

CARE-ON Can we REly on Our Network?



<https://care-on.cnr.it/>

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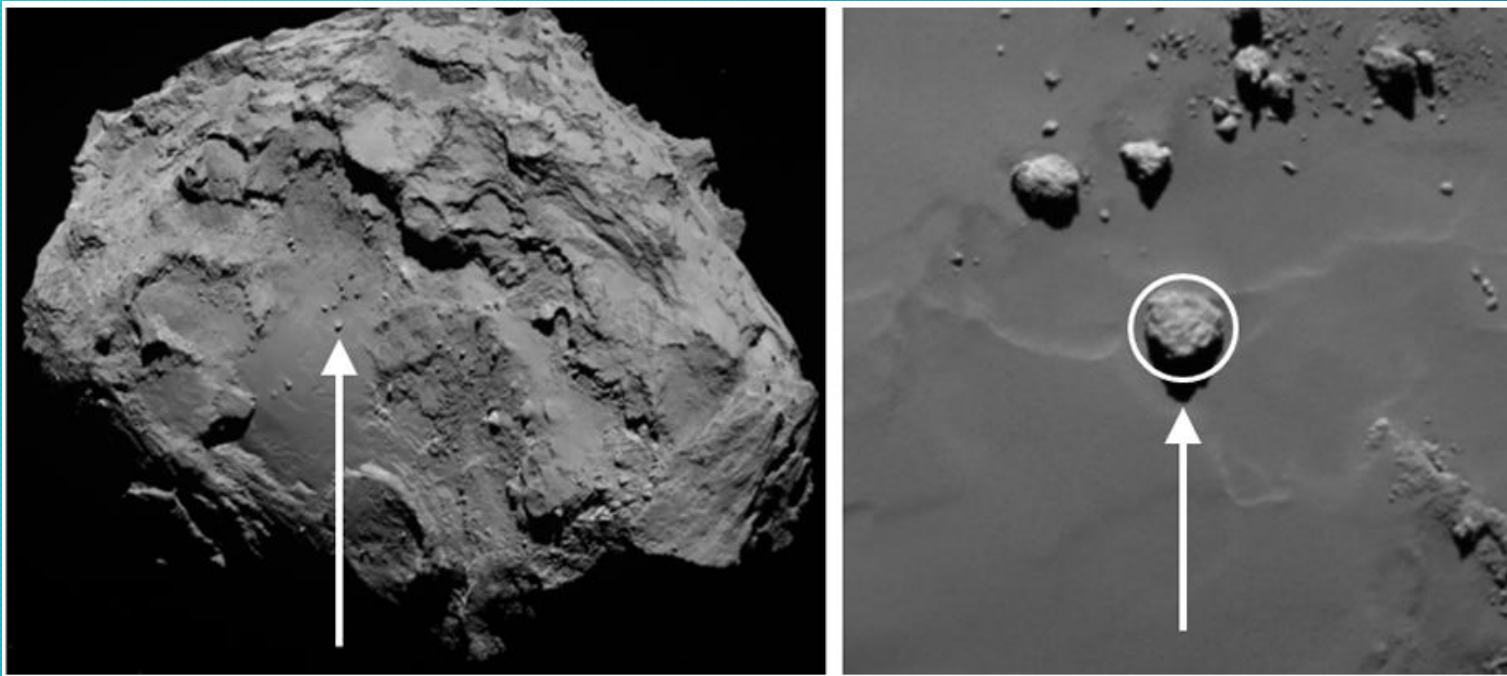
Valentina Rossi - IGG Pavia

Progetto finanziato dall'Istituto di Geoscienze e Georisorse del Consiglio Nazionale delle Ricerche

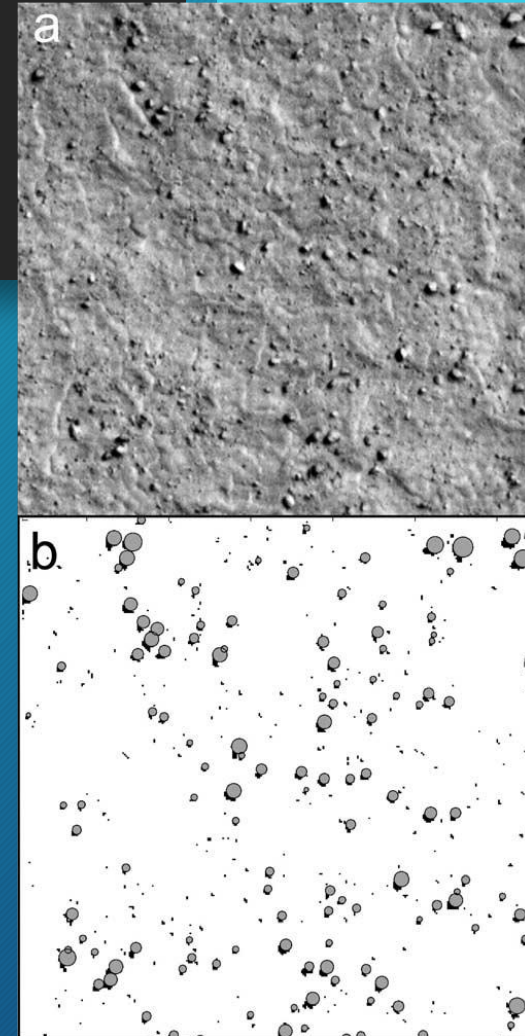
<https://www.igg.cnr.it/ricerche/progetti-finanziati/care-on#c7885>

Riprendiamo qualche concetto:

Boulder counting: Riconoscimento e mappatura di massi sulle superfici di corpi extraterrestri



Superficie della cometa 67P/Churyumov-Gerasimenko (da Preusker et al., 2015)



La superficie di Marte ripresa da satellite (a) e la sua controparte interpretata (b) (Golombek et al., 2008)

Cos'è un boulder?

- Un boulder nel campo delle geoscienze è definite come un clasto particolarmente grande, le dimensioni del cui diametro variano tra 1 e 4 metri. Esistono molti altri termini che definiscono clasti più grandi e più piccoli.
- Nelle geoscienze planetarie la risoluzione delle immagini è tale per cui queste distinzioni sono più difficili. Un boulder è quindi generalmente definite come un blocco di roccia appoggiato su una superficie del quale non fa parte.



Come appaiono «realmente»

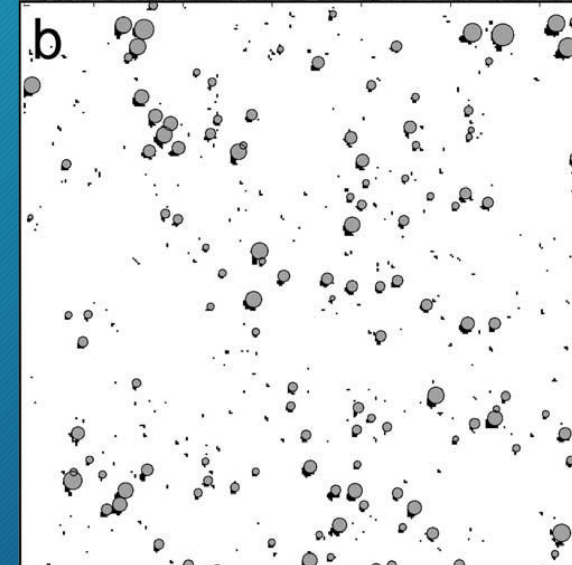
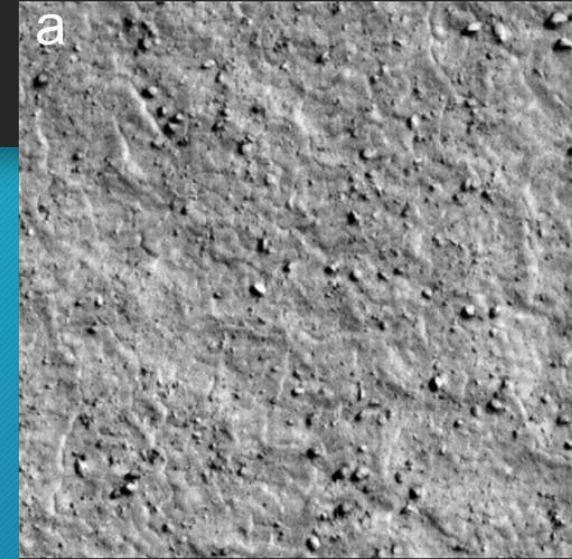




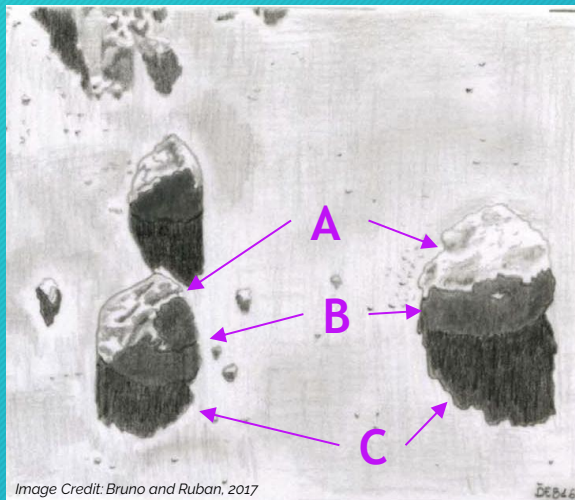
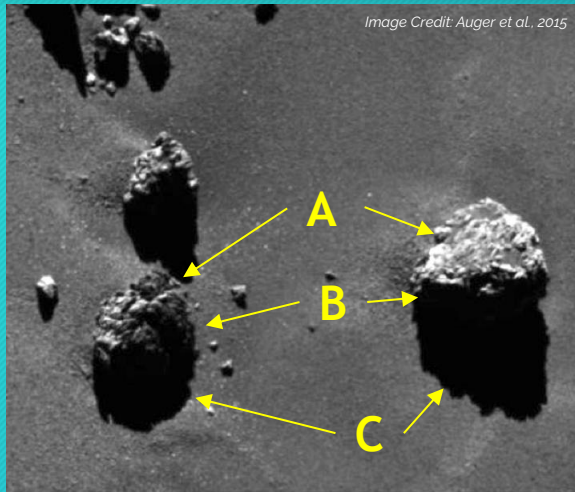
Si tratta di un' interpretazione

In pratica, si vuole passare dal frame “a” al frame “b”.

Questo implica **interpretare** un'immagine raster di una superficie planetaria (a) per ottenere un layer vettoriale con le sagome delle aree occupate dai boulder (b)

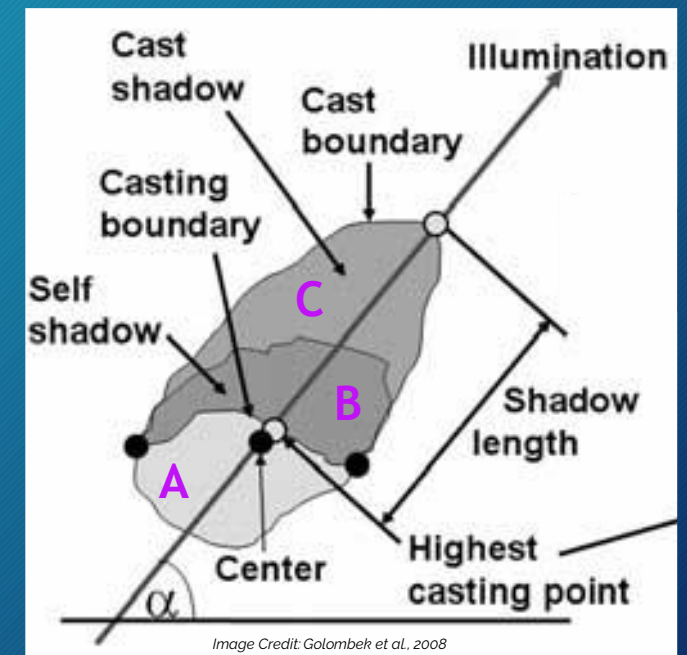
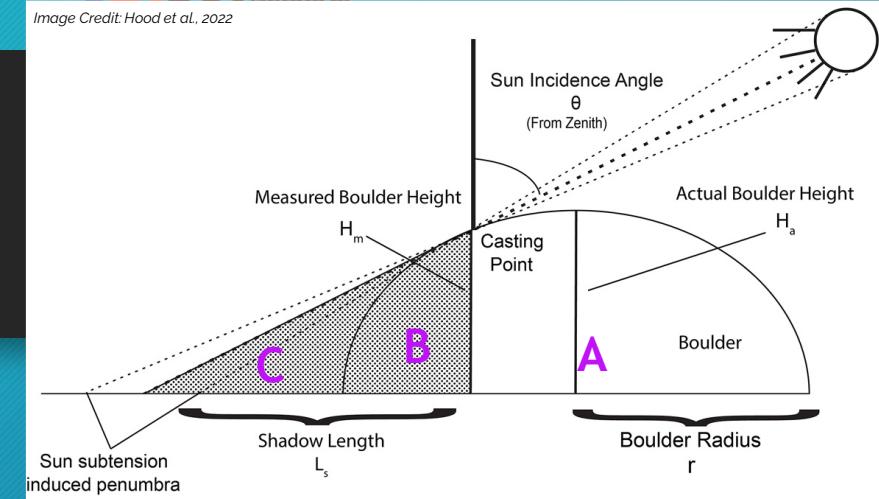


