

Probe concept

- Tracer: Dye ink, printed on the drawing paper by Inkjet printer
- The paper disk is sandwiched with sponges for stable ink elution from the paper
- A tailing will be appeared from printed dot in water

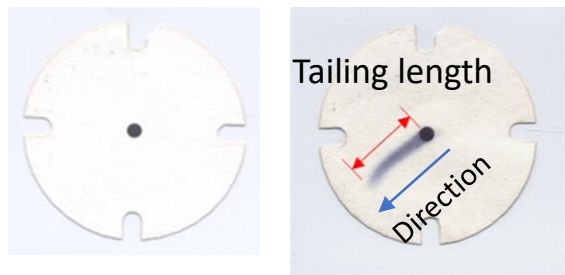


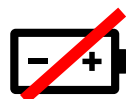
Fig. 1 Paper disk (48 mm diam.)

- Scanning paper to evaluate velocity and direction



Advantages

- Low cost (<1,000 €)
- No electricity used
- Short measurement time (<60min.)



Paper Disk Groundwater Velocimeter (PGDV)

Patent: JP5471624B2

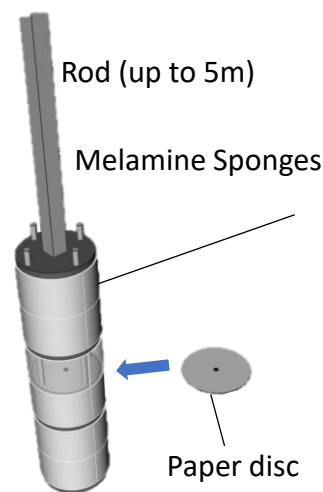


Fig. 2 PGDV (Diameter =50mm)



Calibration line in laboratory

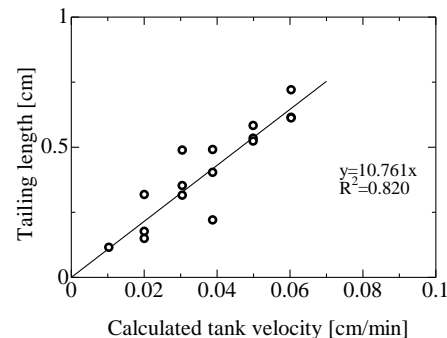


Fig. 3 Tank (Darcy) velocity and tailing length of PGDV

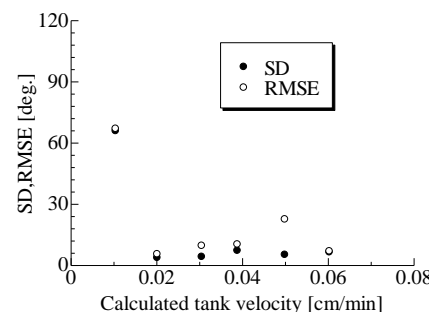


Fig. 4 Standard Deviation and Root Mean Square Error of the direction of the tailing of PGDV

- If the tailing length is short or the speed is low, the direction error will be increased.

Field test of PGDV

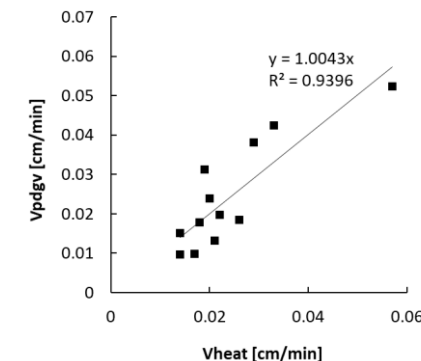


Fig. 5 of Velocity of heat type groundwater velocimeter (Alec electronics GFD-3) and PGDV

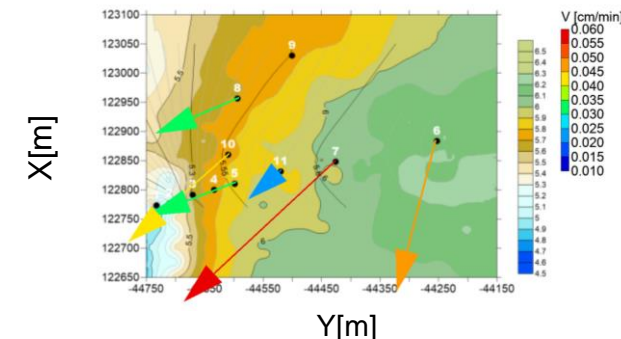


Fig. 6 Groundwater velocity distribution in Sarobetsu Wetland, Japan, July 16, 2017

- PGDV velocity has a good correlation with ordinary velocimeter
- Due to the low cost of the probe, multiple observations of groundwater velocity are possible.
- Contact k_yama@yamaguchi-u.ac.jp for further information