

Supplementary figures and tables for manuscript on bipolar volcanic matching

Version 16 March 2020

Caption for supplementary figures named 'SxxA' is similar to that of Figure 2 in manuscript.
Caption for supplementary figures named 'SxxB' is similar to that of Figure 3 in manuscript.

Figure S1A

Onset YD /GS-1 Acidity records

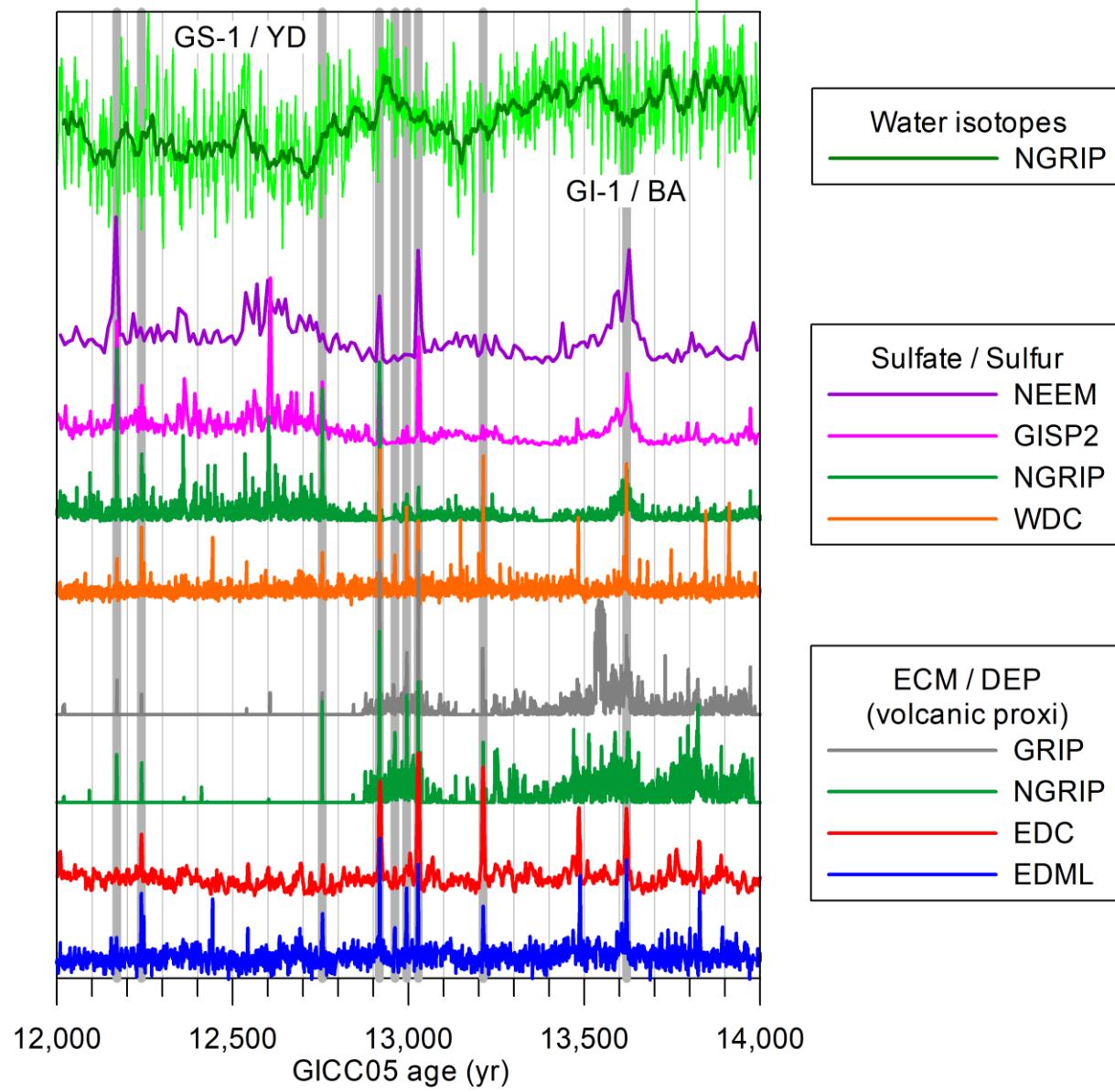


Figure S1B

Onset YD / GS-1
 $\delta^{18}\text{O}$ records

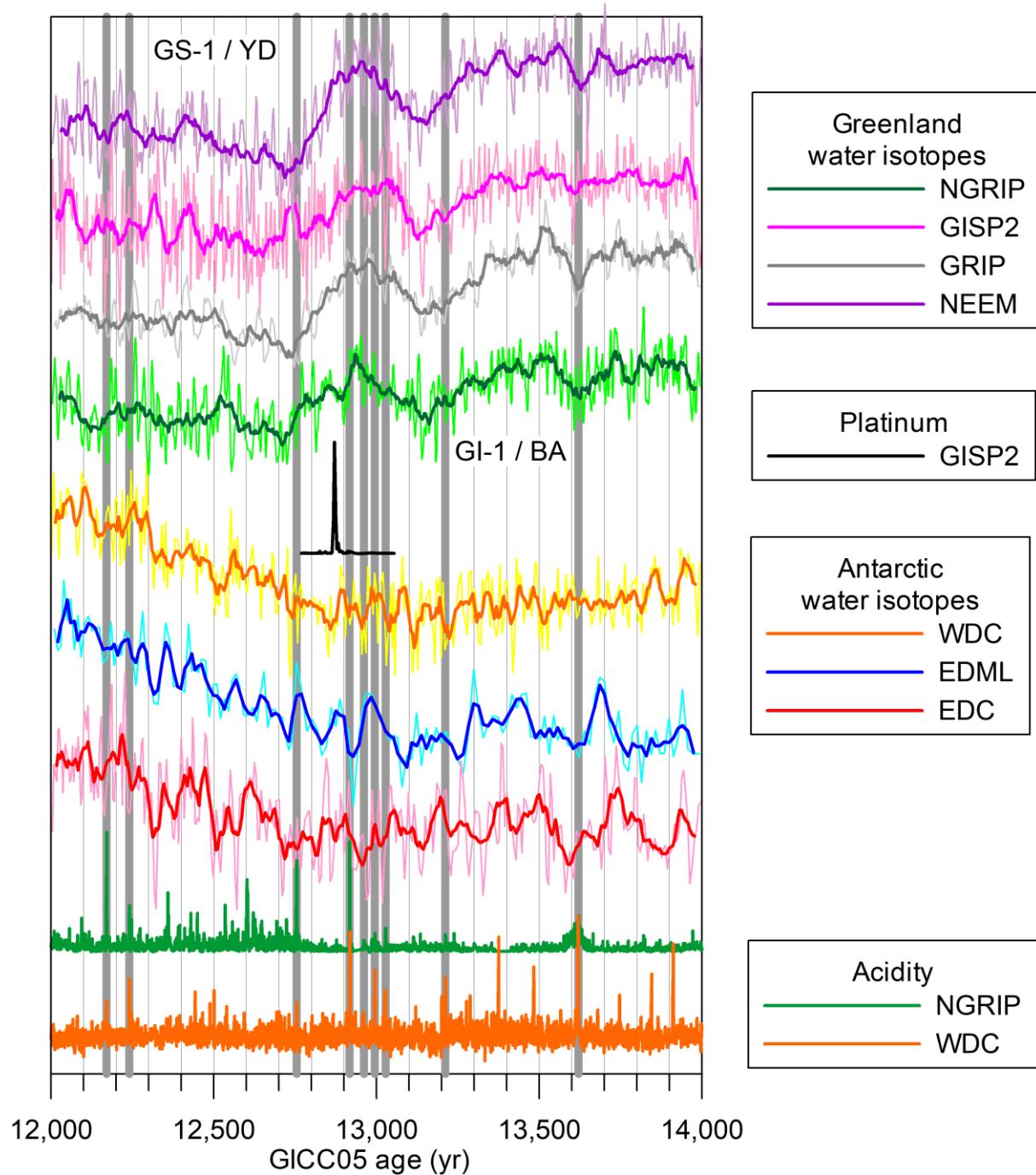


