Contents


```
% program: test_read_netCDF_file
% updated: 22-Feb-2022

% This routine displays the contents of a netCDF file, and reads
% the netCDF file into MATLAB using routine:
% func_load_all_netCDF_variables
```

Define the input filename:

```
input_directory         = 'E:\Projects\Oliktok_Point\dominant_peak\nc_15sec_orig_mom\';
input_netCDF_filename   = [input_directory,'oli_kazr_orig_single_ge_15sec_mom_20170522_12_v01.nc'];
```

Display the contents of the netCDF file

```
ncdisp(input_netCDF_filename);

% Source:
%            E:\Projects\Oliktok_Point\dominant_peak\nc_15sec_orig_mom\oli_kazr_orig_single_ge_15sec_mom_20170522_12_v01.nc
% Format:
%            netcdf4
% Dimensions:
%            time         = 240
%            height       = 607
%            single_value = 1
% Variables:
%     base_time
%            Size:       1x1
%            Dimensions: single_value
%            Datatype:   single
%            Attributes:
%                        long_name = 'Base time in Epoch'
%                        units     = 'seconds since 1970-1-1 0:00:00 0:00'
%                        String    = '2017-05-22 00:00:00 0:00'
%     time_offset
%            Size:       240x1
%            Dimensions: time
%            Datatype:   single
%            Attributes:
%                        long_name = 'Time offset from base time'
%                        units     = 'seconds since 2017-05-22 00:00:00 0:00'
%     time
%            Size:       240x1
%            Dimensions: time
%            Datatype:   single
%            Attributes:
%                        long_name = 'Time offset from midnight'
%                        units     = 'seconds since 2017-05-22 00:00:00 0:00'
%     bad_flag
%            Size:       1x1
%            Dimensions: single_value
%            Datatype:   single
%            Attributes:
%                        long_name = 'Bad Data Flag, -9999'
```

```
%                       units     = 'integer'
%     range
%            Size:       607x1
%            Dimensions: height
%            Datatype:   single
%            Attributes:
%                       long_name = 'Range in the radial direction from the radar to the center of the range gate'
%                       units     = 'meters'
%     signal_to_noise_ratio
%            Size:       607x240
%            Dimensions: height,time
%            Datatype:   single
%            Attributes:
%                       long_name = 'Signal to Noise Ratio'
%                       units     = 'dB'
%     reflectivity_factor
%            Size:       607x240
%            Dimensions: height,time
%            Datatype:   single
%            Attributes:
%                       long_name = 'Calibrated Reflectivity Factor'
%                       units     = 'dBZ'
%     radial_velocity
%            Size:       607x240
%            Dimensions: height,time
%            Datatype:   single
%            Attributes:
%                       long_name = 'Mean radial velocity of scatterers toward instrument'
%                       units     = 'm/s'
%     spectrum_width
%            Size:       607x240
%            Dimensions: height,time
%            Datatype:   single
%            Attributes:
%                       long_name = 'Width of spectrum, defined as 2*(sqrt(spectrum variance))'
%                       units     = 'm/s'
%     spectrum_skewness
%            Size:       607x240
%            Dimensions: height,time
%            Datatype:   single
%            Attributes:
%                       long_name = 'Spectrum skewness'
%                       units     = 'm^3/s^3'
%     spectrum_kurtosis
%            Size:       607x240
%            Dimensions: height,time
%            Datatype:   single
%            Attributes:
%                       long_name = 'Spectrum kurtosis'
%                       units     = 'm^4/s^4'
```

```
Source:
           E:\Projects\Oliktok_Point\dominant_peak\nc_15sec_orig_mom\oli_kazr_orig_single_ge_15sec_mom_20170522_12_v01.nc
Format:
           netcdf4
Dimensions:
           time         = 240
           height       = 607
           single_value = 1
Variables:
    base_time
           Size:       1x1
           Dimensions: single_value
           Datatype:   single
           Attributes:
                       long_name = 'Base time in Epoch'
                       units     = 'seconds since 1970-1-1 0:00:00 0:00'
                       String    = '2017-05-22 00:00:00 0:00'
```

```
time_offset
       Size:       240x1
       Dimensions: time
       Datatype:   single
       Attributes:
                   long_name = 'Time offset from base time'
                   units     = 'seconds since 2017-05-22 00:00:00 0:00'
time
       Size:       240x1
       Dimensions: time
       Datatype:   single
       Attributes:
                   long_name = 'Time offset from midnight'
                   units     = 'seconds since 2017-05-22 00:00:00 0:00'
bad_flag
       Size:       1x1
       Dimensions: single_value
       Datatype:   single
       Attributes:
                   long_name = 'Bad Data Flag, -9999'
                   units     = 'integer'
range
       Size:       607x1
       Dimensions: height
       Datatype:   single
       Attributes:
                   long_name = 'Range in the radial direction from the radar to the center of the range gate'
                   units     = 'meters'
signal_to_noise_ratio
       Size:       607x240
       Dimensions: height,time
       Datatype:   single
       Attributes:
                   long_name = 'Signal to Noise Ratio'
                   units     = 'dB'
reflectivity_factor
       Size:       607x240
       Dimensions: height,time
       Datatype:   single
       Attributes:
                   long_name = 'Calibrated Reflectivity Factor'
                   units     = 'dBZ'
radial_velocity
       Size:       607x240
       Dimensions: height,time
       Datatype:   single
       Attributes:
                   long_name = 'Mean radial velocity of scatterers toward instrument'
                   units     = 'm/s'
spectrum_width
       Size:       607x240
       Dimensions: height,time
       Datatype:   single
       Attributes:
                   long_name = 'Width of spectrum, defined as 2*(sqrt(spectrum variance))'
                   units     = 'm/s'
spectrum_skewness
       Size:       607x240
       Dimensions: height,time
       Datatype:   single
       Attributes:
                   long_name = 'Spectrum skewness'
                   units     = 'm^3/s^3'
spectrum_kurtosis
       Size:       607x240
       Dimensions: height,time
       Datatype:   single
       Attributes:
```

```
                    long_name = 'Spectrum kurtosis'
                    units     = 'm^4/s^4'
```