Punti fissi da tenere a mente

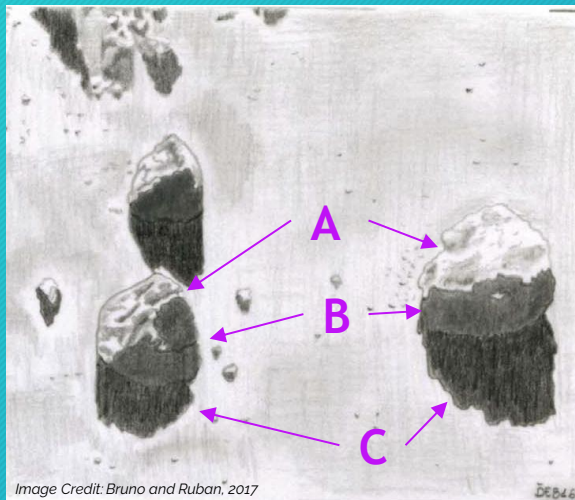
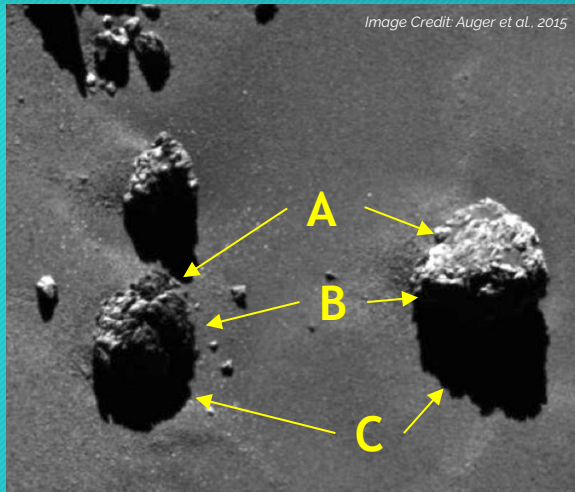


Ogni boulder è definita da:

- Un'area illuminata (A)
- Un'area in ombra (B)
- Un'ombra proiettata (C)

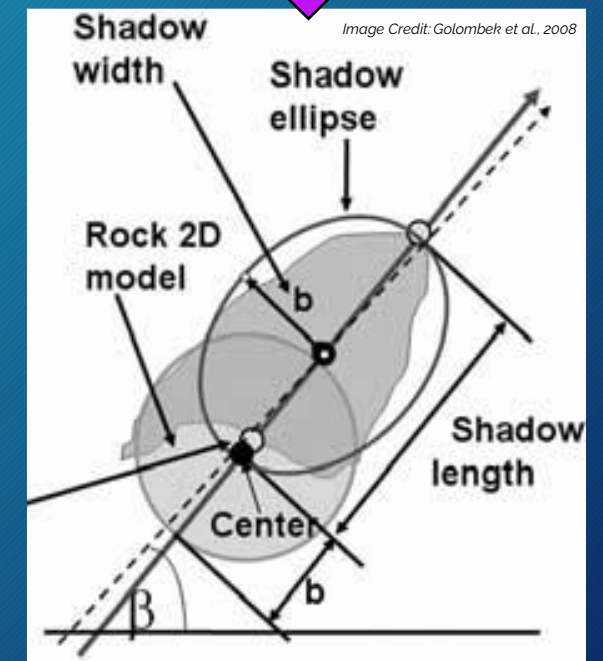
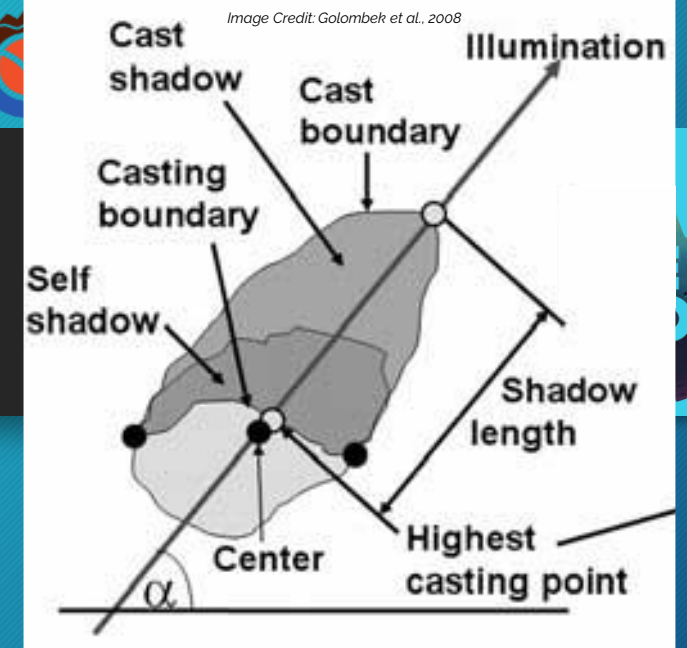


Punti fissi da tenere a mente



Questo significa che la sagoma di ogni boulder può essere approssimata da una forma circolare definite da solamente 2 punti:

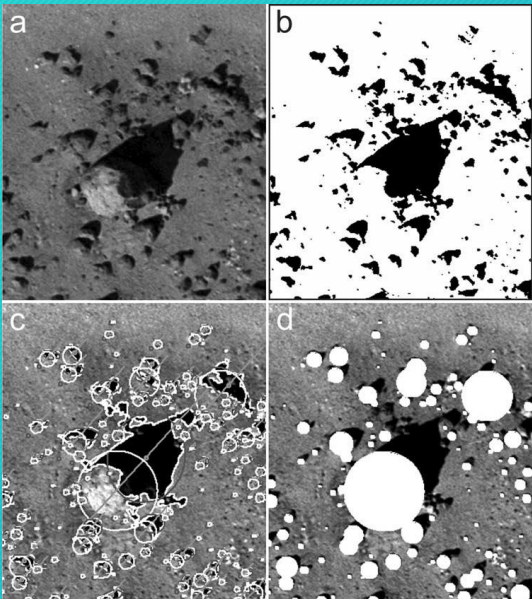
- Il centro
- Il raggio massimo





Punti fissi da tenere a mente

Image Credit: Golombek et al., 2008



Questo significa che la sagoma di ogni boulder può essere approssimata da una forma circolare definita da soli 2 punti:

- Il centro
- Il raggio massimo

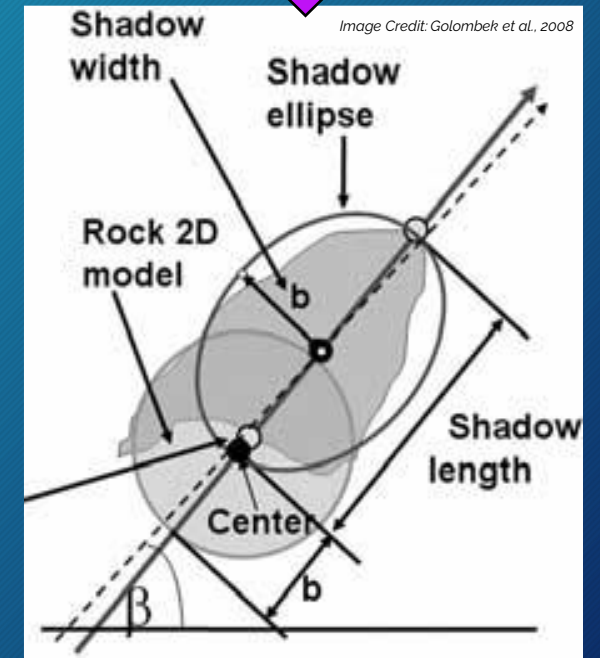
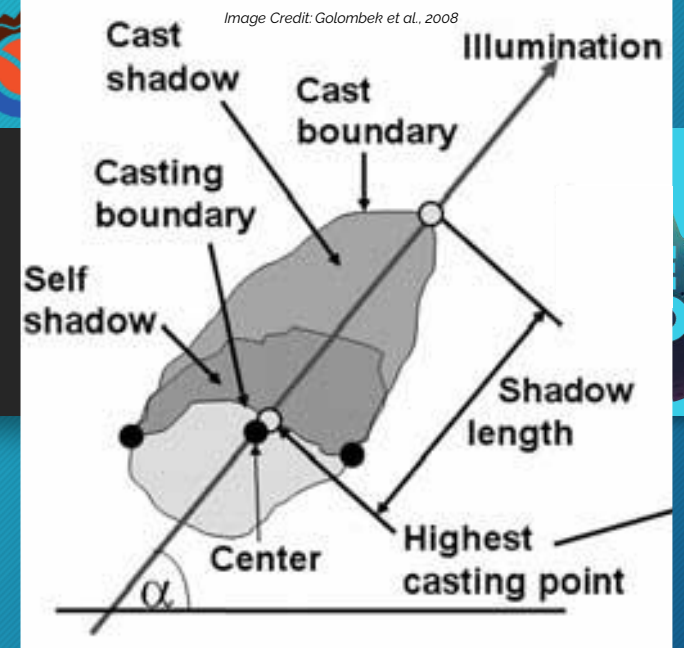


