

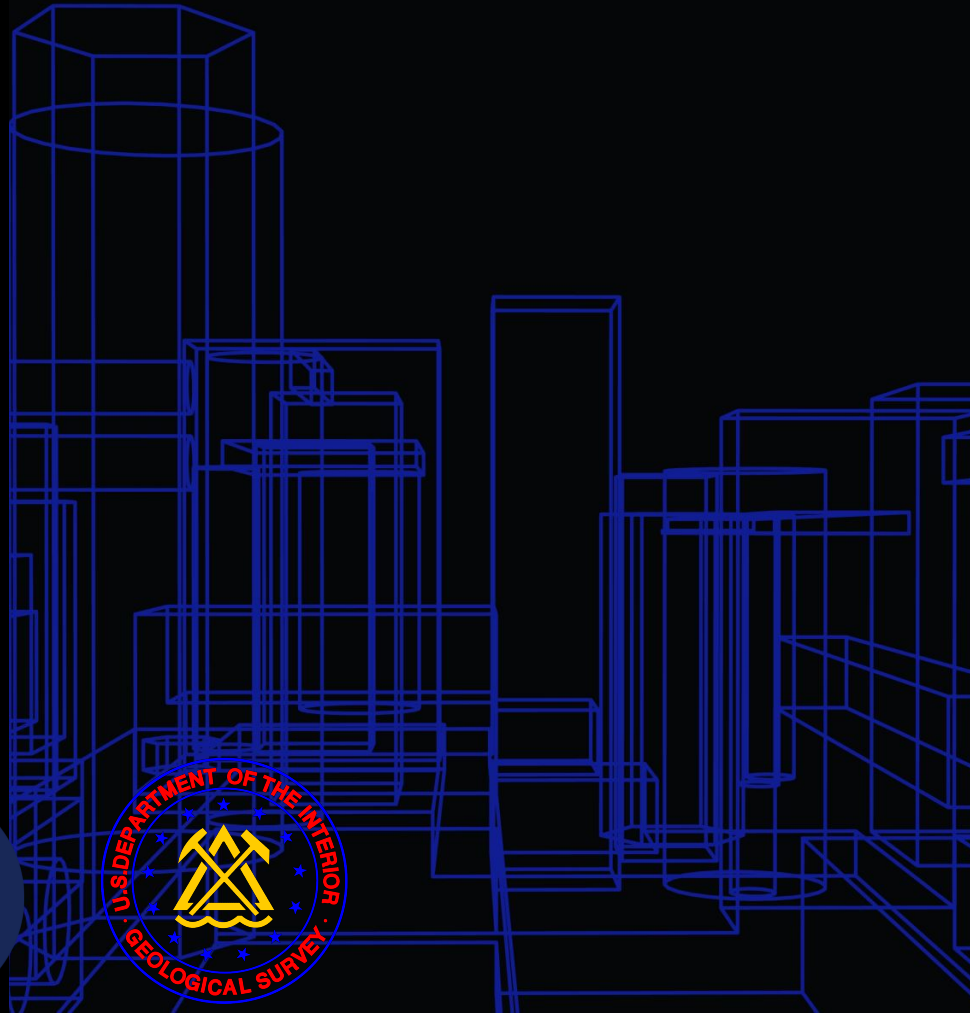
PHYSICAL PROPERTIES OF THE SOUTH POLE ICE CORE, SPC14

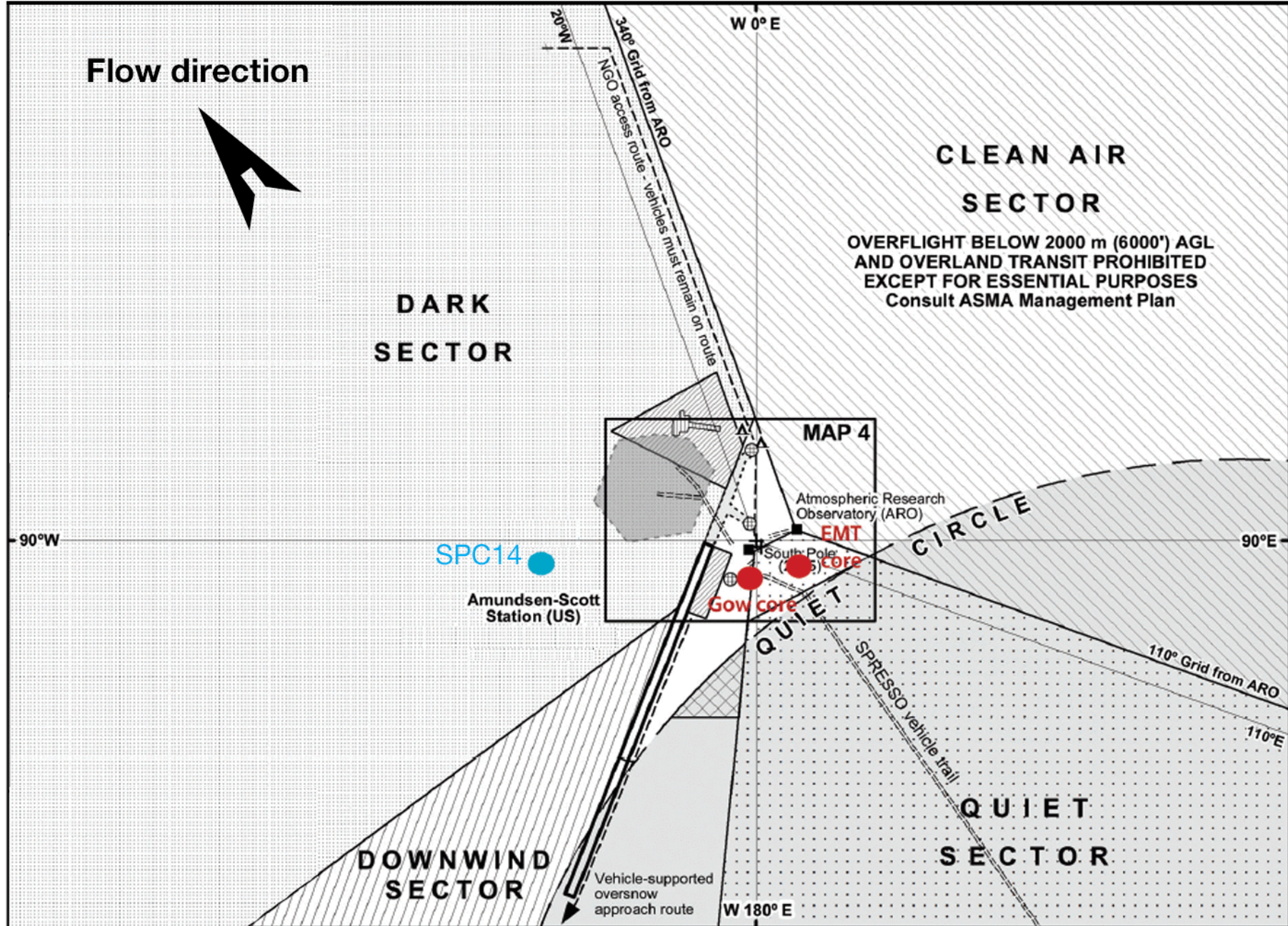
Joan J. Fitzpatrick, Geosciences and
Environmental Change Science Center,
Emeritus; USGS, Denver, CO

