

Why Flood Depth Is Not the Whole Story

Flood damage depends on more than how deep the water gets.

Why the same depth can produce different damage

SLOW, SHALLOW STANDING WATER

Lower impact



FAST-MOVING WATER WITH DEBRIS AND EROSION

Higher impact



SIMILAR WATER DEPTH
~0.5 m

- DEPTH
~0.5 m
- VELOCITY
Low
- DURATION
Several hours
- DEBRIS
Minimal
- EROSION / SCOUR
Low
- CONTAMINATION
Low risk
- EXPOSURE
Limited

- DEPTH
~0.5 m
- VELOCITY
High
- DURATION
Many hours to days
- DEBRIS
High
- EROSION / SCOUR
High
- CONTAMINATION
High risk (sewage, chemicals, fuel, etc.)
- EXPOSURE
High

WHAT MAY BE EXPOSED TO FLOOD DAMAGE



BUILDINGS



ROADS



UTILITY INFRASTRUCTURE



PEOPLE / COMMUNITY



Flood impact depends on multiple factors, not just water depth. The speed of the water, how long it remains, what it carries, whether it erodes the ground, whether contamination is present, and what is located in the flooded area all affect the level and type of damage. Considering all these factors leads to better maps, better warnings, and better decisions.

FACTORS THAT INFLUENCE IMPACTS



DEPTH
How deep the water gets



VELOCITY
How fast the water moves



DURATION
How long water remains



DEBRIS
What the water carries



EROSION / SCOUR
Whether the water erodes the ground



CONTAMINATION
Whether the water is contaminated



EXPOSURE OF HOMES, ROADS, UTILITIES, & PEOPLE
What is located in the flooded area

WHY THIS MATTERS FOR POLICY



- flood maps and warnings should not focus only on water depth



- infrastructure damage can result from erosion and debris as well as inundation



- emergency planning needs to consider multiple dimensions of risk



KEY TAKEAWAY

Depth matters, but speed, duration, debris, and what is in harm's way matter too.