

Can we use the morpho- granulometry as a tool to identify dynamic transfer of particles and sedimentary stocks inside karst aquifer ?

What morphological information might I need to identify dynamic transfer of particles ?

- ✓ Are my particles spherical or not ?
- ✓ Do I have primary particles or agglomerates ?
- ✓ Are my particles smooth or rough ?
- ✓ Can I characterise a mixture of particles ?

What information can we get with morpho- granulometer ?

- ✓ Particle size distribution
- ✓ Shape characteristics
- ✓ Statistical distributions
- ✓ Identity card of size and shape parameters for each particles

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Why automated particle image analysis ?

- ✓ Statistically significant sampling (10,000-500,000 particles)
- ✓ SOP driven measurements eliminates operator bias, fatigue, and time
- ✓ Quantitative shape and size data
- ✓ Images of every particles (shape id. : agglomerates, fibres, foreign particles)



STATIC

Particles fixed on slide, stage moves slide

- ✓ Detailed informations
- ✓ Small sample volume
- ✓ Direct techniques

2 approaches :



DYNAMIC

Particles flow past camera

- ✓ Broad dynamic range
- ✓ Large sample volume
- ✓ Rapid, robust, reproducible

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Morphometry of particles => widely use in sedimentology

In karst aquifer => particle transfer is very variable in space and time

In order to measure the morphometry parameters of particle during karst flash floods, it's necessary to develop an easy, quick and exhaustive method.

This study => first results of an experimental lab approach of morphometry analyses in hydrology

Results => identify the different stocks of sediments and perspective to use this method in continuous at karst springs.