

### Supplement information:

The supplement contains a .pdf file called **Supplementary\_Figures\_Touzeau\_GMD.pdf**, which presents secondary results of the simulations described in the main text.

It also contains 4 files useful for running simulations:

-a **FORCING.nc** file which contains atmospheric meteorological forcing for ten years (2000-2009), it should be added to your running directory;

-a **OPTIONS.nam** file which indicates which options are active and which are not for running the simulation: for instance, for the simulation 6 in the manuscript, snowdrift option is inactive (F for false), isotope option is active (IS1), vapor transport is active (T) and option Dome C is active (T for true). It also contains the initial density/temperature profiles used to build the initial snowpack at the beginning of the simulation. It should also be present in your running directory.

```
LSNOWDRIFT= F
LSNOWDRIFT_SUBLIM= F
LSNOW_ABS_ZENITH= F
CSNOWMETAMO='F06'
CSNOWRAD='B92'
CSNOWISO = 'IS1'
LSNOWVAPTRANS= T
LSNOWDC = T
```

-a **snow\_pro.py** script which transforms diagnostic variables computed by Crocus into prognostic variables used for making plots (Syntax: snow\_pro.py -m C13 -s PHYS). It generates the so-called **PRO.nc** file.

-a **GRAPH.py** script, which is derived from the usual snowtool script for plotting data (Syntax: GRAPH.py d DELTA18O\_FAR vap\_pvar). It uses the **PRO.nc** file generated at the end of the simulation to make a 2D plot displaying a chosen variable (temperature, delta18O) as color levels against time (horizontal axis) and snow heights (vertical axis). Note that if the **PRO.nc** file contains more than 500 points on the time axis, it is better to reduce it using ncks before making the plot (Syntax: ncks -d time,0,3650,7 PRO.nc PRO\_weekly.nc).