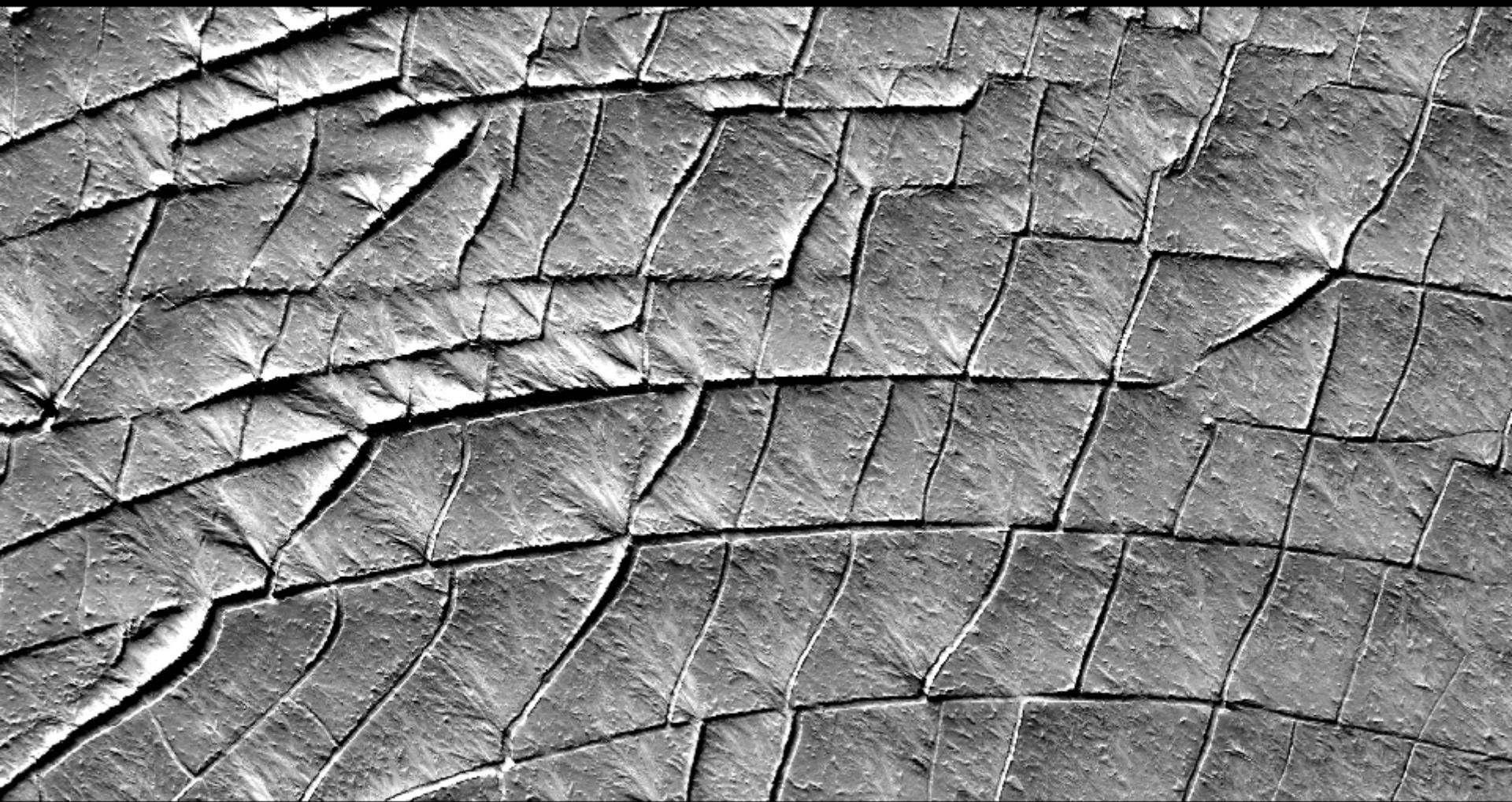
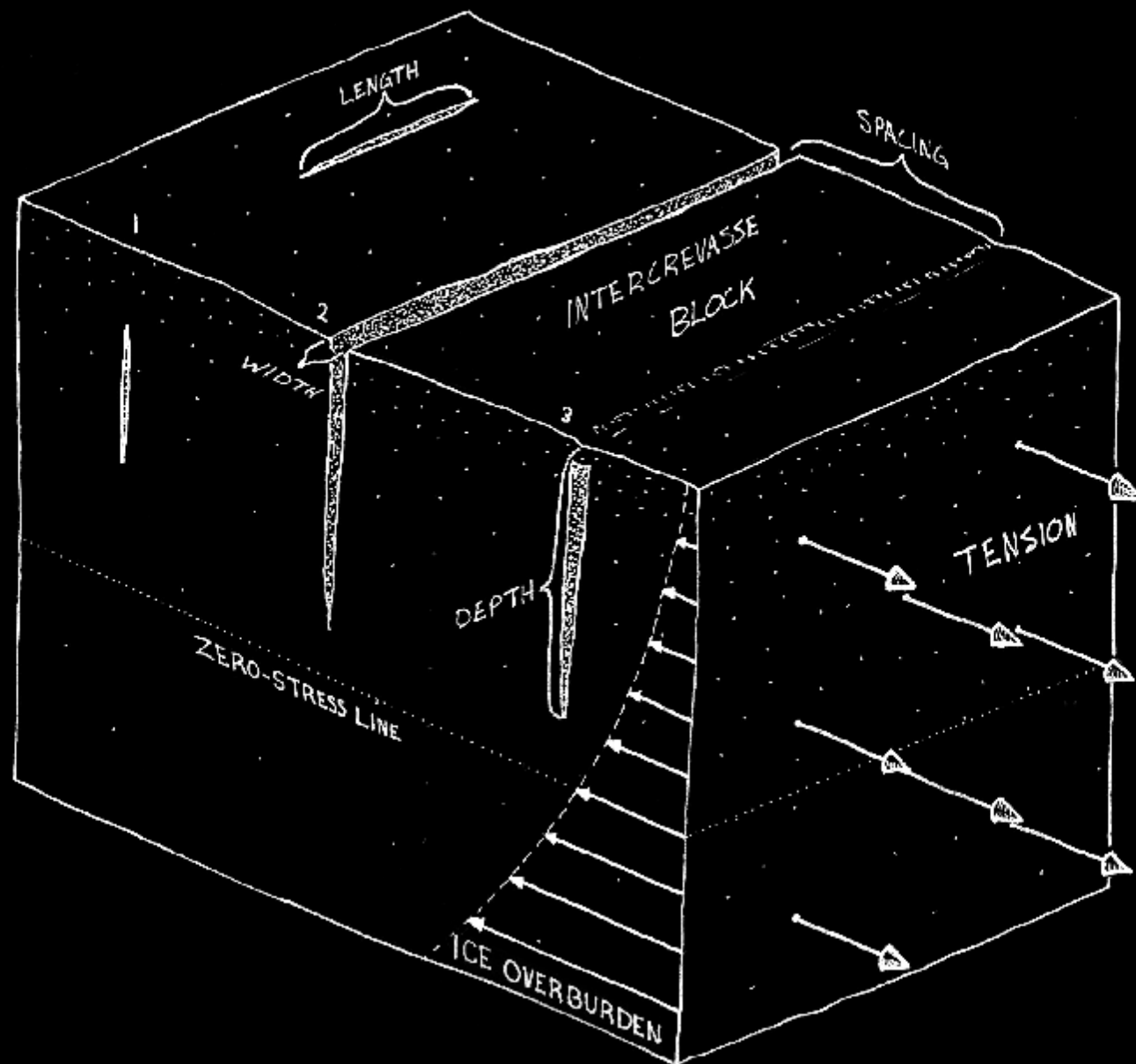