Figure S2A

Onset GI-1 Acidity records

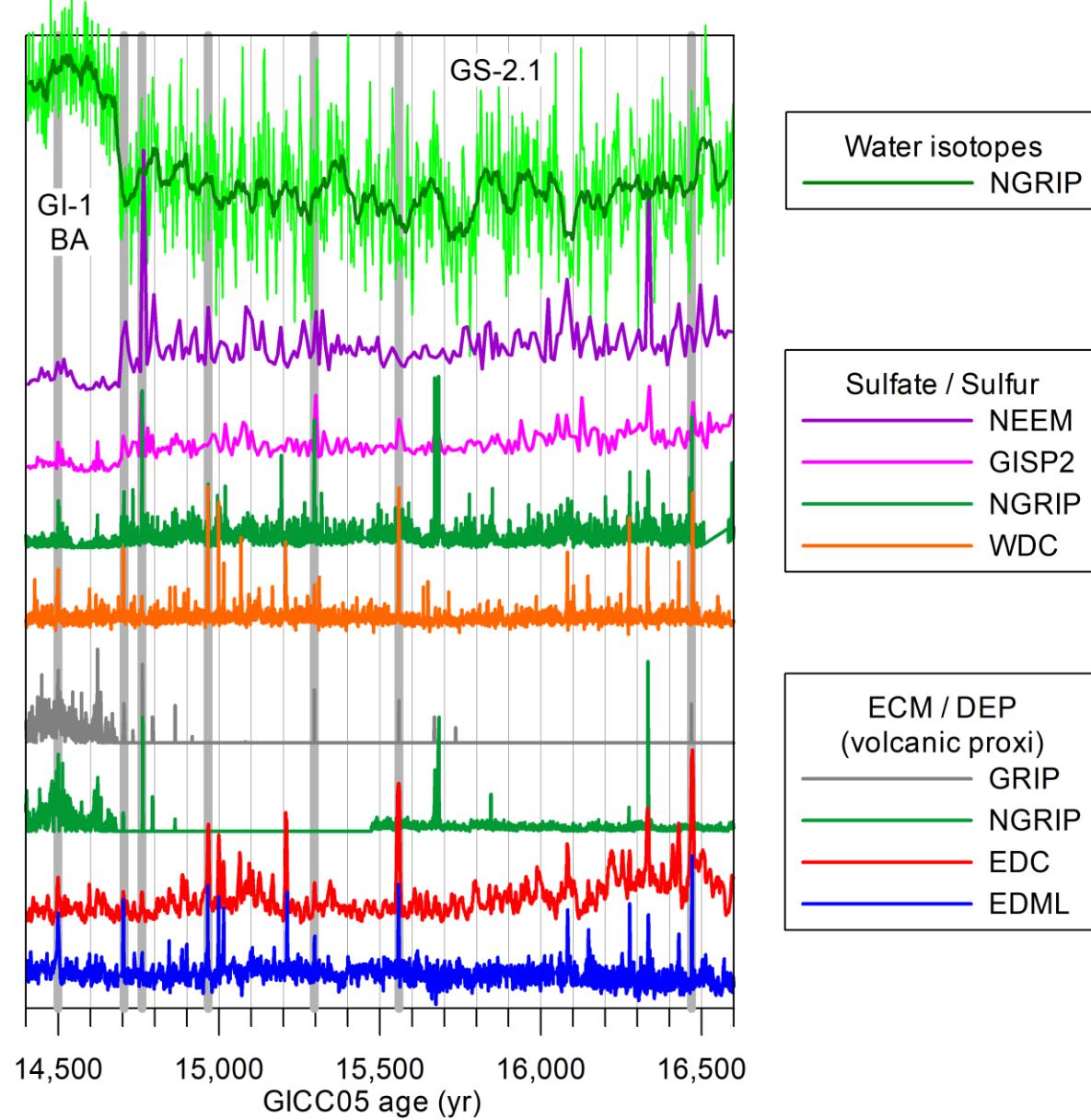


Figure S2B

Onset GI-1 $\delta^{18}\text{O}$ records

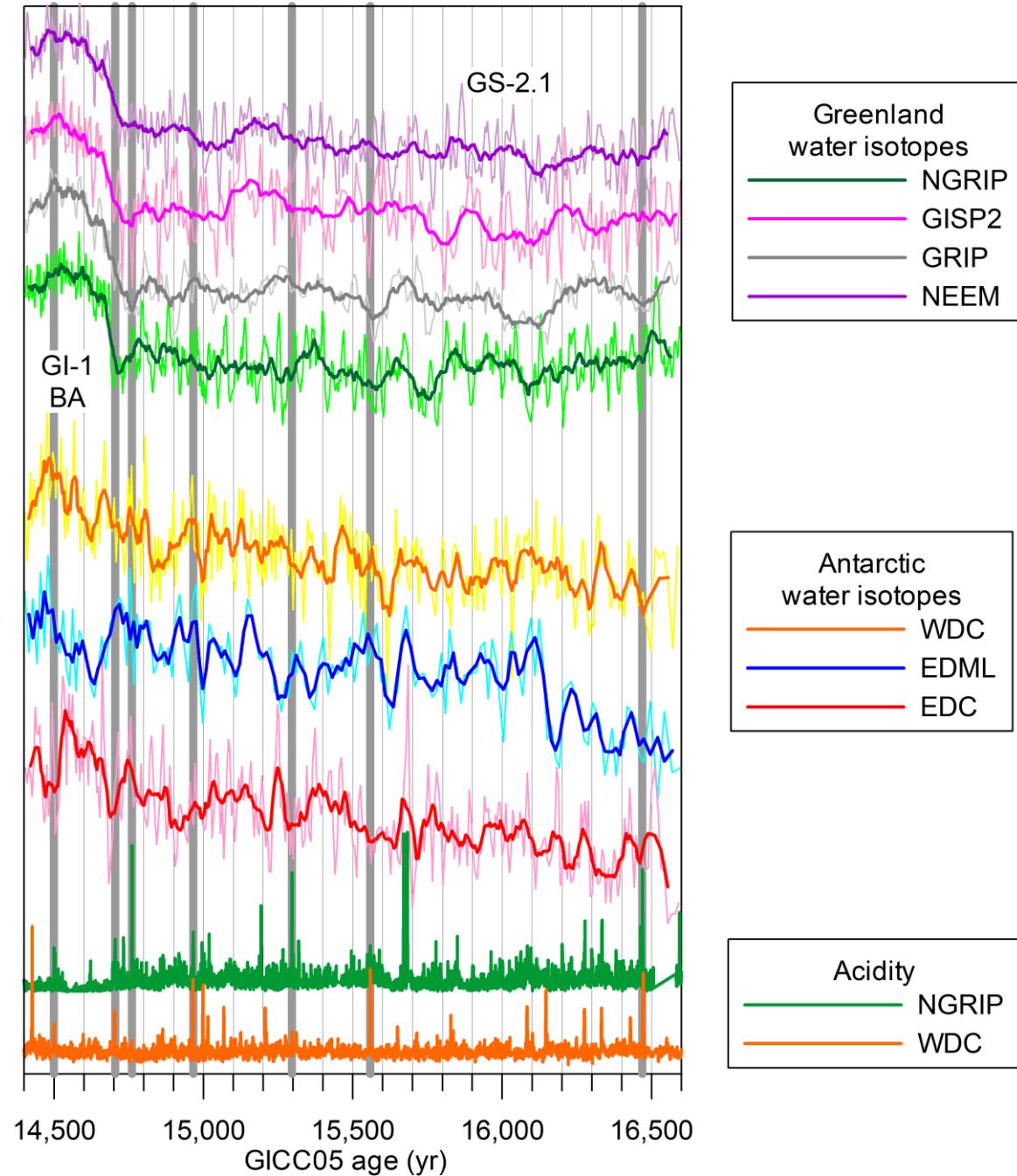


Figure S3A

GS-3 Acidity records

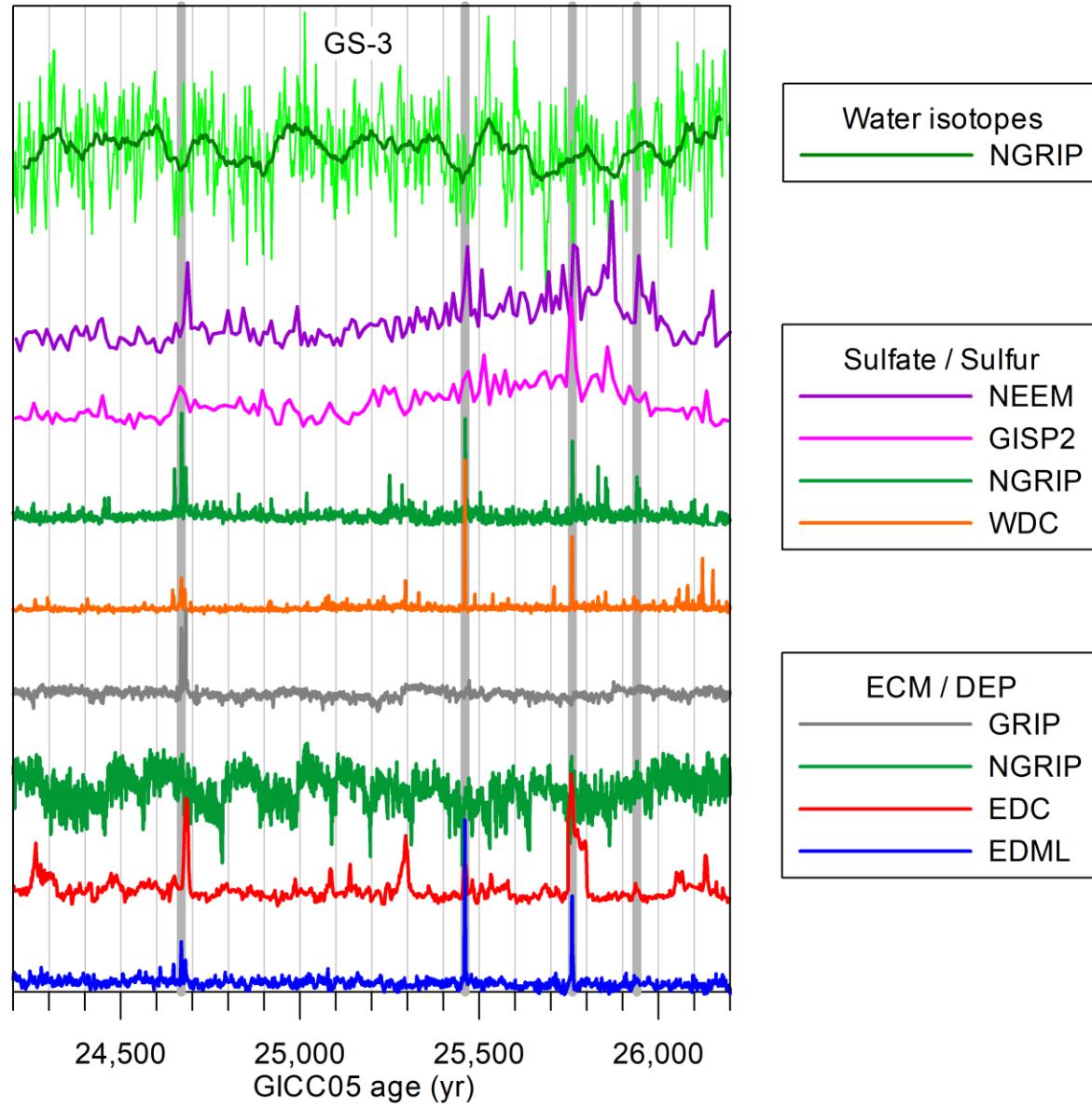


Figure S3B

GS-3
 $\delta^{18}\text{O}$ records

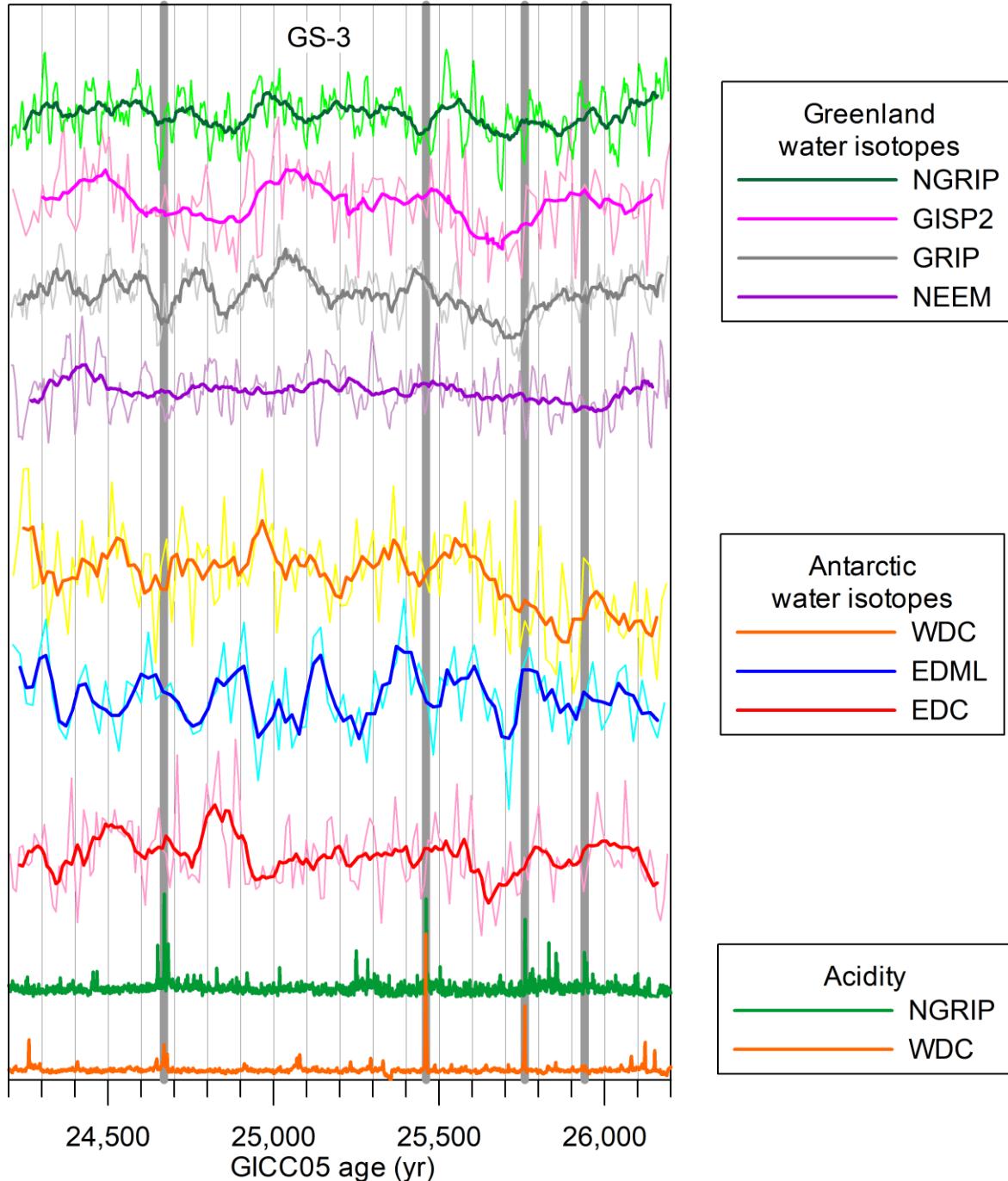


Figure S4A

Onset GI-3-4 Acidity records

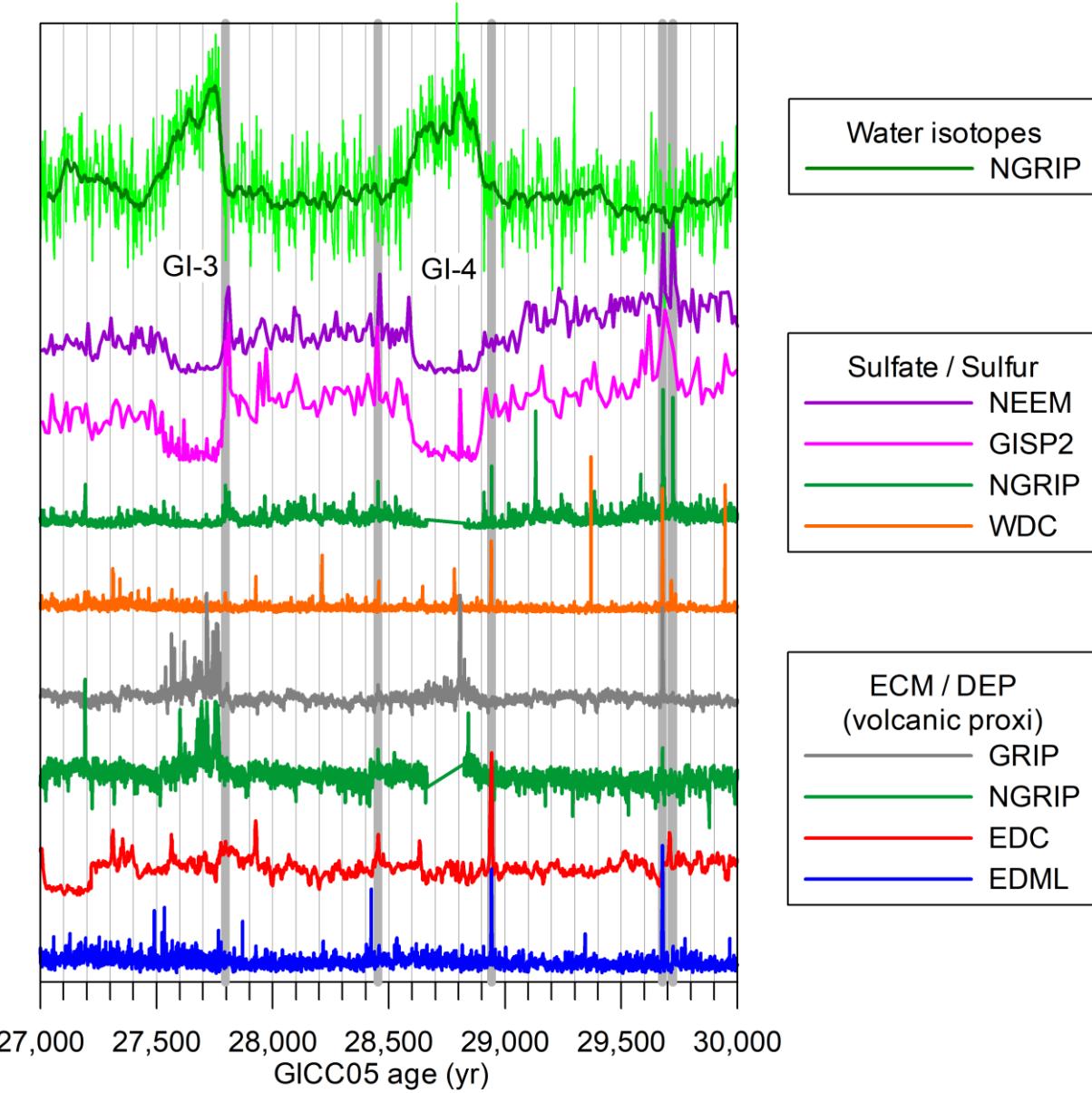


Figure S4B

Onset GI-3-4
