

Atomic force microscope images of human hair

James R. Smith



www.microworldreflections.com





AFM imaging



Hopeweavers

Thornhill Art Group
(TAG)

Sandie Schulkins



Jacqui Smith Music



Vice-President's Award Fund

Micrometres, models and mysticism:
Creative interpretations of the microworld

Website

Artistic
interpretations

Exhibitions

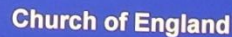


Lynda Owens-Hussey

Public understanding
of science



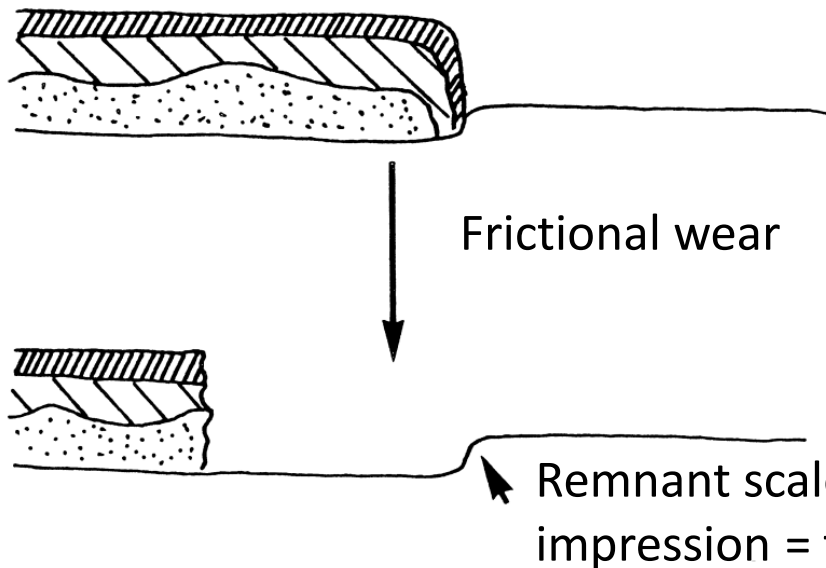
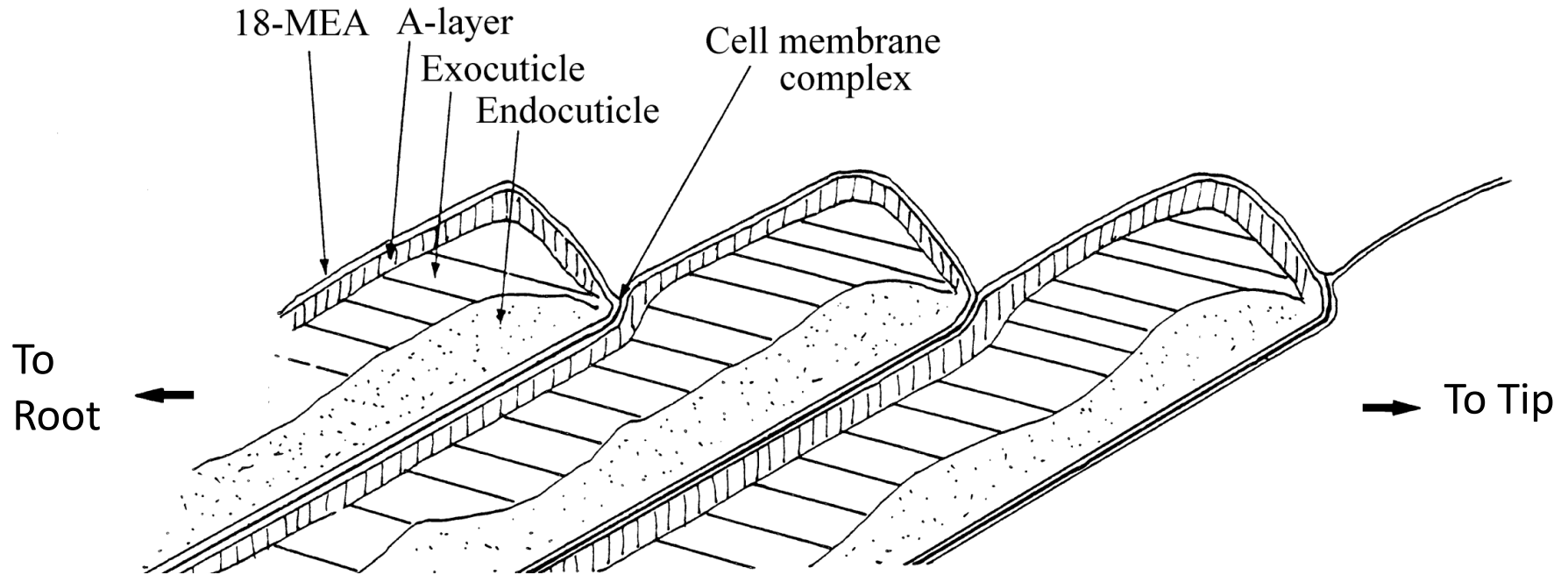
8.00am Eucharist
10.00am Sung Eucharist
(including children's worship)
6.30pm Evening Service







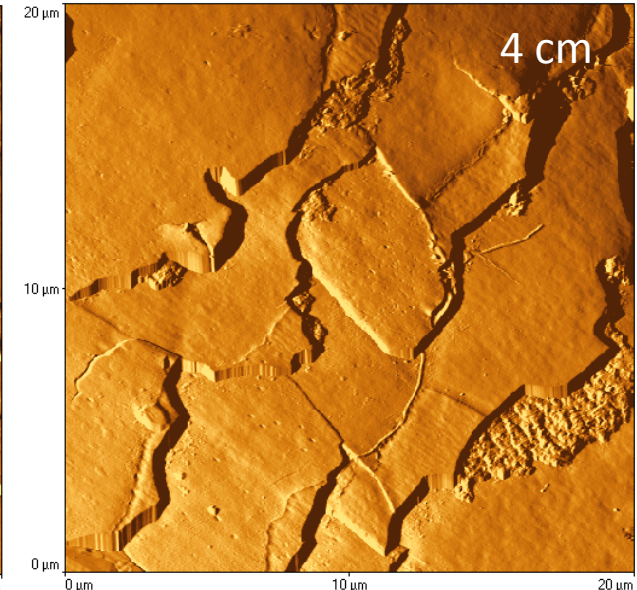
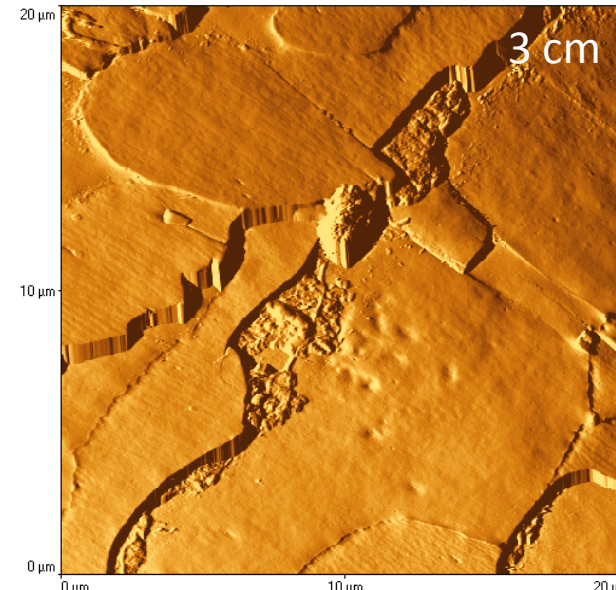
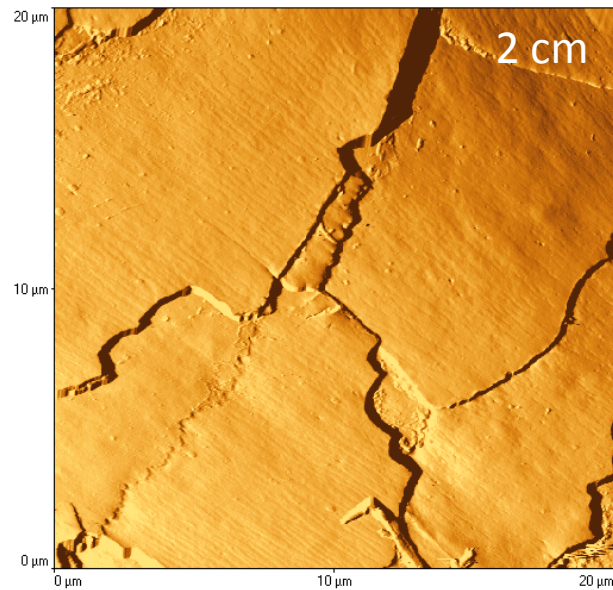
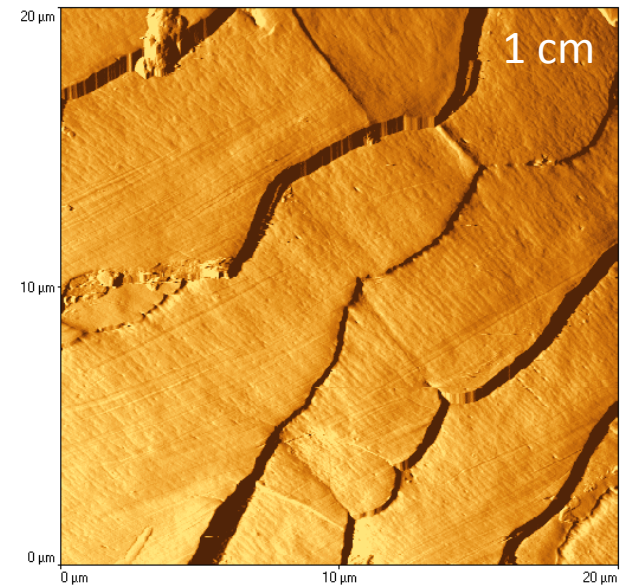
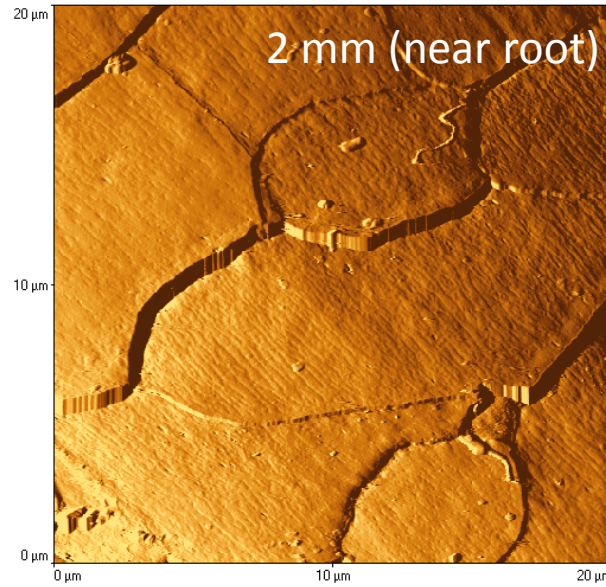
Human hair cuticle structure



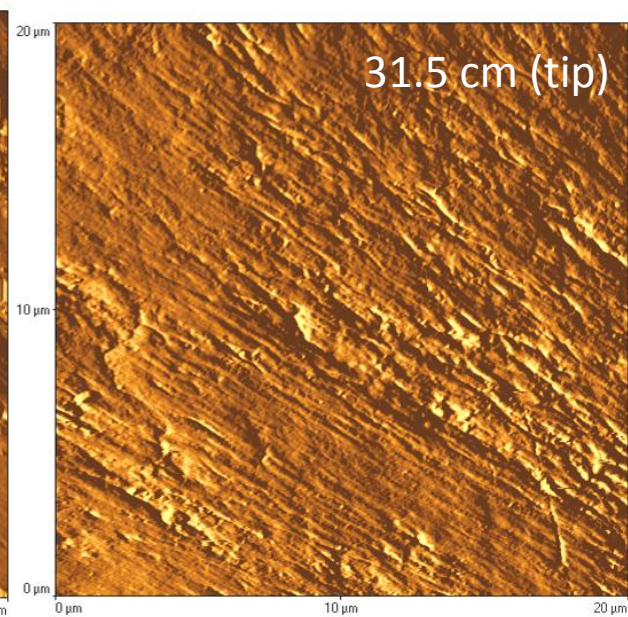
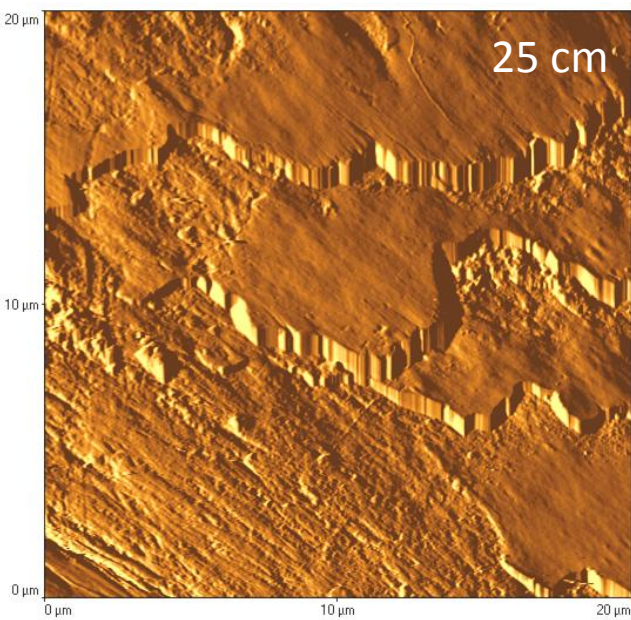
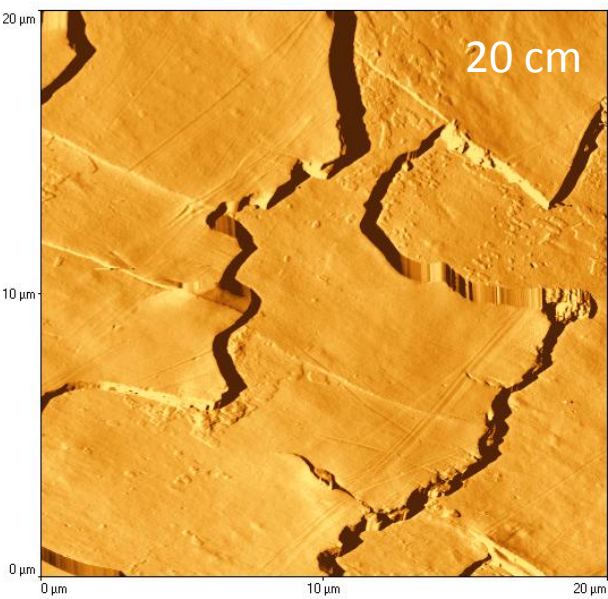
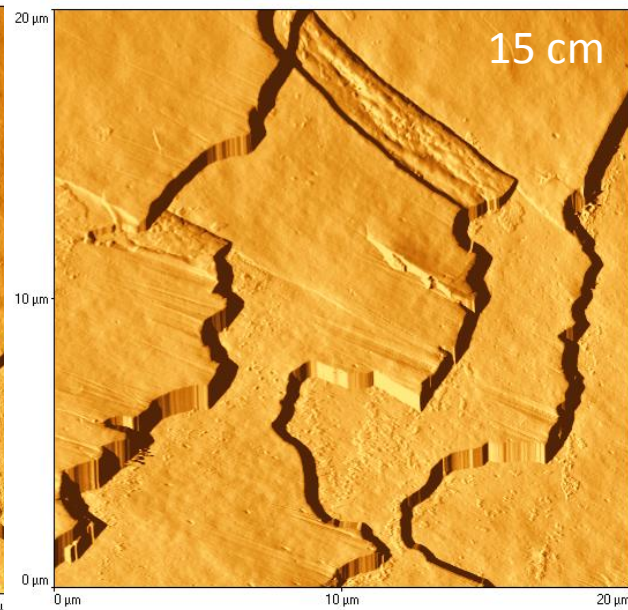
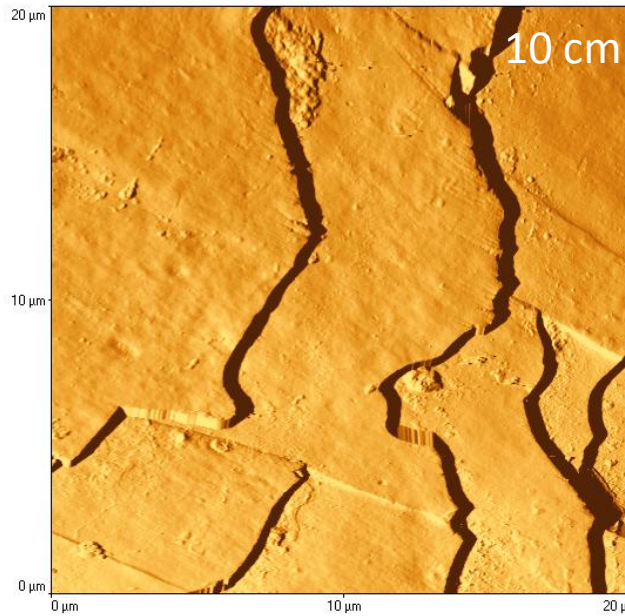
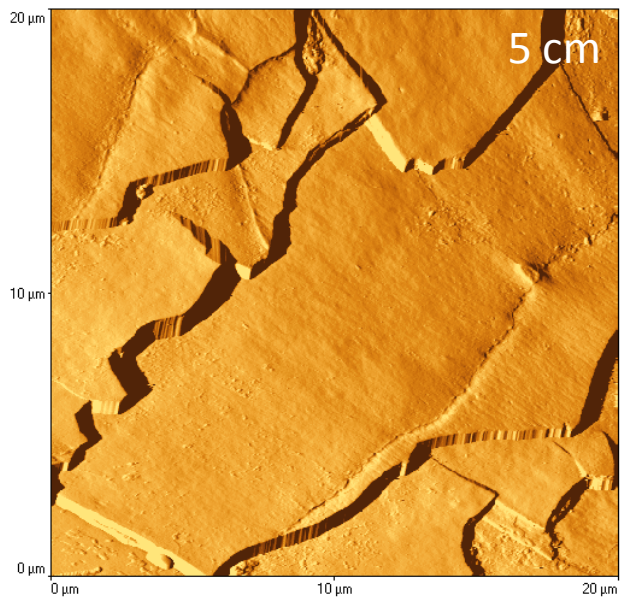
- ❑ The cuticles lie on top of one another
- ❑ Overlap orientation from root to tip
- ❑ Cuticle has various substructures
- ❑ 'Bits break off'

Variation of structure with length

The cuticular architecture varies with hair length. Scale edges generally appear smooth and unbroken close to the root, but become broken further along. Striations and 'ghosts' also disappear. Eventually the underlying cortex is exposed.



