



Causes of Flooding

Learning Objective:

- **Assess** the *causes* of flooding



Learning Outcomes:

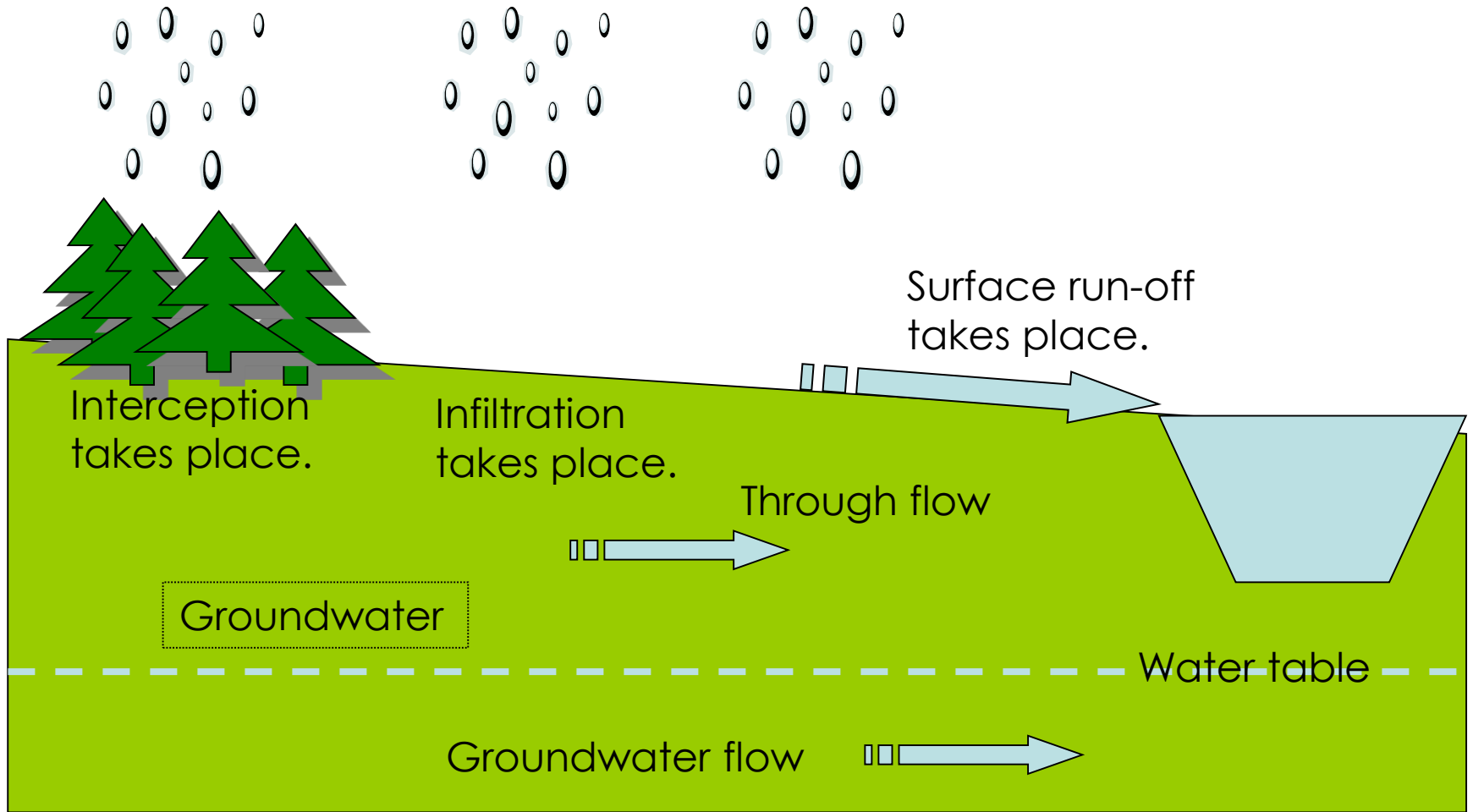
- **Define** what flooding is
- **Explain** the physical and human causes
- **Analyse** the shape of flood hydrographs

What is flooding?

