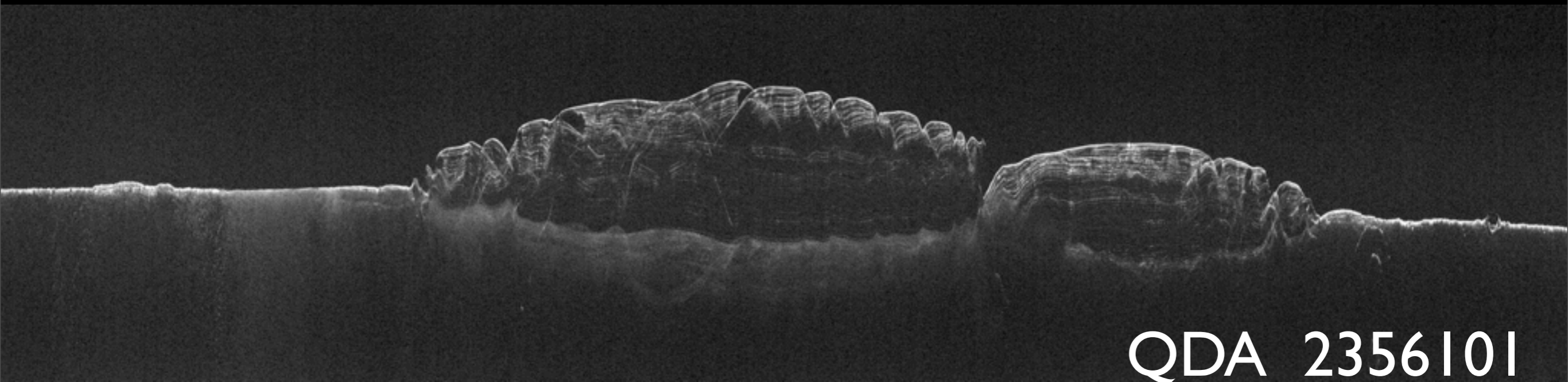


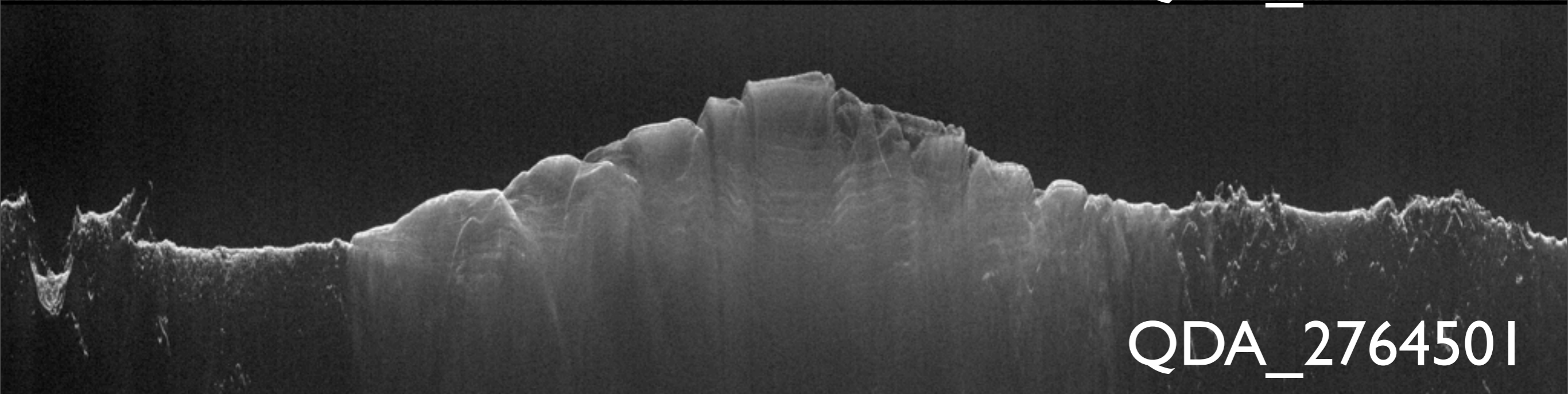
Polar Studies with SHARAD

Isaac Smith
SHARAD workshop, pre-LPSC 2014

Polar Studies with SHARAD



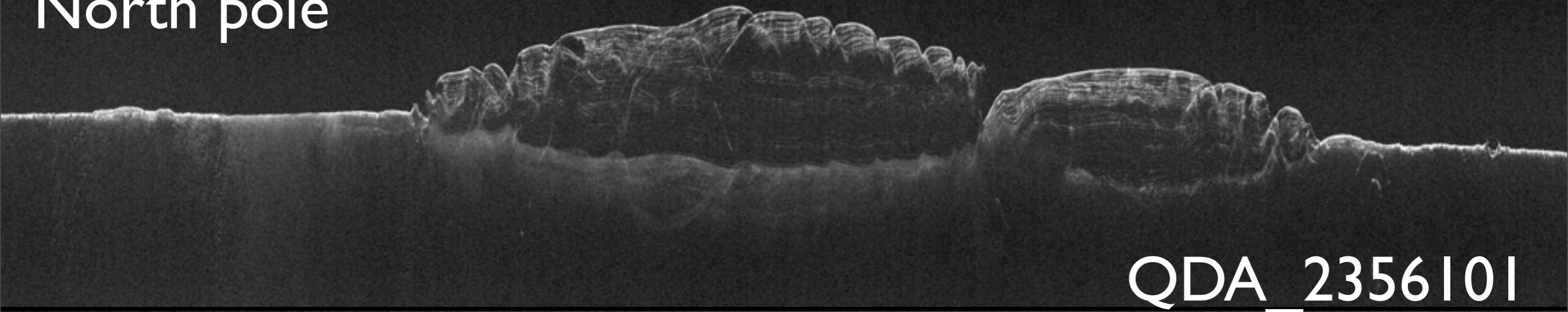
QDA_2356101



QDA_2764501

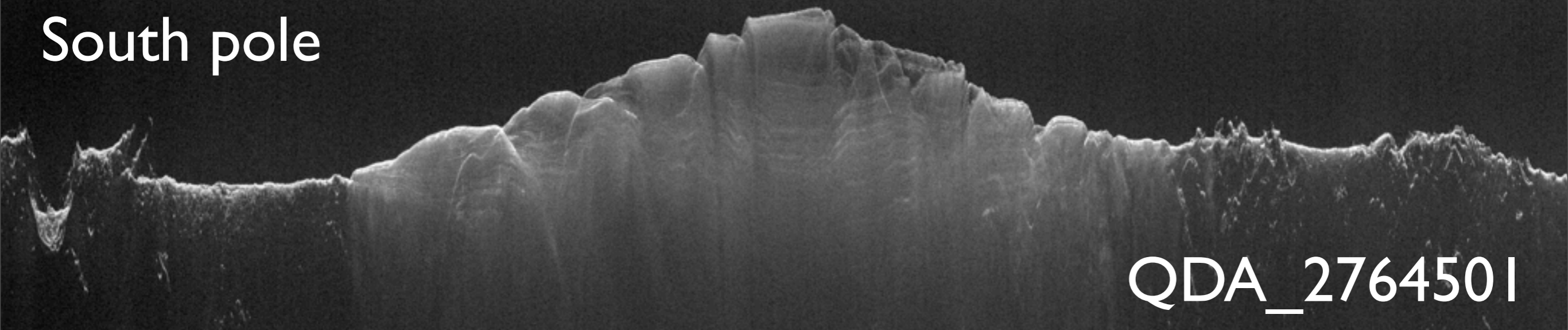
Polar Studies with SHARAD

North pole



QDA_2356101

South pole



QDA_2764501

- North Pole
- South Pole

North pole

Generally more reflectors

South pole

More diffuse, reflectors
only in certain spots

- North Pole
- South Pole

North pole

Generally more reflectors

Bottom often detected

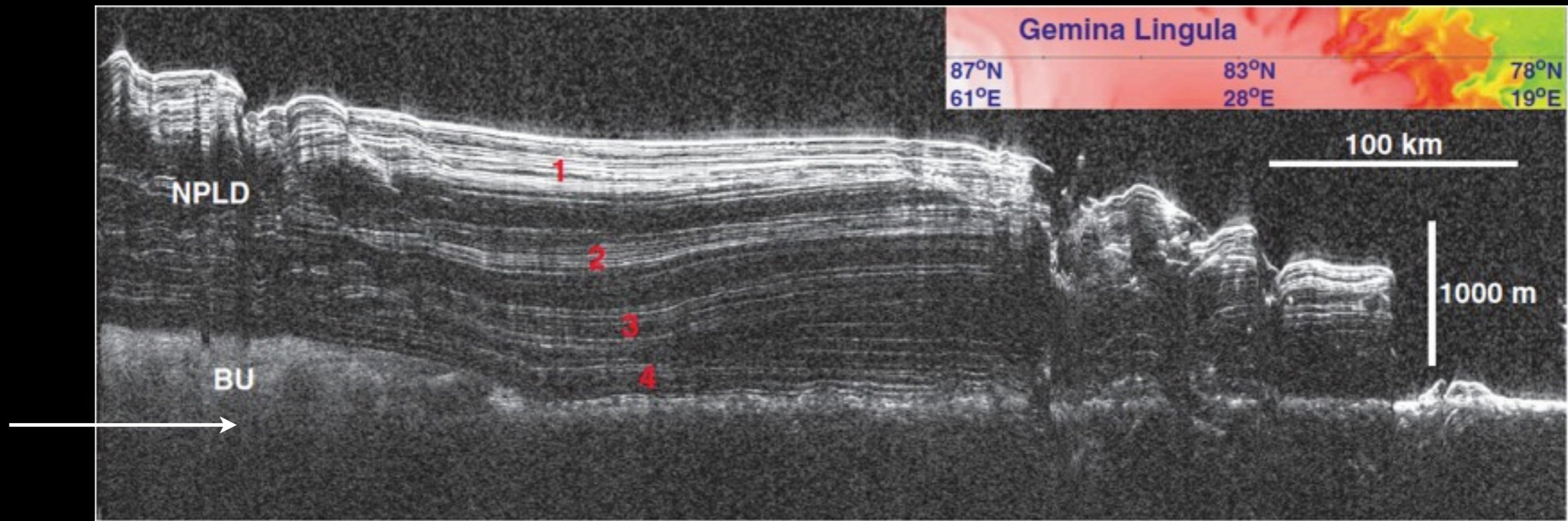
South pole