Distances from scalp indicated



D.H
28.1.13

MJM
T.A.G.
28.1.13

F.F
28.1.13

S.A.S.
TAG
28.1.13.

P.F. 28-1-13

MC
28-1-13

EM
Thornhill Art
Group

I.F
28.1.2013

CAS
Thornhill Art
Group

ERH
28.01.13

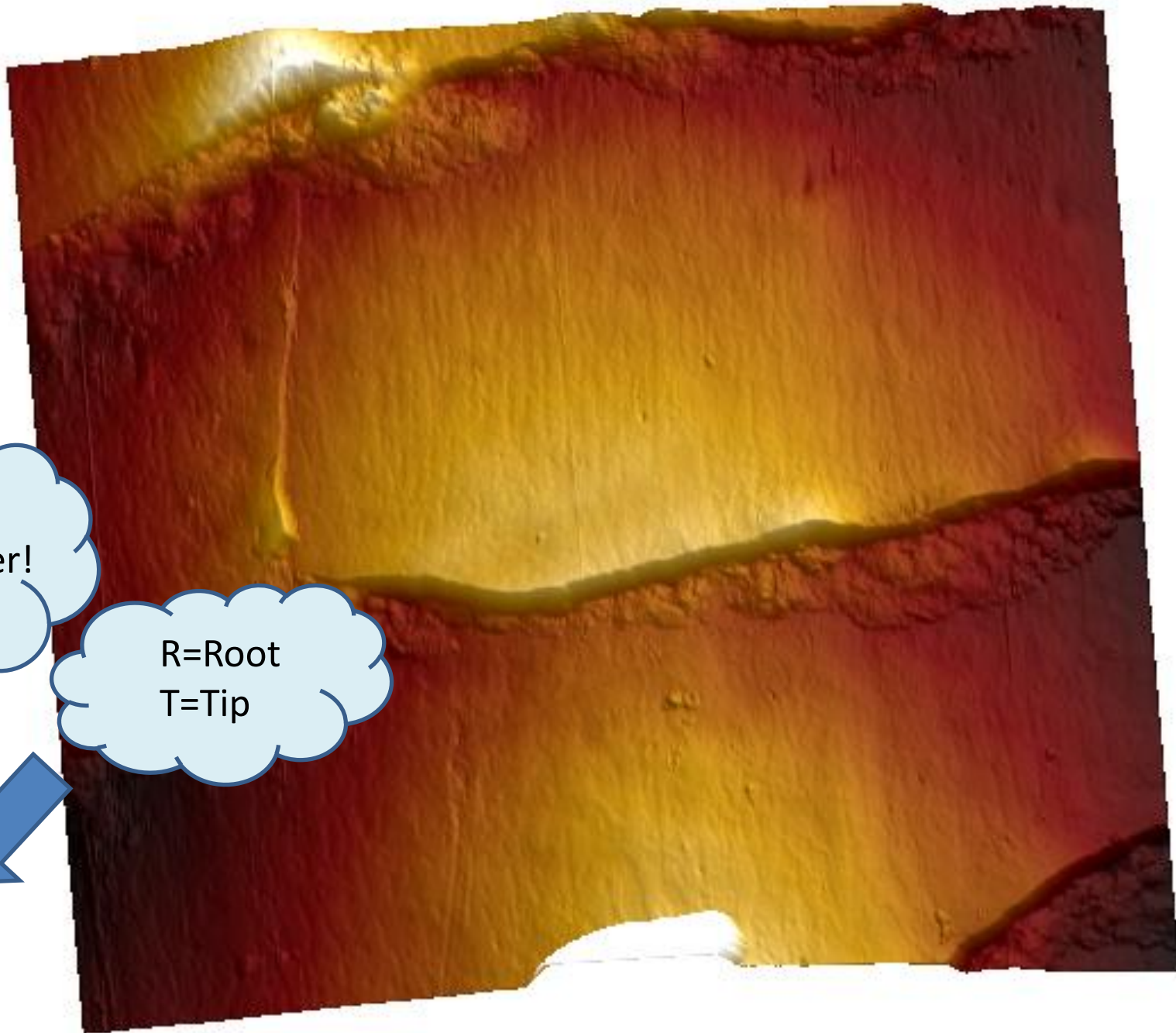
D.J
TAG
28.1.13

JAS
28.1.2013
TAG

J.V.B
JAN 28.1.2013
TAG

JP
TAG
28-10-13

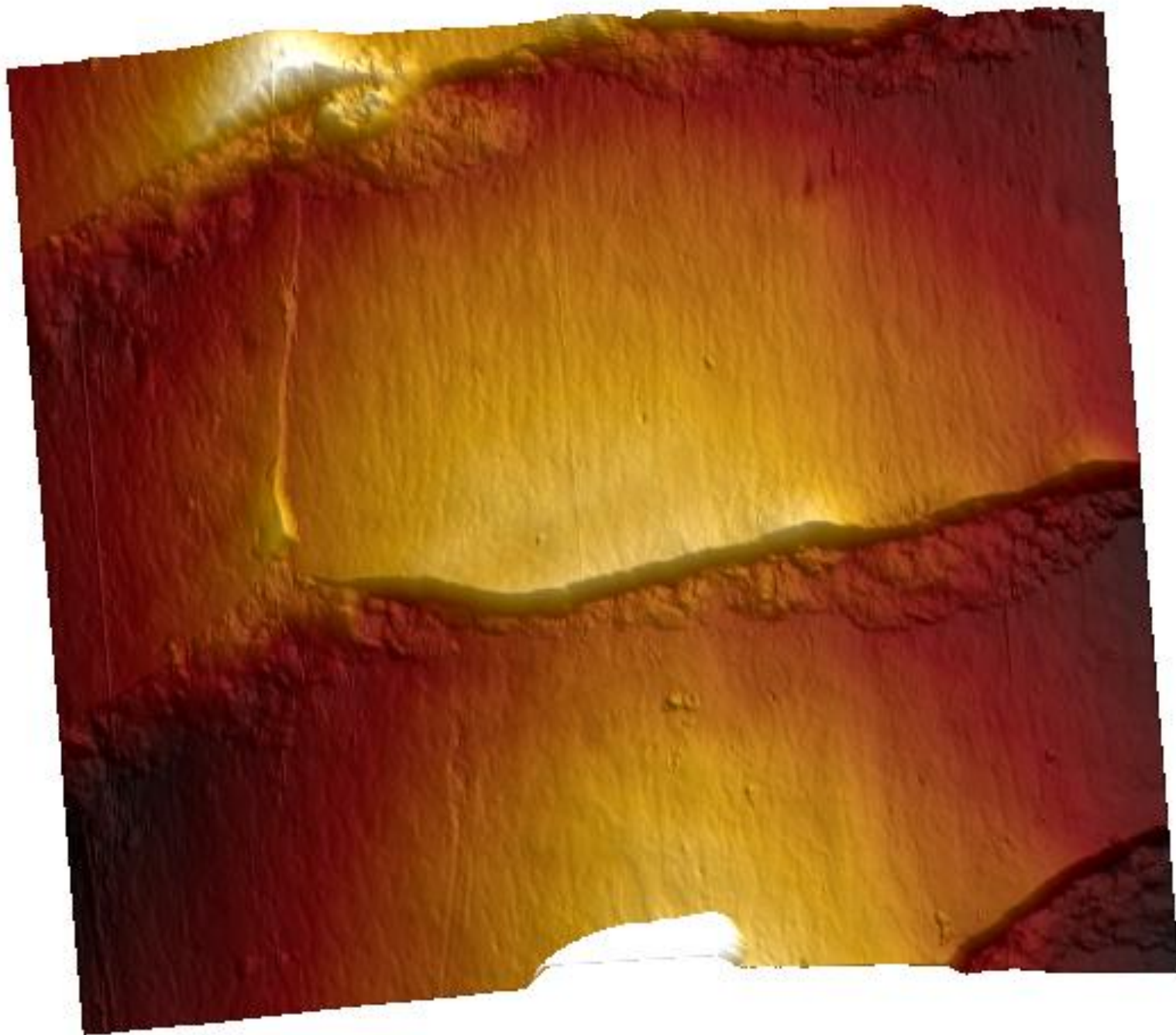
C.A.H. TAG
28.1.13



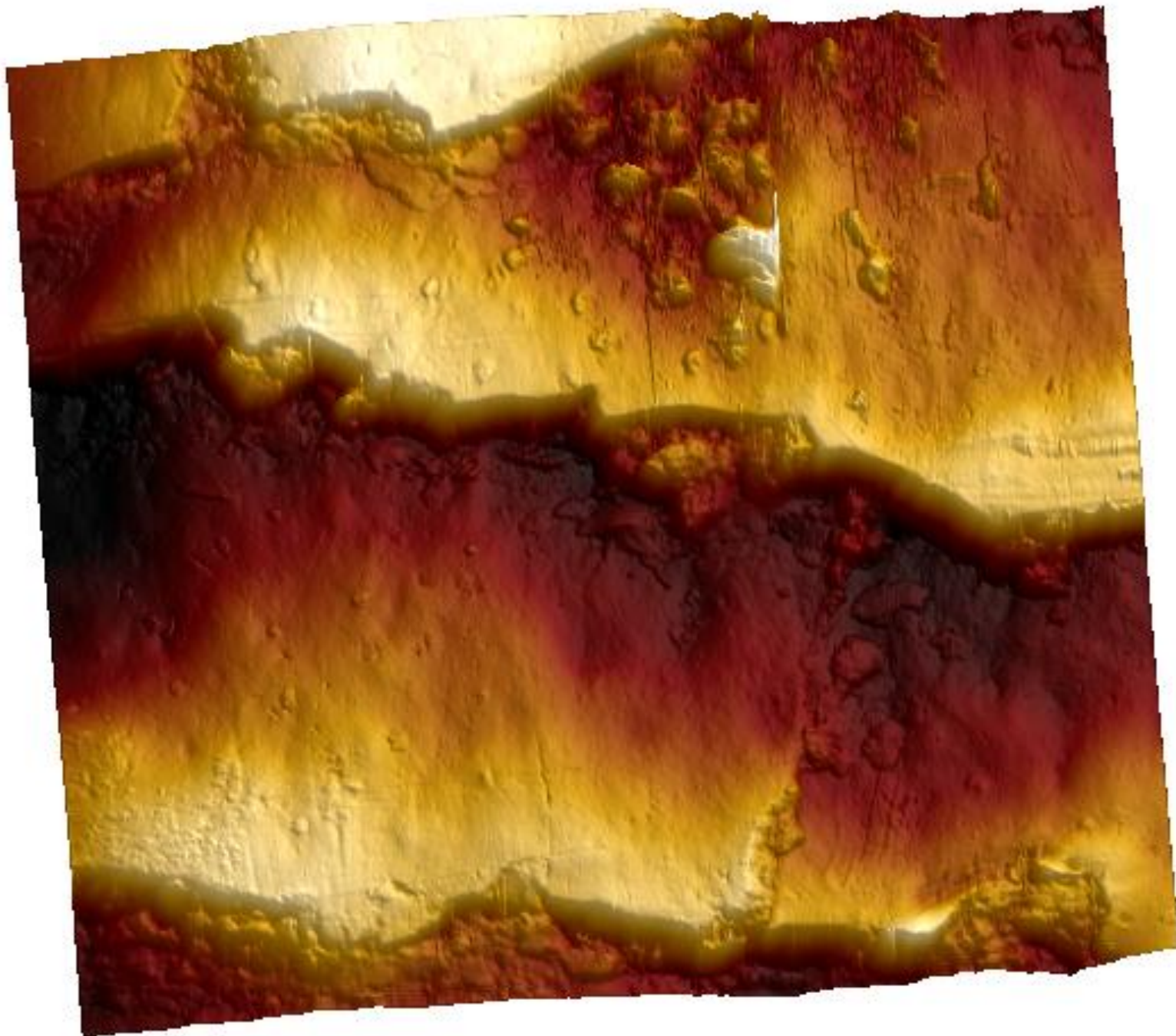
Your number!