When a river channel can **no longer hold** the amount of water flowing in it. Water **overtops the banks** and floods the land next to it – the floodplain.

How is a ***flash*** flood different?

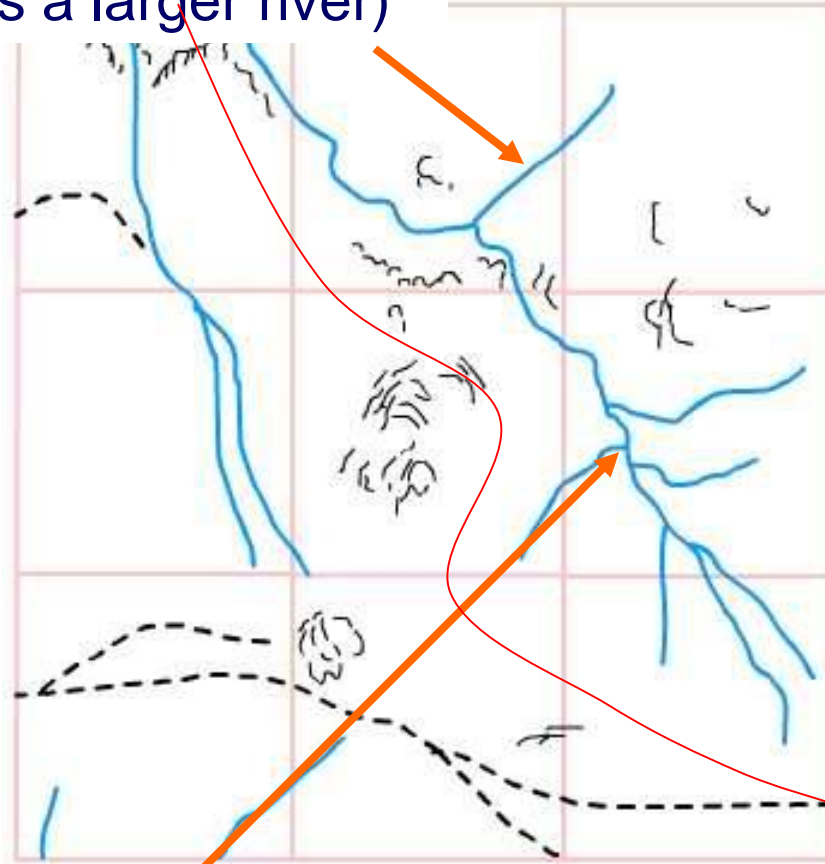




Where is flooding more likely to occur?

Tributary

(a river which joins a larger river)



Confluence

(the point at which two rivers join)



Physical and Human causes of flooding

Physical

Precipitation



Heavy rainfall can lead to flash floods as rivers can't hold the volume of water.

Geology (rock type)



Impermeable rocks such as granite or clay don't allow water to pass through. Water flows over them and into the river.

Steep slopes



In mountainous areas water moves faster into a river down the steep slopes.

Human

Urbanisation

Building on a floodplain creates impermeable surfaces such as tarmac roads. Water flows quickly into drains and sewers and then rivers.



Deforestation

Water is not intercepted by the trees on their leaves, branches or absorbed into roots. More water can then get into the river.

