

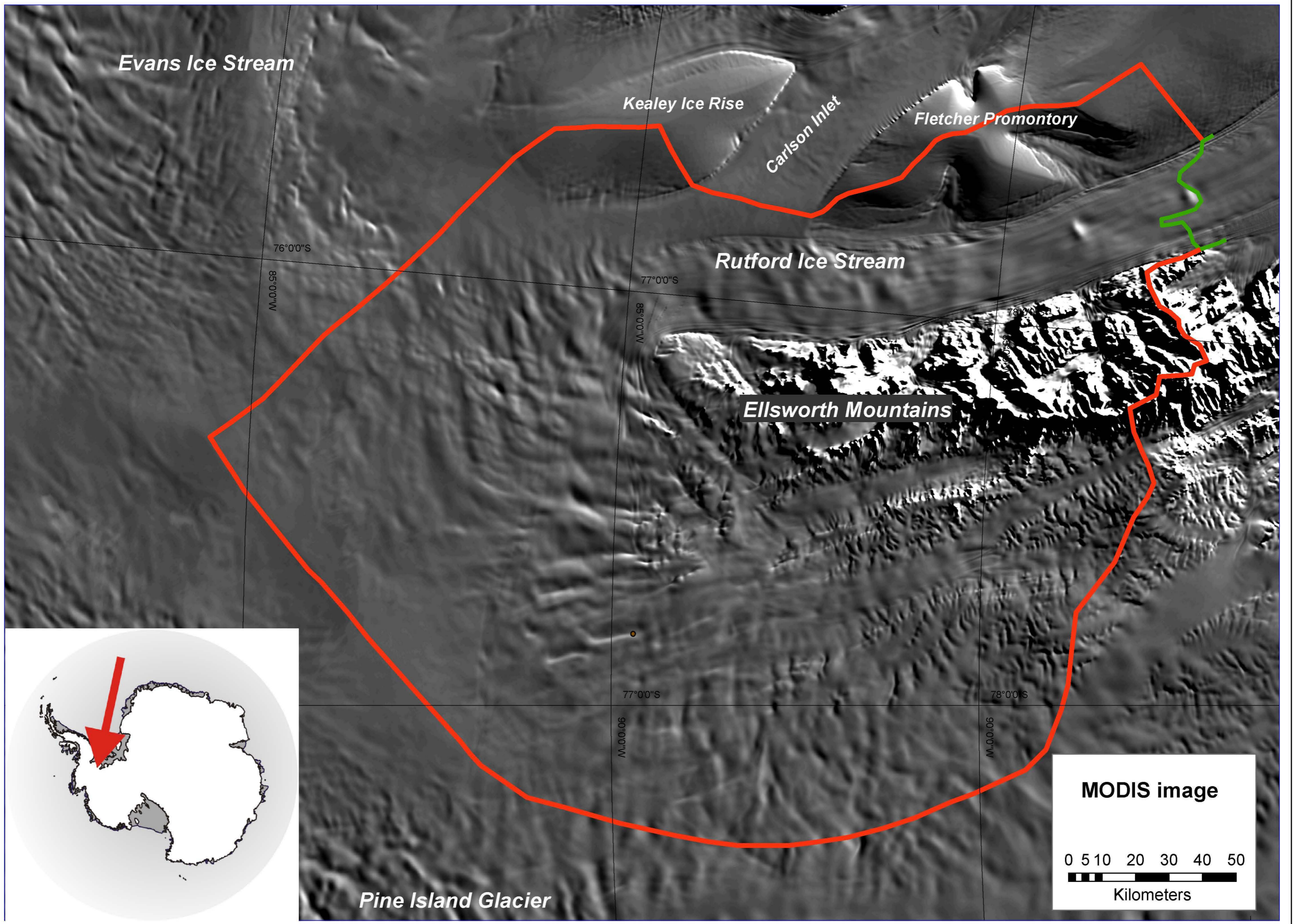
# Mega-scale Glacial Lineations beneath Rutford Ice Stream

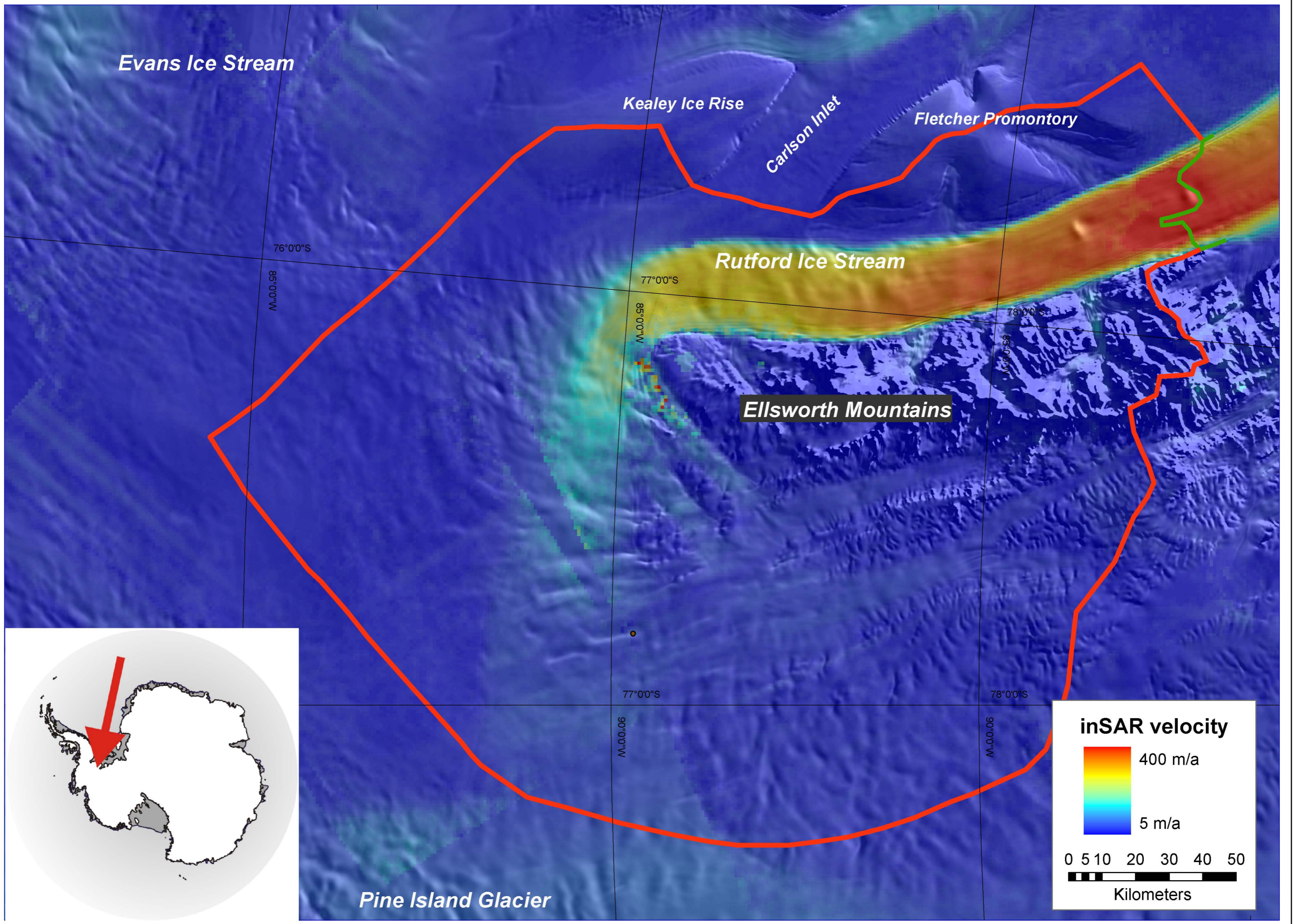
Ed King

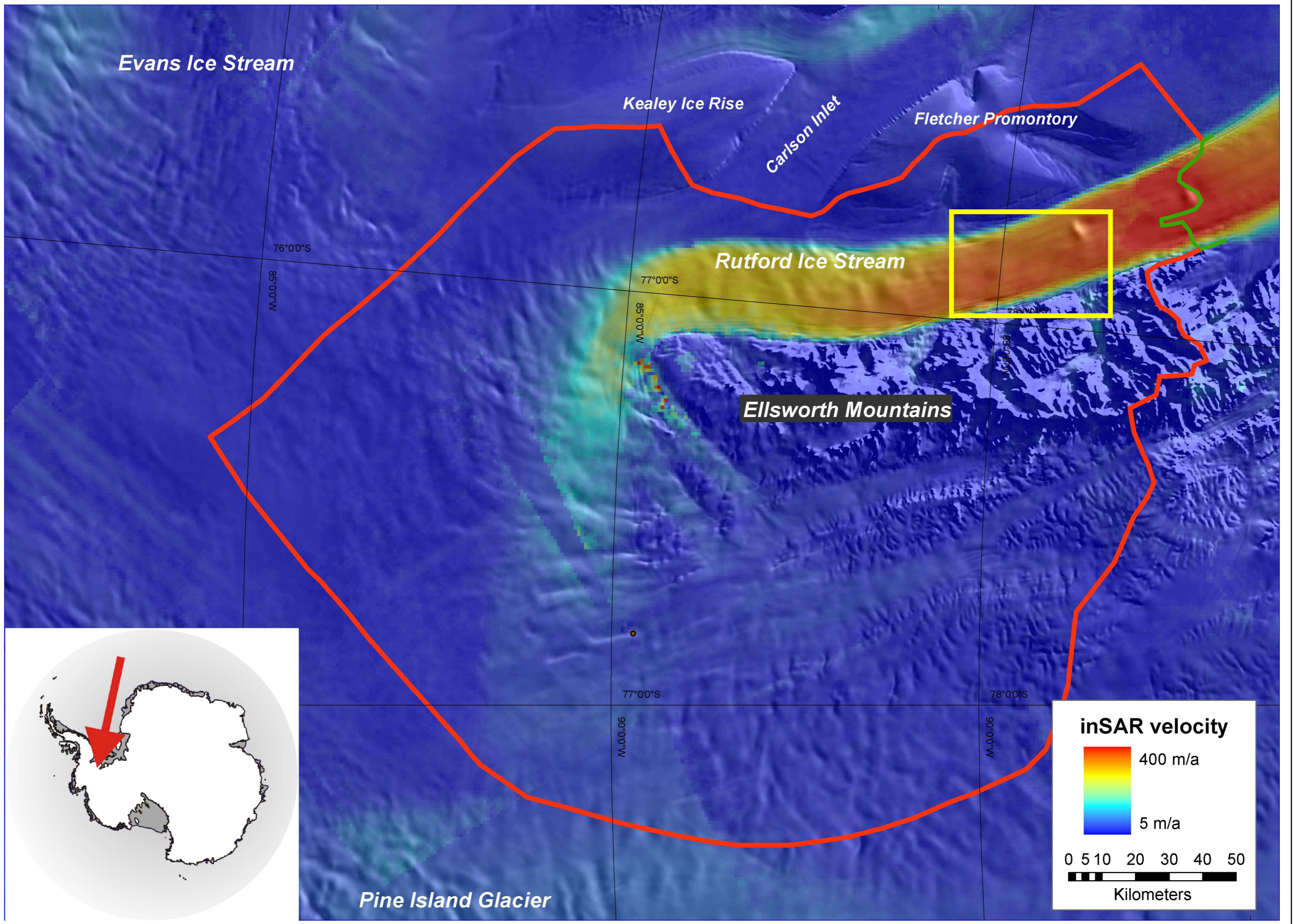


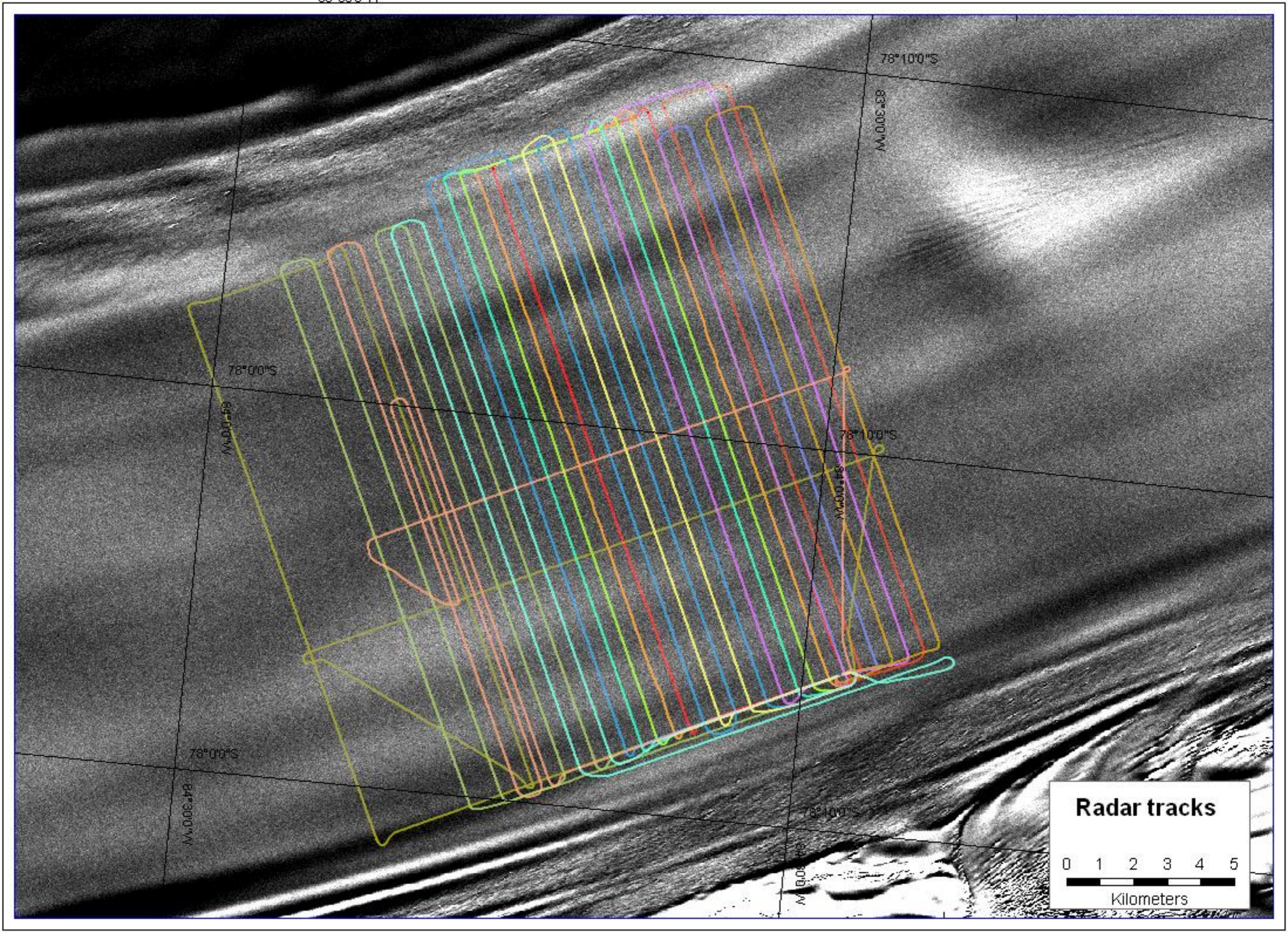
**British  
Antarctic Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL









78°10'0"S

83°30'0"W

78°0'0"S

84°0'0"W

78°10'0"S

84°0'0"W

78°0'0"S

84°30'0"W

78°10'0"S

84°0'0"W

**Radar tracks**

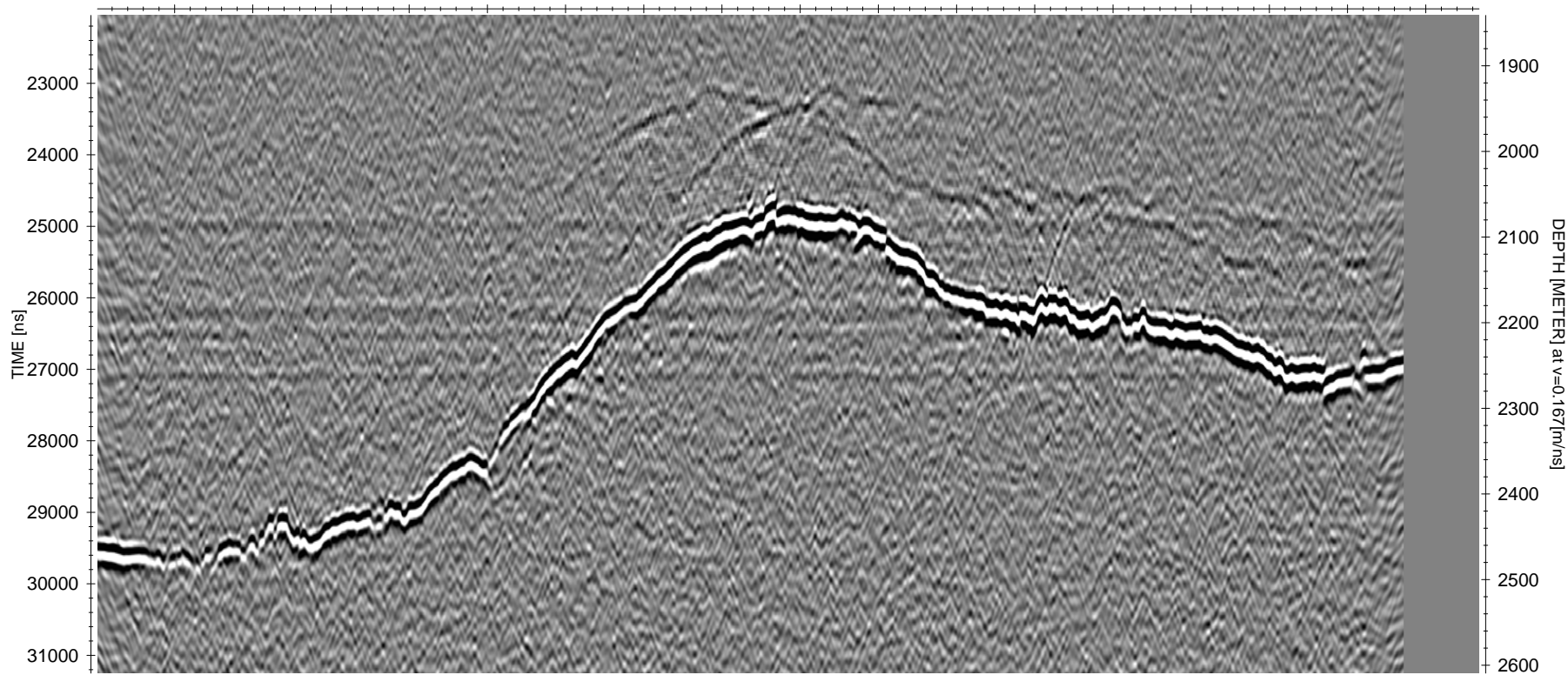
0 1 2 3 4 5

Kilometers

200W\_200E.27T

DISTANCE [METER]

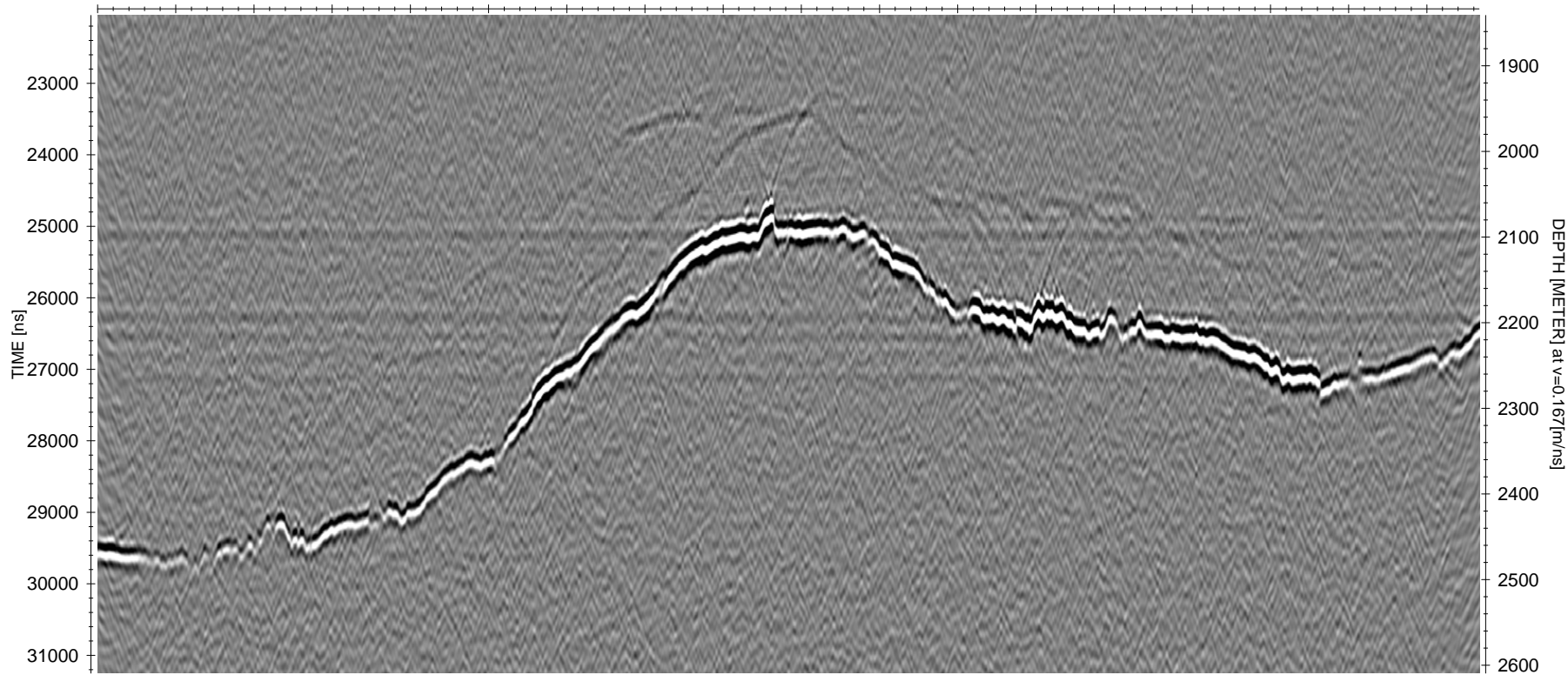
1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000 16000 17000