# Crevasses Forming in Glazed Surfaces Across East Antarctica



Logan C. Byers, Leigh A. Stearns, C. J. van der Veen  
The University of Kansas

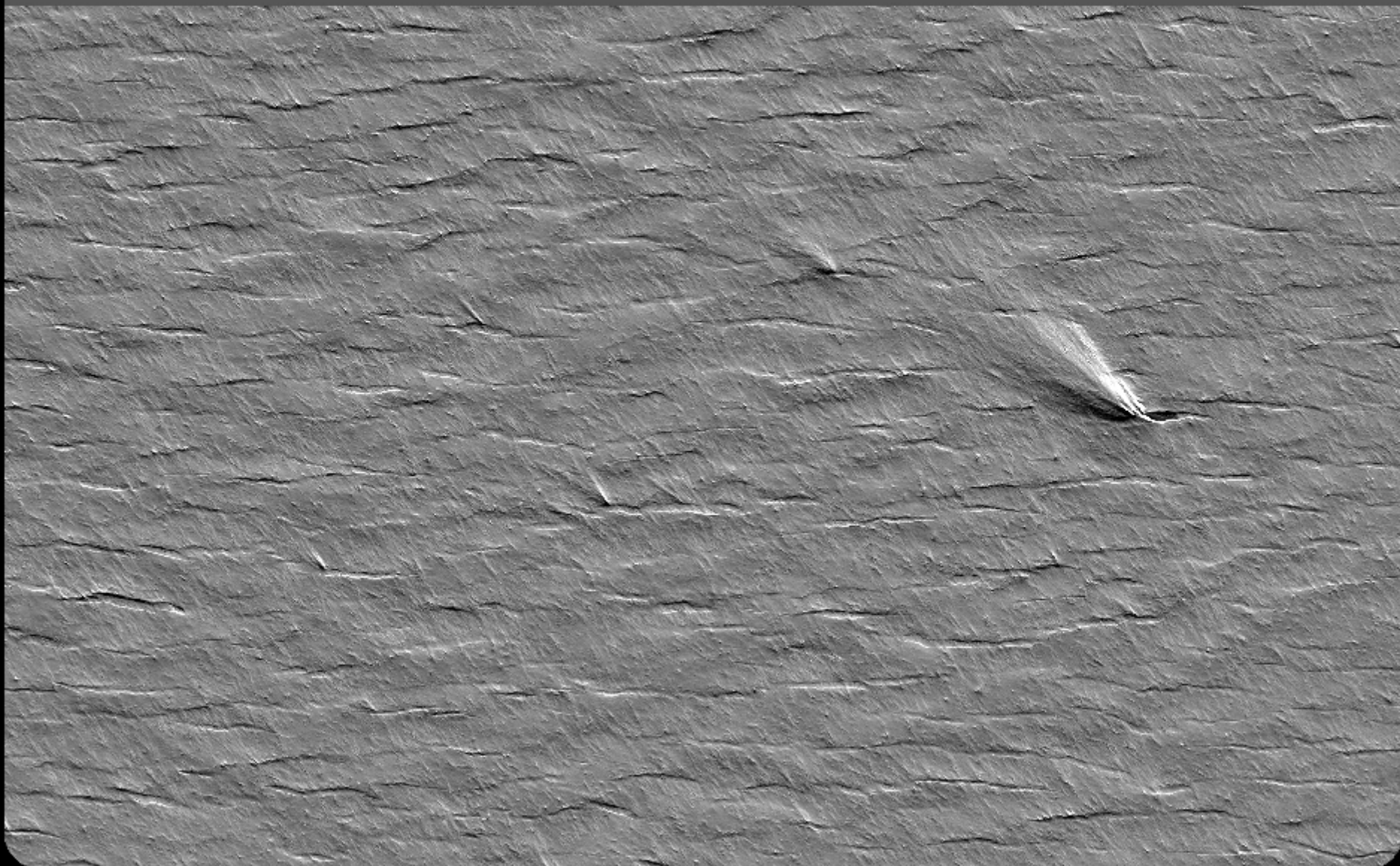
# Classical Model of Crevasses



# Byrd Glacier, 200 km Inland

Proposed Twin-Otter Landing Site

250 m



# Research Questions

Do Byrd crevasses form with subglacial lake activity

