Volcanic Forcing of Climate over the Past 1500 Years:
An Improved Ice-Core-Based Index for Climate Models

These data are described in the paper:

Gao, Chaochao, Alan Robock, and Caspar Ammann, 2008: Volcanic forcing of climate over the past 1500 years: An improved ice-core-based index for climate models. *J. Geophys. Res.*, **113**, D23111, doi:10.1029/2008JD010239. PDF file

DATA SET DESCRIPTION. There are two data files available for downloading:

1) The first file contains the global and hemispheric annual stratospheric volcanic sulfate aerosol **injections** for the period from 501 to 2000 AD. Units are **Tg sulfate aerosol.** Because many of the ice cores ended in the 1980s and 1990s, the record should not be considered complete to the very end. In particular, the 1982 El Chichón eruption is missing from our record, and should be added to the NH time series, with a loading of about 14 Tg H_2SO_4.

2) The second file contains the monthly, latitudinally, and height dependent aerosol **loading** for the same period. Units are **kg sulfate aerosol/km^2**.

Please use the parameters of your choice to convert the data to optical depth or radiative forcing if necessary.

The first dataset has 4 columns: (1) time; (2) NH sulfate aerosol injection; (3) SH sulfate aerosol injection; (4) global total sulfate aerosol injection.

The second dataset has 775 columns: the first column gives the time, and the rest of the 774 (18*43) columns give the loading from 9 km to 30 km at 0.5 km resolution for each 10° latitude belt (from 90°S to 90°N) for individual months. The data are provided in both text and binary formats. You can read the data in with a simple MATLAB program like the following:

```
*********************************************
...
TIME = D(:,1);
DATA = D(:, 2:end);
for t = 1:18000
   for lat = 1:18
      for alti = 1:43
            LOAD(t, lat, alti) = DATA(t, 43*(lat-1)+alti);
         end
   end
end
...

*********************************************
```