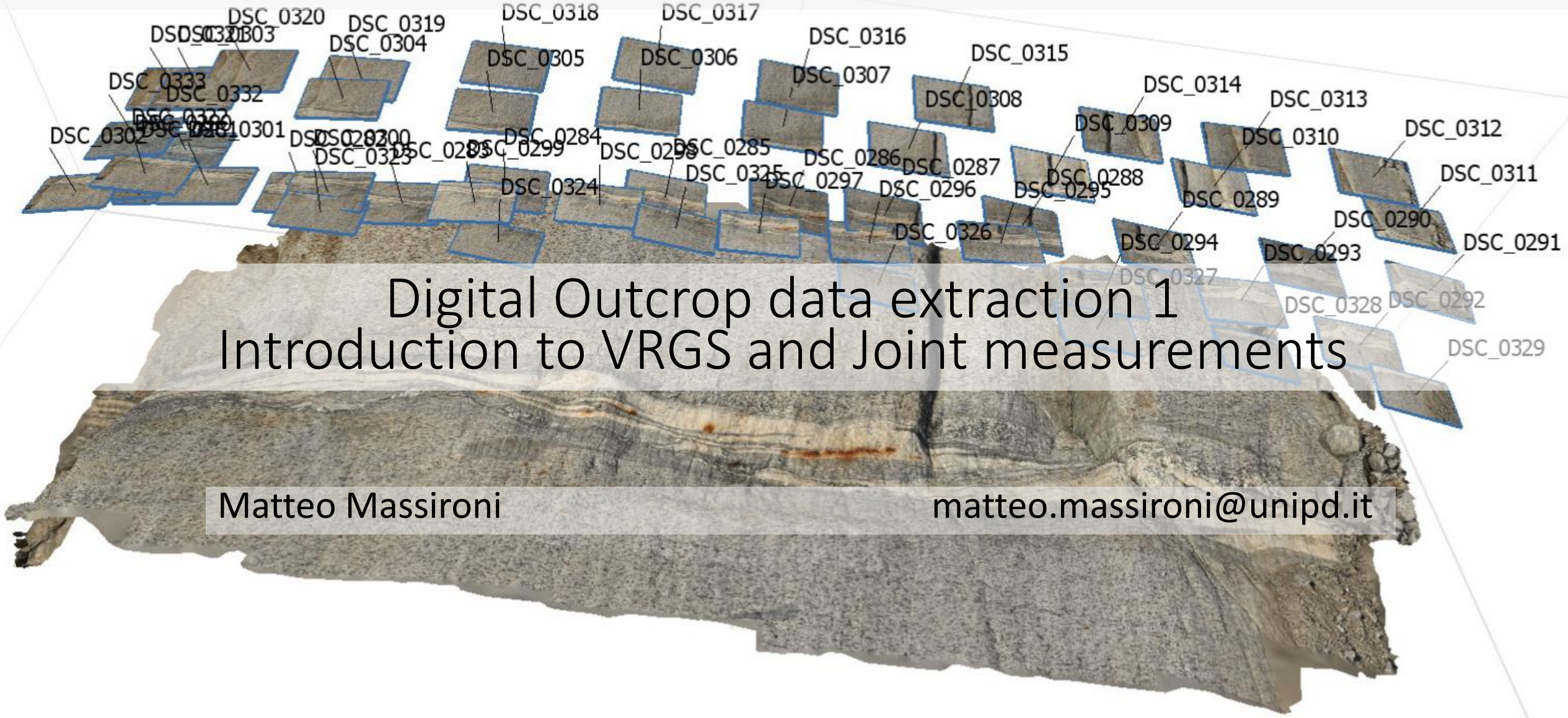
Digital Geological Mapping



Digital Outcrop data extraction 1
Introduction to VRGS and Joint measurements

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VRGS software and Data set

- 18 Virtual desktops using VMware-Horizon Client
  - client: https://vlab.vdi.ict.unipd.it/; user and password are the same of your SSO.
  - VRGS floating license code: GN4H-Y5ST-4UEK-DXVR
  - Data sets: M_Merlo_quarry_base_data.zip in in E:\GEO\2G_22

- Your Own Laptop:
  - VRGS Installer at: https://apps.vrgeoscience.com/index.html
  - VRGS floating license code: GN4H-Y5ST-4UEK-DXVR Moodle
  - Data Sets for : M_Merlo_quarry_base_data.zip in Moodle

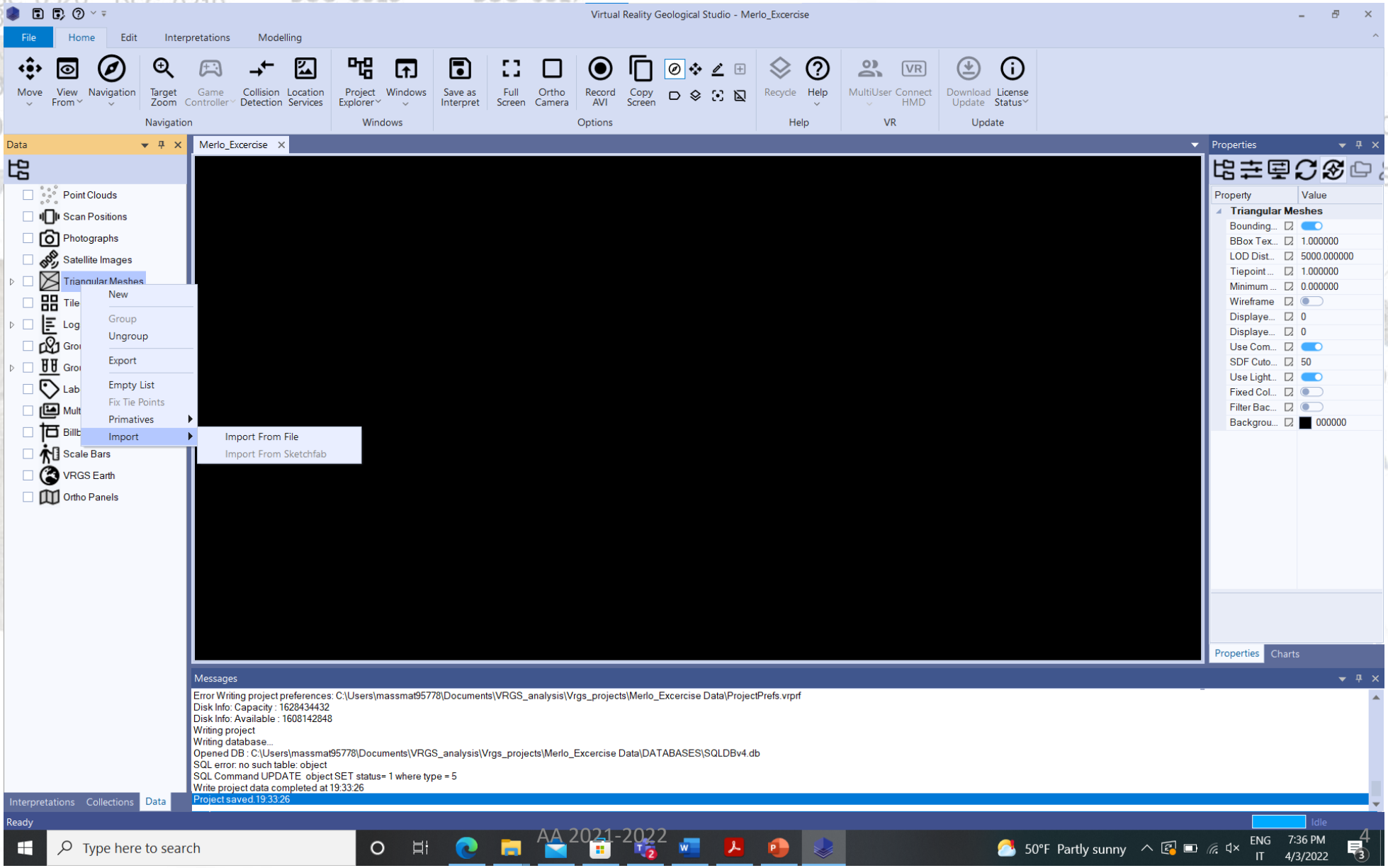
Practical activity sequence

- Importing DOM Meshes in VRGS
- Introduction to VRGS
- Joint attitude measurements on DOMs
- Importing Clino field move data in VRGS
- Comparison between field data and data extracted from DOMs
- Exporting data measurements from VRGS to Stereonet
- Visualizing data in Stereonet
- Importing DOM clouds in VRGS
- Clouds Tensor Anlysis