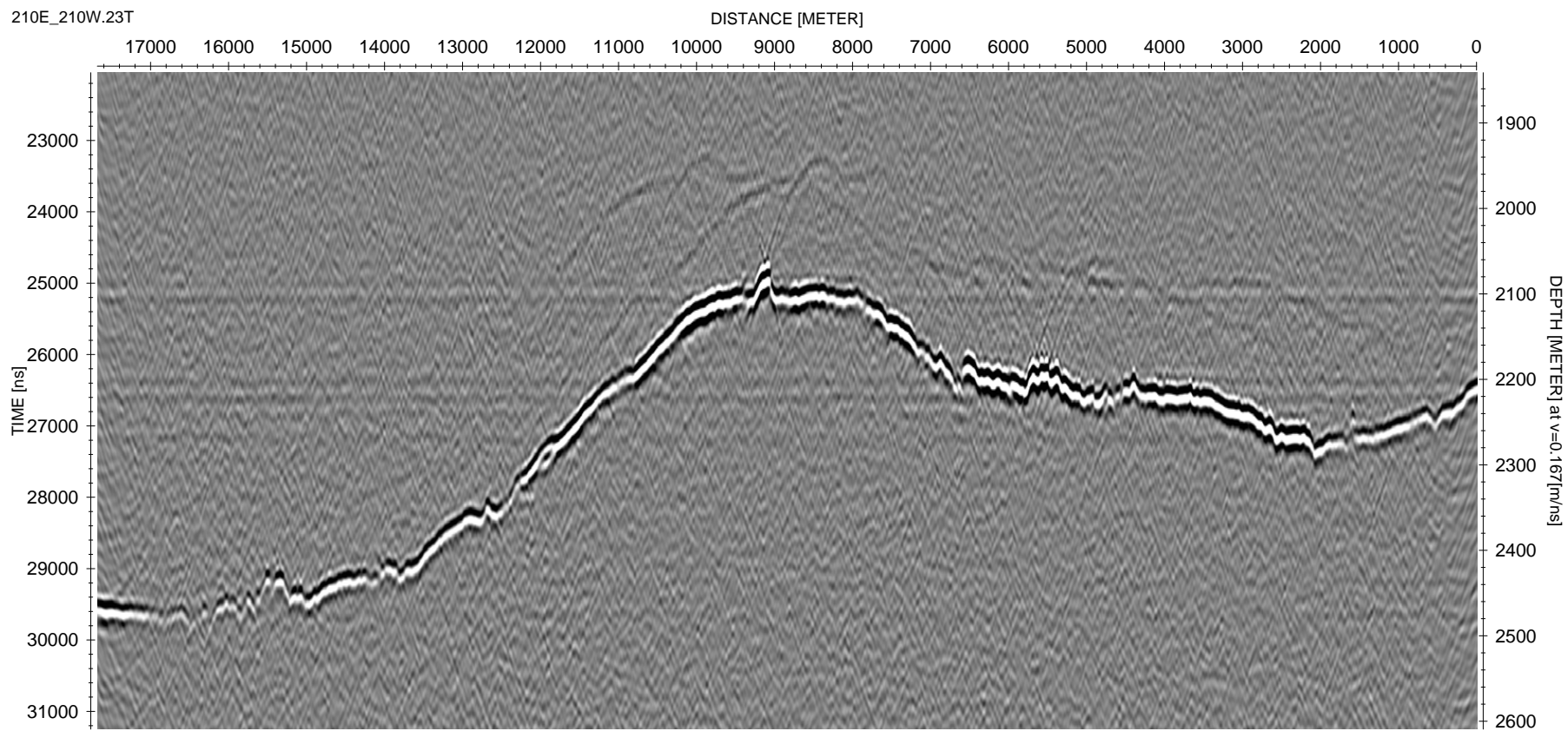
205W\_205E.24T

DISTANCE [METER]

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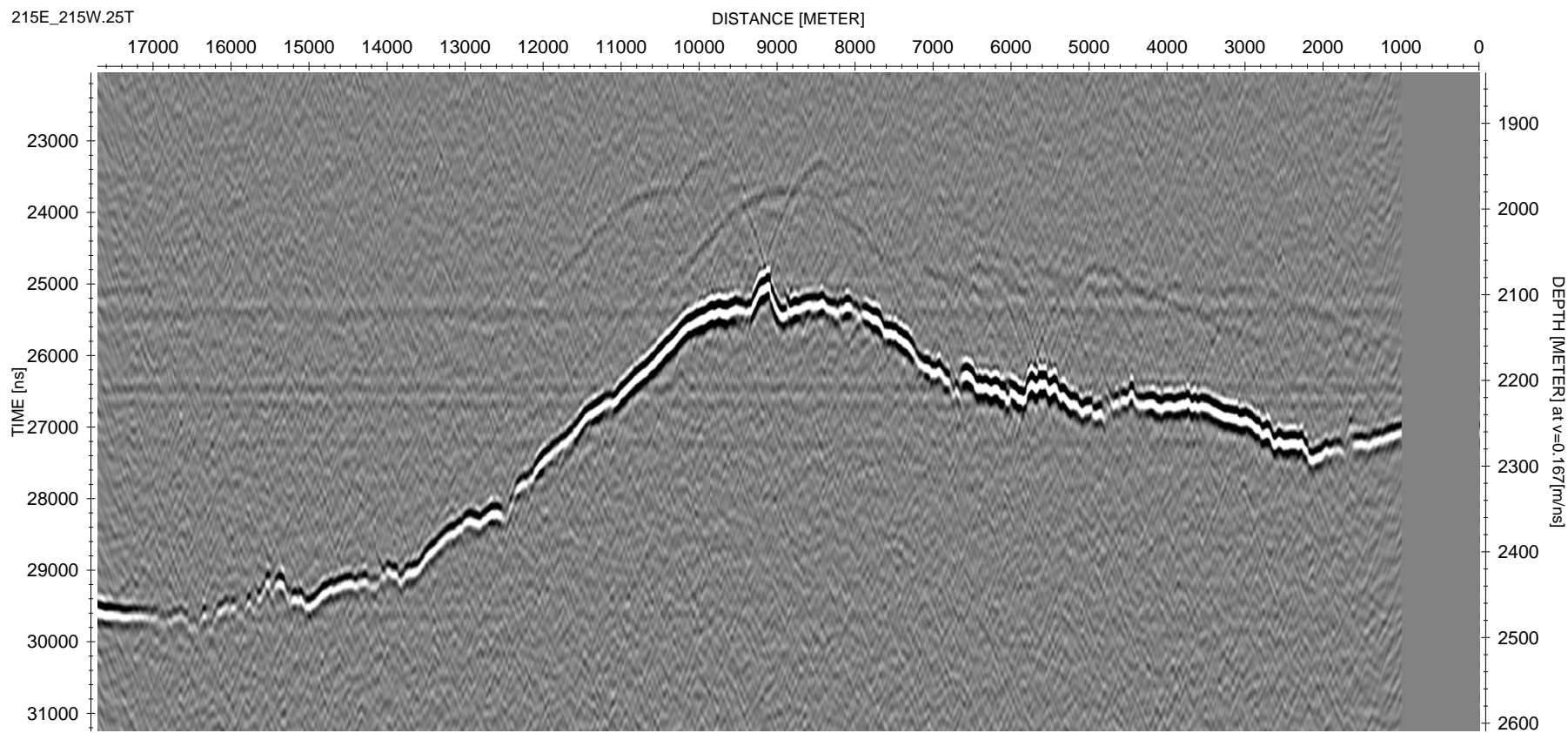


210E\_210W.23T





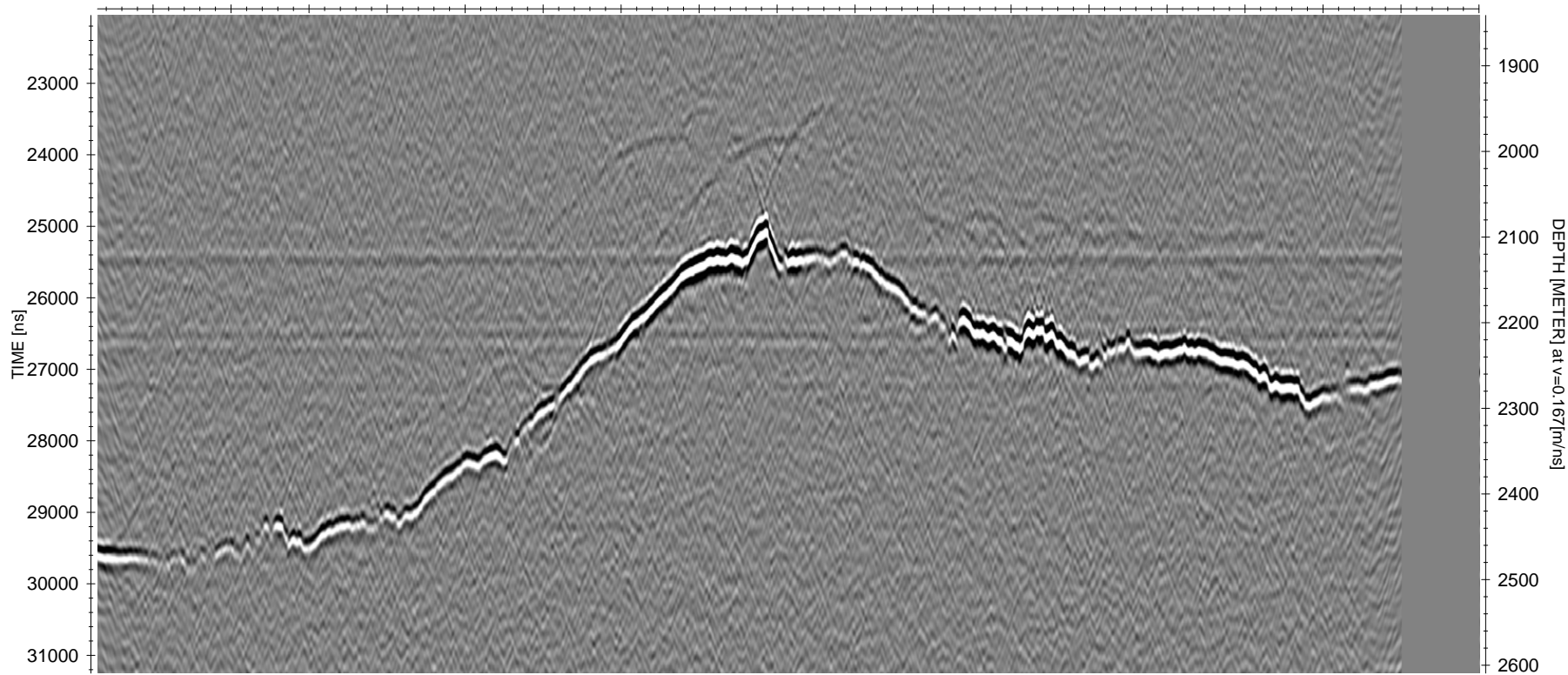
215E\_215W.25T



220E\_220W.25T

DISTANCE [METER]

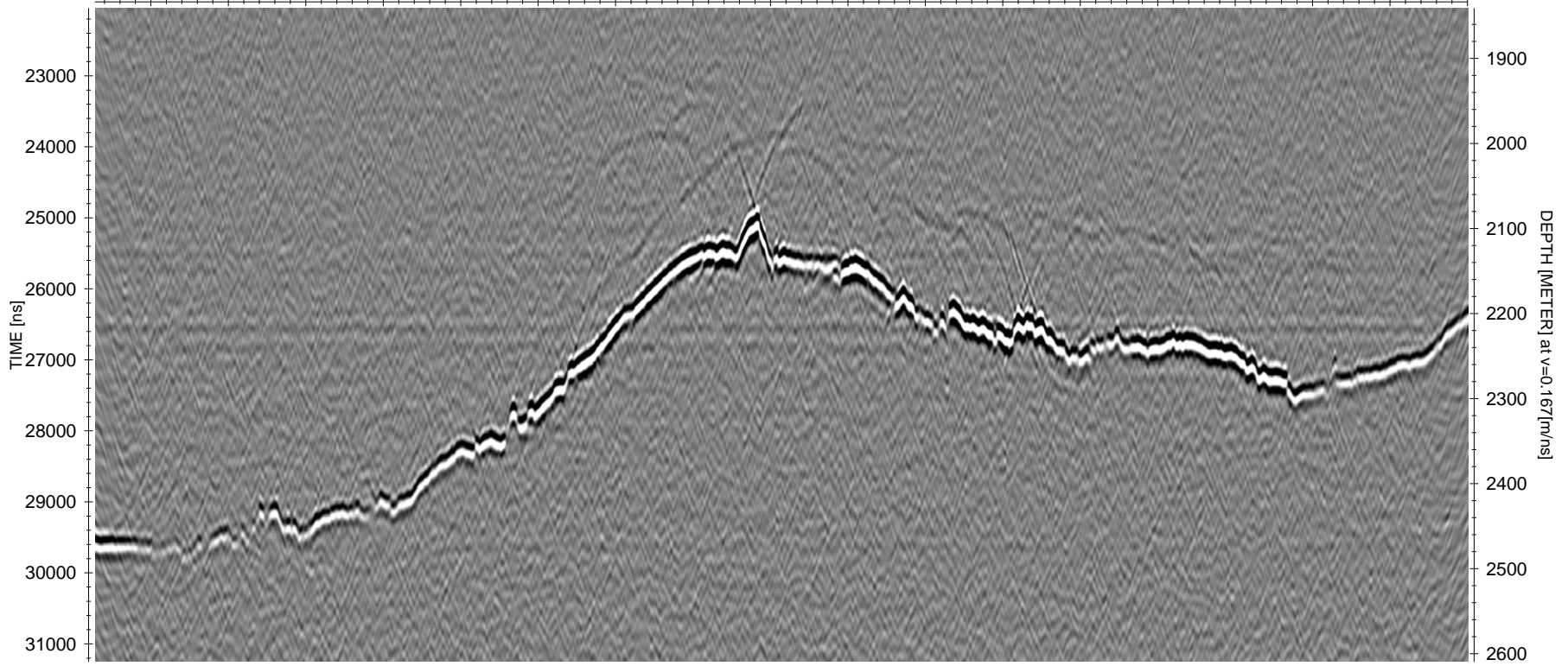
17000 16000 15000 14000 13000 12000 11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000 0



225E\_225W.23T

DISTANCE [METER]

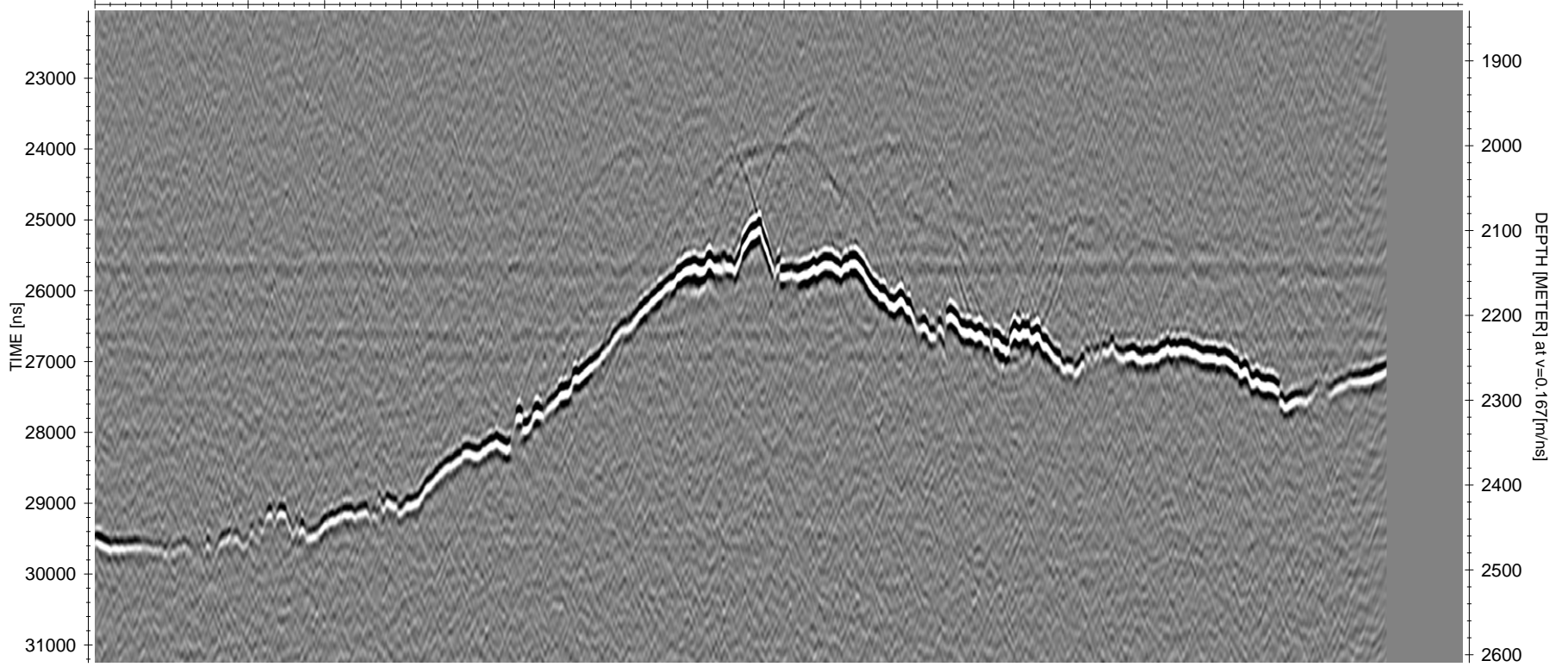
17000 16000 15000 14000 13000 12000 11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000 0



230W\_230E.26T

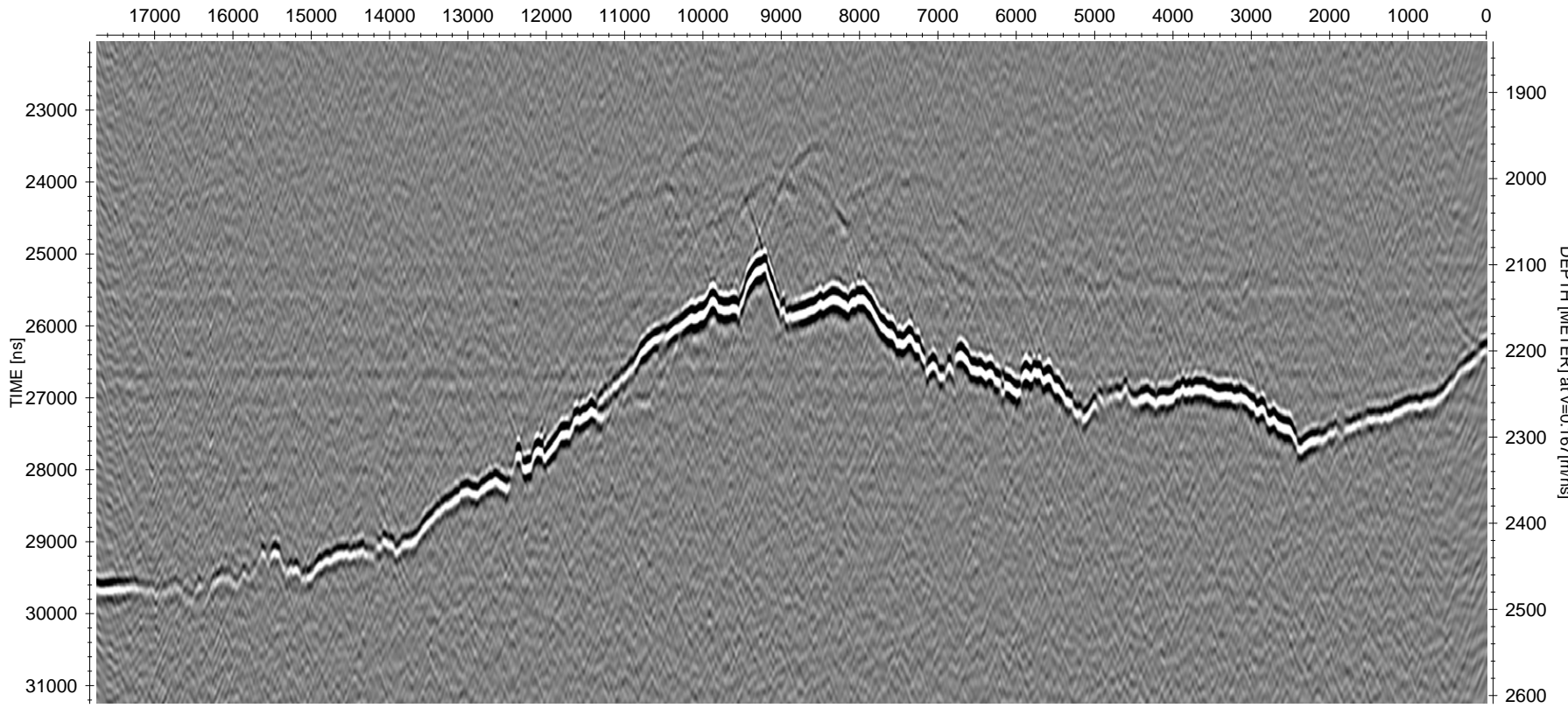
DISTANCE [METER]

0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 11000 12000 13000 14000 15000 16000 17000

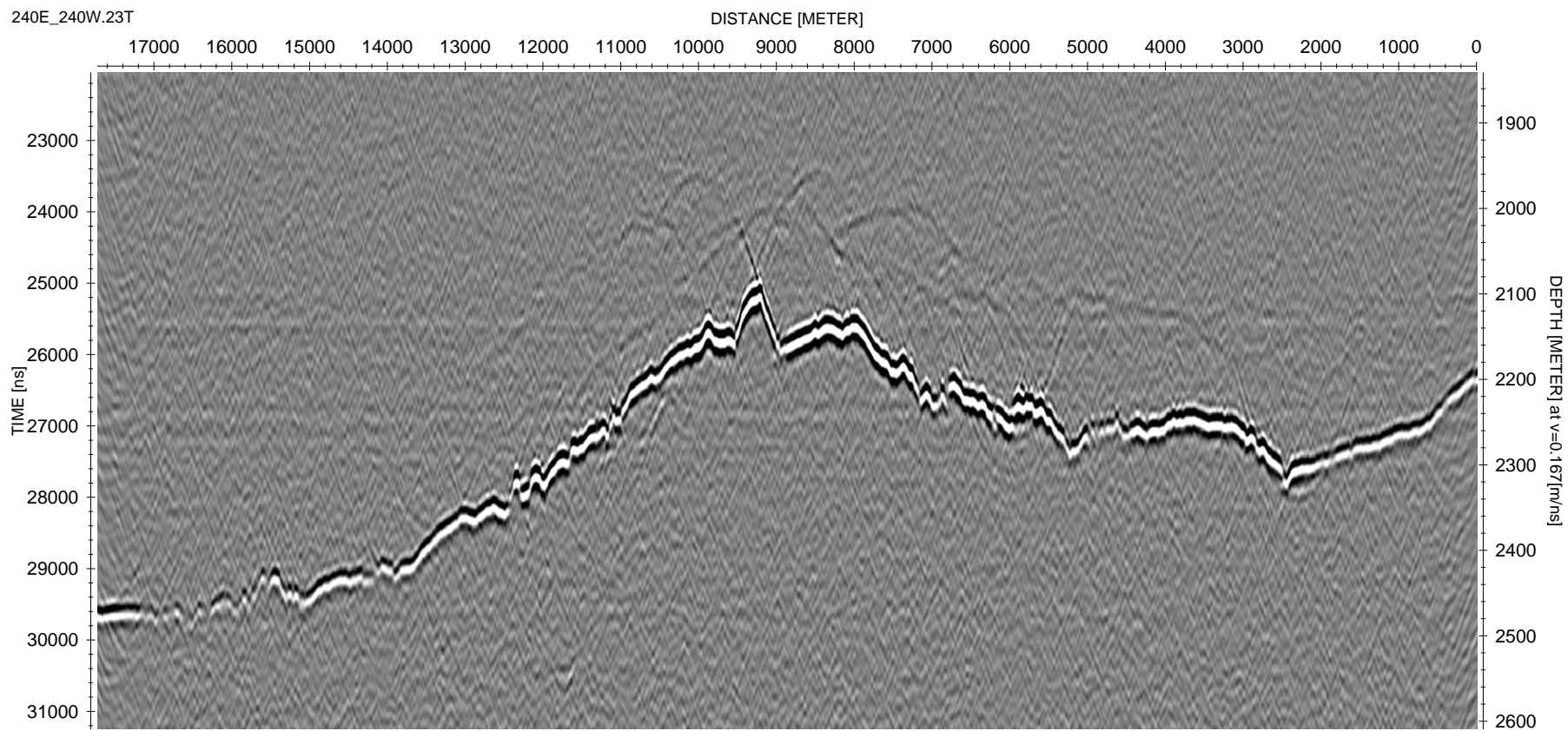


235E\_235WE.23T

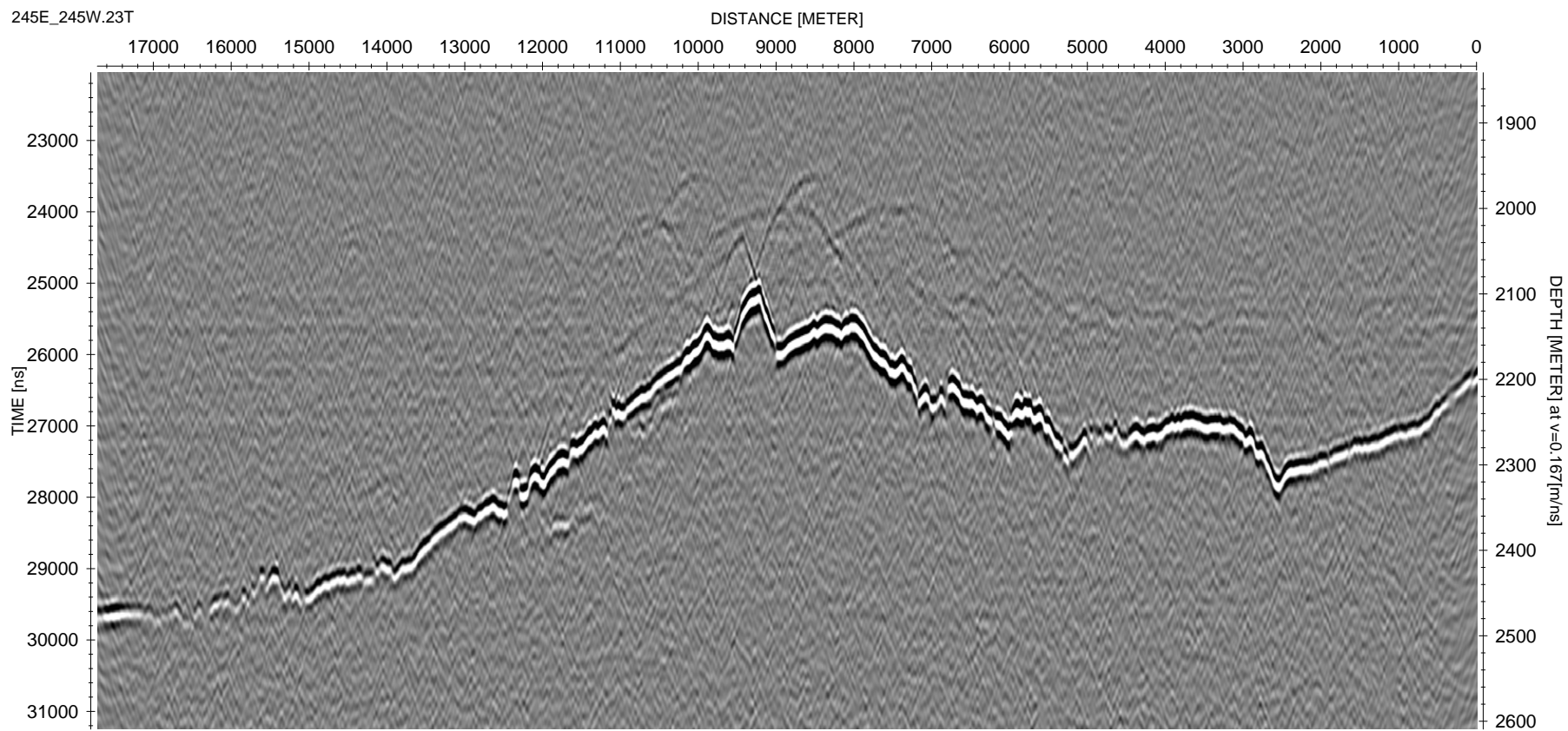
DISTANCE [METER]