R=Root
T=Tip

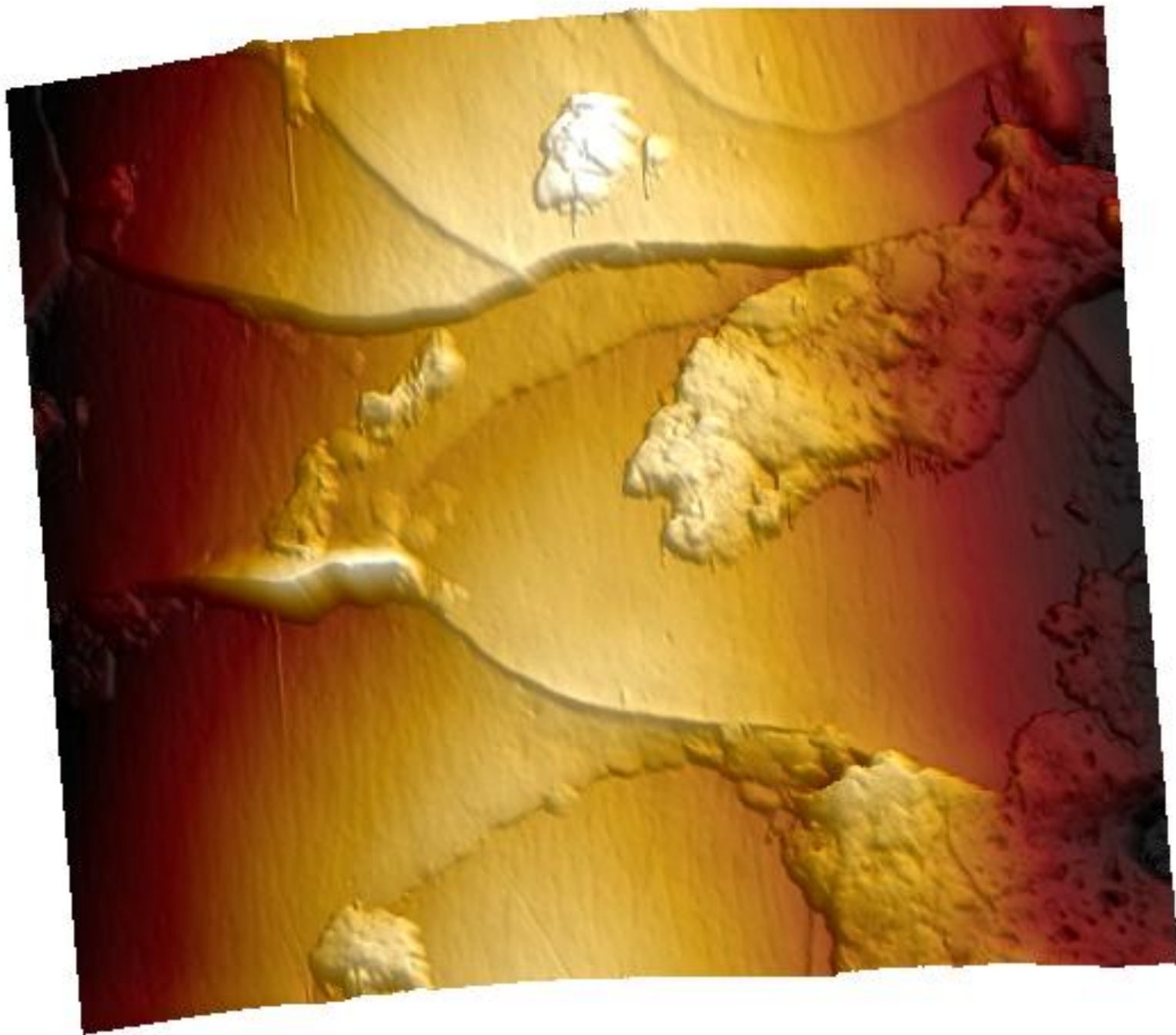
1 R



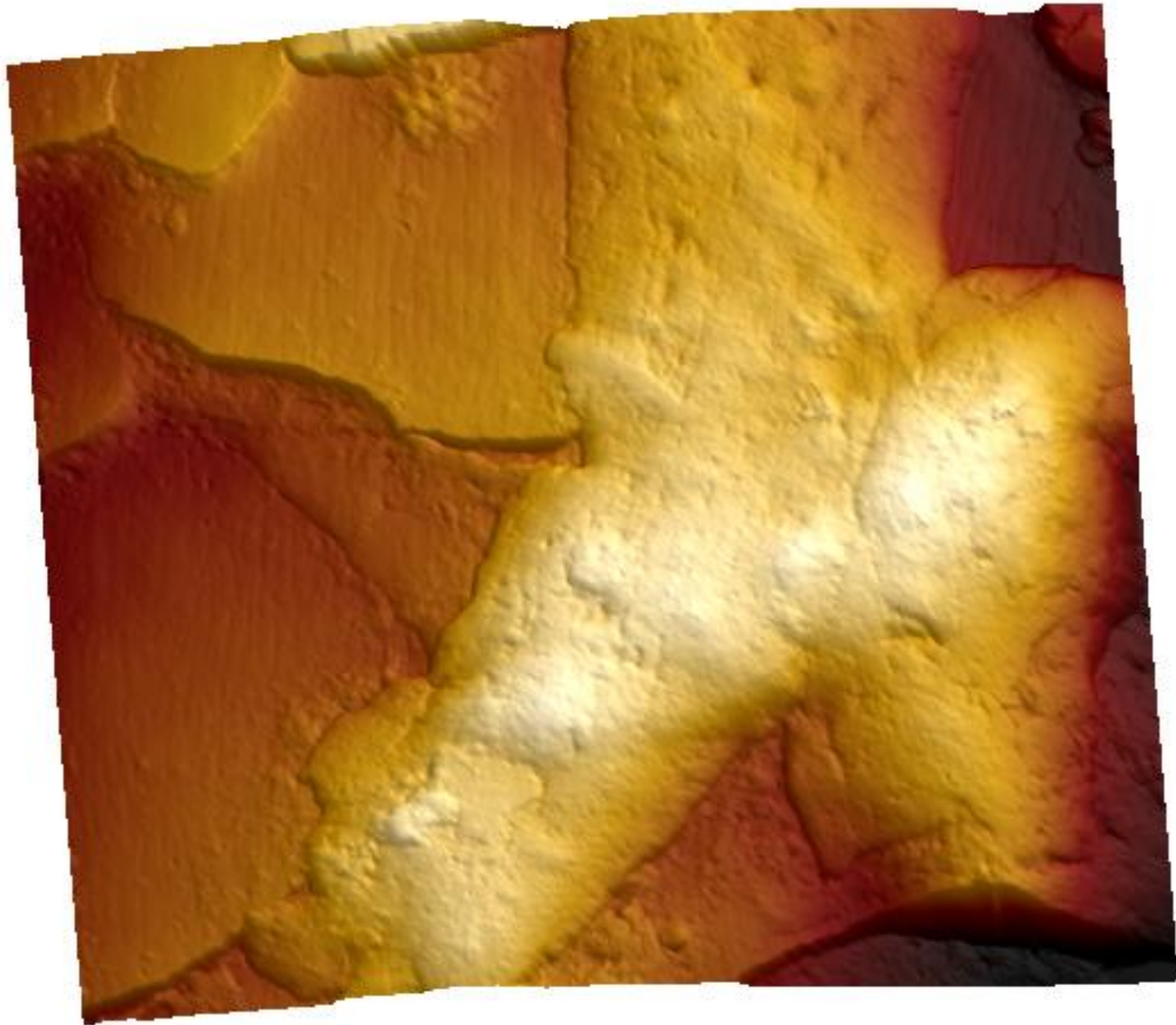
1 R



1 T

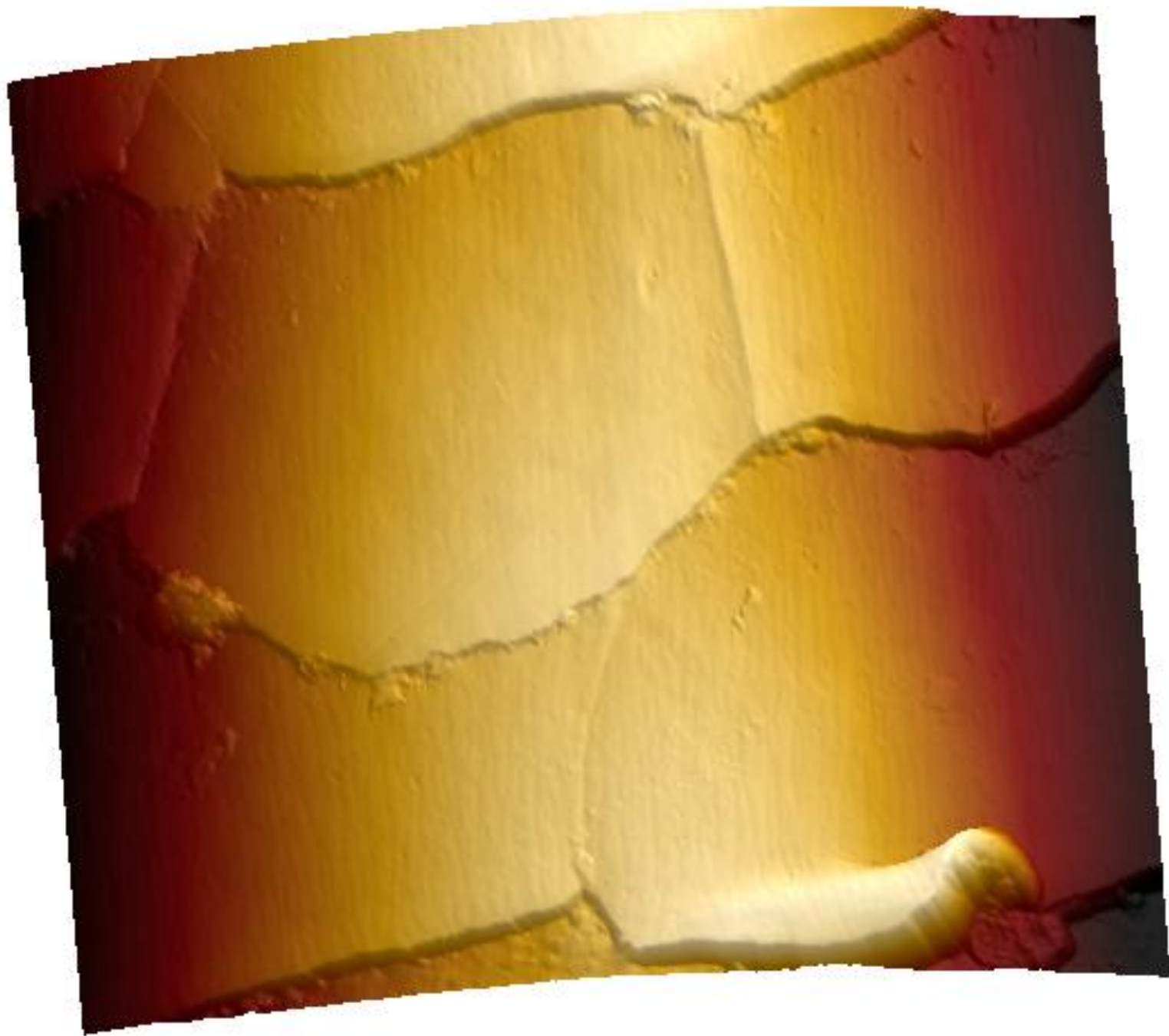


2 R

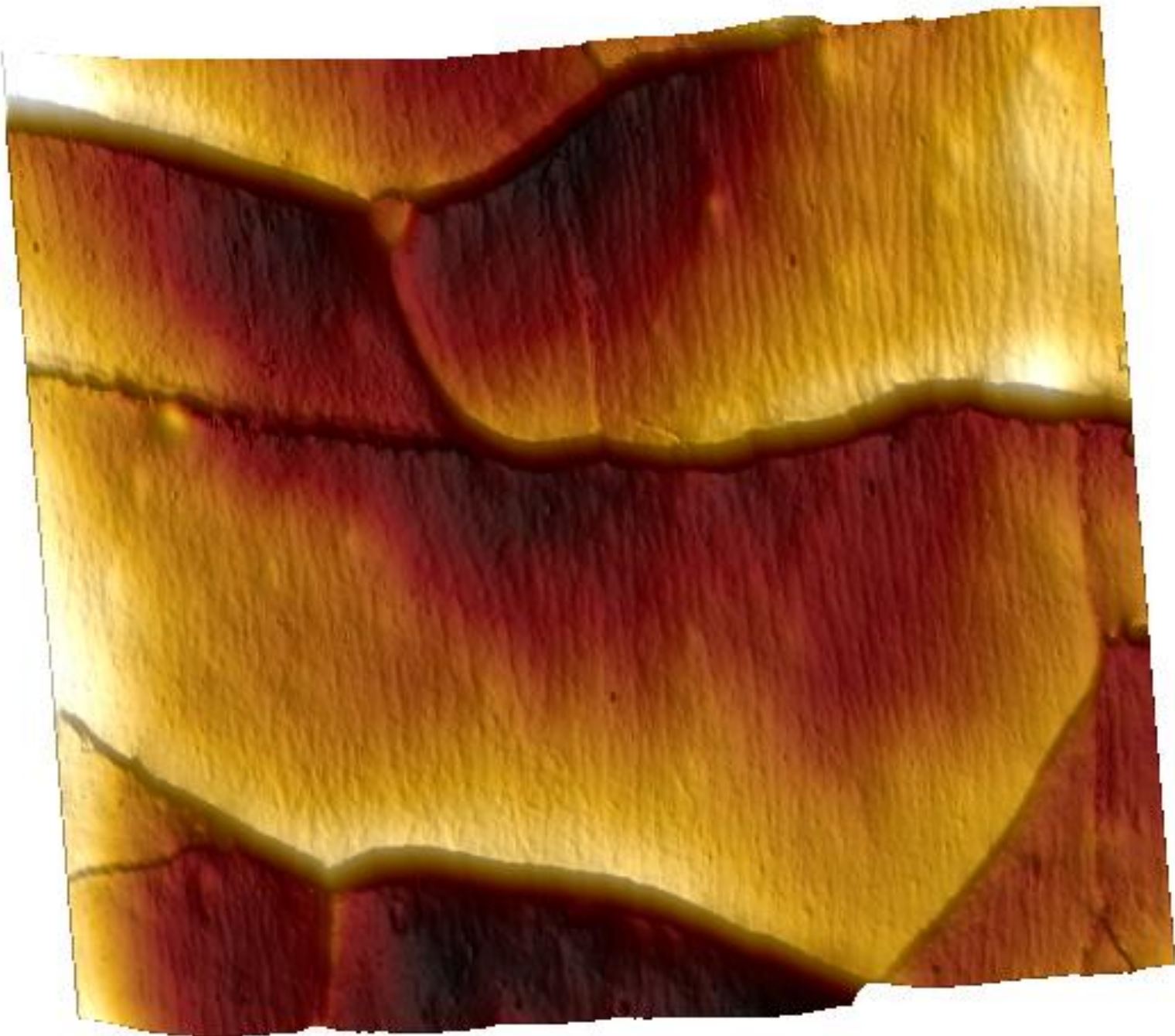


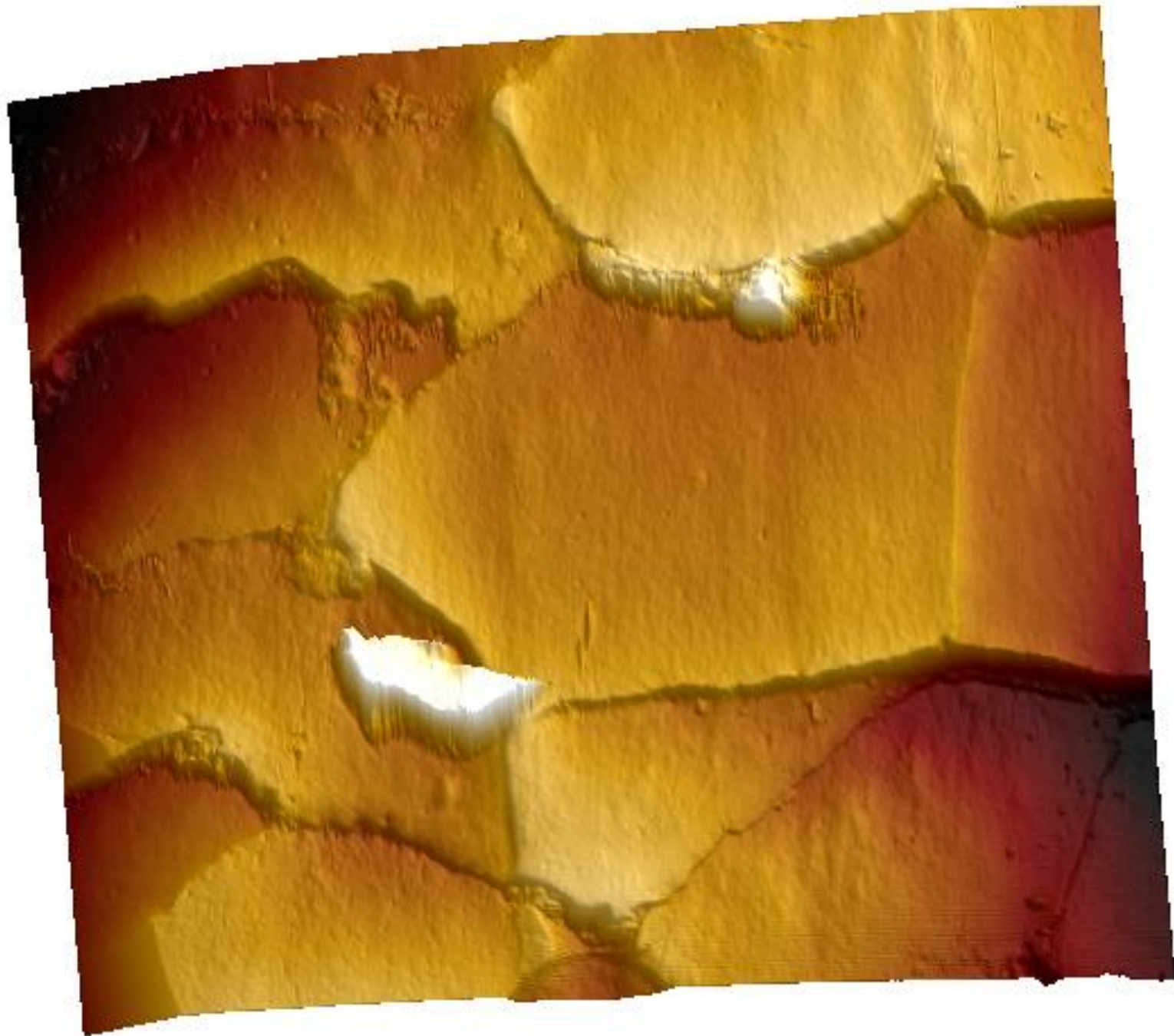
2 T

3 R



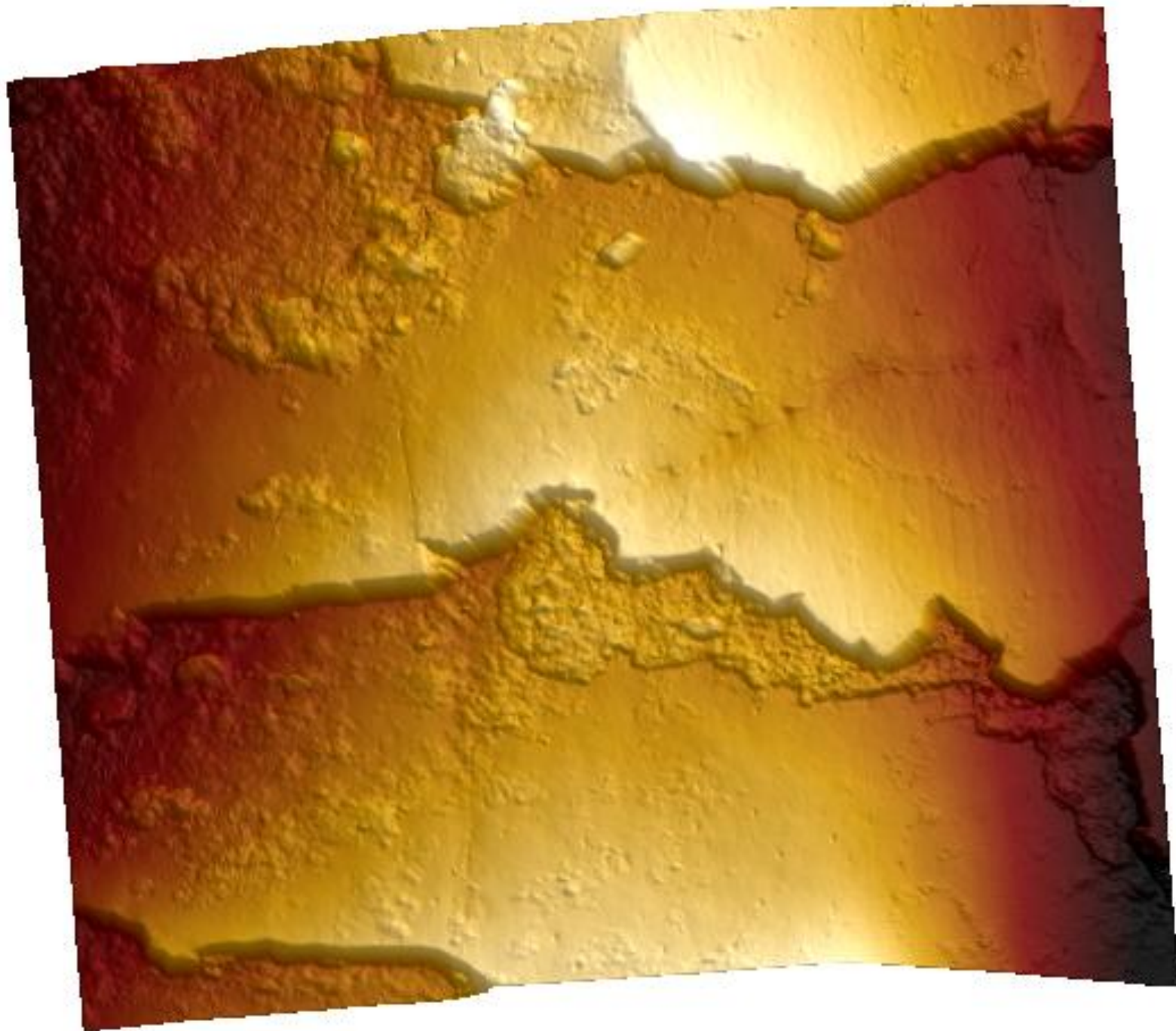
3 T