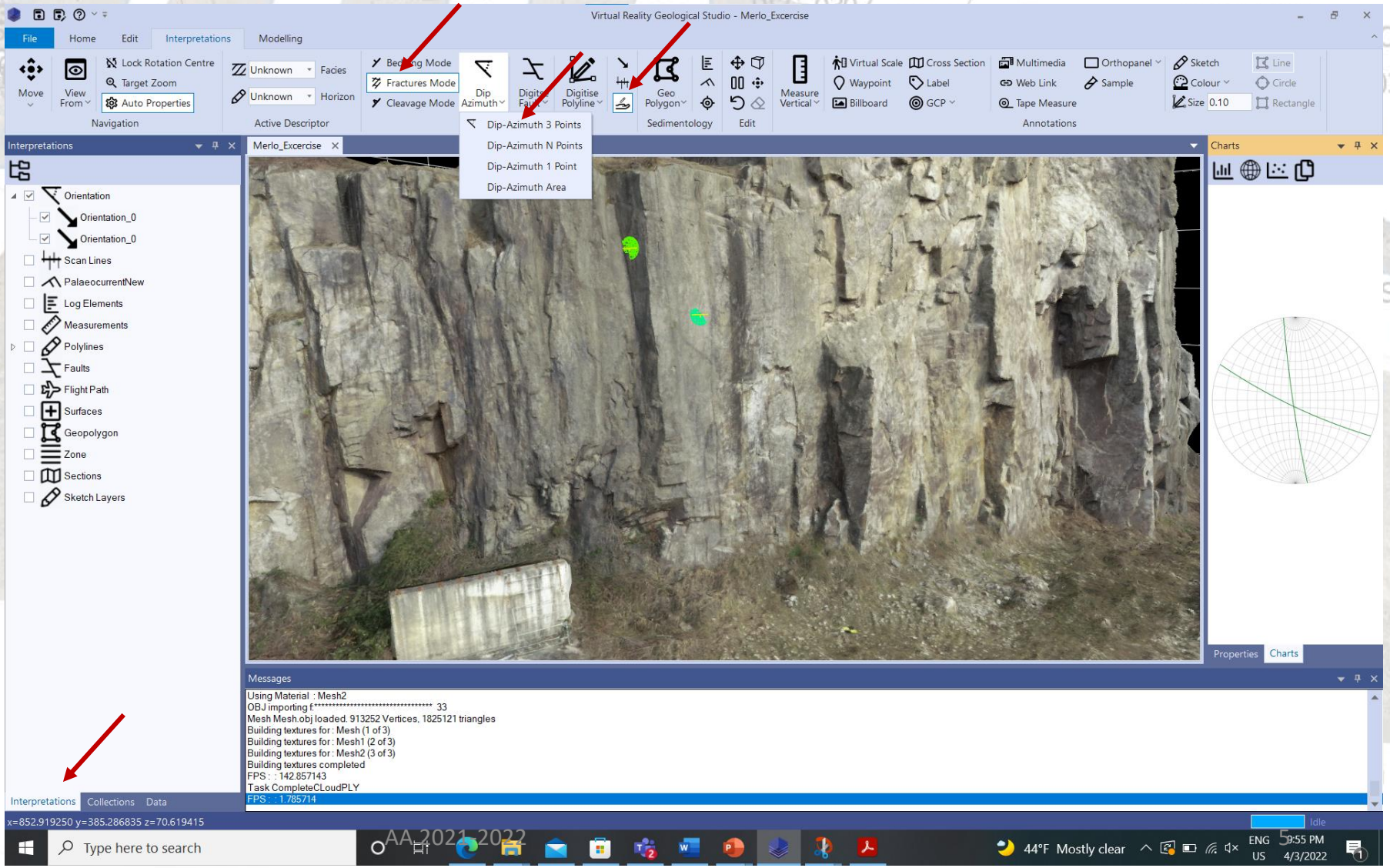
Importing Meshes

- Import

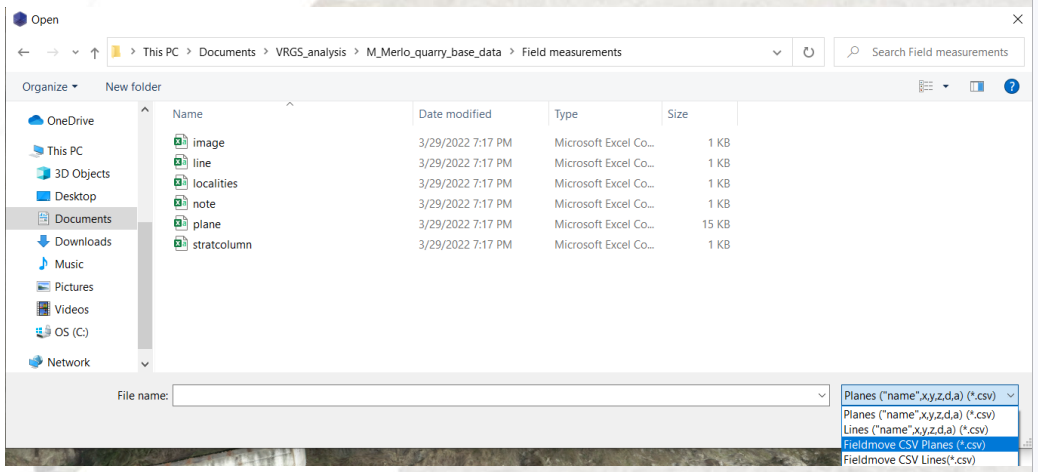
. obj or . ply

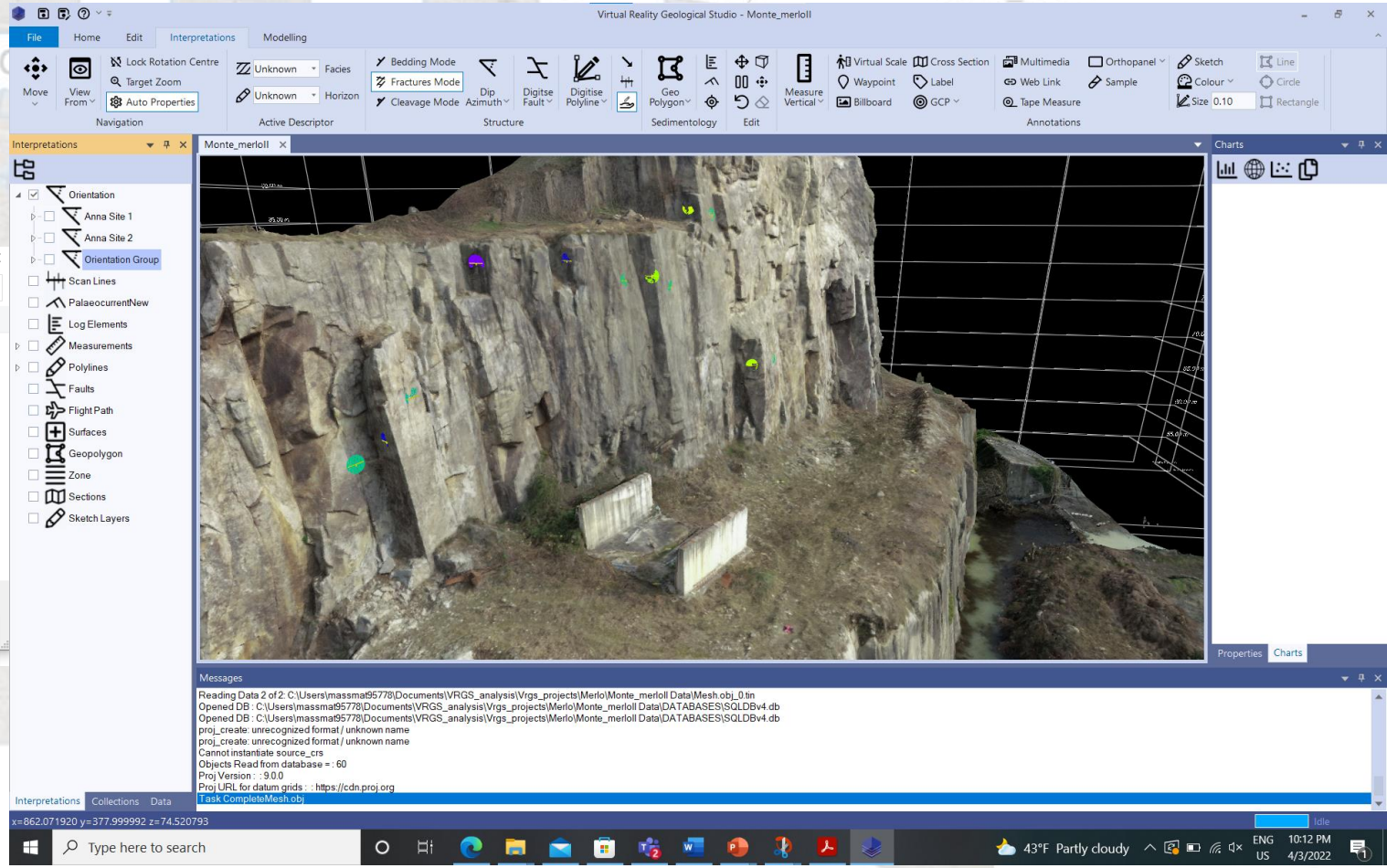


Joint measurements on DOM mesh

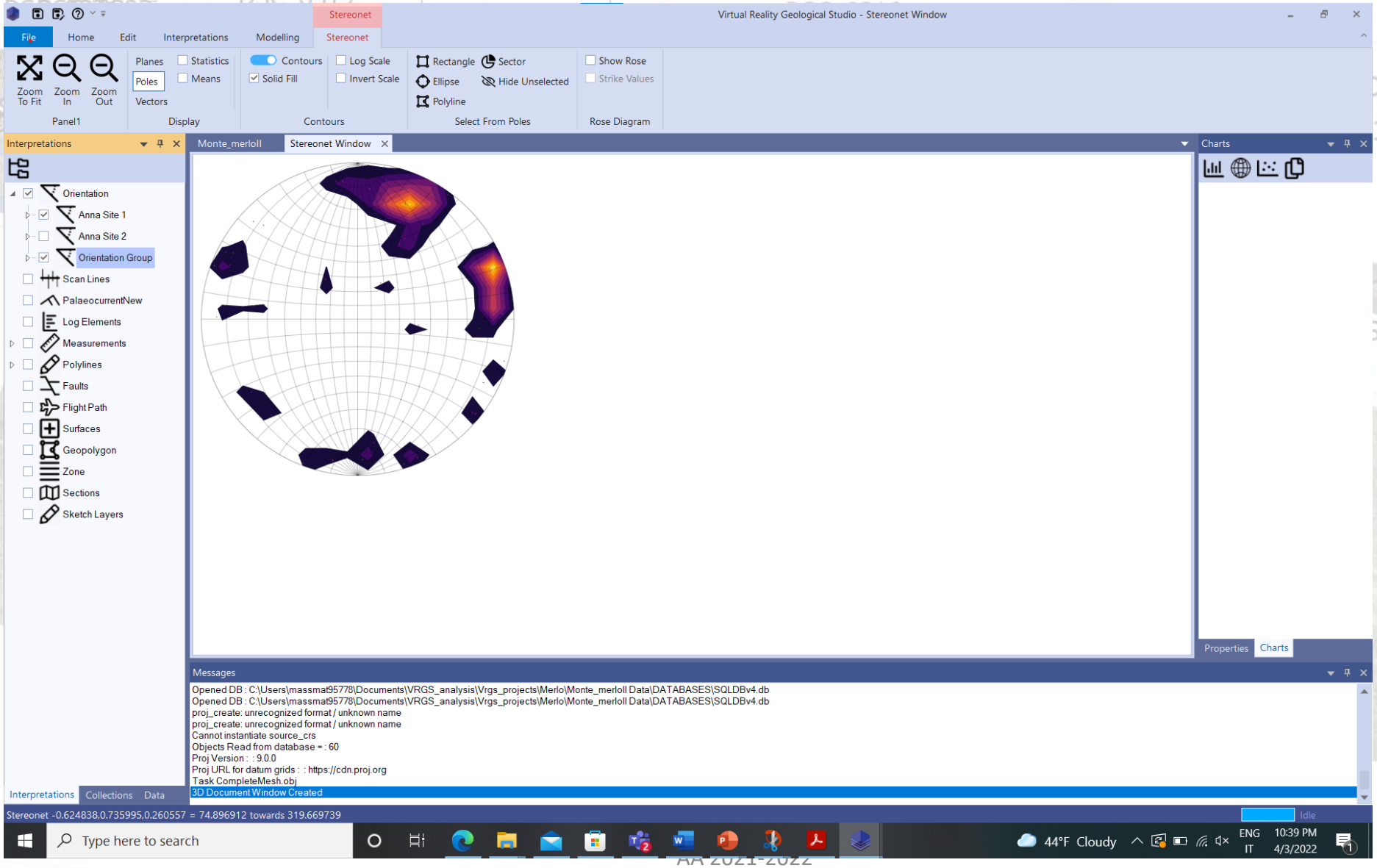