240E\_240W.23T

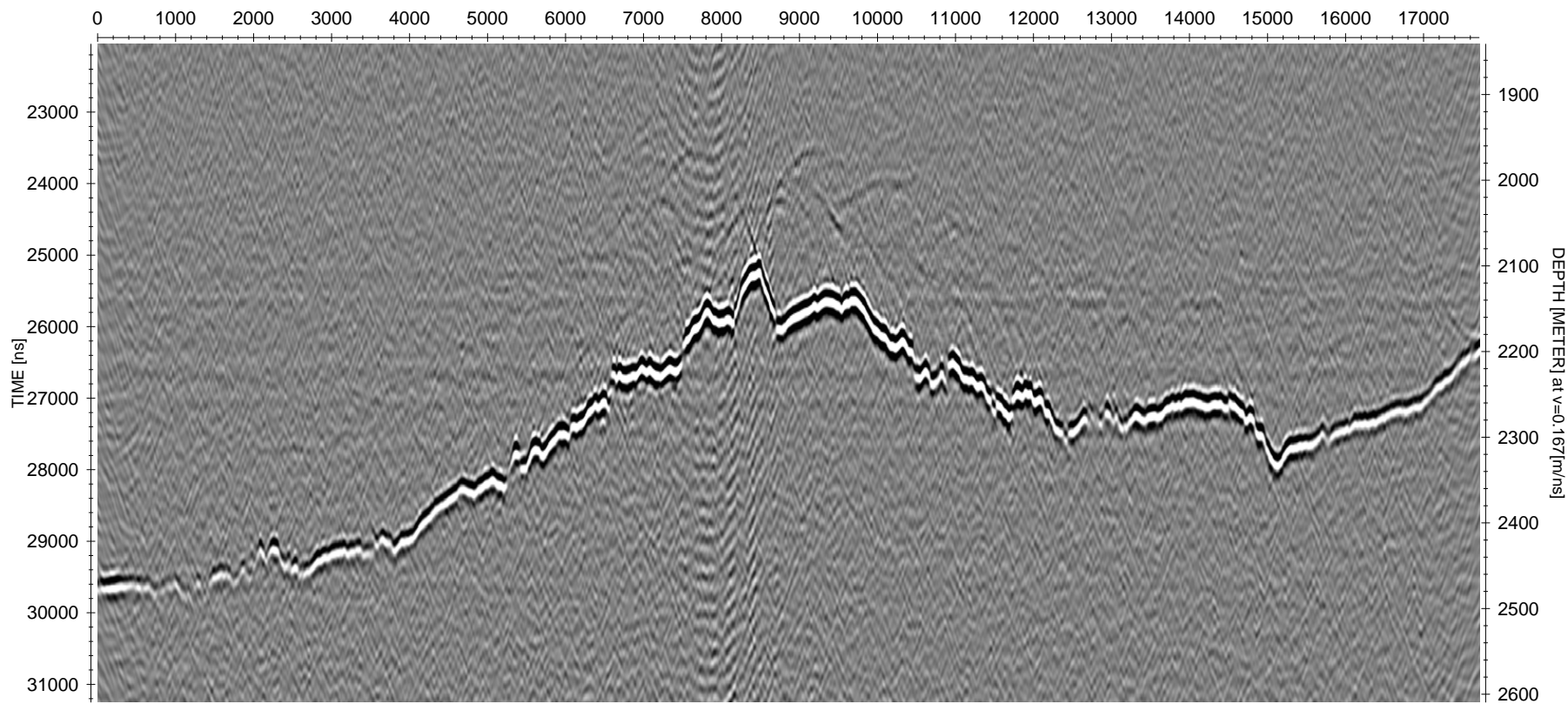


245E\_245W.23T



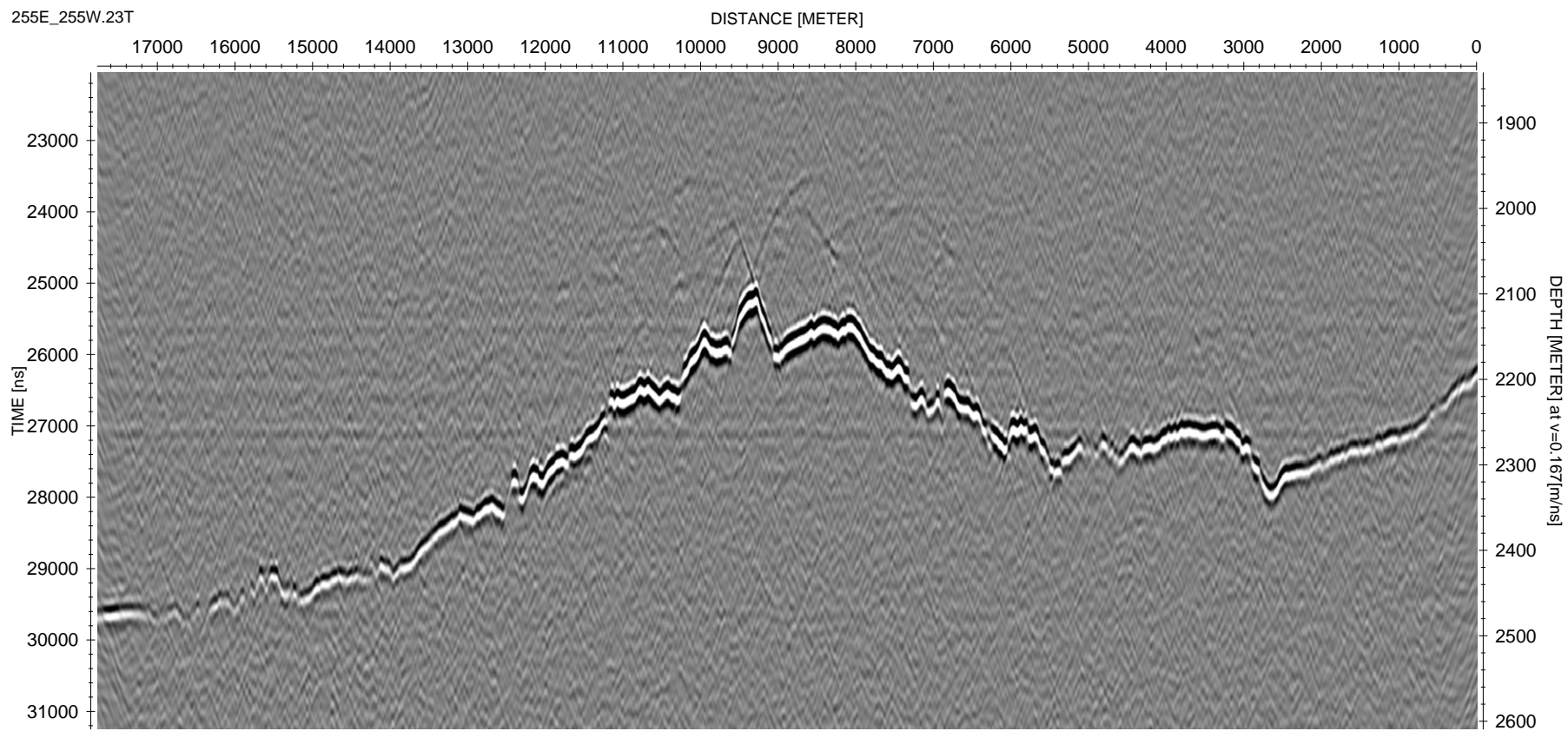
250W\_250E.23T

DISTANCE [METER]





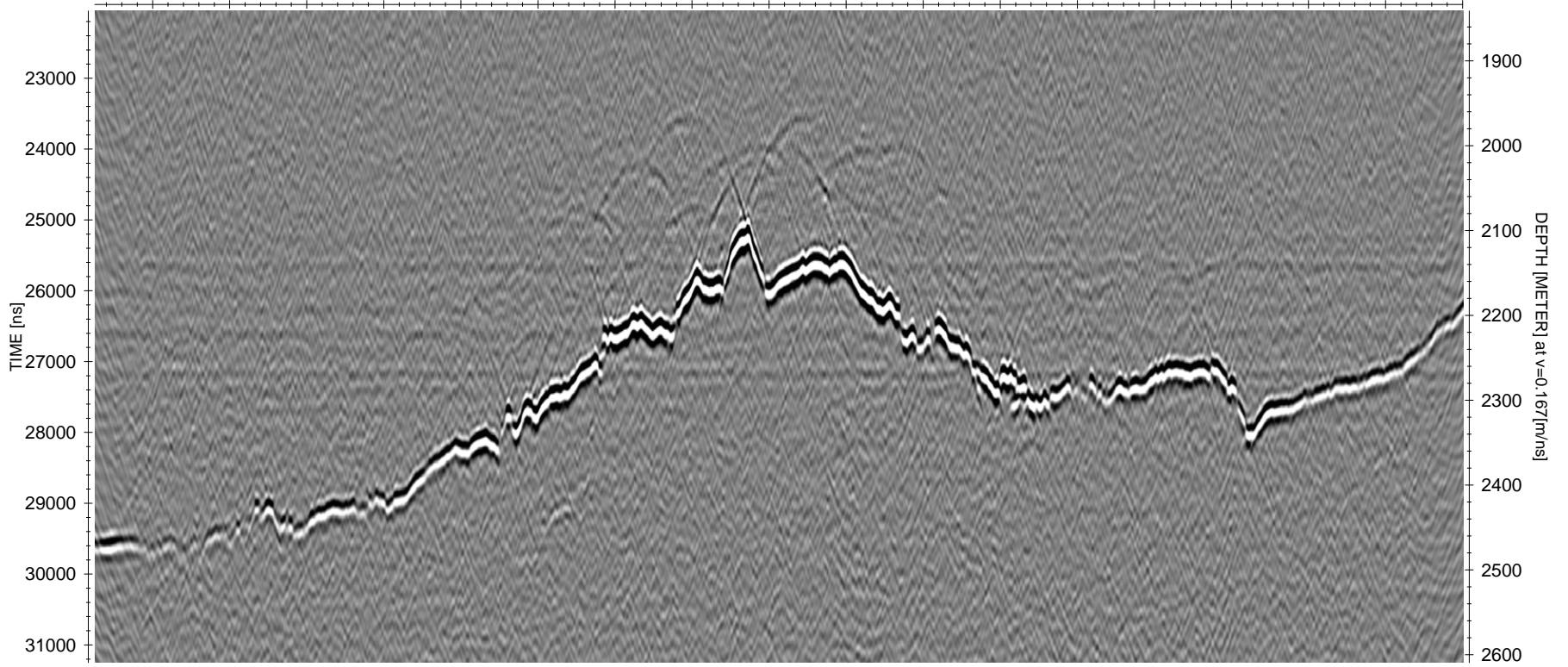
255E\_255W.23T



260W\_260E.23T

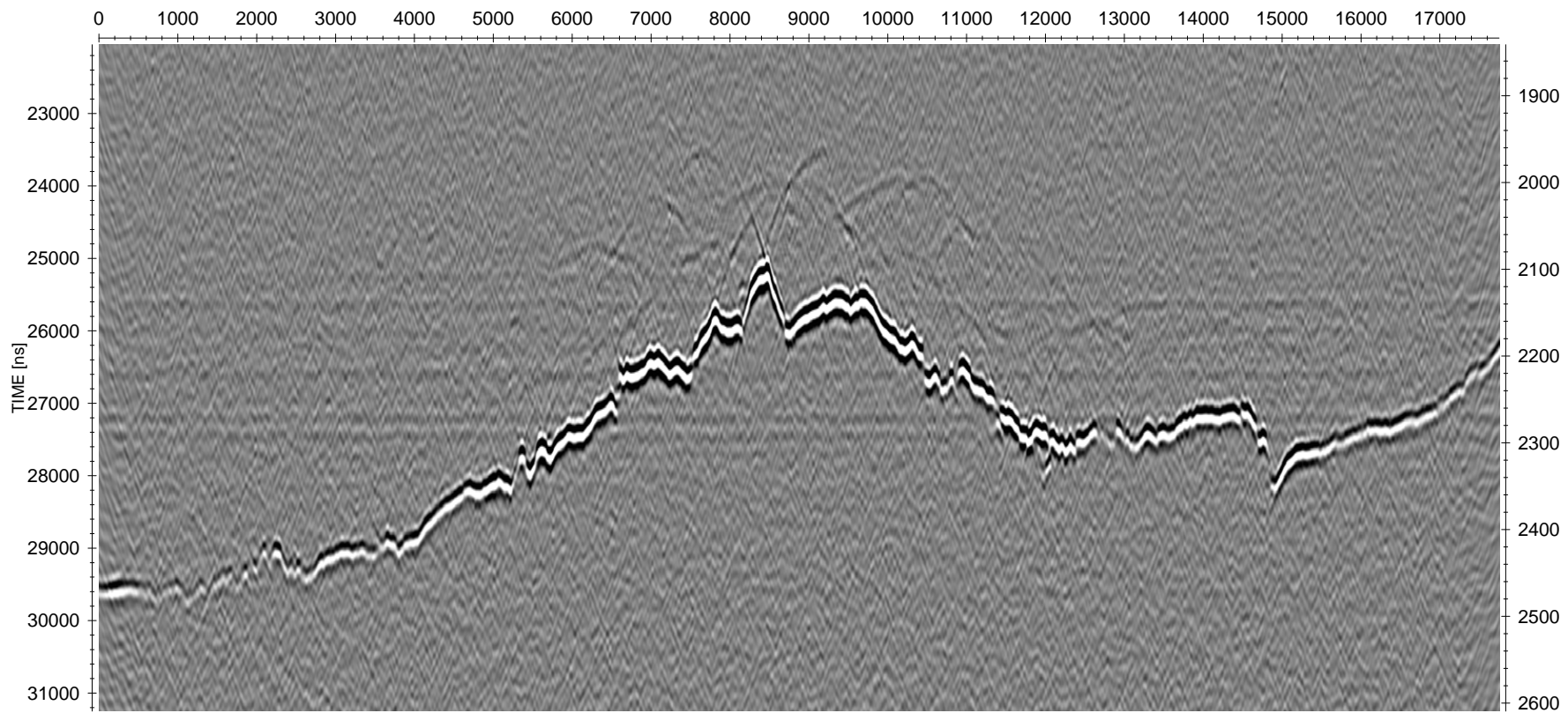
DISTANCE [METER]

17000 16000 15000 14000 13000 12000 11000 10000 9000 8000 7000 6000 5000 4000 3000 2000 1000 0



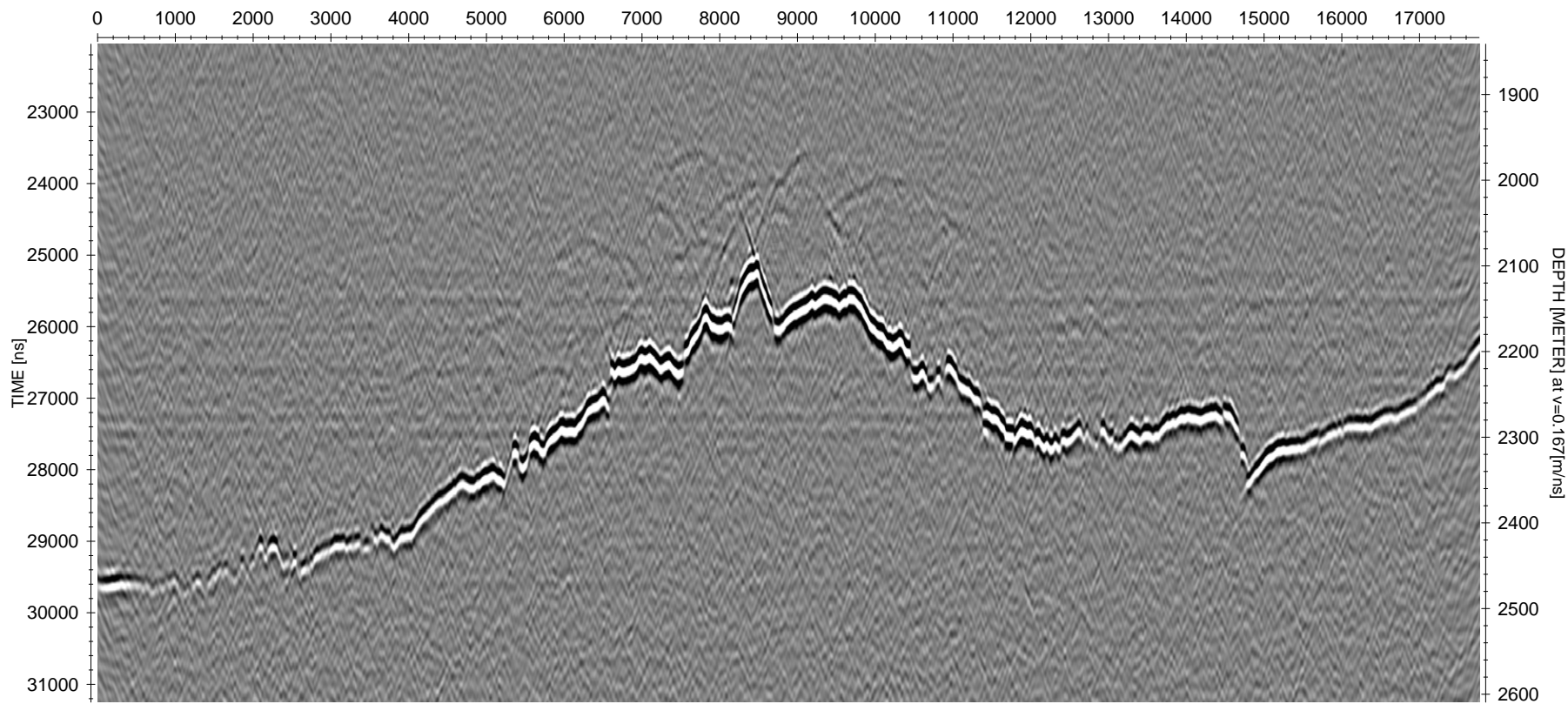
265E\_265W.23T

DISTANCE [METER]

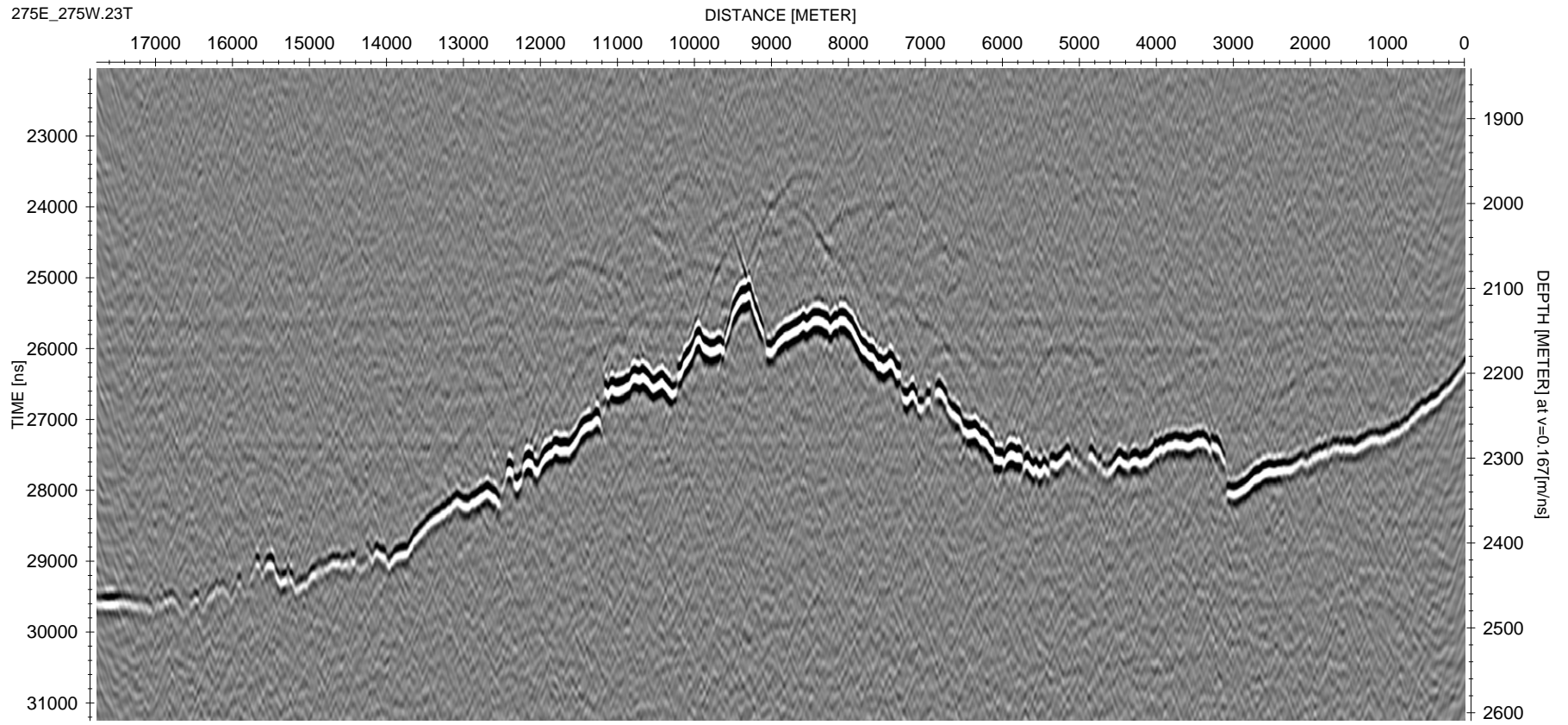


270W\_270E.23T

DISTANCE [METER]



