README for flexure_profiles.mat

For – Warner et al (2021), Rapid formation of an ice doline on Amery Ice Shelf, East Antarctica, *Geophysical Research Letters.*

As described in Section 4, we used thin-plate elastic flexure modelling of the "hydrostatic rebound" response to unloading the ice shelf, following Lambeck & Nakiboglu, 1980; and MacAyeal & Sergienko, 2013. We considered the response to unloading of an axisymmetric lake with a cylindrical profile, which is expressible in terms of Kelvin functions (Lambeck & Nakiboglu, 1980). This was located at the centroid (72.3489^{o} S, 67.6659^{o} E). of the DEM difference uplift contours.

Flexure model profiles were calculated for the tracks of 8 ICSat-2 sub-beams across the doline region and several of these were utilized in Figure 2 b-f.

This Matlab file contains:

- surface (z_profile*) and uplift (z_uplift*) model profiles
- latitude and longitude coordinates for each of the ICESat-2 RGTs,
- corresponding polar stereographic x and y coordinates (EPSG: 3031) in metres.

The matlab variables are labelled by the ICESat-2 RGT track numbers and the relevant sub-beam:

T0081_gt1L
T0081_gt1R
T0653_gt3L
T0653_gt3R
T1095_gt1L
T1095_gt1R
T1095_gt2L
T1095_gt2R

e.g. lat_T0081_gt1L
lon_T0081_gt1L
z_profile_T0081_gt1L

etc

Roland Warner May 2021.