More diffuse, reflectors only in certain spots

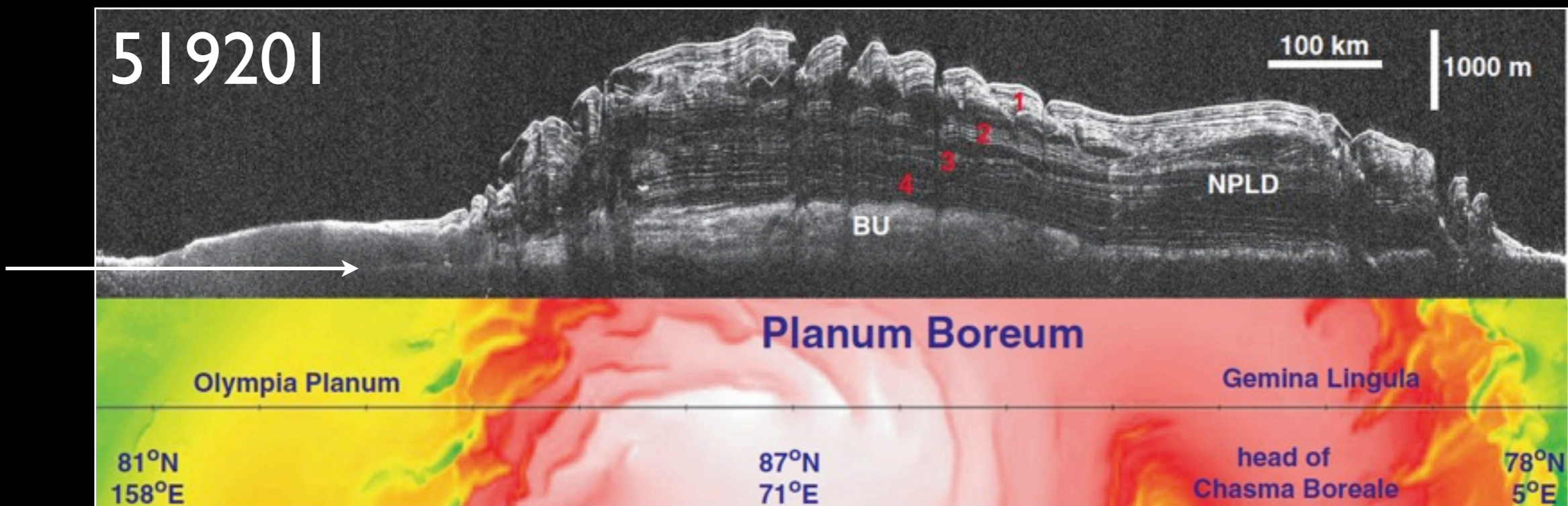
Bottom seldom detected

•North Pole

Phillips et al, 2008

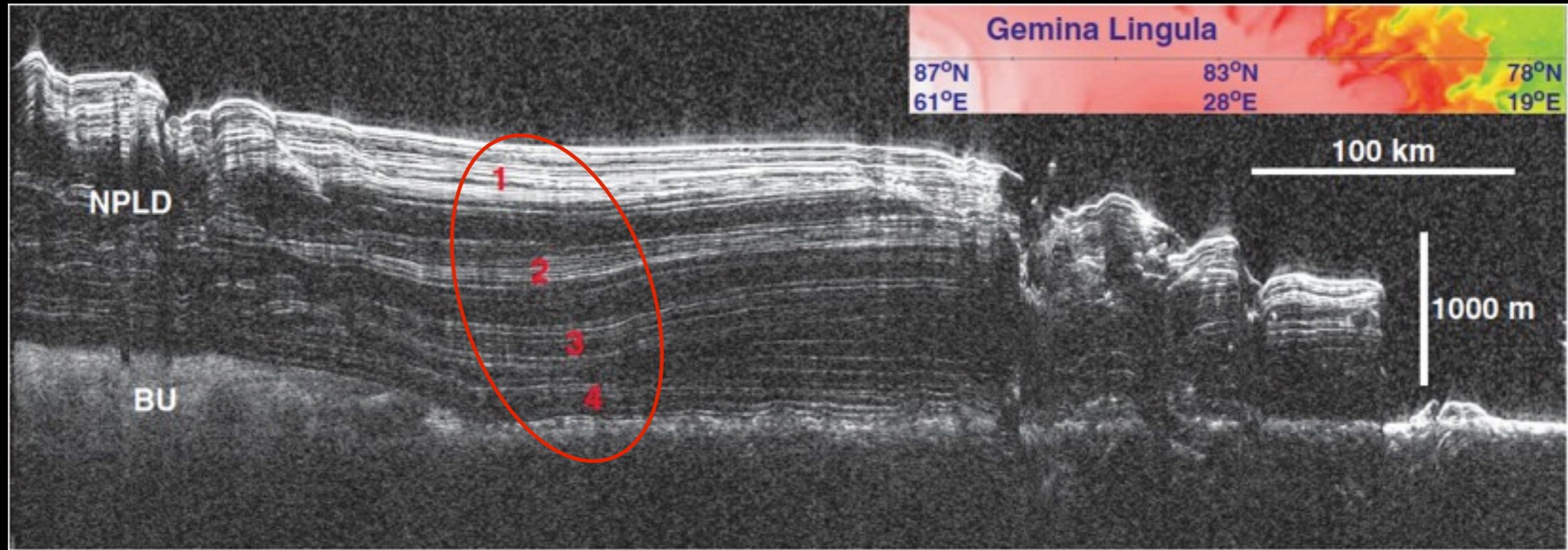


NPLD base is easily detected,
but Basal Unit is diffuse, and no BU bottom

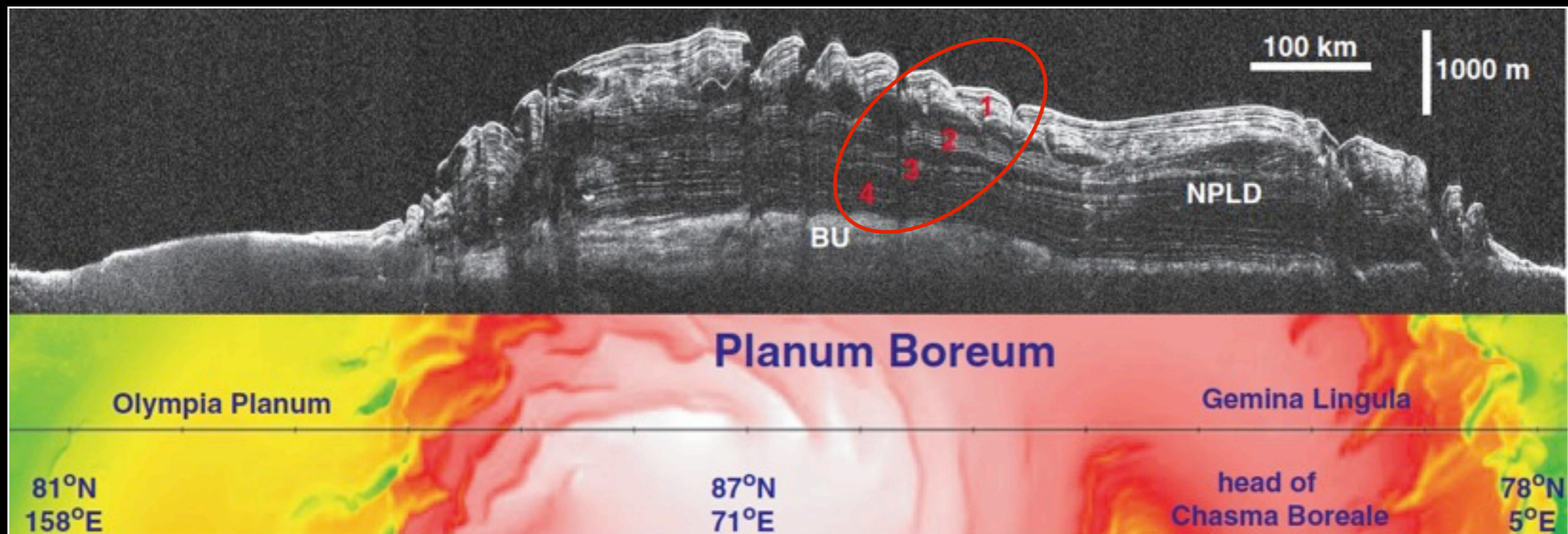


•North Pole

Phillips et al, 2008

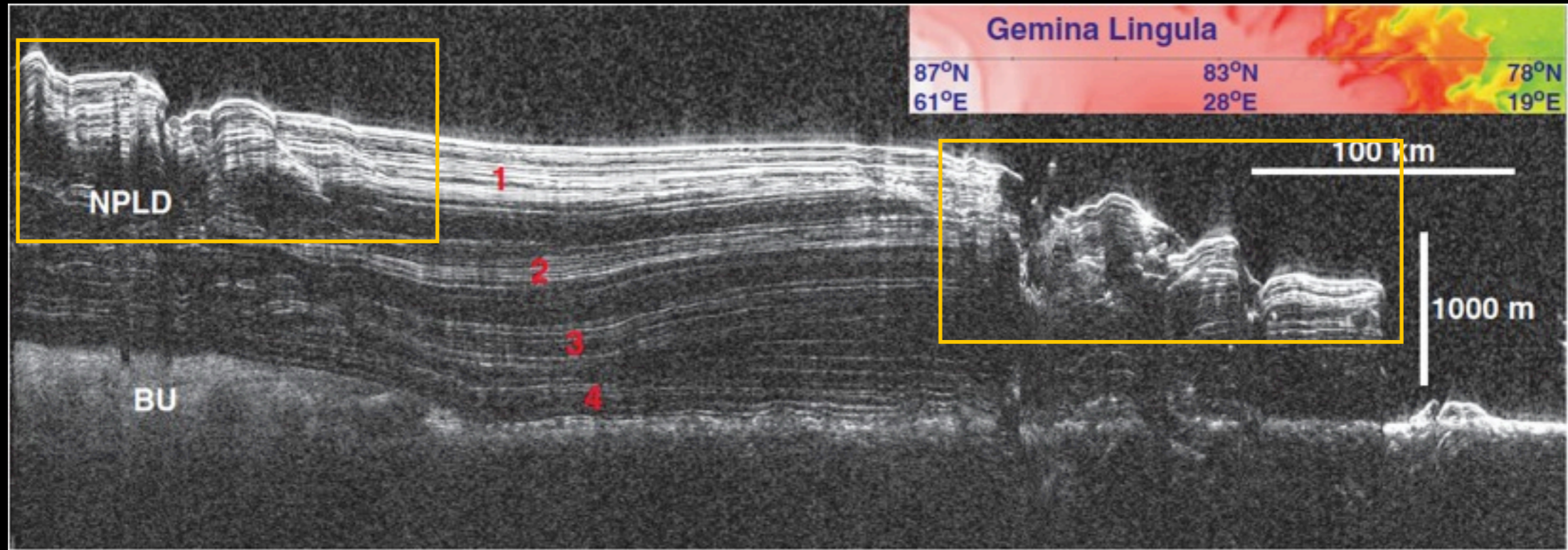


Packet / inter packet pattern
Seen over much of the N pole

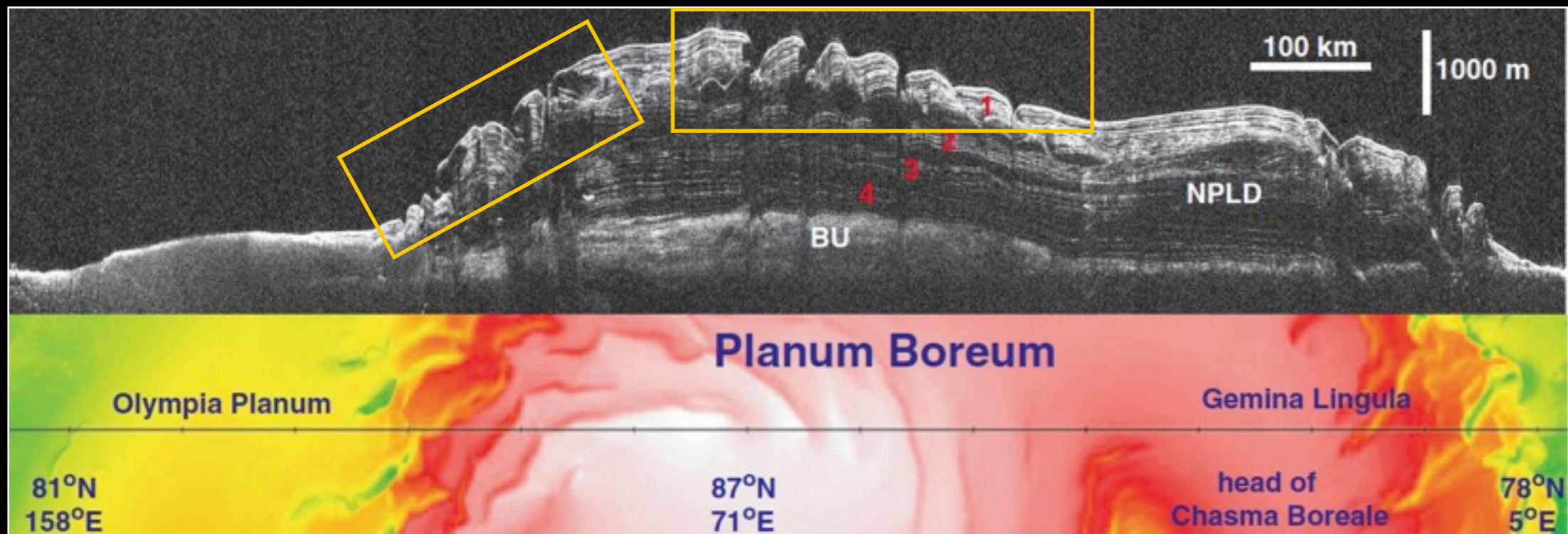


•North Pole

Phillips et al, 2008



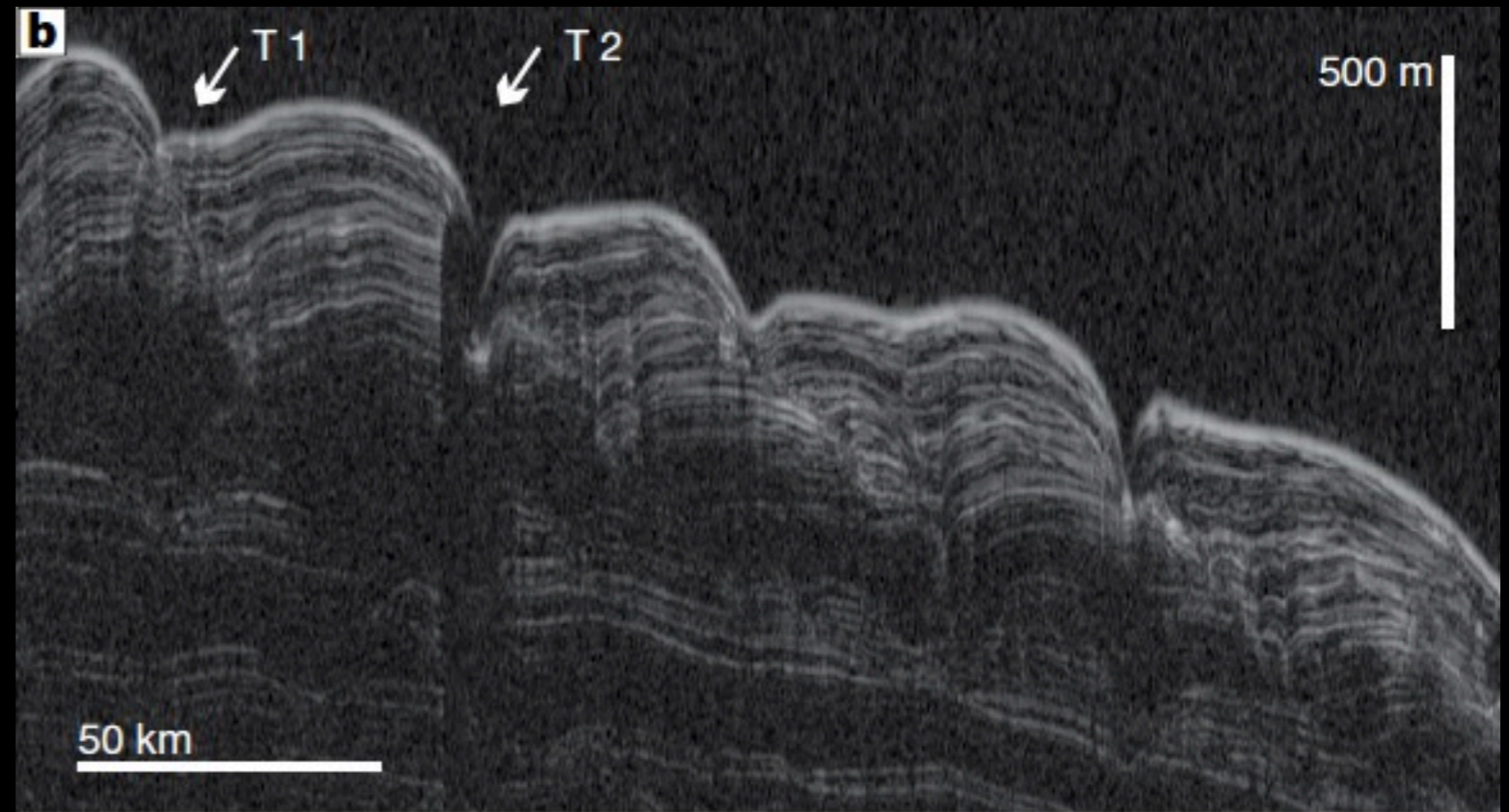
Sub- horizontal layering in lower 2/3
Discontinuities in the top 1/3