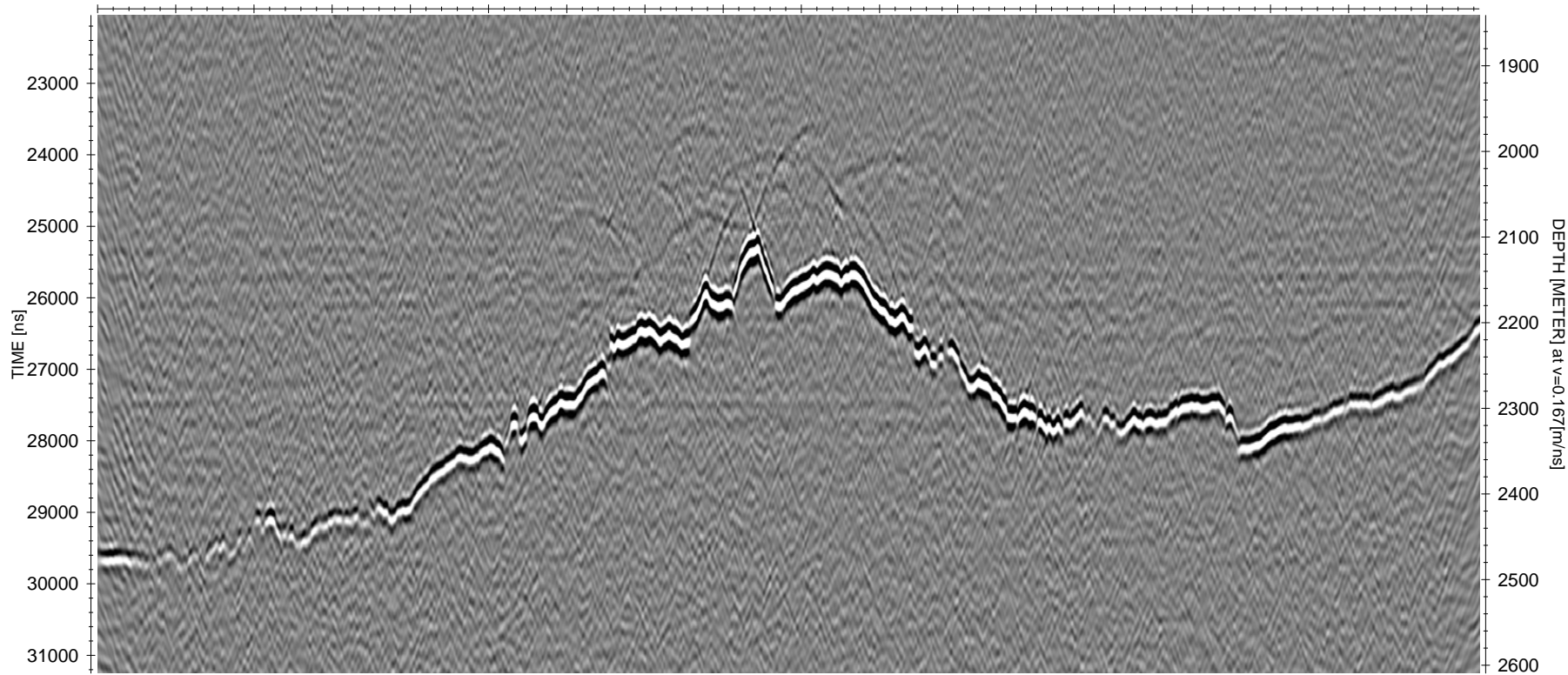
275E\_275W.23T



280W\_280E.23T

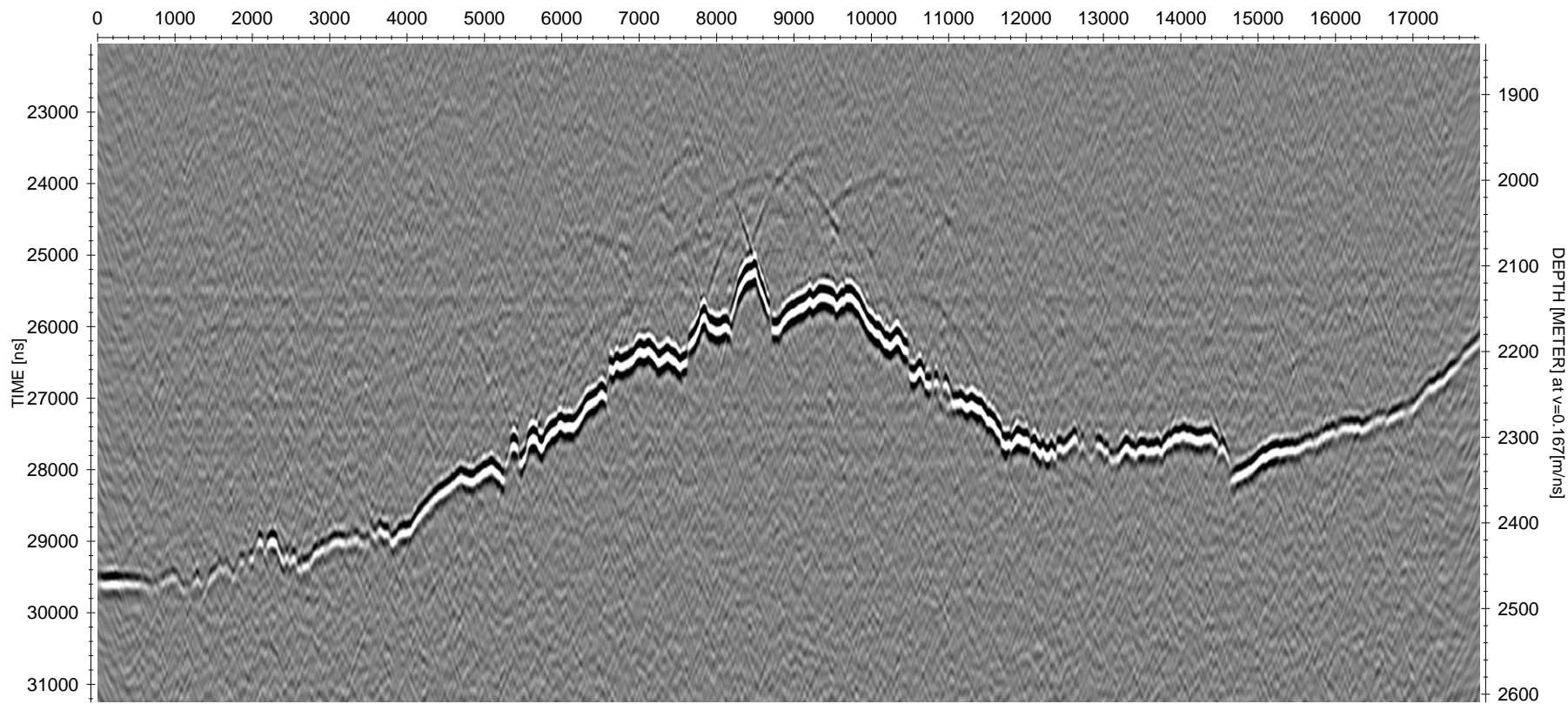
DISTANCE [METER]

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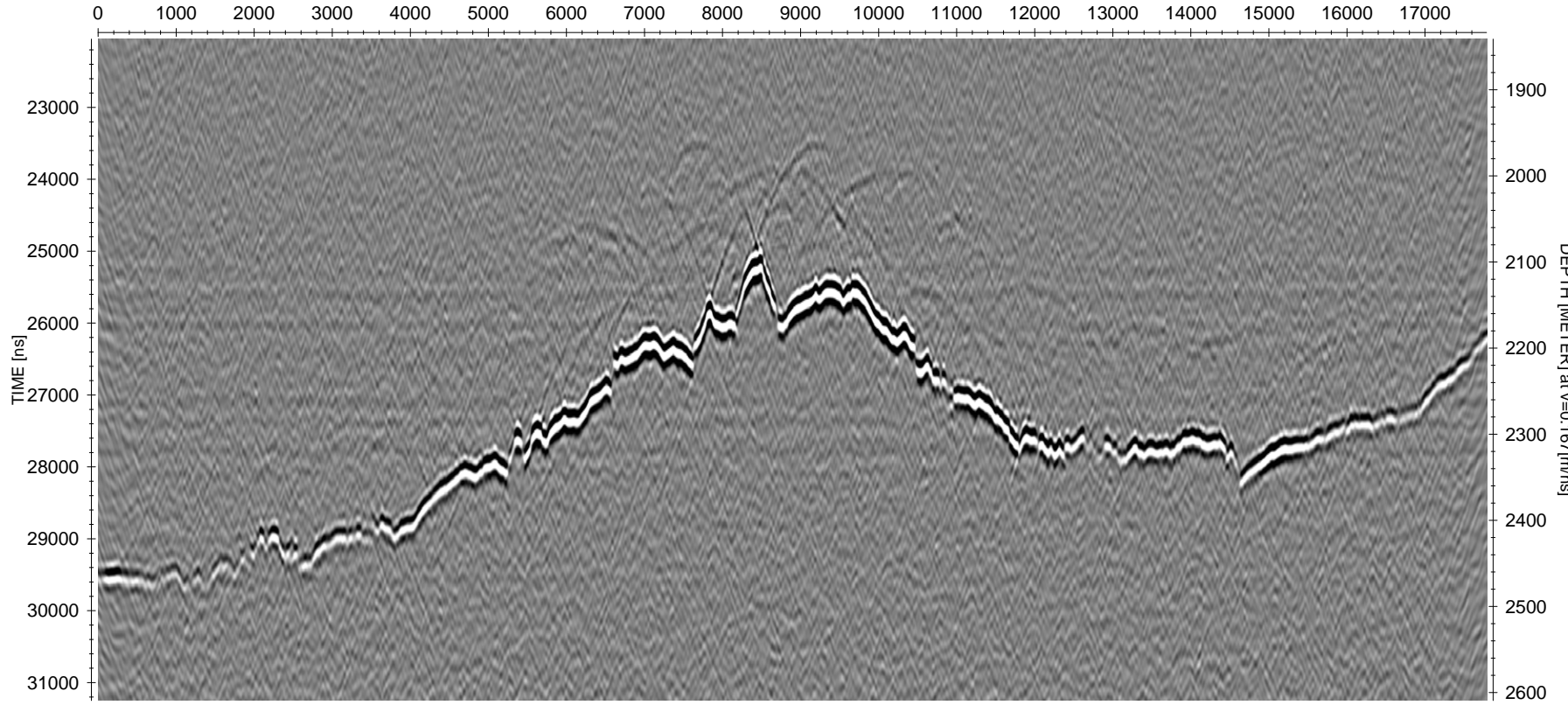
285W\_285E.23T

DISTANCE [METER]



290W-290E.23T

DISTANCE [METER]

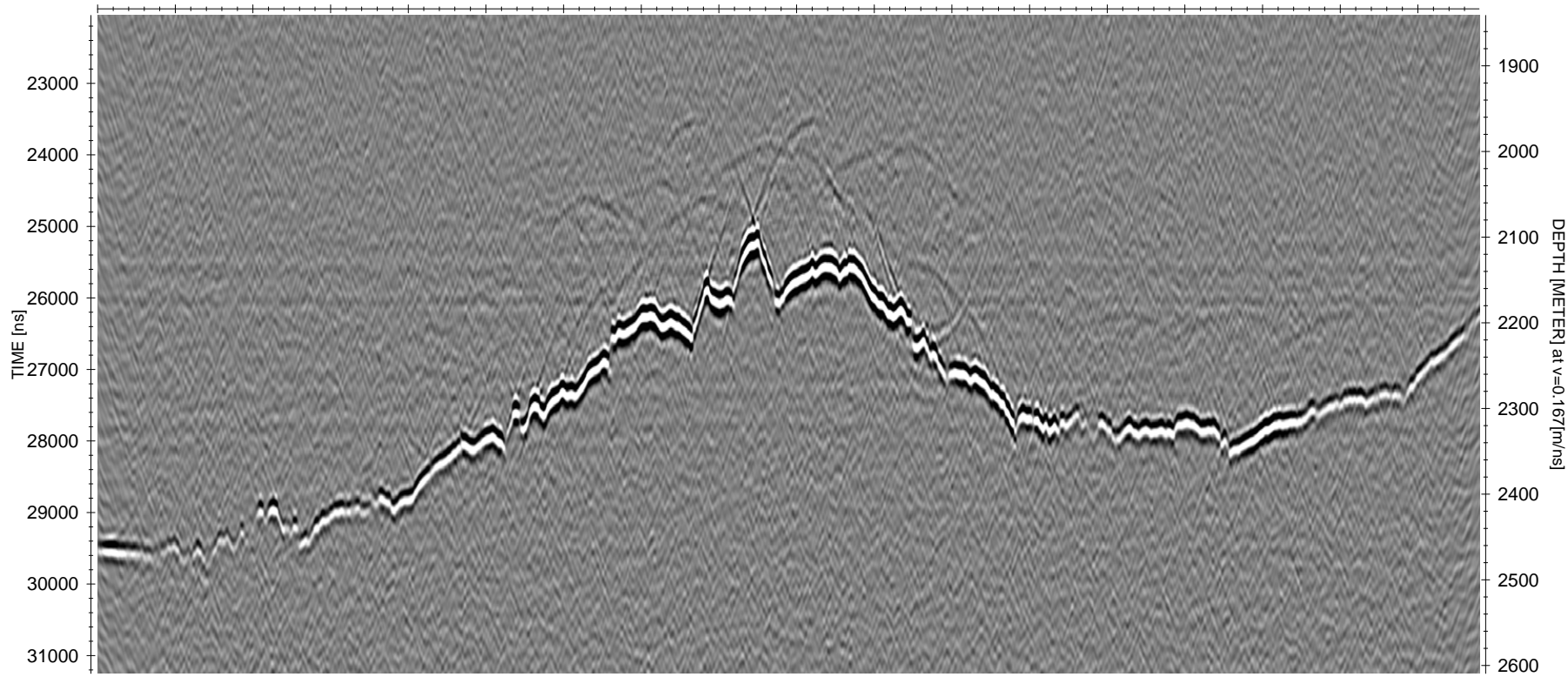




295W\_295E.23T

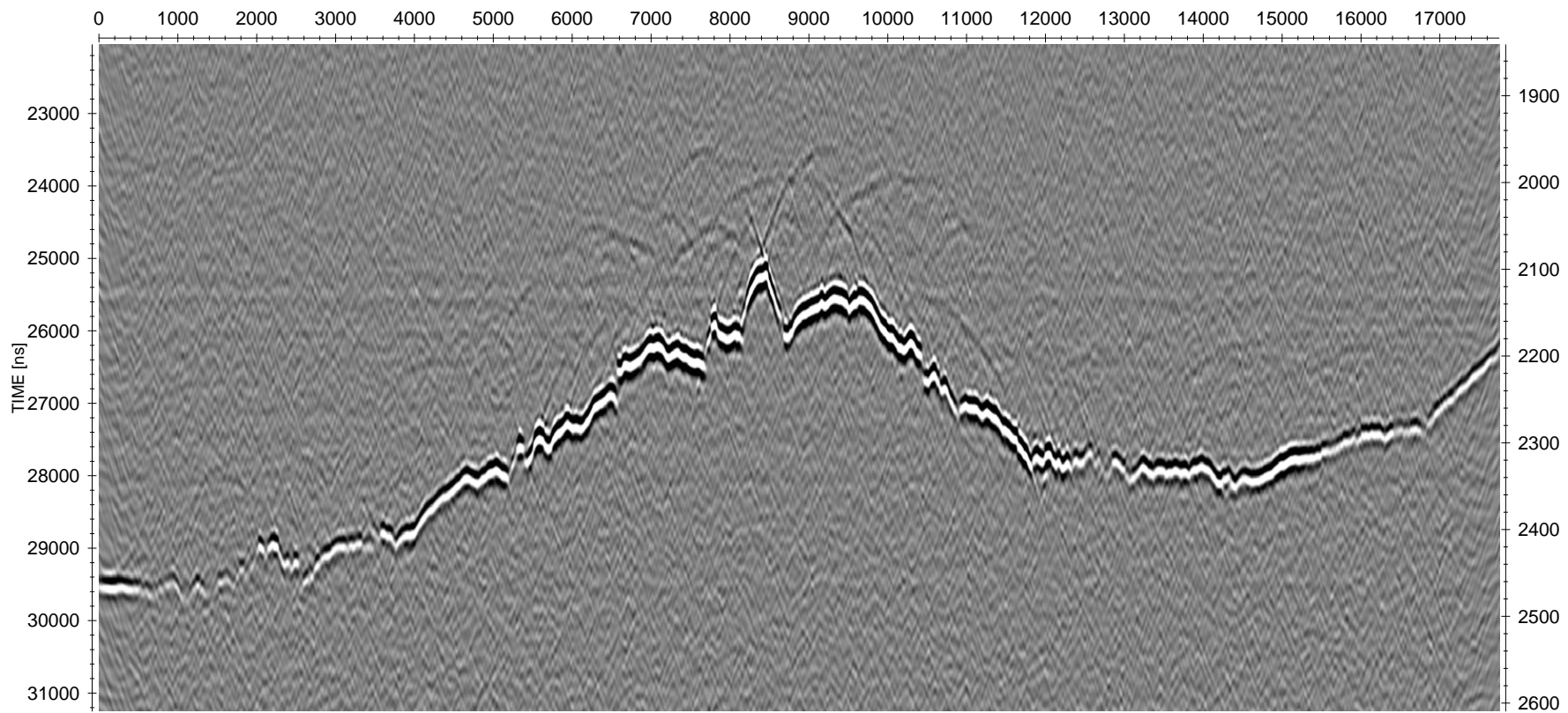
DISTANCE [METER]

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30W\_300E.23T

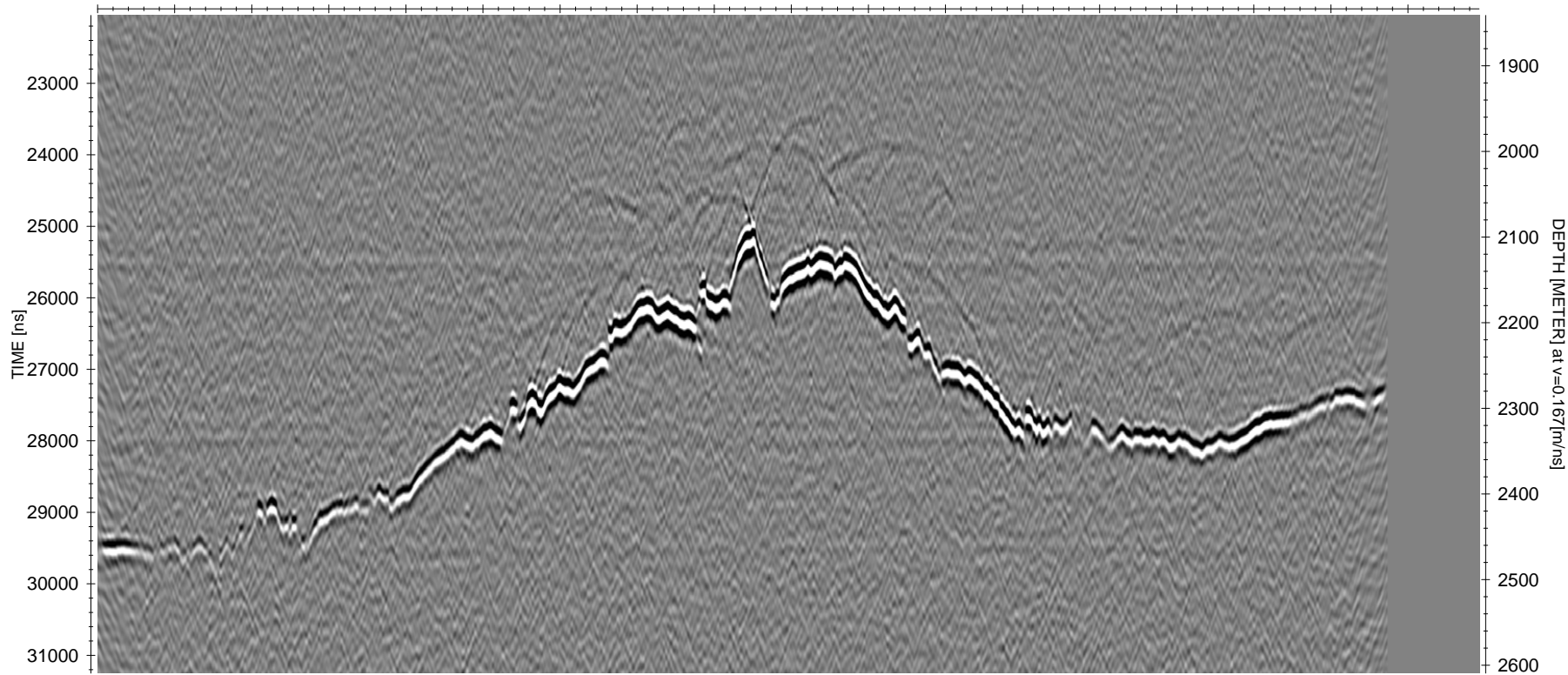
DISTANCE [METER]



305W\_305E.26T

DISTANCE [METER]