Where are crevasses forming in Byrd

What are physical conditions controlling crevassing

Why are crevasses present under low strain rates

Are Byrd's crevasses unique in some way

Does classical model of crevasse formation hold

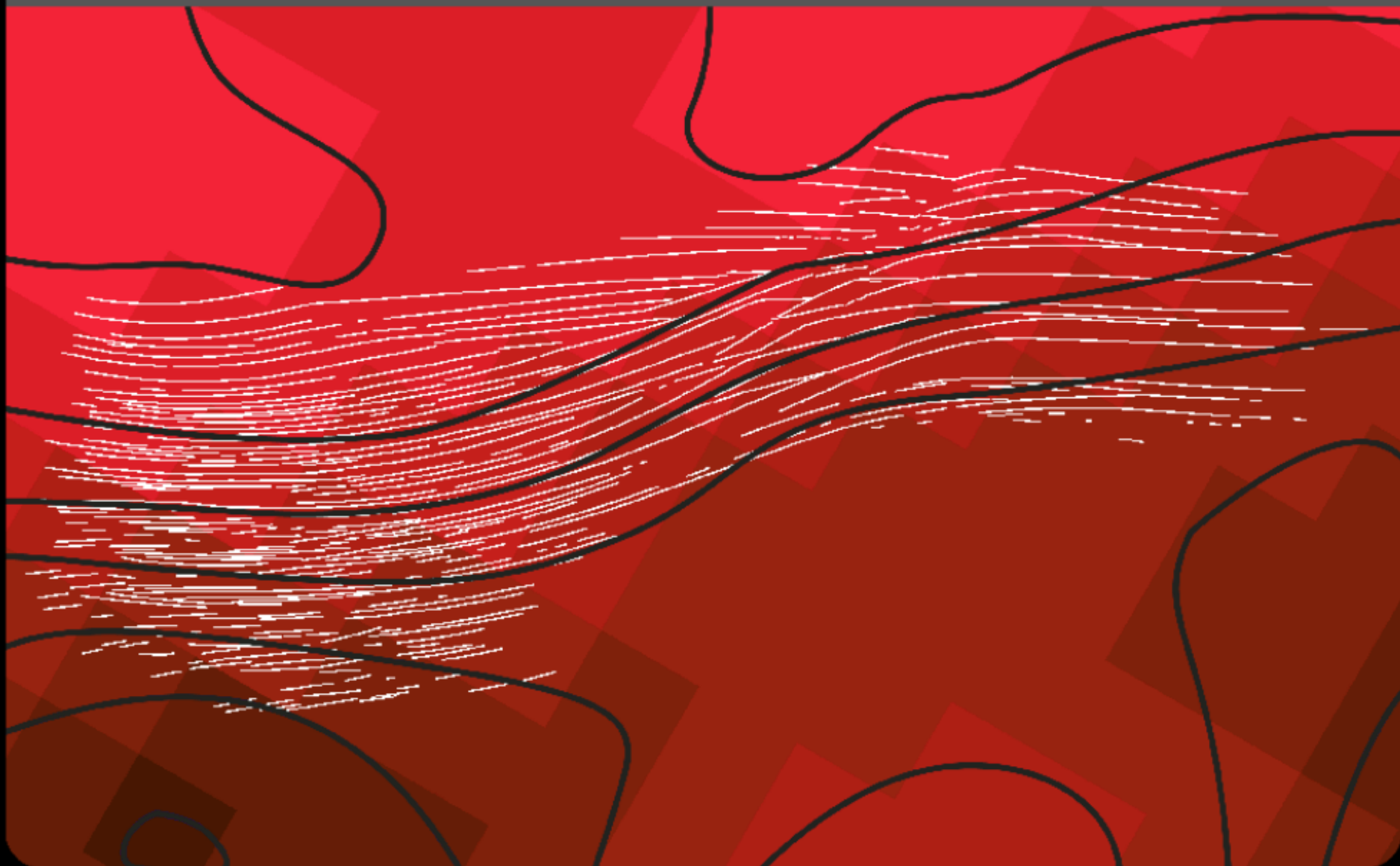
Is Linear Elastic Fracture Mechanics valid