 $\delta^{18}\text{O}$ records

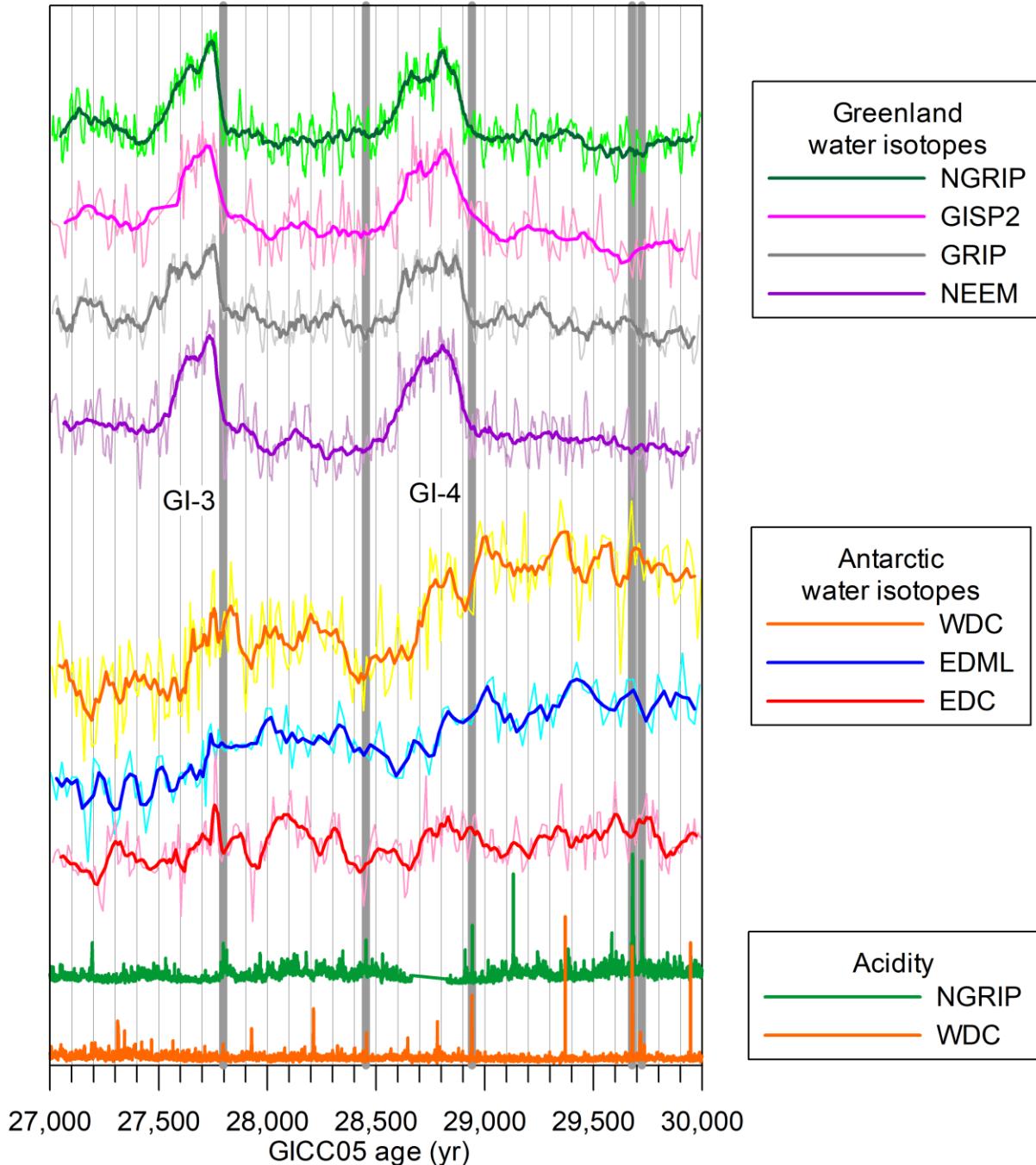


Figure S5A

Onset GI-5.1-5.2
Acidity records

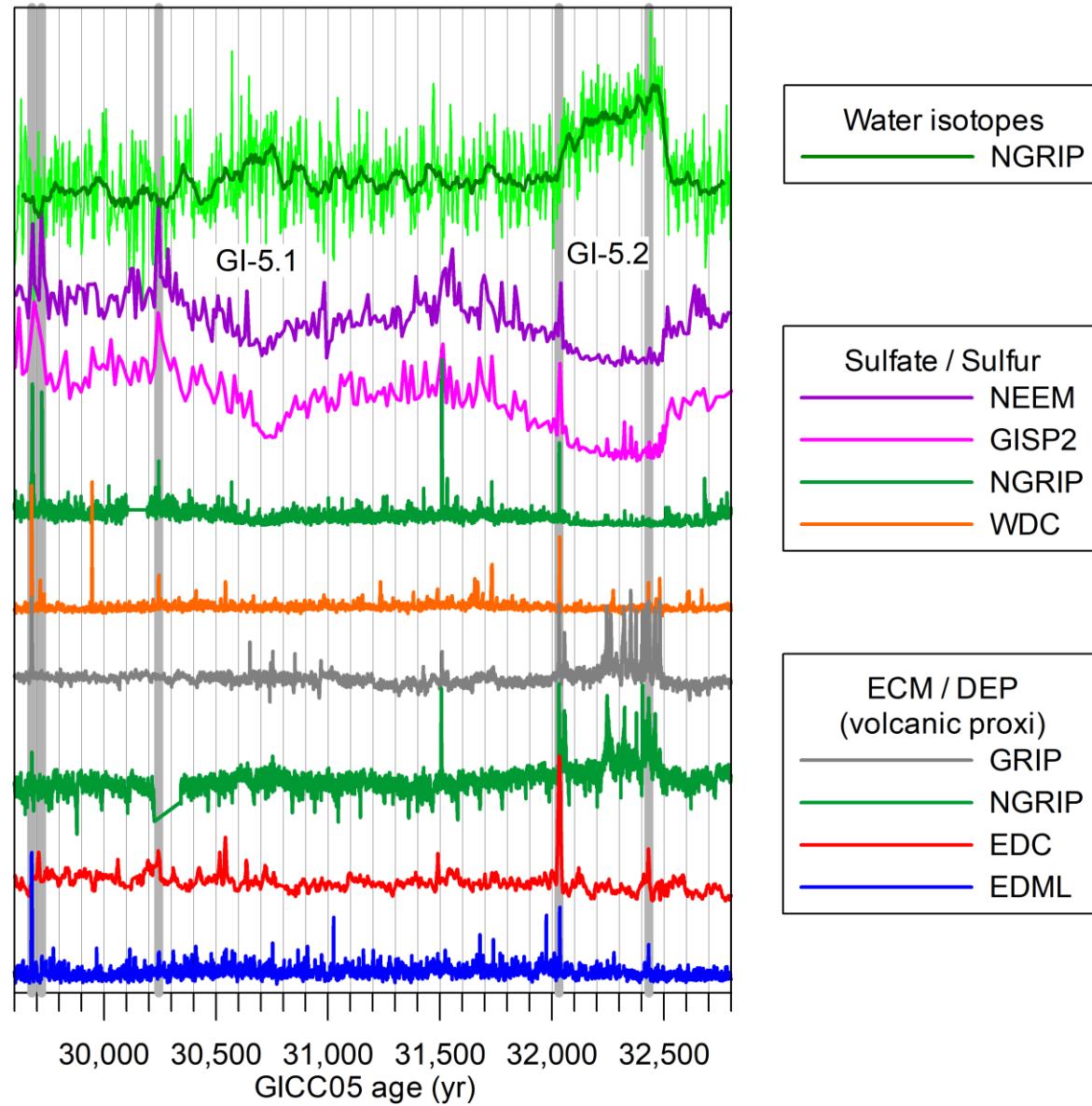


Figure S5B

Onset GI-5.1-5.2 $\delta^{18}\text{O}$ records

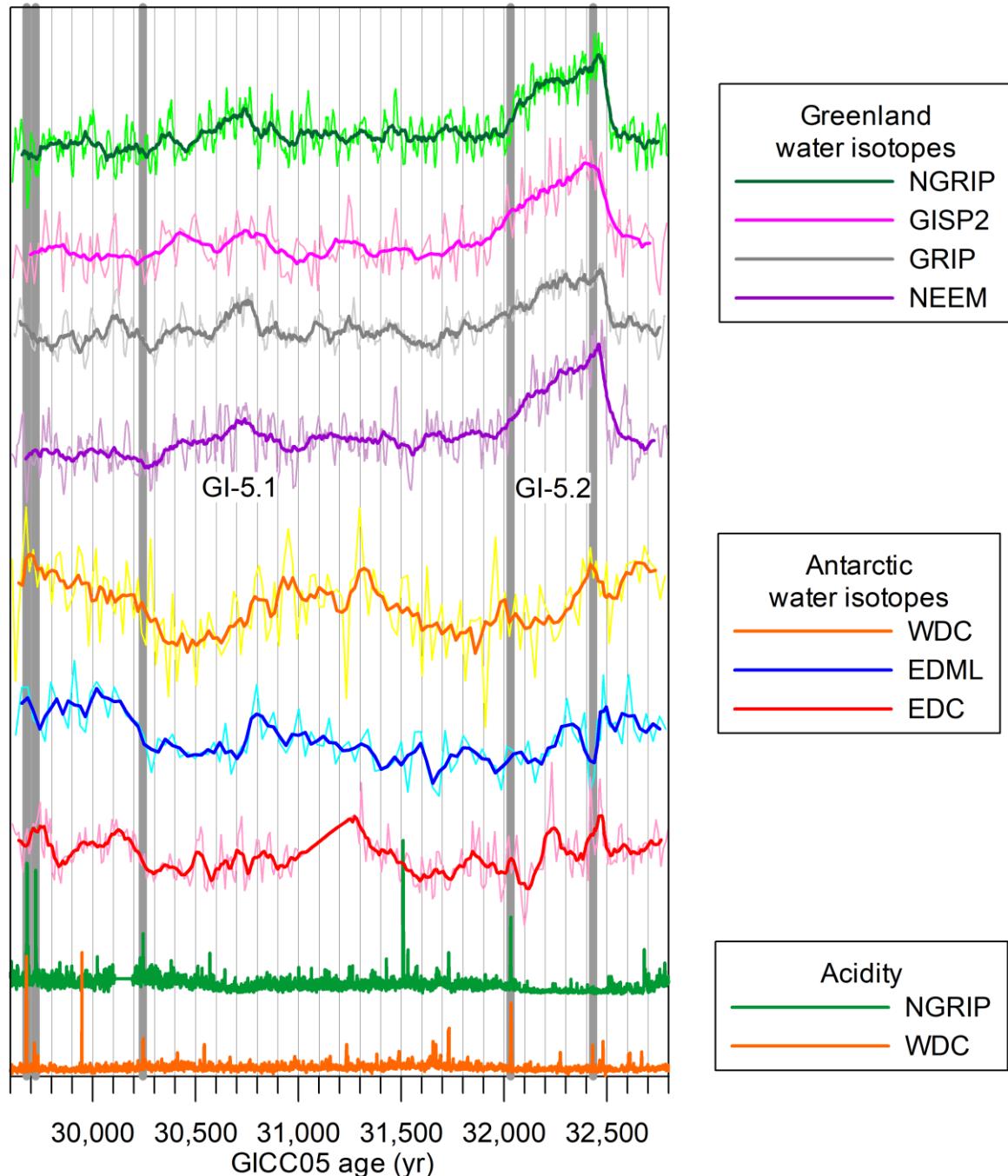


Figure S6A

Onset GI-6-7 Acidity records

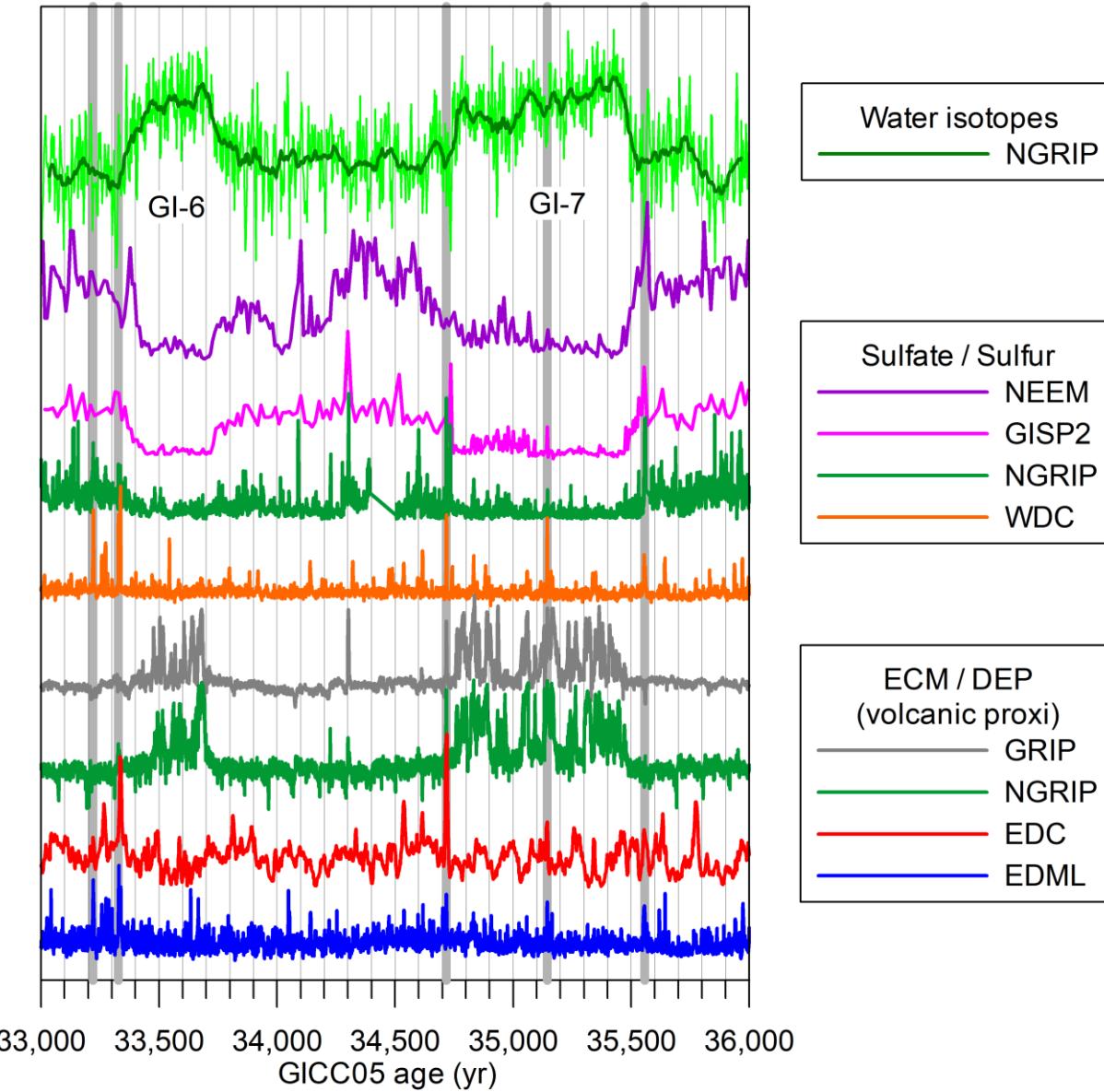


Figure S6B

Onset GI-6-7
 $\delta^{18}\text{O}$ records

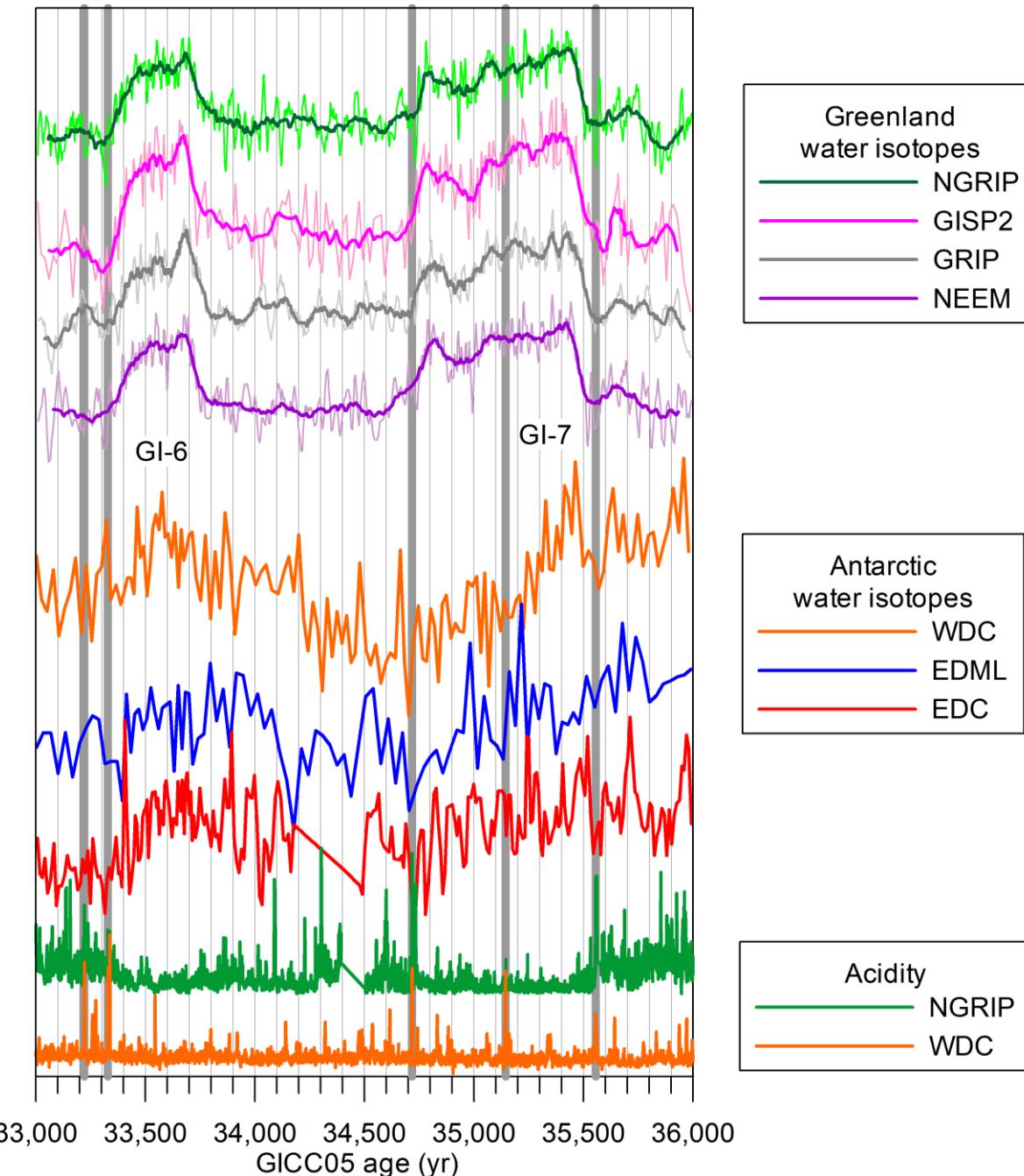


Figure S7A

Onset GI-8 Acidity records