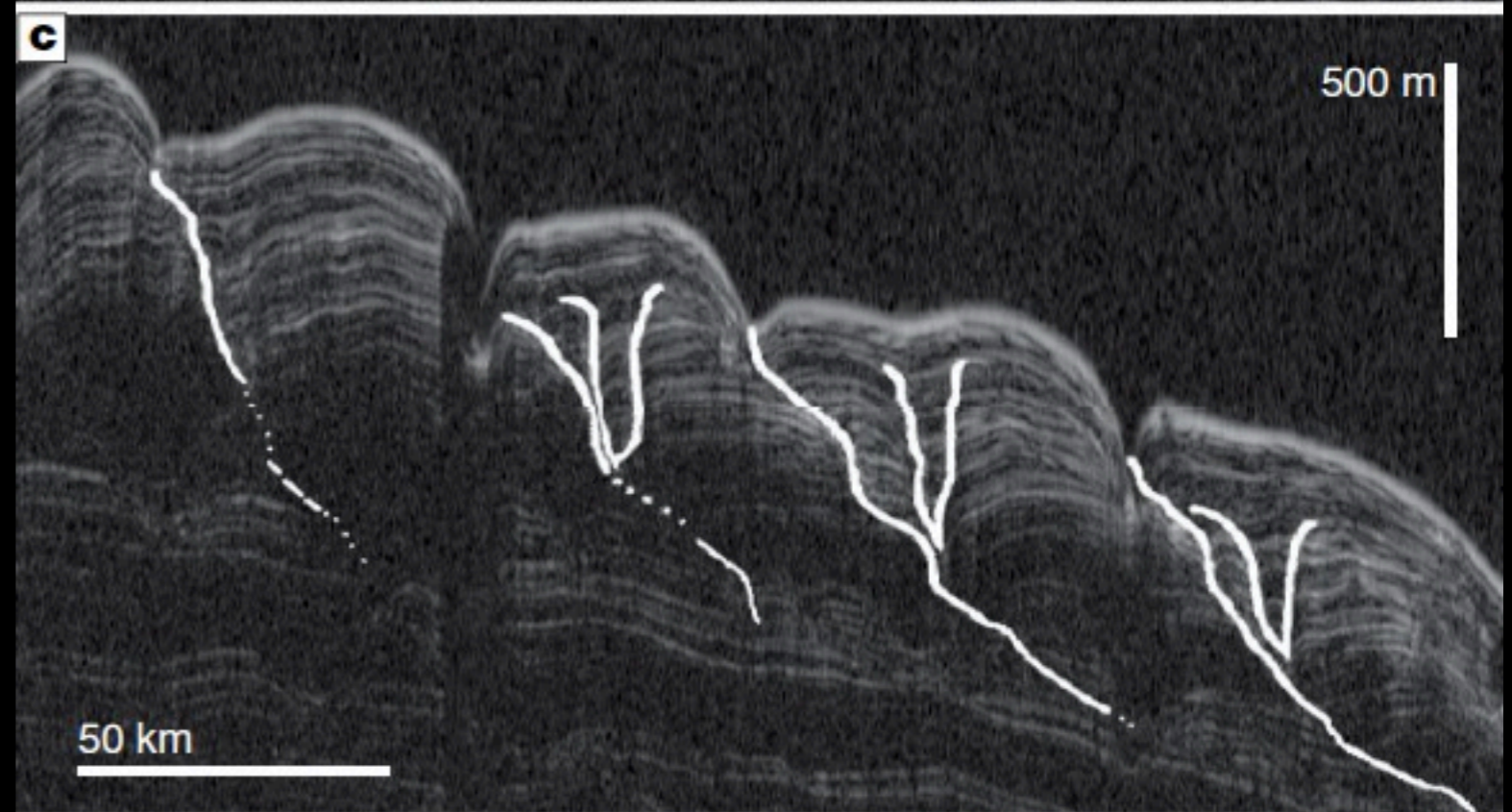
•North Pole

Smith et al, 2010

QDA_624701

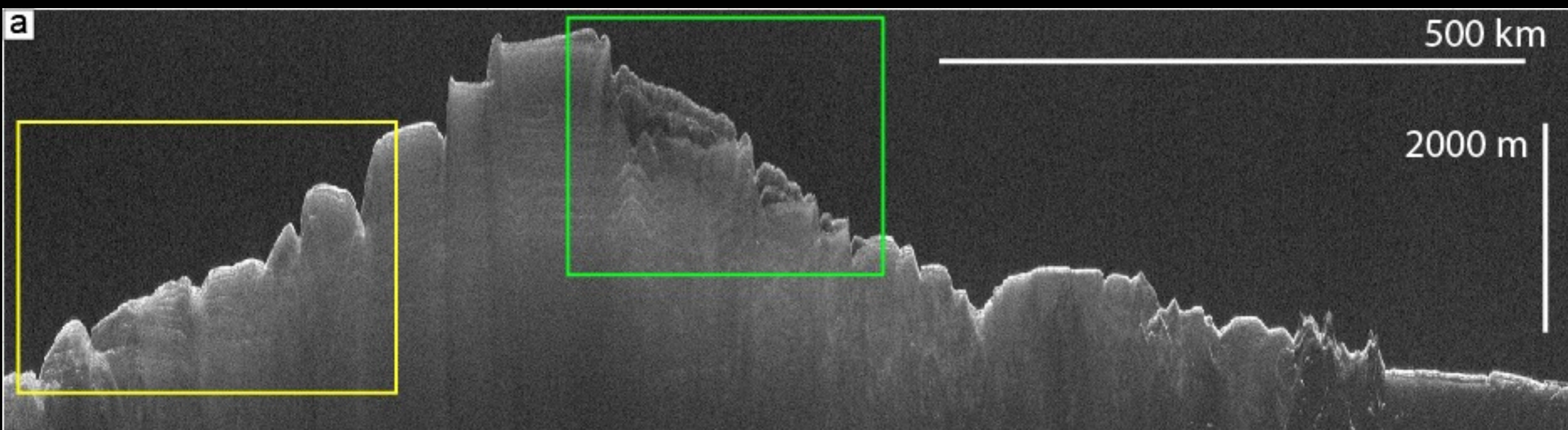
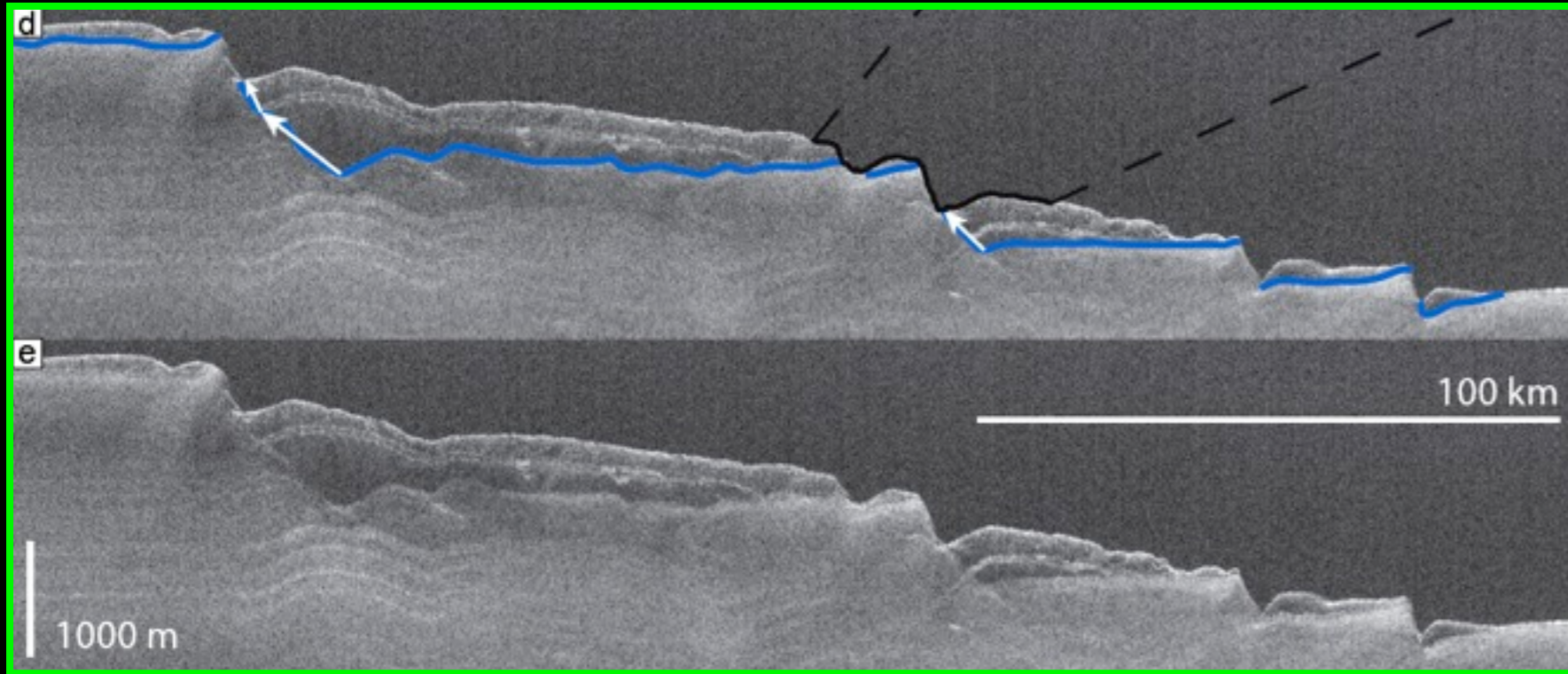