# Low Stress Crevasses

Surface Elevation (5m Contours), Crevasses

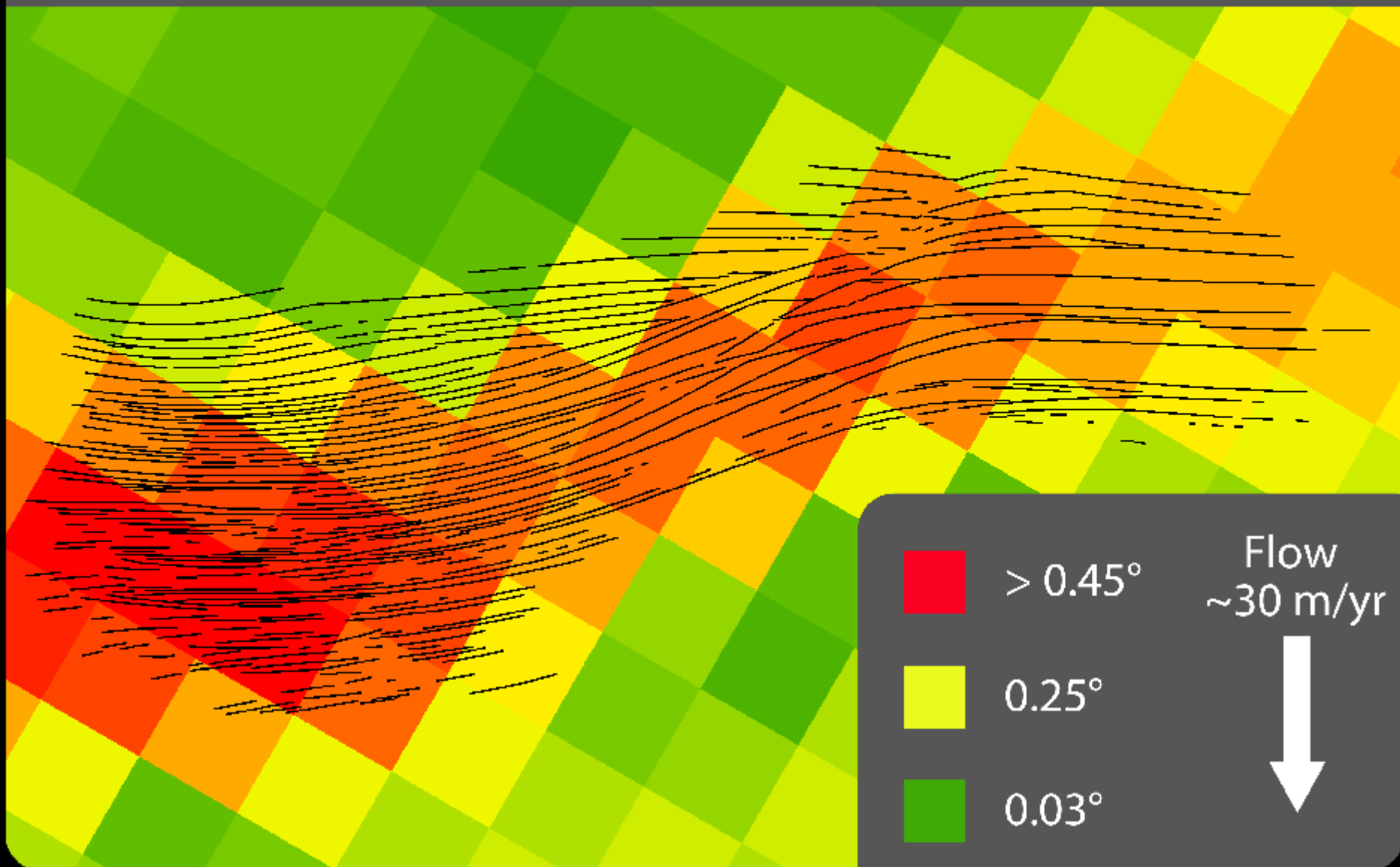
2 km



# Low Stress Crevasses

Surface Slope, Crevasses

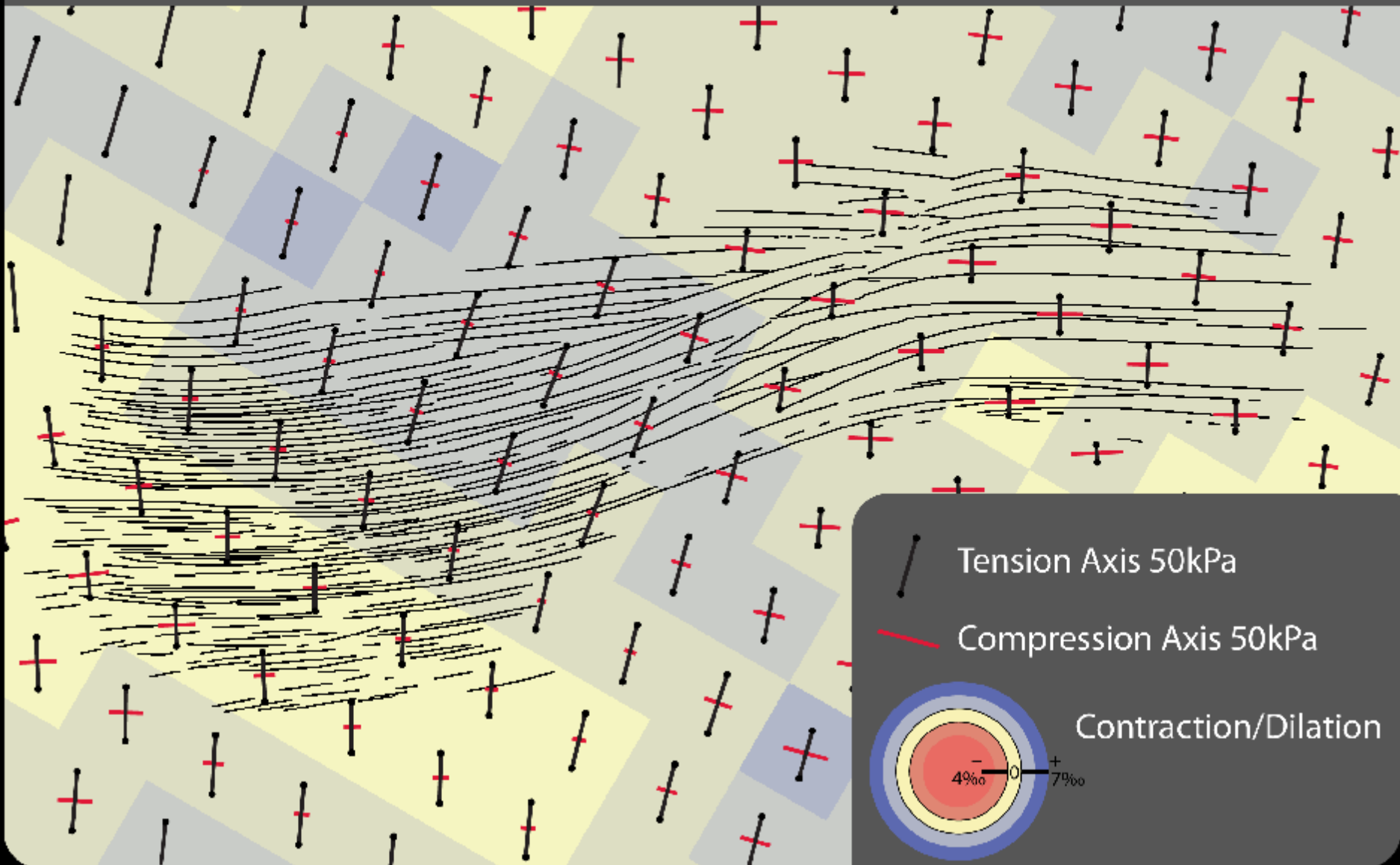