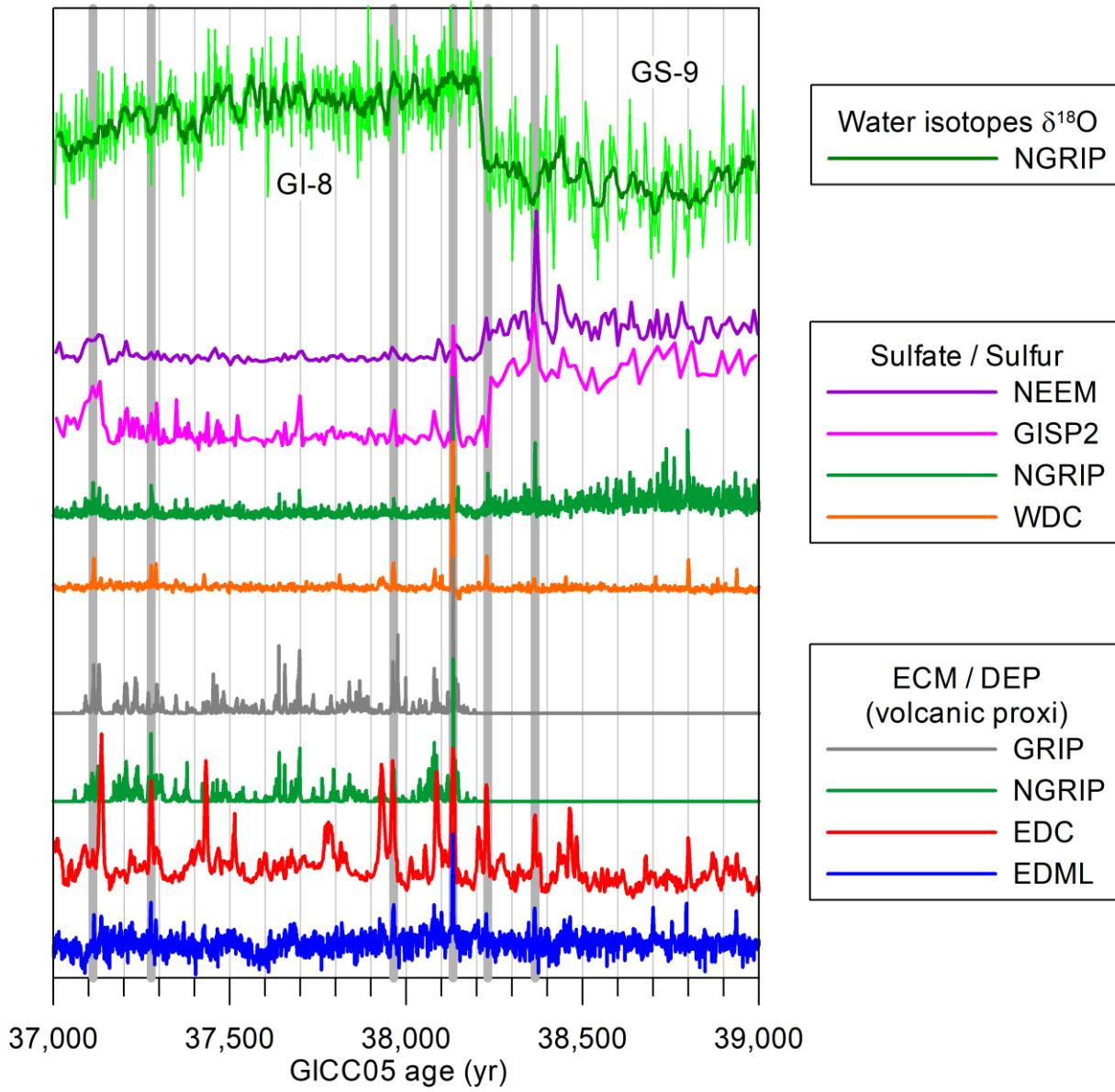


Figure S7B

Onset GI-8
 $\delta^{18}\text{O}$ records

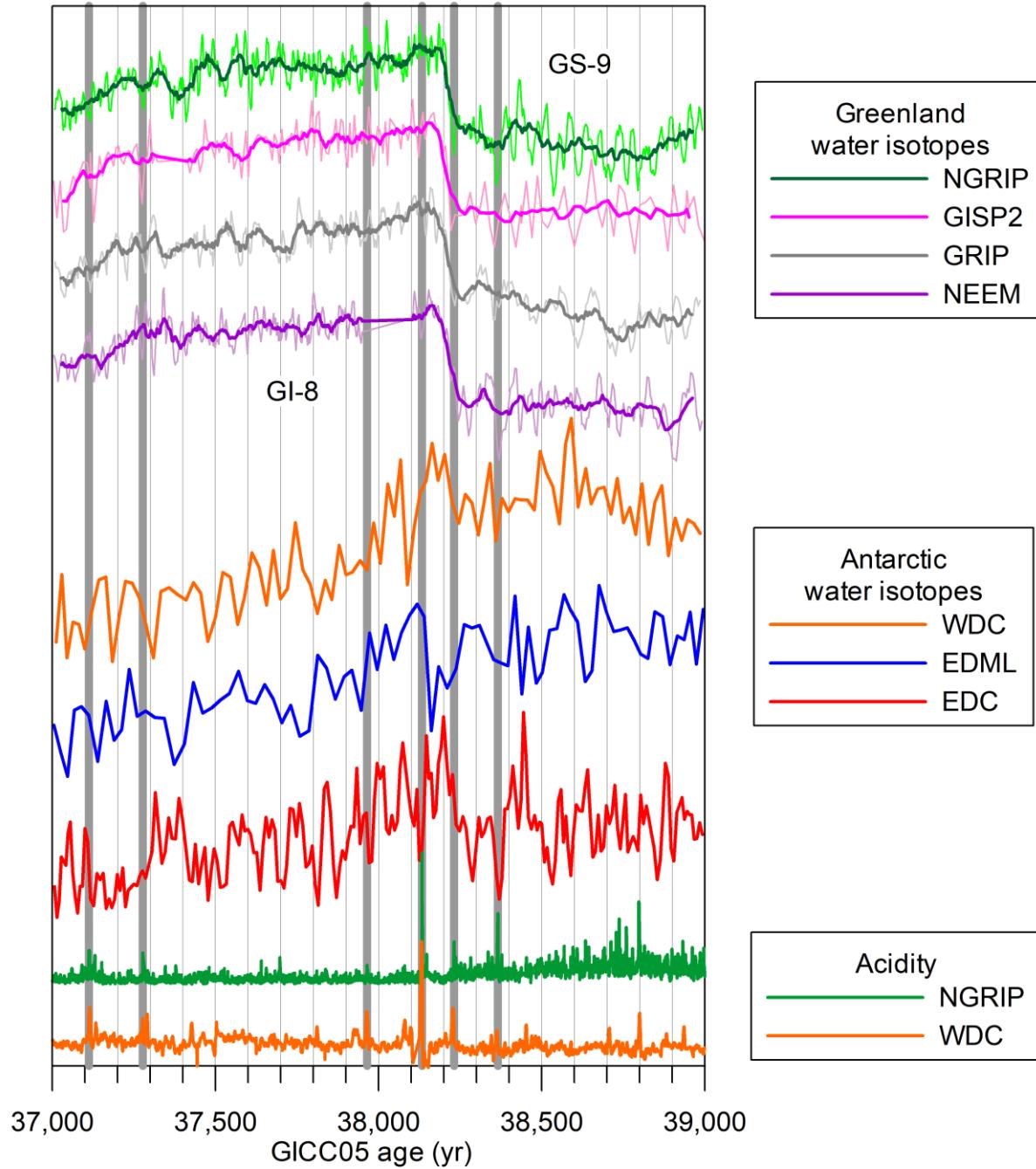


Figure S8A

Onset GI-9-10 Acidity records

The black vertical lines are ^{10}Be bipolar match points from Raisbeck et al., CP, 2017.

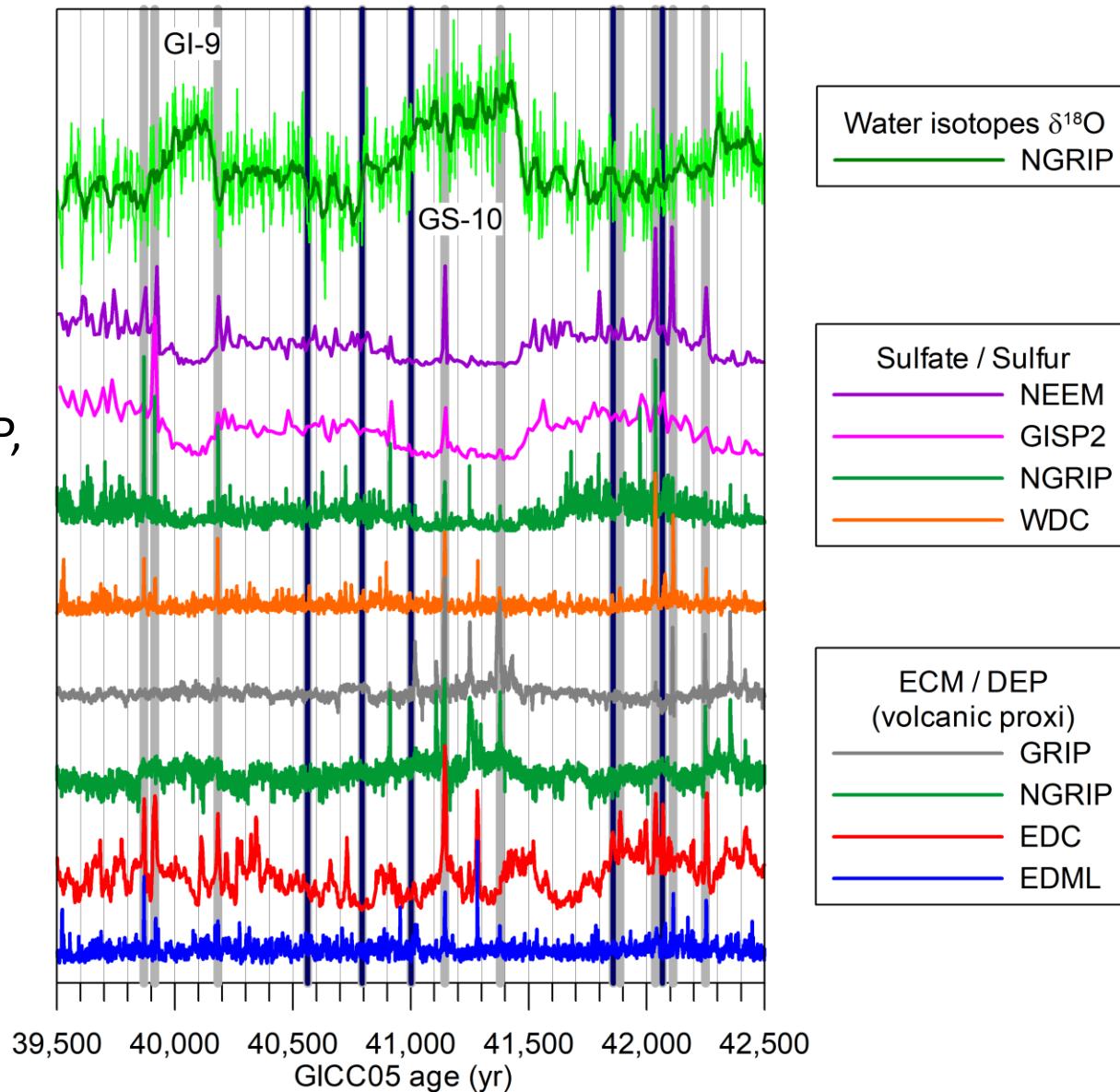


Figure S8B

Onset GI-9-10
 $\delta^{18}\text{O}$ records

The black vertical lines are ${}^{10}\text{Be}$ bipolar match points from Raisbeck et al., CP, 2017.