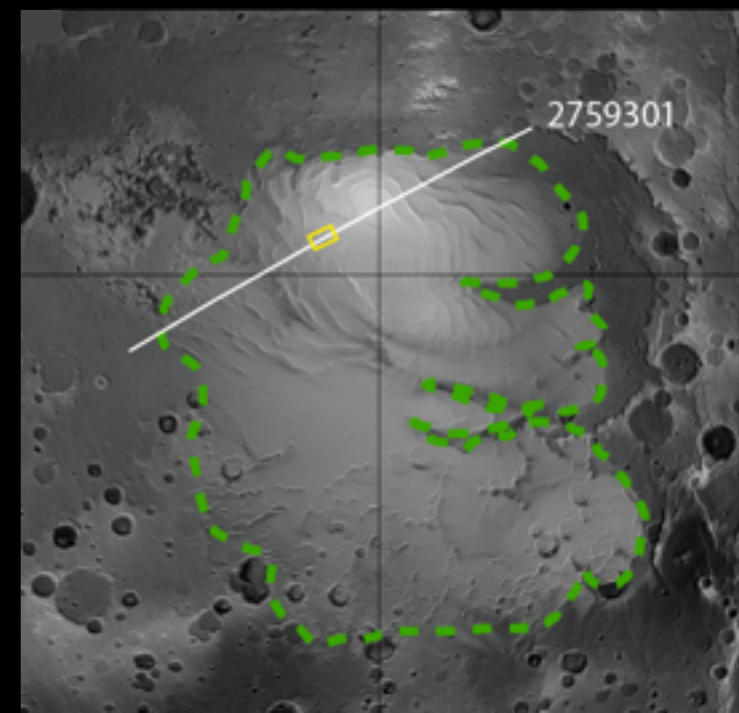


Discontinuities



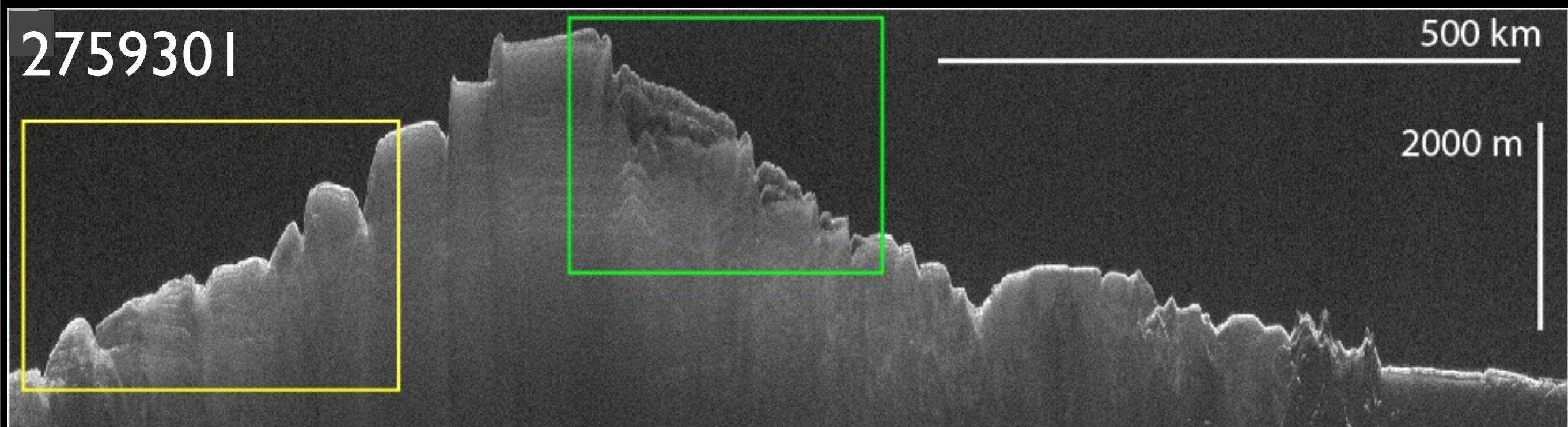
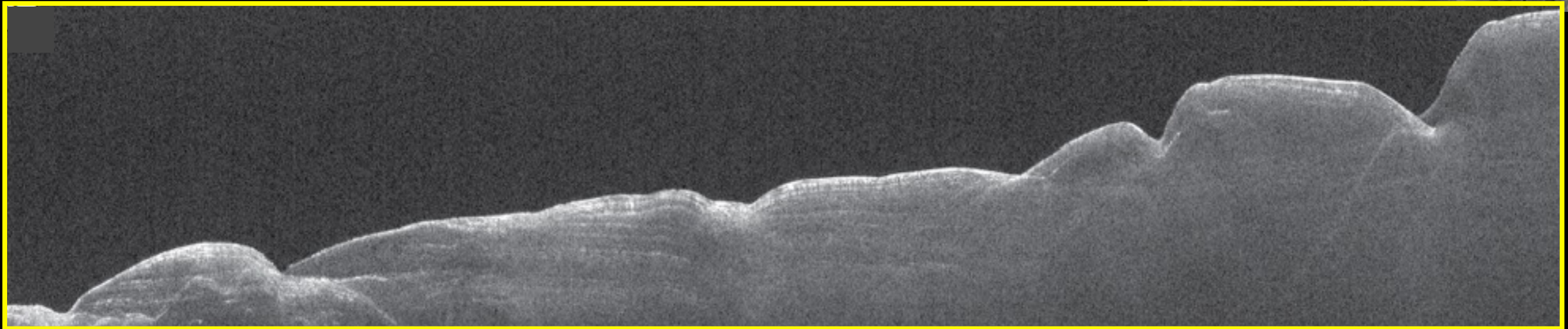
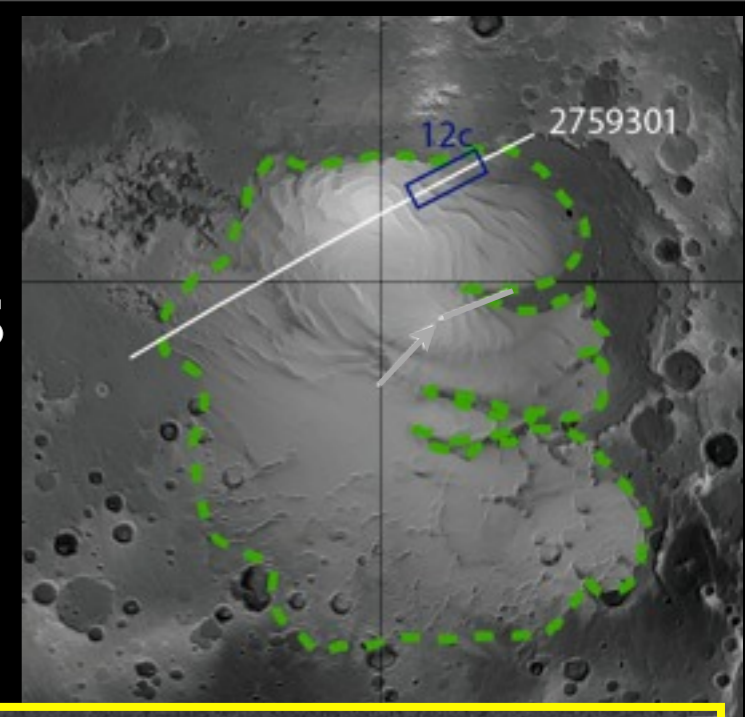
•South Pole