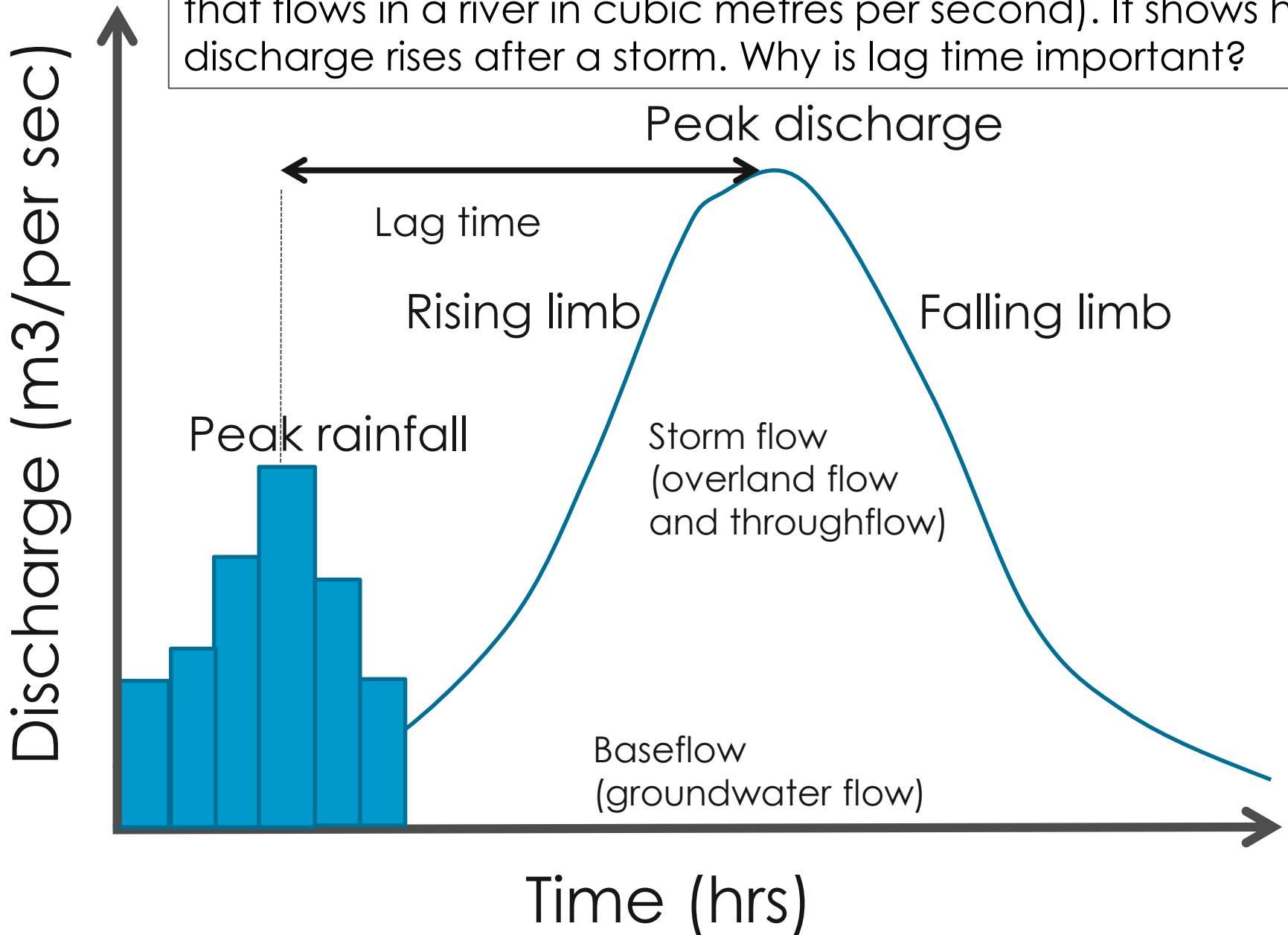


Agriculture

In arable farming (crops) soil is exposed and can increase surface runoff into rivers. There is less grass to absorb water.



A **flood hydrograph** plots river discharge (volume of water that flows in a river in cubic metres per second). It shows how discharge rises after a storm. Why is lag time important?

