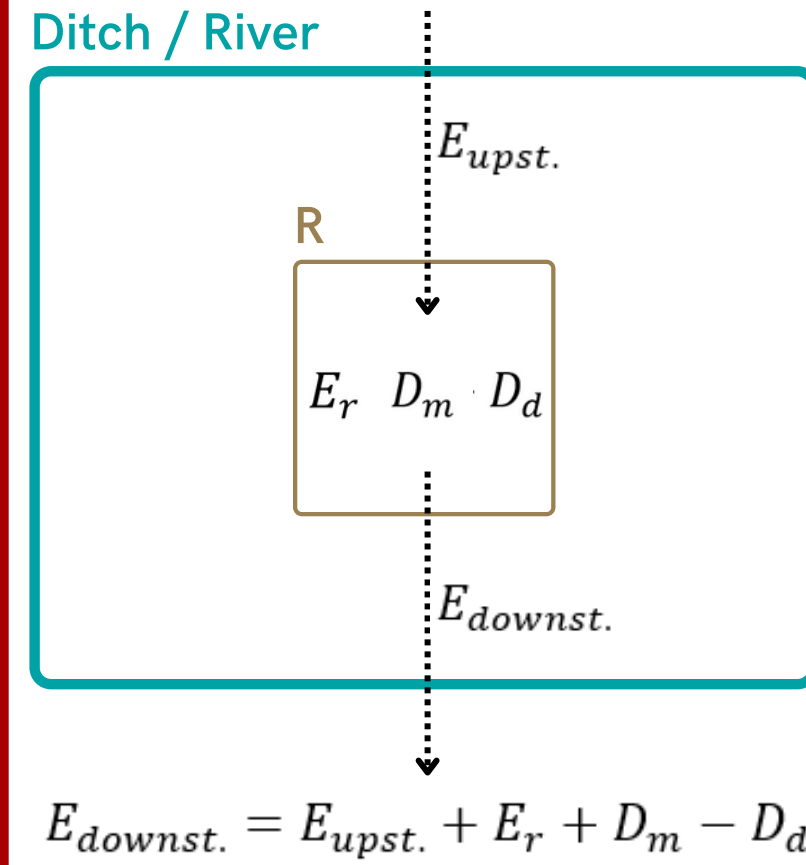
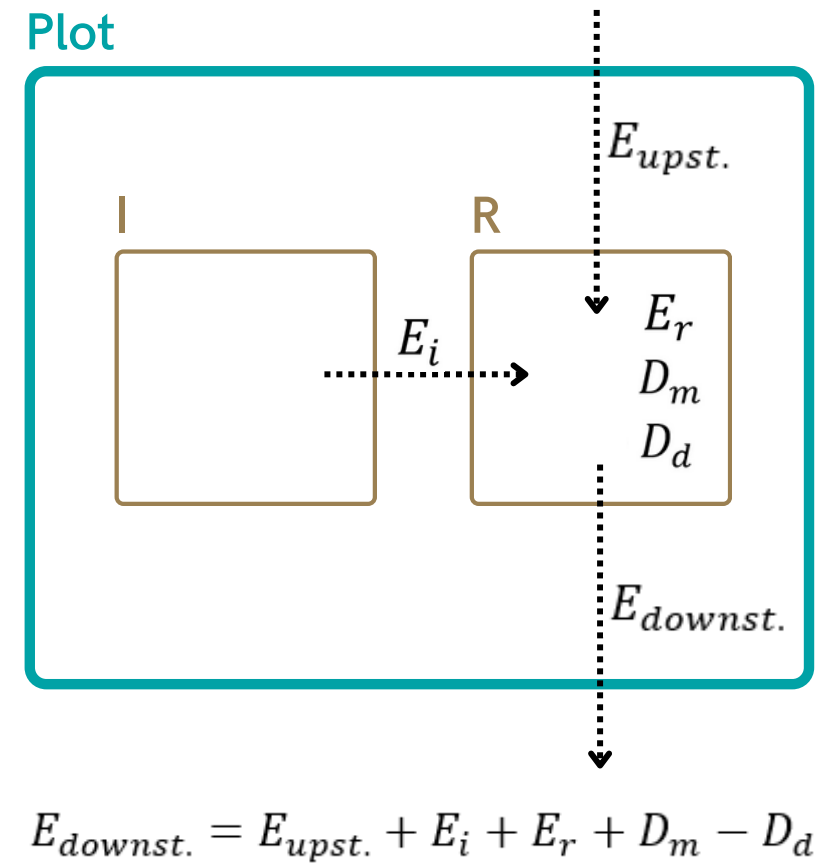


I = Interrill Process ; R = Rill Process

# PESHMELBA

## Processes representation for each landscape element: Rill Erosion and Deposition

### EROSION MODEL



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!**