

Cracks encountered in constructions

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When some many people see the appearance of cracks in their houses, they don't understand what happening. They ask themselves . Must they repair or must they sell et leave the house.

Naturally there are several causes that are at the origine of these cracks.

- Infiltrations. They weaken the foundation of a house and let water seep into the concrete.
- The expansion of concrete. Composed of water and cement, concrete can deteriorate over time, due to a bad dosage at the time of preparation for example.
- Unstable soil.
- Dryness. ...

Small cracks are repairable but large cracks such as those affecting load-bearing walls or foundations can be repaired on a case-by-case. It depends on the costs of repairs and the causes that are causing the disorders.

We address here, just the appearance of cracks related to the behavior of the soil.

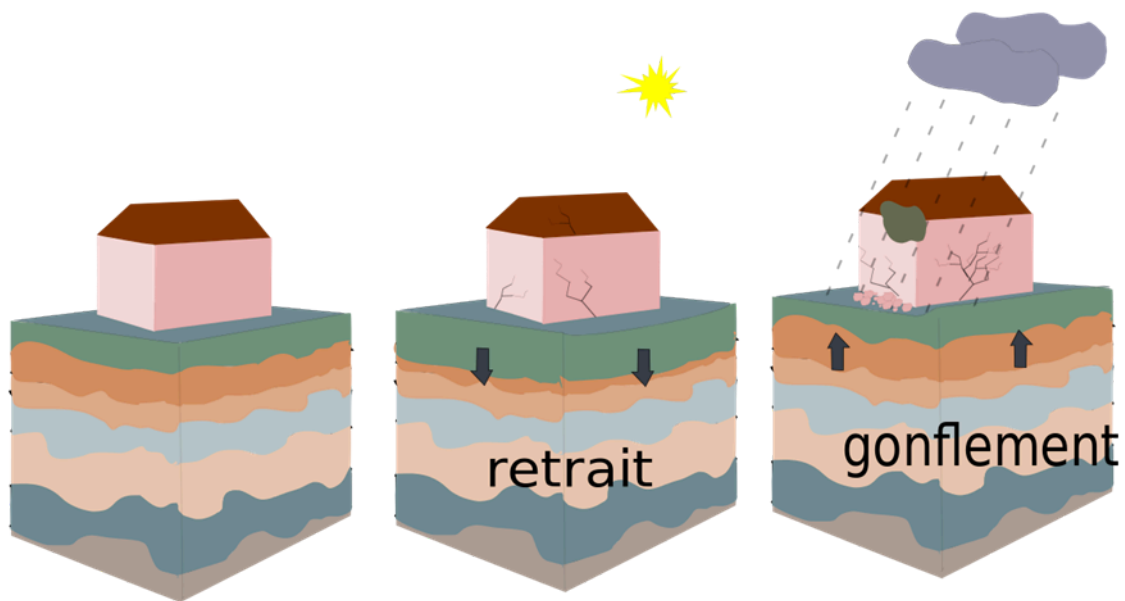
These cracks are often due to the fact that the foundations of the constructions rest on heterogeneous layers of soil that behave differently in the presence of water. For example, permeability in clay is less than in silt or sand.

When the groundwater level rises, the soil layers swell. This is called soil swelling. But in the dry periods, the groundwater level drops, the soil layers shrink. It is withdrawal. The alternation of swelling and shrinkage of the layers over the years ends up creating differential settlements of the foundations causing cracks in the walls.

1 - Some examples of cracks found in constructions



2- Withdrawal and swelling of soil layer



In the case of withdrawal of soil, the layer of ochre color is thin, the arrows are oriented downwards, the water table drops. But in the case of swelling, the ochre layer is thick, and the arrows are oriented upwards, the water table rises. The arrows represent the direction of the variation in the water table level.