Donald E. Voigt, Pennsylvania State
University, Department of
Geosciences, Retired; University Park,
PA

John J. Fegyesi, Northern Arizona
University, School of Earth and
Sustainability, Flagstaff, AZ

Richard B. Alley, Pennsylvania State
University, Department of
Geosciences, University Park, PA





Projection: Polar Stereographic;
Standard Parallel 90°S; Latitude of Origin 90°S;
Spheroid: WGS84
Data source: United States Antarctic Program

ASMA No. 5: South Pole
Map 3: Amundsen-Scott Station,
Management Zones and Sectors

17 May 2011
United States Antarctic Program
Environmental Research & Assessment



SPC14 sample cut plan

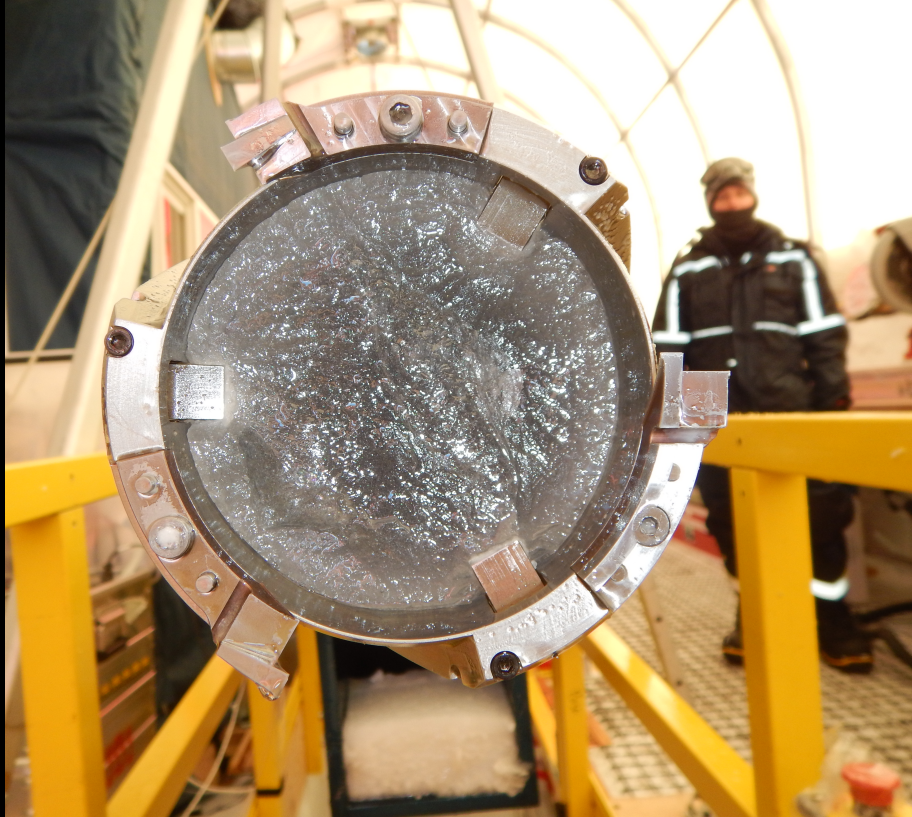
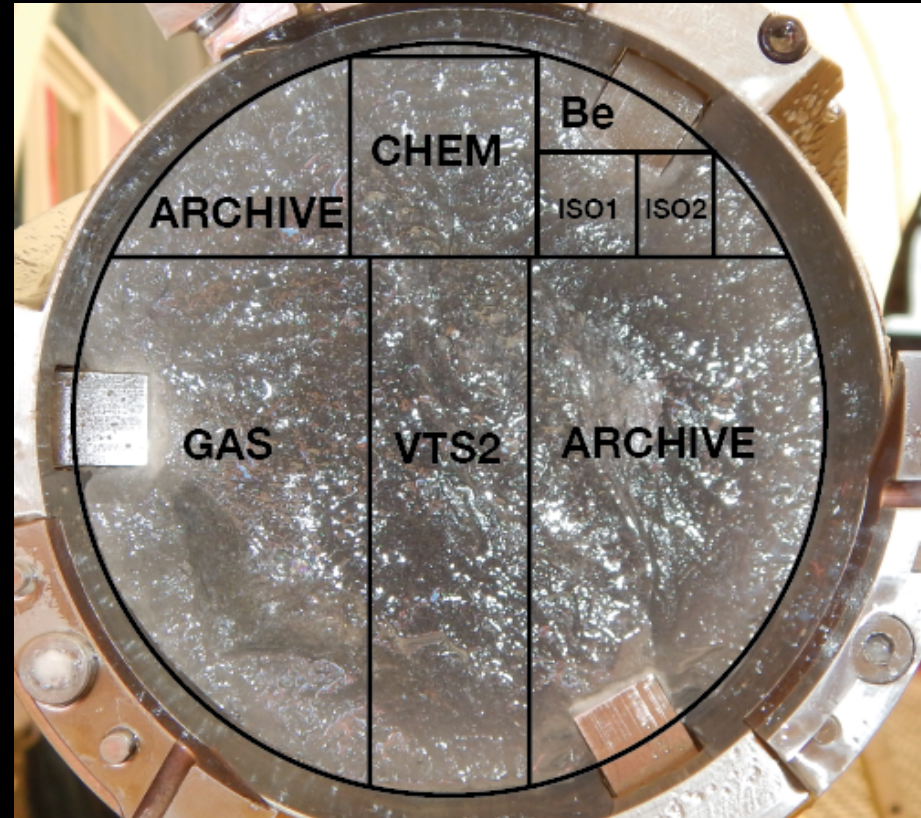