Importing Field Data and grouping Field data and DOM measurements

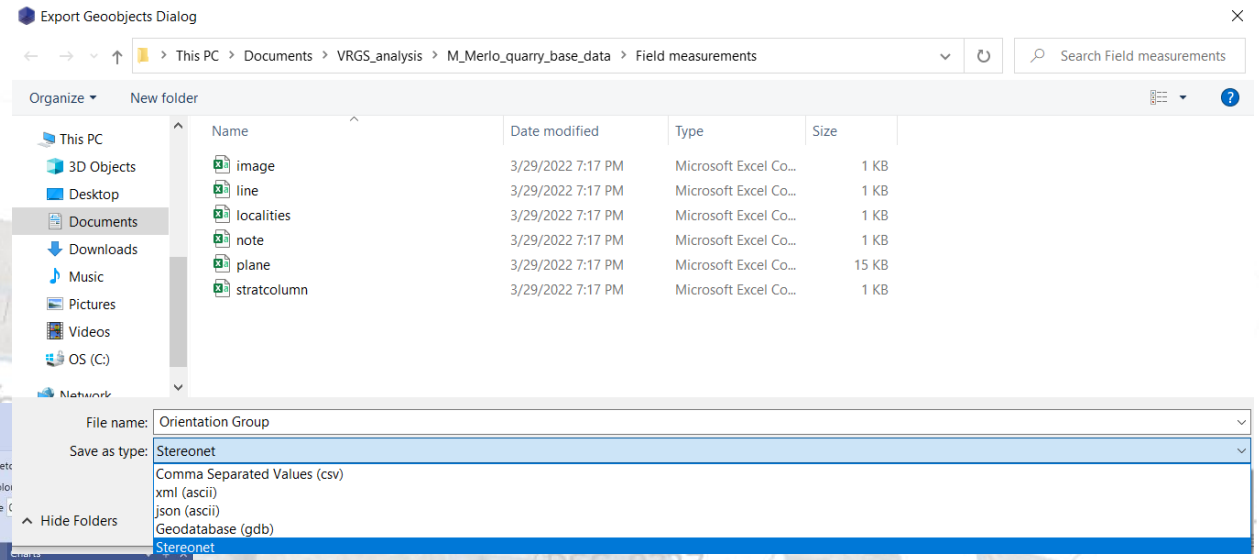


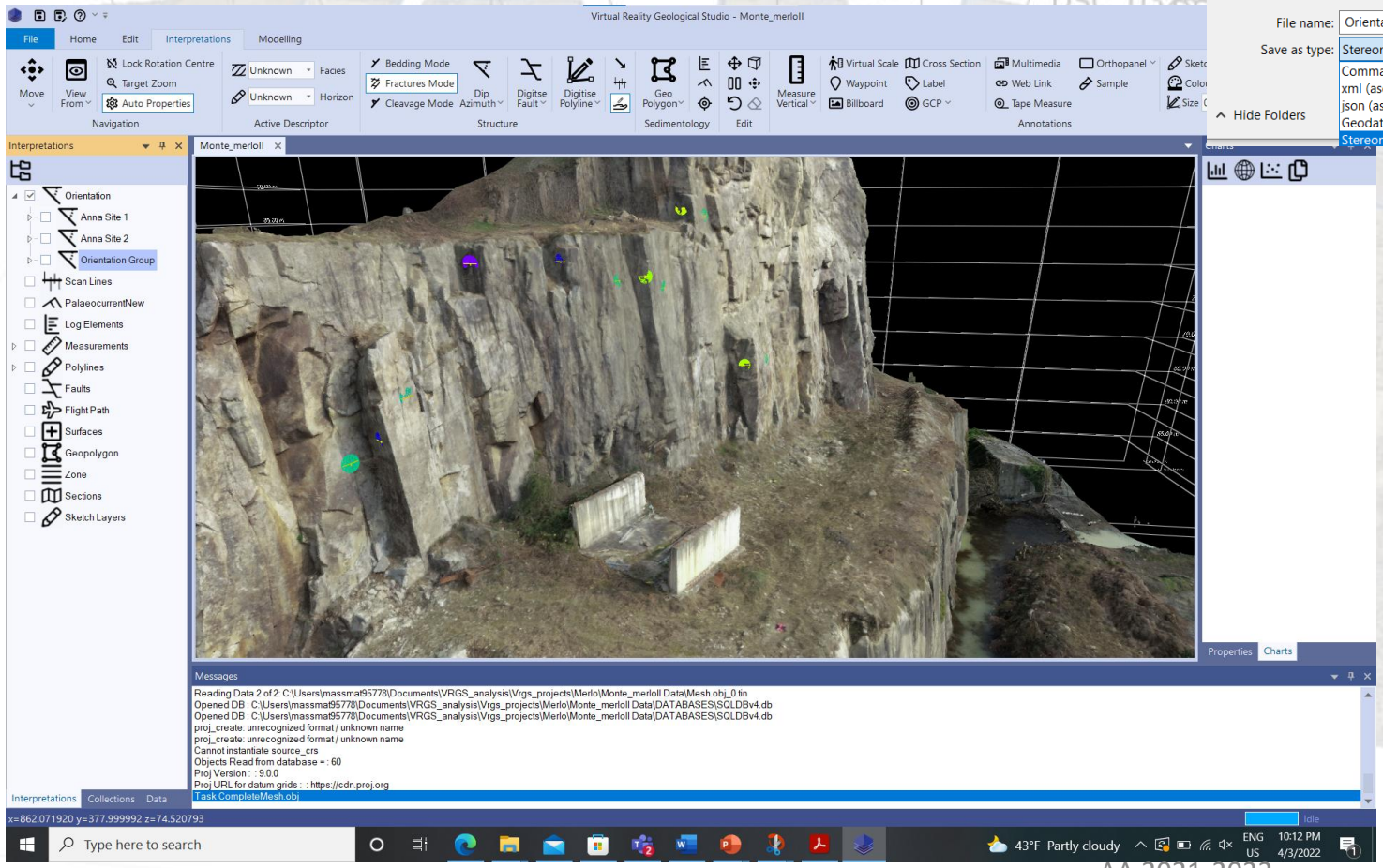


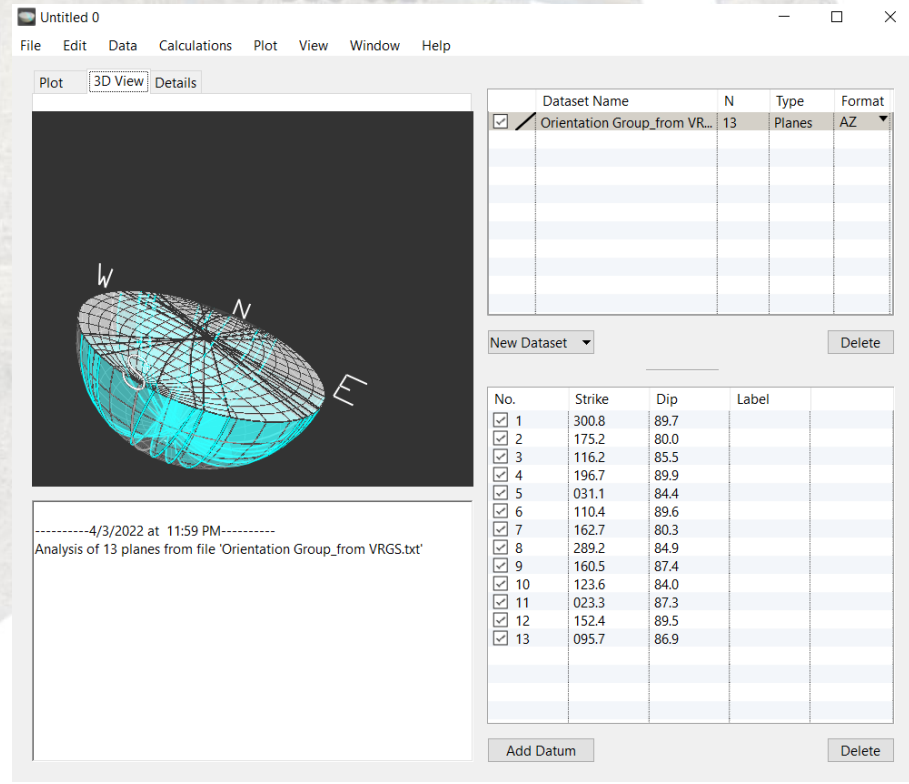
Field data vs DOM measurements



Export to Stereonet