Image Credit: Golombek et al., 2008

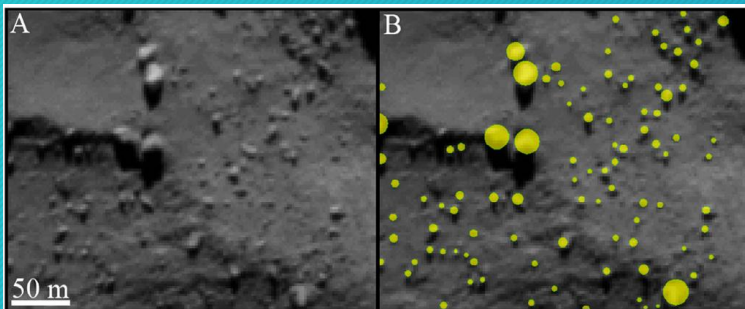
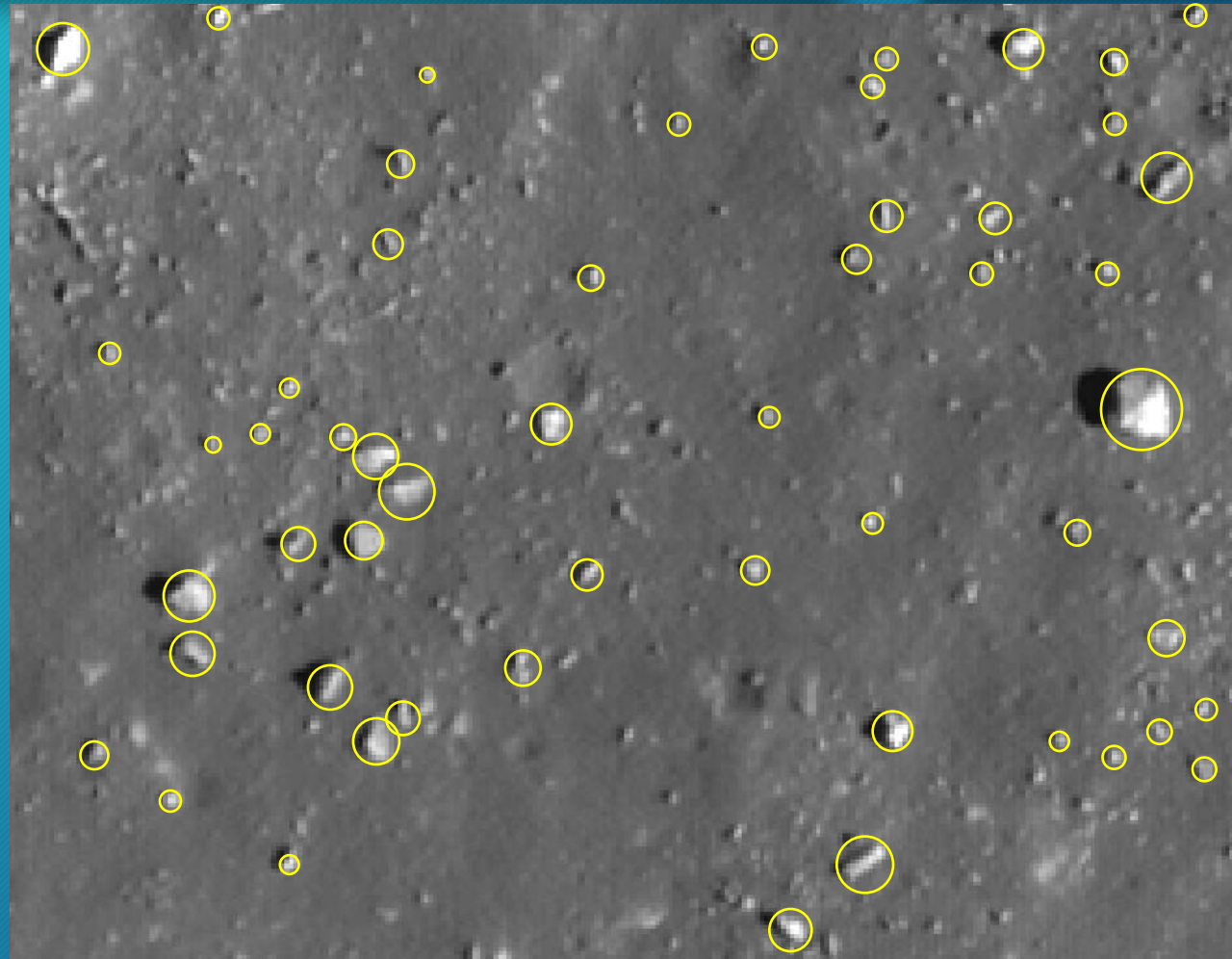
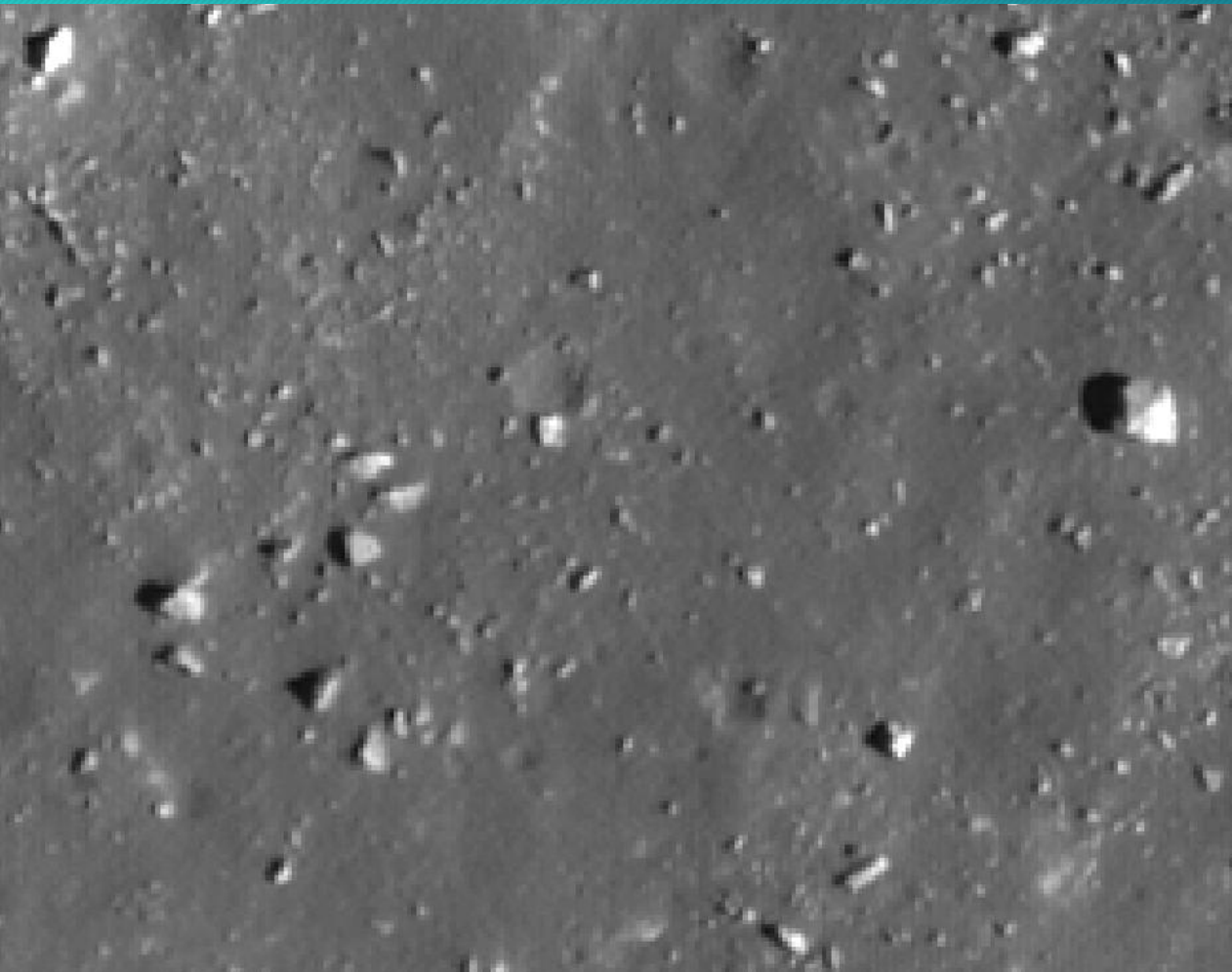
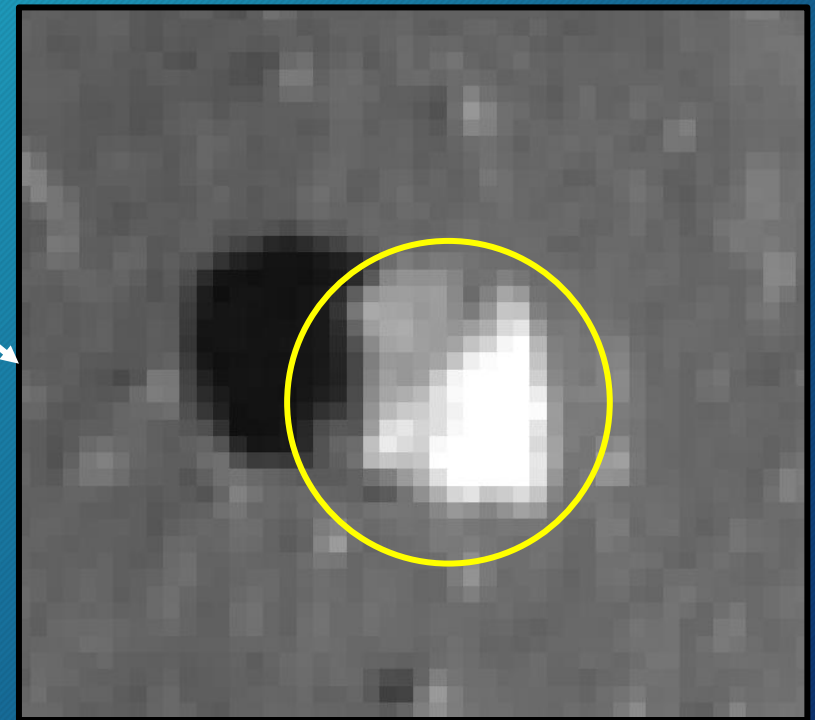
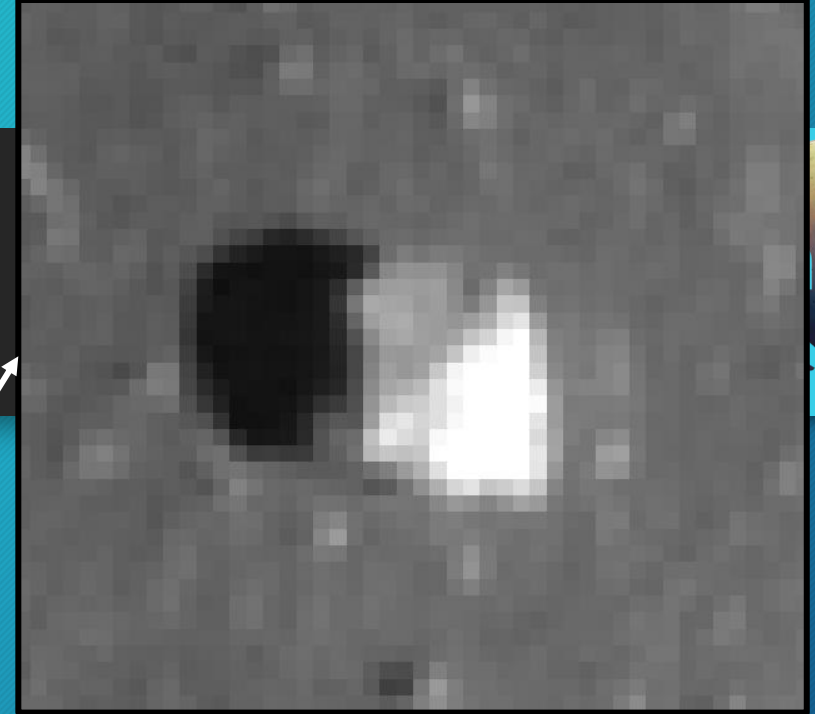
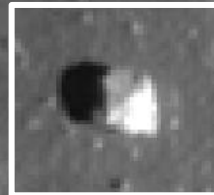
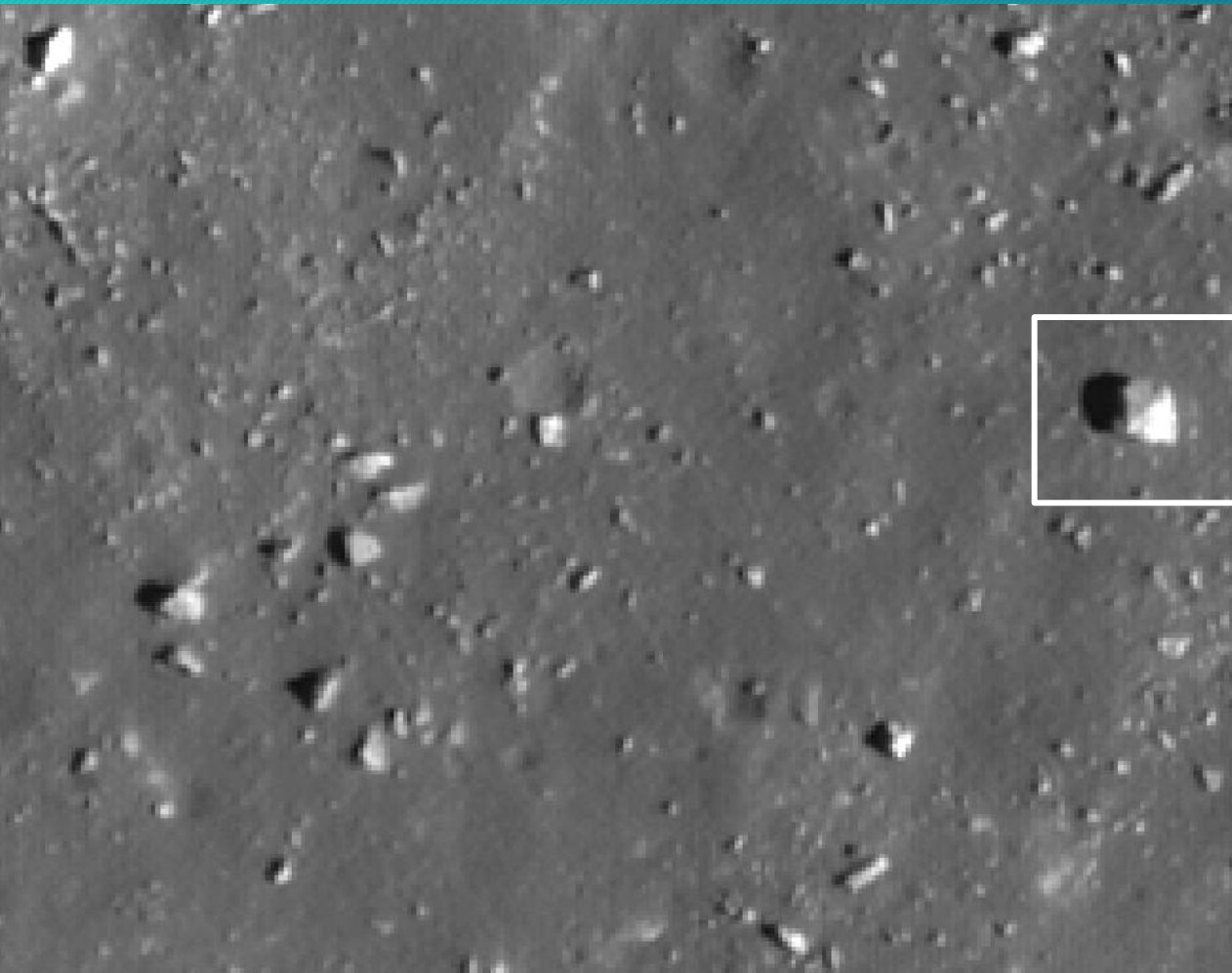