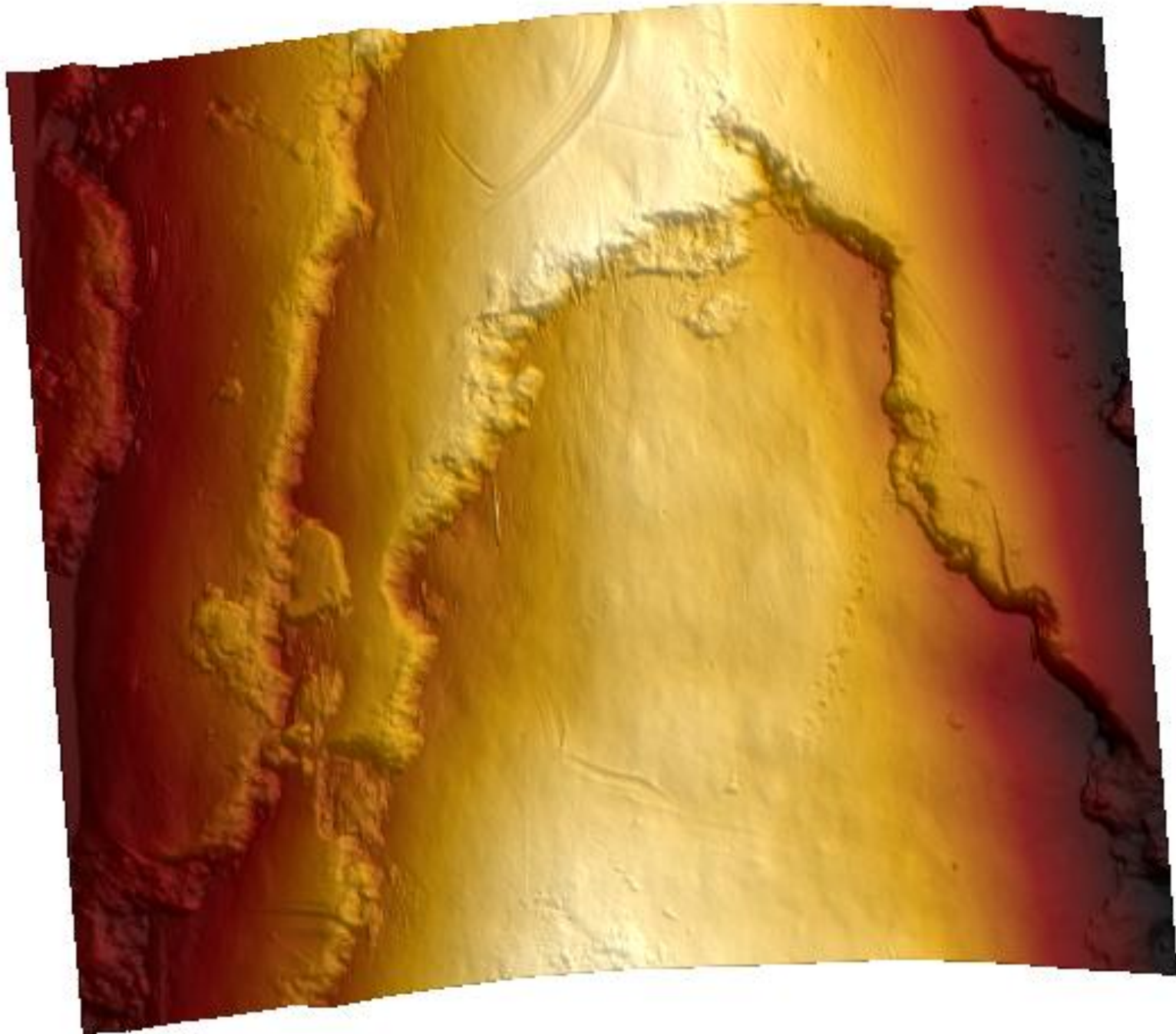


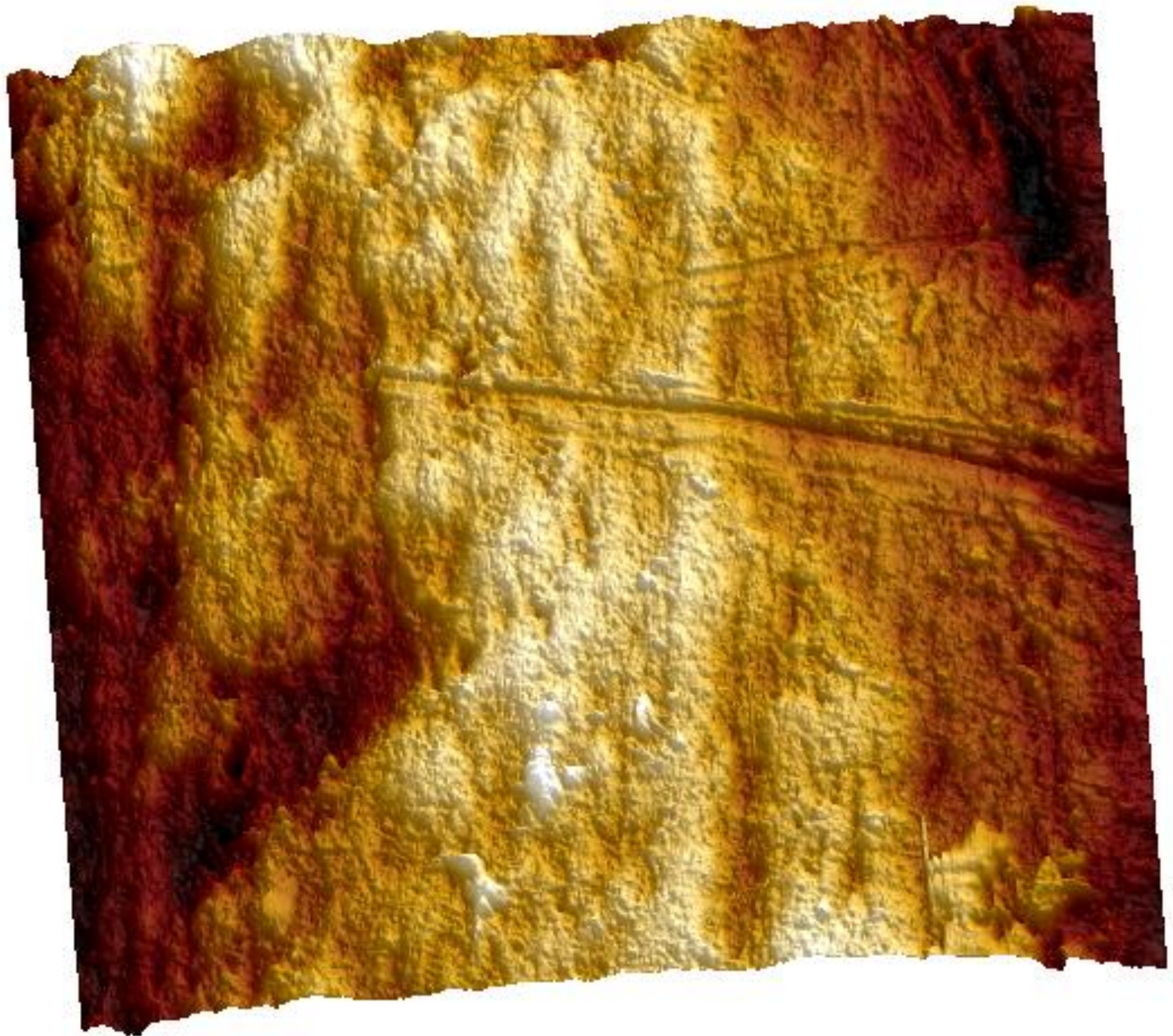
4 R

4 T

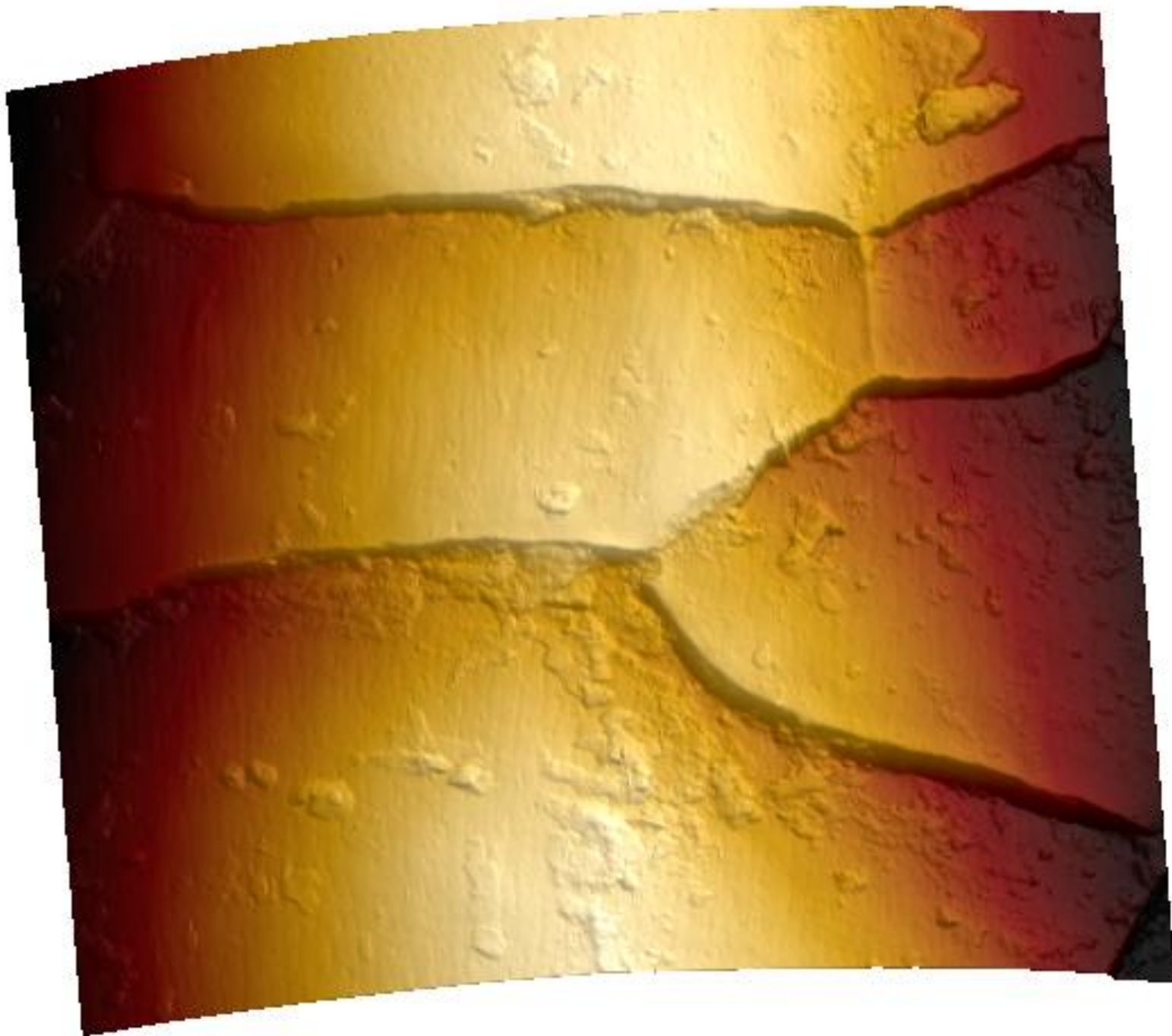


5 R



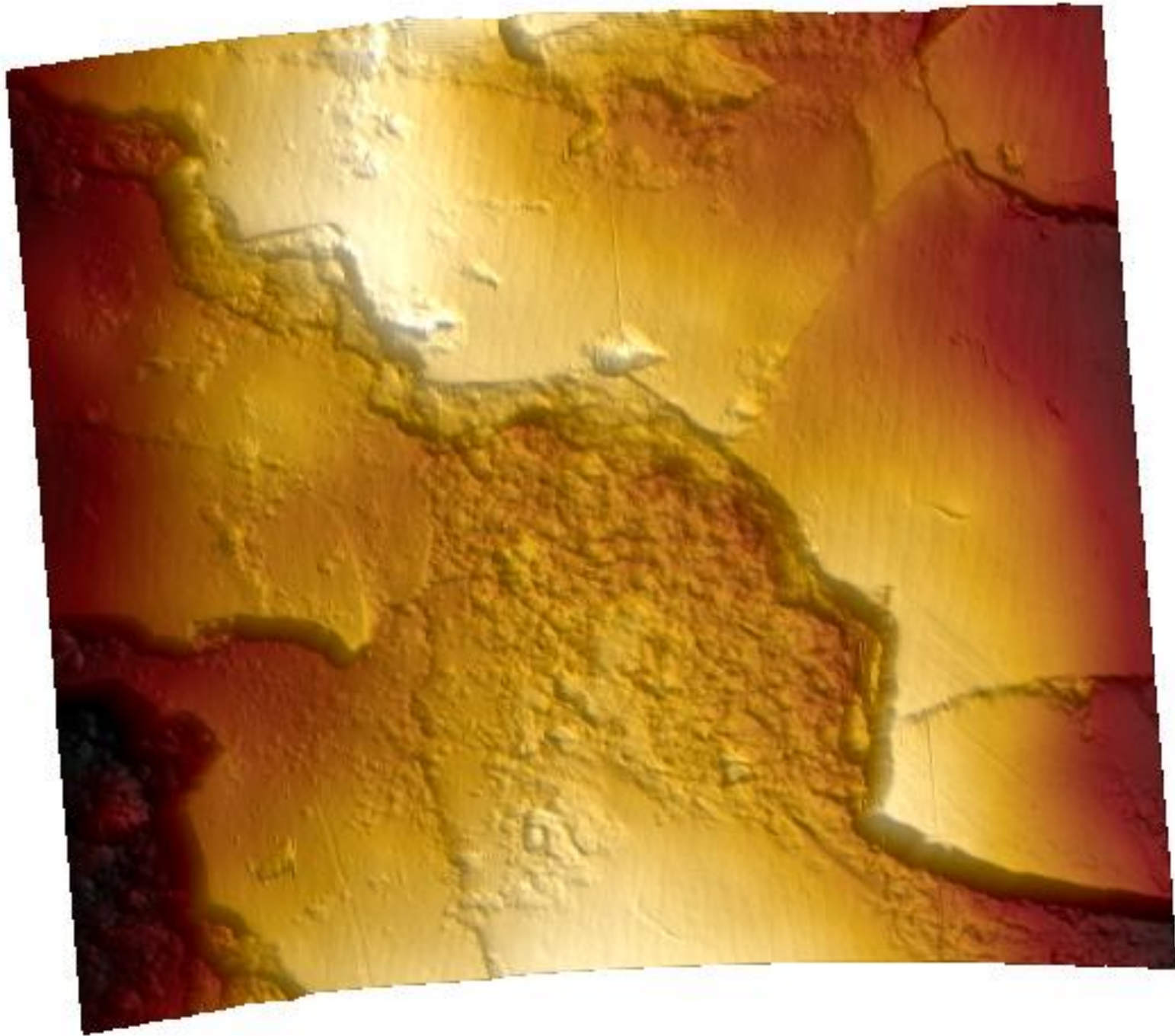


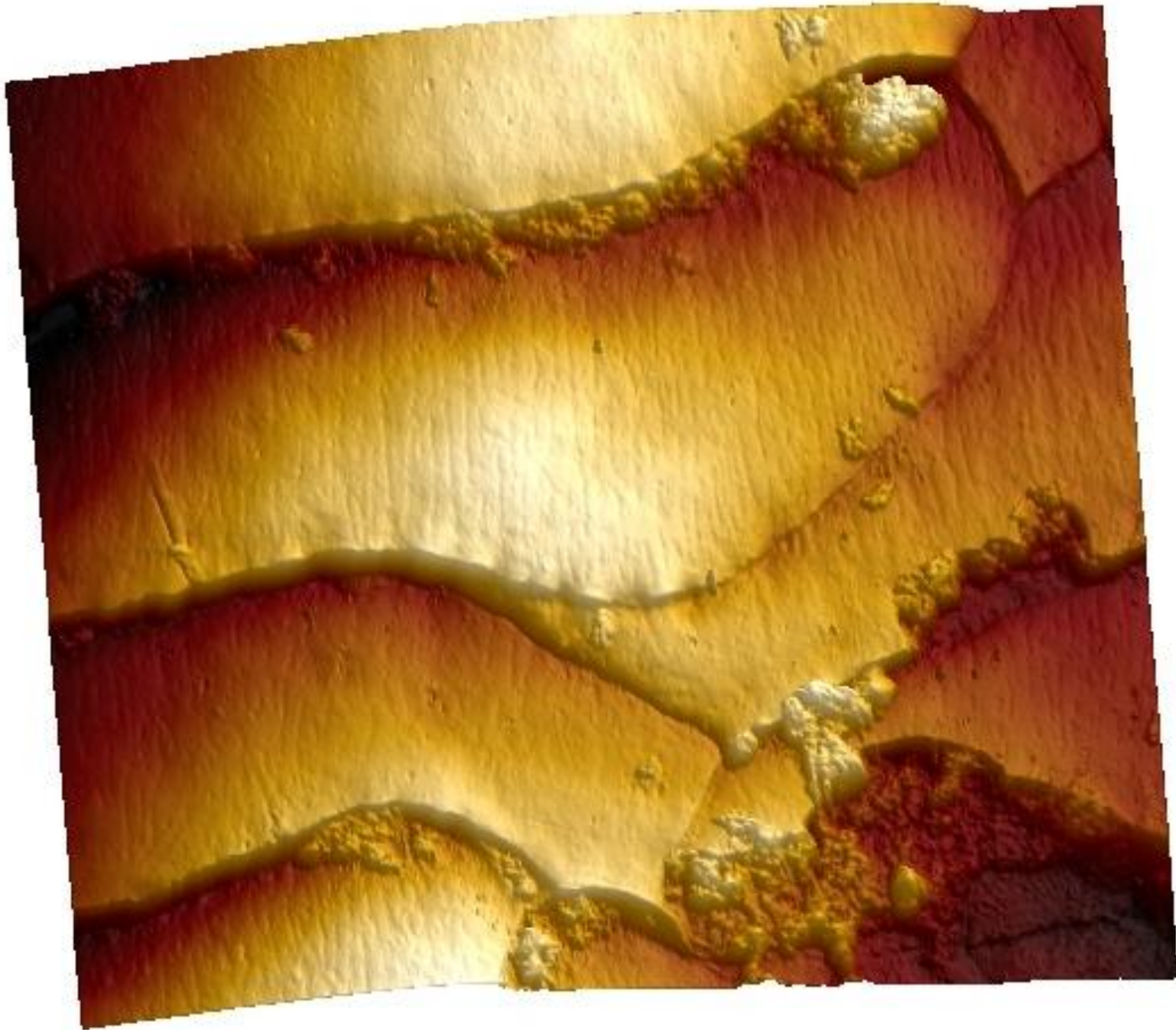
5 T



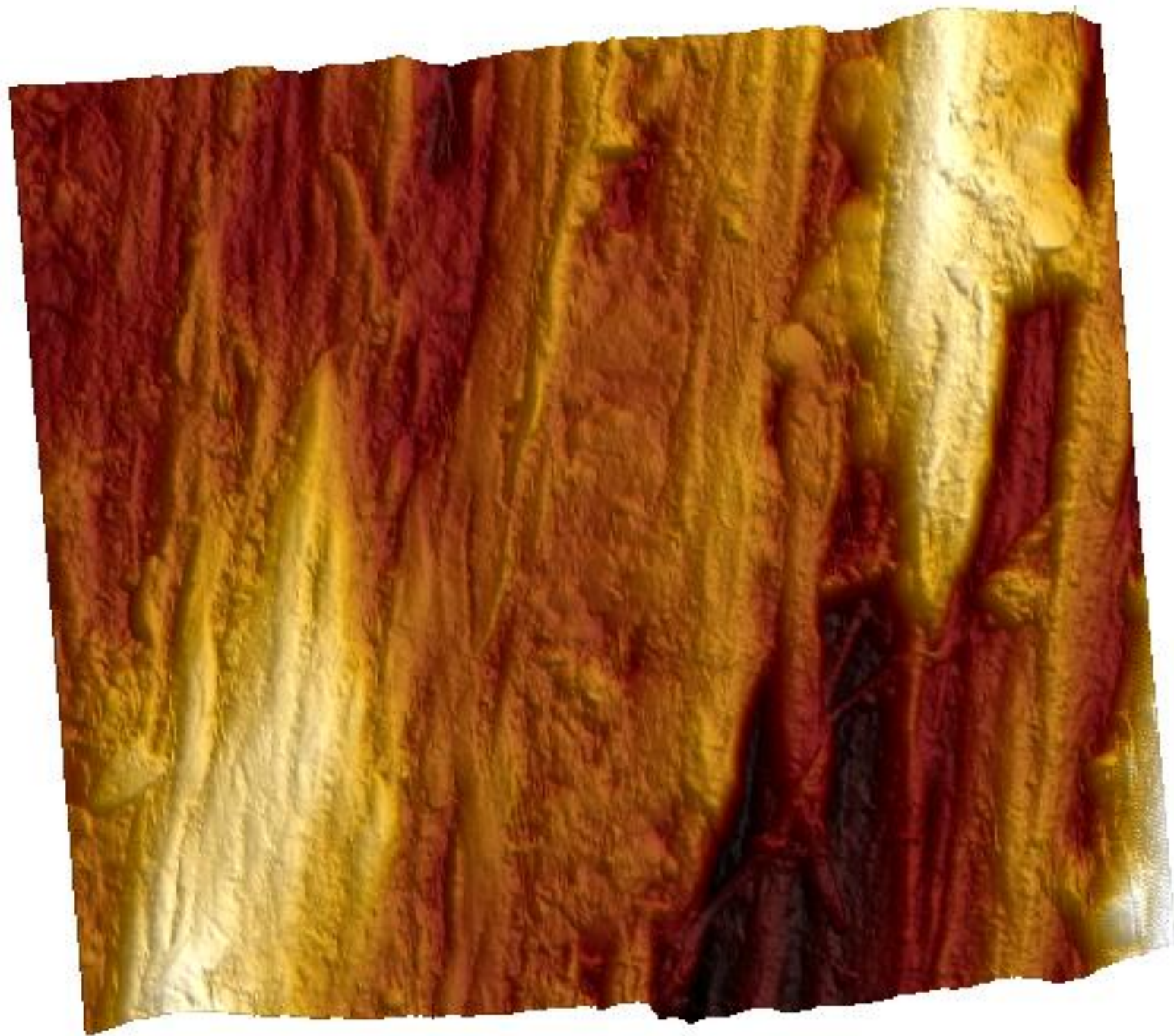
6 R

6 T



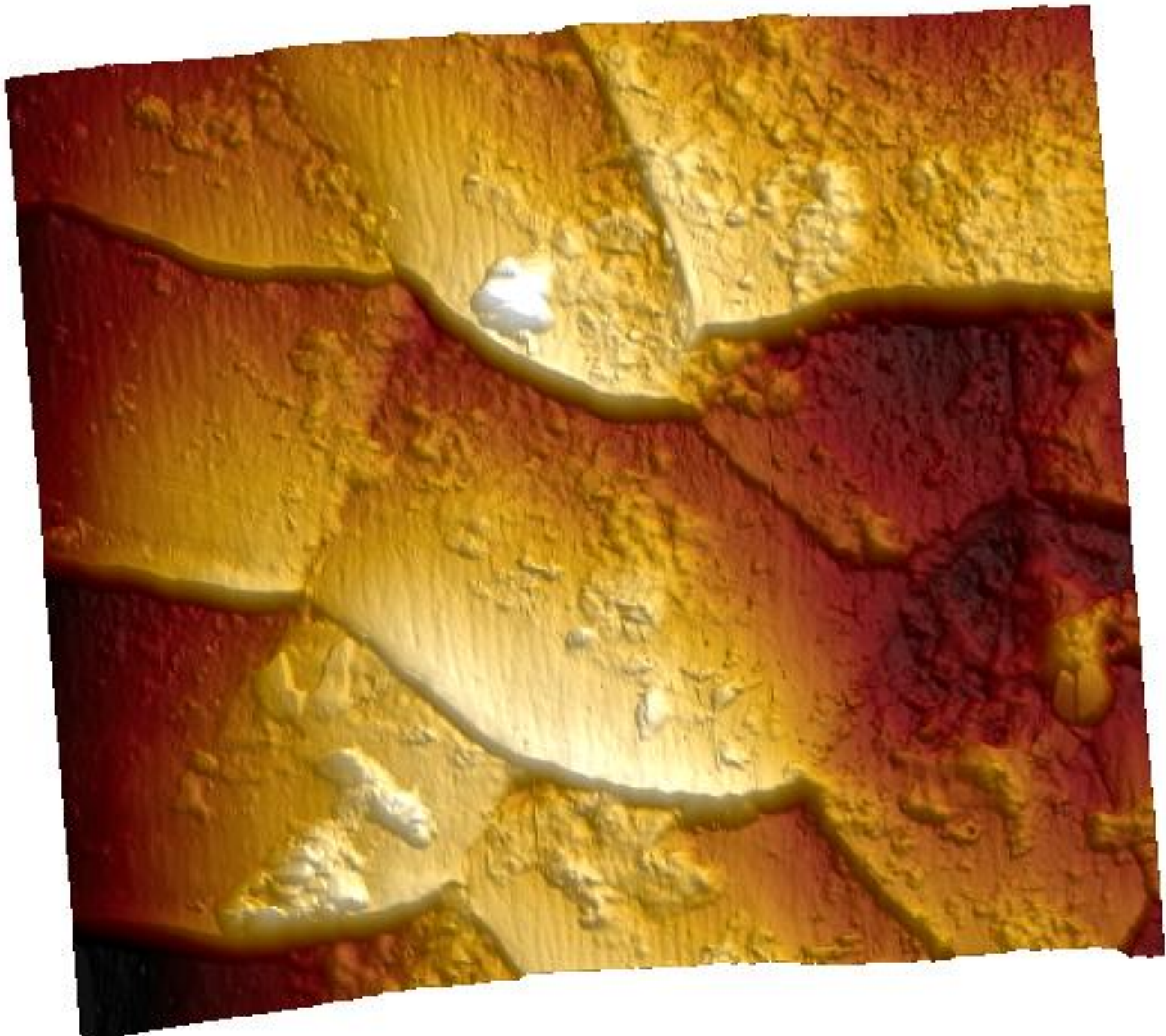