Photo credit: TJ. Fudge



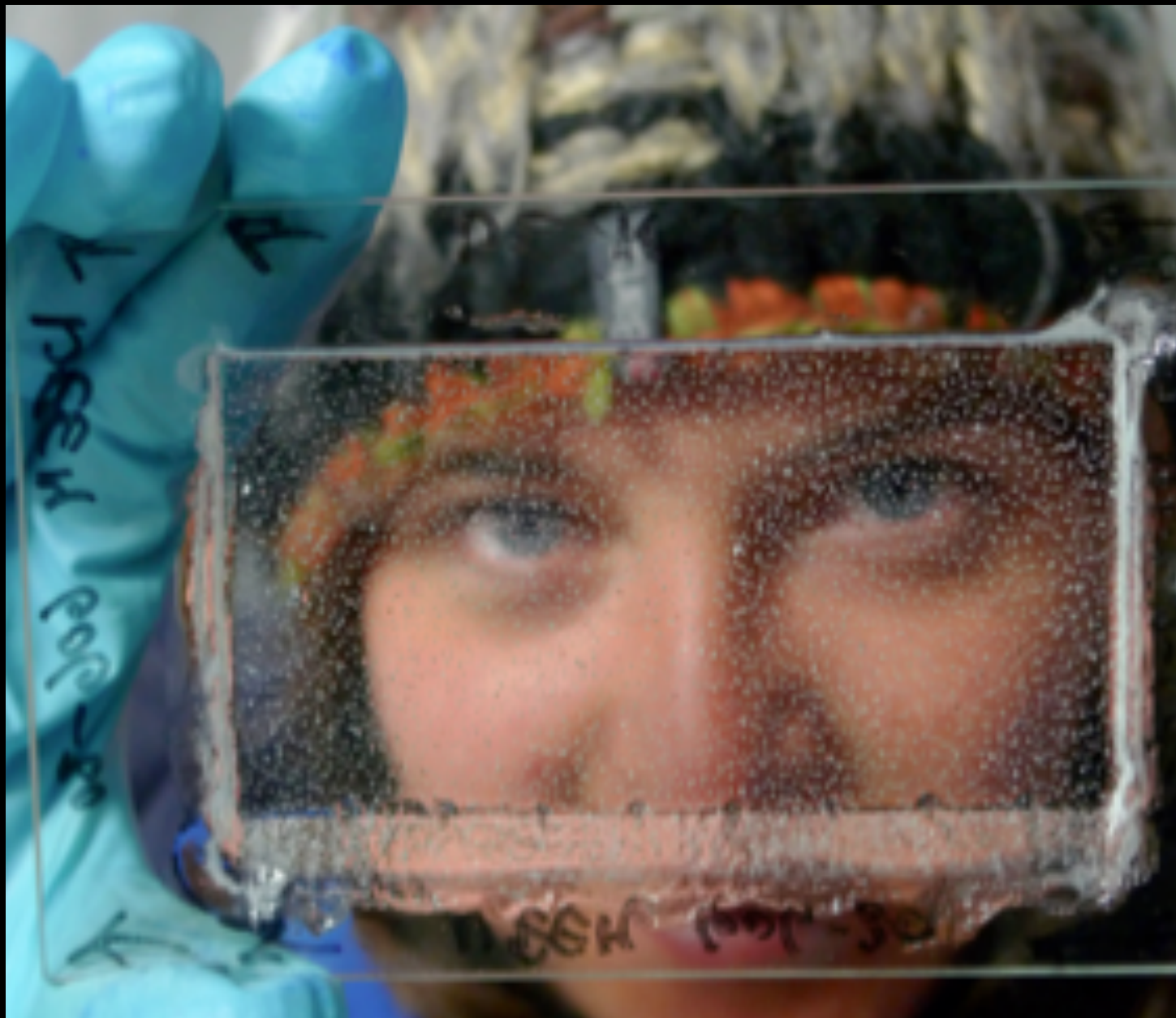
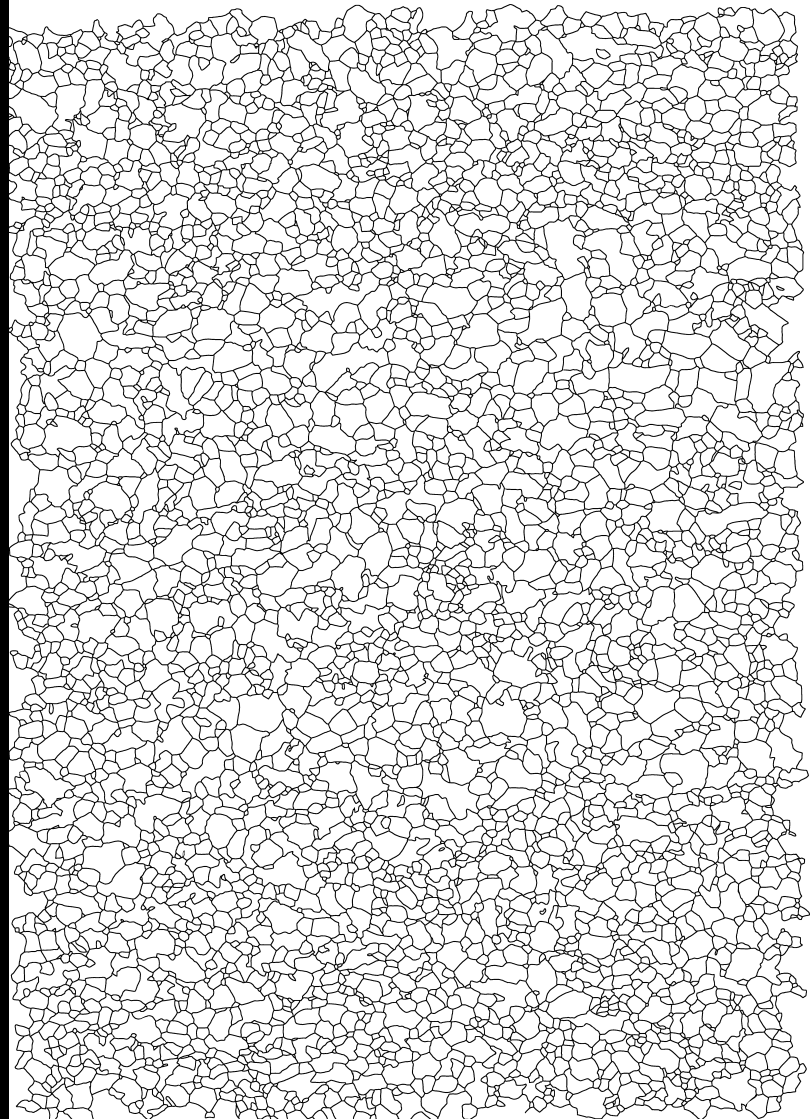


Photo credit: Sepp Kipfstuhl

Physical properties measurements include:

- Bubble number density
- Grain size, shape, position
- Grain orientations
- Sampled every 20 meters