Load the variables

```
func_load_all_netCDF_variables
% The variables are:
%   bad_flag                    1x1                   8  double
%   base_time                   1x1                   8  double
%   radial_velocity           240x607            1165440  double
%   range                     607x1                 4856  double
%   reflectivity_factor       240x607            1165440  double
%   signal_to_noise_ratio     240x607            1165440  double
%   spectrum_kurtosis         240x607            1165440  double
%   spectrum_skewness         240x607            1165440  double
%   spectrum_width            240x607            1165440  double
%   time                      240x1                 1920  double
%   time_offset               240x1                 1920  double
```

Replace -9999 with NaNs

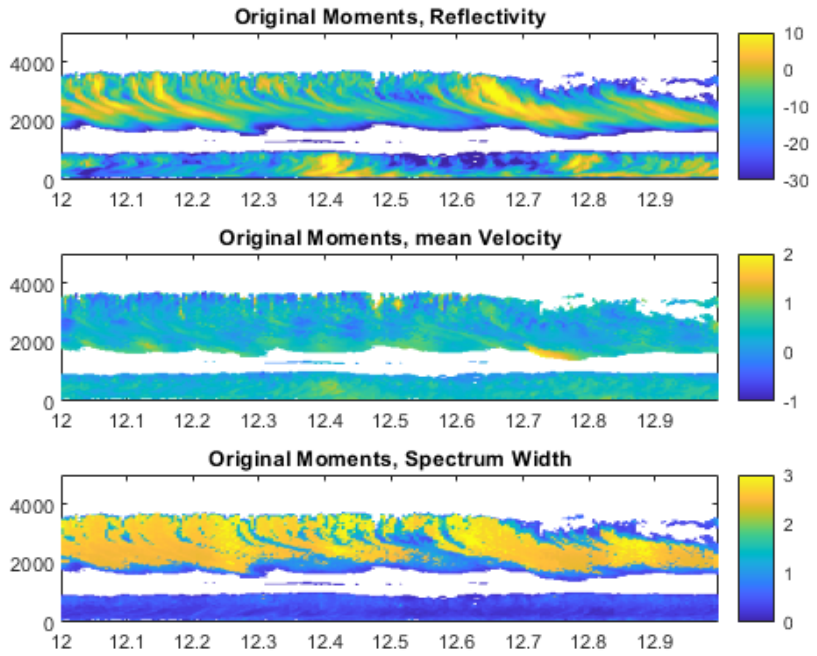
```
zdb = reflectivity_factor;
zdb(zdb < -9000) = zdb(zdb < -9000) .* NaN;
Vmean = radial_velocity;
Vmean(Vmean < -9000) = Vmean(Vmean < -9000) .* NaN;
Vwidth = spectrum_width;
Vwidth(Vwidth < -9000) = Vwidth(Vwidth < -9000) .* NaN;
```

```
time_hr = time_offset ./ (60*60);

figure
subplot(3,1,1)
pcolor(time_hr,range,zdb');shading flat
colorbar
caxis([-30 10])
ylim([0 5000])
title('Original Moments, Reflectivity')

subplot(3,1,2)
pcolor(time_hr,range,Vmean');shading flat
colorbar
caxis([-1 2])
ylim([0 5000])
title('Original Moments, mean Velocity')

subplot(3,1,3)
pcolor(time_hr,range,Vwidth');shading flat
colorbar
caxis([0 3])
ylim([0 5000])
title('Original Moments, Spectrum Width')
```