7 R

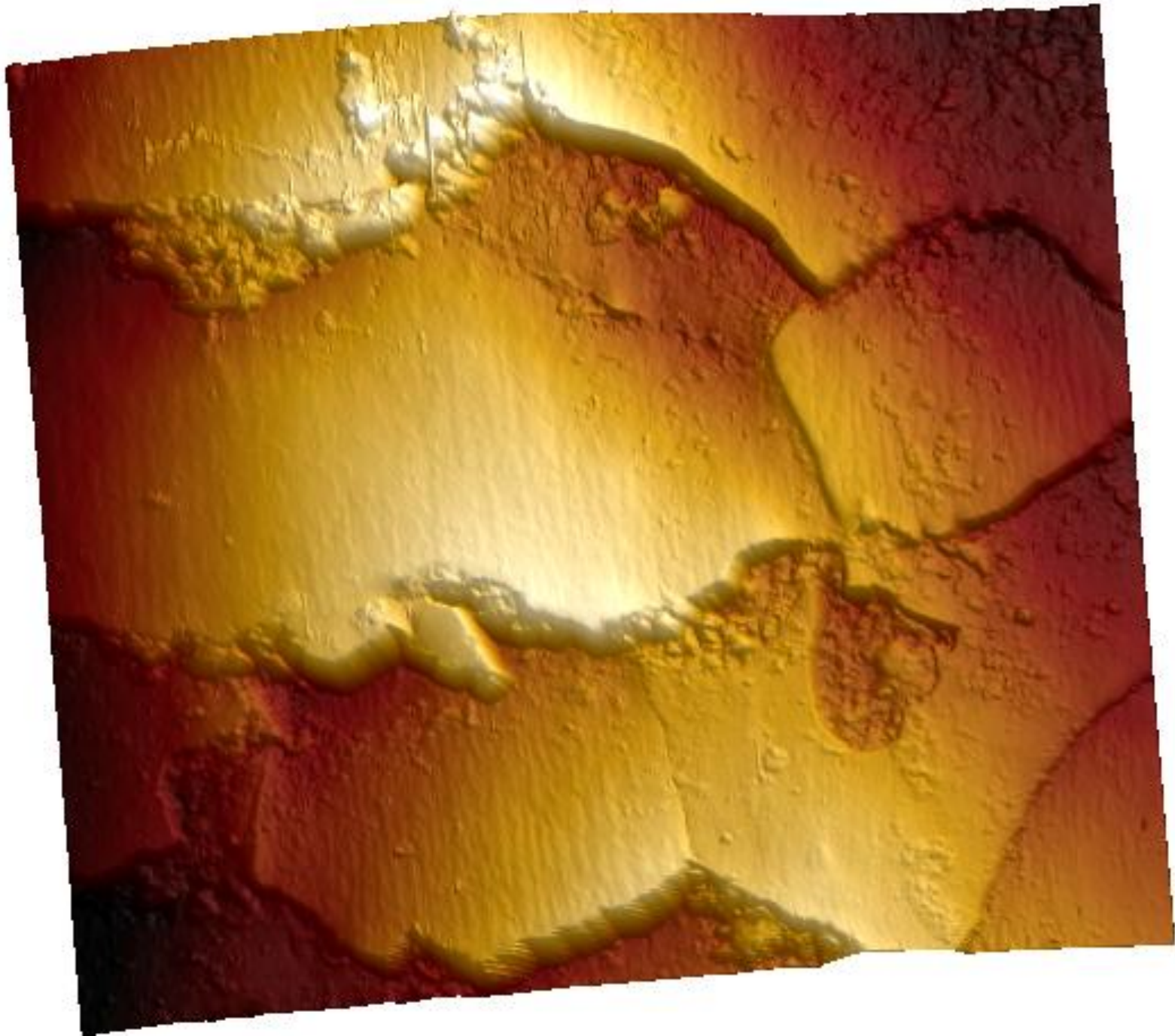


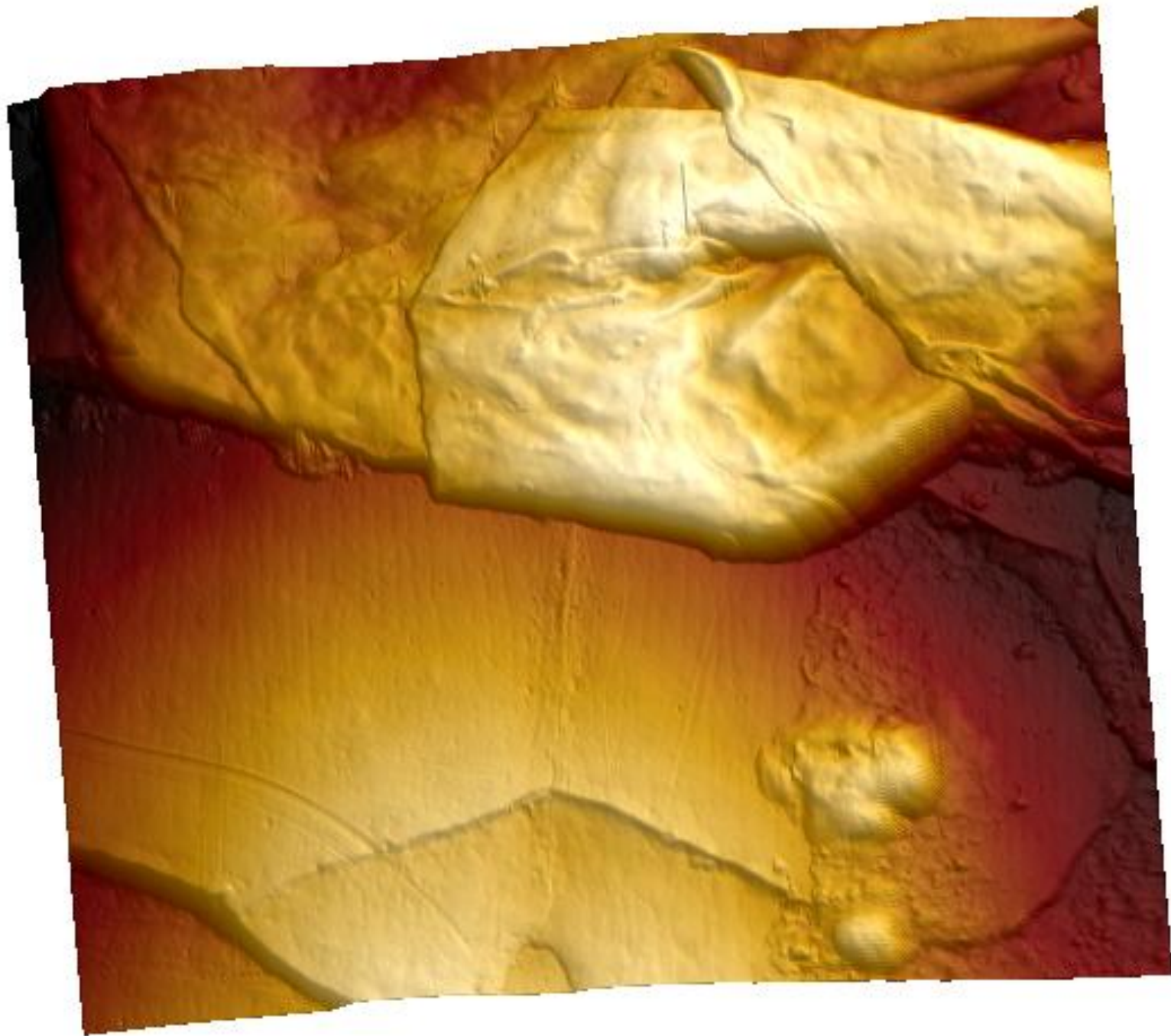
7 T

8 R



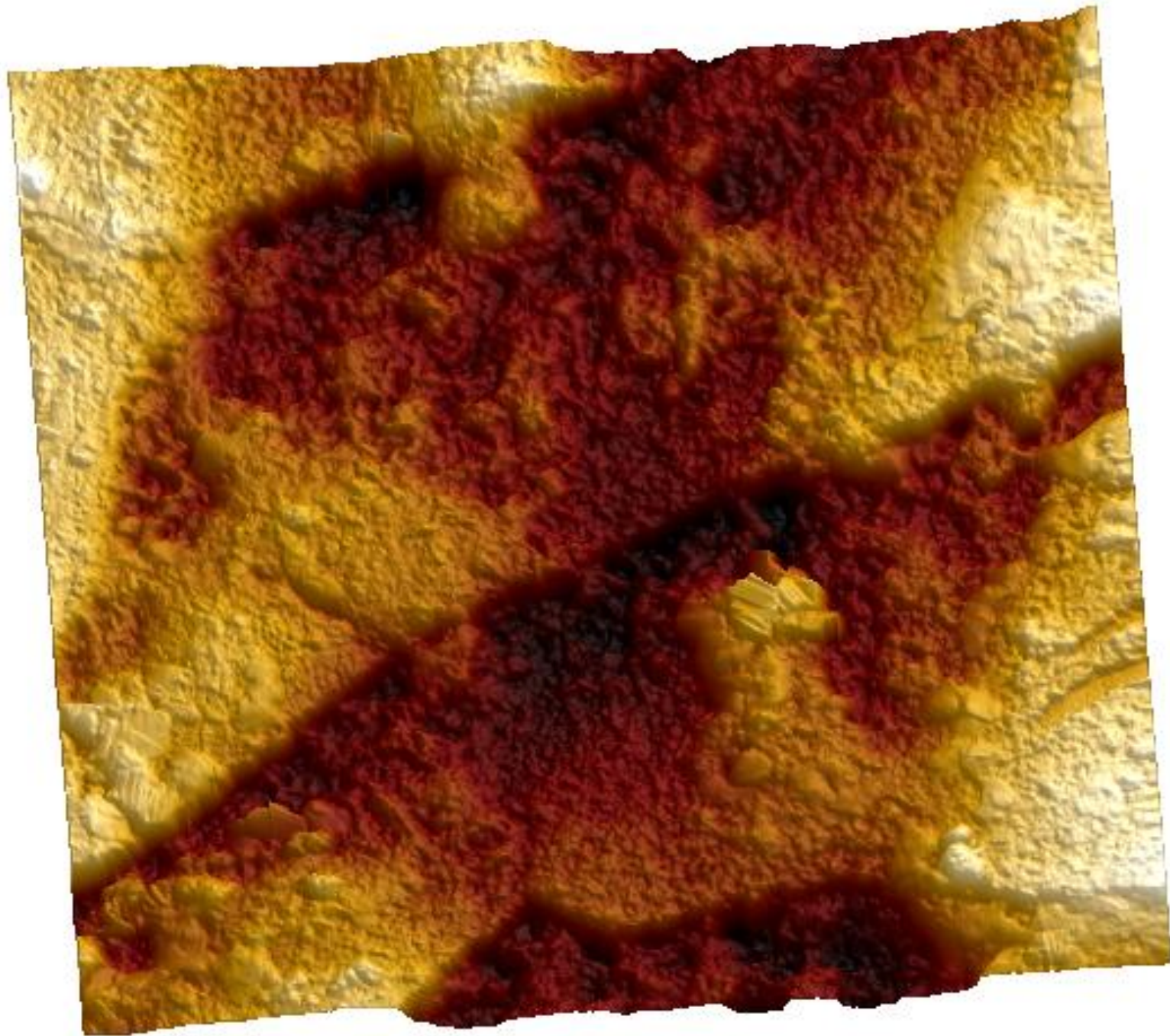
8 T

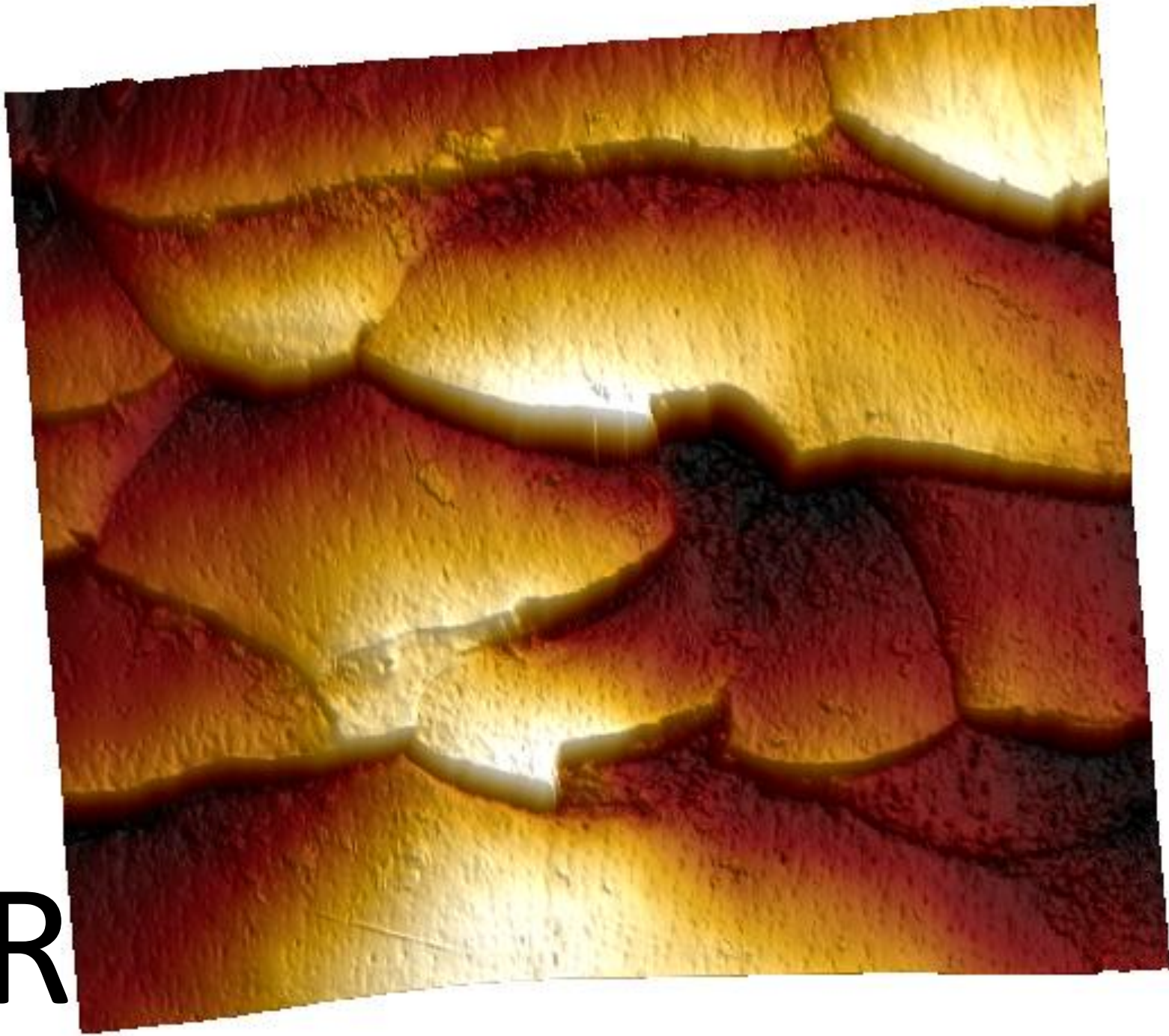




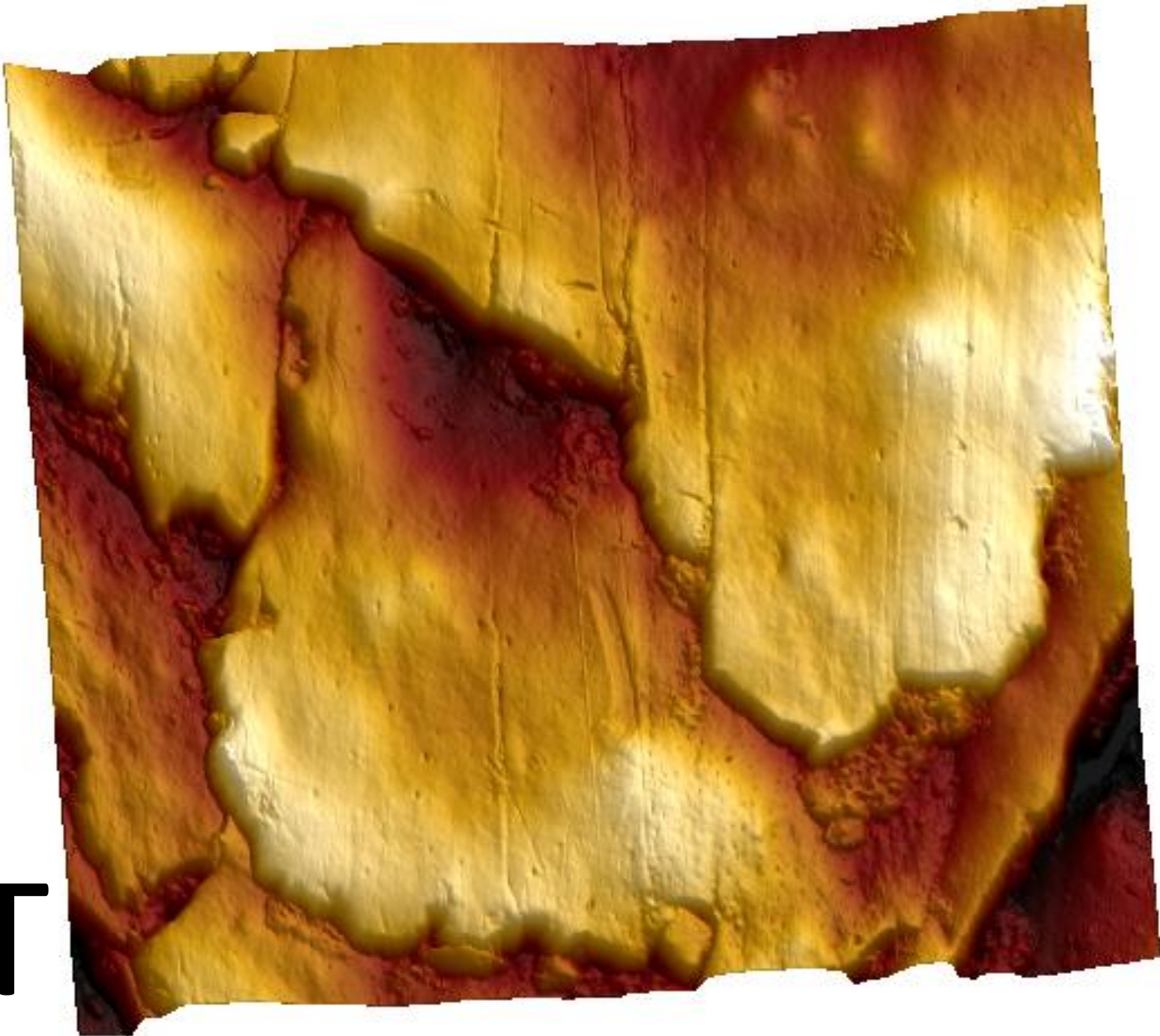
9 R

9 T

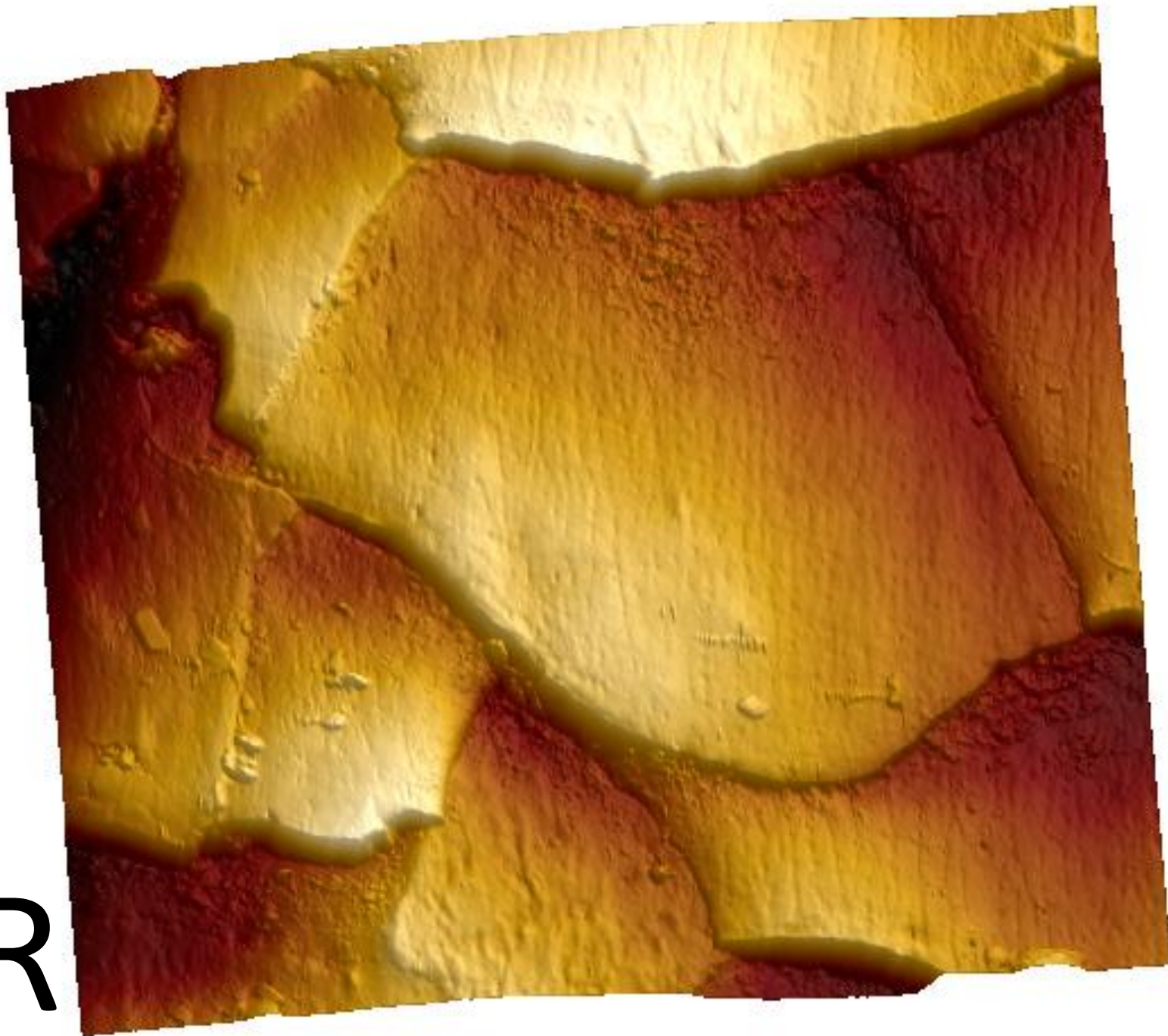




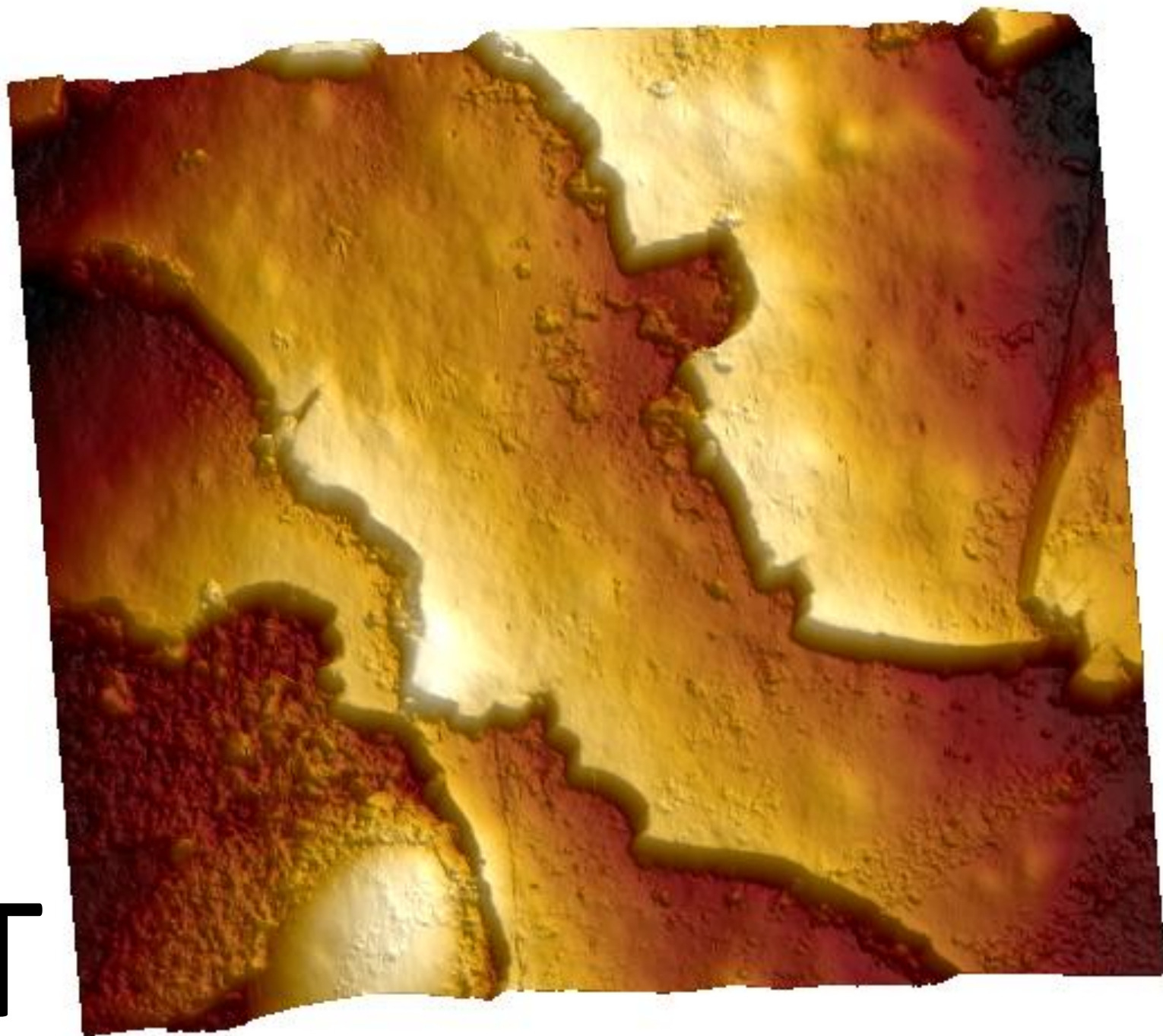