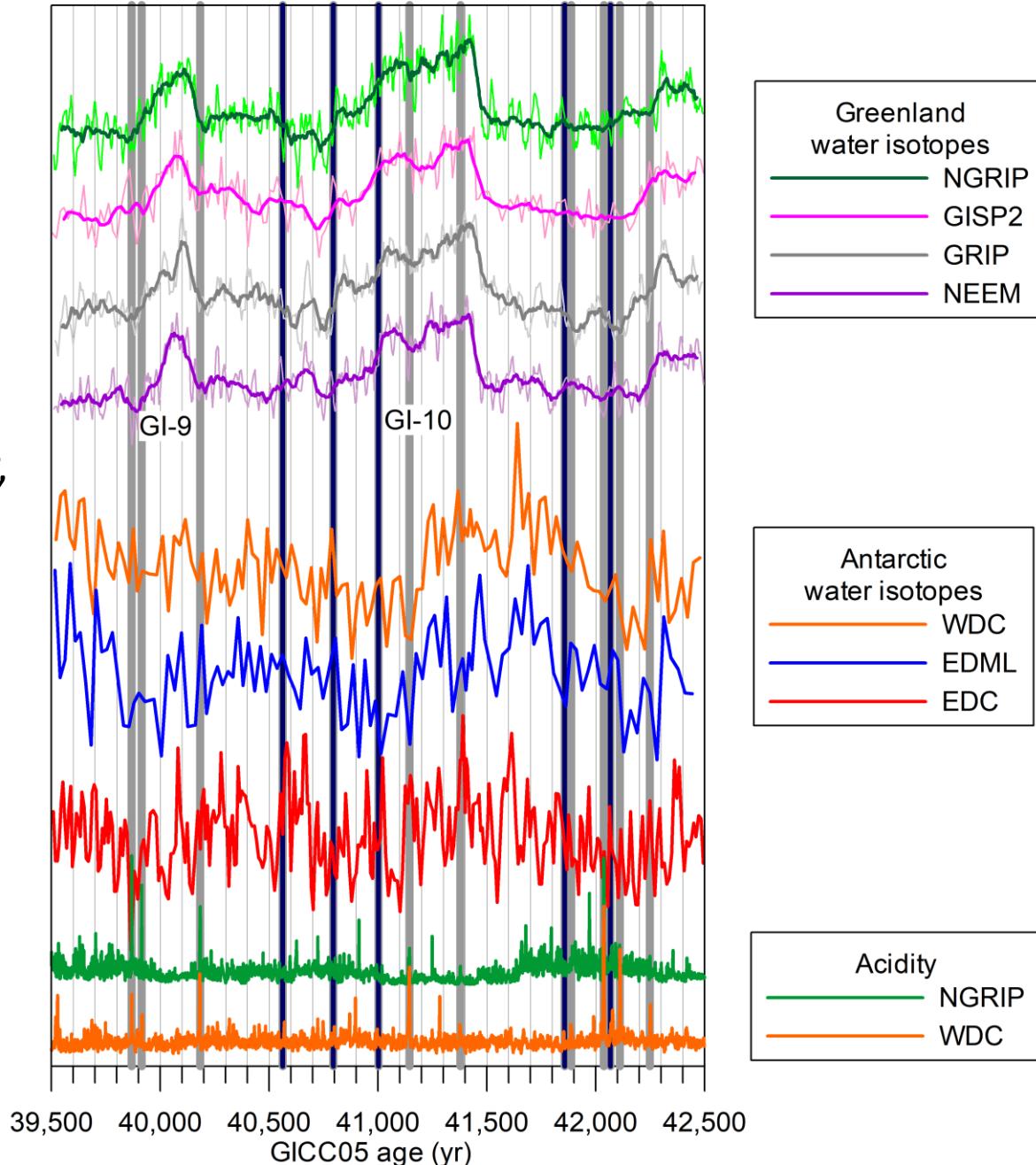


Figure S9A

Onset GI-11 Acidity records

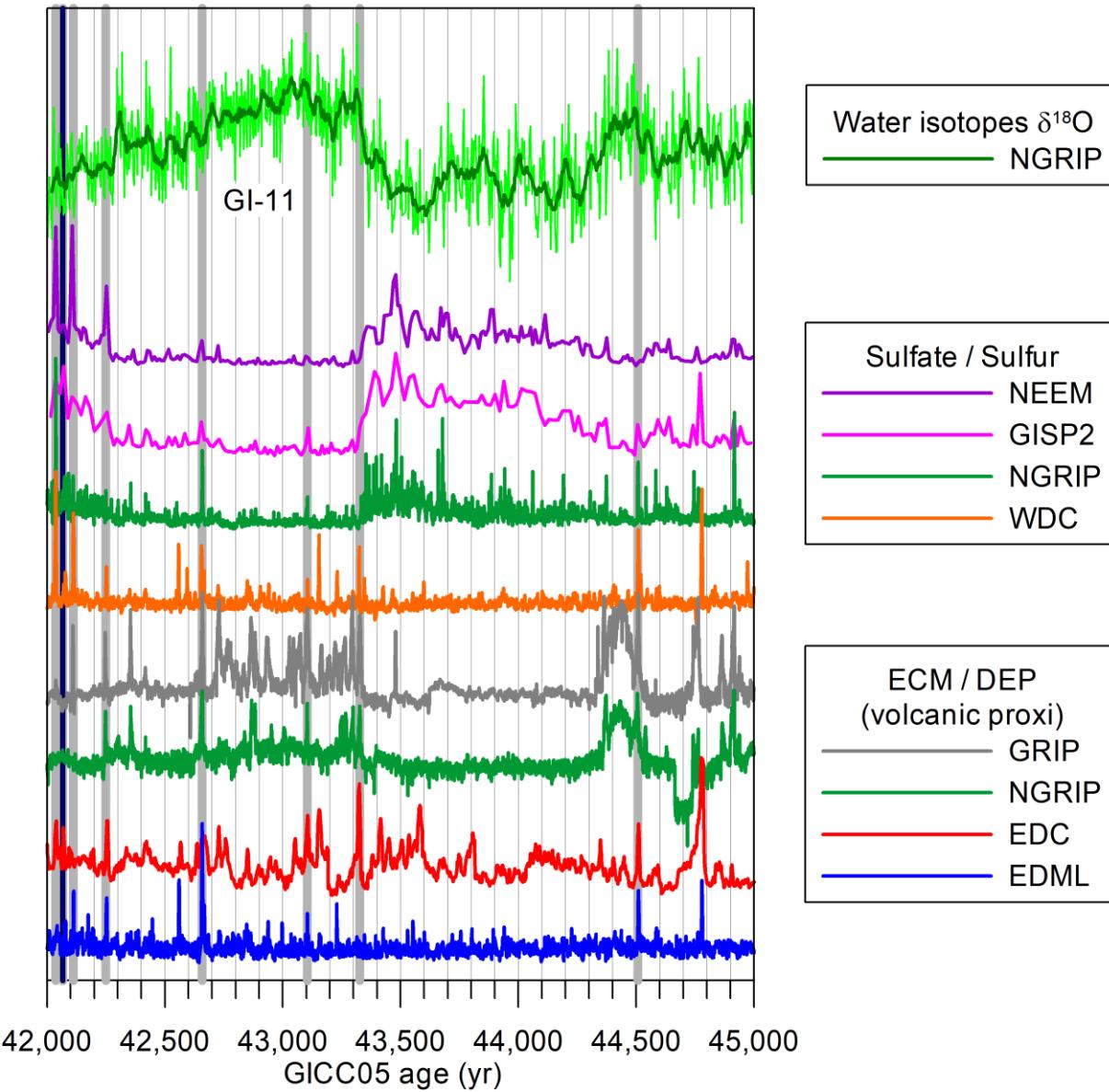


Figure S9B

Onset GI-11
 $\delta^{18}\text{O}$ records

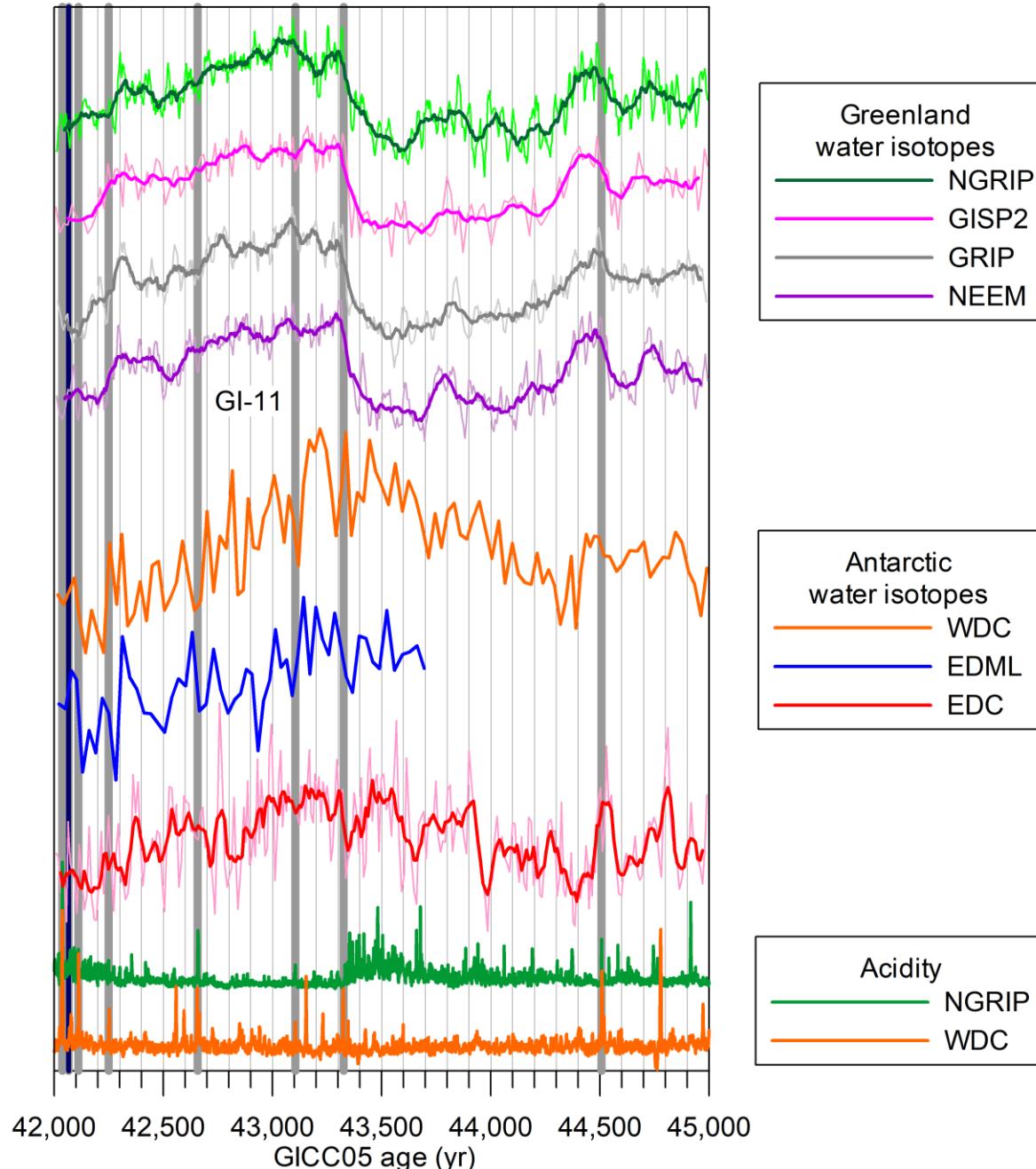


Figure S10A

Onset GI-12 Acidity records

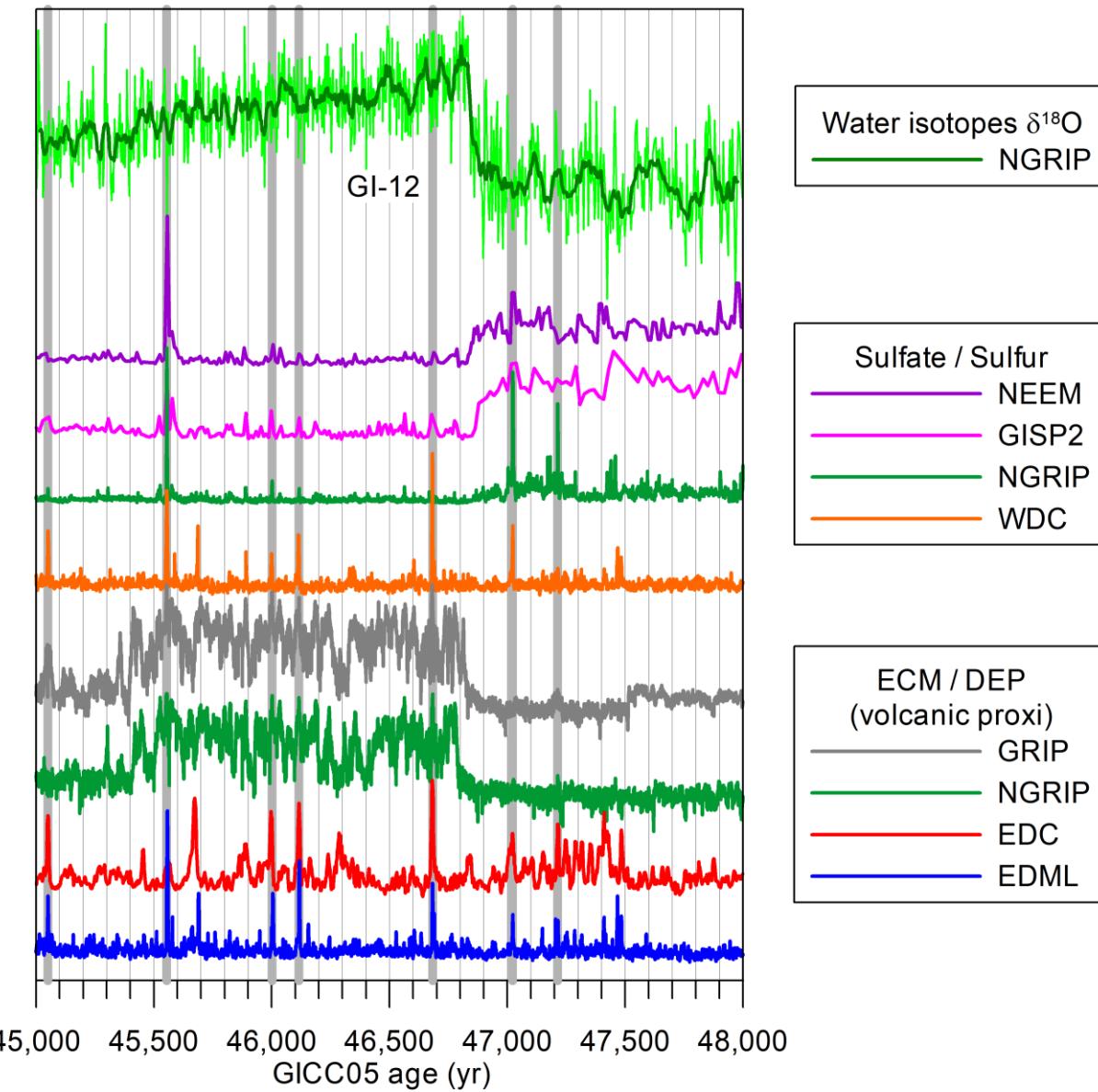


Figure S10B

Onset GI-12
 $\delta^{18}\text{O}$ records

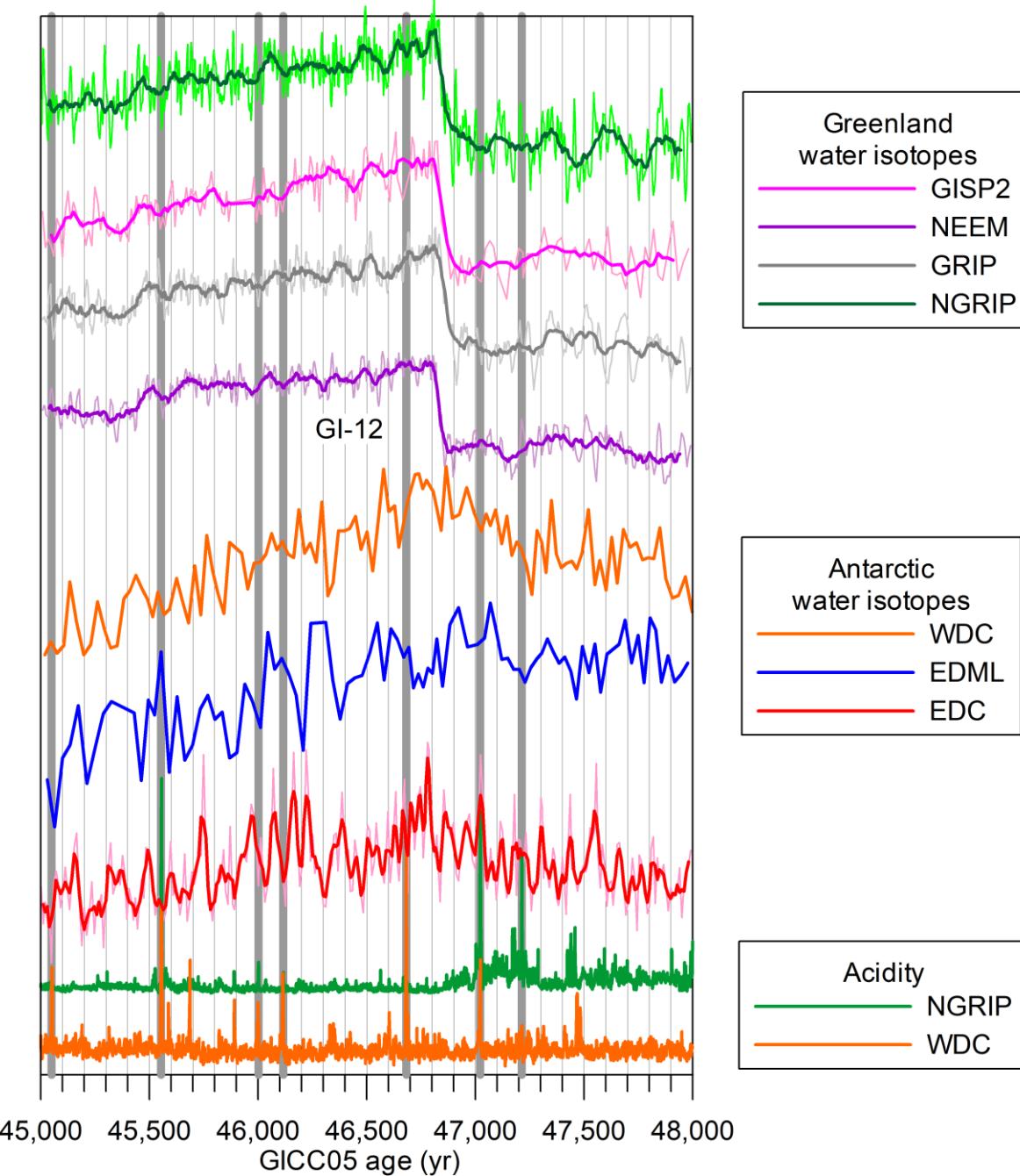


Figure S11A

Onset GI-13 Acidity records

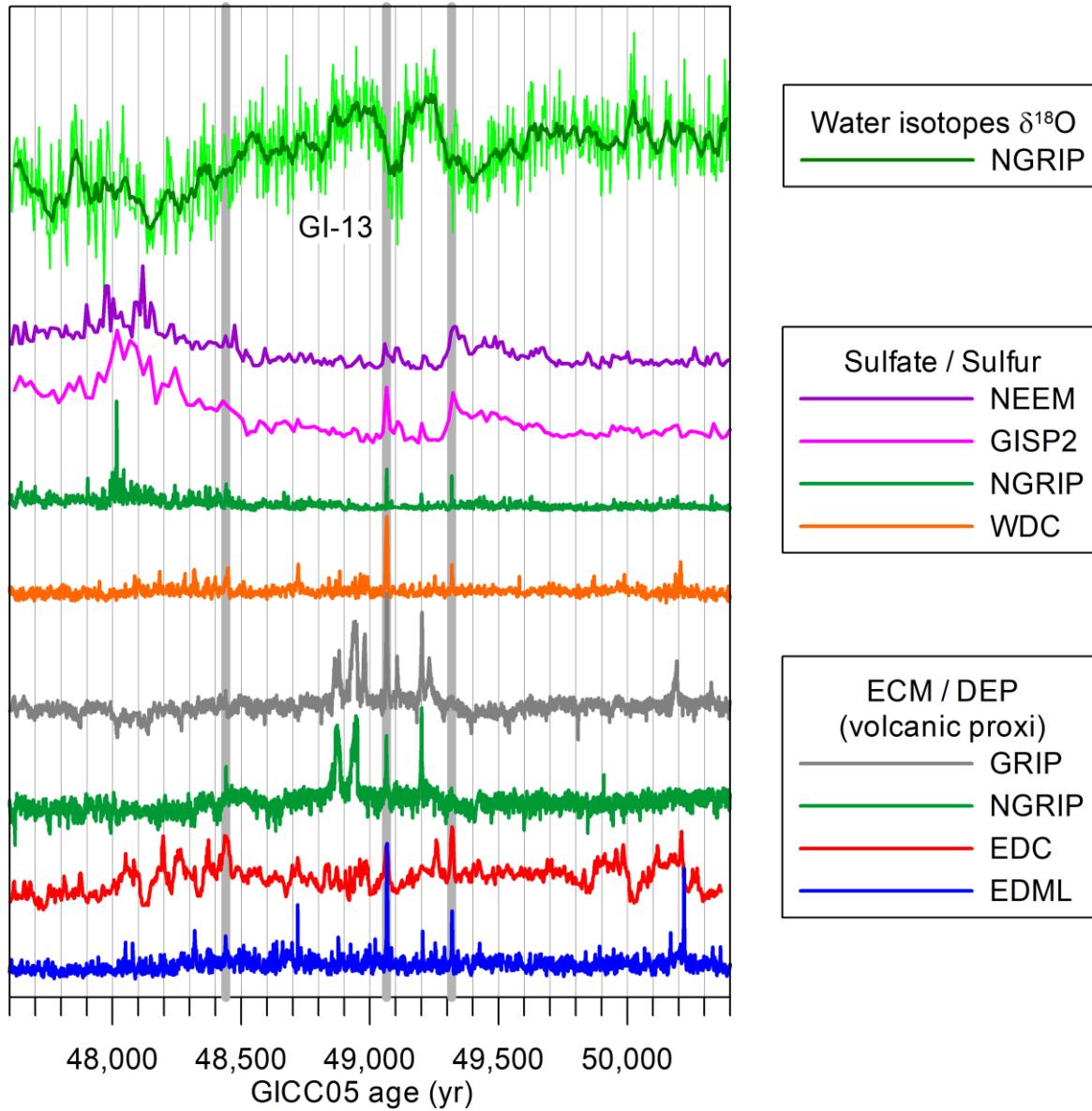


Figure S11B

Onset GI-13
 $\delta^{18}\text{O}$ records

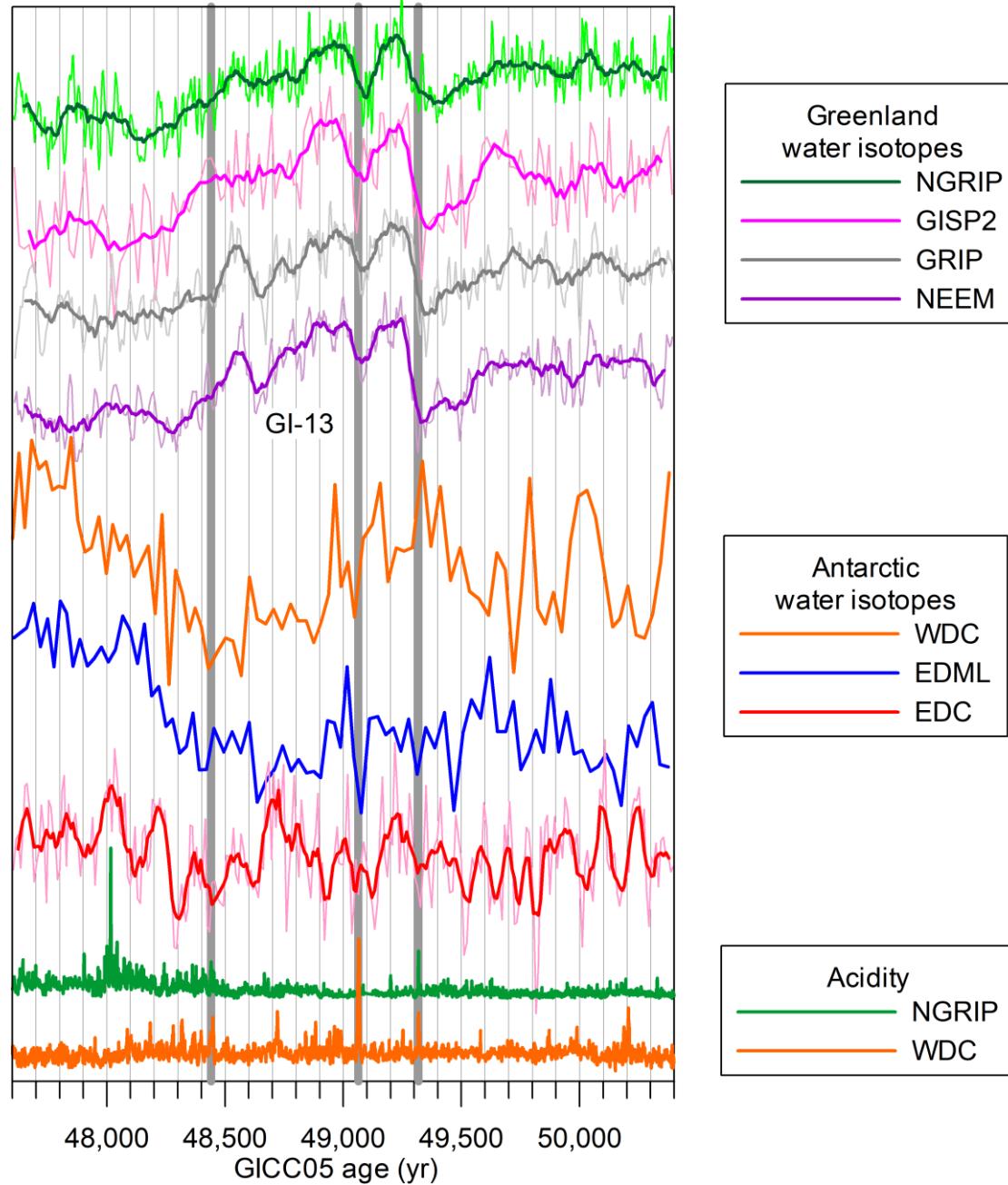


Figure S12A

Onset GI-14-15.1 Acidity records

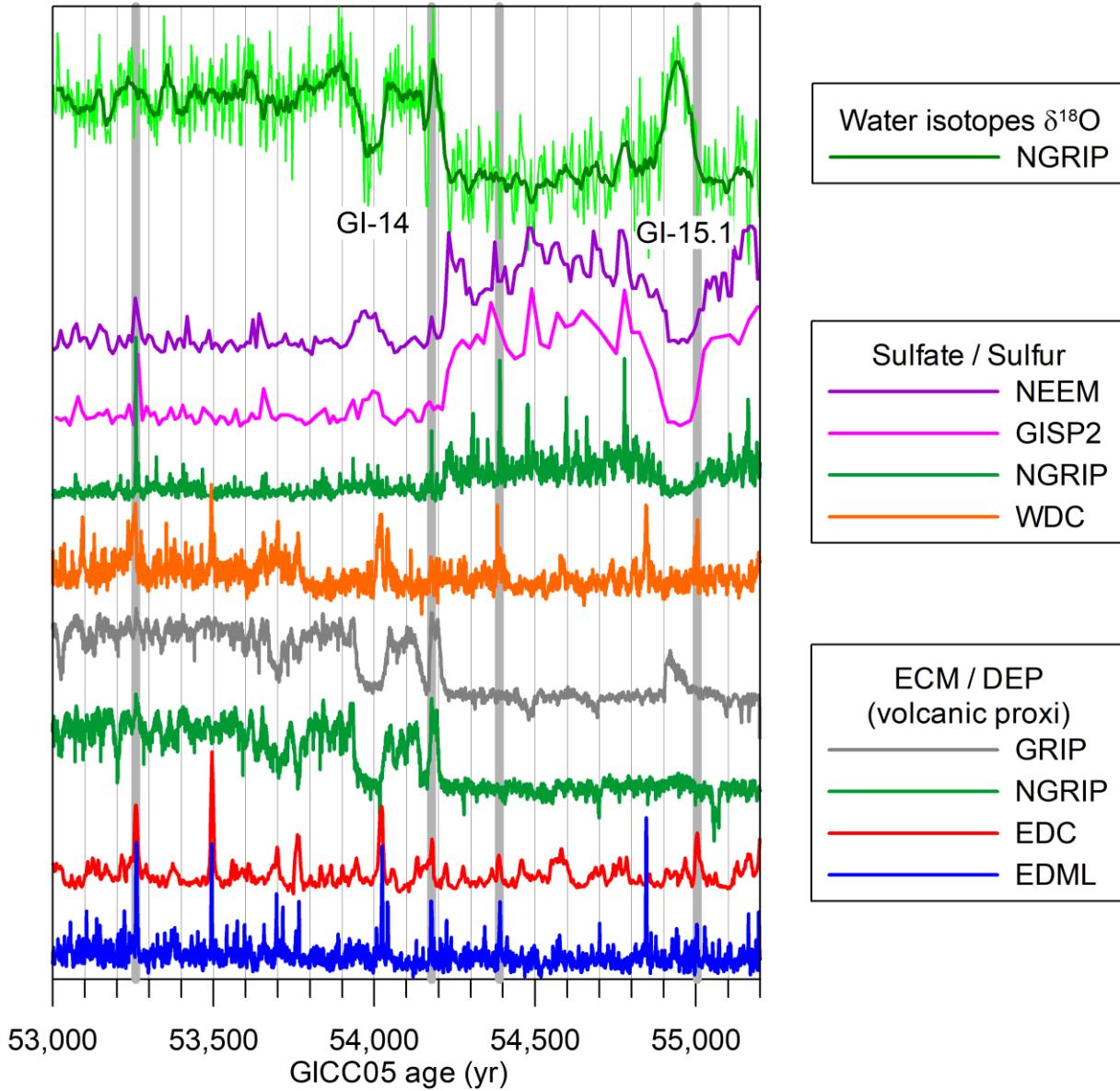


Figure S12B

Onset GI-14-15.1
