# Article information:

Modelling classical gullies – A review - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0169555X2200109X?via%3Dihub>

# Article summary:

1. This review provides a comprehensive synthesis of existing classical gully erosion models and identifies opportunities for future model development.

2. Classical gullies are defined as erosional features that cannot be eradicated by tillage, and mathematical models are used to predict gully initiation and growth, simulate sediment export from gullies, and inform land management practices.

3. Nine areas for model improvement are identified to guide future model improvements, including data acquisition, machine learning, sensitivity and uncertainty analysis, climate change risk analysis, model parameterisation and validation, land management implications, gully morphology, neglected processes, and inter-operability of models for catchment-scale applications.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article provides a comprehensive review of existing classical gully erosion models and identifies opportunities for suitable scaffolding to support future model development. The article is well-structured with clear definitions of key terms such as rills, ephemeral gullies and classical gullies. It also provides an overview of the major processes of gully erosion at the catchment scale before summarising erosion processes at the gully scale. The authors provide a flowchart to aid in gully erosion model selection based on the modelling objective and data availability.

The article is generally reliable in its content but there are some potential biases that should be noted. For example, the literature was restricted to publications available in English which may under-represent models developed in China where considerable research into erosion on the Loess Plateau has occurred. Additionally, while the authors provide nine areas for model improvement they do not explore counterarguments or present both sides equally which could have been beneficial in providing a more balanced view on the topic.

In conclusion, this article provides a comprehensive review of existing classical gully erosion models with clear definitions of key terms and an overview of major processes involved in gully erosion at both catchment scale and gully scale. However there are some potential biases that should be noted such as restricting literature to publications available in English which may under-represent models developed in China as well as not exploring counterarguments or presenting both sides equally which could have been beneficial in providing a more balanced view on the topic.

# Topics for further research:

* Gully erosion modelling in China
* Gully erosion processes on the Loess Plateau
* Catchment scale gully erosion
* Gully scale gully erosion
* Counterarguments to gully erosion models
* Balanced view of gully erosion models

# Report location:

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