SPC14 1119m



1 cm

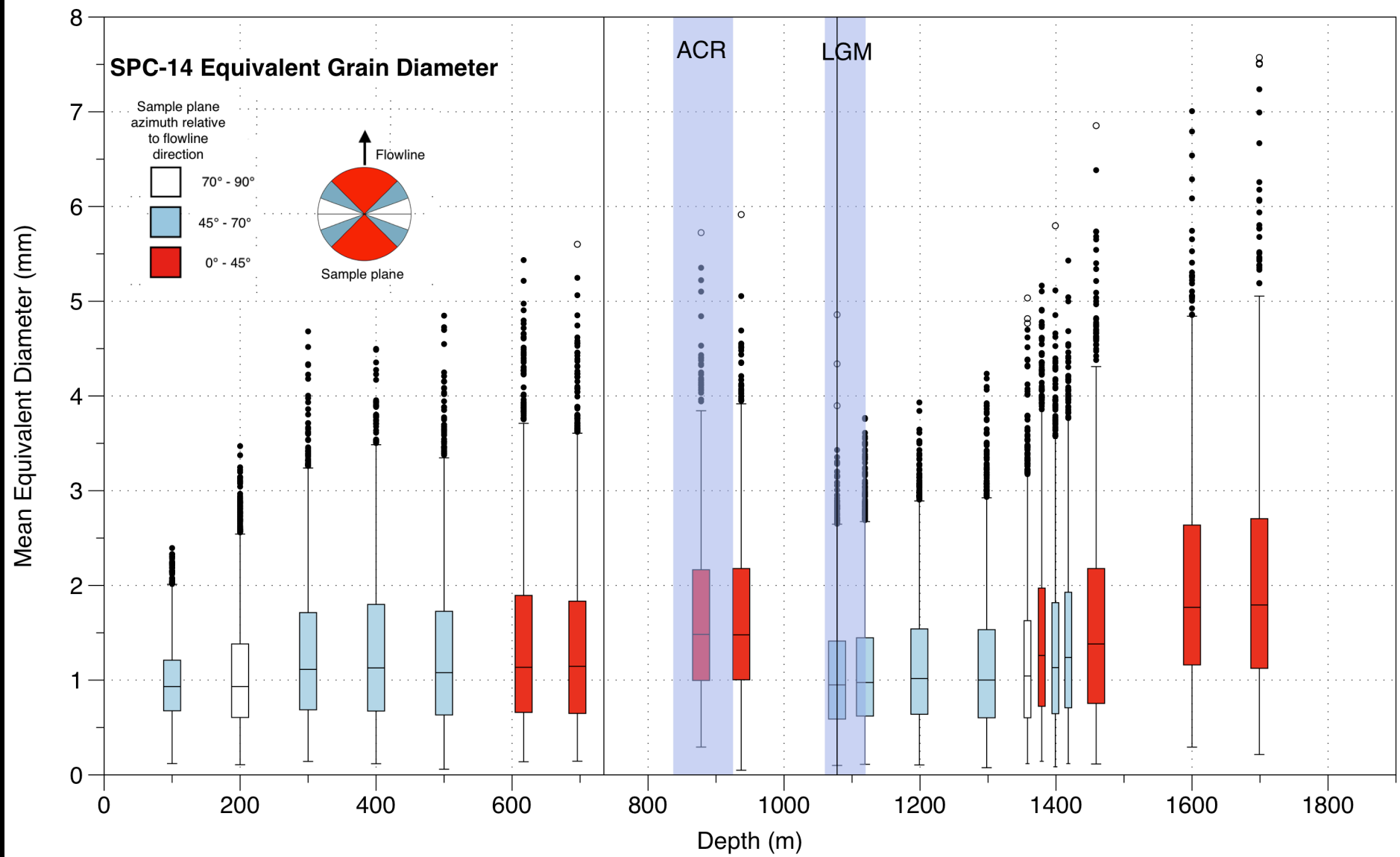
Up



Image
Processing

Image Analysis

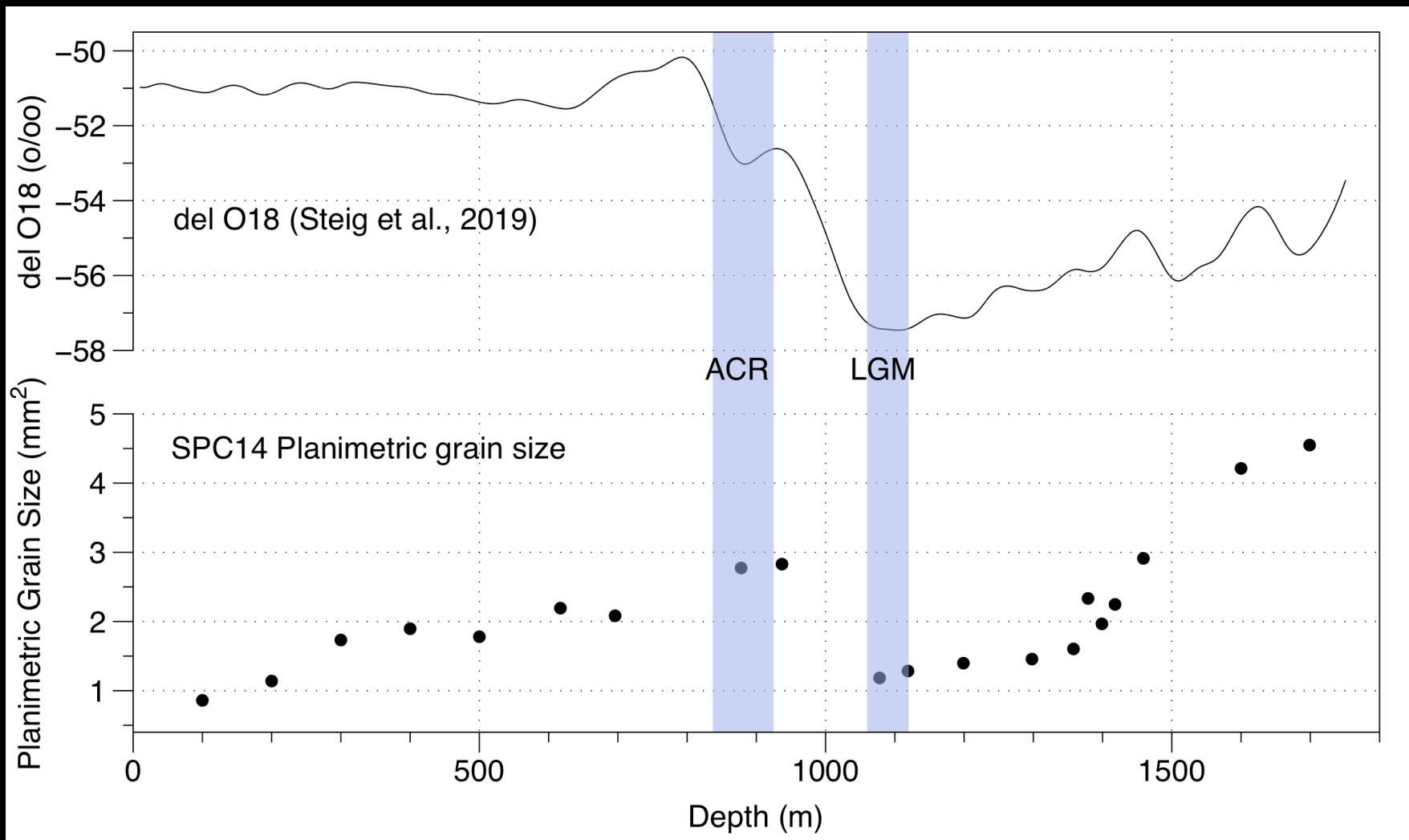
Post-Processing

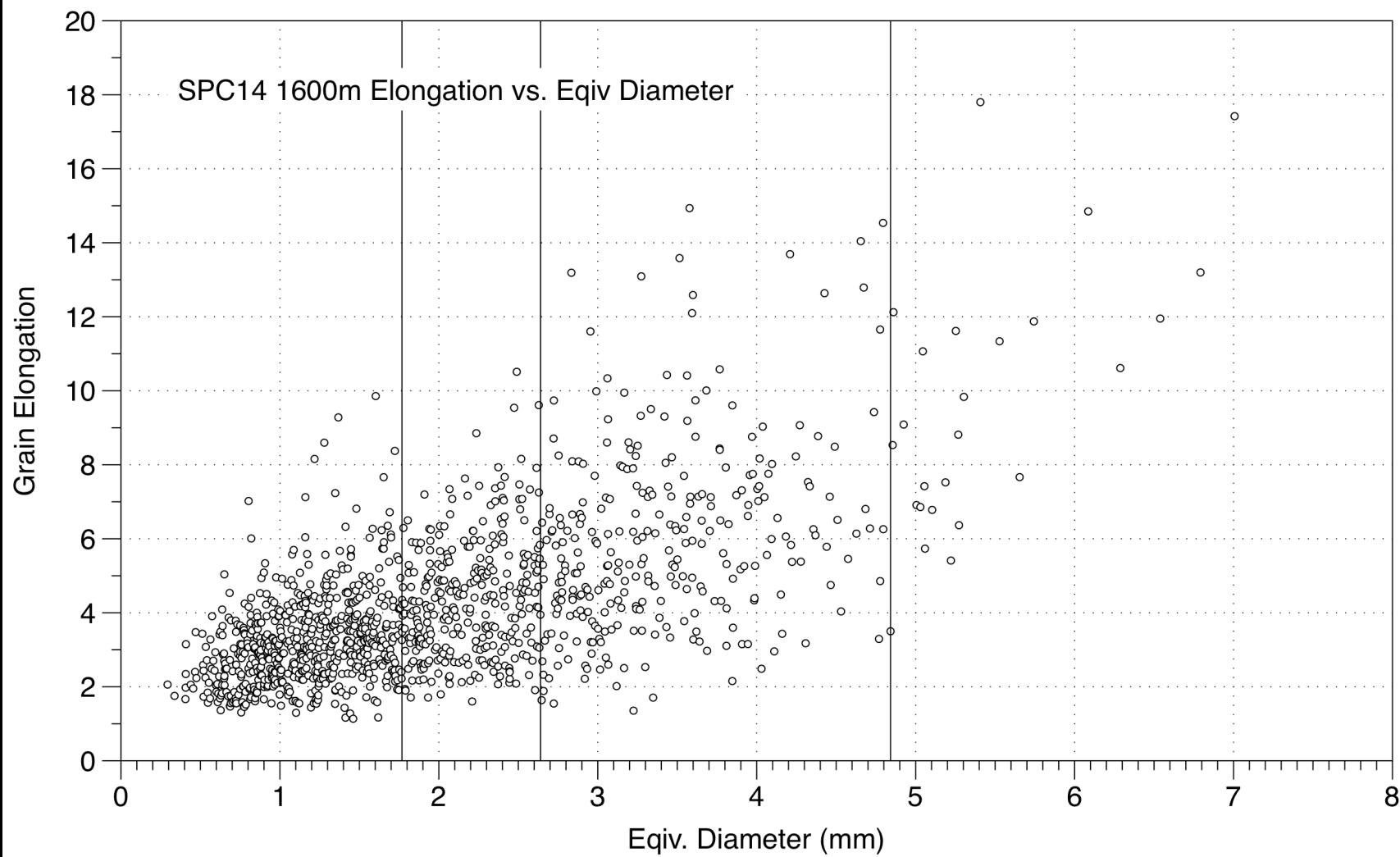


Time