Australe Mensa has few reflectors



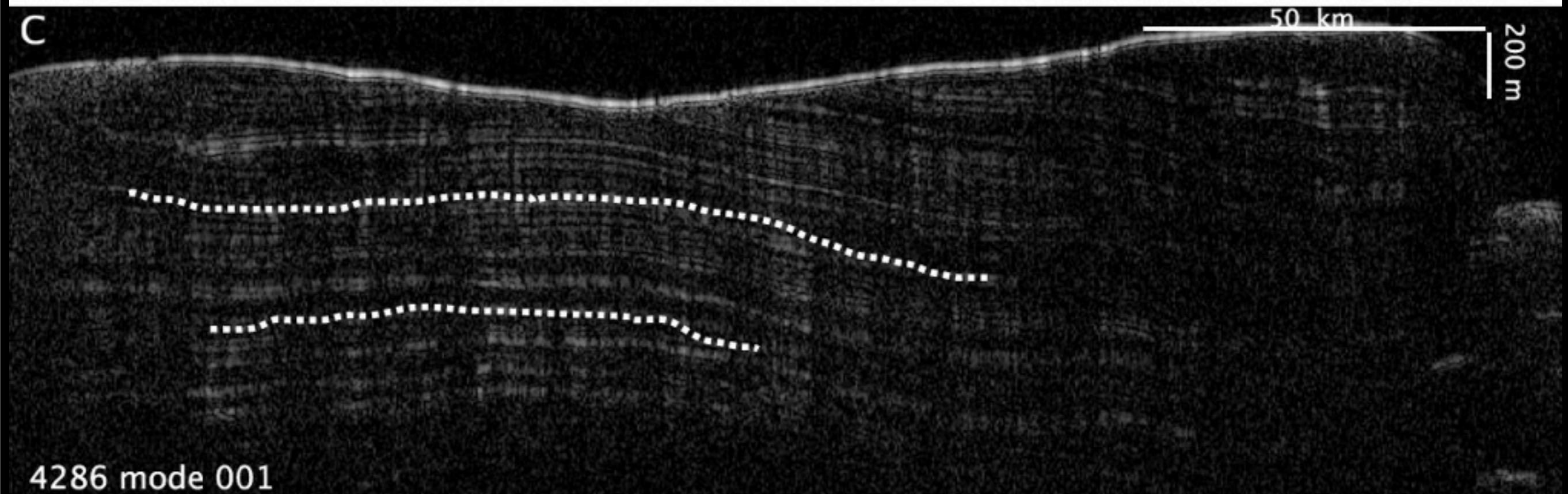
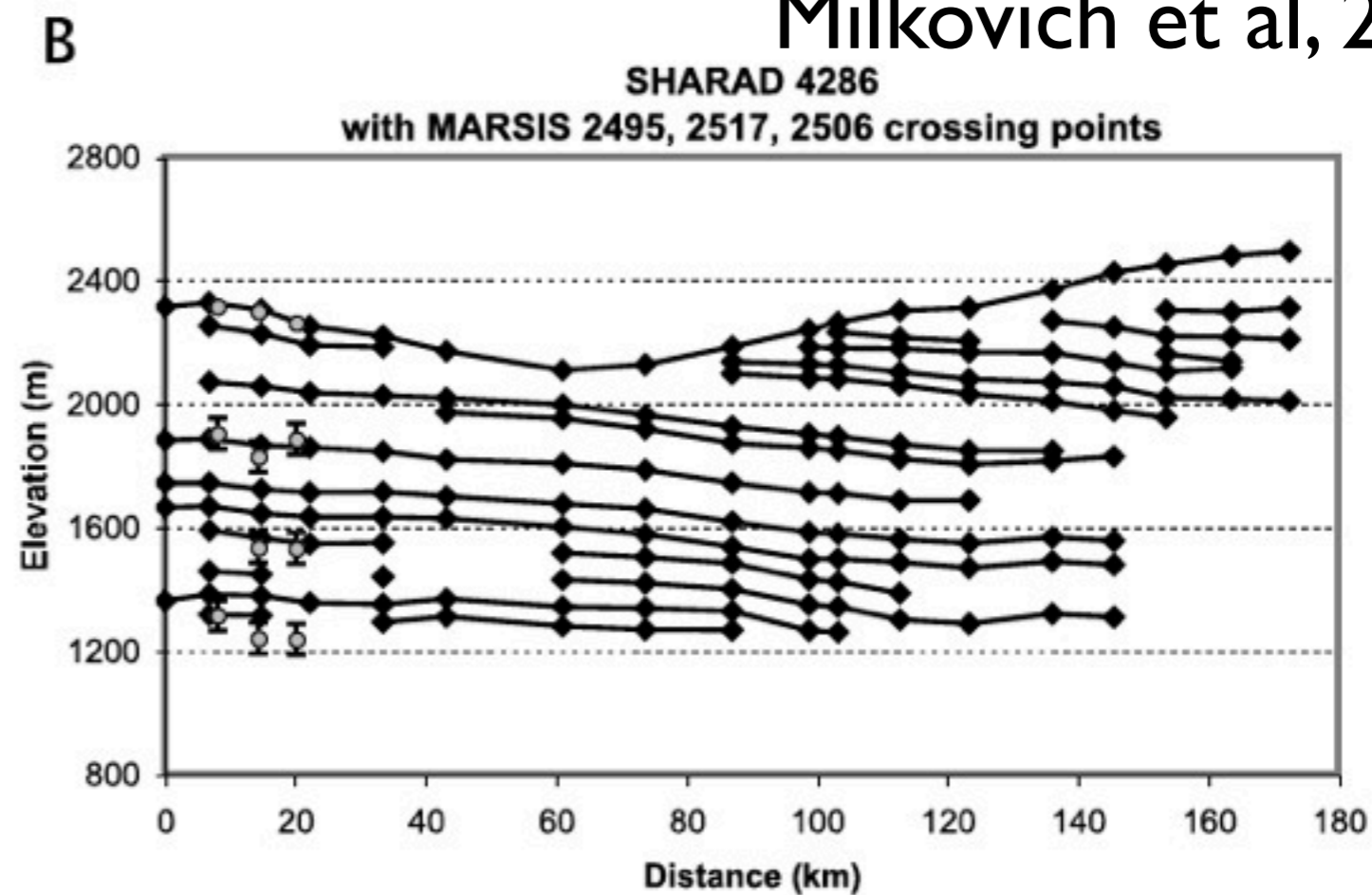
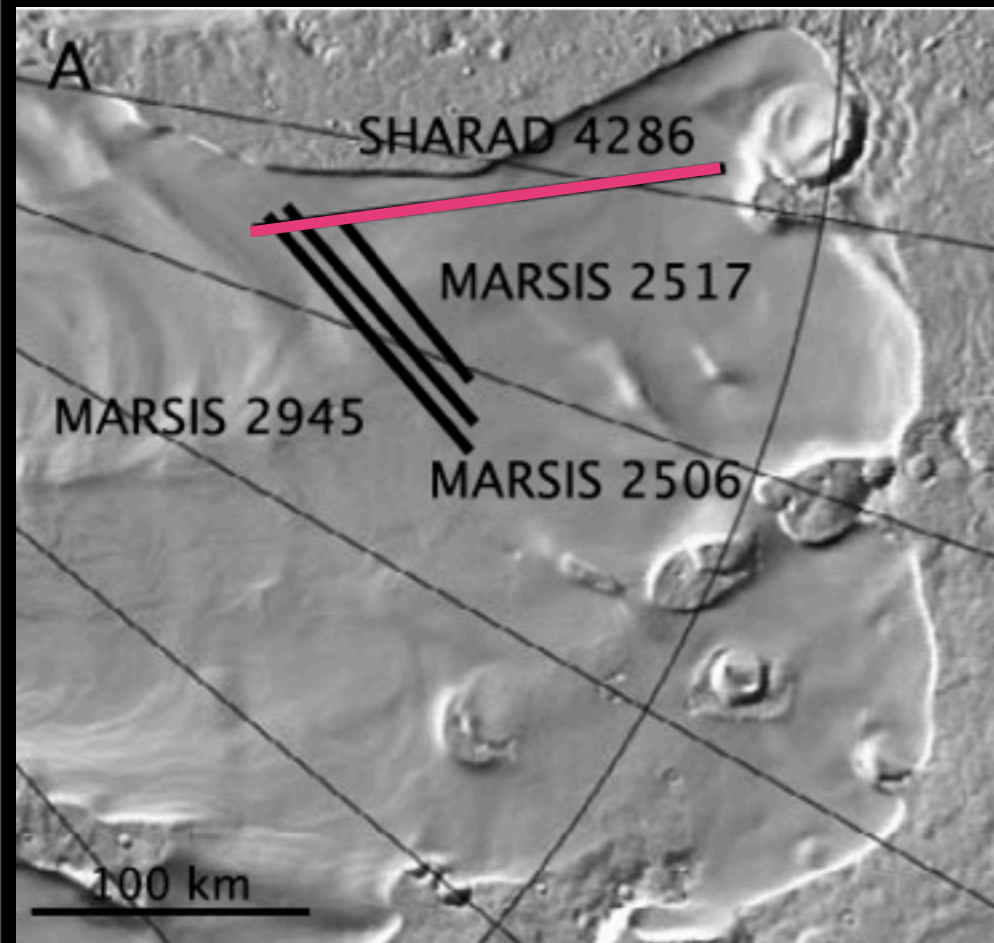
- South Pole

Australe Lingula has few reflectors



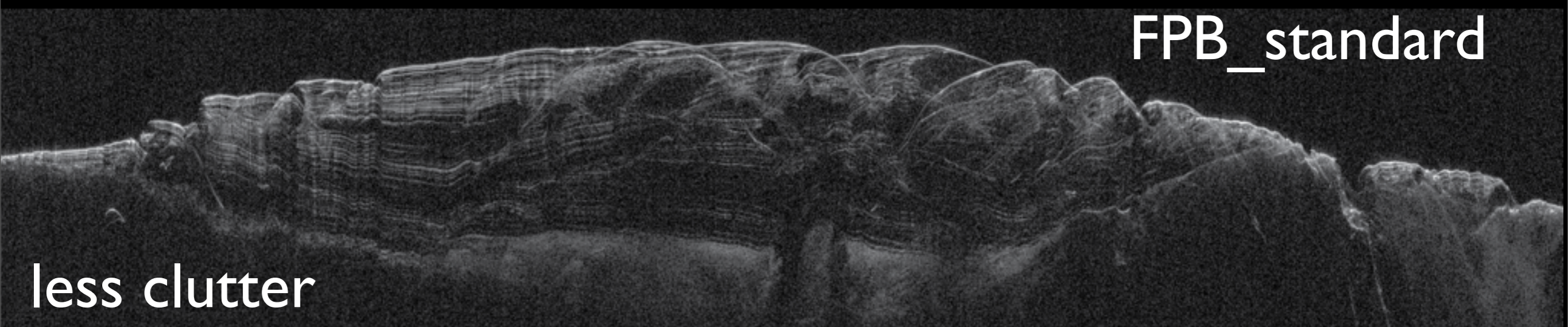
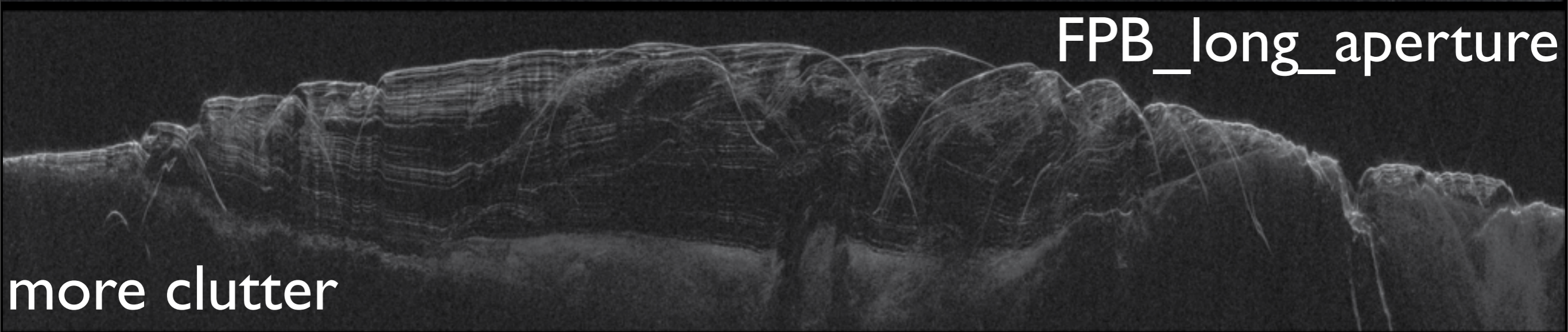
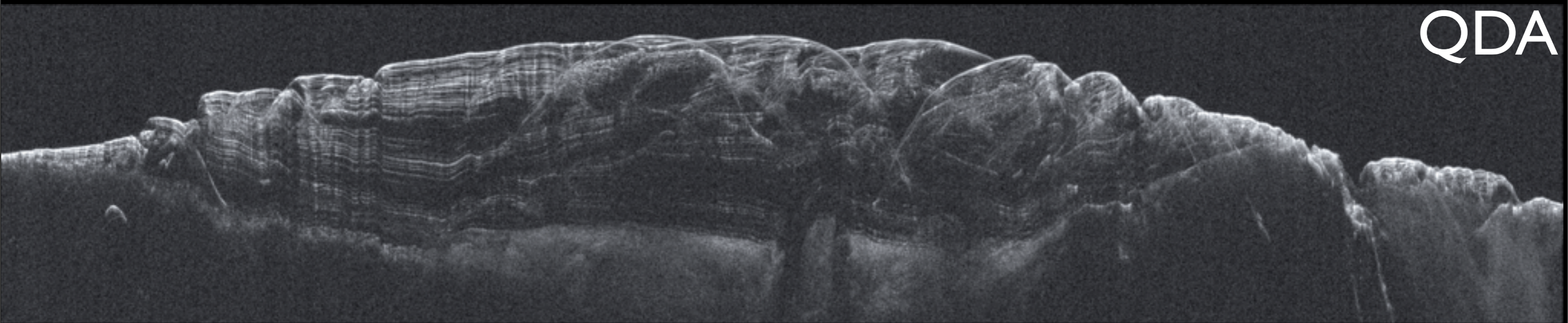
Promethia Lingula has abundant layers

