1. Supplementary material

1.1. Solutocapillary flow induced by a freshwater source present on the surface of a saltwater body:

A syringe needle connected to a syringe pump is used to create a freshwater source on the air-water interface (dotted line) of the saltwater body seeded with PIV particles. The salt concentration is 35 g l-1. The needle tip size is 27G, and the freshwater flow rate is 50 l/min. The view above the marked line is an optical reflection of the waterbody. The freshwater source creates a solute concentration gradient that causes the flow. The induced flow is away from the needle at the interface, and below is towards the needle.