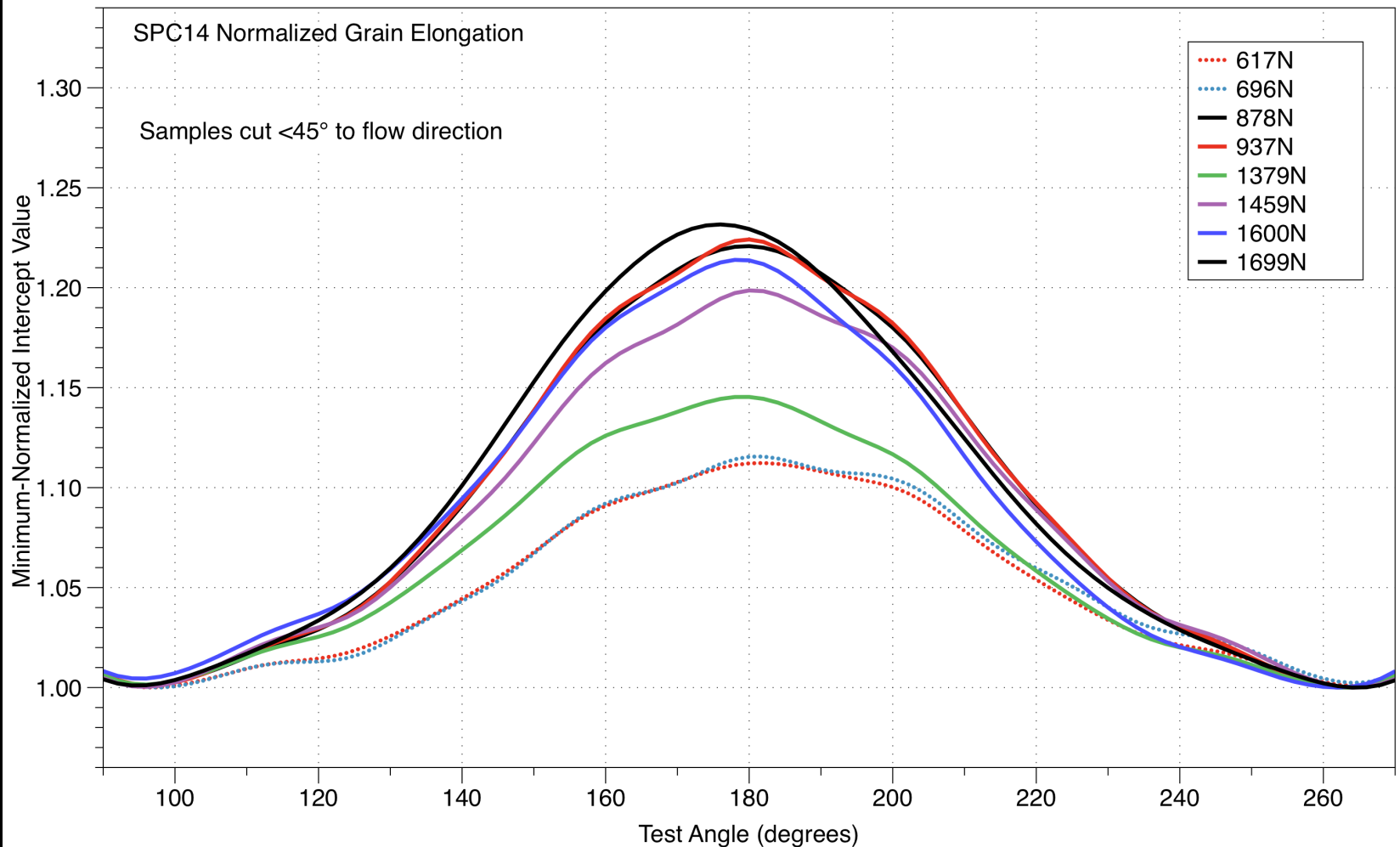


Age



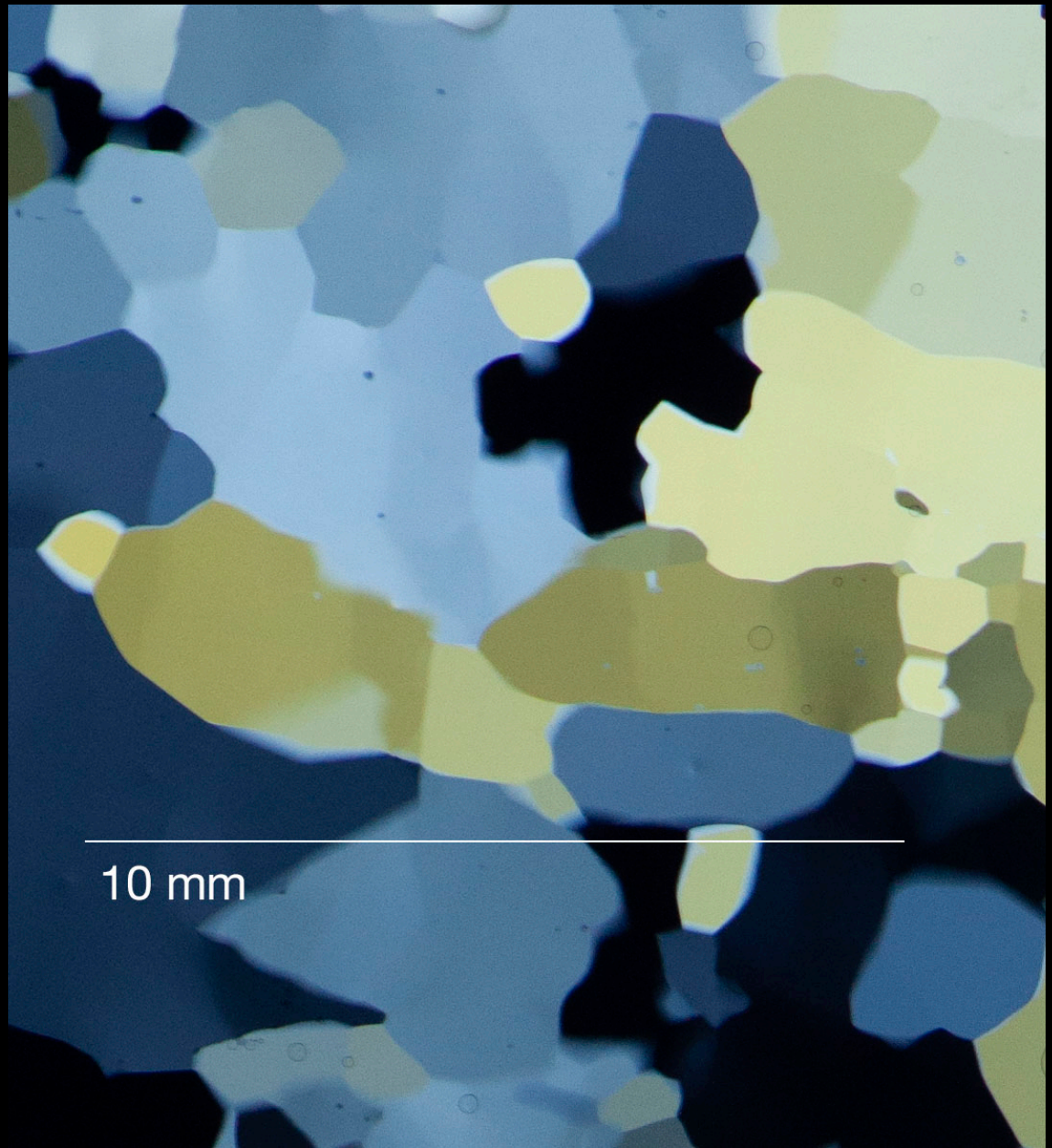


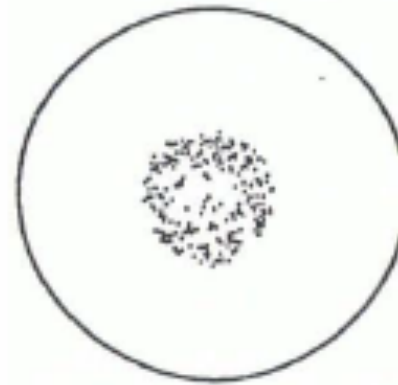
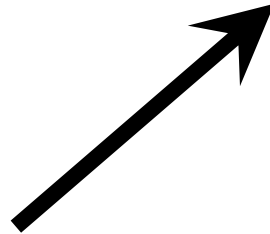
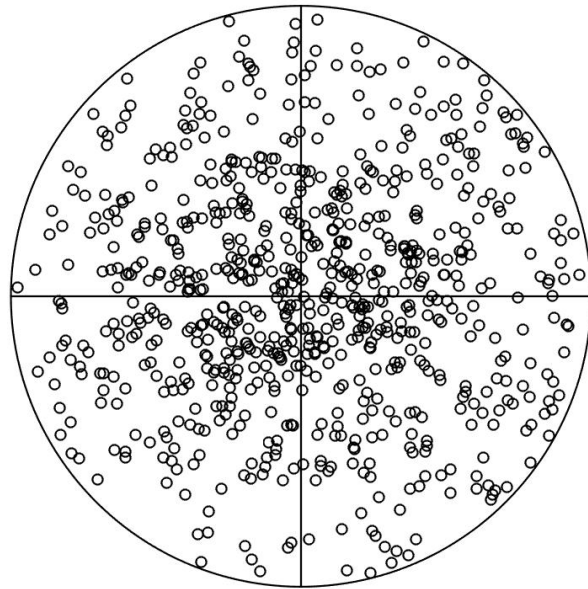