Image Credit: Pajola et al., 2015

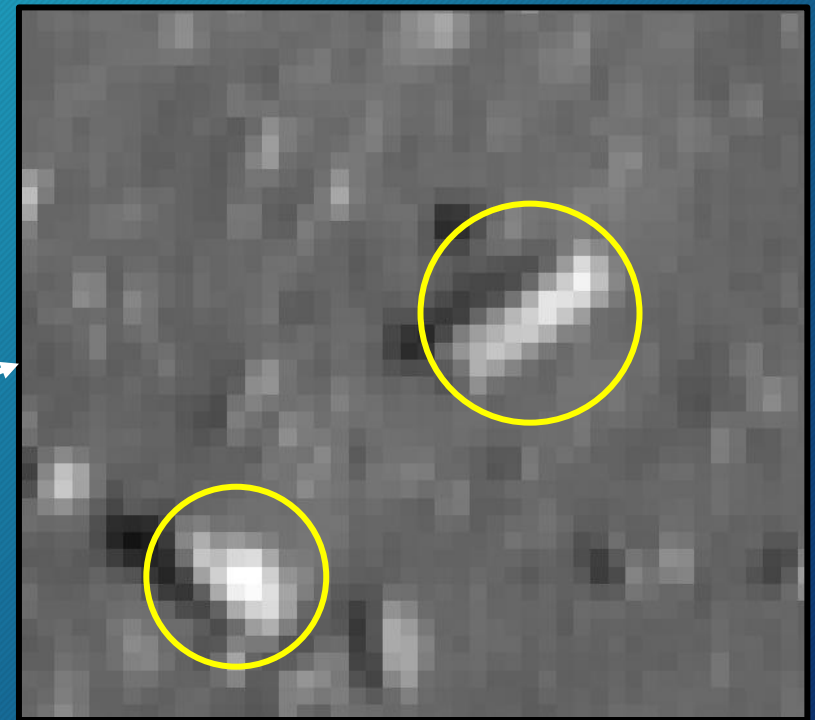
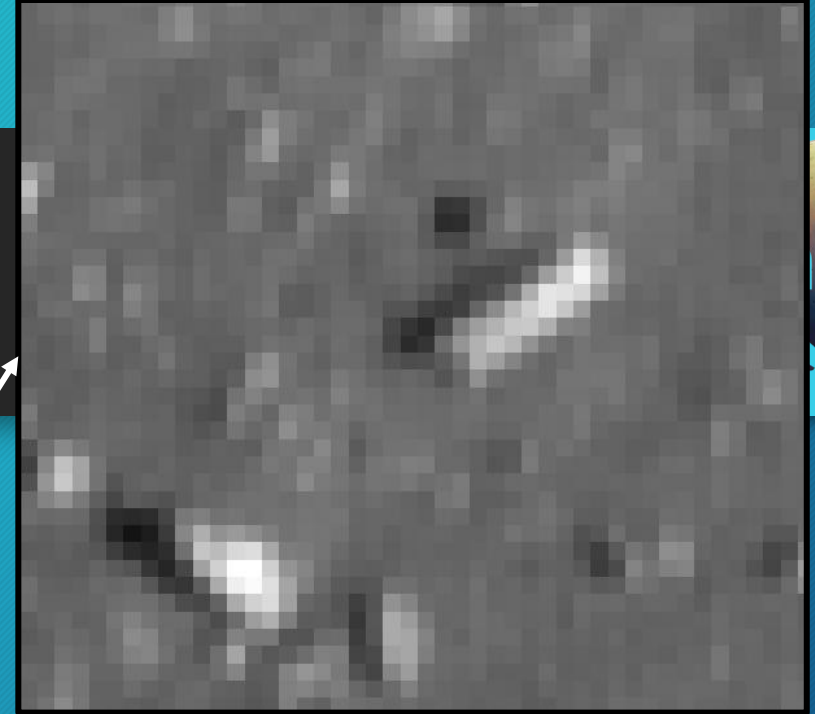
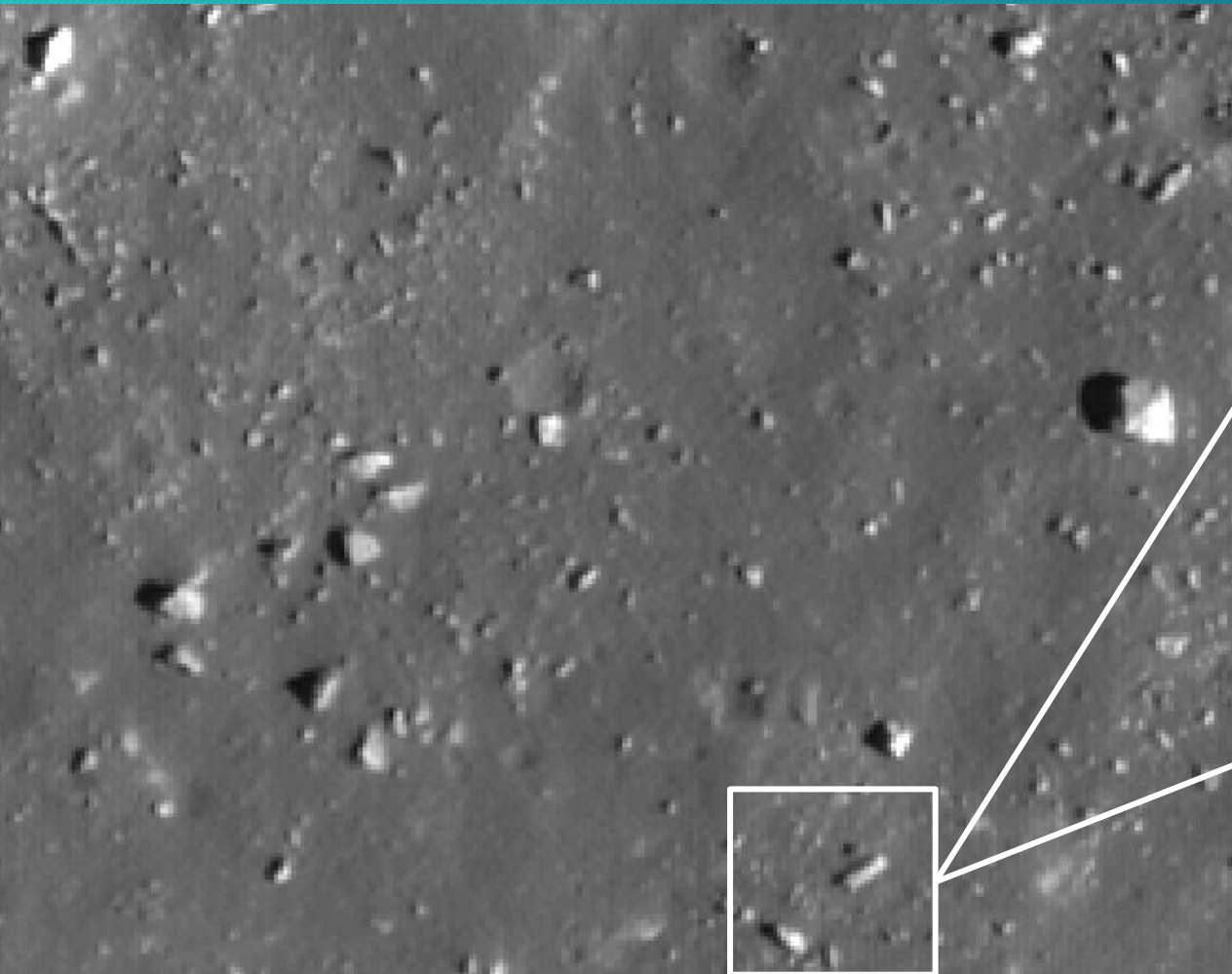
Come può apparire una schermata mappata



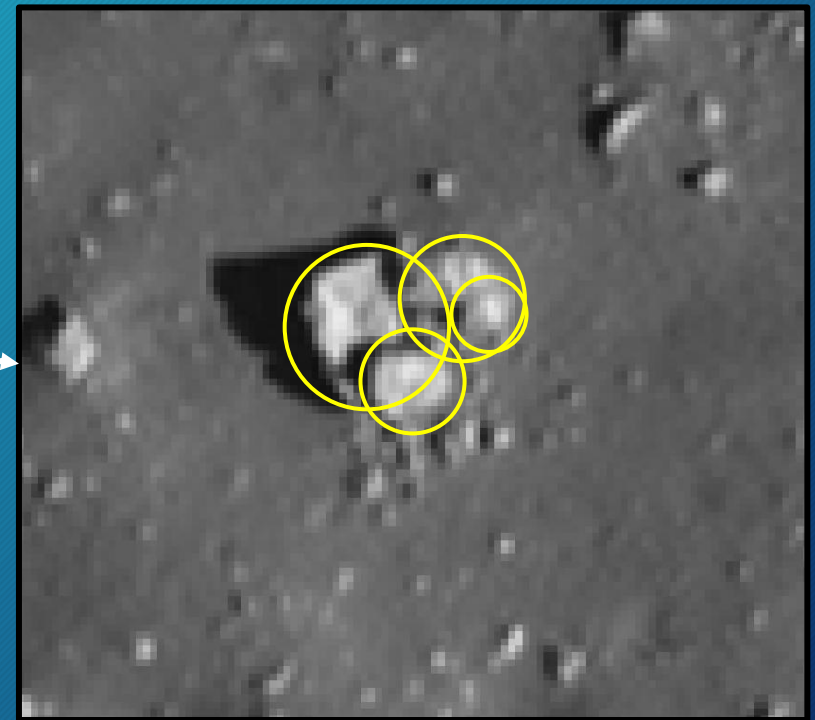
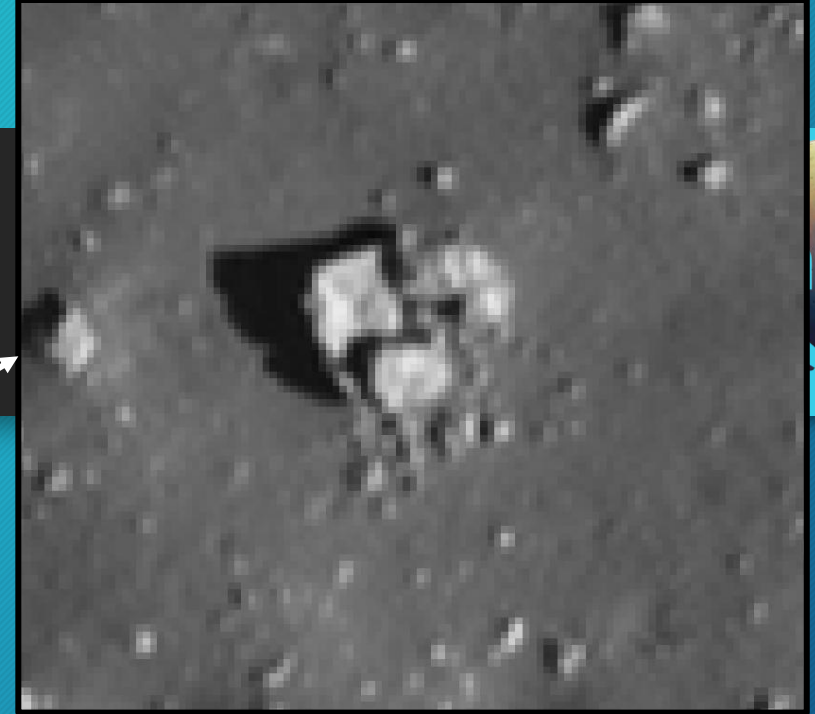
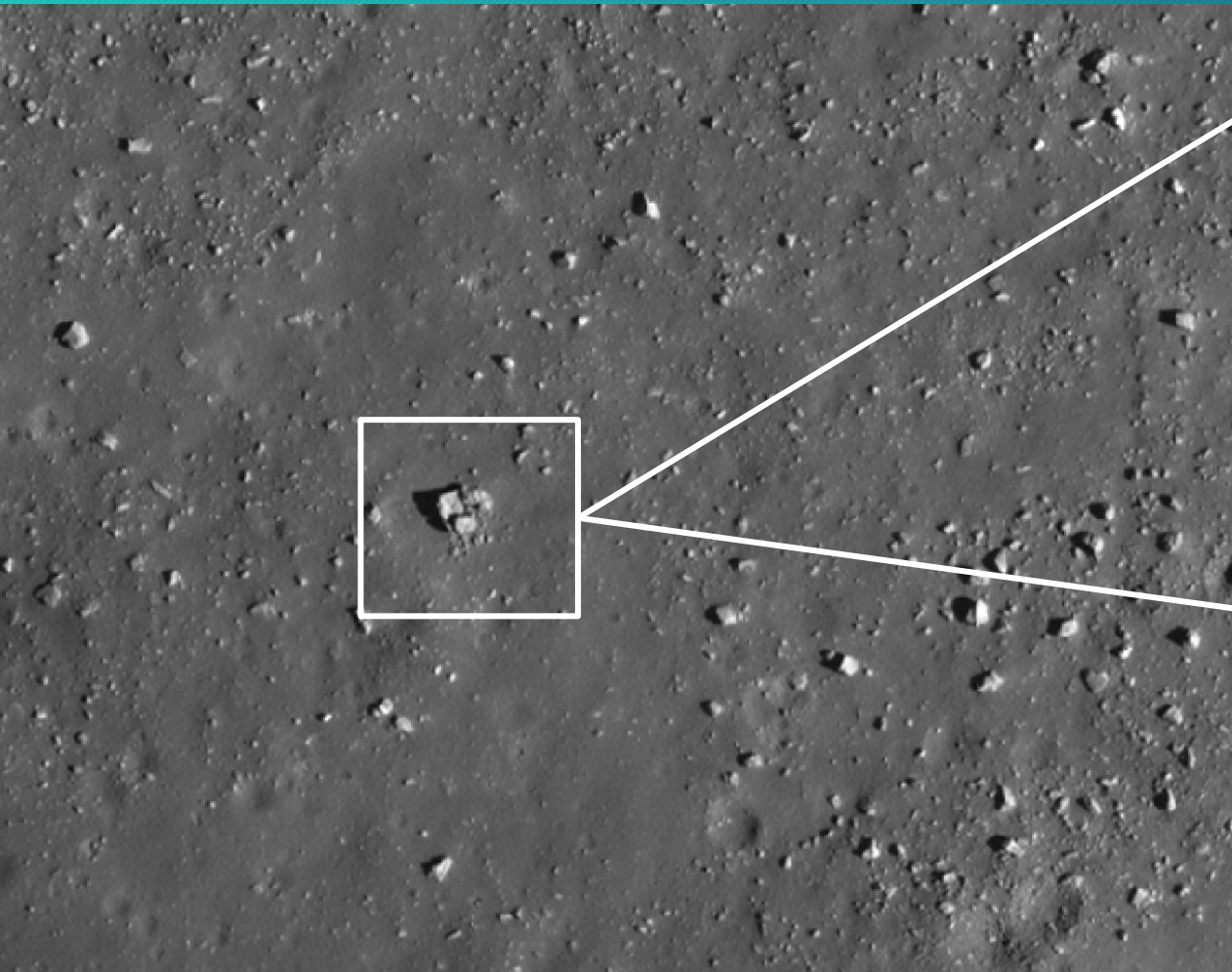
Come può apparire un masso?



