

Geodesy: Measuring risk before, during and after disaster

Knowing where, what changed, and what to do next.

The Earth is constantly changing

Geodesy is the science of measuring the Earth. In disaster management, it tells us precisely where things are, how the ground is moving, and how the landscape changes before, during, and after a disaster.

Before a disaster: Understand and reduce risk



Know where hazards may strike

Accurate maps, heights, and measurements help identify areas exposed to floods, landslides, earthquakes, coastal hazards, and ground instability.

Make infrastructure safer

Geodetic information helps engineers choose locations, design infrastructure, and monitor its stability in hazard-prone areas.

During a disaster: See what is happening



Measure the changes

Satellites and ground-based instruments can quickly measure where the ground has moved, how much it has changed, and which areas are affected.

Support emergency response

Accurate positioning and up-to-date maps help authorities and emergency services locate affected areas, assess damage, plan access routes, and coordinate resources.

After a disaster: Assess and recover



Measure the impact

Geodesy provides objective measurements of ground deformation, subsidence, uplift, flooding, and changes to the landscape and infrastructure.

Support safer reconstruction

Geodetic measurements help authorities assess damage, update hazard maps, plan reconstruction, and reduce risk from future events.

Geodesy supports every stage

Geodesy provides the precise information about the Earth that helps people understand hazards, respond to disasters, and build a safer future.

Understand risk → Prepare → Respond → Assess damage → Recover → Reduce future risk

Through the ***International Association of Geodesy (IAG)*** and its ***Global Geodetic Observing System (GGOS)***, the global geodetic community works together to provide the measurements, reference systems, services, products and essential geodetic variables that help science and society understand our changing Earth and build a safer, more resilient world.

https://geodesy.science/ggos/

©GGOS