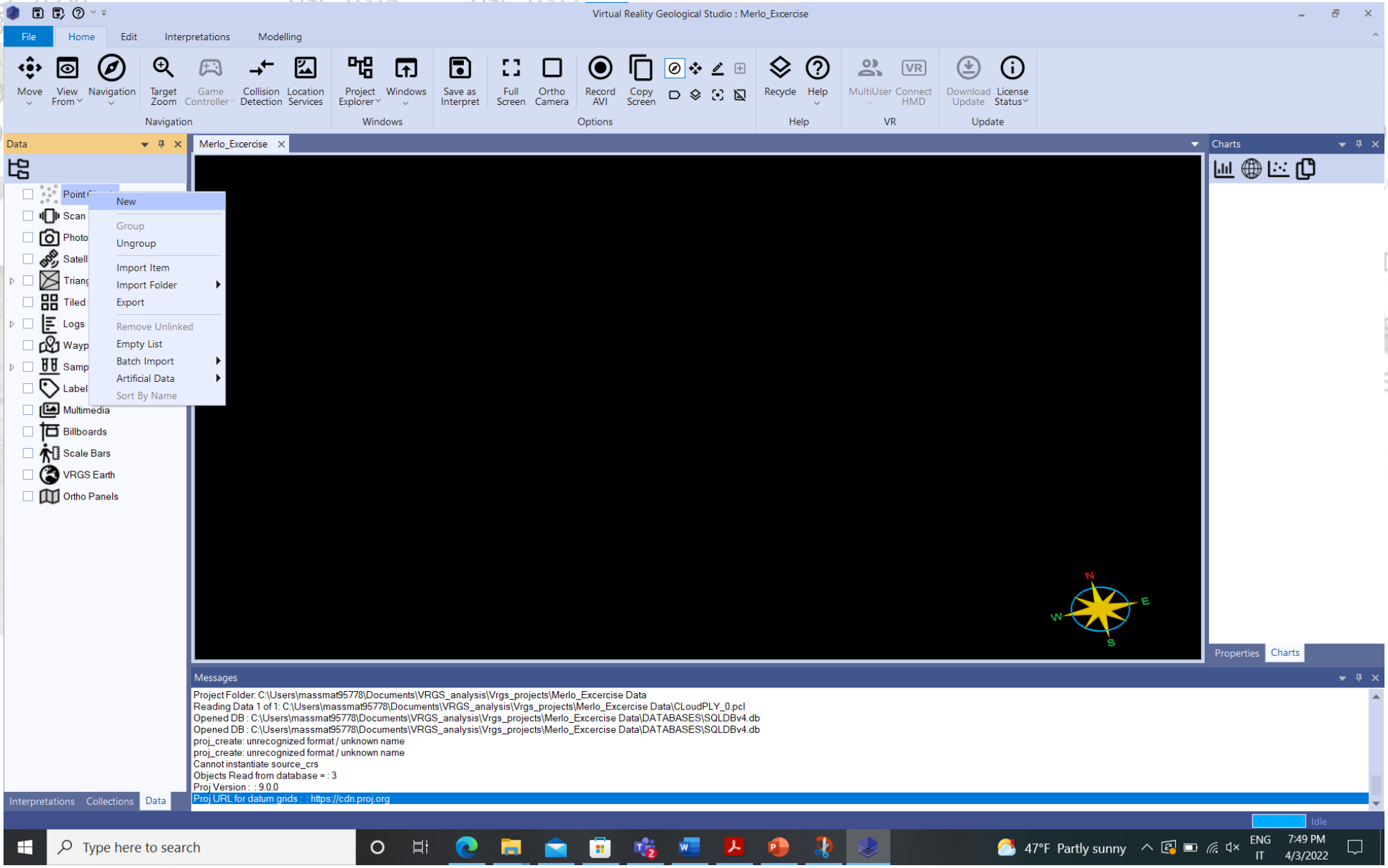




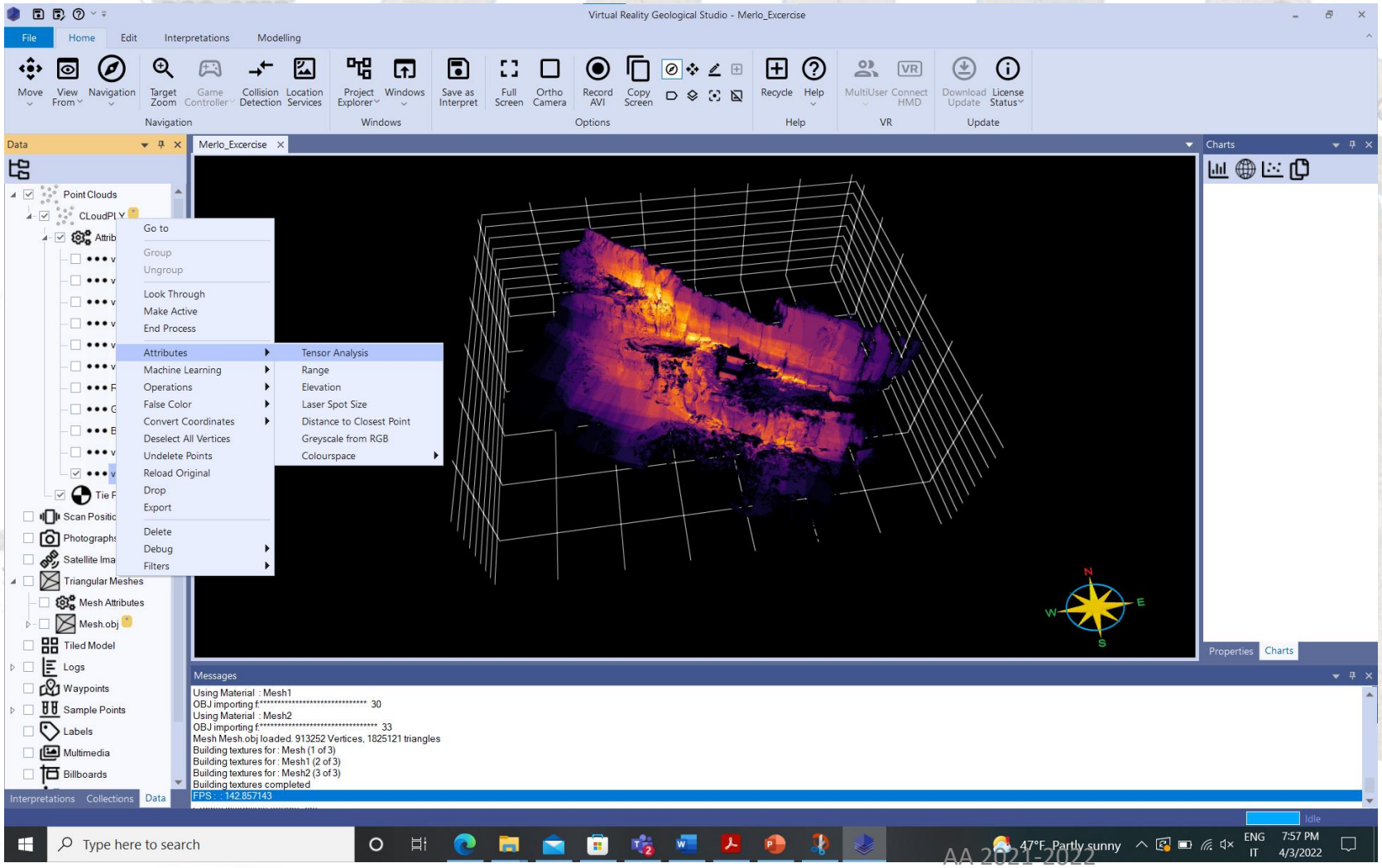
Importing Clouds

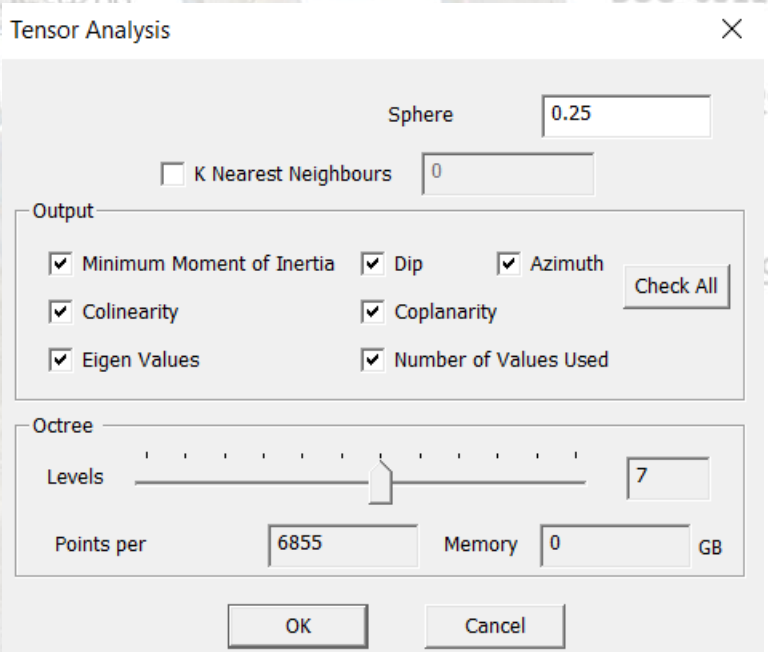
- Import

. ply

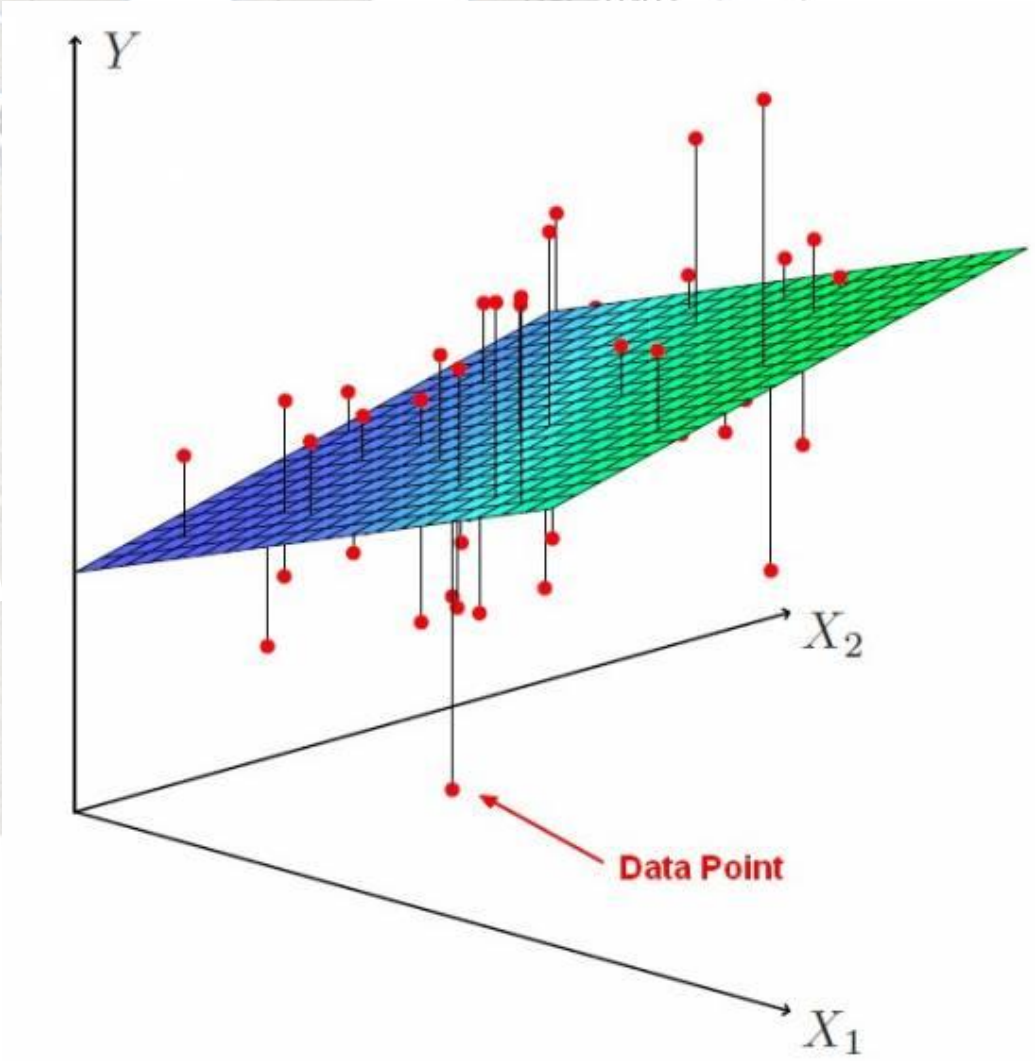


Tensor analysis

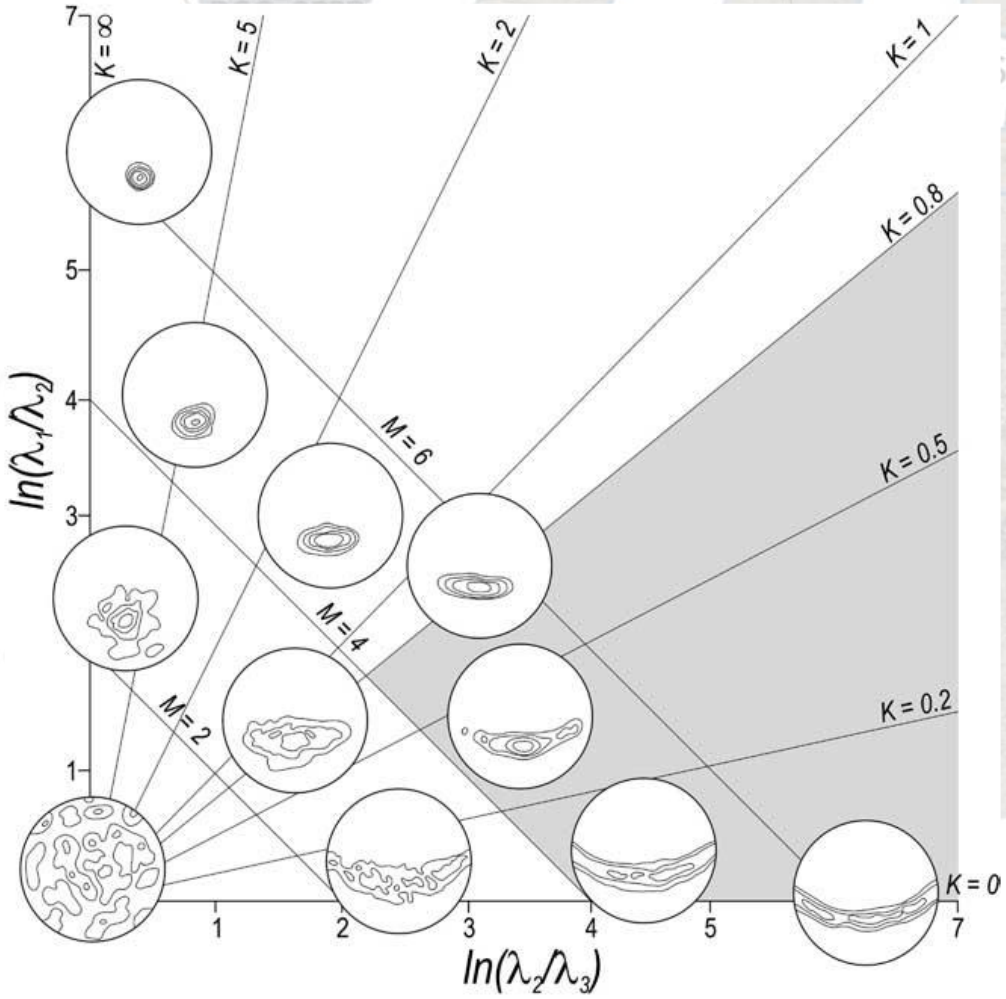




