

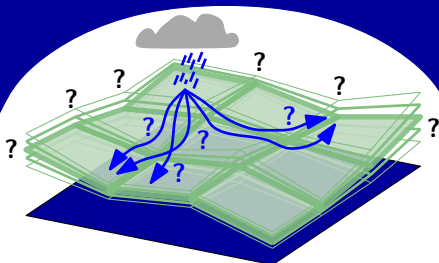
# flow computations on imprecise terrains

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uncertain elevations  $\longrightarrow$  uncertain flow of water

**potential watershed:**

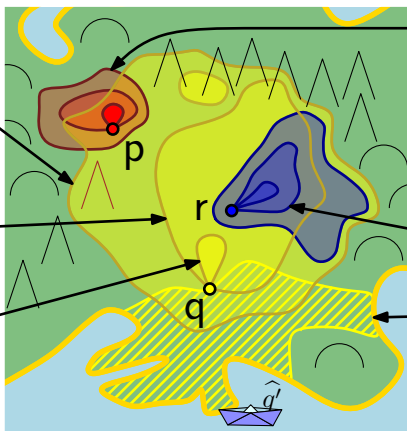
water may  
flow to  $q$

**persistent watershed:**

water can only  
flow to  $q$

**core watershed:**

water must  
flow to  $q$



$p \in \text{PotWS}(q)$   
does *not* imply  
 $\text{PotWS}(p) \subseteq$   
 $\text{PotWS}(q)$

on regular terrains  
 $r \in \text{PerWS}(q)$   
implies  
 $\text{PerWS}(r) \subseteq$   
 $\text{PerWS}(q)$

potentially  
downstream:  
water from  $q$   
may flow here

triangulated surface:



**NP-hard**

flow network:



**$O(n \log n)$  time**

grid model:



**$O(n)$  time**