Swish floats- an inexpensive neutrally buoyant float to monitor dispersion in coastal seas

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The direct measurement of subsurface ocean currents using neutrally buoyant free-floating instruments (or “floats”) has been used for decades by oceanographers. These observations are still useful to observe mean flows via repeated Lagrangian measurements, particularly in coastal regions where circulation schemes remain unresolved. To increase the statistical significance of these observations, it is desirable to maximize the number of measurements and therefore minimize the expense associated with collecting these measurements: with this in mind, many inexpensive observations of ocean flows can be preferable to fewer data-rich observations from more expensive platforms. In this talk, I will describe a simple neutrally buoyant GPS float that has been developed at a cost of €200 per unit to measure subsurface dispersion on timescales up to a month. The floats share some passing similarities with the original Swallow floats, thus they nicknamed “Swallow-ish”, or Swish floats. I will outline the float design; discuss the principles governing the neutrally buoyant nature of the floats; and present results from several deployments in the coastal seas of Canada, showing how these simple floats are being used track the dispersion of pollutants through coastal systems via measurements of advection, diffusion, and vertical motion.