Milkovich et al, 2009



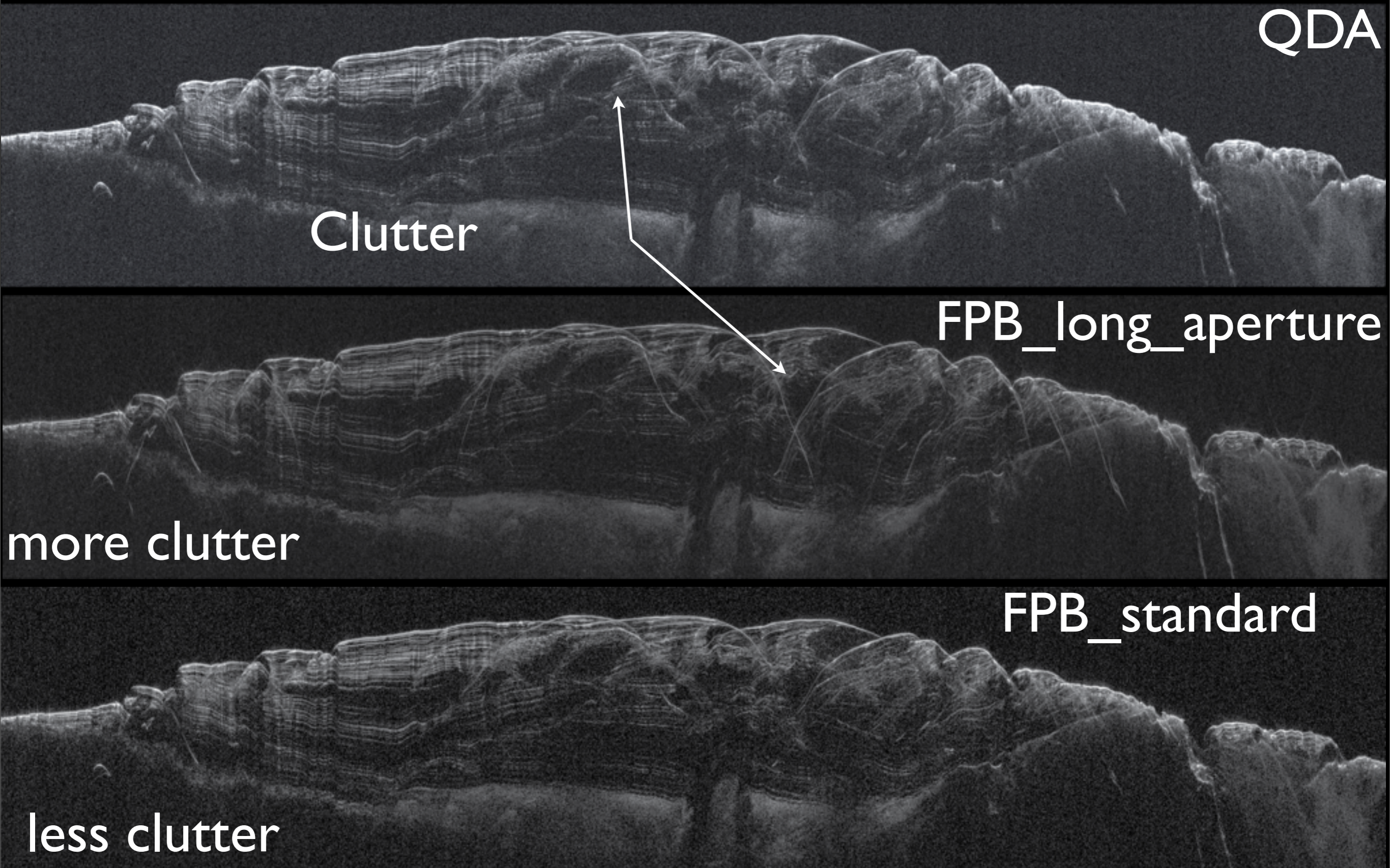
1873701

Optimized radar processing



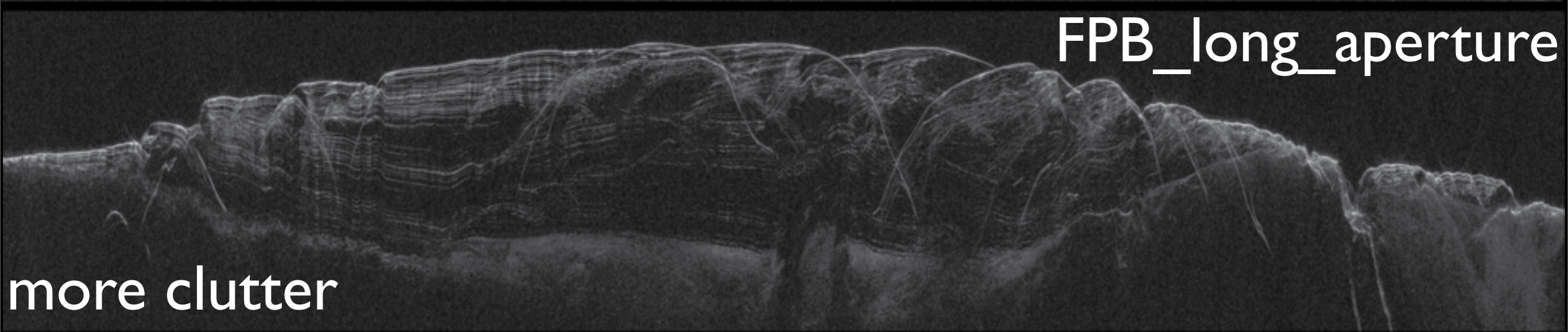
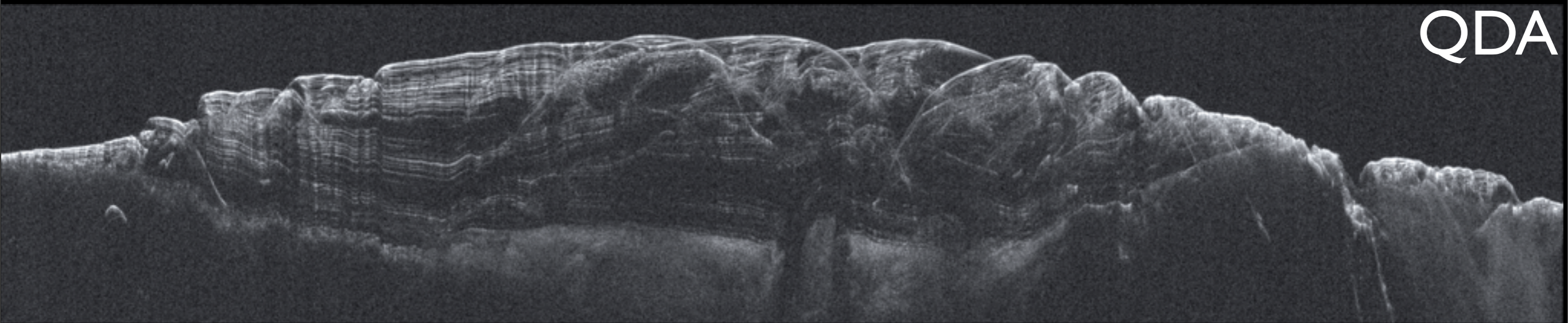
1873701

Optimized radar processing



1873701

Optimized radar processing



1873701

Optimized radar processing

QDA

artifacts

FPB_long_aperture

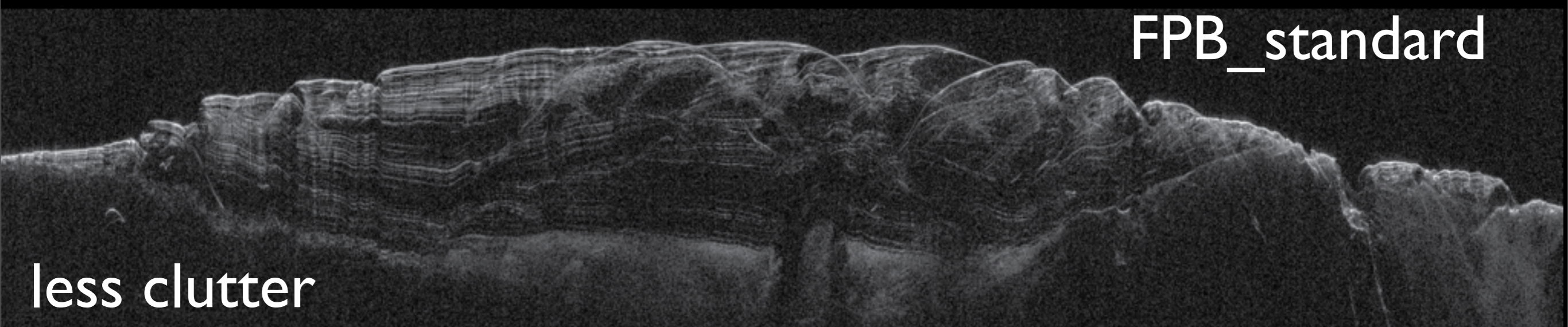
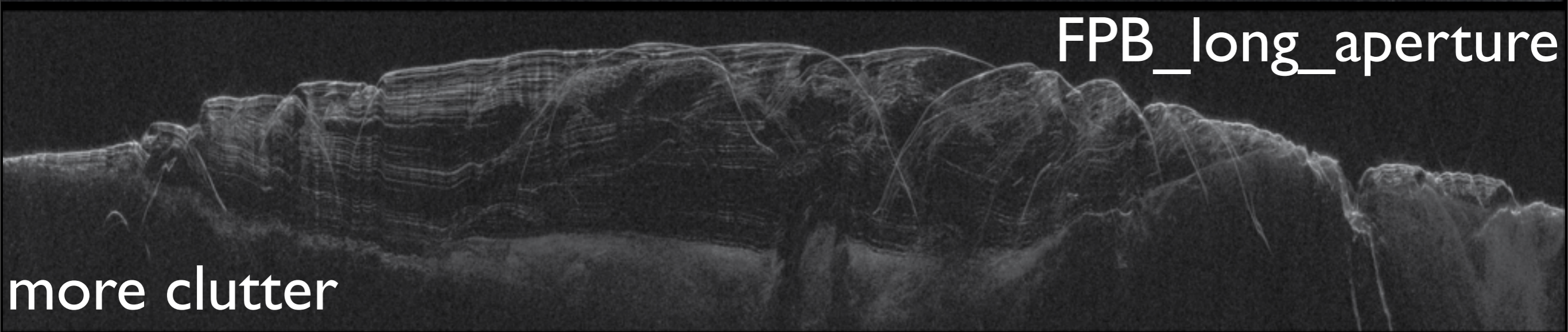
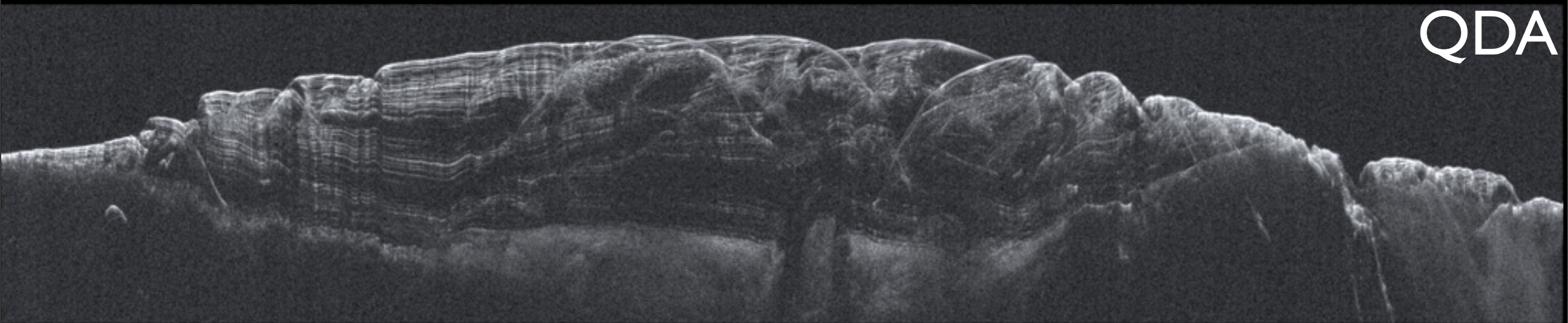
more clutter