Best Fit Plane-Multiple linear regression

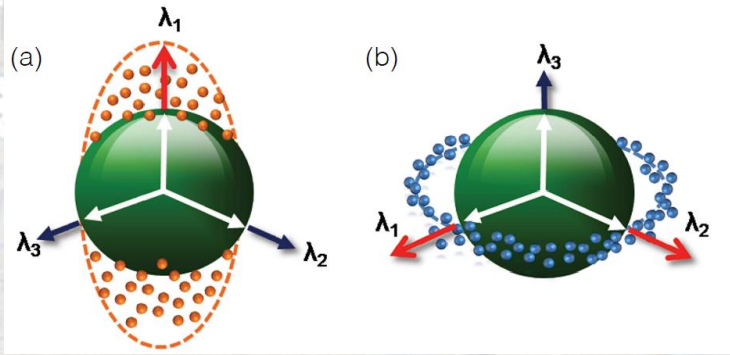


Moment of inertia



Fernandez 2005, JSG

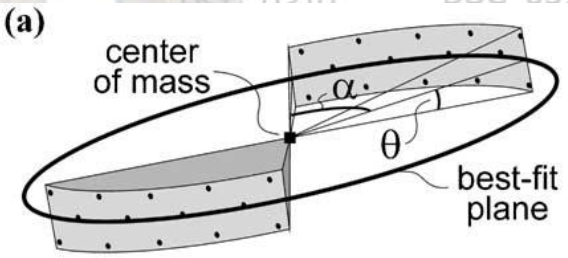
Baek and Kim, 2015, Nat. Haz. and Earth Syst. Sci,