2 km



# Low Stress Crevasses

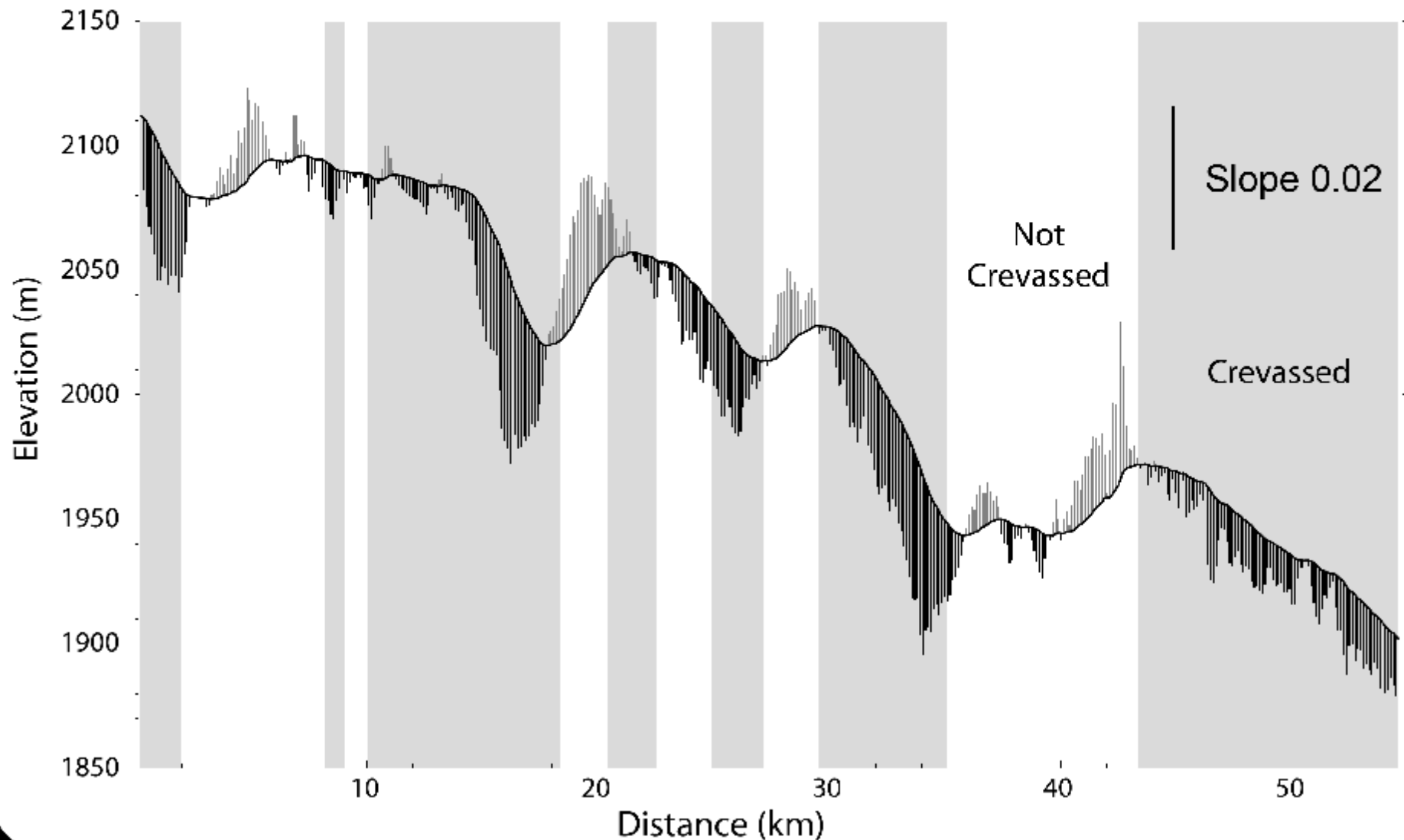
Area Strain, Crevasses, Stress Axes

2 km



# Along Flow Surface Topography

Surface Slope