FPB_standard

less clutter

1873701

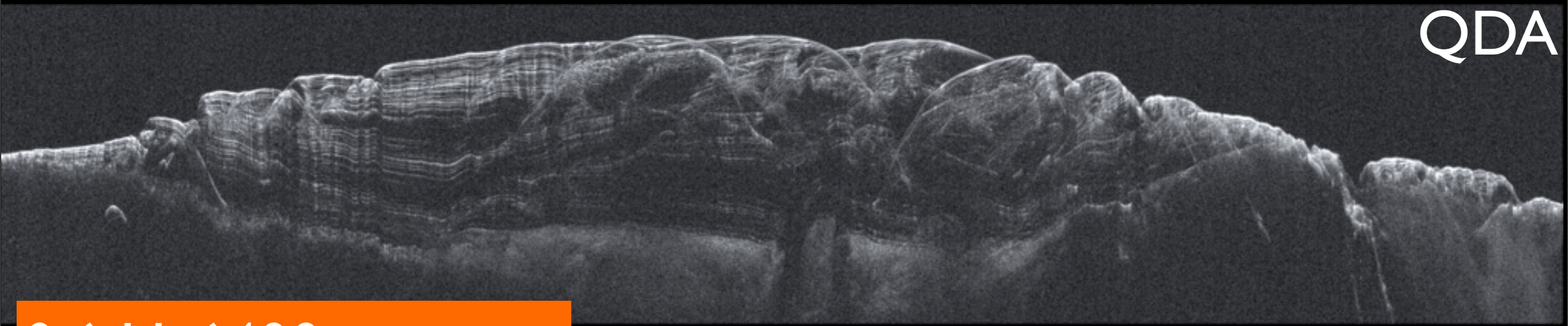
Optimized radar processing



1873701

Optimized radar processing

QDA



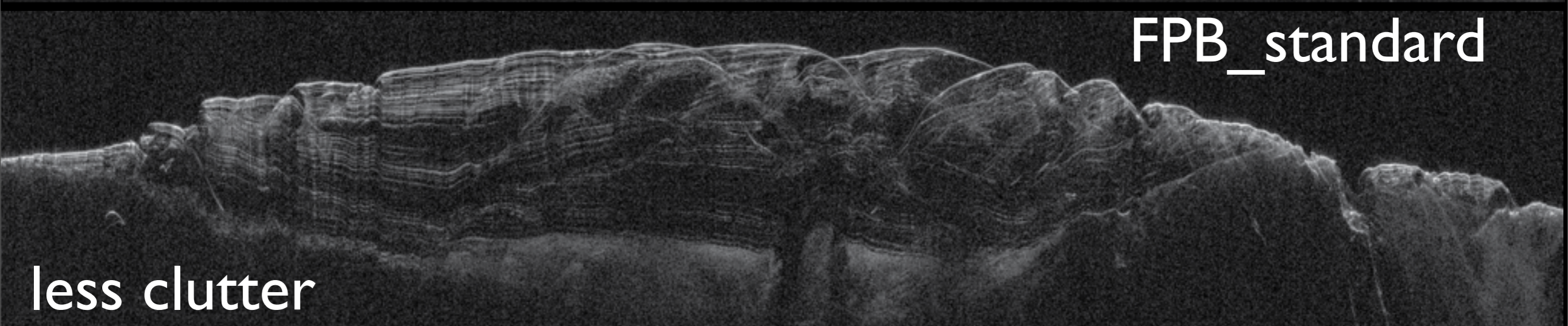
0.6 Hz6400 aperture

FPB_long_aperture



more clutter

FPB_standard

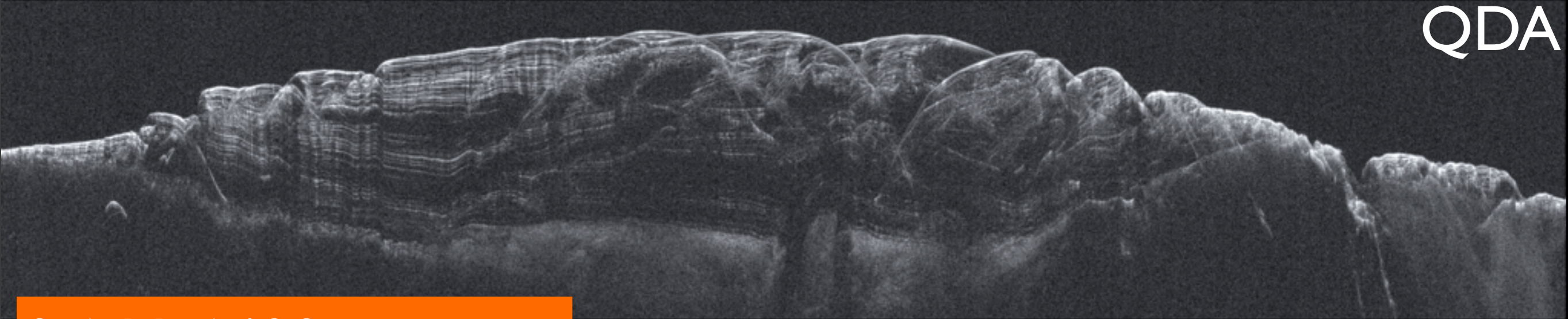


less clutter

1873701

Optimized radar processing

QDA

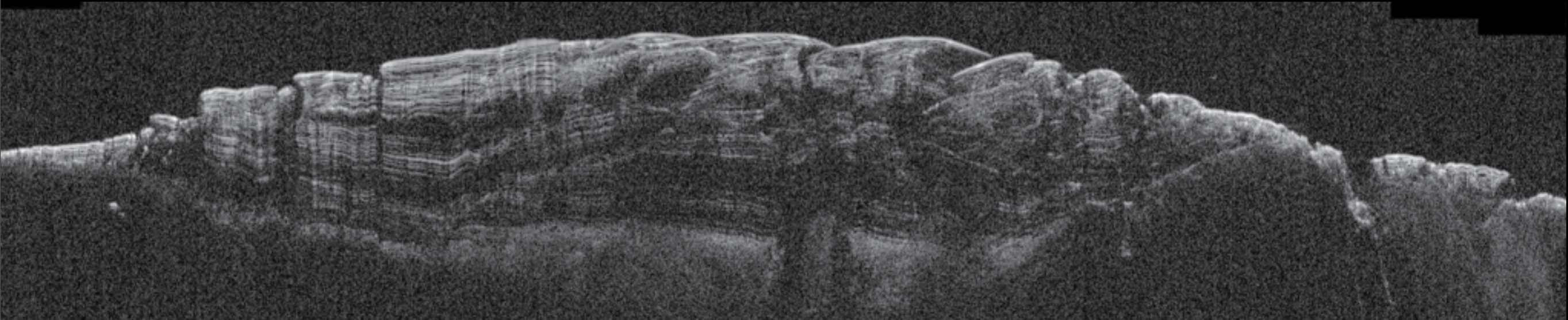


0.6 Hz6400 aperture

FPB_long_aperture



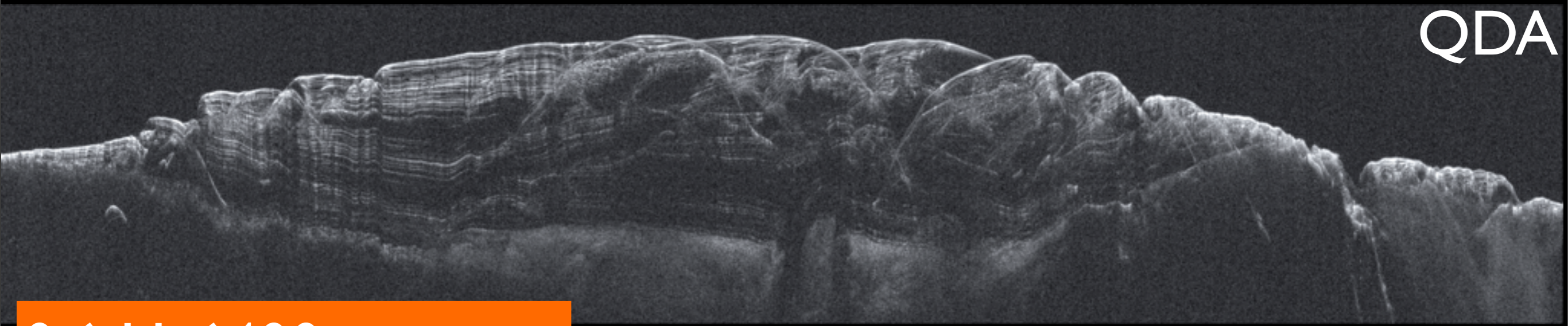
more clutter



1873701

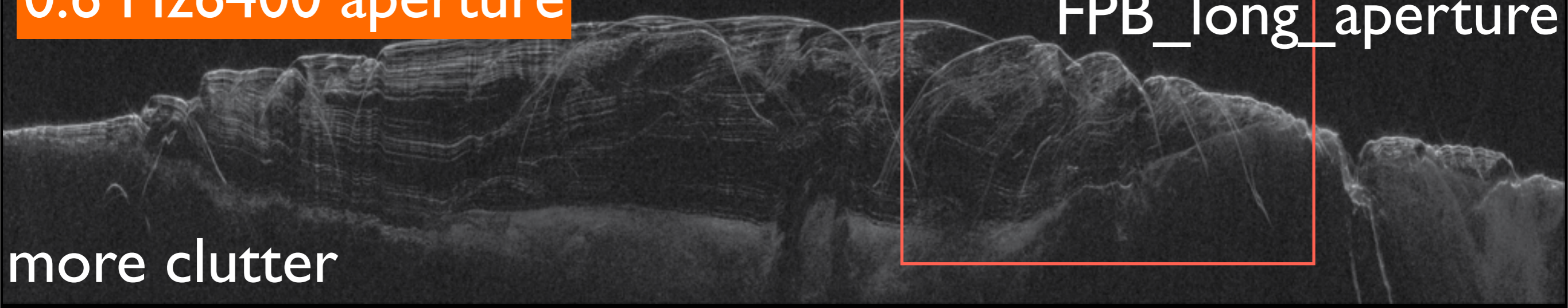
Optimized radar processing

QDA

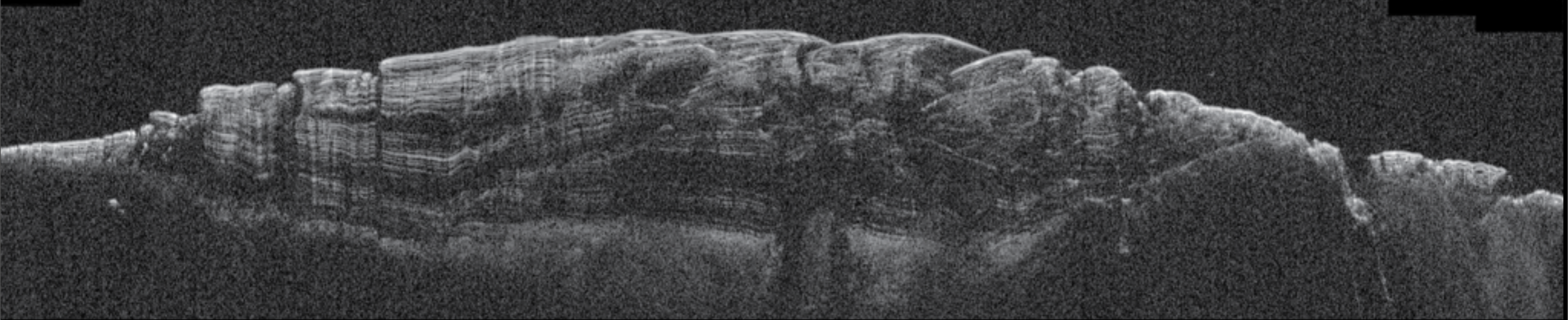


0.6 Hz6400 aperture

FPB_long_aperture



more clutter



Optimized radar processing

FPB_long_aperture