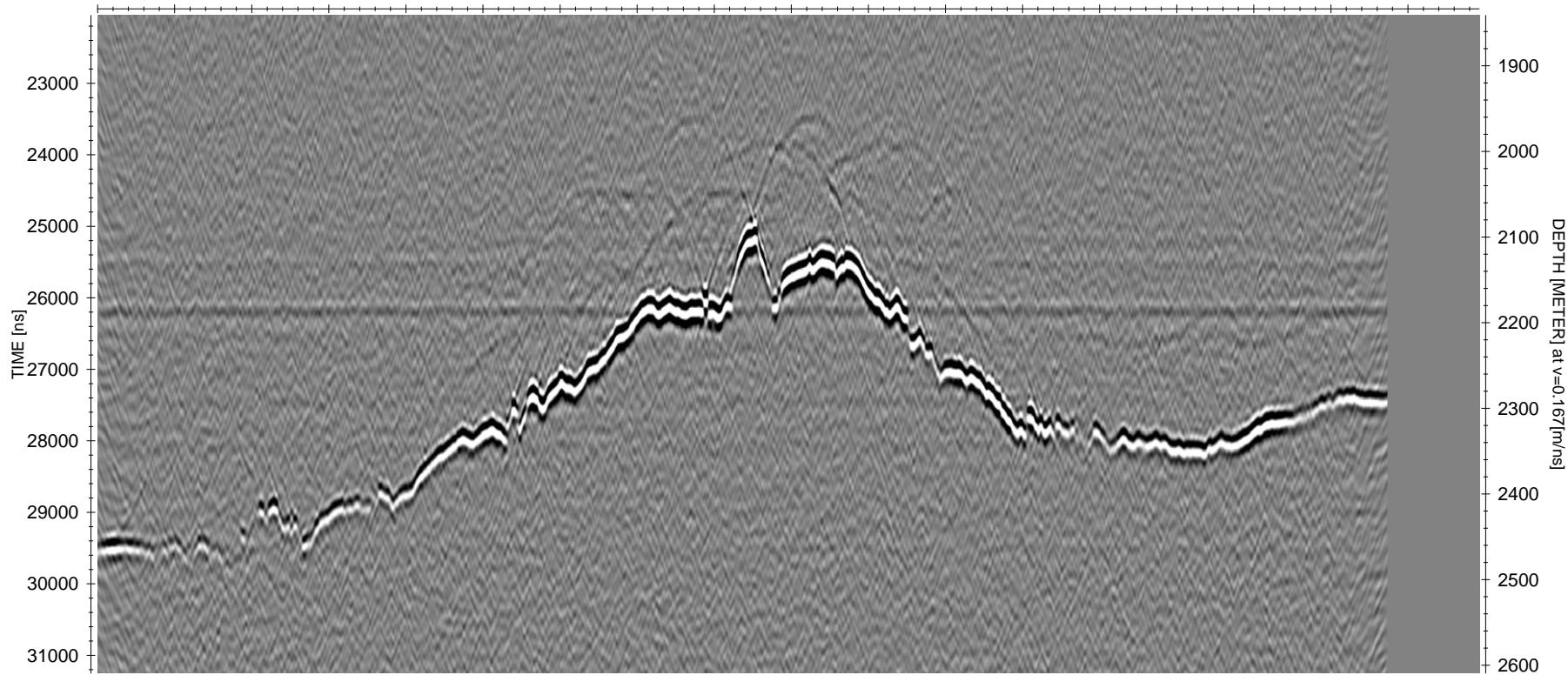
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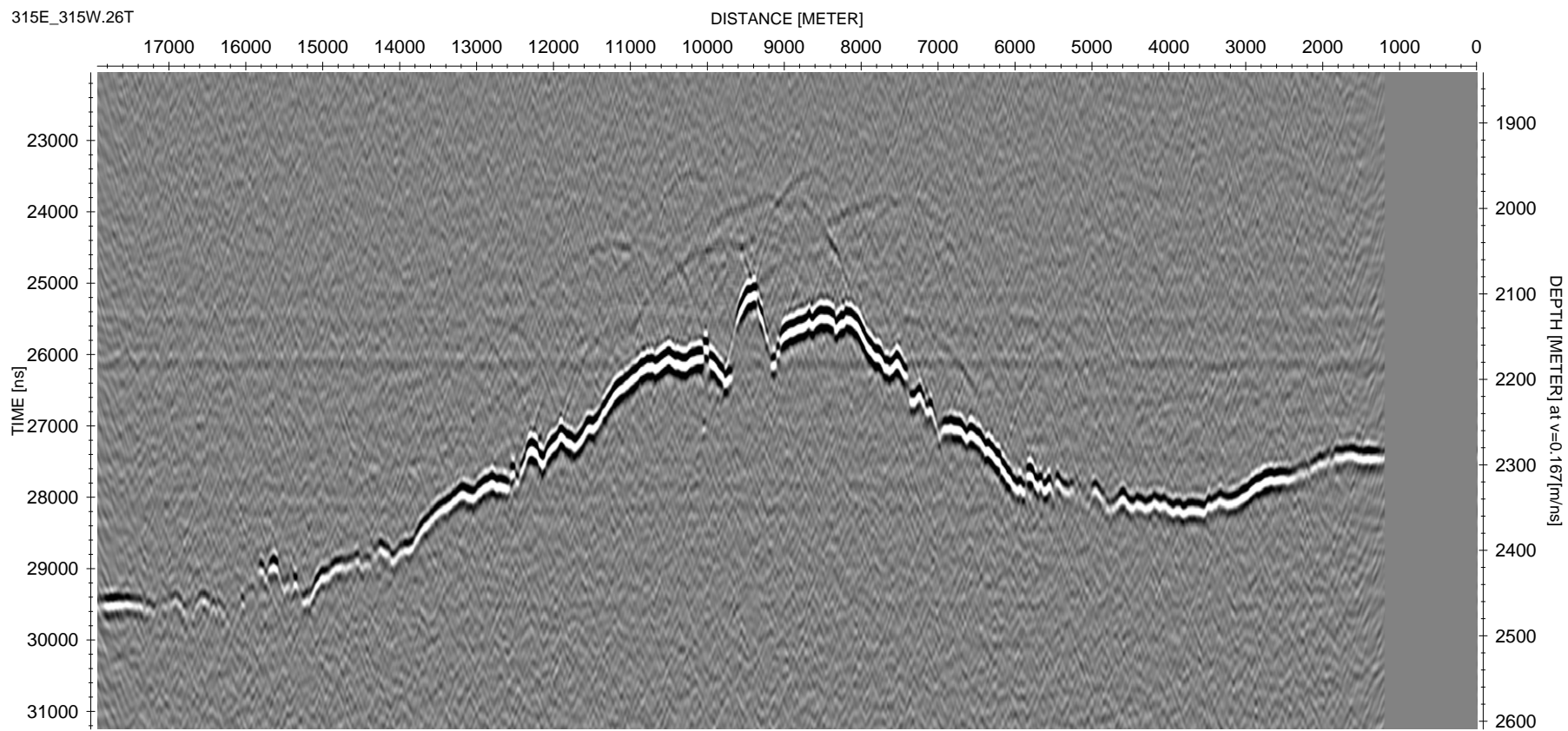
310W\_310E.26T

DISTANCE [METER]

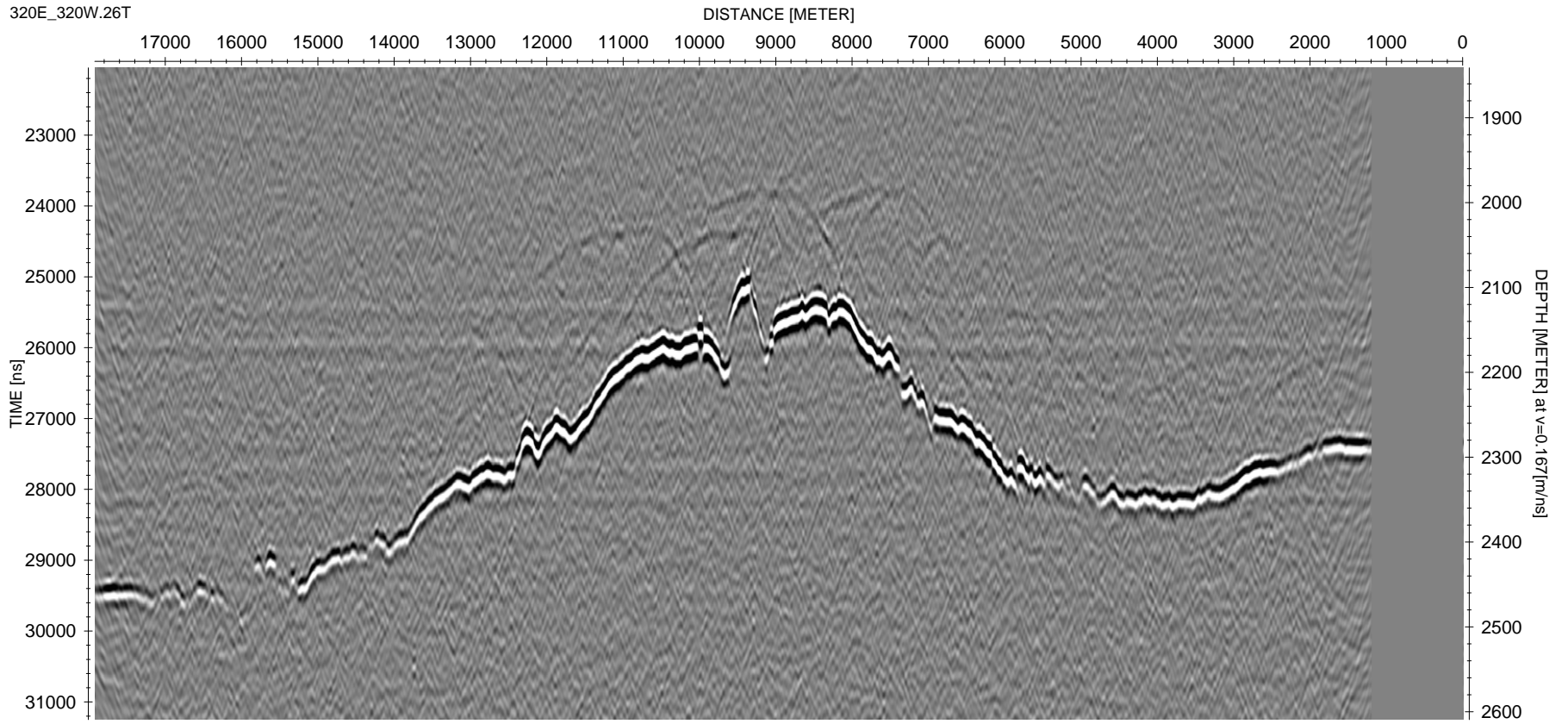
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315E\_315W.26T



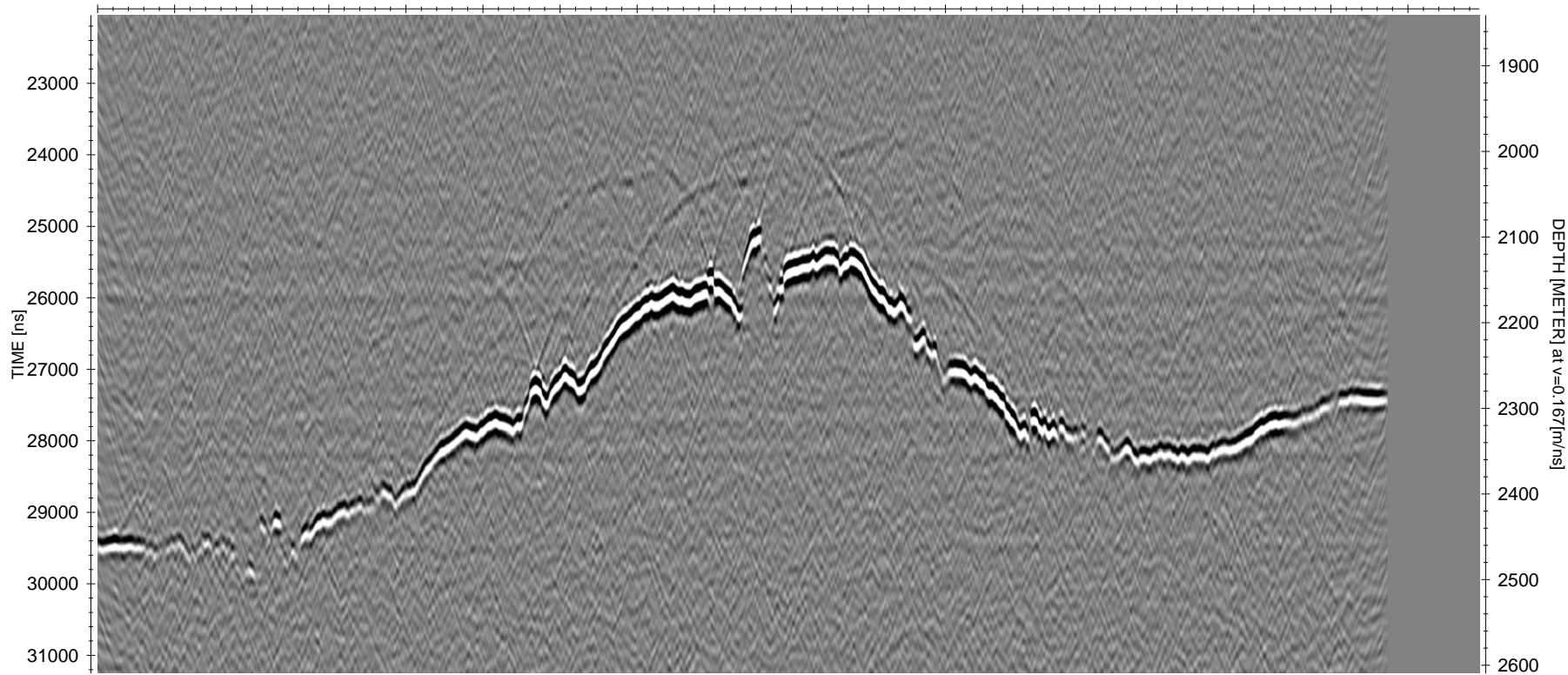
320E\_320W.26T



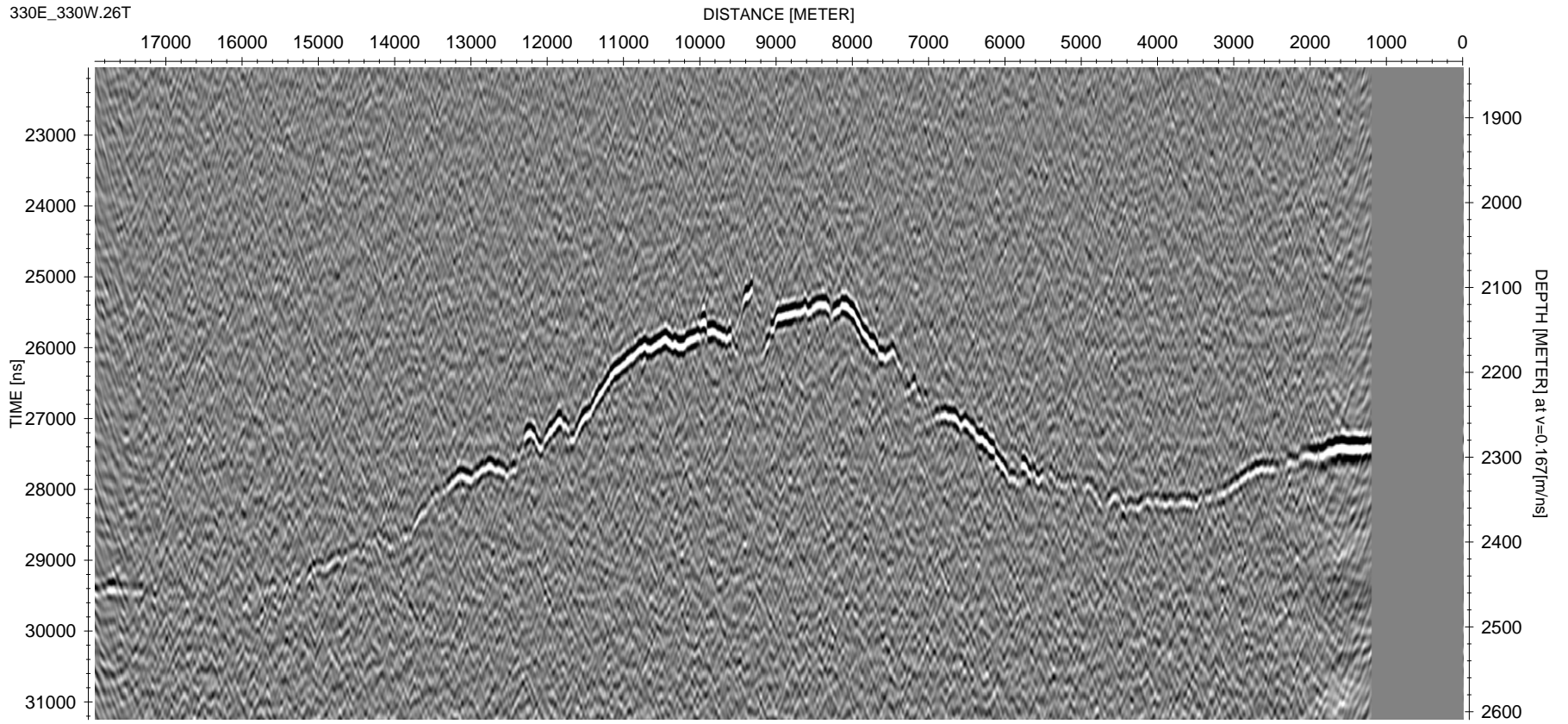
325W\_325E.26T

DISTANCE [METER]

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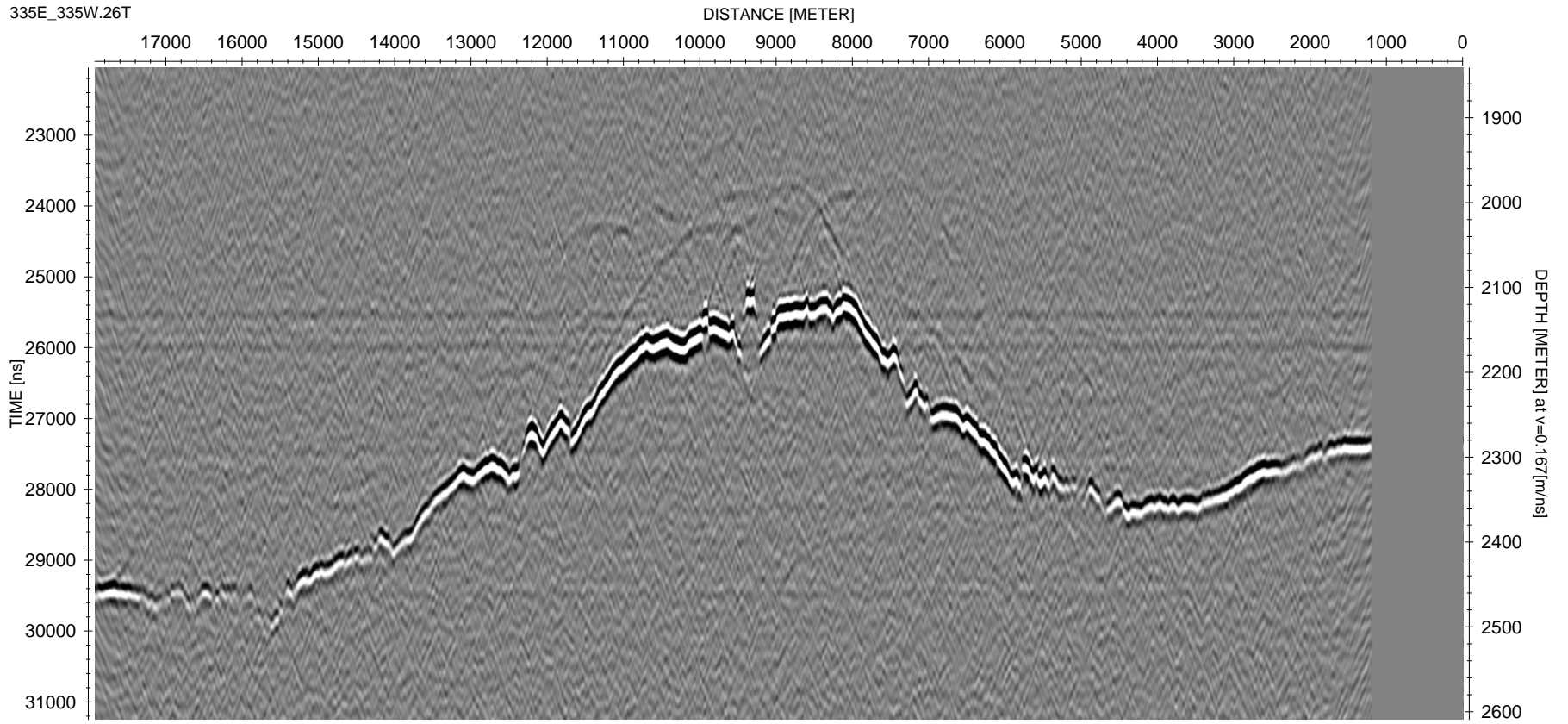


330E\_330W.26T





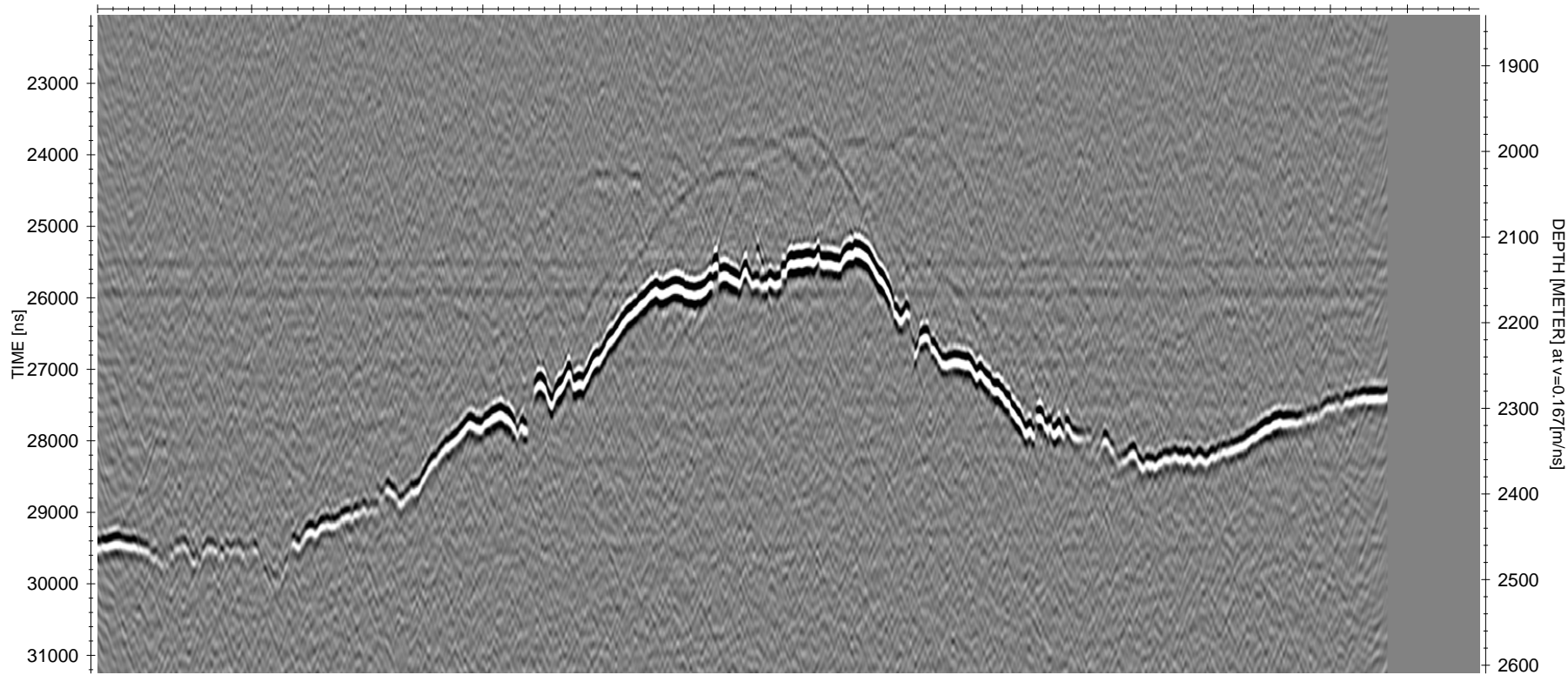
335E\_335W.26T



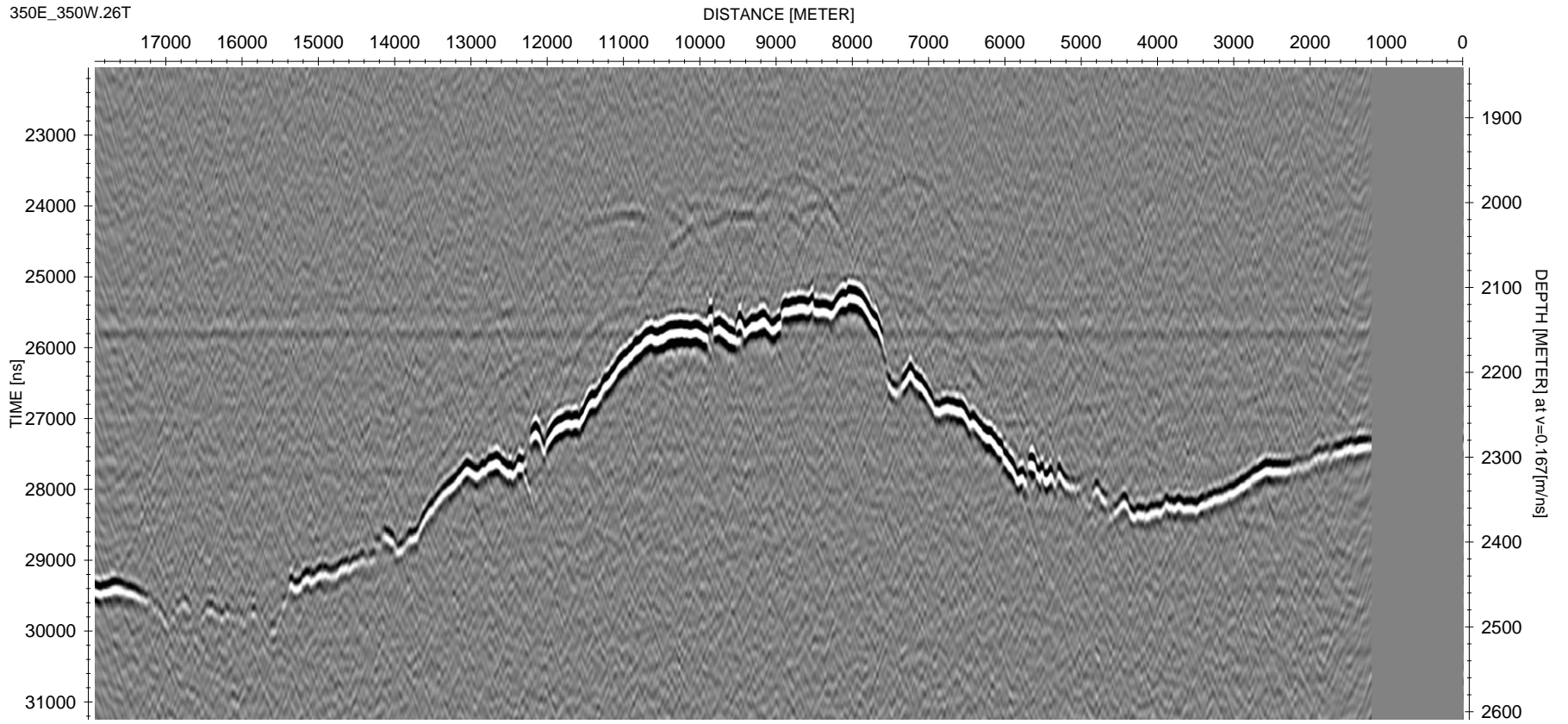
340W\_340E.26T

DISTANCE [METER]