Grain elongation



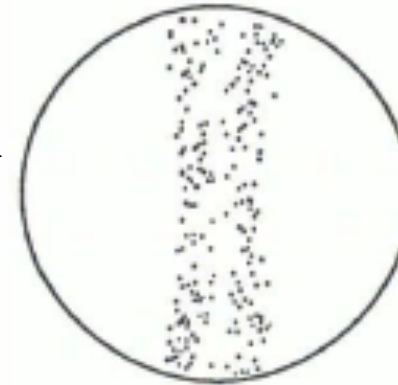
Grain
polygonization
may limit
elongation

SPC14 1600m

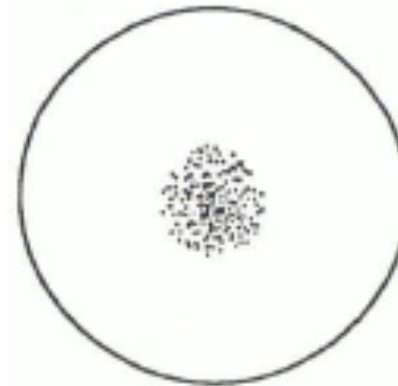
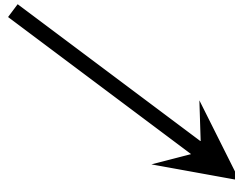