QDA

sometimes, things get smeared

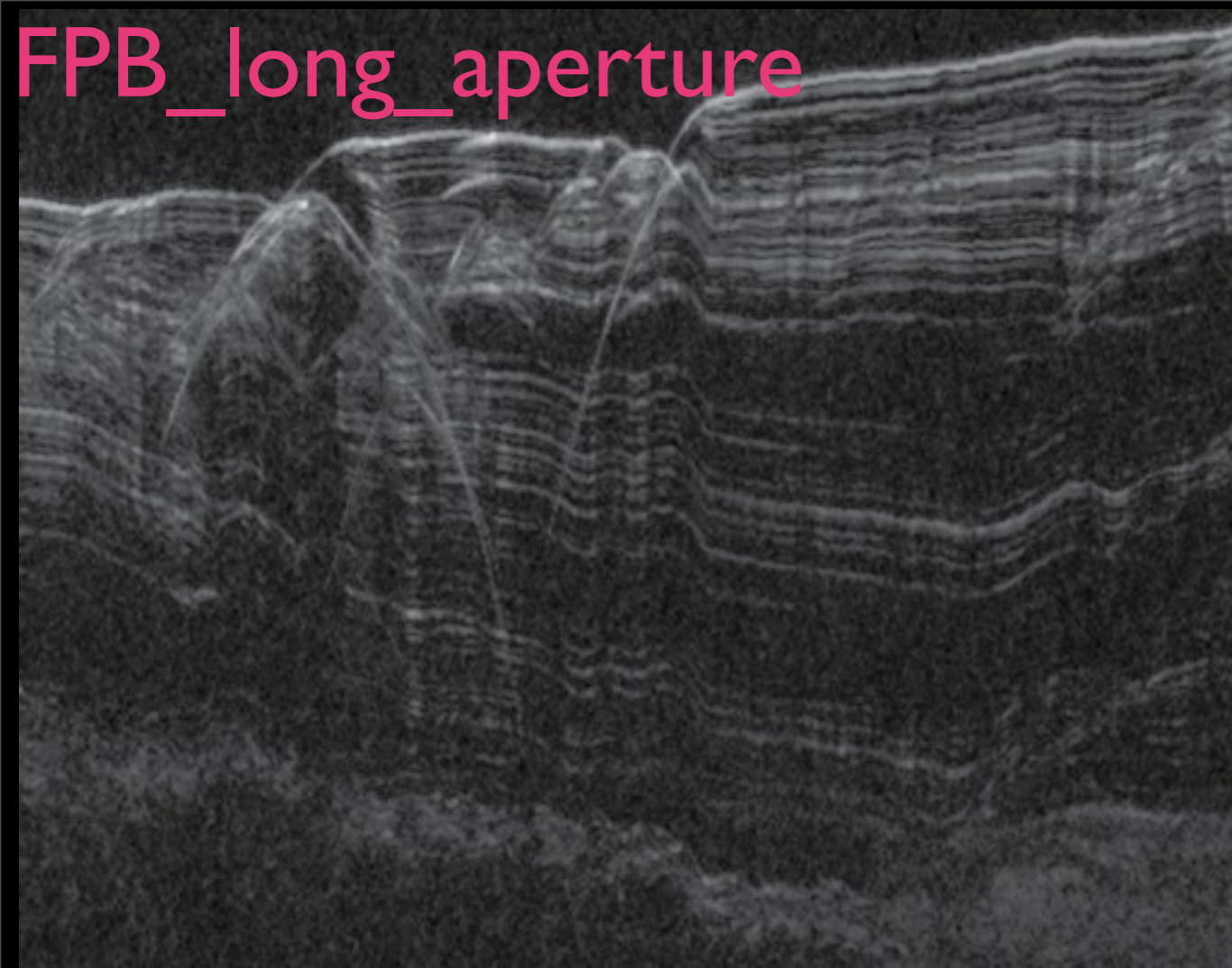
FPB_standard

less clutter

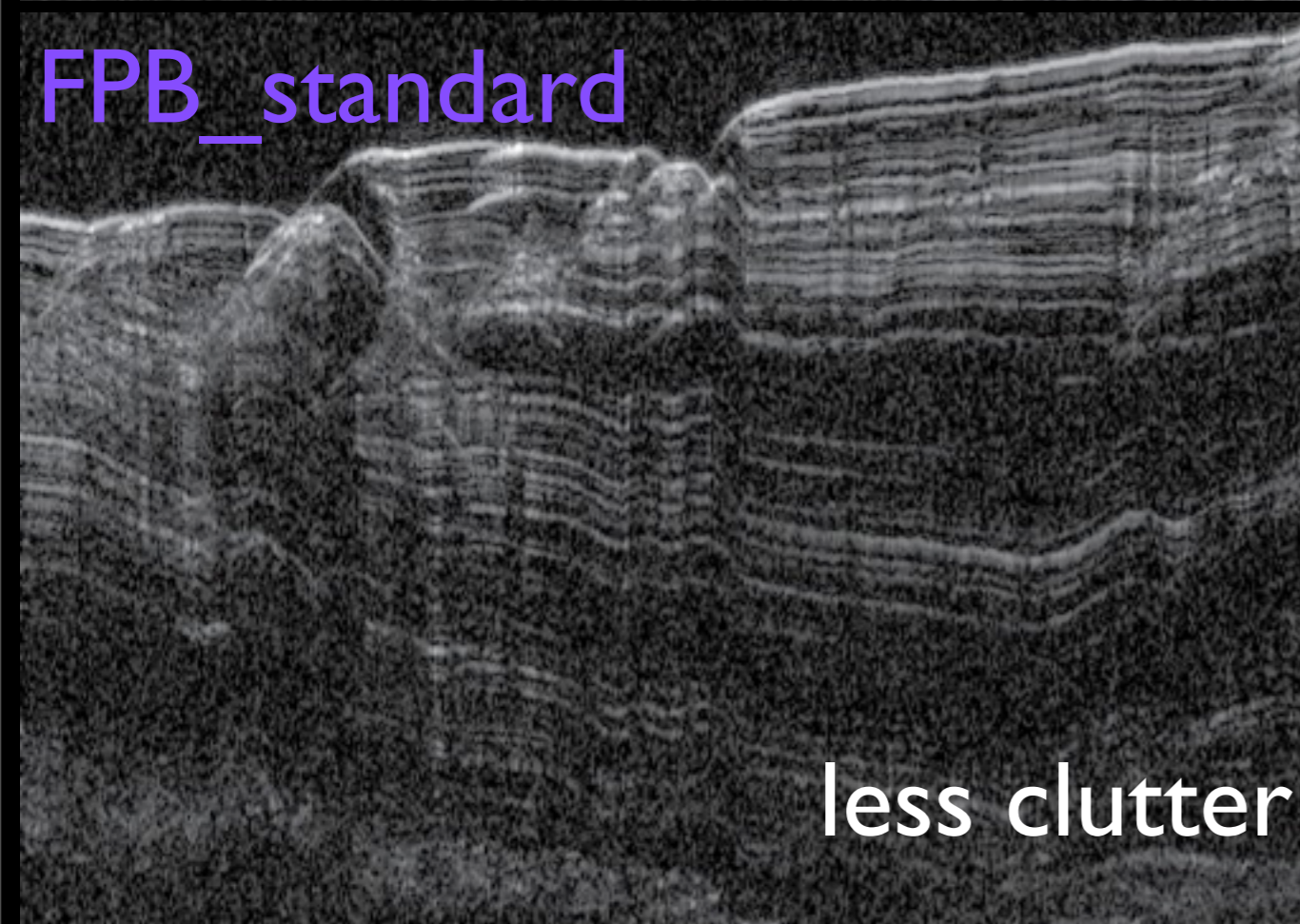
FPB standard has good ionosphere correction

FPB long aperture has more continuous reflectors

QDA has less consistent ionosphere but good continuity



sometimes QDA sees dimmer reflectors



less clutter

FPB standard has good ionosphere correction

FPB long aperture has more continuous reflectors

QDA has less consistent ionosphere but good continuity

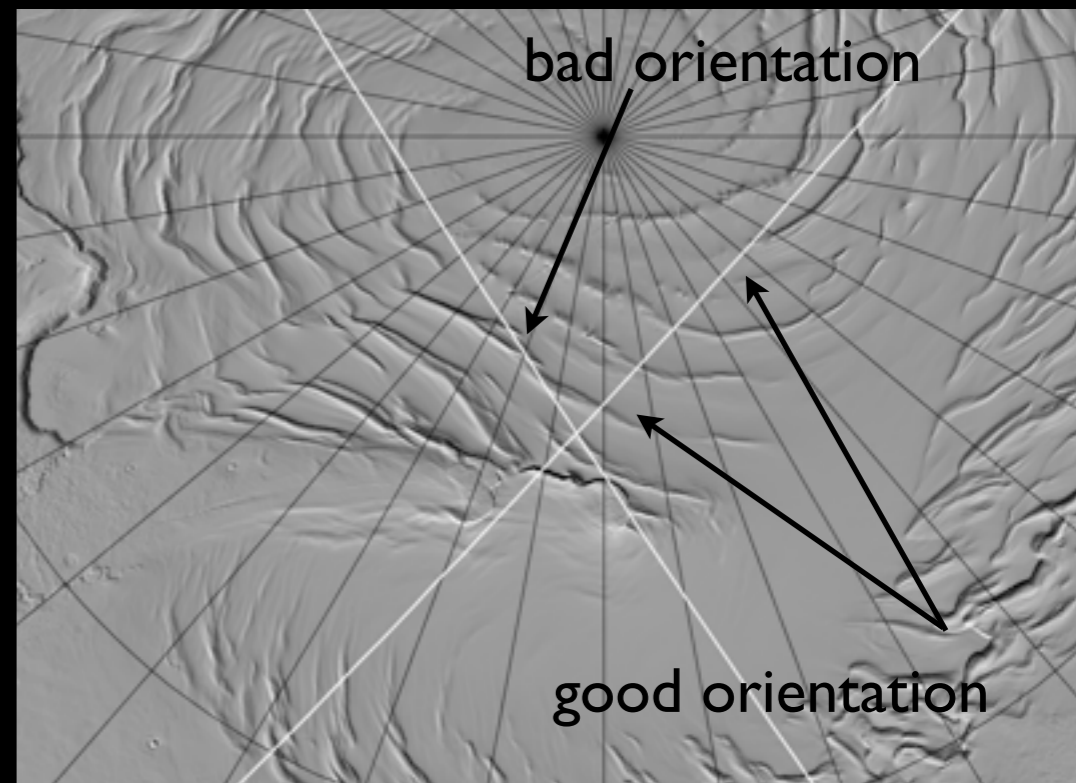
Moral

Determine which processor is best for
each application

Usually good to compare for each case

| 30820 |

very difficult to interpret



Spacecraft orientation

almost no clutter

216360 |