 $\delta^{18}\text{O}$ records

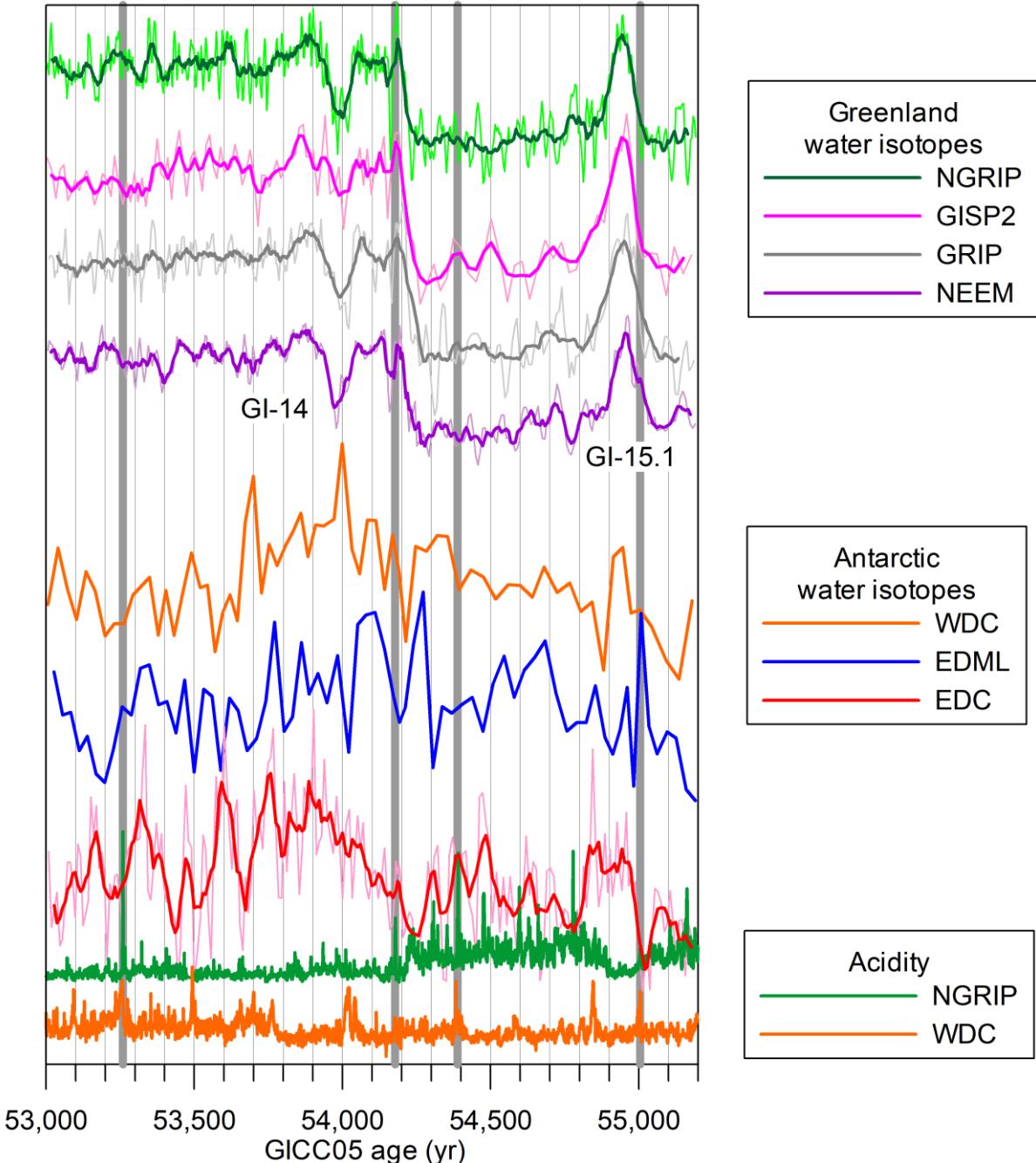


Figure S13A

Onset GI-15.2-16.1 Acidity records

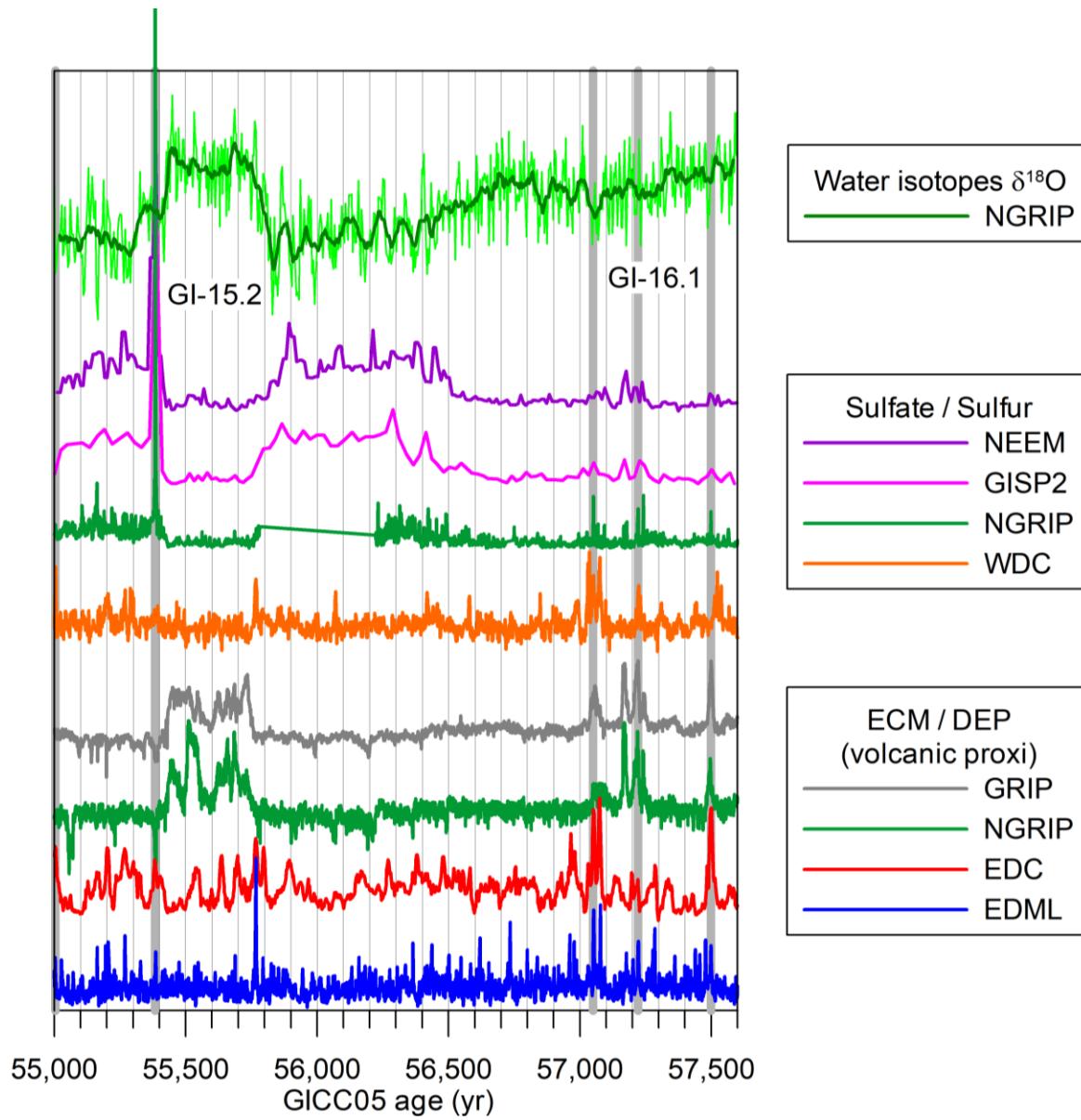


Figure S13B

Onset GI-15.2-16.1
 $\delta^{18}\text{O}$ records

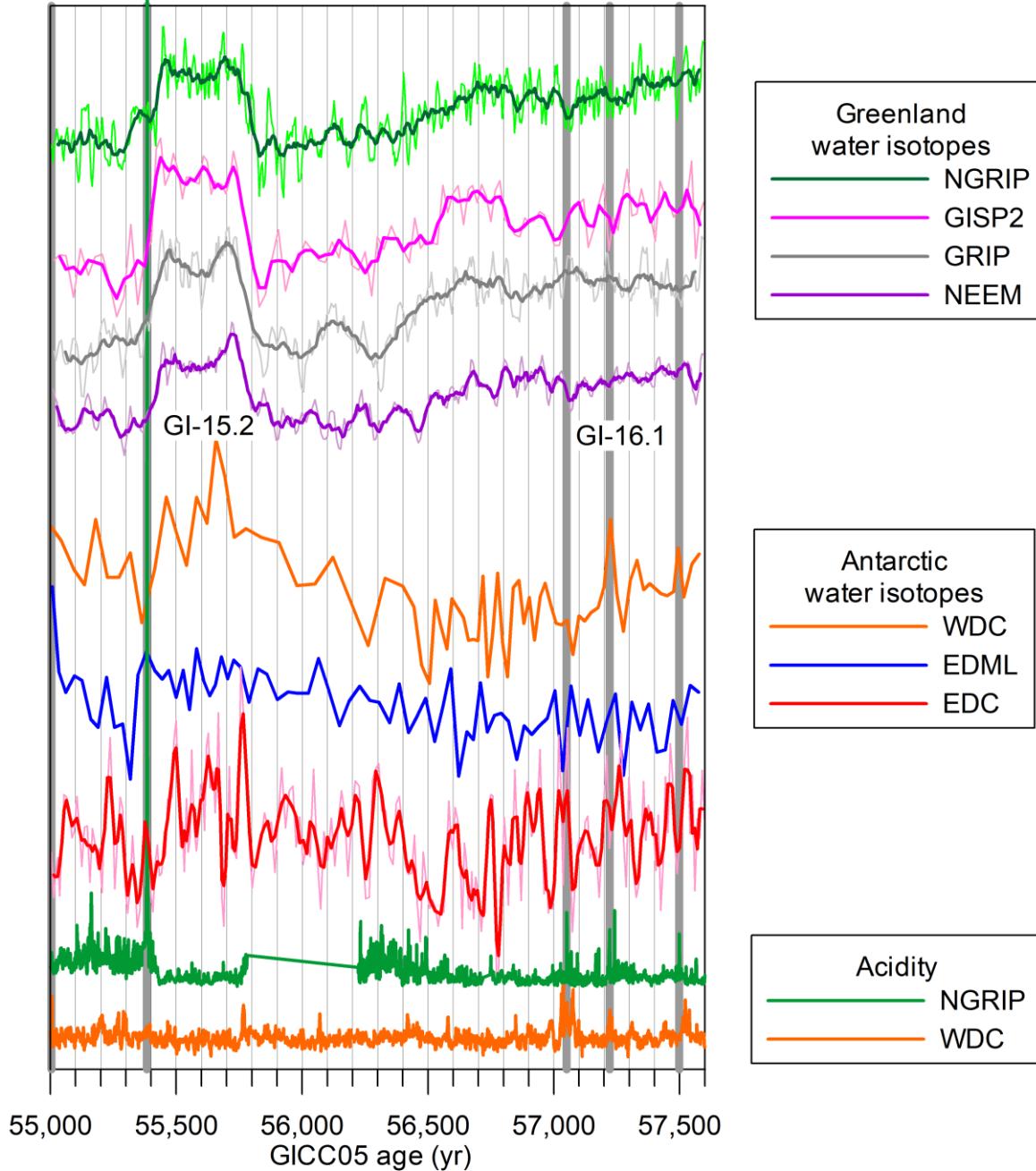


Figure S14A

Onset GI-16.2-17.2 Acidity records

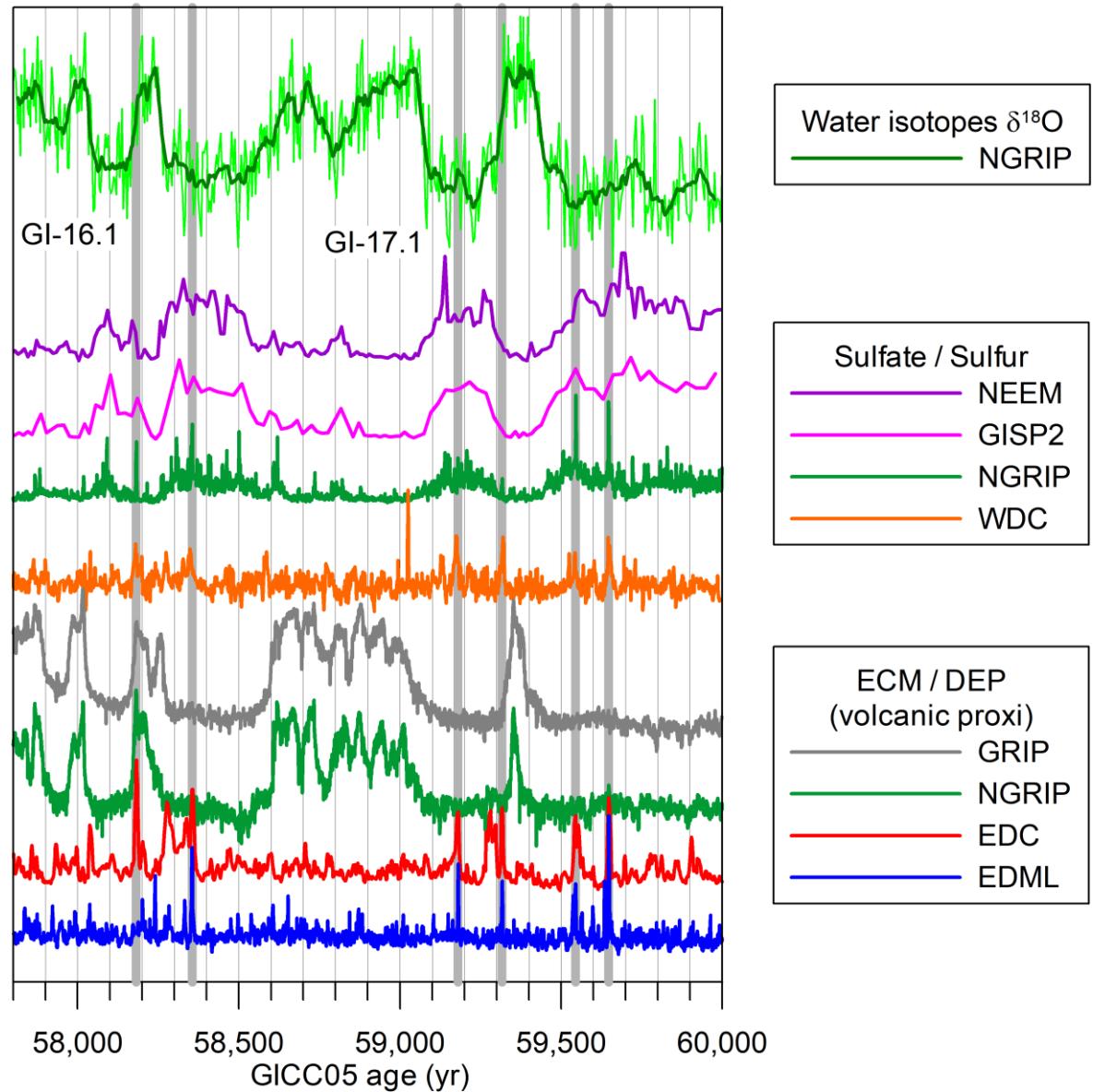


Figure S14B

Onset GI-16.2-17.2
 $\delta^{18}\text{O}$ records

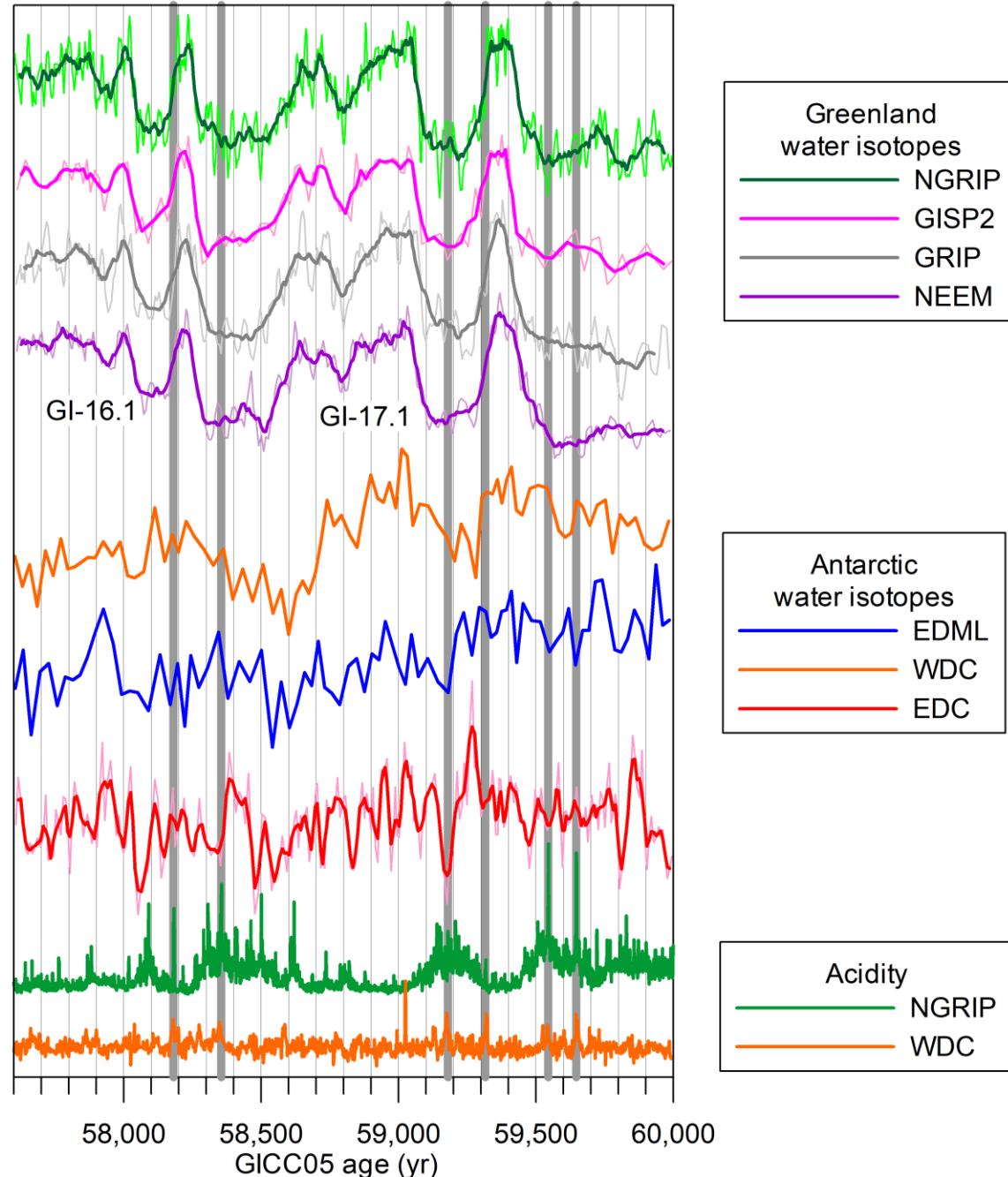


Figure S15

Location of the Antarctic ice cores applied in this study. The color coding of the ice-coring sites shows the spatial pattern of the Antarctic response in $\delta^{18}\text{O}$ and d_{\ln} to a GI warming event, using the stacks from Fig. 4 (GI-0 