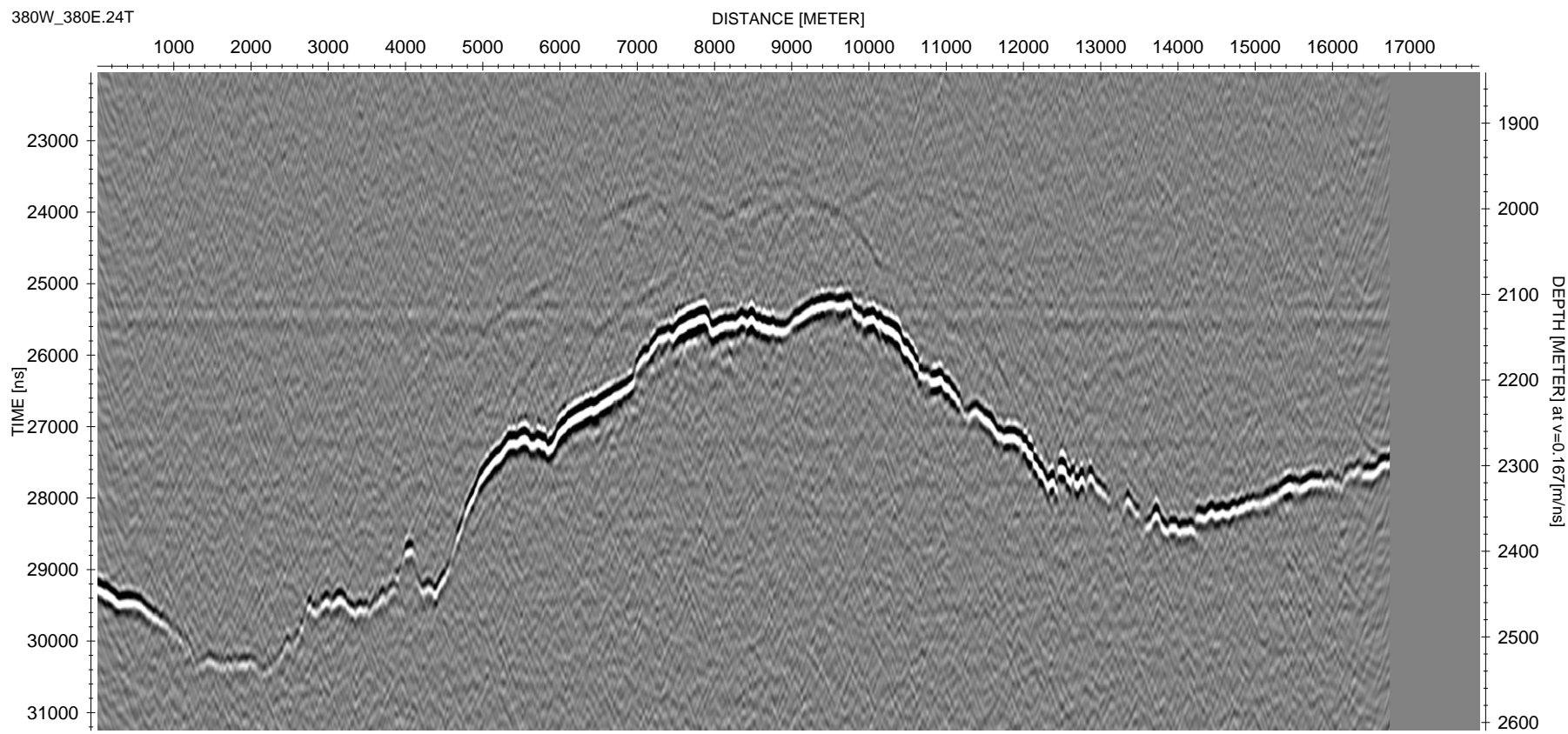
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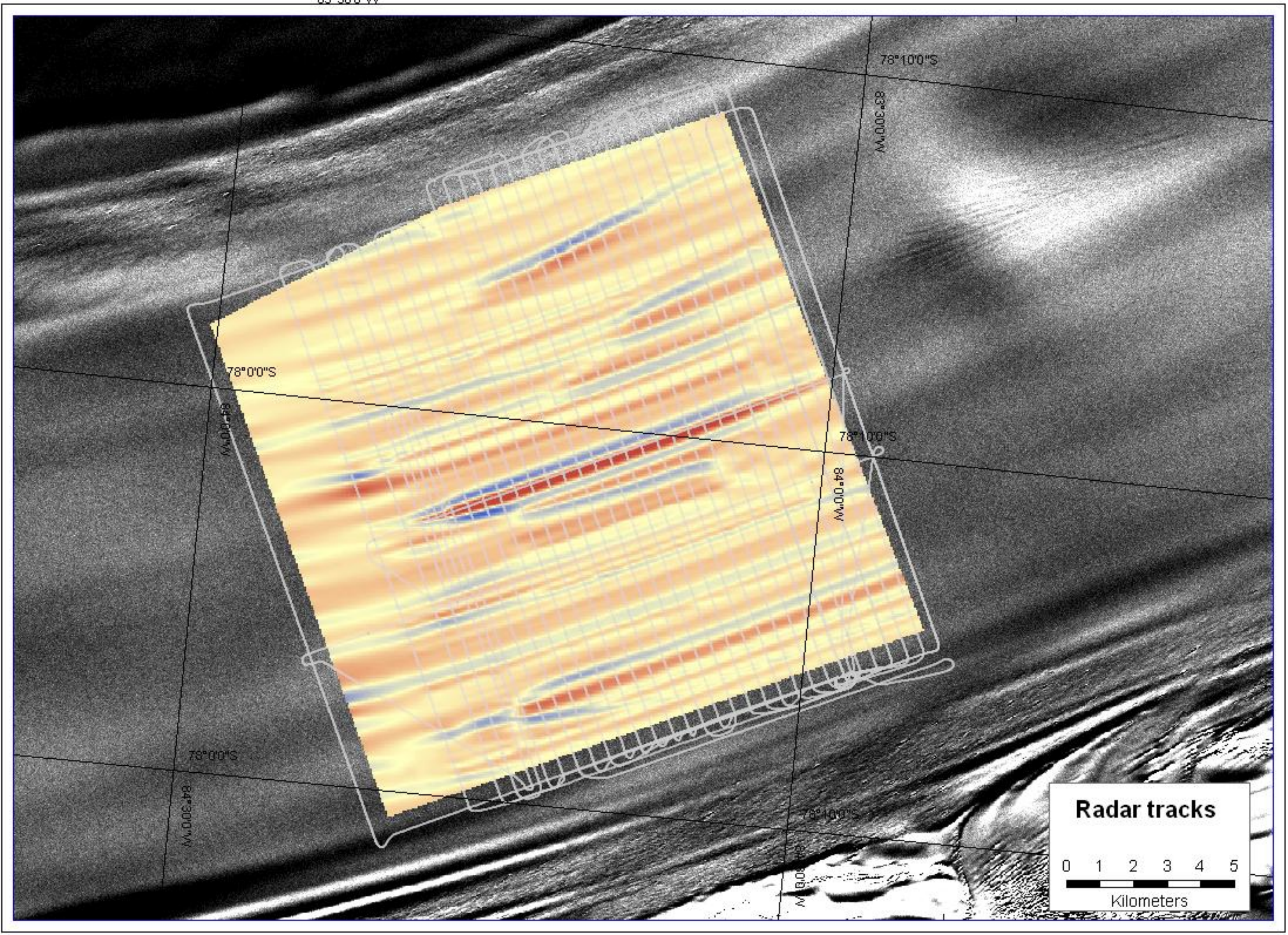


350E\_350W.26T



380W\_380E.24T





78°10'0"S

84°30'0"W

78°0'0"S

84°0'0"W

78°10'0"S

84°0'0"W

78°0'0"S

84°30'0"W

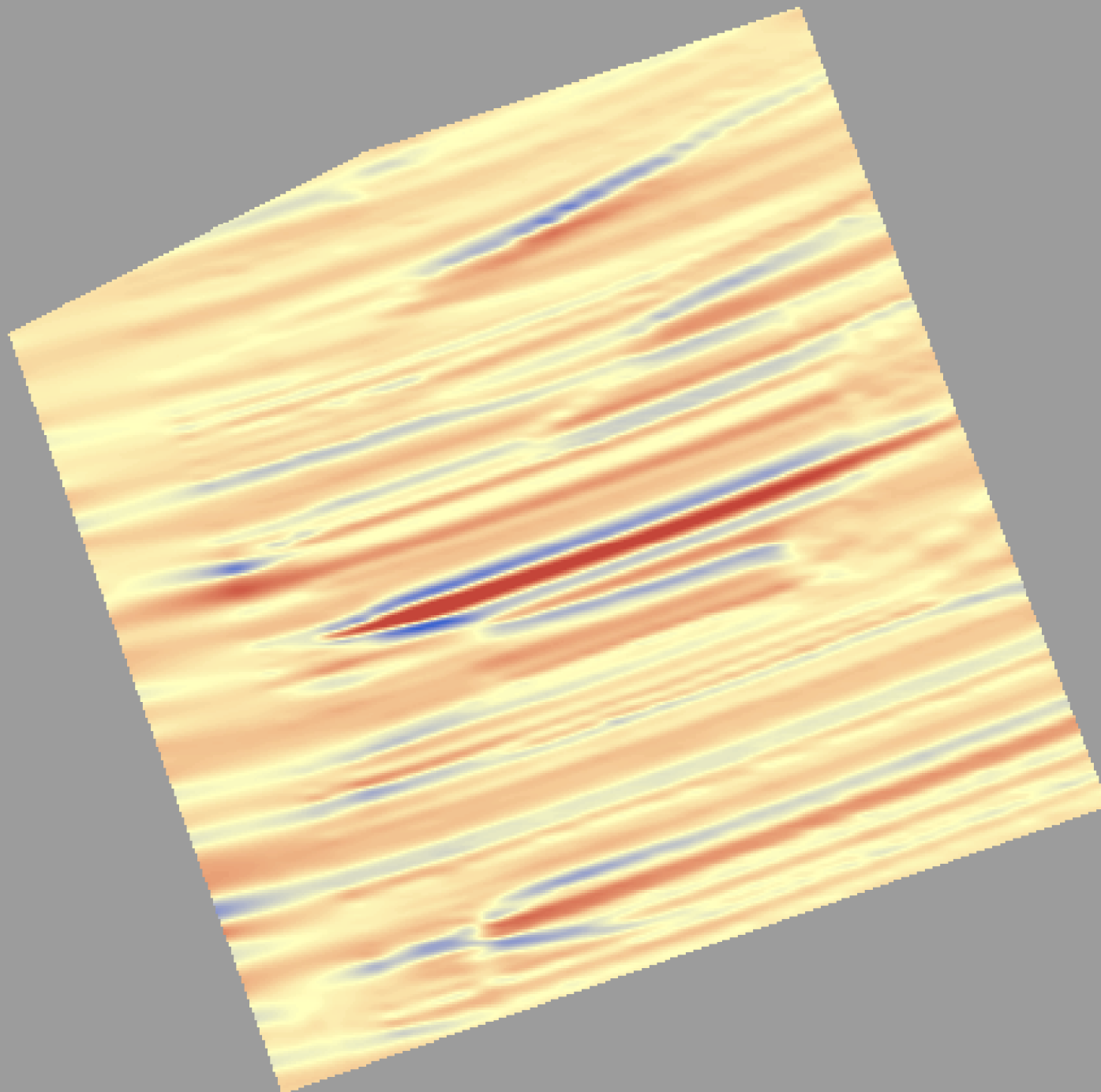
78°10'0"S

84°30'0"W

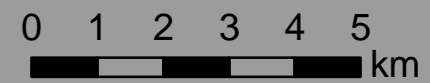
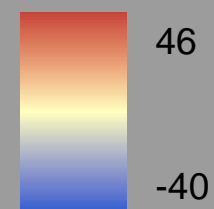
**Radar tracks**