Superimposed, 64x V.E., 250 km Inland

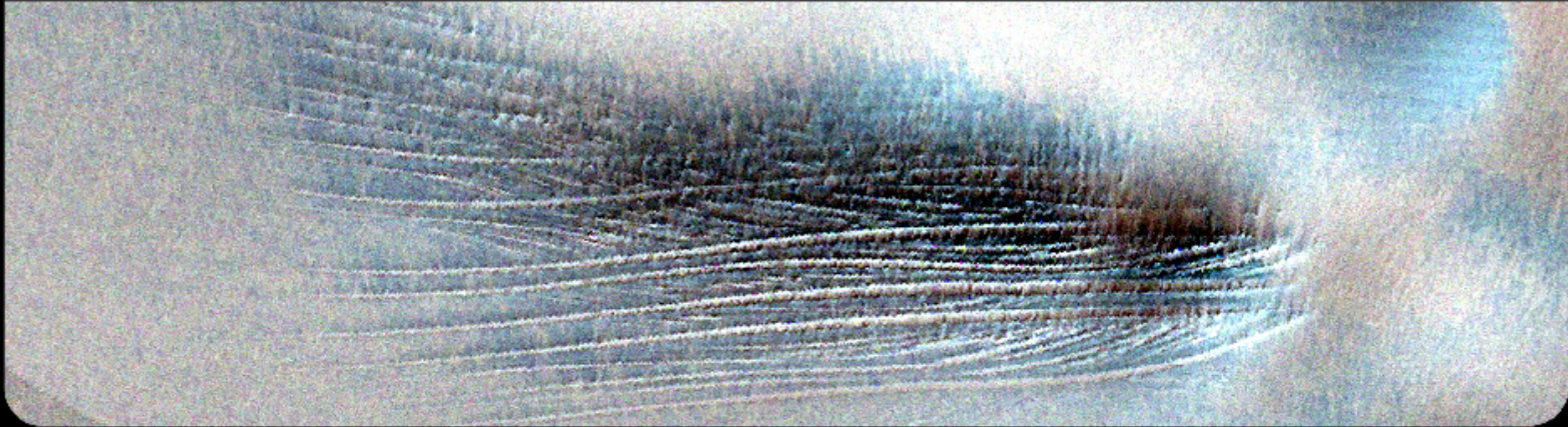




# Crevasse Appearance

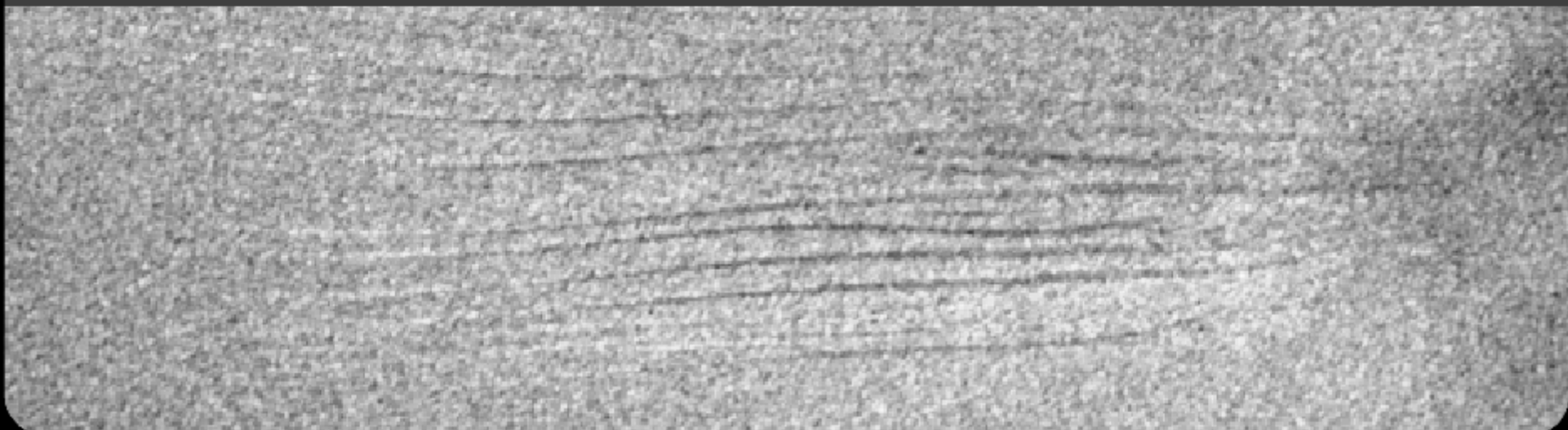
LIMA False Color 3x Stretch, Intensity-Adjusted

