

Exploring the Optimal Setup for Surface Flow Velocity Measurements using PTV

- S. Manfreda and S. F. Dal Sasso University of Basilicata (Italy)
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Motivations & Objectives

Nowadays the implementation of optical methods in hydrological monitoring suffers the influence of environmental conditions and technical settings



- ✓ Investigate the optimal parameters for Particle Tracking Velocimetry (PTV) in terms of particle seeding density, frame rate, and tracer characteristics (size and color)
- ✓ Define clear guidelines in order to describe accurately the dynamics of surface flow velocity both in space and time using UAVs









Exploring experimental setup





Noce river clear water







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Field survey procedures

Bradano river turbid water

Equipment



- FHD videos captured at 24 frames DJI Phantom 3 Pro Quadcopter
- Benchmarking velocities estimated using current meters Seba F1



Field results



Conclusions

The accuracy of PTV results during field test can be improved through the choice of correct equipment and setting parameters:

- \checkmark Spatial and temporal image resolution
- ✓ Seeding particle densities
- ✓ Tracer dimension and shape
- ✓ Use of different type of natural tracers respect to the local environmental conditions

Thanks for your attention...







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