Come può apparire un masso?



Sovrapposizioni - no problem



Massi «piccoli»?



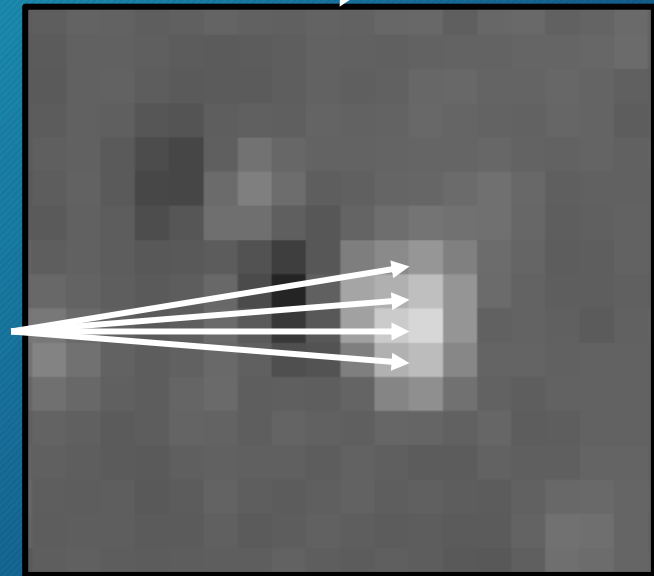
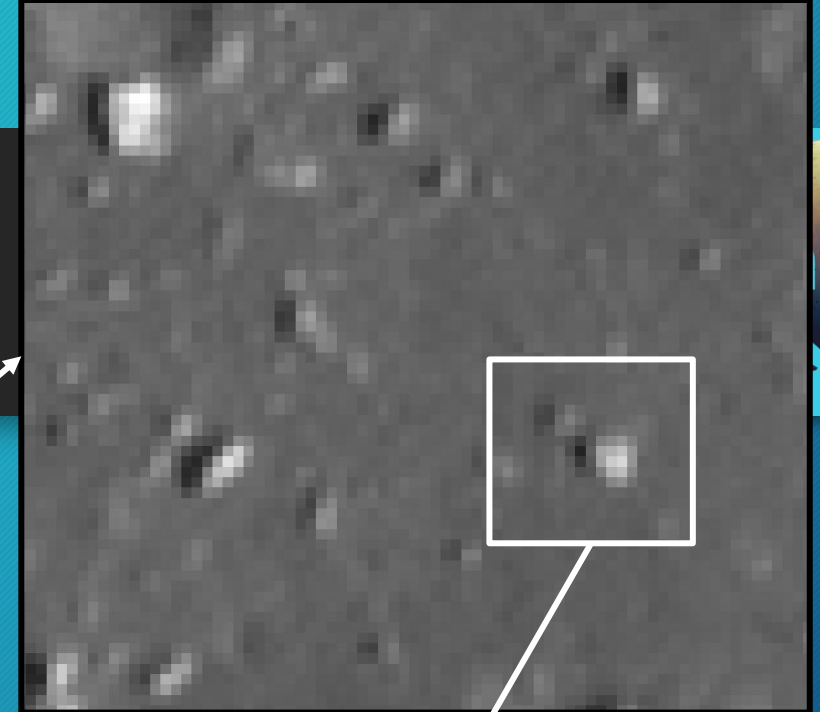
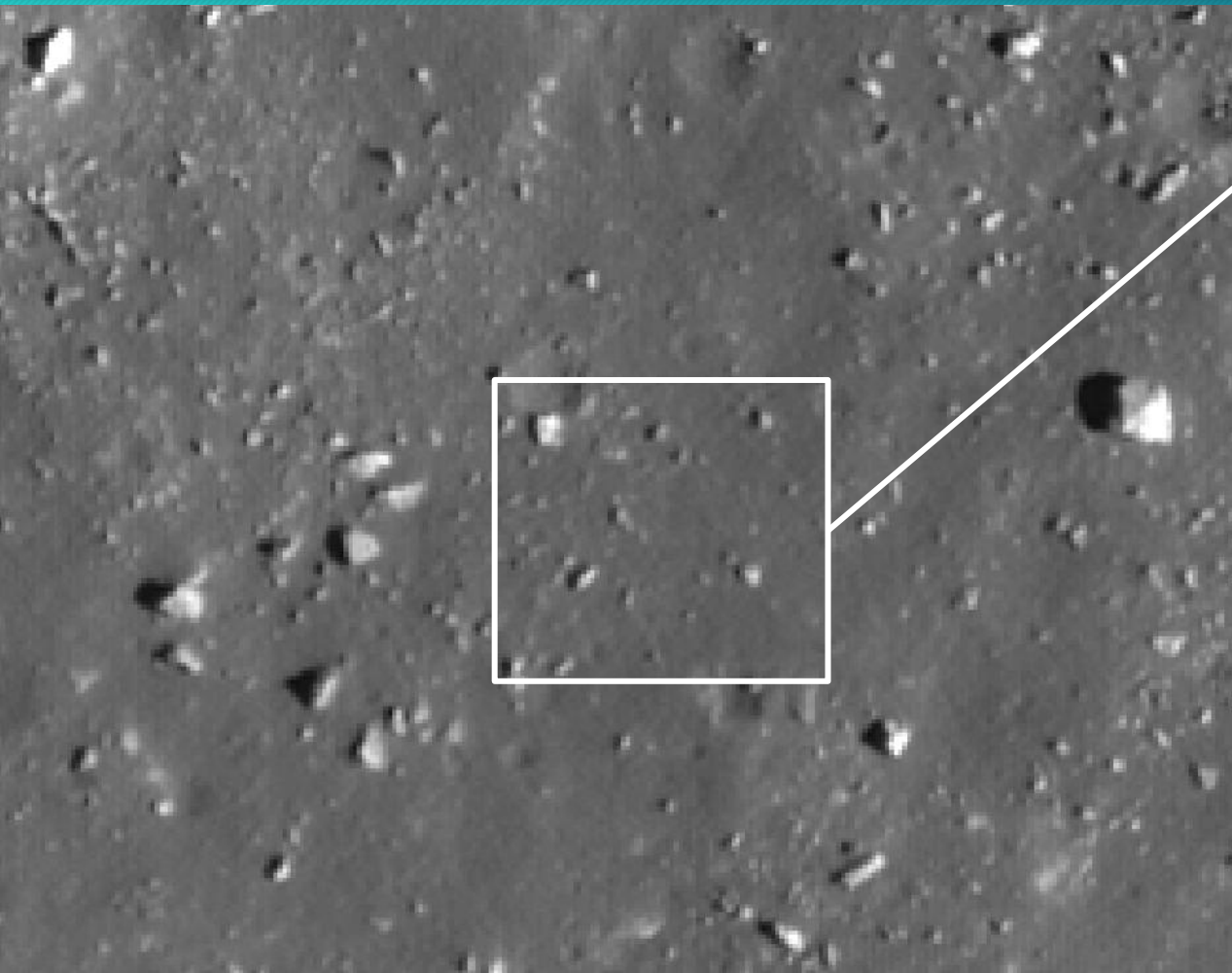
Un masso viene considerato affidabile se formato da almeno 4 pixel.

Non importa la dimensione reale del pixel, solo la loro quantità.

Non perdeteci troppo tempo: se avete dubbi su un masso, segnate!

I massi troppo piccoli verranno automaticamente rimossi da noi in fase di analisi dei dati.