3 km



RADARSAT AMM-1, Intensity-Adjusted

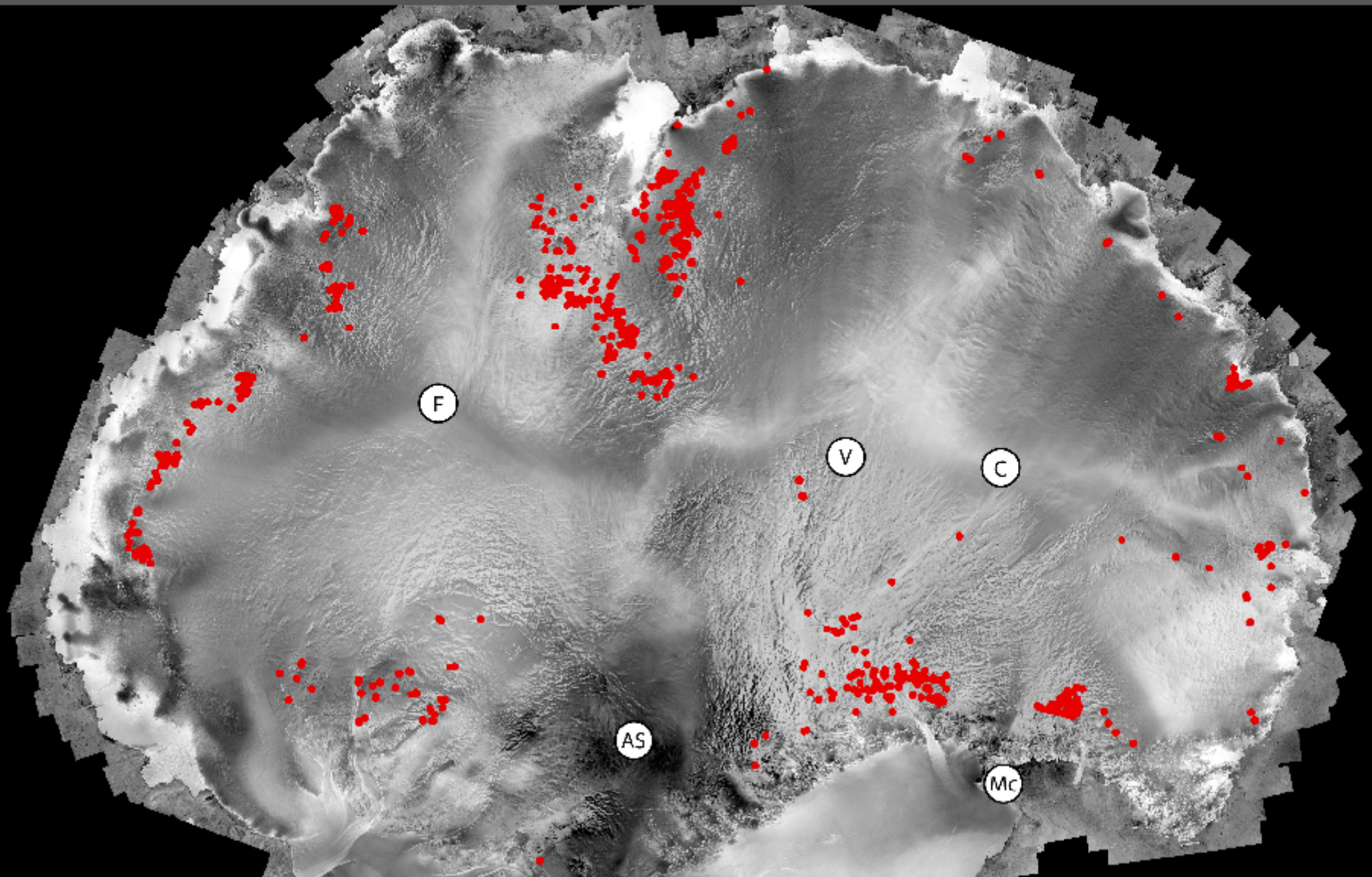
3 km





# Crevasse Map of East Antarctica

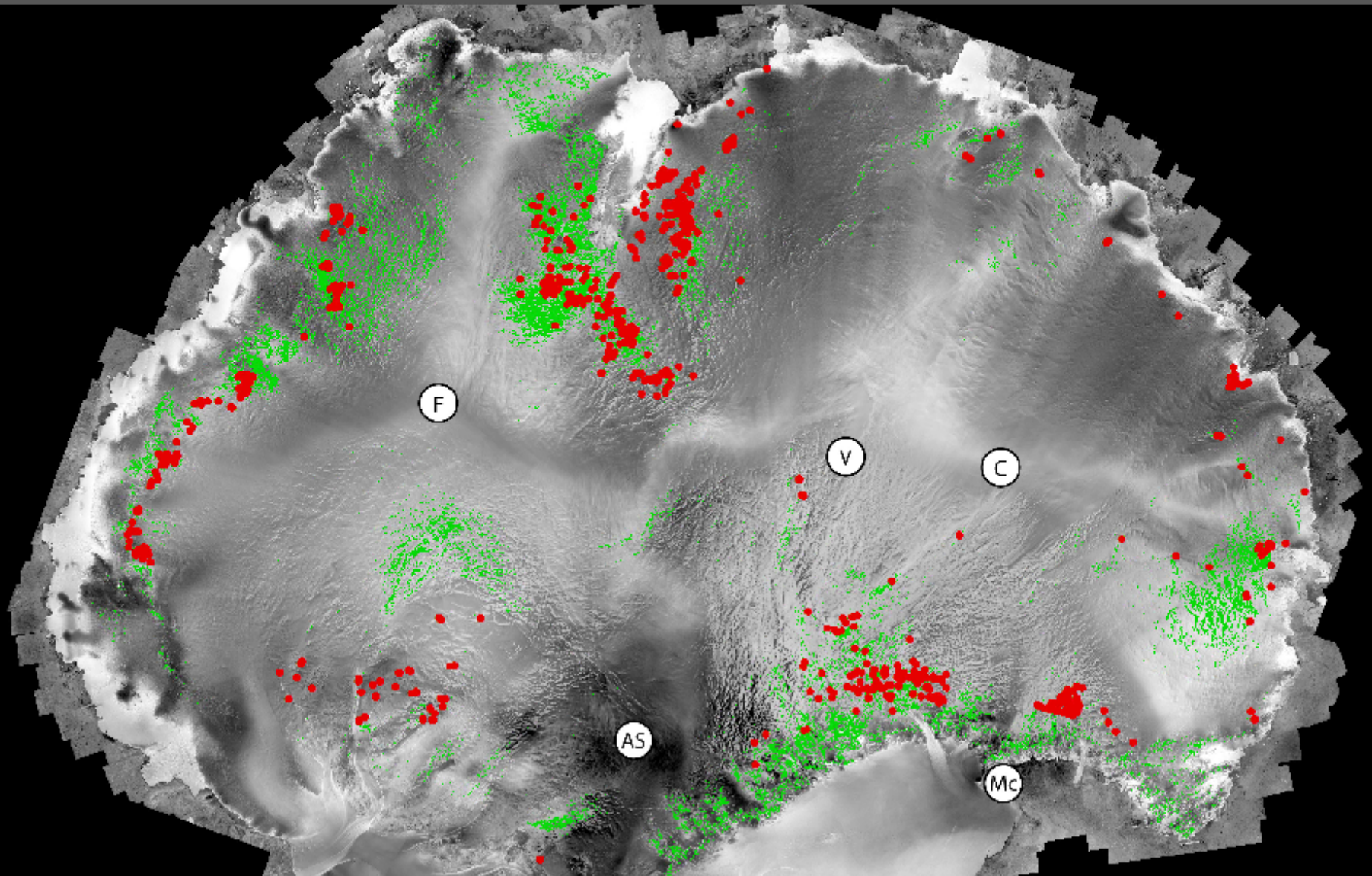
RADARSAT AMM-1, Research Bases





# Crevasse Map of East Antarctica

RADARSAT AMM-1, Research Bases, Wind-Glaze (Scambos et al, 2012)