Load and plot the gaus fit moments

```
input_directory         = 'E:\Projects\Oliktok_Point\dominant_peak\nc_15sec_gaus_mom\';
input_netCDF_filename   = [input_directory,'oli_kazr_gaus_single_ge_15sec_mom_20170522_12_v01.nc'];

func_load_all_netCDF_variables
% The variables are:
%   bad_flag                    1x1                     8  double
%   base_time                   1x1                     8  double
%   radial_velocity           240x607             1165440  double
%   range                     607x1                  4856  double
%   reflectivity_factor       240x607             1165440  double
%   signal_to_noise_ratio     240x607             1165440  double
%   spectrum_kurtosis         240x607             1165440  double
%   spectrum_skewness         240x607             1165440  double
%   spectrum_width            240x607             1165440  double
%   time                      240x1                  1920  double
%   time_offset               240x1                  1920  double
```

Replace -9999 with NaNs

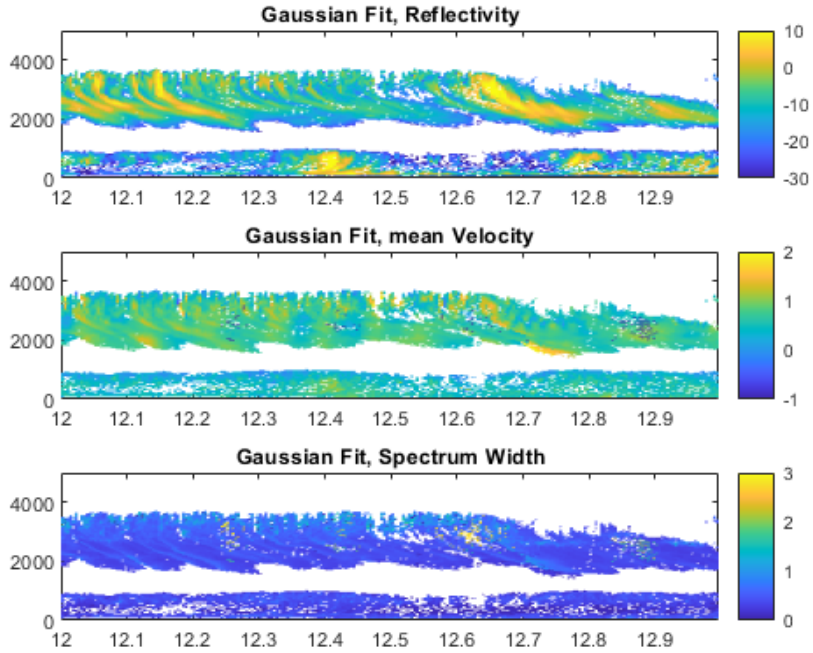
```
zdb = reflectivity_factor;
zdb(zdb < -9000) = zdb(zdb < -9000) .* NaN;
Vmean = radial_velocity;
Vmean(Vmean < -9000) = Vmean(Vmean < -9000) .* NaN;
Vwidth = spectrum_width;
Vwidth(Vwidth < -9000) = Vwidth(Vwidth < -9000) .* NaN;
```

```
time_hr = time_offset ./ (60*60);

figure
subplot(3,1,1)
pcolor(time_hr,range,zdb');shading flat
colorbar
caxis([-30 10])
ylim([0 5000])
title('Gaussian Fit, Reflectivity')
```

```
subplot(3,1,2)
pcolor(time_hr,range,Vmean');shading flat
colorbar
caxis([-1 2])
ylim([0 5000])
title('Gaussian Fit, mean Velocity')

subplot(3,1,3)
pcolor(time_hr,range,Vwidth');shading flat
colorbar
caxis([0 3])
ylim([0 5000])
title('Gaussian Fit, Spectrum Width')
```



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