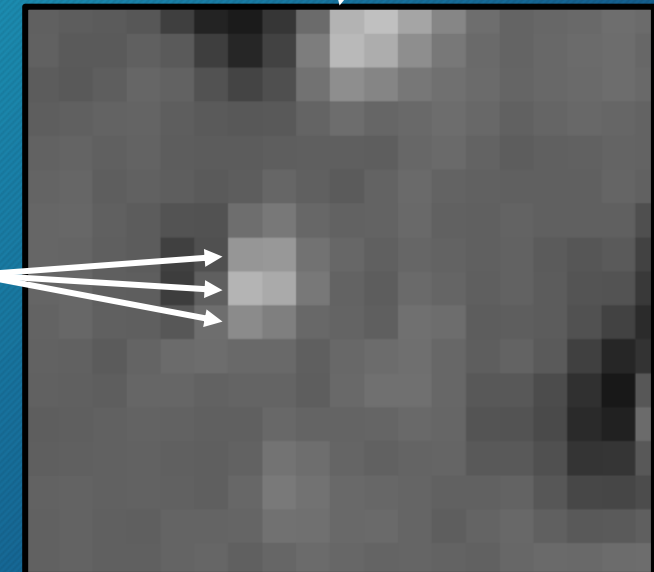
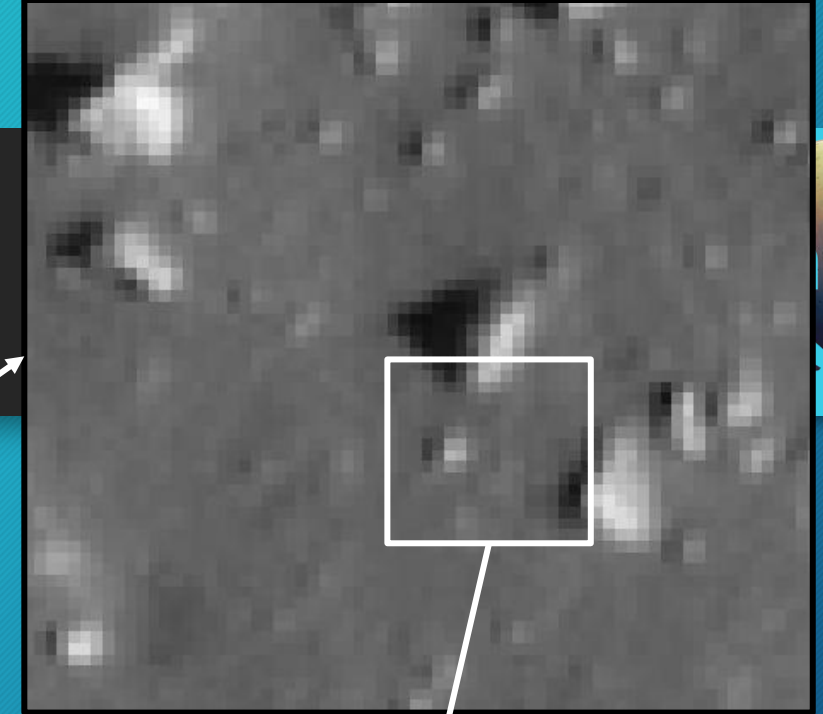
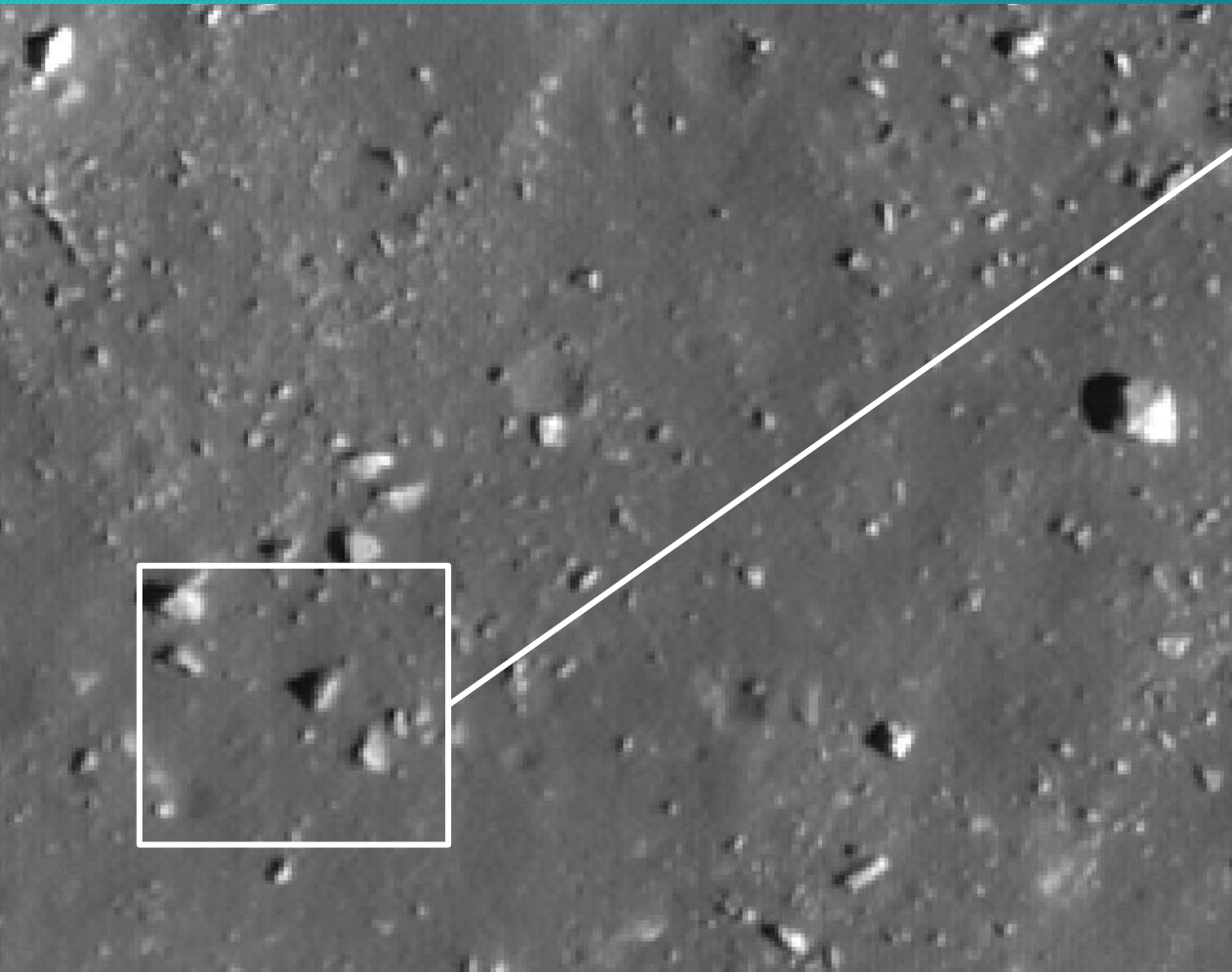
Massi «piccoli»



~4 pixel!

Ricordate: se avete dubbi su un masso, includetelo.

Massi troppo piccoli



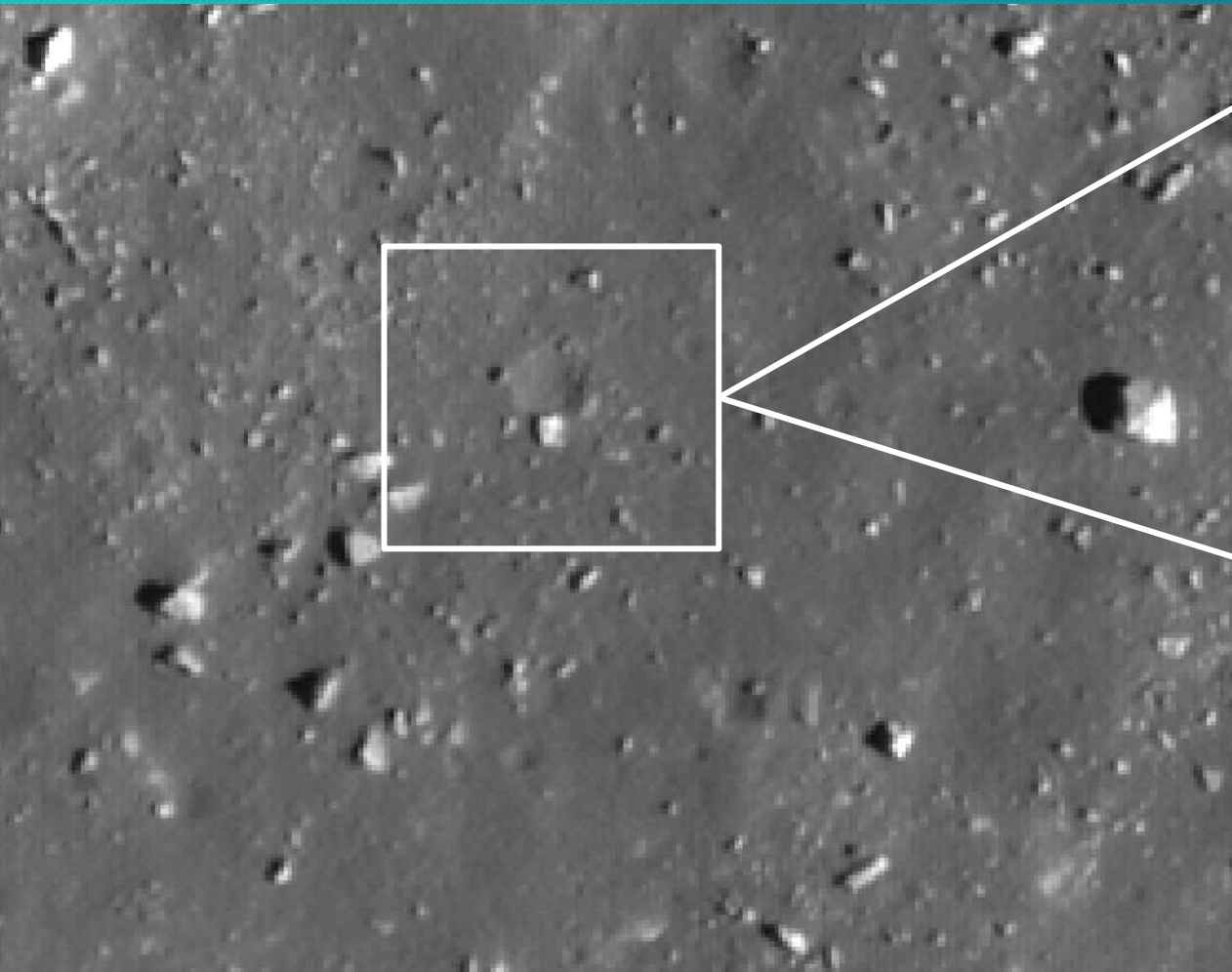
3 pixel!



Le ombre: evitare gli errori



Le ombre: evitare gli errori



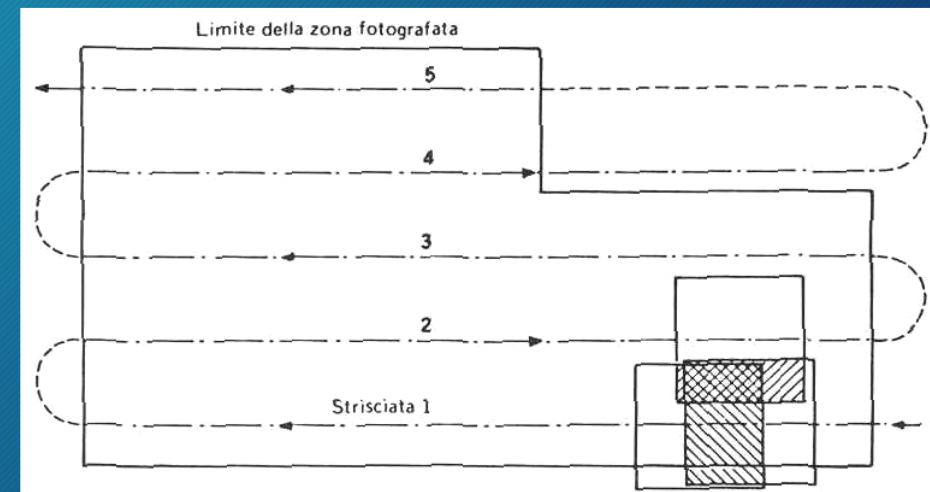
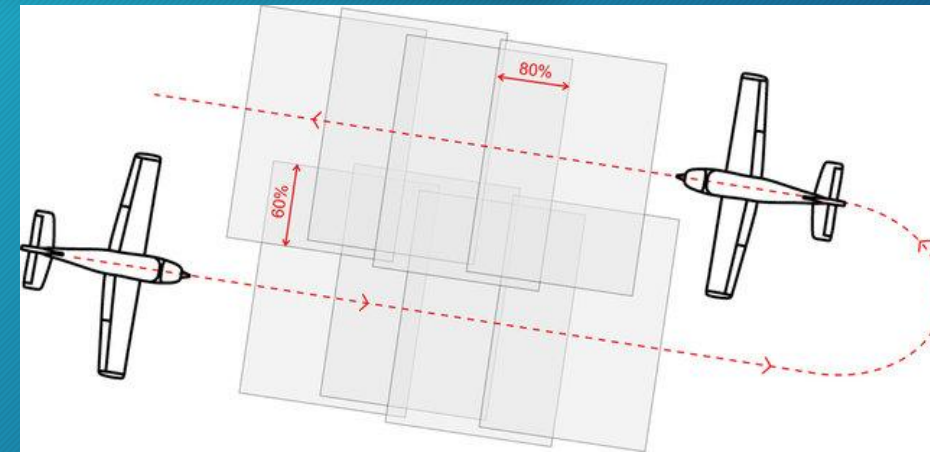


Strategia di mappatura: overlap e sidelap

Il modo migliore per essere sicuri di coprire tutta l'area è iniziare da un angolo (ad esempio quello in alto a sinistra) e procedere orizzontalmente verso il lato opposto.

Una volta completata la prima riga ci si può muovere verticalmente e invertire il senso di marcia per tornare verso il lato di partenza.

Se si identificano tutti i massi nella schermata prima di muoversi e ci si sposta tenendo a video gli ultimi massi visti, si è sicuri di aver coperto tutto l'area.

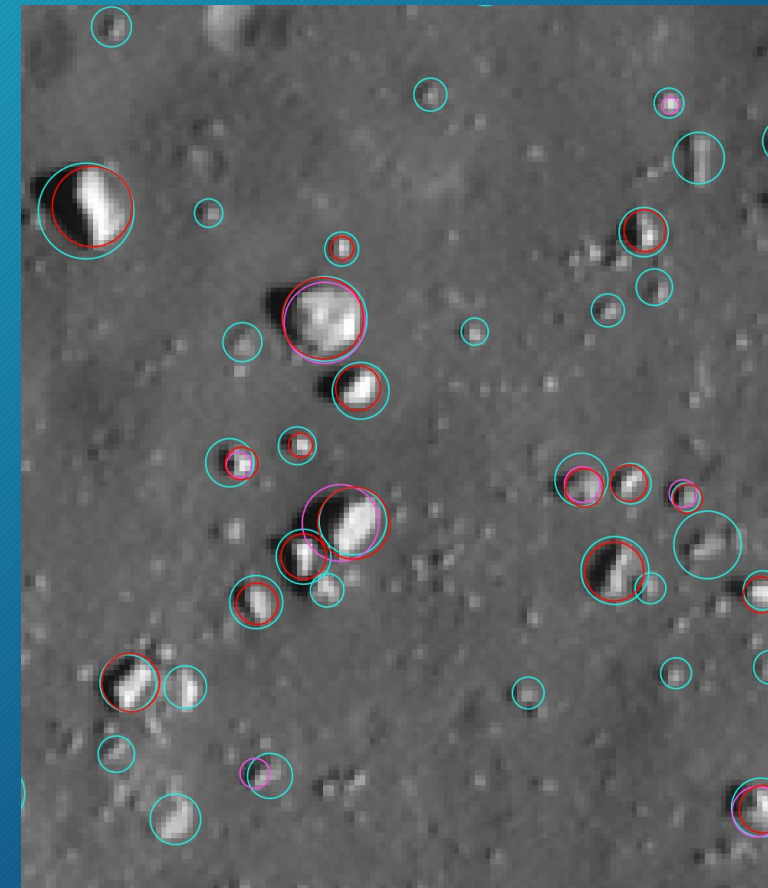


Passi operativi



Per completare il progetto è necessario:

- Compilare il **questionario conoscitivo iniziale** (link via mail tra qualche giorno)
- Mappare la prima area su **Zooniverse** (consigliamo di iniziare con «Area 2»)
- Compilare il **questionario post attività** (link via mail tra qualche giorno)
- Mappare la seconda area su **Zooniverse**
- Compilare il **questionario post attività** (link via mail tra qualche giorno)



Iniziamo!