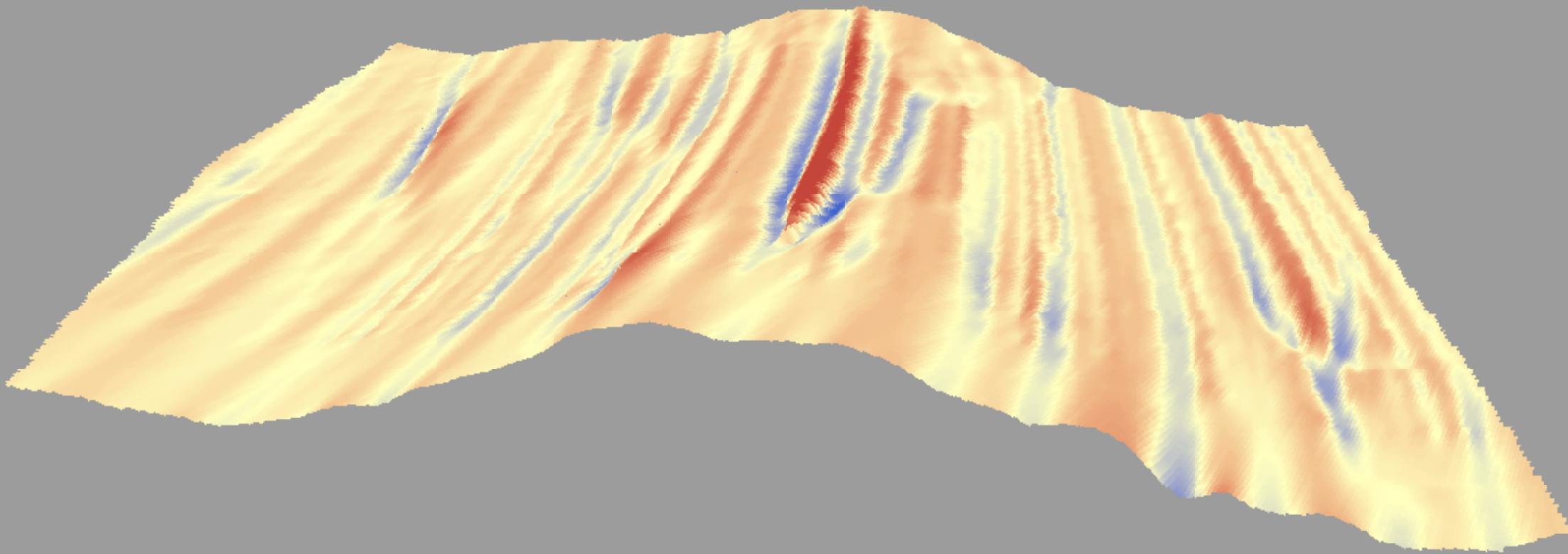
0 1 2 3 4 5

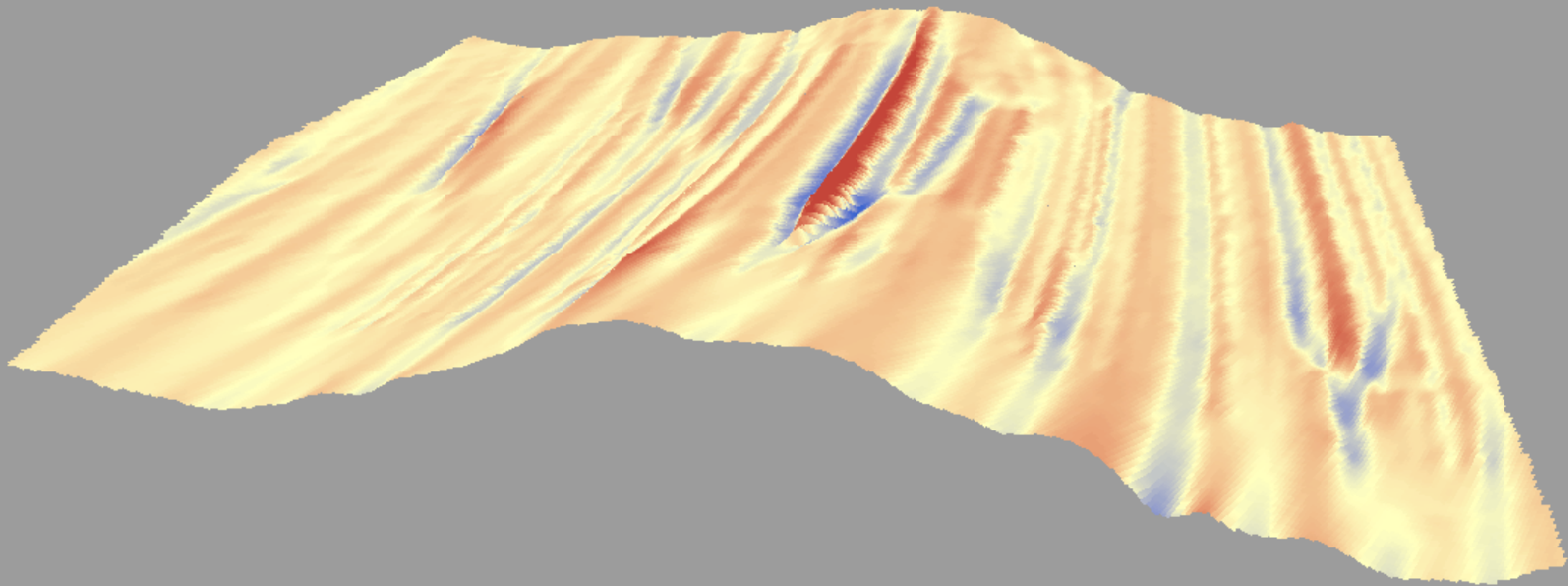
Kilometers



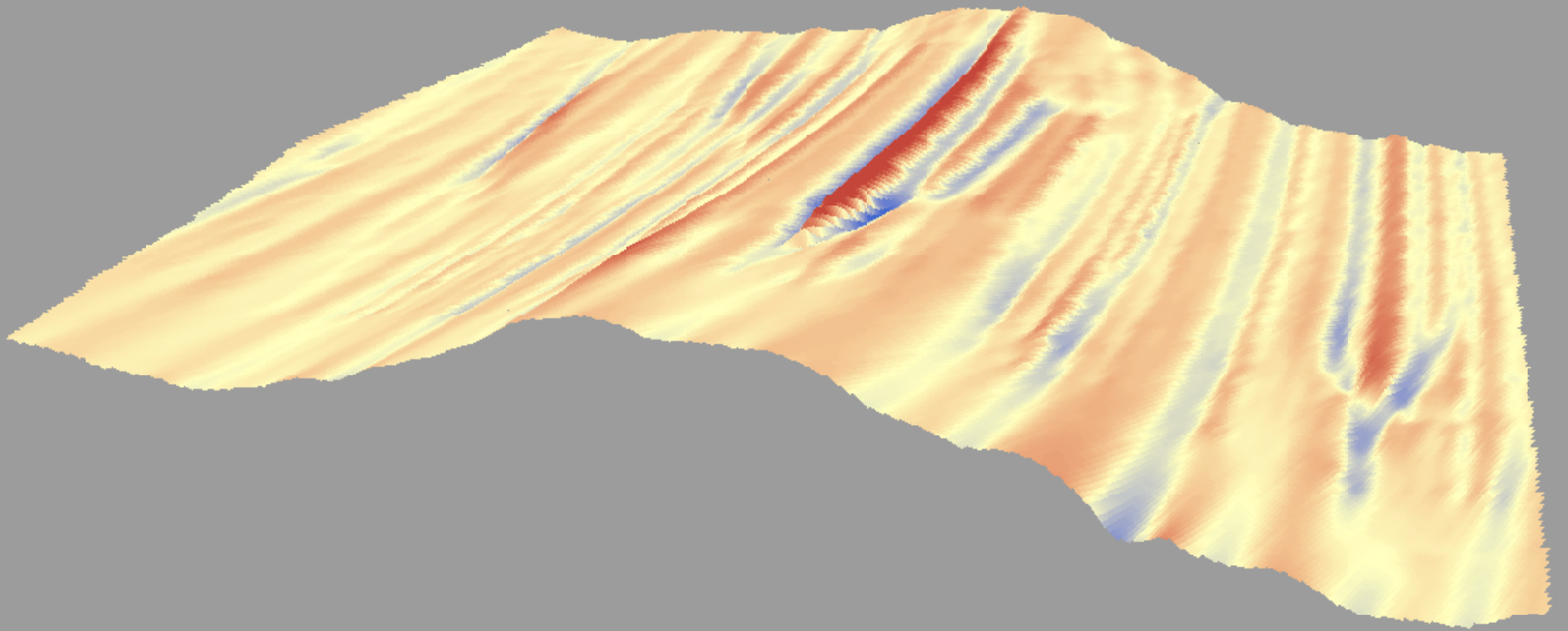
**Bed form  
elevation (m)**

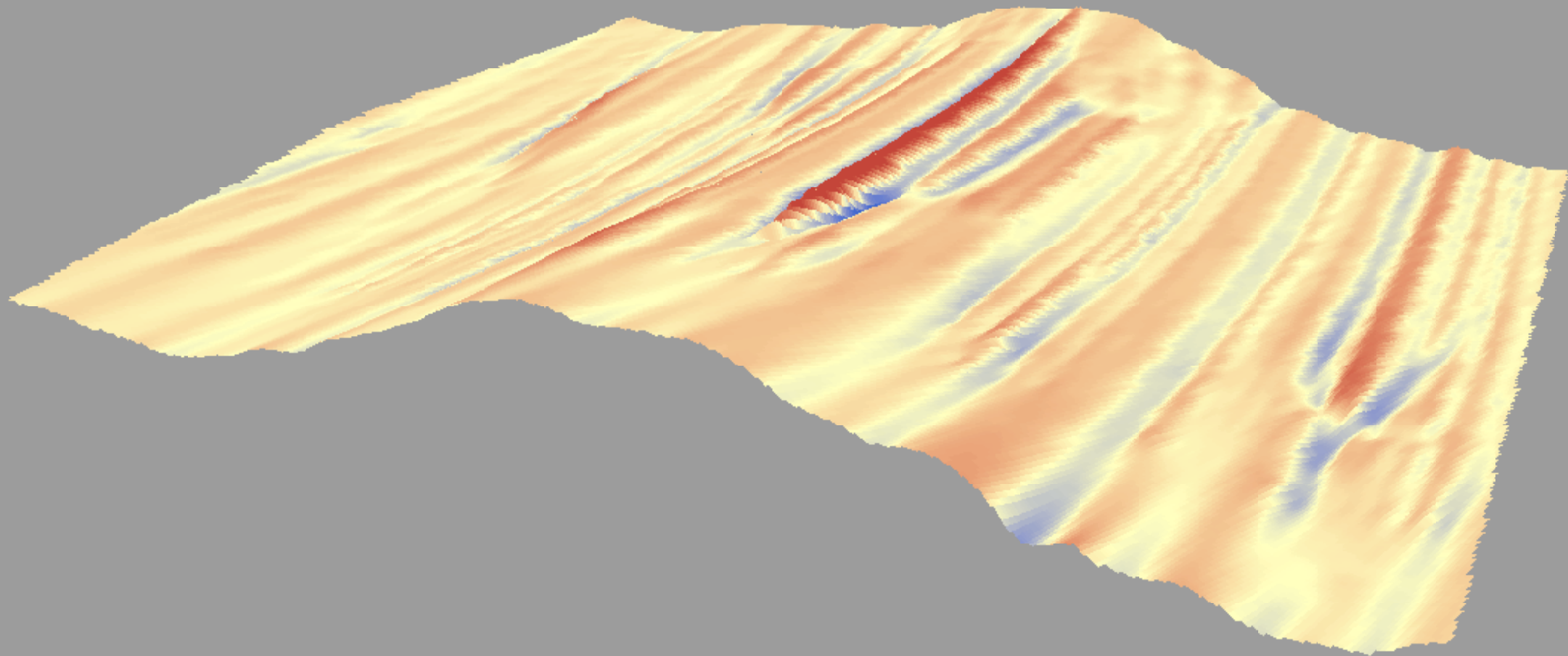




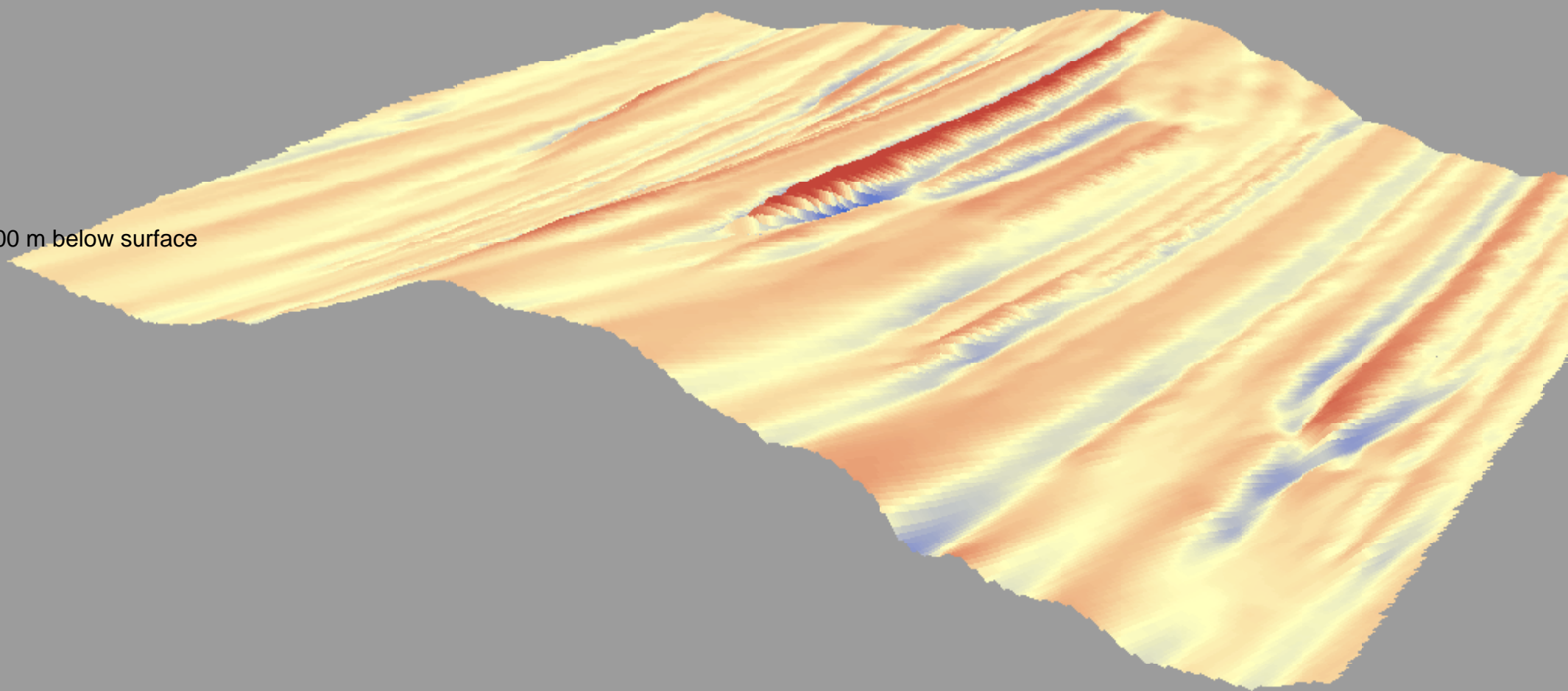


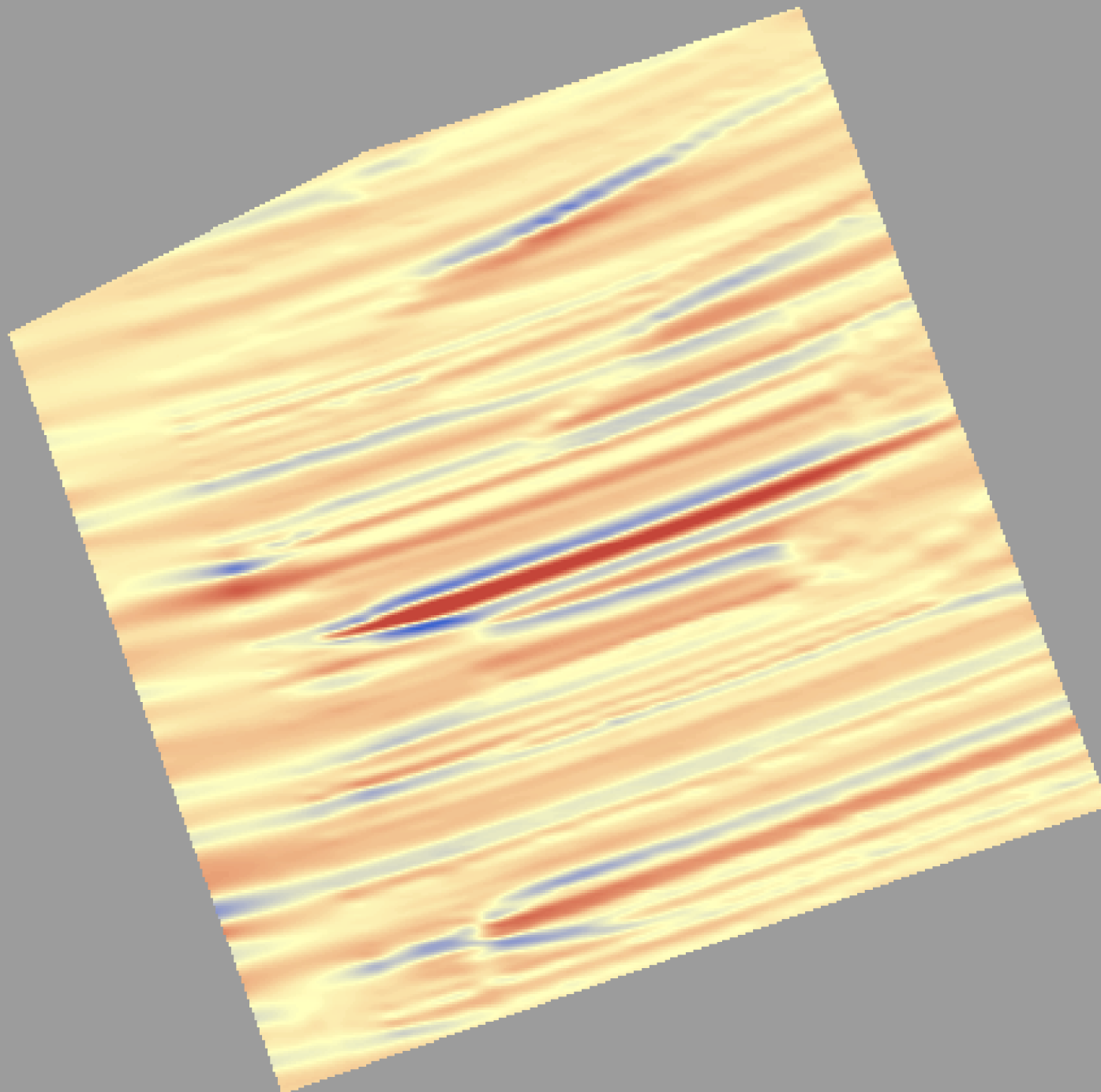




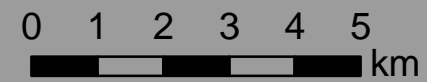
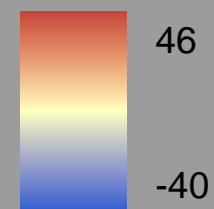


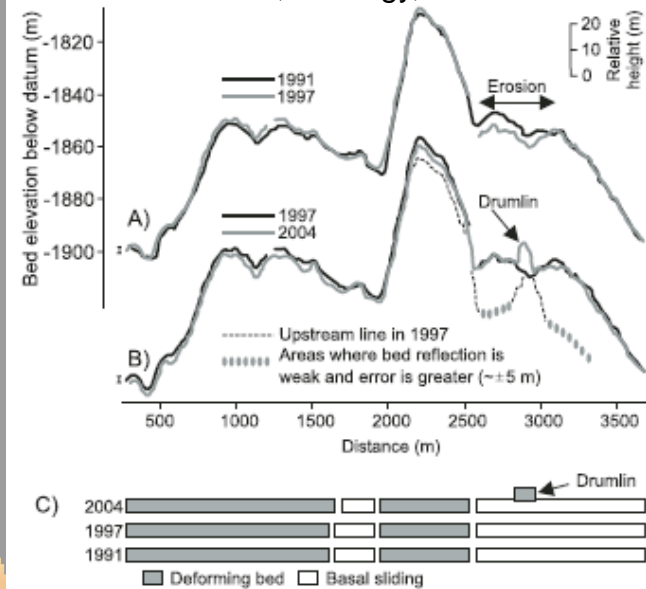
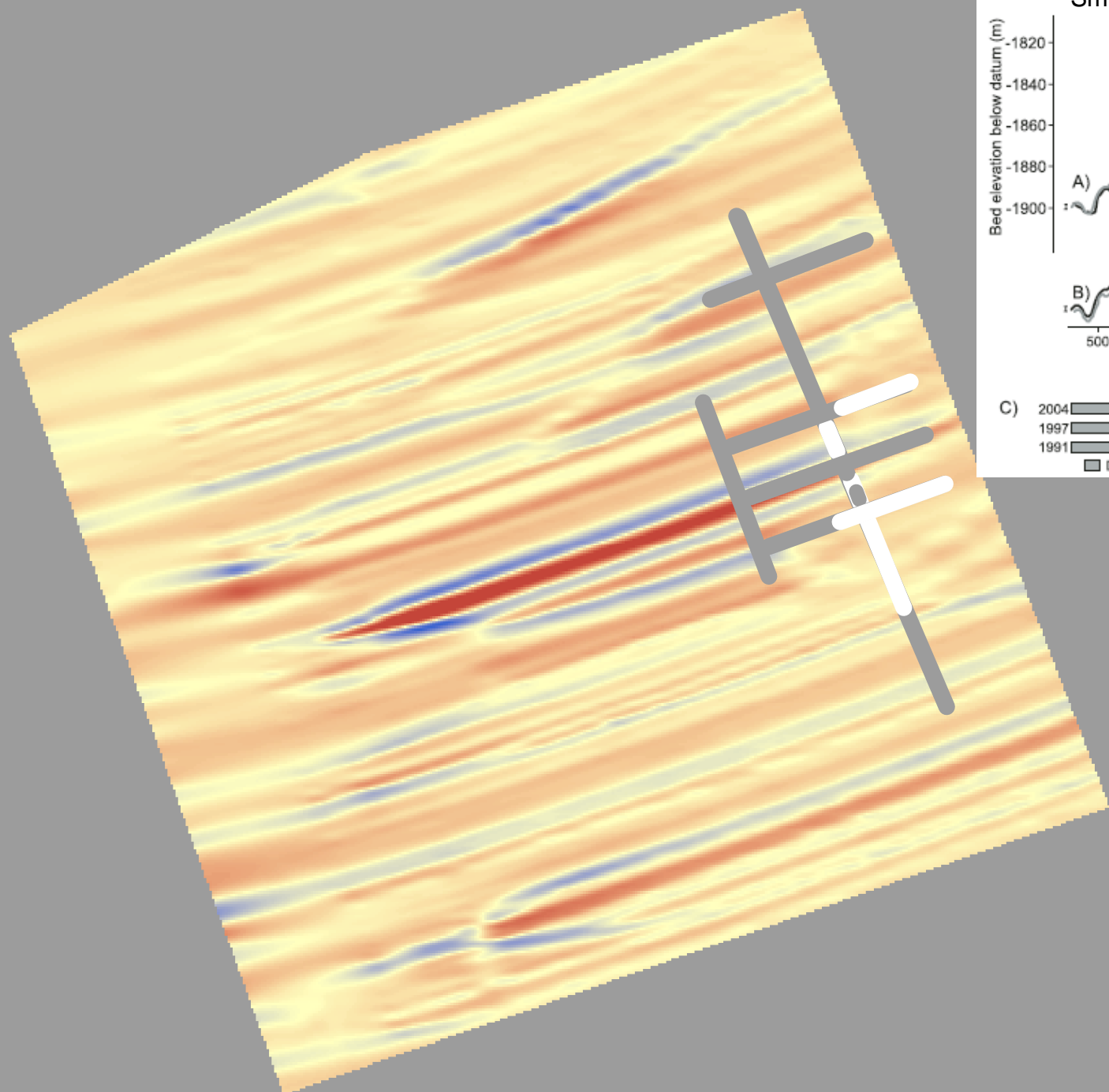
2300 m below surface



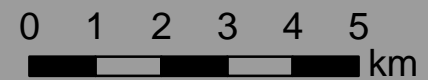
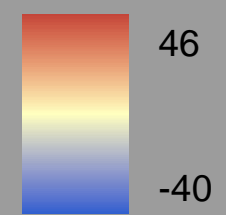


**Bed form  
elevation (m)**

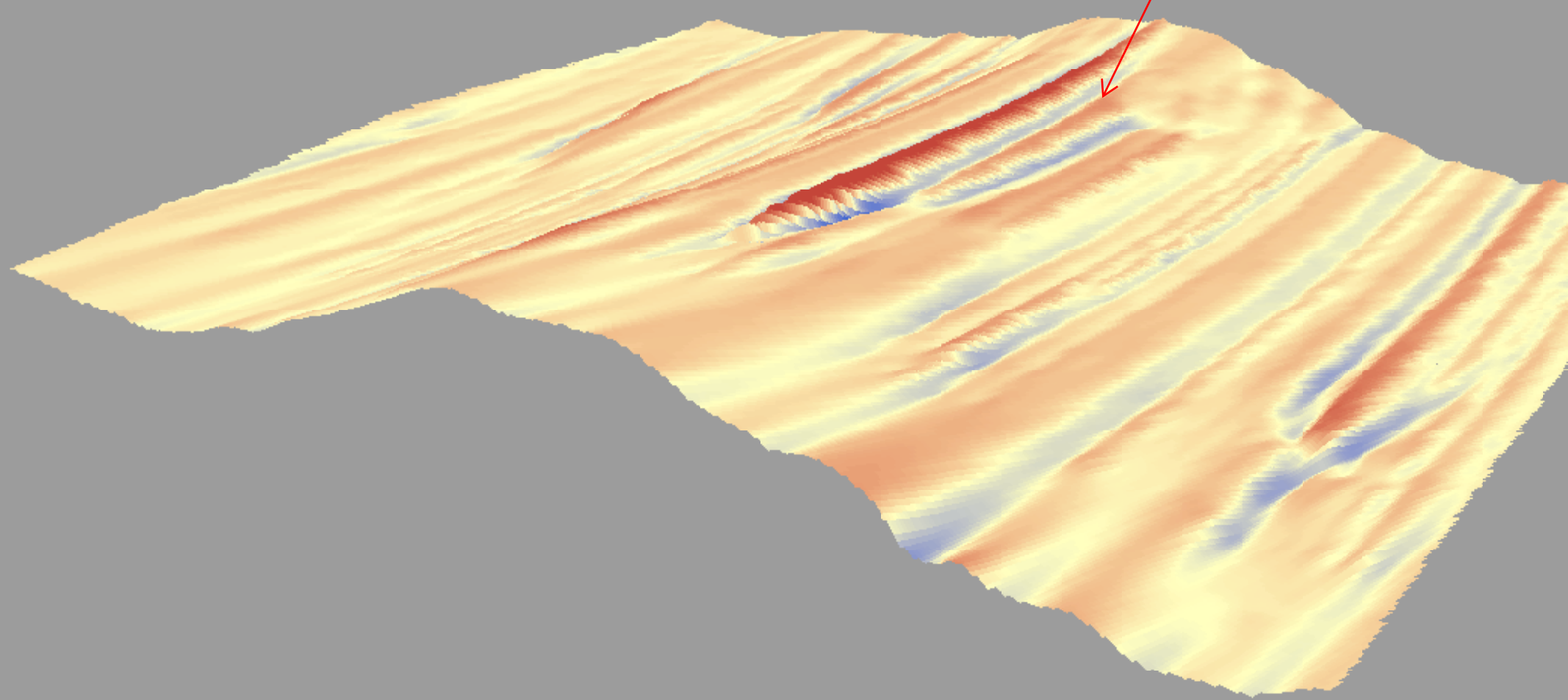




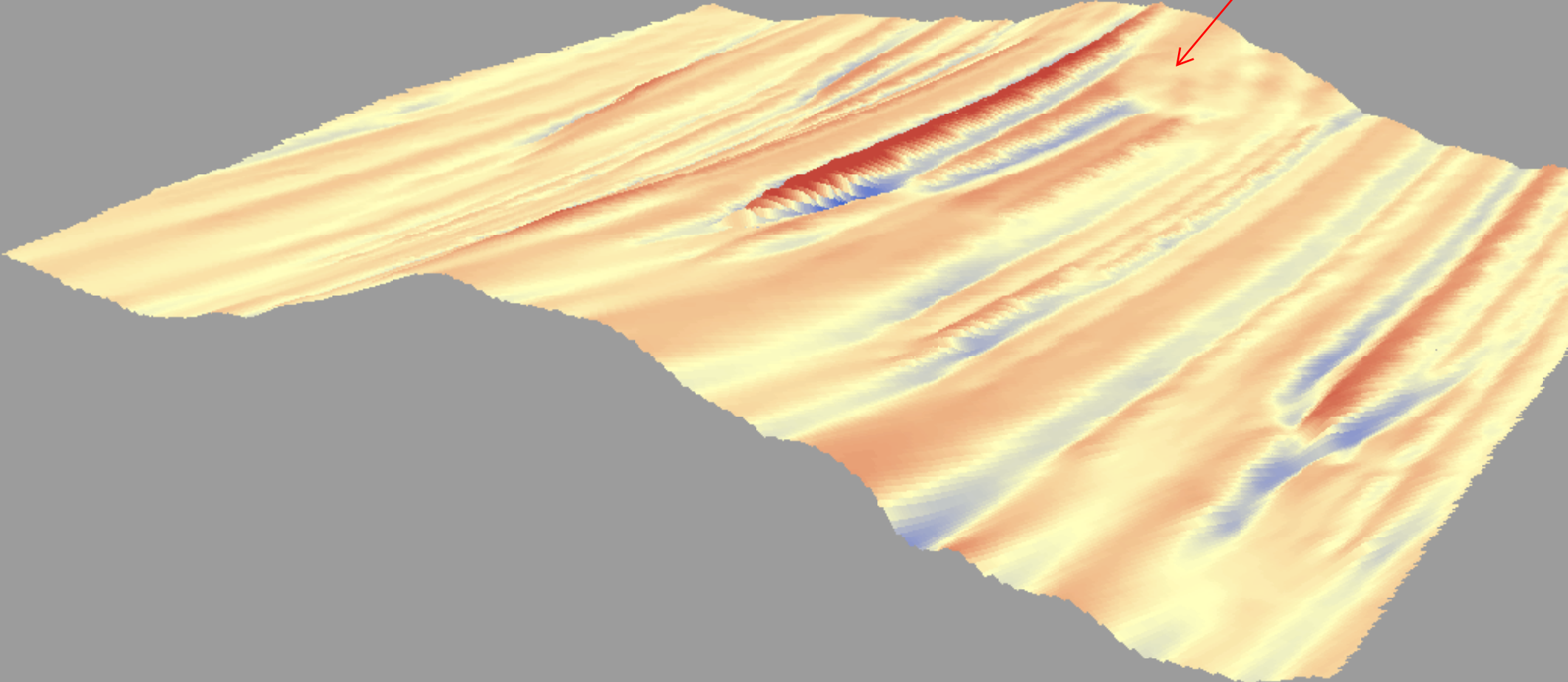
Bed form elevation (m)



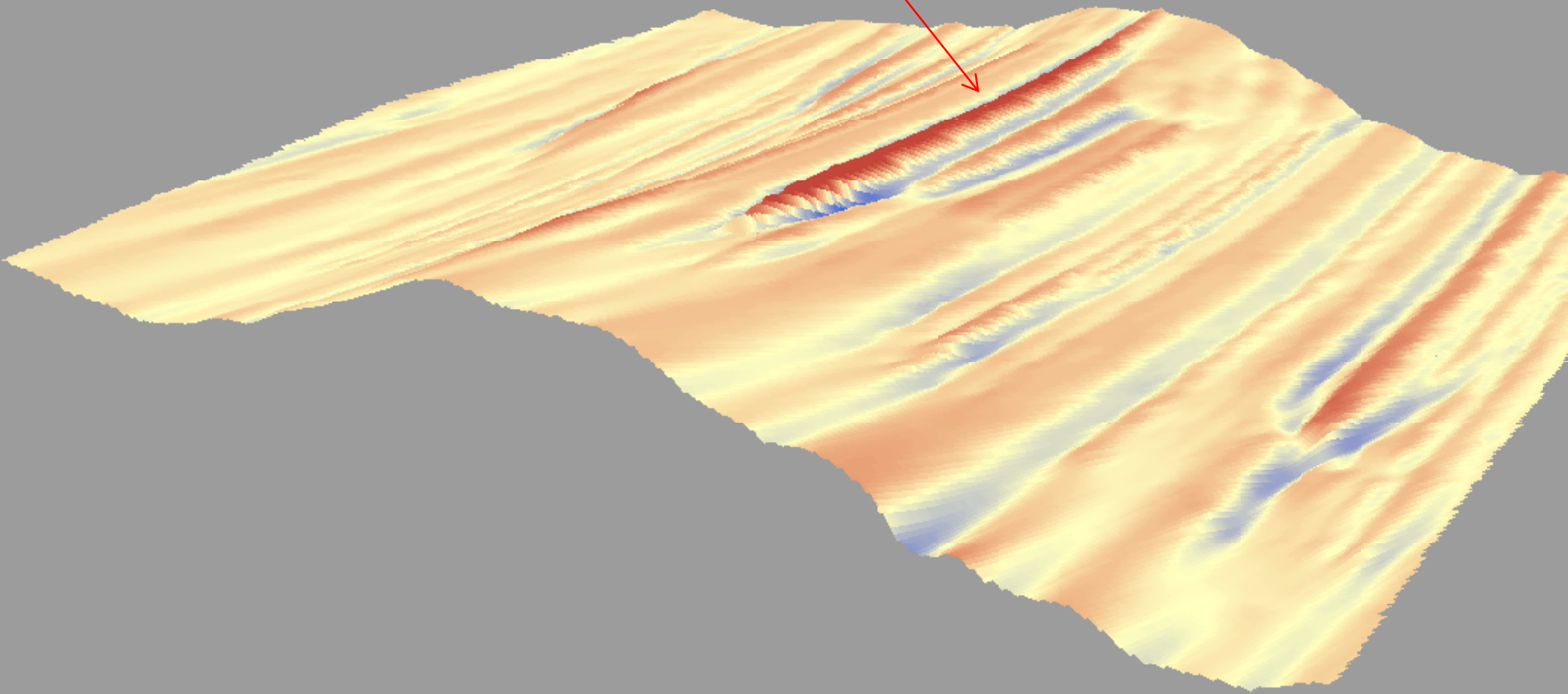
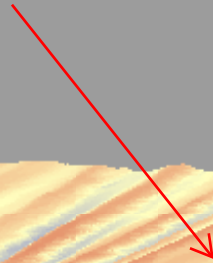
Drumlin