**Vertical
compression**



**Longitudinal
extension**



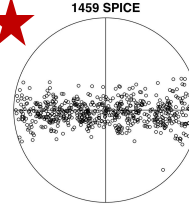
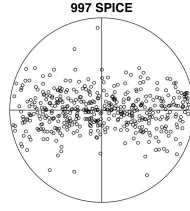
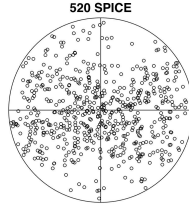
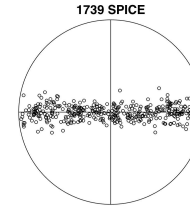
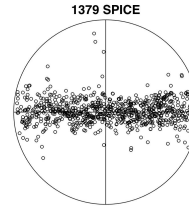
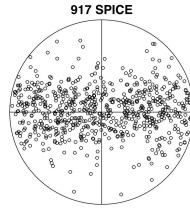
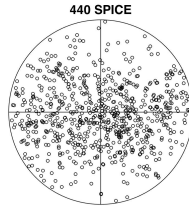
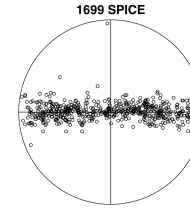
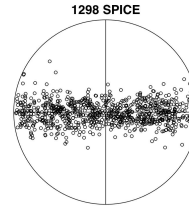
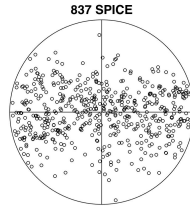
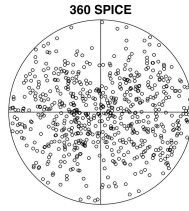
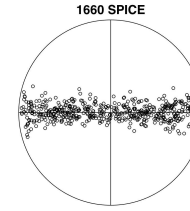
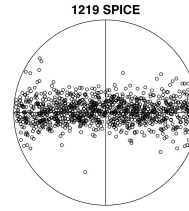
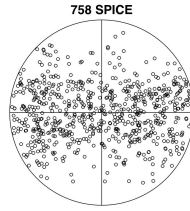
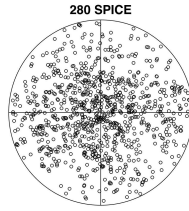
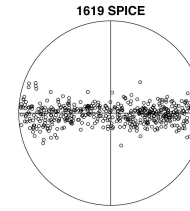
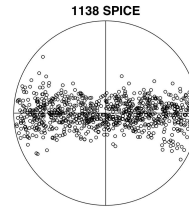
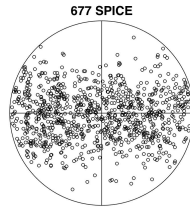
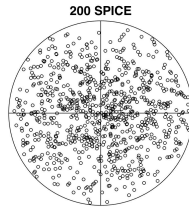
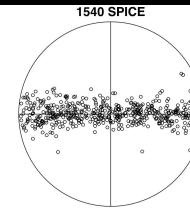
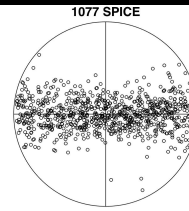
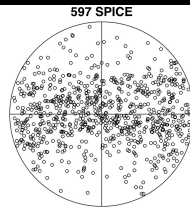
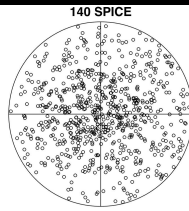
**Simple
shear**



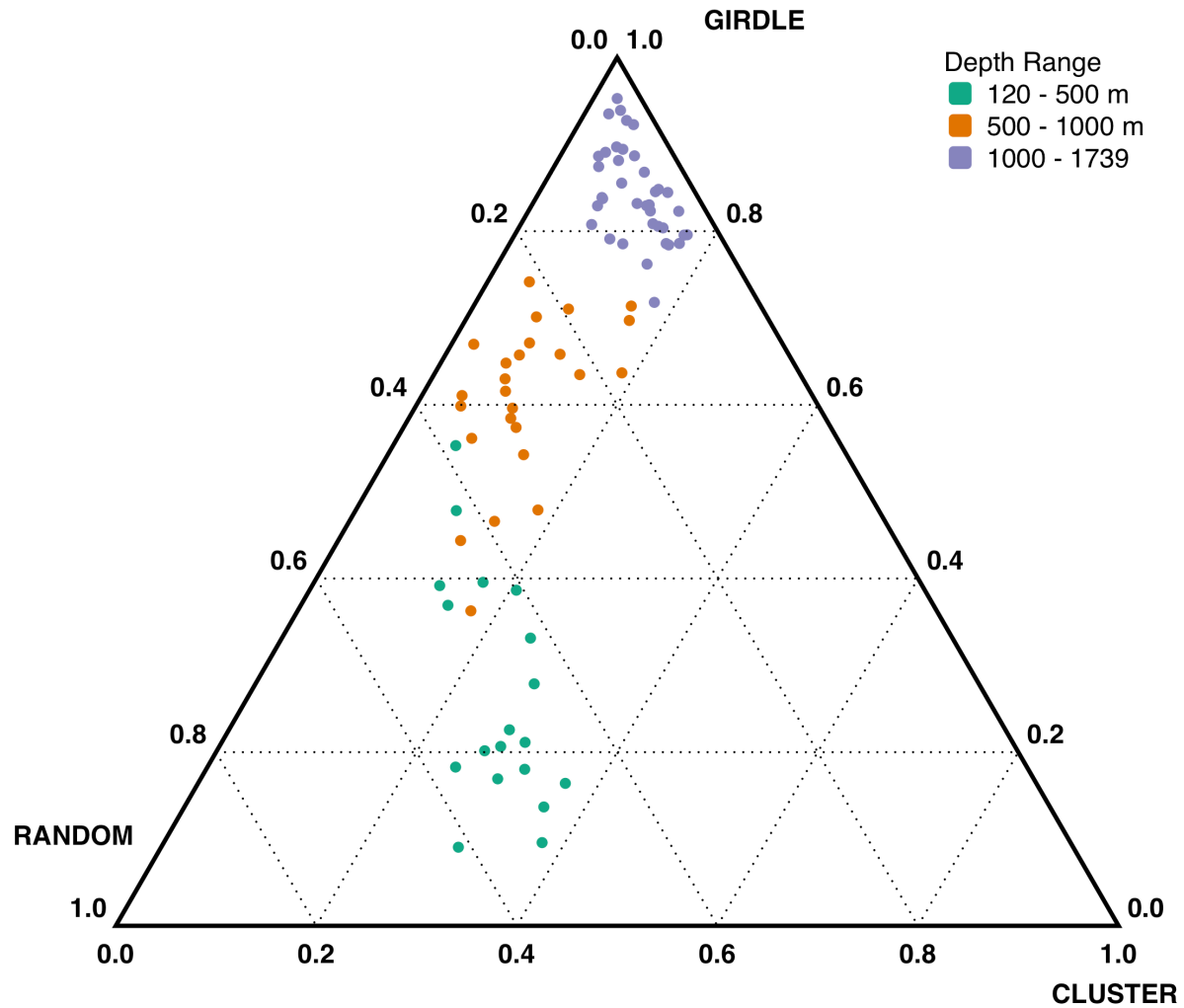
**Fabric evolves differently depending
on the flow pattern in the ice mass.**