10 R



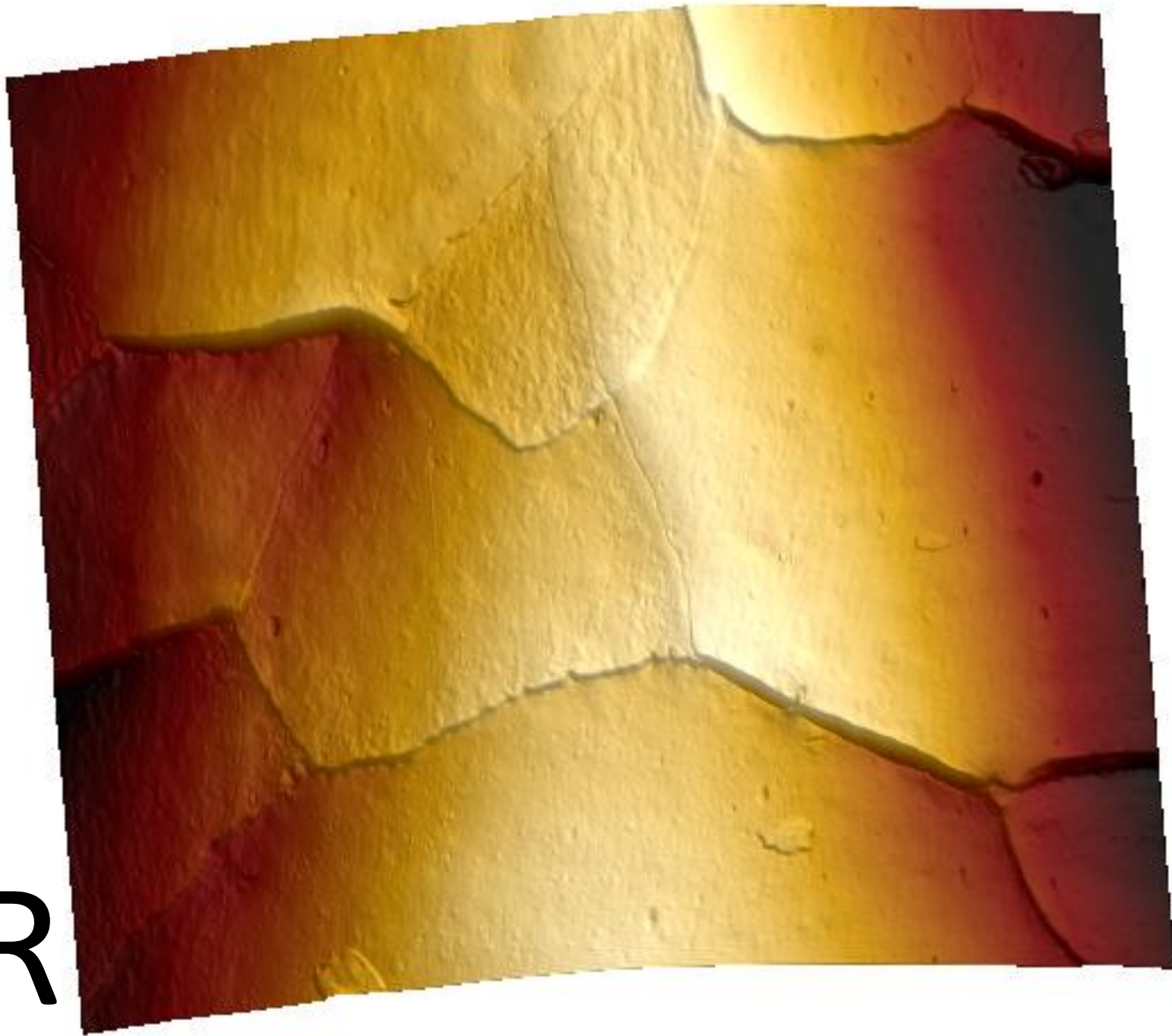
10 T



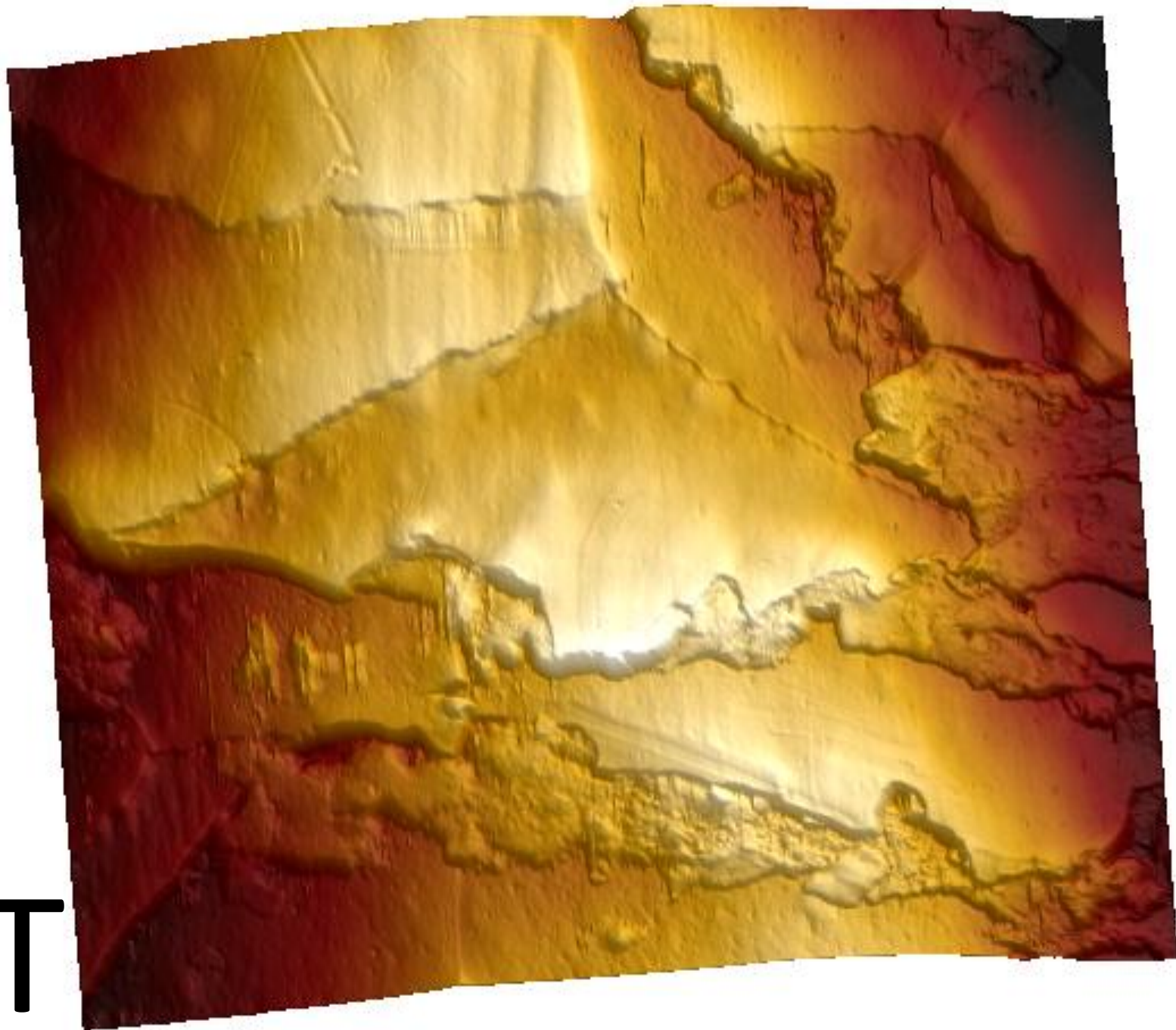
11 R



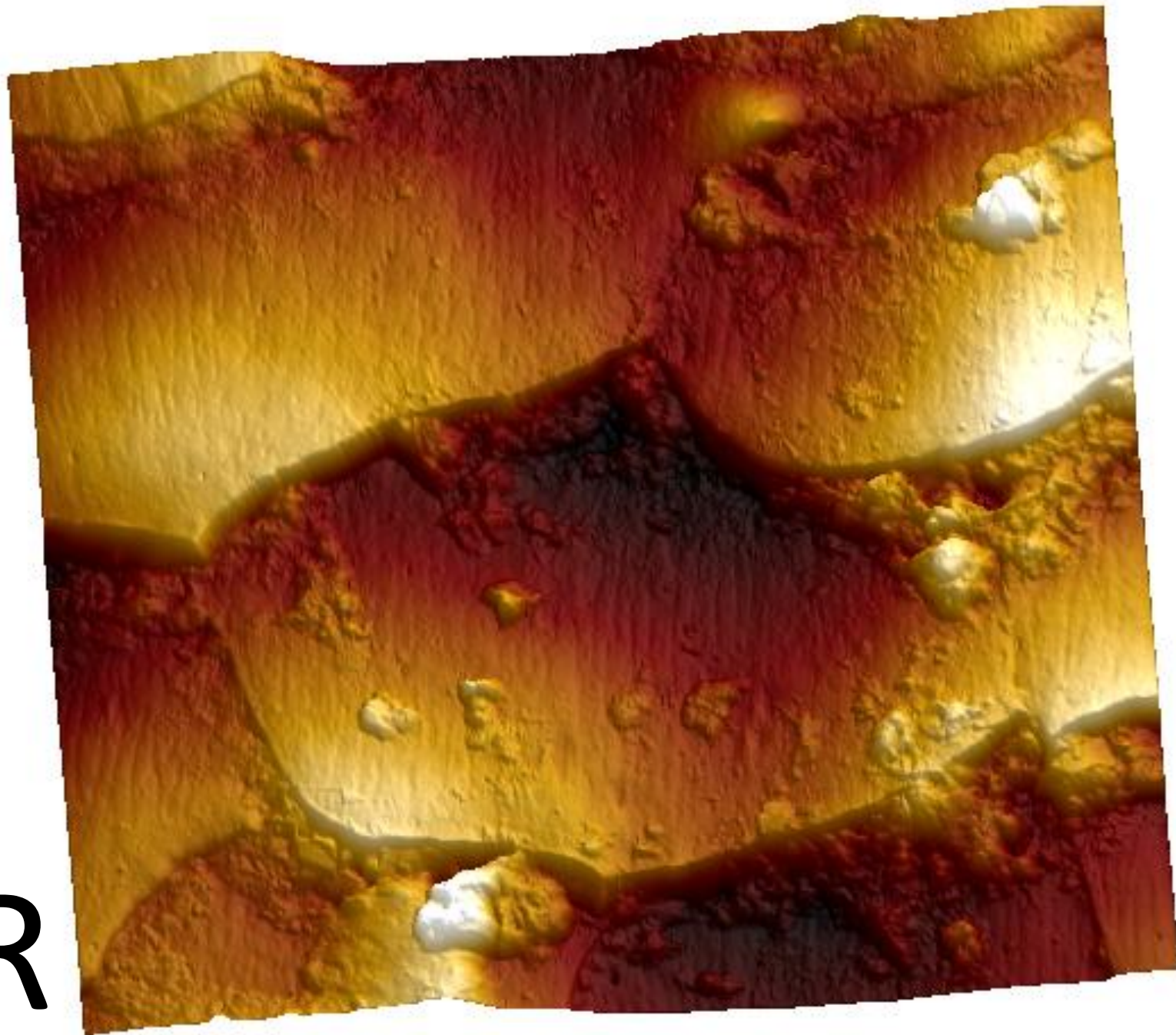
11 T



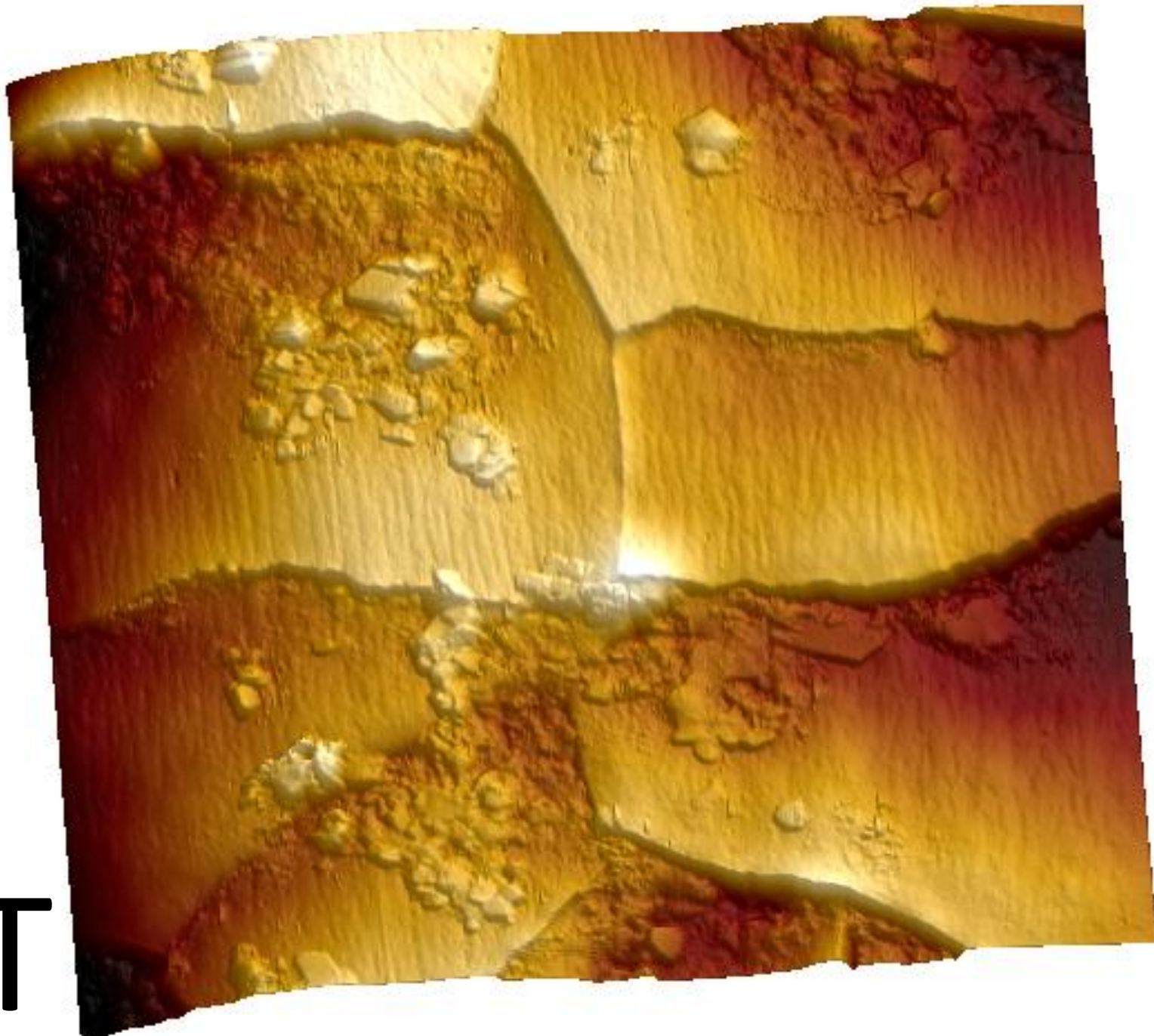
12 R



12 T

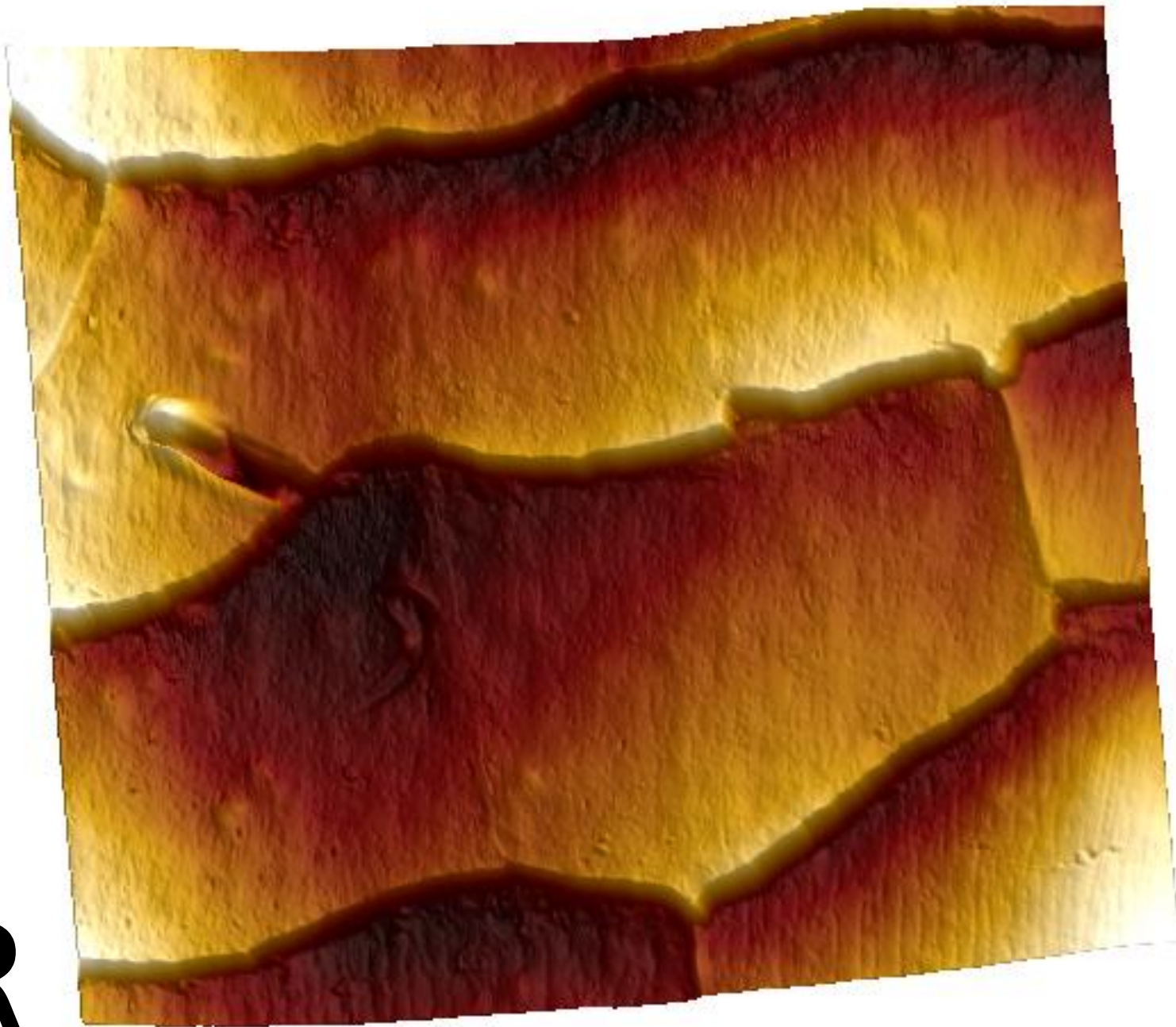


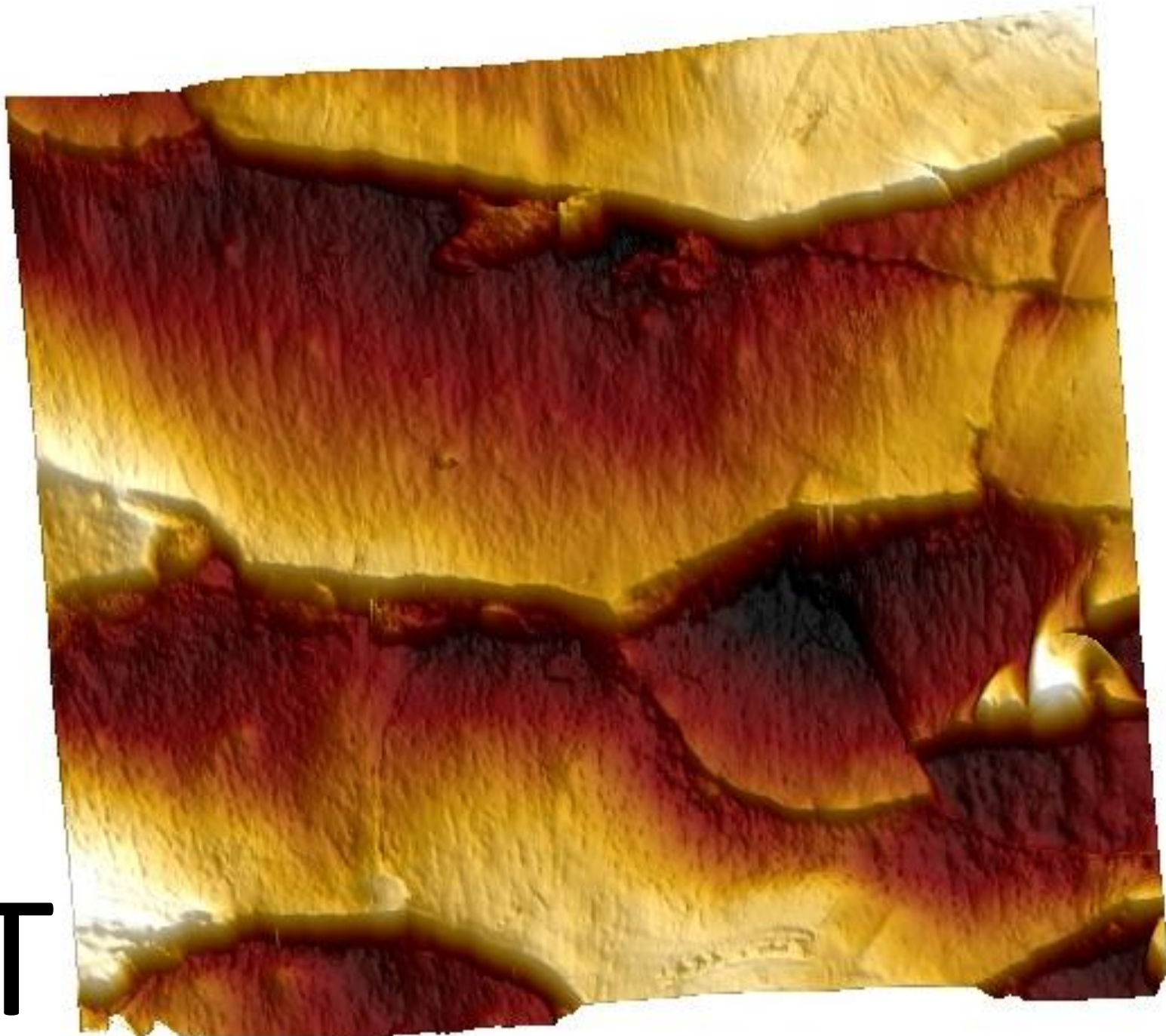
13 R