Basal sliding

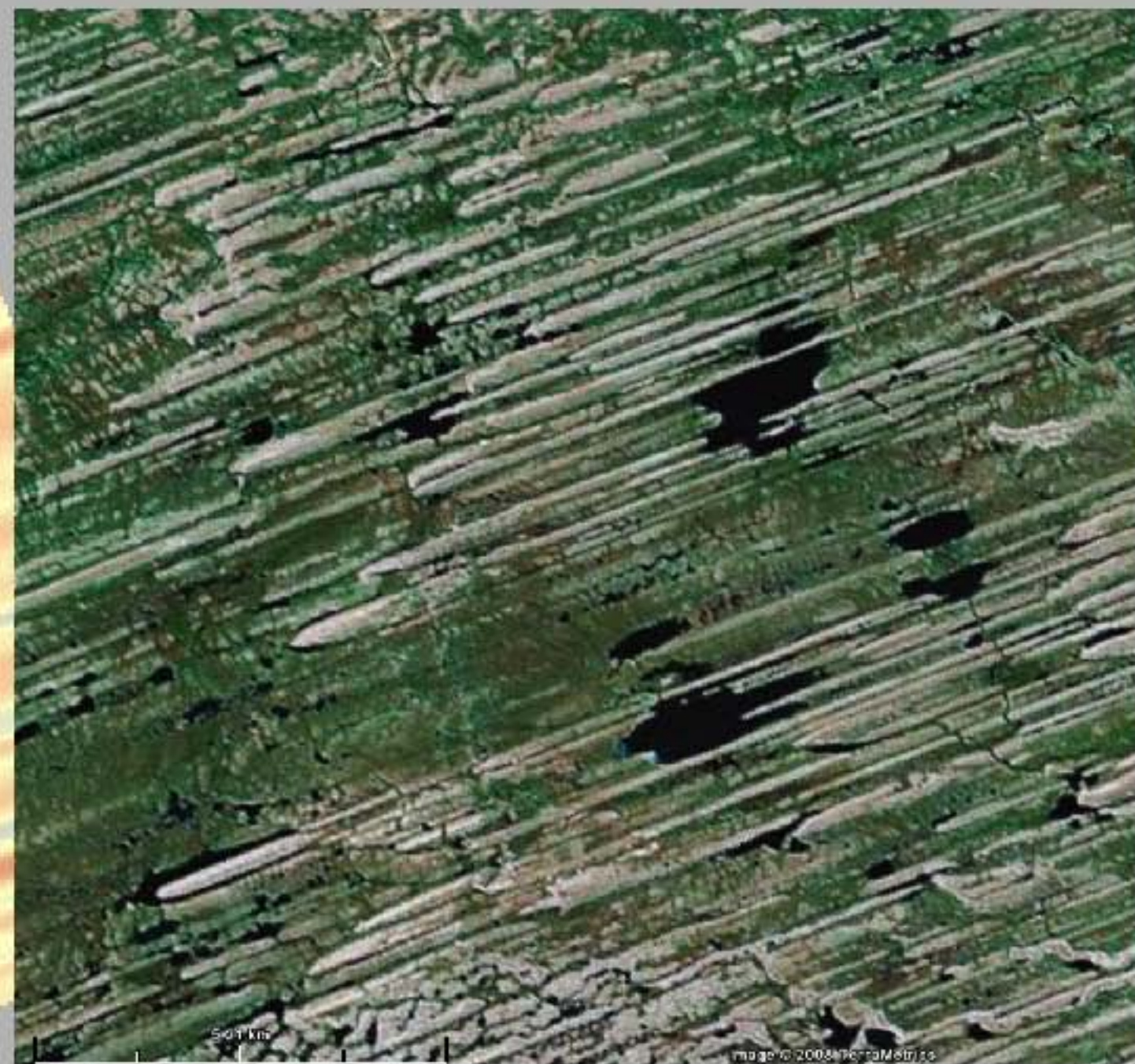
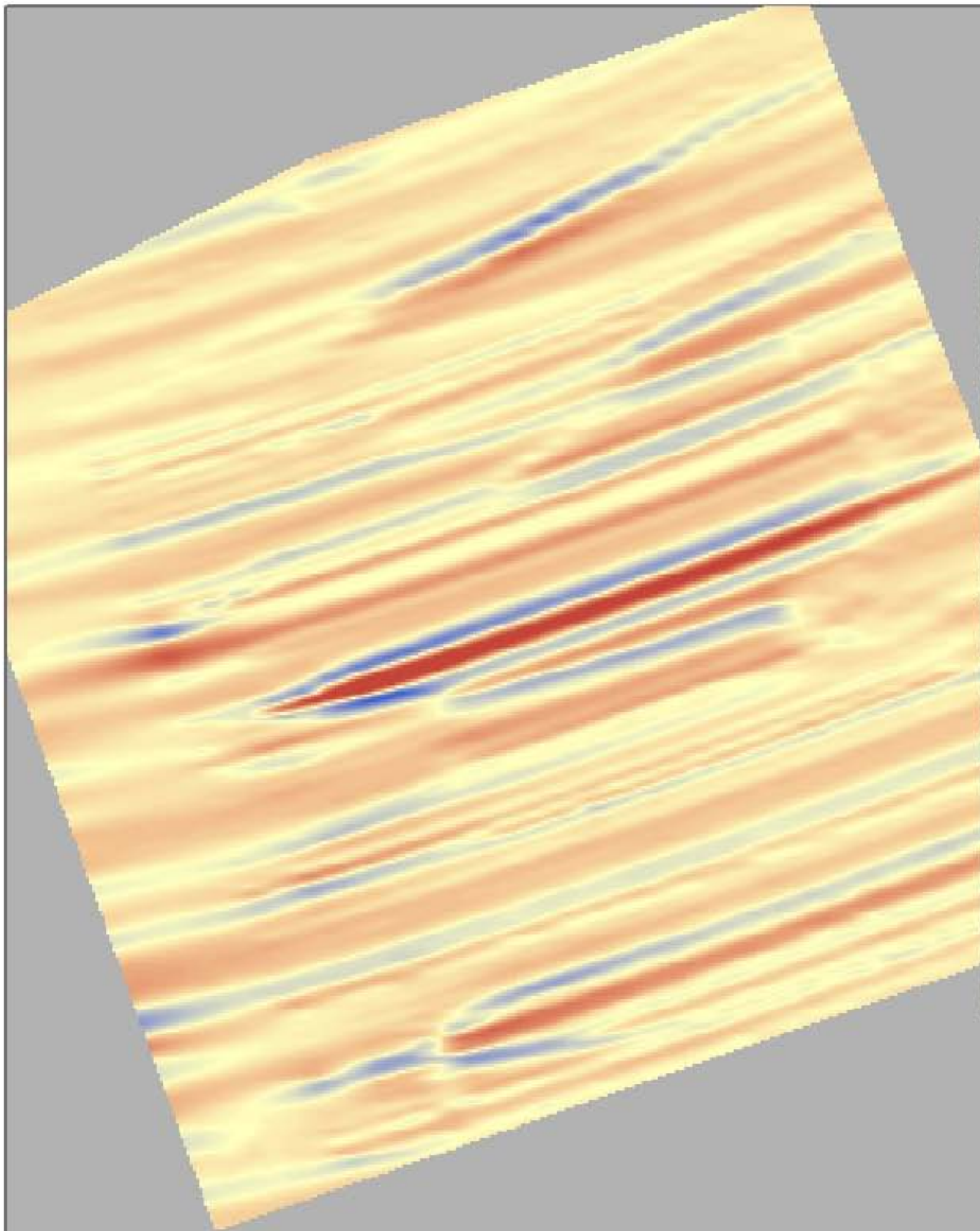


Deforming bed



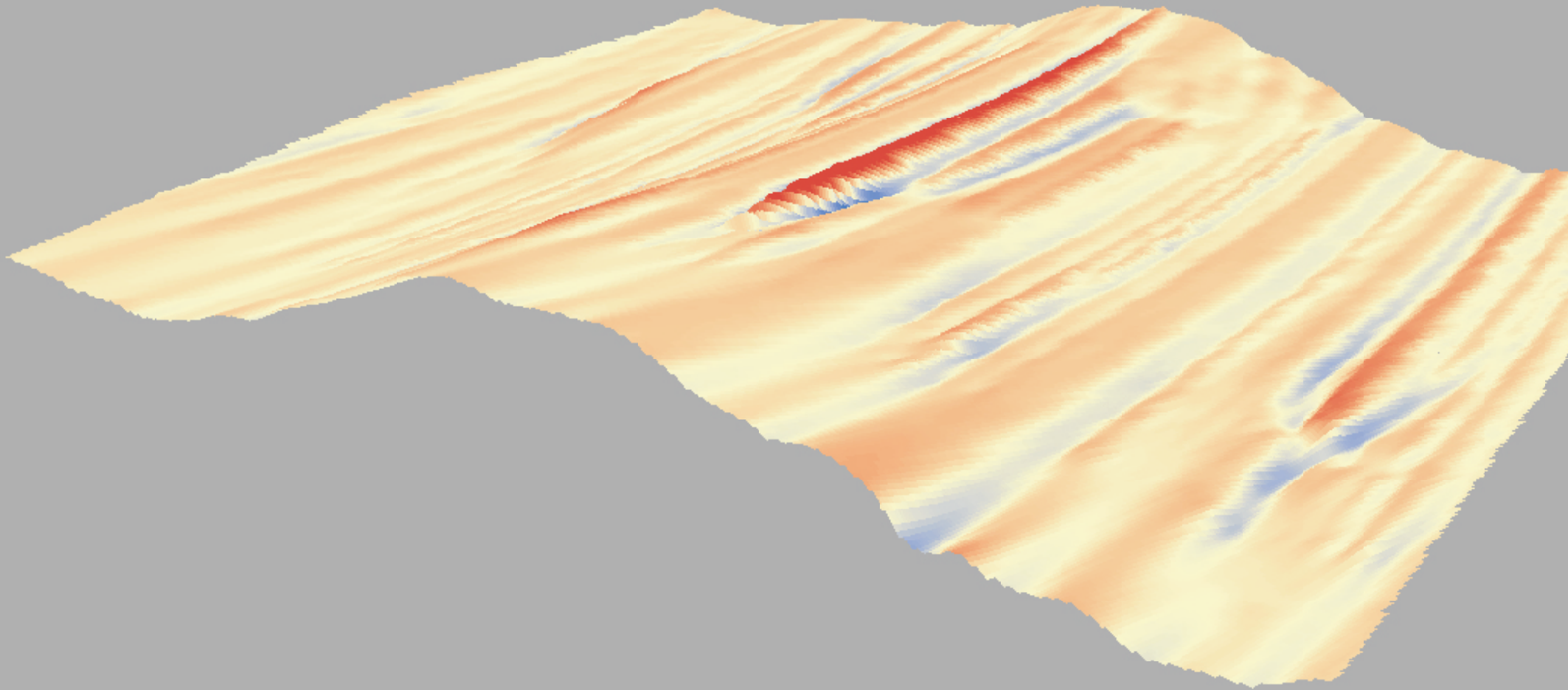


Dubawnt Lake region, Nunavut, Canada



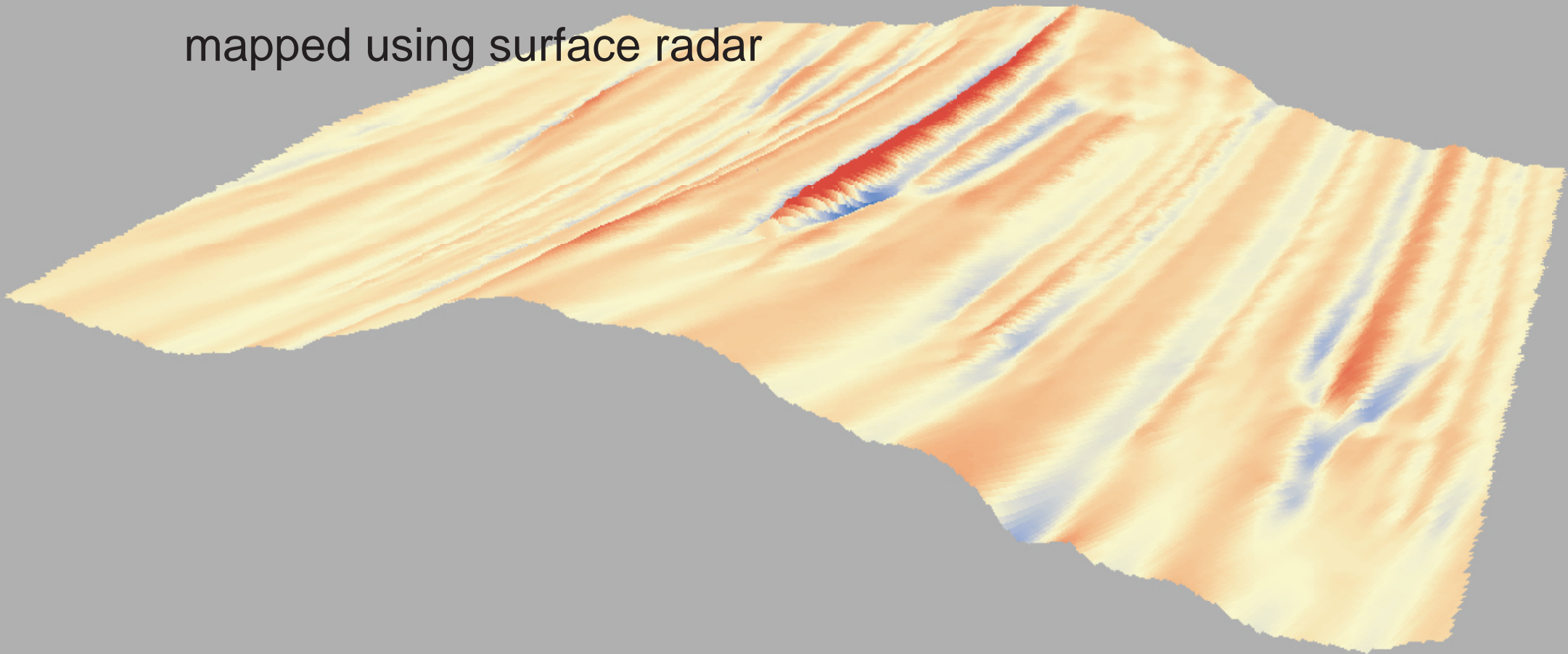
## Conclusions

These data prove that MSGL are formed beneath ice streams



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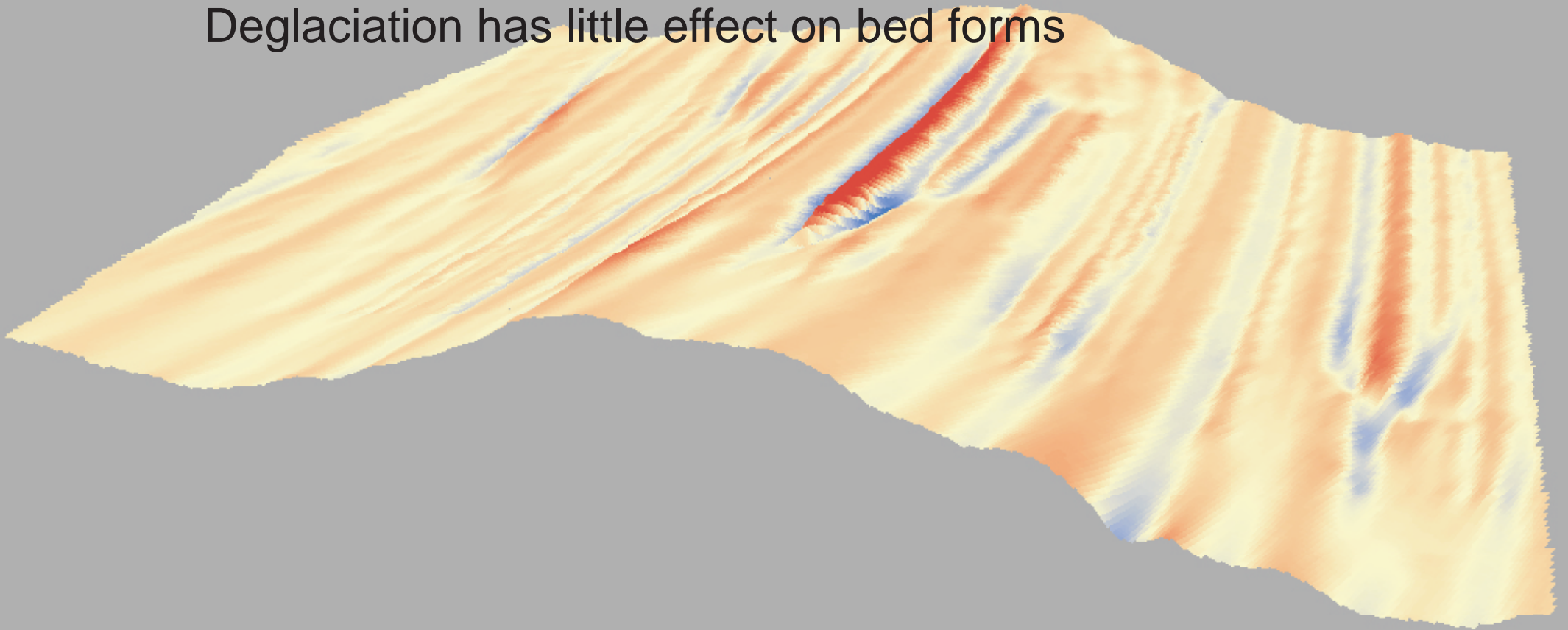
The distribution of deforming till and basal sliding can be mapped using surface radar



These data prove that MSGL are formed beneath ice streams

The distribution of deforming till and basal sliding can be mapped using surface radar

**Deglaciation has little effect on bed forms**

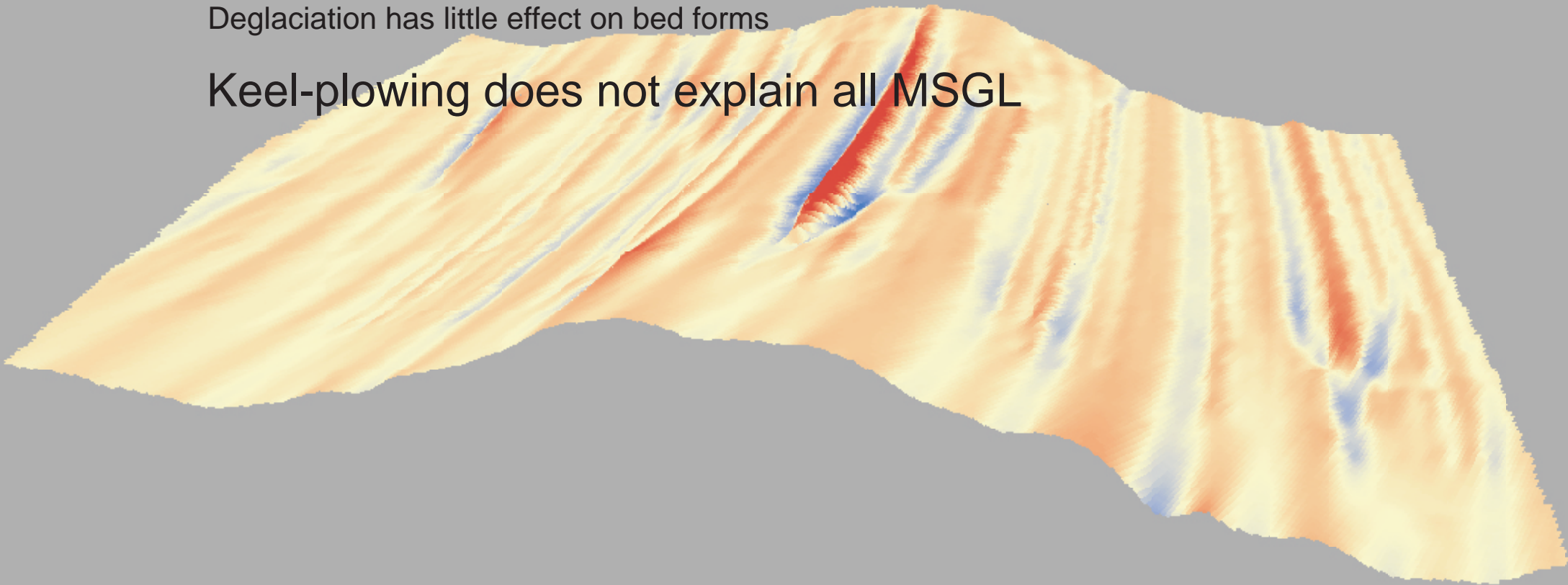


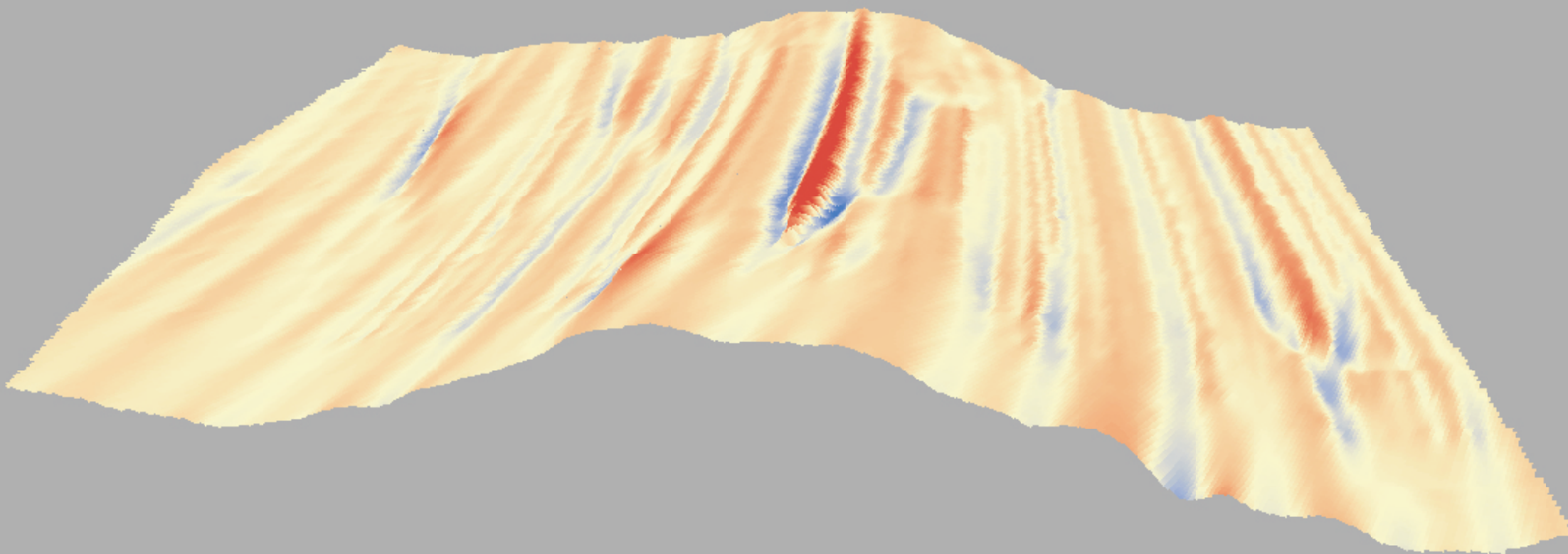
These data prove that MSGL are formed beneath ice streams

The distribution of deforming till and basal sliding can be mapped using surface radar

Deglaciation has little effect on bed forms

Keel-plowing does not explain all MSGL





With thanks to Roger Stilwell and the operations staff of Rothera Research Station