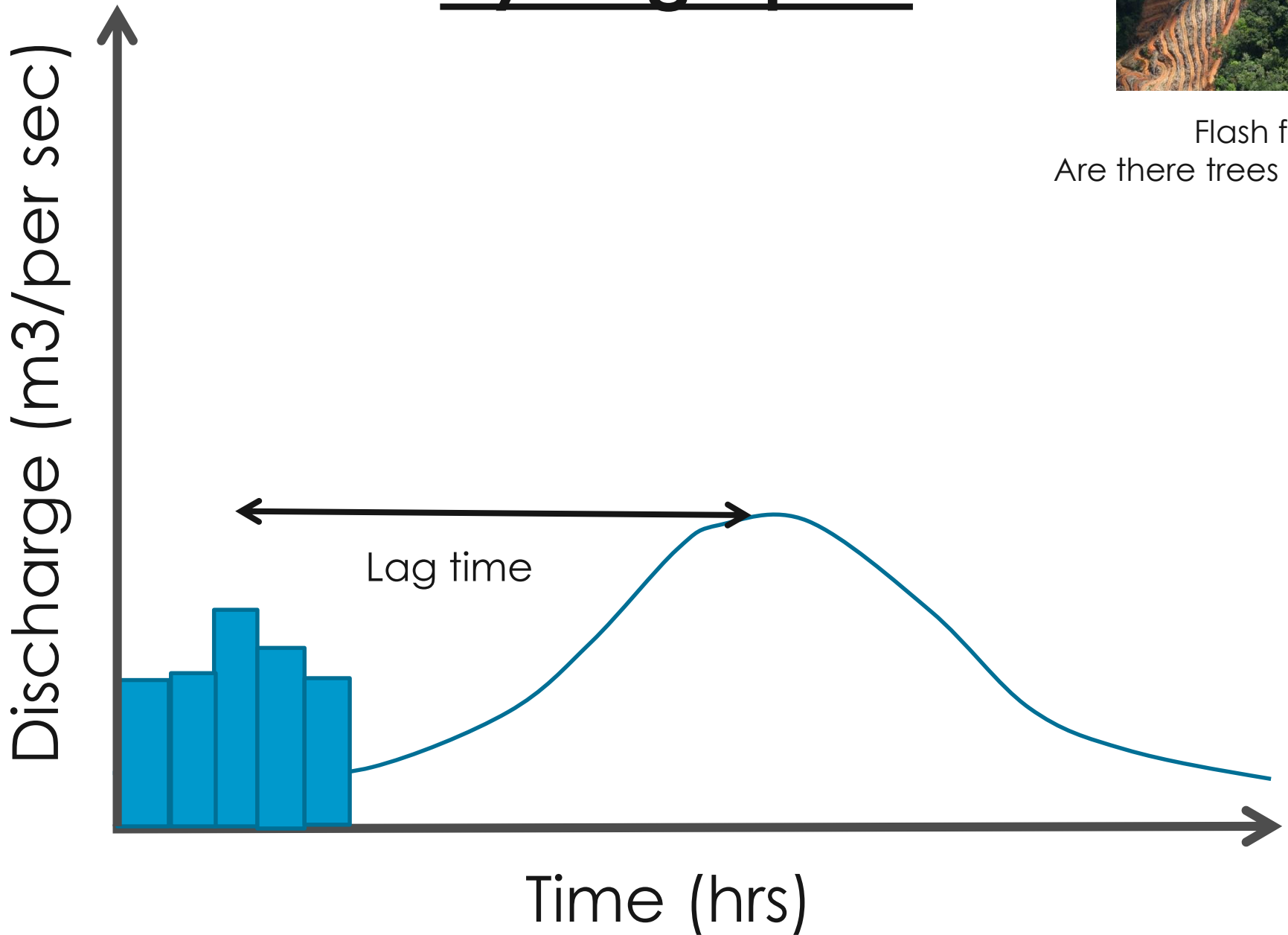


Hydrograph	Description	Explanation
1		
2		
3		
4		