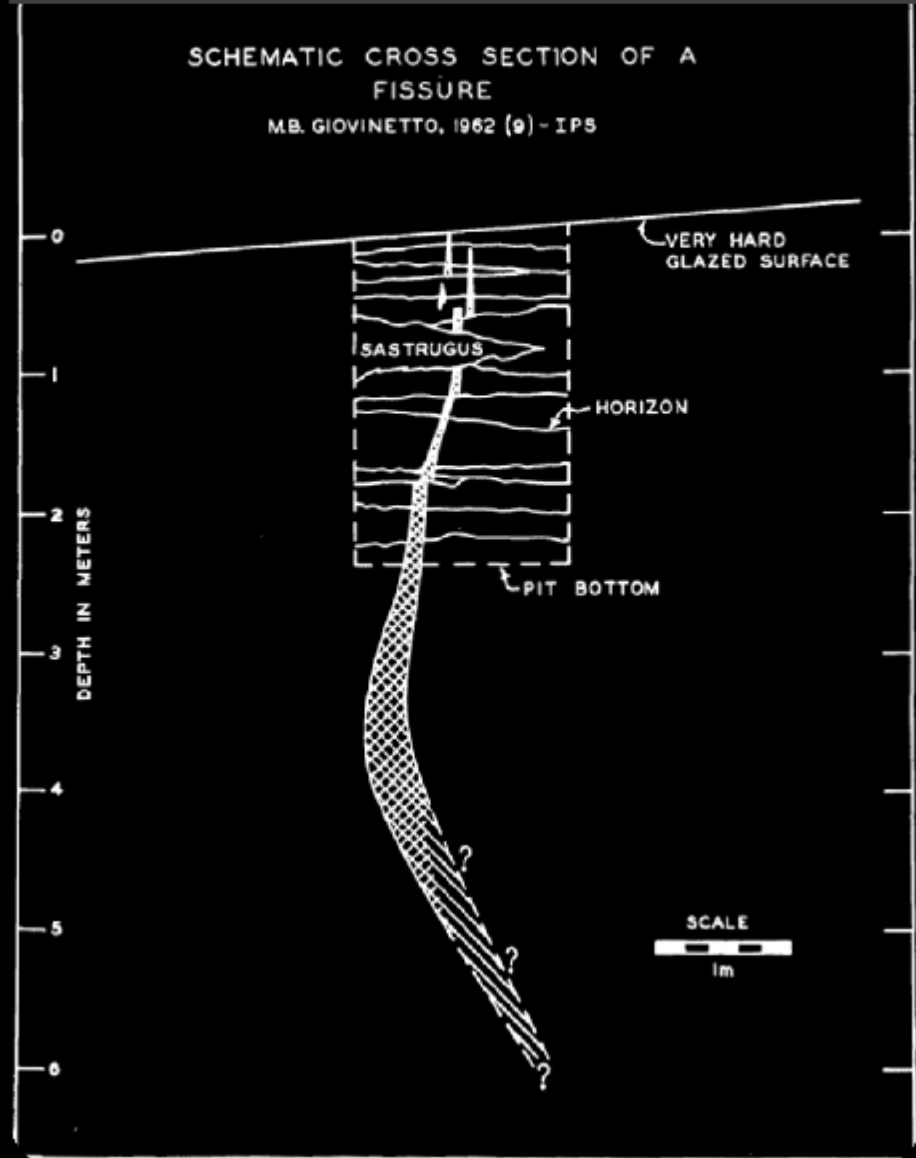


# Surface Cracks

**Macro-crack:** Severinghaus et al, 2010



**Fissure:** Giovinetto, 1969



# Future Work

## Continued Research

**Basal Hydrology & Topography**

**Controls on Glazed Surfaces**

**Acquire New Velocity Maps**

**Polygonally Patterned Ice**

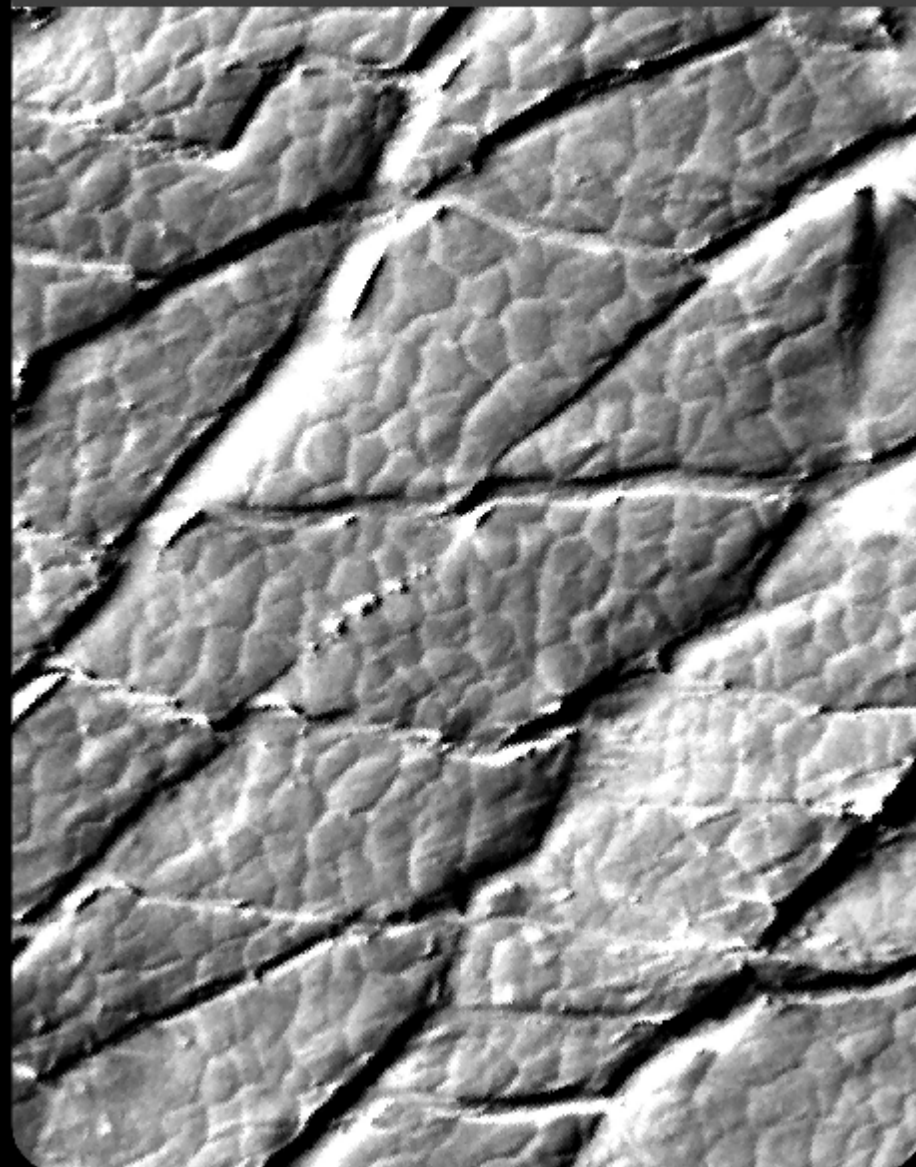
**Internal Firn Mass Balance**

**Feedback Loops**

**Cold Firn Strength**

## Polygonal Patterns

100 m





# Acknowledgements

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kansas geology