Technique	Platform	Spatial resolution (m)	Max. water depth	Typical error	Applicability (e.g., water clarity)	References
Spectral signature	Satellite	High-resolution commercial satellites[a]: ≈ 2 m; medium-resolution satellites[b]: typically > 30 m	1–1.5 m	0.10–0.20 m	≈ 1–1.5 times the Secchi depth	Fonstad and Marcus (2005), Legleiter and Overstreet (2012).
	Manned aircraft	Typically 0.5–4 m				Carbonneau et al. (2006), Legleiter and Roberts (2005), Winterbottom and Gilvear (1997).
	UAV	0.05–0.20 m				Flener et al. (2013), Lejot et al. (2007).
Through-water photogramme-try	Manned aircraft	Typically 0.1–0.5 m	0.6–1.5 m	0.08–0.2 m	$\approx$ Secchi depth	Feurer et al. (2008), Lane et al. (2010), Westaway et al. (2001).
	UAV	Typically 0.01–0.1 m				Bagheri et al. (2015), Dietrich (2016), Tamminga et al. (2014), Woodget et al. (2015).
Lidar	UAV	≈ 0.020 m at 20 m range	1–1.5 m	≈ 0.10 m with standard deviation of 0.13 m	≈ 1–1.5 times the Secchi depth	Mandlburger et al. (2016).
	Manned aircraft	Few dm-several m	6 m	0.05–0.3 m	≈ 2–3 times the Secchi depth	Bailly et al. (2012, 2010), Charlton et al. (2003), Hilldale and Raff (2008), Kinzel et al. (2007).
TLS[c]	Banks of the water body	Typically ≈ 0.05 m	0.5 m, but typically ≈ 0.1 m	0.005–0.1 m	Clear water	Bangen et al. (2014), Heritage and Hether-ington (2007), Smith et al. (2012), Smith and Vericat (2014).
Single-or multi-beam swath sonars	Manned/ unmanned vessels	Depending on the instrumentation and water depth	Sonars have minimum depth requirements (min 0.2–1 m)	Variable	Navigable streams	Widely known methodology
Sonar tethered to UAV	UAV	Depending on the water depth[d]	0.5–80 m	$\approx 3.8\,\%$[e] $\approx 2.1\,\%$[f] of actual depth	All water conditions	Methodology described in this paper