Eigenvalue λ 3 and eigenvector v3 correspond to the orientation with the minimum density of vectors and maximum moment o inertia, and therefore the pole to the best-fit plane of a girdle distribution.

M=ln (λ1/λ3)

K= ln (λ1/λ2) / ln (λ2/λ3)



(b)

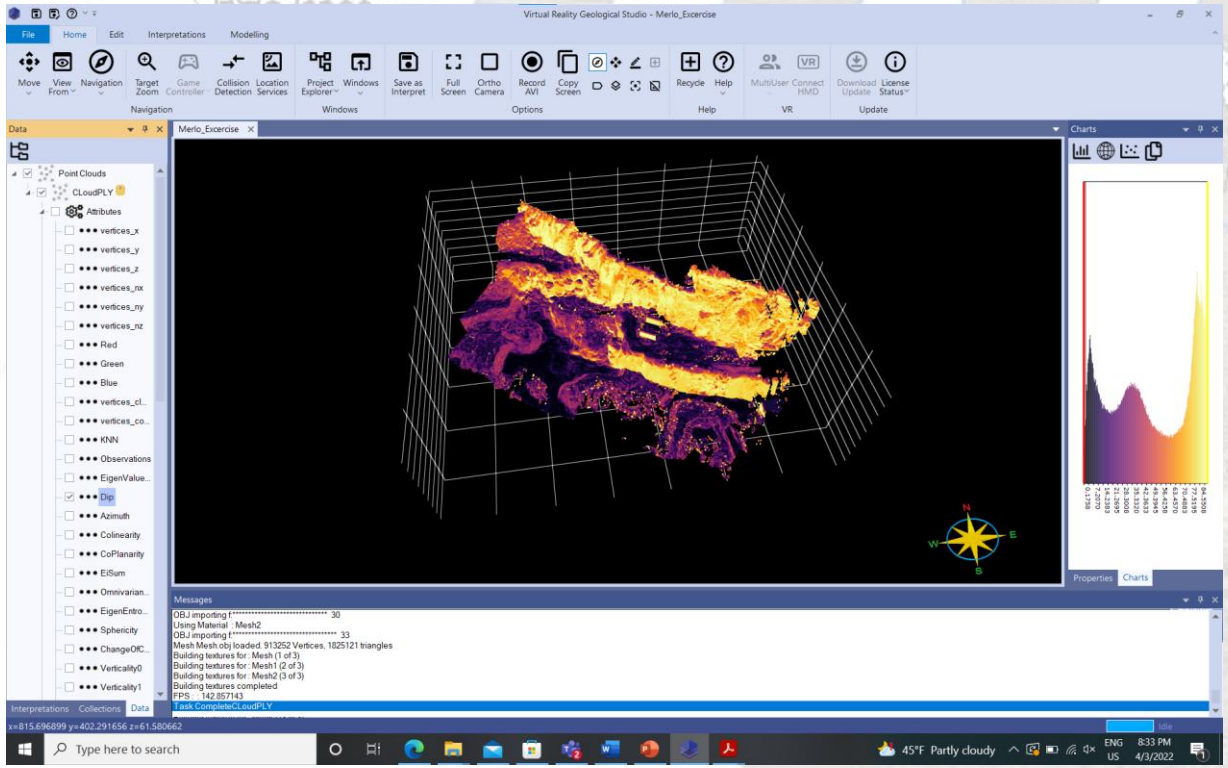
