

Sedflume/PICS

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- Tool description: An erosion flume for cohesive (fine grained) and mixed sediments to quantify site-specific critical shear stress, erosion rate as a function of shear stress, settling velocity of eroded aggregates, and the variation of these quantities with depth below the initial sediment/water surface

- Tool Input- Sediment core sample
Tool Output – Erosion rate as a function of shear stress and depth below the initial sediment/water surface, settling velocities

- What question(s) does it answer for the Districts
 - ▶ Sediment stability
 - ▶ Sediment erosion rate and variation with depth from sediment/water surface
 - ▶ Relate erosion to sediment properties
 - ▶ Replicate storm stress conditions
 - ▶ Settling velocities of eroded aggregates
 - ▶ Parameterization (input) for predictive sediment stability and transport models

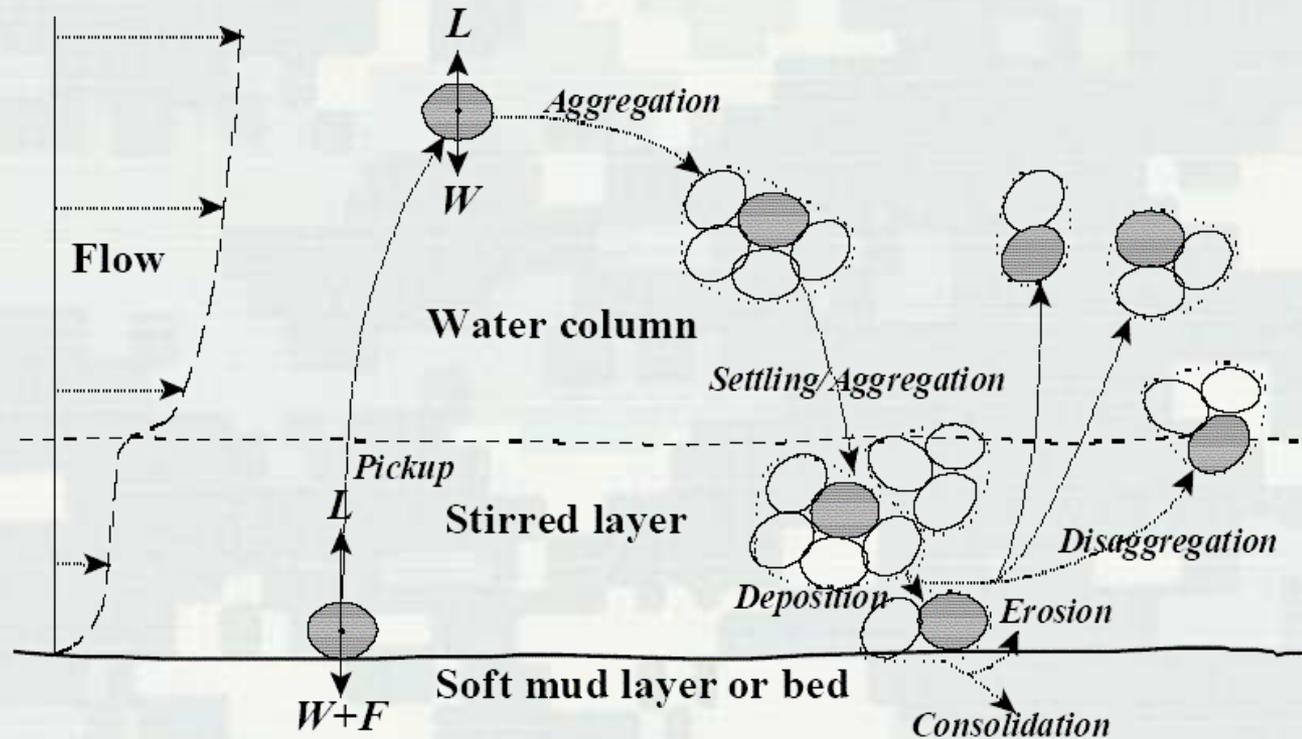


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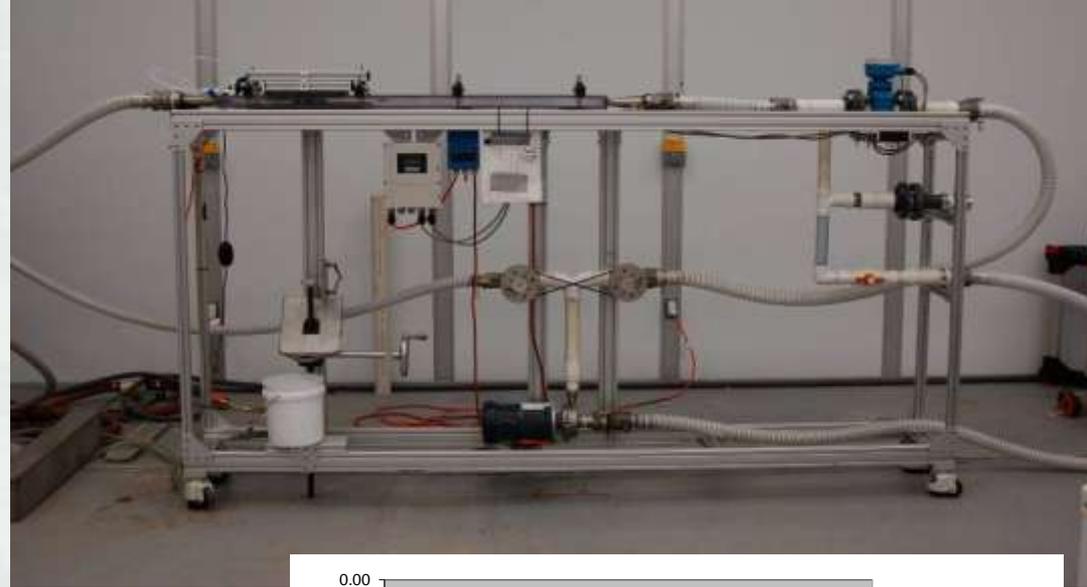
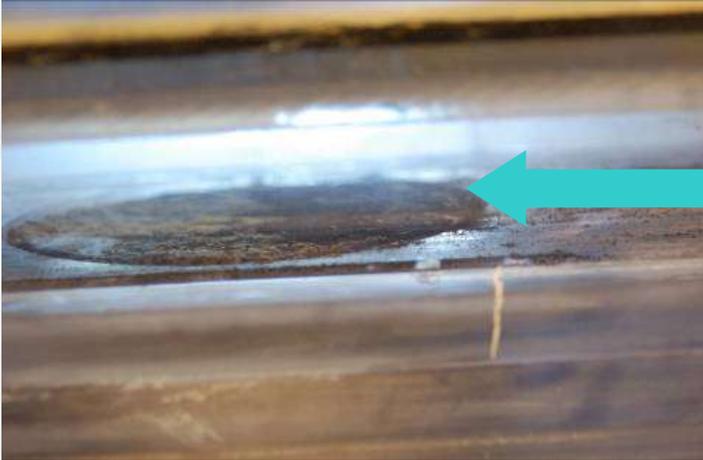
- Status of the tool or model: Operational

- Where has tool been applied?:

- ▶ Housatonic River, MA
- ▶ Pecos River, NM
- ▶ Palos Verdes Shelf, CA
- ▶ New Bedford Harbor, NH
- ▶ Mobile Bay, AL
- ▶ Missouri River, SD
- ▶ Lake Cochiti, NM
- ▶ Calumet River/Harbor, IL
- ▶ Portsmouth, NH
- ▶ Hamilton Wetlands /San Pablo Bay, CA
- ▶ Kewanee Stamp Sands, MI

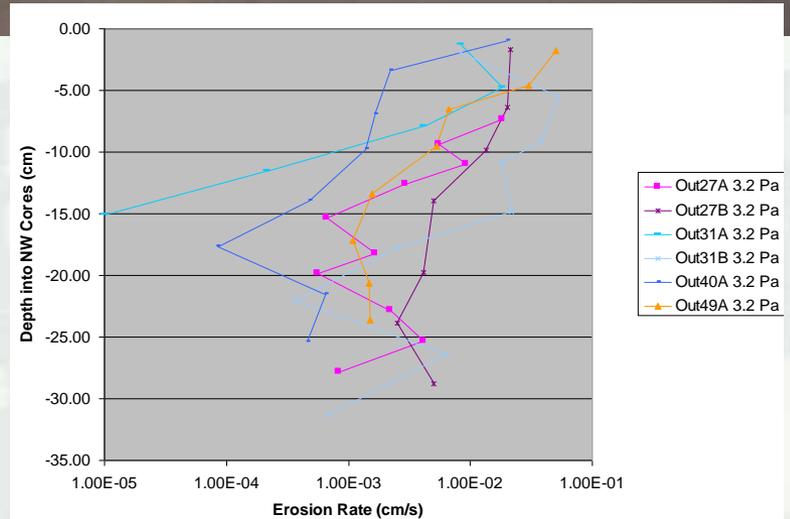


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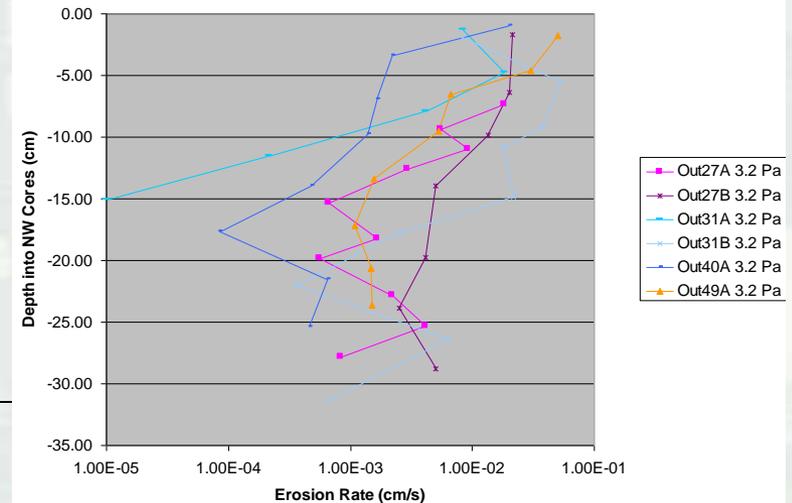
■ Sedflume Features