Alley, J. Glac., 1992

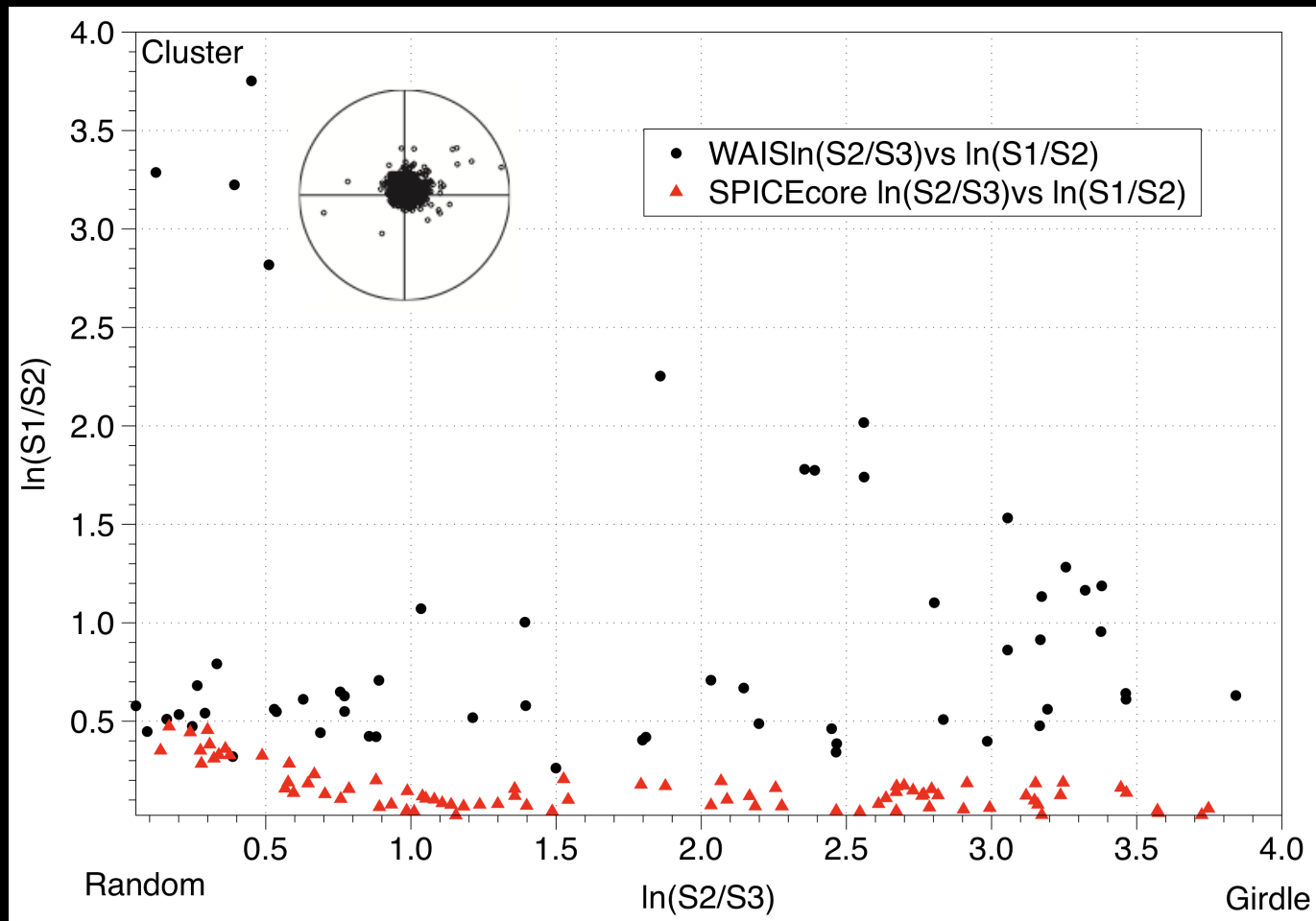
SPC14 Fabric Development

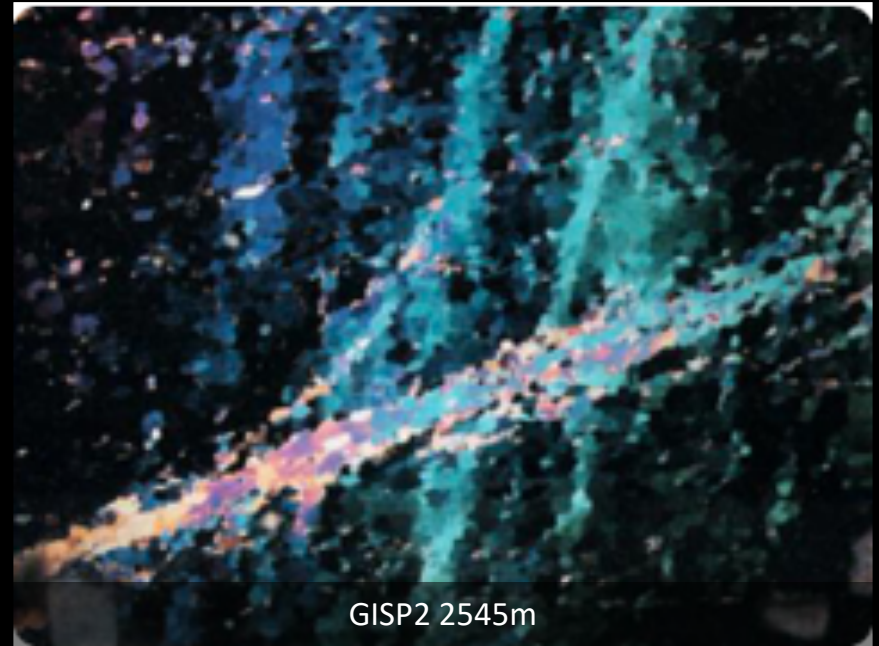
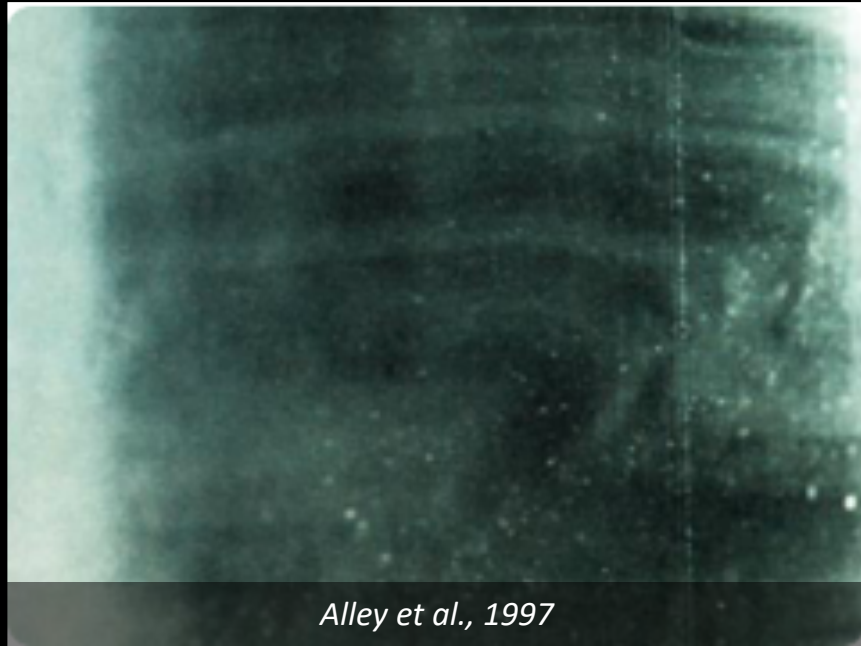


SPC14 Fabric Trajectory



What might happen below 1739?





What might happen below 1739?

What
might
happen
below
1739?

WDC06A
2745m