Zooniverse: creiamo l'account



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WHAT IS THE ZOONIVERSE?

The wisdom of the crowd

The Zooniverse is the world's largest platform for people-powered research. We connect professional researchers with millions of volunteers worldwide. Facilitating real results from impractical, or otherwise impossible research. This has led to new discoveries, policy impacts, and research publications.

Our platform is driven by volunteers, like you. All ages and backgrounds are welcome to participate, no PhD required – just a sense of wonder and a few clicks. Many of the most interesting findings from Zooniverse projects have emerged from discussions between volunteers and researchers. Join us today to take part in cutting-edge research and make your own discoveries!

THE ZOONIVERSE WORKS

866,232,281

CLASSIFICATIONS SO FAR

2,820,971

REGISTERED VOLUNTEERS

Zooniverse: creiamo l'account



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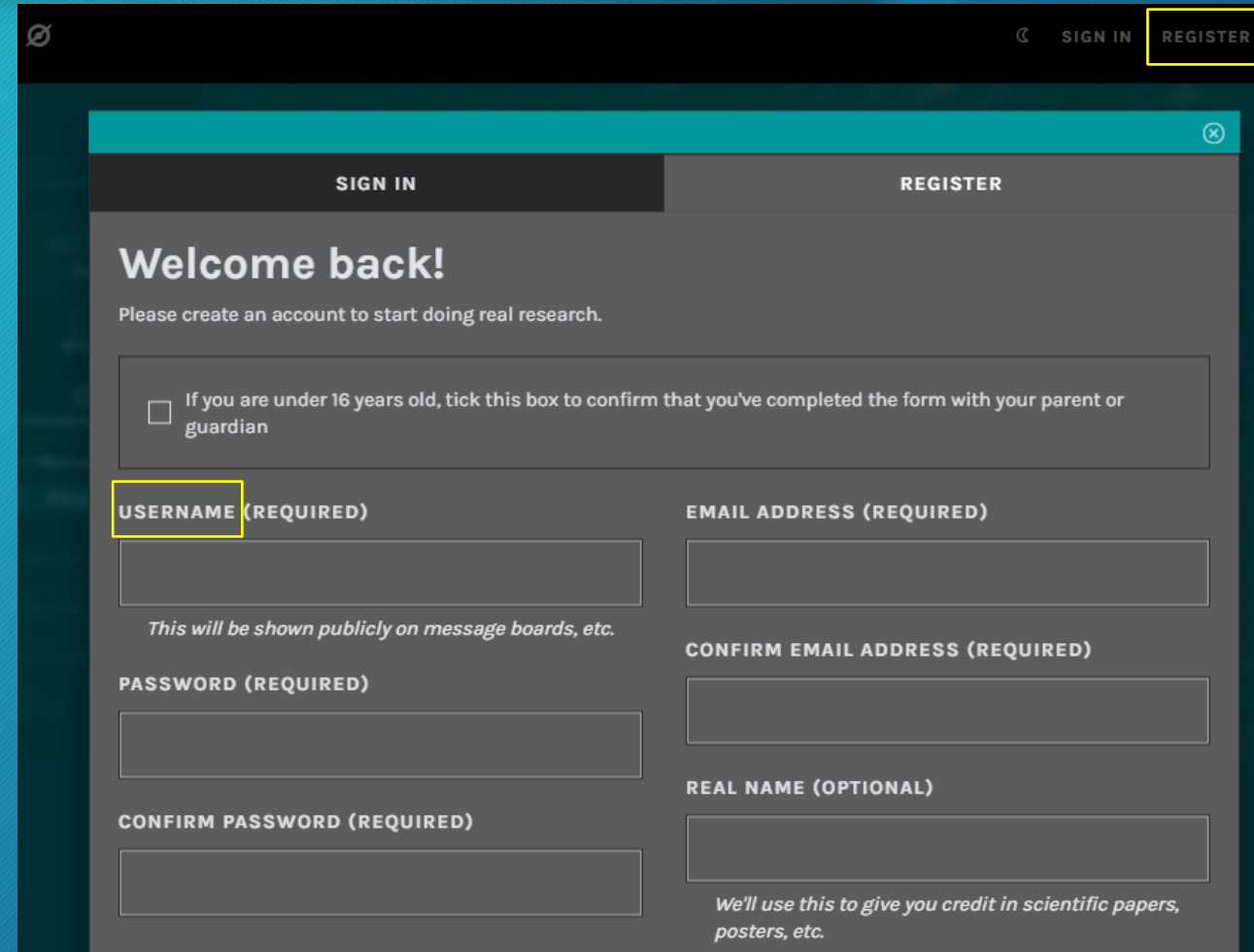
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Lo username è fondamentale per collegare le
vostre mappature ai risultati dei questionari



The screenshot shows the registration page of the Zooniverse website. At the top right, there are links for 'SIGN IN' and 'REGISTER'. The 'REGISTER' link is highlighted with a yellow box. Below the navigation bar, there are two tabs: 'SIGN IN' and 'REGISTER'. The 'REGISTER' tab is active. The main heading is 'Welcome back!' followed by the instruction 'Please create an account to start doing real research.' Below this, there is a checkbox with the text 'If you are under 16 years old, tick this box to confirm that you've completed the form with your parent or guardian'. The form consists of several input fields: 'USERNAME (REQUIRED)' (highlighted with a yellow box), 'EMAIL ADDRESS (REQUIRED)', 'CONFIRM EMAIL ADDRESS (REQUIRED)', 'PASSWORD (REQUIRED)', 'CONFIRM PASSWORD (REQUIRED)', and 'REAL NAME (OPTIONAL)'. There are also two lines of explanatory text: 'This will be shown publicly on message boards, etc.' and 'We'll use this to give you credit in scientific papers, posters, etc.'

Zooniverse: la pagina del progetto



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CARE-ON boulders

<https://l.cnr.it/care-on-boulders>

Zooniverse: la pagina del pro

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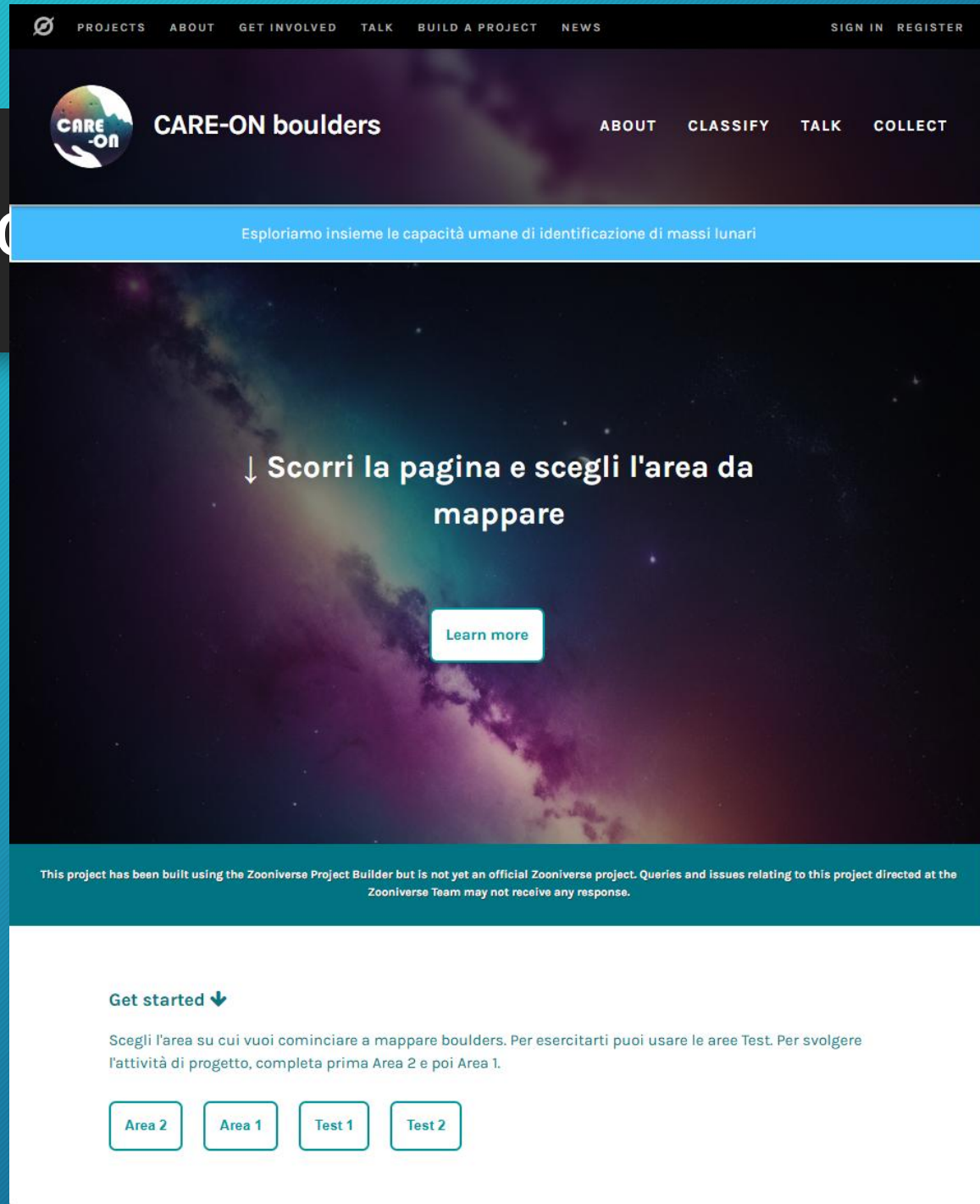
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CARE-ON boulders

<https://l.cnr.it/care-on-boulders>



The screenshot shows the CARE-ON boulders project page on Zooniverse. The page has a dark background with a colorful nebula. At the top, there is a navigation bar with links: PROJECTS, ABOUT, GET INVOLVED, TALK, BUILD A PROJECT, NEWS, and SIGN IN REGISTER. Below the navigation bar is the project title "CARE-ON boulders" and a sub-navigation bar with links: ABOUT, CLASSIFY, TALK, and COLLECT. A blue banner contains the text "Esploriamo insieme le capacità umane di identificazione di massi lunari". Below this, a large text block says "↓ Scorri la pagina e scegli l'area da mappare" with a "Learn more" button. At the bottom, there is a "Get started" section with a downward arrow and instructions: "Scegli l'area su cui vuoi cominciare a mappare boulders. Per esercitarti puoi usare le aree Test. Per svolgere l'attività di progetto, completa prima Area 2 e poi Area 1." Below the instructions are four buttons: Area 2, Area 1, Test 1, and Test 2. A small disclaimer at the bottom of the page reads: "This project has been built using the Zooniverse Project Builder but is not yet an official Zooniverse project. Queries and issues relating to this project directed at the Zooniverse Team may not receive any response."