θ	*M*
1°	7.81
2°	6.42
3°	5.61
4°	5.03
5°	4.59
6°	4.22
7°	3.91
8°	3.64
9°	3.40
10°	3.18
15°	2.35

(c)

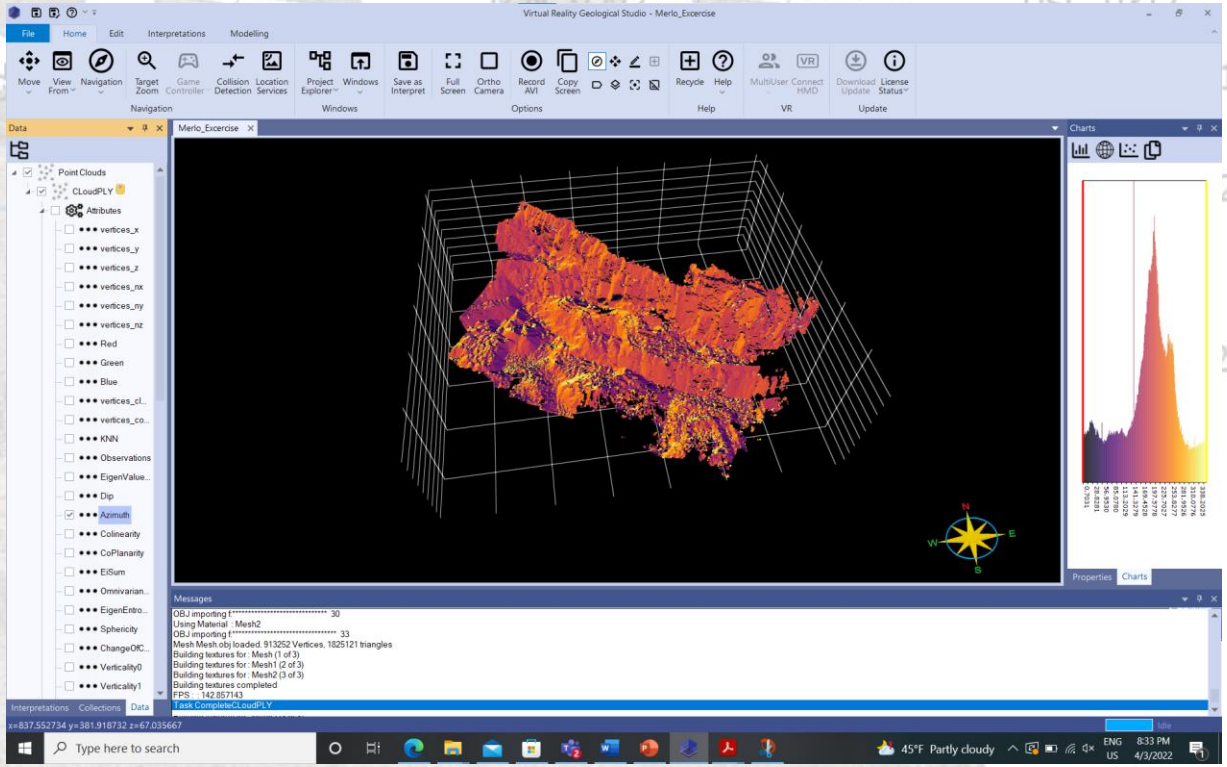
α	*K*
180°	3.1×10^{-4}
150°	2.9×10^{-2}
120°	0.10
90°	0.21
75°	0.28
60°	0.38
45°	0.52
30°	0.76
15°	1.33