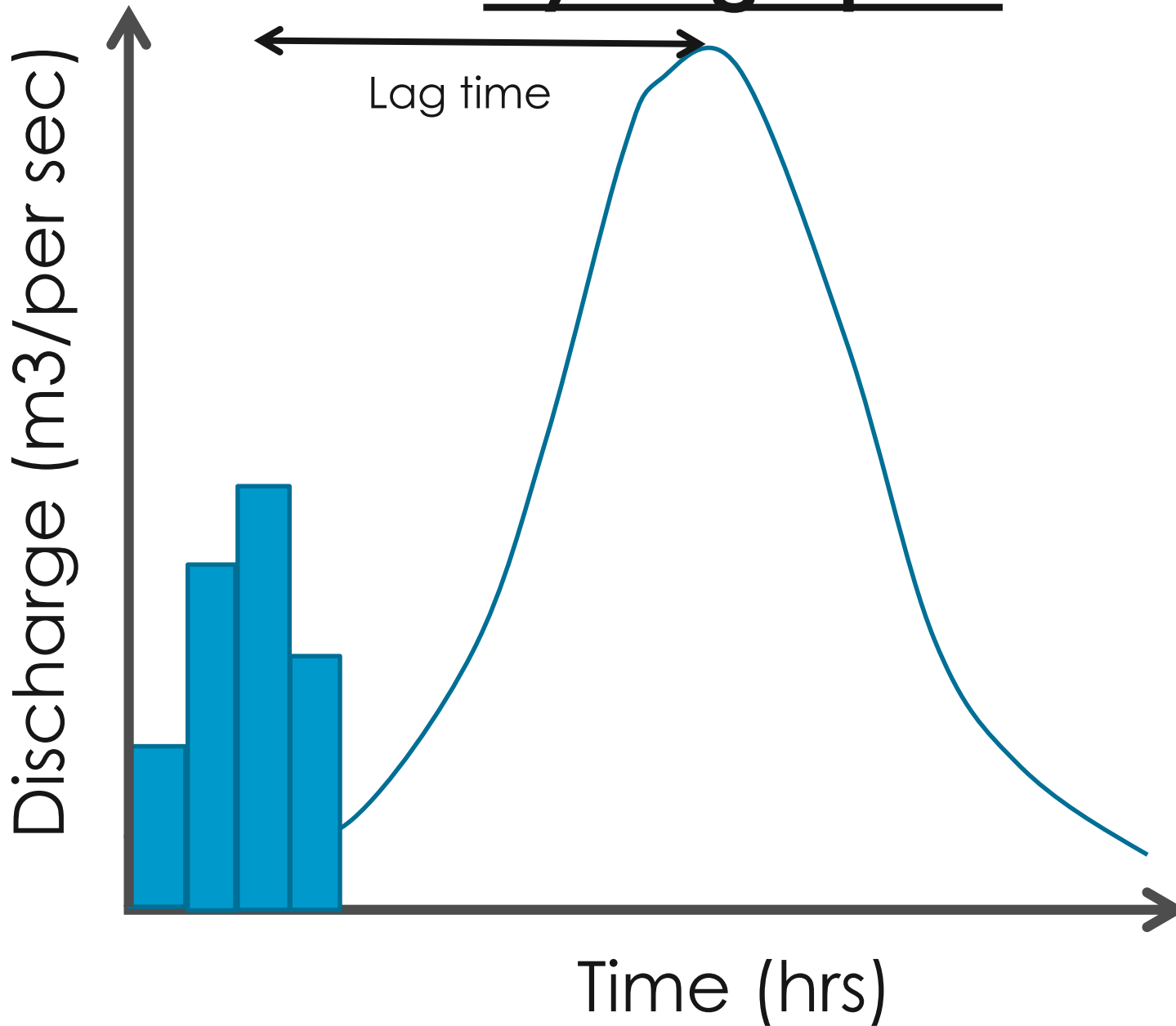
Hydrograph 1



Flash flood?
Are there trees here?