Zooniverse: la pagina del pro

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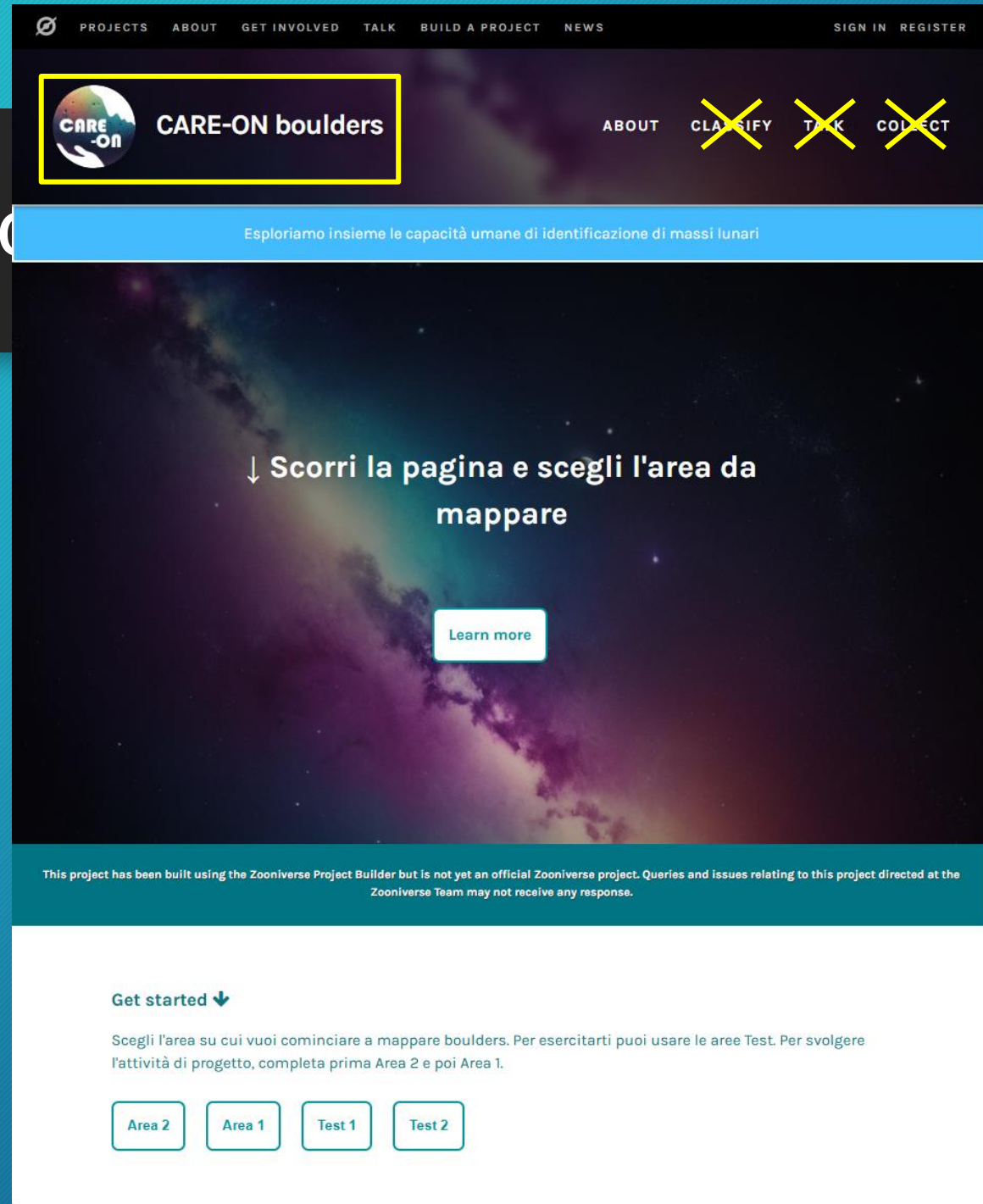
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CARE-ON boulders

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The screenshot shows the top navigation bar with links: PROJECTS, ABOUT, GET INVOLVED, TALK, BUILD A PROJECT, NEWS, SIGN IN, REGISTER. Below this is a header for the 'CARE-ON boulders' project, featuring a globe icon and the project name. To the right are navigation links: ABOUT, CLASSIFY, TALK, COLLECT, with the latter three crossed out with red X's. A blue banner below the header contains the text: 'Esploriamo insieme le capacità umane di identificazione di massi lunari'. The main content area has a dark background with a nebula image and the instruction: '↓ Scorri la pagina e scegli l'area da mappare', accompanied by a 'Learn more' button. At the bottom, there is a disclaimer: 'This project has been built using the Zooniverse Project Builder but is not yet an official Zooniverse project. Queries and issues relating to this project directed at the Zooniverse Team may not receive any response.' Below the disclaimer is a 'Get started ↓' section with the text: 'Scegli l'area su cui vuoi cominciare a mappare boulders. Per esercitarti puoi usare le aree Test. Per svolgere l'attività di progetto, completa prima Area 2 e poi Area 1.' At the bottom of this section are four buttons: Area 2, Area 1, Test 1, and Test 2.

Zooniverse: iniziamo il test

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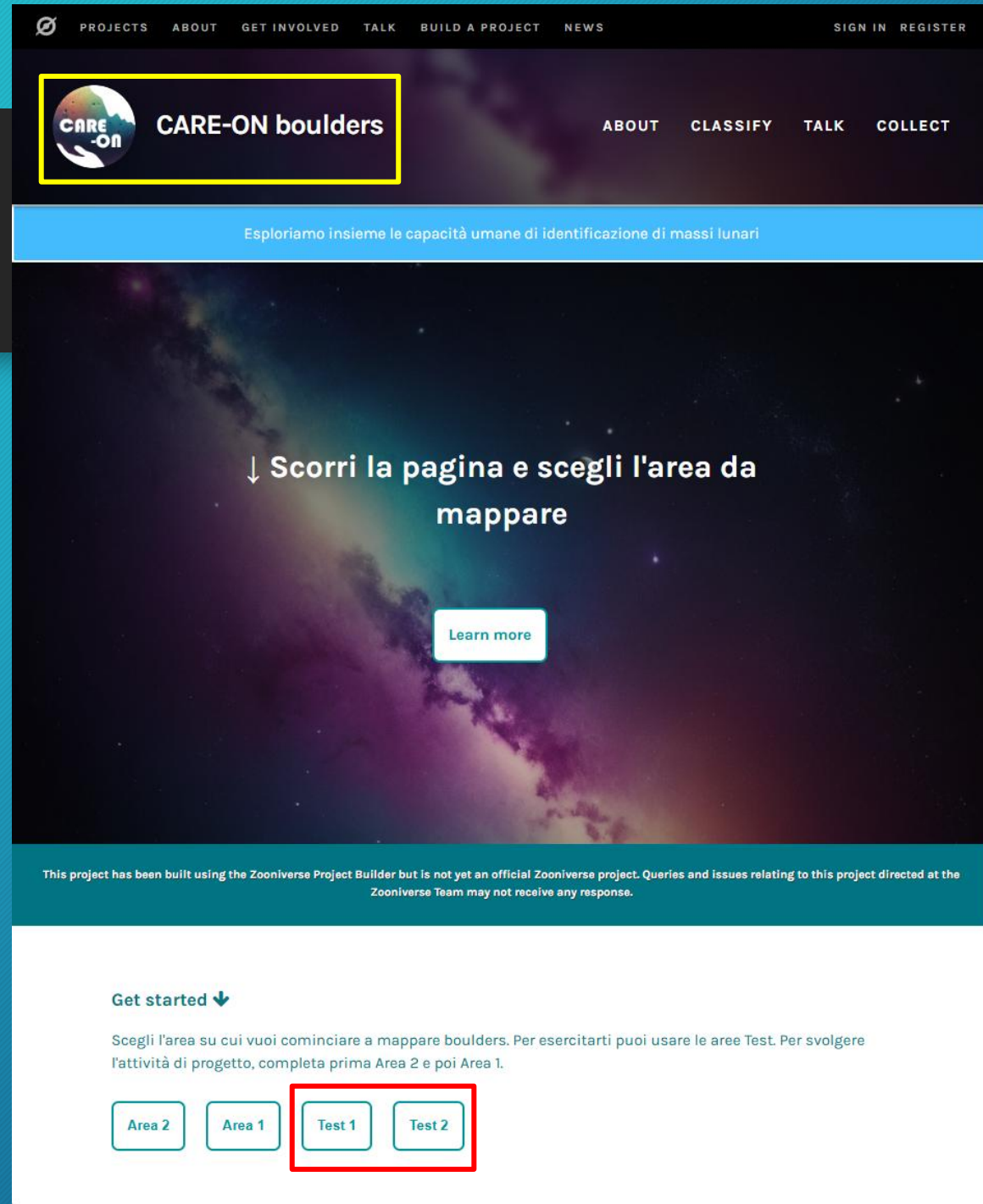
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PROJECTS ABOUT GET INVOLVED TALK BUILD A PROJECT NEWS SIGN IN REGISTER

CARE-ON CARE-ON boulders ABOUT CLASSIFY TALK COLLECT

Esploriamo insieme le capacità umane di identificazione di massi lunari

↓ Scorri la pagina e scegli l'area da mappare

Learn more

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Get started ↓

Scegli l'area su cui vuoi cominciare a mappare boulders. Per esercitarti puoi usare le aree Test. Per svolgere l'attività di progetto, completa prima Area 2 e poi Area 1.

Area 2 Area 1 Test 1 Test 2

Zooniverse: per iniziare

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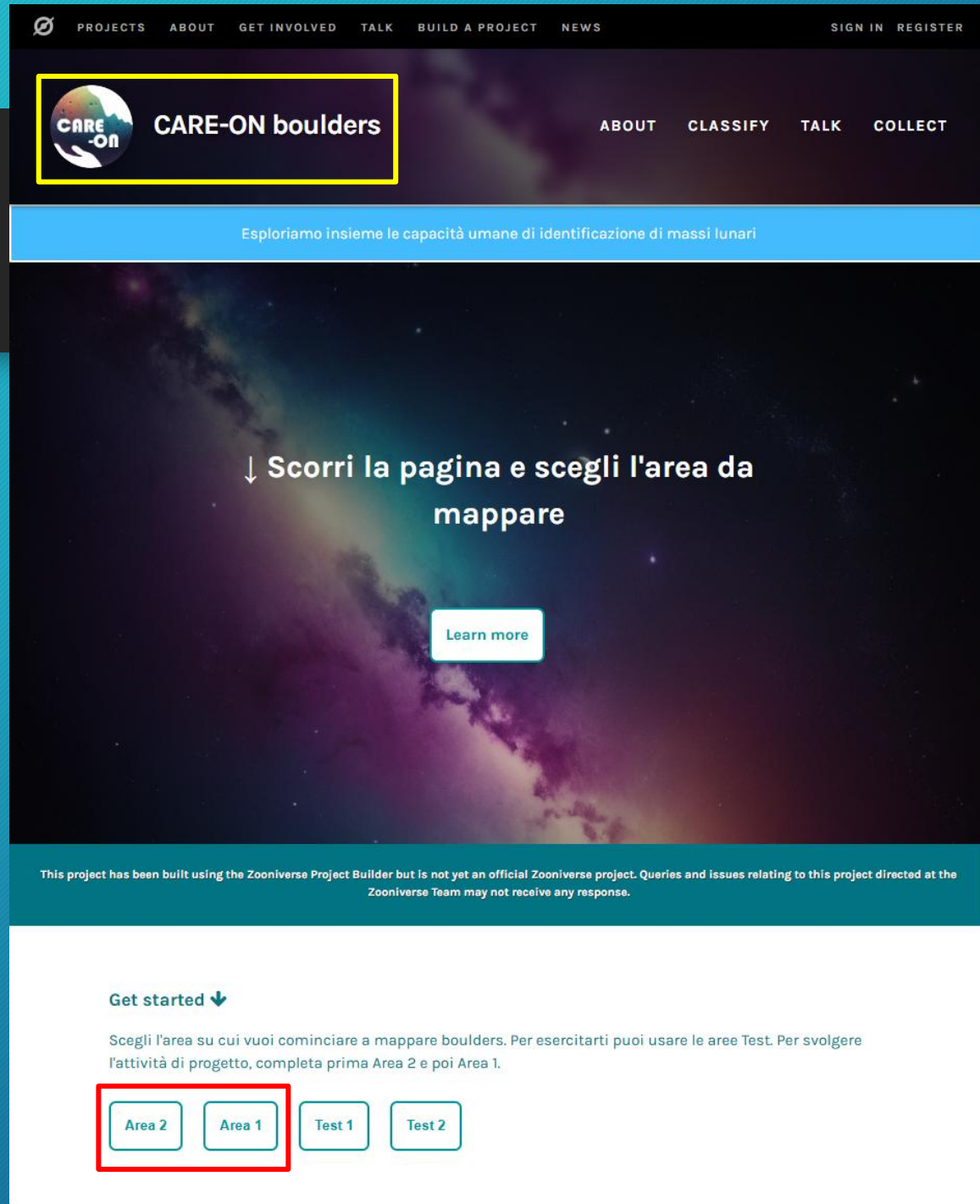
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PROJECTS ABOUT GET INVOLVED TALK BUILD A PROJECT NEWS SIGN IN REGISTER

CARE-ON CARE-ON boulders ABOUT CLASSIFY TALK COLLECT

Esploriamo insieme le capacità umane di identificazione di massi lunari

↓ Scorri la pagina e scegli l'area da mappare

Learn more

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Area 2 Area 1 Test 1 Test 2