Fernandez 2005, JSG

Dip and Azimuth

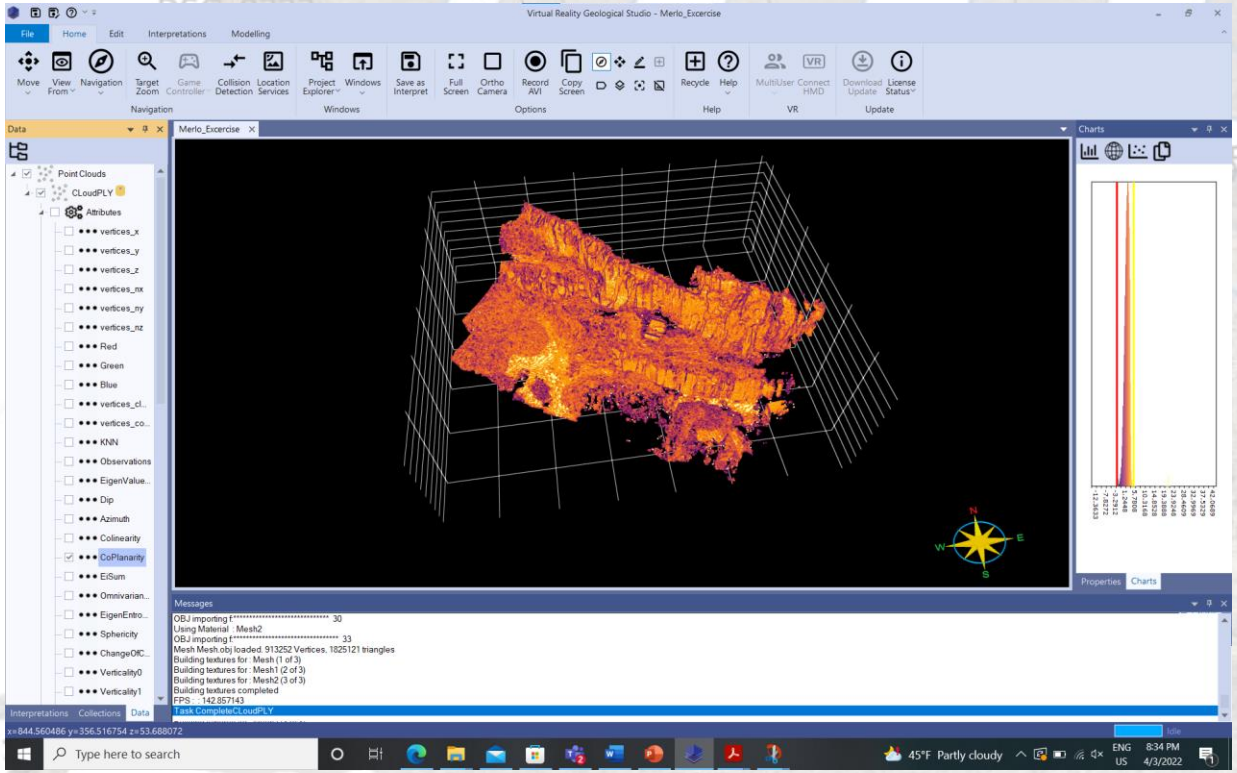


Dip

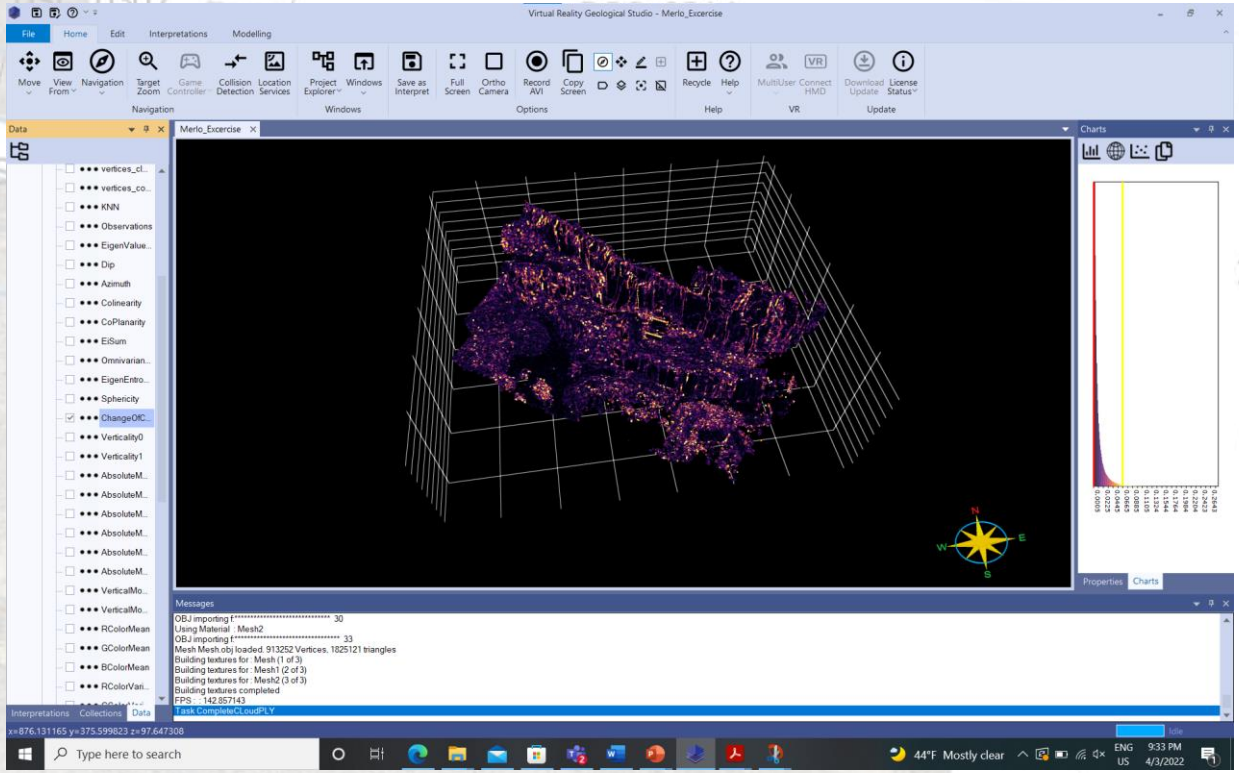


Azimuth

Coplanarity and Curvature



Coplanarity



Curvature