Hydrograph 2

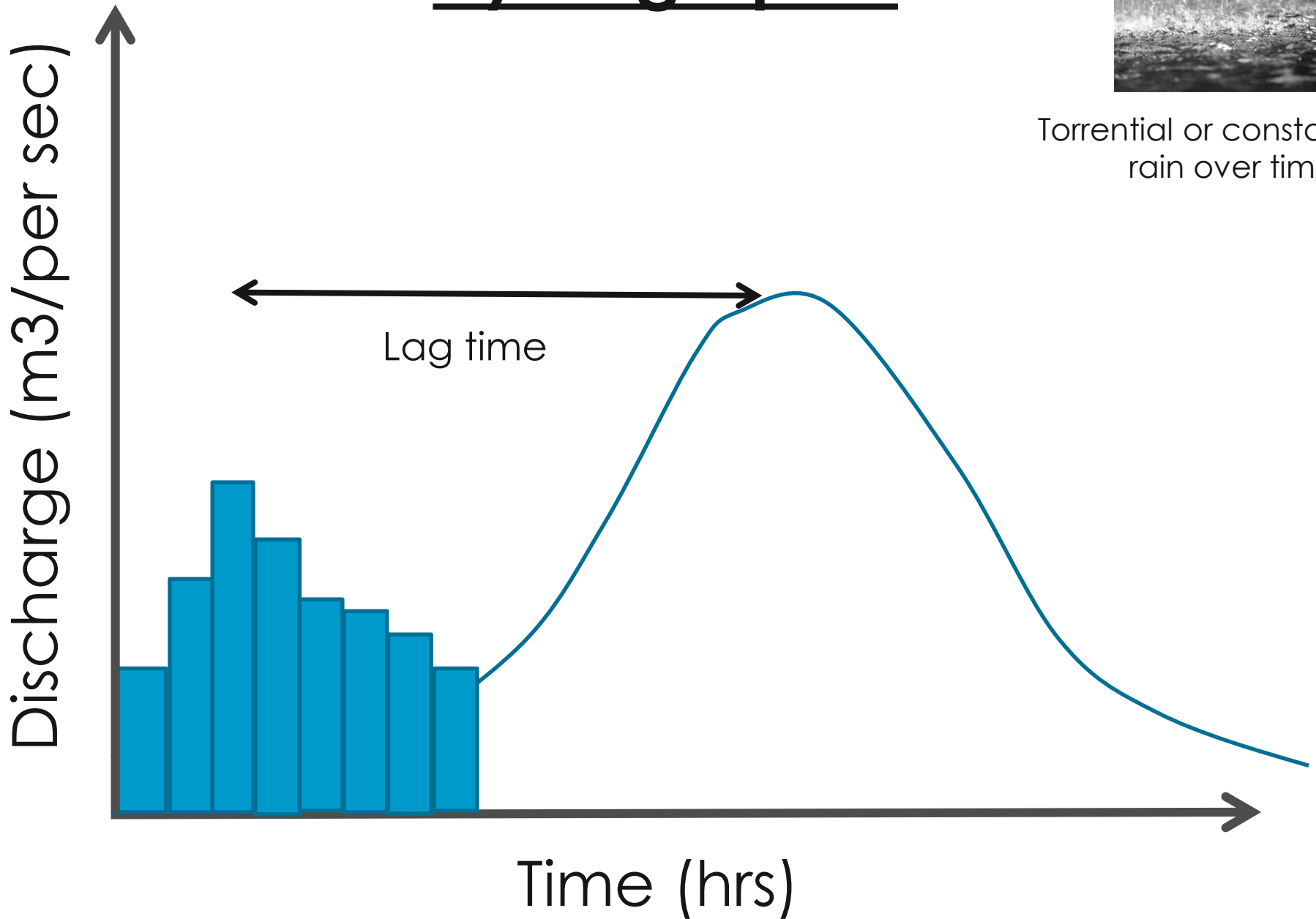


Highest rainfall or
highest discharge?
Note the lag time

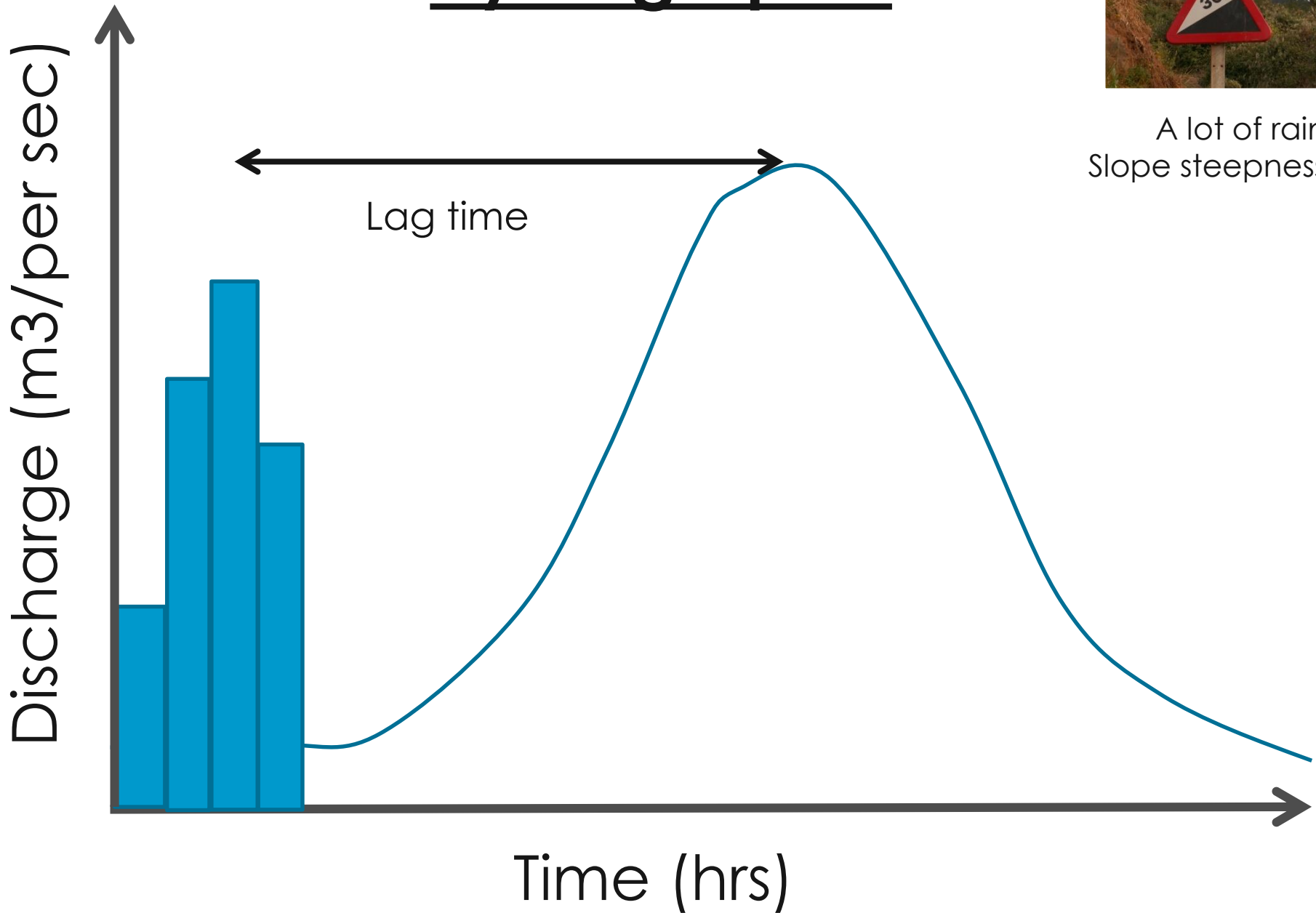
Hydrograph 3



Torrential or constant
rain over time?



Hydrograph 4



A lot of rain?
Slope steepness?

'River flooding is a natural phenomenon'

To what extent do you agree with this statement? (6 marks)

L1 (1-2 marks): basic **description** that floods can be caused by natural and / or human factors.

L2 (3-4 marks): focus on the **extent** (how much) that floods can be caused by natural factors. **Examples** are **explained** such as gradient and rock type.

L3 (5-6 marks): clear **explanation**, using **2 examples** on why natural causes of floods are more **significant** (important) than human causes. Answer is more **purposeful**, stating why human causes might not be as significant.



Odd one out?

