
Subject: read SCIAMACHY NO2 hdf files

Posted by [Kostasc](#) on Sun, 01 Oct 2006 09:55:46 GMT

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hello all, first of all i would like to tell u that i have no idea about programming in idl. What i 'd like to ask is if it is possible to get from a hdf file the NO2 values for particular longitudes and latitudes, i need them so as to compare with ground based measurements. In the site i downloaded the hdf files they give the following code. Could please someone tell me how to export the values in an ASCII file?

```
pro read_scia_no2
```

```
;-----  
; Read data from GOME HDF file between two times "date1" and "date2"  
; and stores in structure "no2"  
;  
;"maxorbits"    maximum number of orbits in a file  
;"maxpix"      maximum number of pixels in an orbit  
;"nplevs"       number of pressure levels in TEMIS SCIA data  
;  
;   Folkert Boersma, KNMI, February 2004  
;-----
```

```
maxorbits = 20  
maxpix    = 5000  
nplev     = 35
```

```
file      = 'no2track20030417.hdf'
```

```
; Define structure for GOME data
```

```
no2 = { $  
    norbits : 0, $  
    npix    : intarr(maxorbits), $  
    a_lev   : make_array(nplev,/float,value=-999),$  
    b_lev   : make_array(nplev,/float,value=-999),$  
    date    : make_array(maxorbits,maxpix,/string,value=-999), $  
    time    : make_array(maxorbits,maxpix,/string,value=-999), $  
    lon     : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    lat     : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    vcd     : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    sigvcd  : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    vcdtrop : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    sigvcdt : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    vcdstrat : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    sigvcds : make_array(maxorbits,maxpix,/float,value=-999.9), $  
    fltrop  : make_array(maxorbits,maxpix,/int,value=-999), $  
    psurf   : make_array(maxorbits,maxpix,/float,value=-999.9), $
```

```

sigvcdak : make_array(maxorbits,maxpix,/float,value=-999.9), $
sigvcdtak : make_array(maxorbits,maxpix,/float,value=-999.9), $
kernel   : make_array(maxorbits,maxpix,nplev,/float,value=-999),$
ghostcol  : make_array(maxorbits,maxpix,/float,value=-999.9), $
sza       : make_array(maxorbits,maxpix,/float,value=-999.9),$
vza       : make_array(maxorbits,maxpix,/float,value=-999.9),$
raa       : make_array(maxorbits,maxpix,/float,value=-999.9),$
ssc       : make_array(maxorbits,maxpix,/int,value=-999), $
loncorn   : make_array(maxorbits,maxpix,4,/float,value=-999.),$
latcorn   : make_array(maxorbits,maxpix,4,/float,value=-999.),$
sdc       : make_array(maxorbits,maxpix,/float,value=-999.),$
amf       : make_array(maxorbits,maxpix,/float,value=-999.),$
amftrop   : make_array(maxorbits,maxpix,/float,value=-999.),$
amfgeo    : make_array(maxorbits,maxpix,/float,value=-999.),$
scdstr    : make_array(maxorbits,maxpix,/float,value=-999.),$
clfrac    : make_array(maxorbits,maxpix,/float,value=-999.),$
cltpres   : make_array(maxorbits,maxpix,/float,value=-999.),$
albclr    : make_array(maxorbits,maxpix,/float,value=-999.),$
crfrac    : make_array(maxorbits,maxpix,/float,value=-999.),$
ltropo    : make_array(maxorbits,maxpix,/int,value=-999)}

```

```

id = hdf_sd_start(file,/read)
; The HDF_SD_FILEINFO procedure retrieves the number of datasets and
; global attributes in an HDF file.
hdf_sd_fileinfo,id,datasets,attributes
help,datasets,attributes

```

```

iret = 0
for i=0,attributes-1 do begin
  hdf_sd_attrinfo,id,i,name = name, data = d
  command = name+'=d'
  iret = execute(command)
  print, 'Retrieved Attribute:',name,' ',d
endfor
hdf_sd_end,id

```

```

; Open file and initialize vdata reading
file_id=hdf_open(file,/read)
vd_id = -1
vd_handle = -1
end_of_file=0

```

```

vds = hdf_vd_lone(file_id)
nvds = n_elements(vds)
if (nvds eq 0) then begin
  print, 'ERROR: No vdatas found in file'
  stop

```

```

endif

; Loop over vdatas
for i=0,attributes+nvds-1 do begin

    vd_id = hdf_vd_getid(file_id,vd_id)
    vd_handle=hdf_vd_attach(file_id,vd_id,/read)

    hdf_vd_get,vd_handle,nfields=nf,name=vd_name,count=count,fields=fields

; Read pressure fields a_lev and b_lev into variables
if (strmid(vd_name,0,4) eq 'pres' ) then begin

    for j=0,nf-1 do begin
        hdf_vd_getinfo,vd_handle,j,name=fieldname,size=size,type=type

    name = strcompress(fieldname,/remove_all)
        iret = execute('nread=hdf_vd_read(vd_handle,'+$
                        name+',fields="'+fieldname+'")')
        if (iret ne 1) then begin
            print,'Error dataset',i
            stop
        endif

    endfor
    no2.a_lev(0:nplev-1) = transpose(a_lev)
    no2.b_lev(0:nplev-1) = transpose(b_lev)
endif

if (strmid(vd_name,0,4) eq 'NO2_' ) then begin
    if (vd_name ne 'start_time' and vd_name ne 'end_time') then
begin
    track_date = long64(strmid(vd_name,strlen(vd_name)-8,8))
    track_date = track_date * 1000 + 20000000000000
    endif

; Check whether orbit fits in data structure
if (no2.norbits ge maxorbits) then begin
    print,no2.norbits
print, 'ERROR: more orbits in file than', maxorbits
    stop
endif
if (count gt maxpix) then begin
    print, 'ERROR: orbit', no2.norbits+1, ' has more pixels (', $
        count, ' ) than', maxpix
    stop
endif
endif