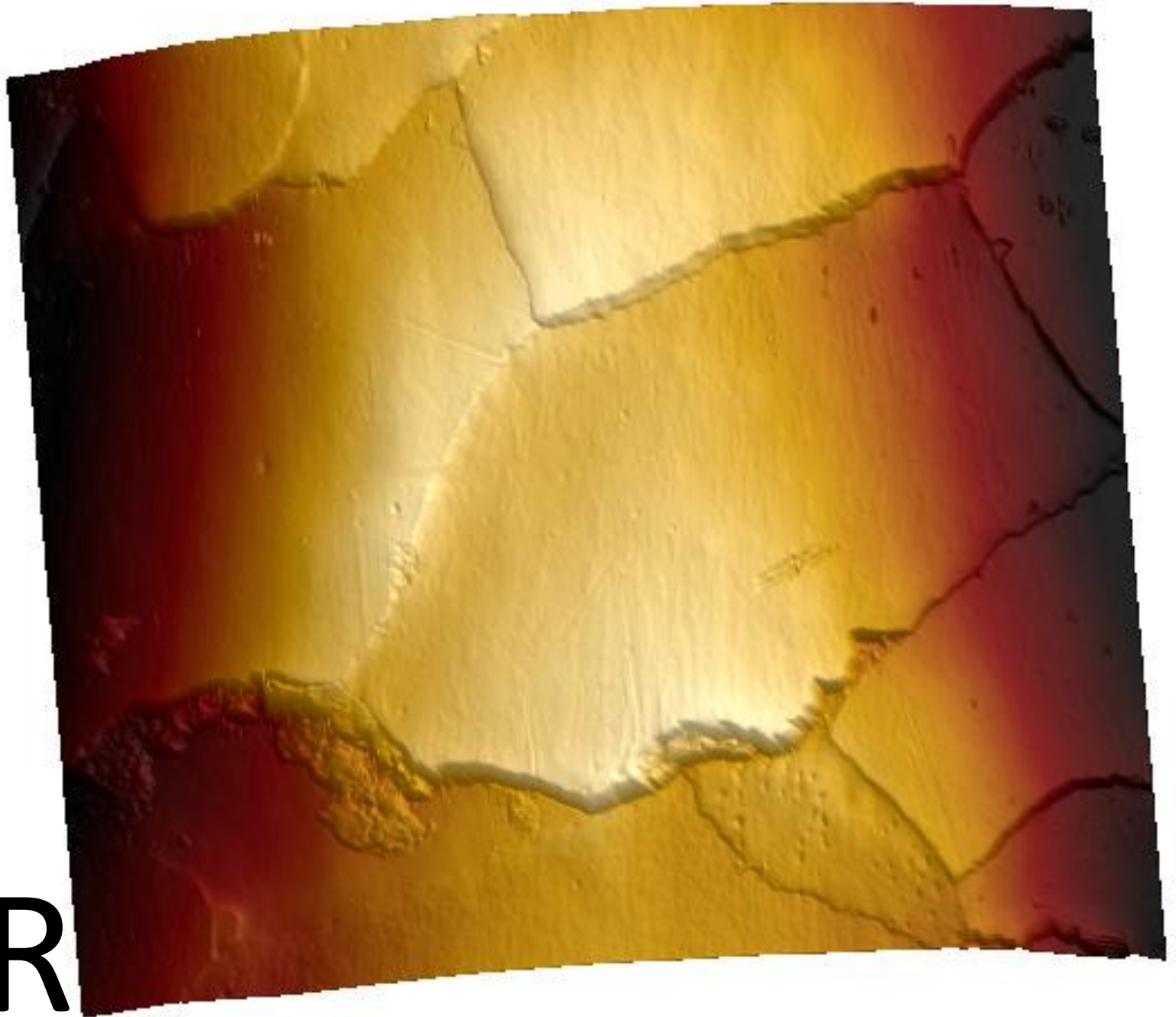
13 T

14 R

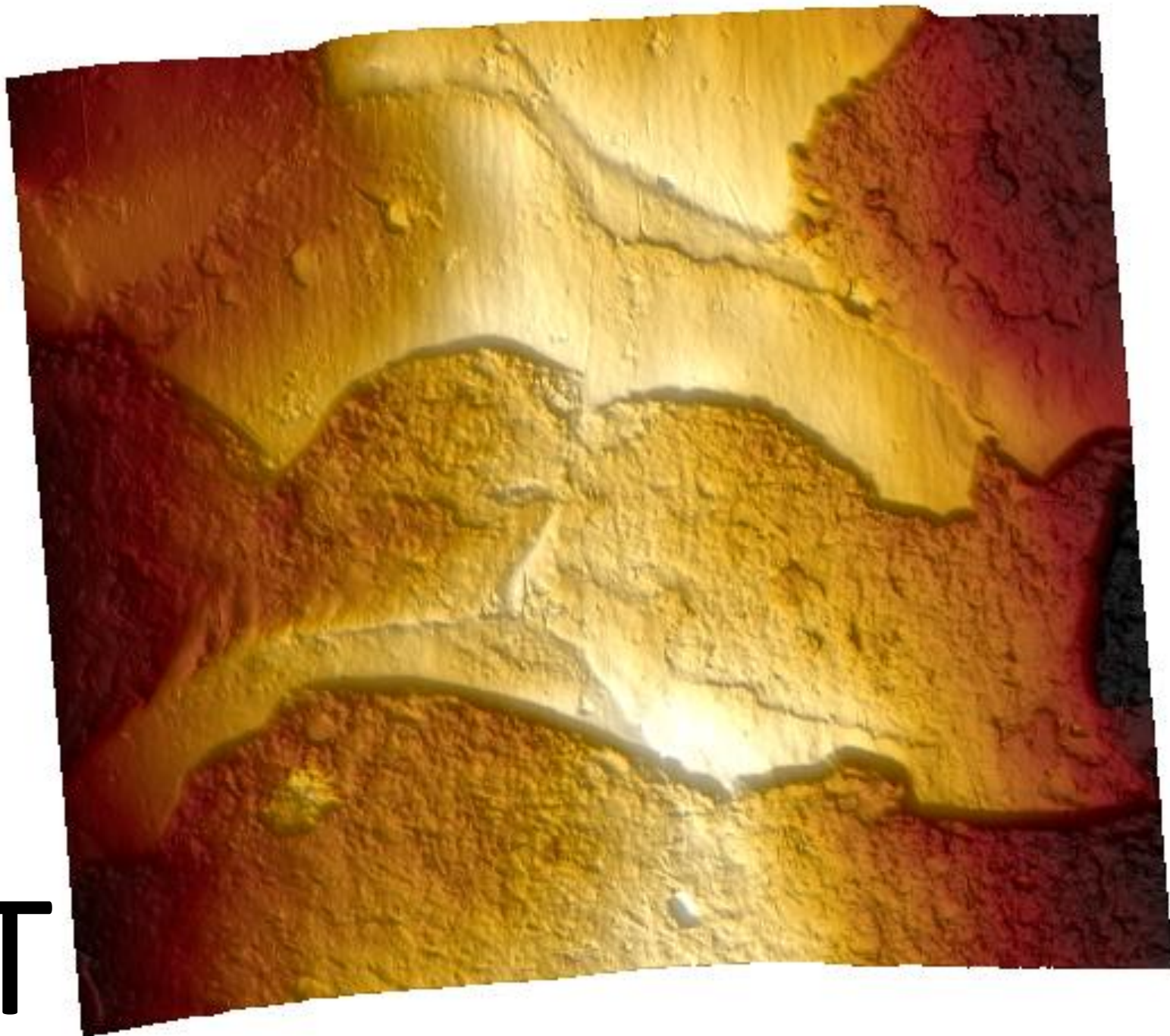




14 T



15 R



15 T

Conclusions

- Normal cuticle breakage patterns seen with these samples:
 - Striated exocuticle at root end
 - Smooth cuticle edges also at root end
 - Jagged cuticle edges further along hair fibre
 - Endocuticle debris and other deposits, especially at the foot of cuticle steps
 - Cortex sometimes exposed at tip end
- A few images are not representative of an individual!
 - Not even representative of a single hair
 - More scanning would be needed!
 - But these are your hair images and so may provide some artistic inspiration!