to GI-17, with GI-2 excluded). The figure shows the "after" (average over $t=50$ to 100 years) minus the "before" (average over $t=-100$ to -50 years).

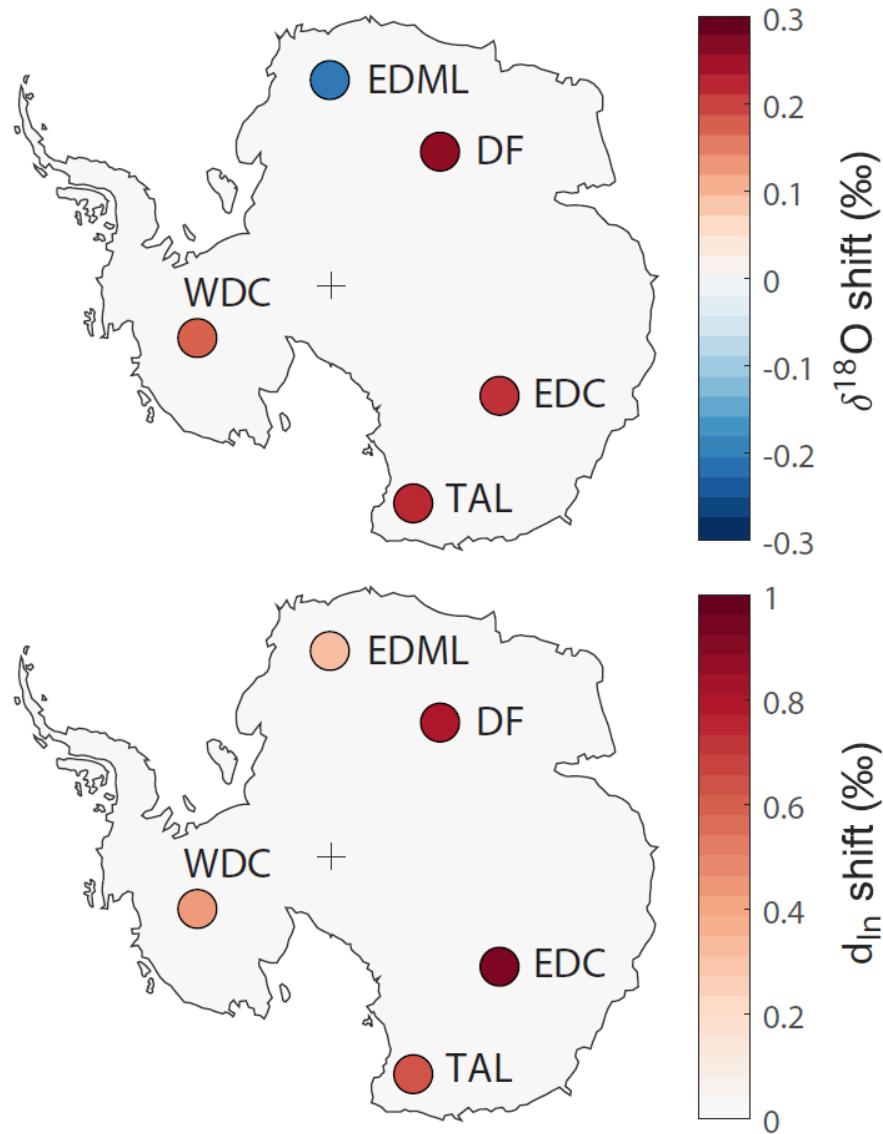
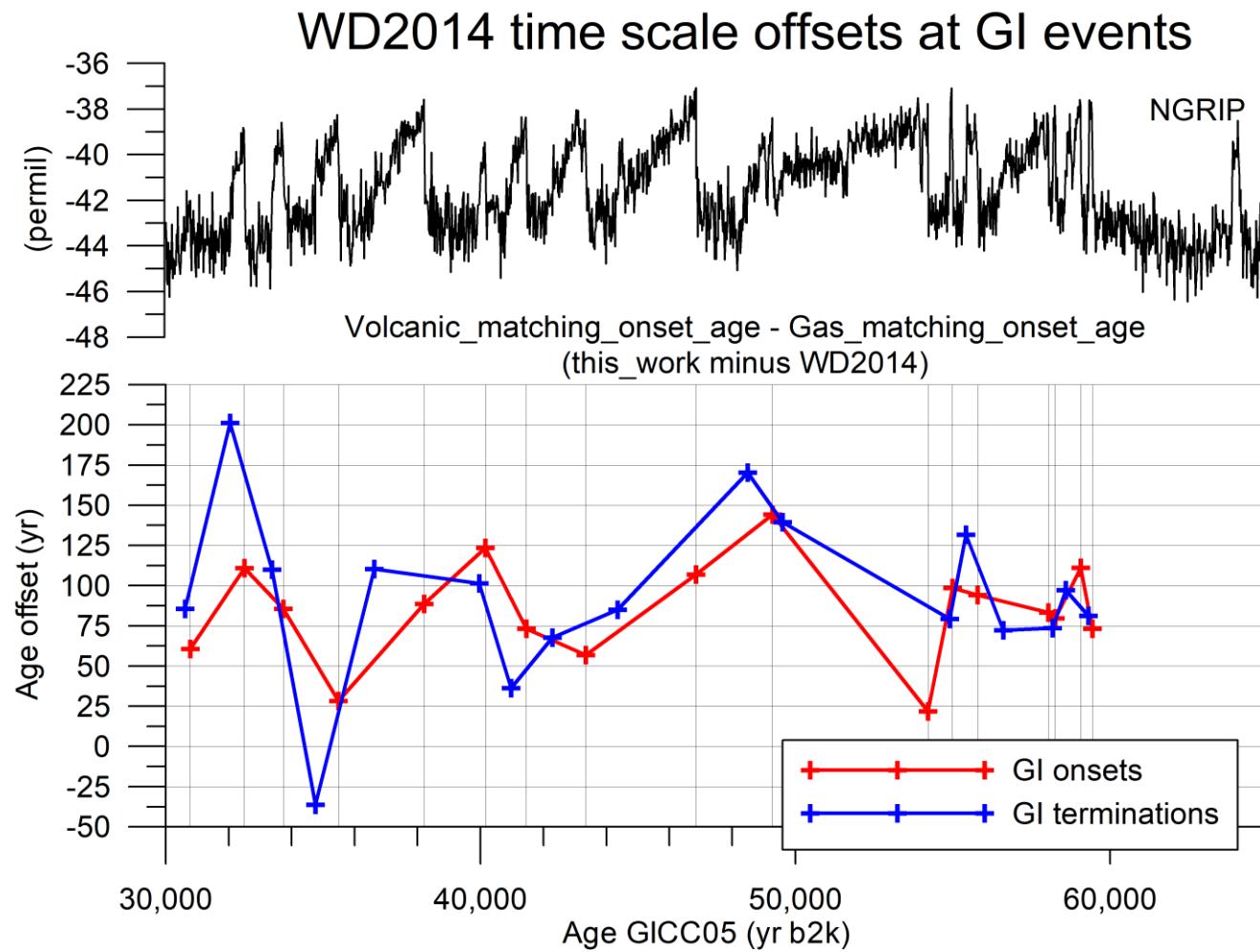


Figure S16



Supplementary Table S1

	Annual layer counting		Bipolar volcanic matching			Climate records	
Ice core	CFA	Line Scan	Sulfate/Sulfur	ECM + DEP	Conductivity	d18O	dxs
NGRIP	(Bigler, 2004)	(Svensson et al., 2005)	(Bigler, 2004)	(Dahl-Jensen et al., 2002)	(Bigler, 2004)	(Gkinis et al., 2014)	-
NEEM	-	-	(Schüpbach et al., 2018)	(Rasmussen et al., 2013)	(Schüpbach et al., 2018)	(Vinther et al., in prep)	-
GRIP	-	-	-	(Wolff et al., 1997)	-	(Johnsen et al., 2001)	-
GISP2	-	-	(Mayewski et al., 1997)	-	-	(Stuiver and Grootes, 2000)	-
EDML	(Ruth et al., 2003)	(Faria et al., 2018)	(Severi et al., 2007)		(Ruth et al., 2003)	(EPICA community members, 2006)	(EPICA community members, 2006)
EDC	-	-	(Severi et al., 2007)	(Parrenin et al. 2012)	-	(EPICA community members, 2004)	(EPICA community members, 2004)
WDC	-	-	(Fudge et al., 2013) (Sigl et al., 2016)	-	(Fudge et al., 2013) (Sigl et al., 2016)	(WAIS members, 2013) (Buizert et al., 2018)	(WAIS members, 2013) (Buizert et al., 2018)
DF	-	-	-	-	-	(Watanabe et al., 2003) (Kawamura et al., 2007)	(Watanabe et al., 2003) (Kawamura et al., 2007)
TAL	-	-	-	-	-	(Stenni et al., 2011) (Landais et al., 2015)	(Stenni et al., 2011) (Landais et al., 2015)