```

endif

; Read fields into variables

for j=0,nf-1 do begin

hdf_vd_getinfo,vd_handle,j,name=fieldname,size=size,type=type

name = strcompress(fieldname,/remove_all)

iret = execute('nread=hdf_vd_read(vd_handle,'+\$
name+',fields=""'+fieldname+'")')

if (iret ne 1) then begin

print,'Error dataset',i

stop

endif

endfor

; Add variables to structure

no2.date(no2.norbits,0:count-1) = date

no2.time(no2.norbits,0:count-1) = time

no2.lon(no2.norbits,0:count-1) = lon

no2.lat(no2.norbits,0:count-1) = lat

no2.vcd(no2.norbits,0:count-1) = vcd

no2.sigvcd(no2.norbits,0:count-1) = sigvcd

no2.vcdtrop(no2.norbits,0:count-1) = vcdtrop

no2.sigvcddt(no2.norbits,0:count-1) = sigvcddt

no2.vcdstrat(no2.norbits,0:count-1) = vcdstrat

no2.sigvcdds(no2.norbits,0:count-1) = sigvcdds

no2.fltrap(no2.norbits,0:count-1) = fltrap

no2.psurf(no2.norbits,0:count-1) = psurf

no2.sigvcddak(no2.norbits,0:count-1) = sigvcddak

no2.sigvcddtak(no2.norbits,0:count-1) = sigvcddtak

no2.kernel(no2.norbits,0:count-1,*) = transpose(kernel)

no2.ghostcol(no2.norbits,0:count-1) = ghostcol

no2.npix(no2.norbits) = count

endif

if (strmid(vd_name,0,4) eq 'GEO_') then begin

; Check whether orbit fits in data structure

if (no2.norbits ge maxorbits) then begin

print, 'ERROR: more orbits in file than', maxorbits

stop

endif

if (count gt maxpix) then begin

print, 'ERROR: orbit', no2.norbits+1, ' has more pixels

(, \$

count, ') than', maxpix

```

        stop
    endif

; Read fields into variables
    for j=0,nf-1 do begin

hdf_vd_getinfo,vd_handle,j,name=fieldname,size=size,type=type
        name = strcompress(fieldname,/remove_all)
        iret = execute('nread=hdf_vd_read(vd_handle, '+$
                        name+',fields="'+fieldname+'")')
        if (iret ne 1) then begin
            print,'Error dataset',i
            stop
        endif
    endfor

; Add variables to structure
    no2.sza(no2.norbits,0:count-1) = sza
    no2.vza(no2.norbits,0:count-1) = vza
    no2.raa(no2.norbits,0:count-1) = raa
    no2.ssc(no2.norbits,0:count-1) = ssc
    no2.loncorn(no2.norbits,0:count-1,*) = transpose(loncorn)
    no2.latcorn(no2.norbits,0:count-1,*) = transpose(latcorn)

endif

if (strmid(vd_name,0,4) eq 'ANC_') then begin

; Check whether orbit fits in data structure
if (no2.norbits ge maxorbits) then begin
    print, 'ERROR: more orbits in file than', maxorbits
    stop
endif
if (count gt maxpix) then begin
    print, 'ERROR: orbit', no2.norbits+1, ' has more pixels
(, $
        count, ' ) than', maxpix
    stop
endif

; Read fields into variables
    for j=0,nf-1 do begin

hdf_vd_getinfo,vd_handle,j,name=fieldname,size=size,type=type
        name = strcompress(fieldname,/remove_all)
        iret = execute('nread=hdf_vd_read(vd_handle, '+$
                        name+',fields="'+fieldname+'")')

```

```

        if (iret ne 1) then begin
            print,'Error dataset',i
            stop
        endif

    endfor

; Add variables to structure
no2.scd(no2.norbits,0:count-1) = scd
no2.amf(no2.norbits,0:count-1) = amf
no2.amftrop(no2.norbits,0:count-1) = amftrop
no2.amfgeo(no2.norbits,0:count-1) = amfgeo
no2.scdstr(no2.norbits,0:count-1) = scdstr
no2.clfrac(no2.norbits,0:count-1) = clfrac
no2.cltpres(no2.norbits,0:count-1) = cltpres
no2.albclr(no2.norbits,0:count-1) = albclr
no2.crfrac(no2.norbits,0:count-1) = crfrac
no2.ltropo(no2.norbits,0:count-1) = ltropo
no2.norbits = no2.norbits+1

endif

hdf_vd_detach, vd_handle

endfor

hdf_close, file_id

end

```

Thanks in advance
