

**Table 1: Overview of multivariate DA scenarios.**

Method	Streamflow DA updates:		SWE DA updates:	
	VOL + GWL?	SWE?	VOL + GWL?	SWE?
VG-S	yes	no	no	yes
VG2-S	yes	no	yes	yes
VG-S2	yes	yes	no	yes
VG2-S2	yes	yes	yes	yes