- ▶ Erosion of cores extracted from the sediment bed or created in the laboratory
- ▶ Layer-by-layer erosion to understand the effects of bulk density and self-weight consolidation on erosion rate
- ▶ Attached to PICS to quantify settling velocity of eroded aggregates and the variation with depth
- ▶ Mobile, so that it can be taken to a site for erosion experiments



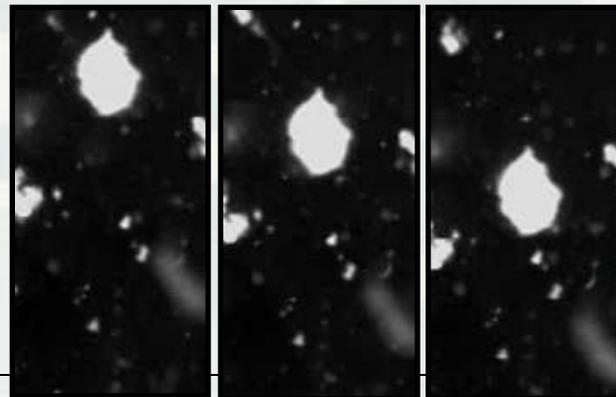
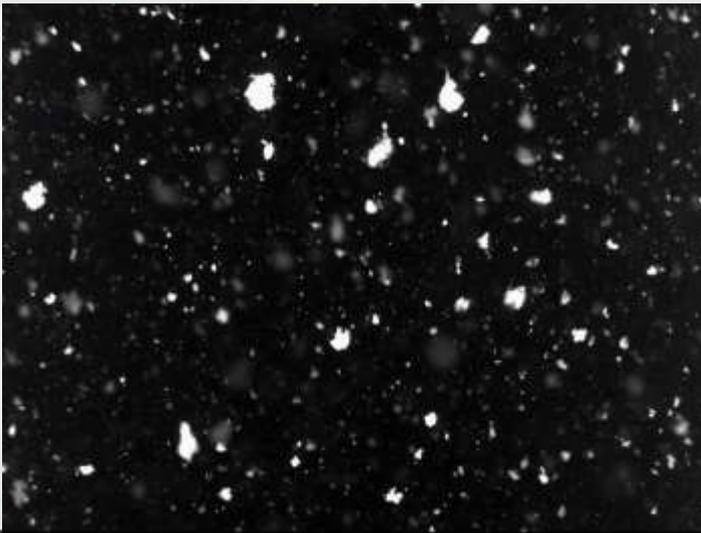
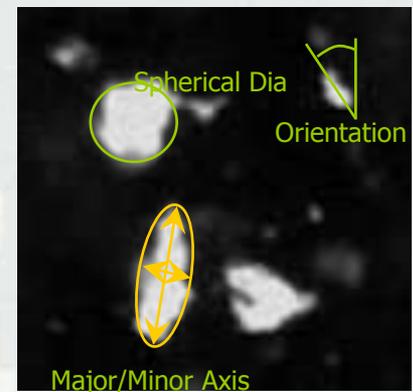
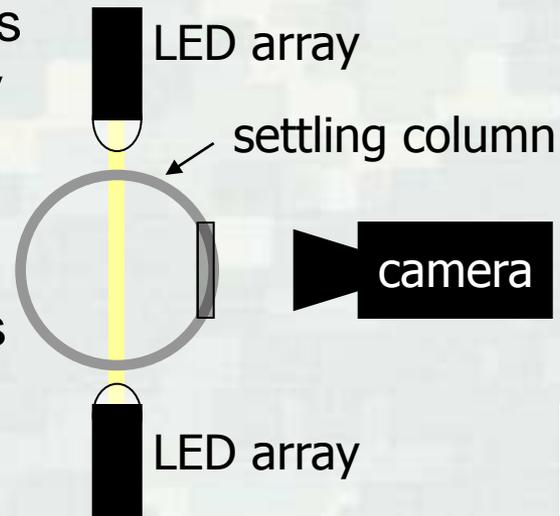
Sedflume/PICS

- Sedflume. PICS, other sediment measurement tools designed for field use
- Mobile laboratory deployed at field sites
- Erosion on minimally disturbed cores required for soft sediment erosion
- PICS attached to Sedflume for field deployment
- Field facility self contained for remote sites



Sedflume/PICS

- Settling of individual particles
- Settling of sediment aggregates
- Estimates of aggregate density
- Field or laboratory deployable
- Settling of Sedflume effluent (aggregate erosion)
- Quantify number of aggregates and state of flocculation
- Monitor 1000's of particles per sample
- Rapid data acquisition (2 min)



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