

Julien Cornebise, Ph.D.

2021/11/16 – ESA-ECMWF Workshop

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# SUPER-RESOLUTION: WHY DO WE CARE?





Google DeepMind







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Google

## Google DeepMind on AI-based radiotherapy

Google's AI research arm is partnering with radiotherapists by using machine learning to



The DeepMind project will use anonymized patient data to train AI models. Juice/REX/Shutterstock



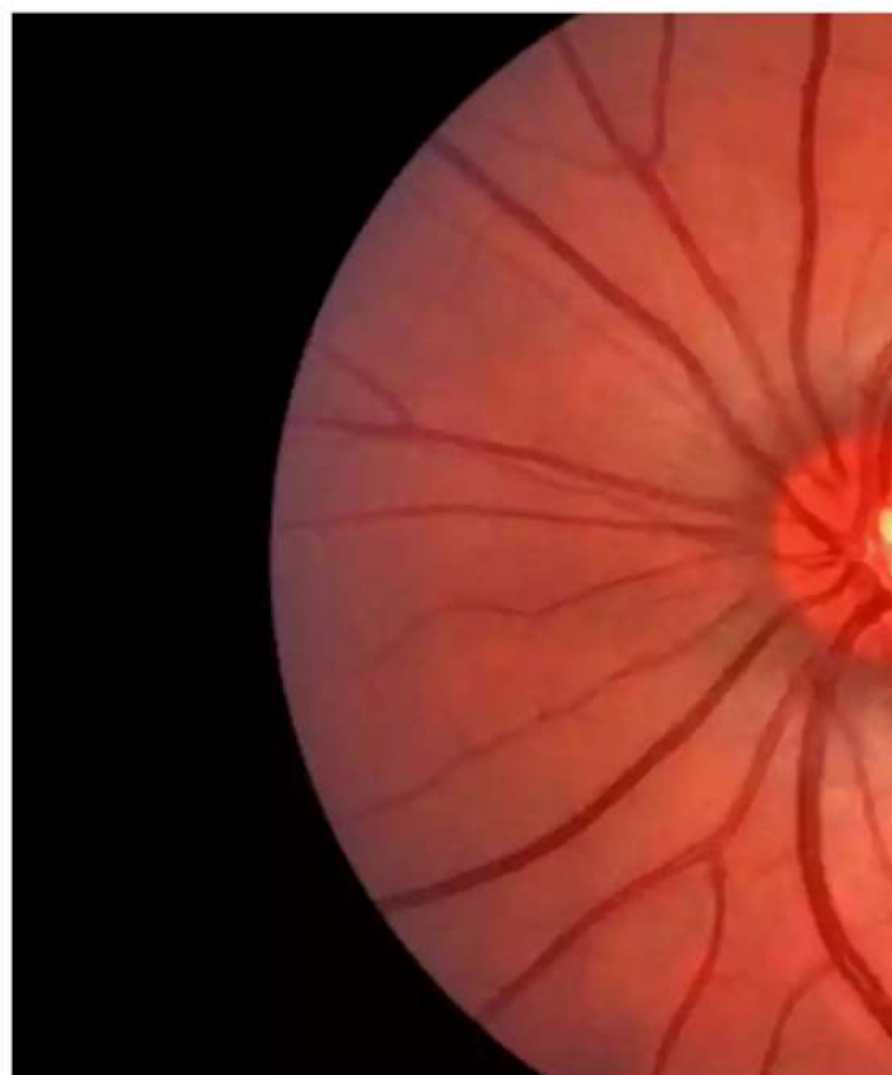
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Google

## Google DeepMind partners with radiotherapists to use machine learning to

'Deep learning' research company will use 1m patient scans to identify early signs of degenerative



Retinal scans are produced rapidly, but require great skill to interpret. Alamy Stock Photo/Alamy Stock Photo

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BUSINESS INSIDER

## Twitter is so 'toxic' that it's enlisting a 'Troll Patrol'



Katie Canales

April 5, 2018



Jack Dorsey Twitter

Bill Pugliano/Getty Images

• Human rights watchdog Amnesty

International has launched

project that will assign di

project that will assign di

International has launched

• Human rights watchdog Amnesty

Bill Pugliano/Getty Images

Jack Dorsey Twitter



FINANCIAL TIMES

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## Twitter shares tumble amid concern over 'toxic' content

### Twitter shares test October lows

Share price in US dollars



Source: Refinitiv  
© FT

Feedback





**AMNESTY**  
INTERNATIONAL



**Daniel Worrall**  
**@danieleworrall**



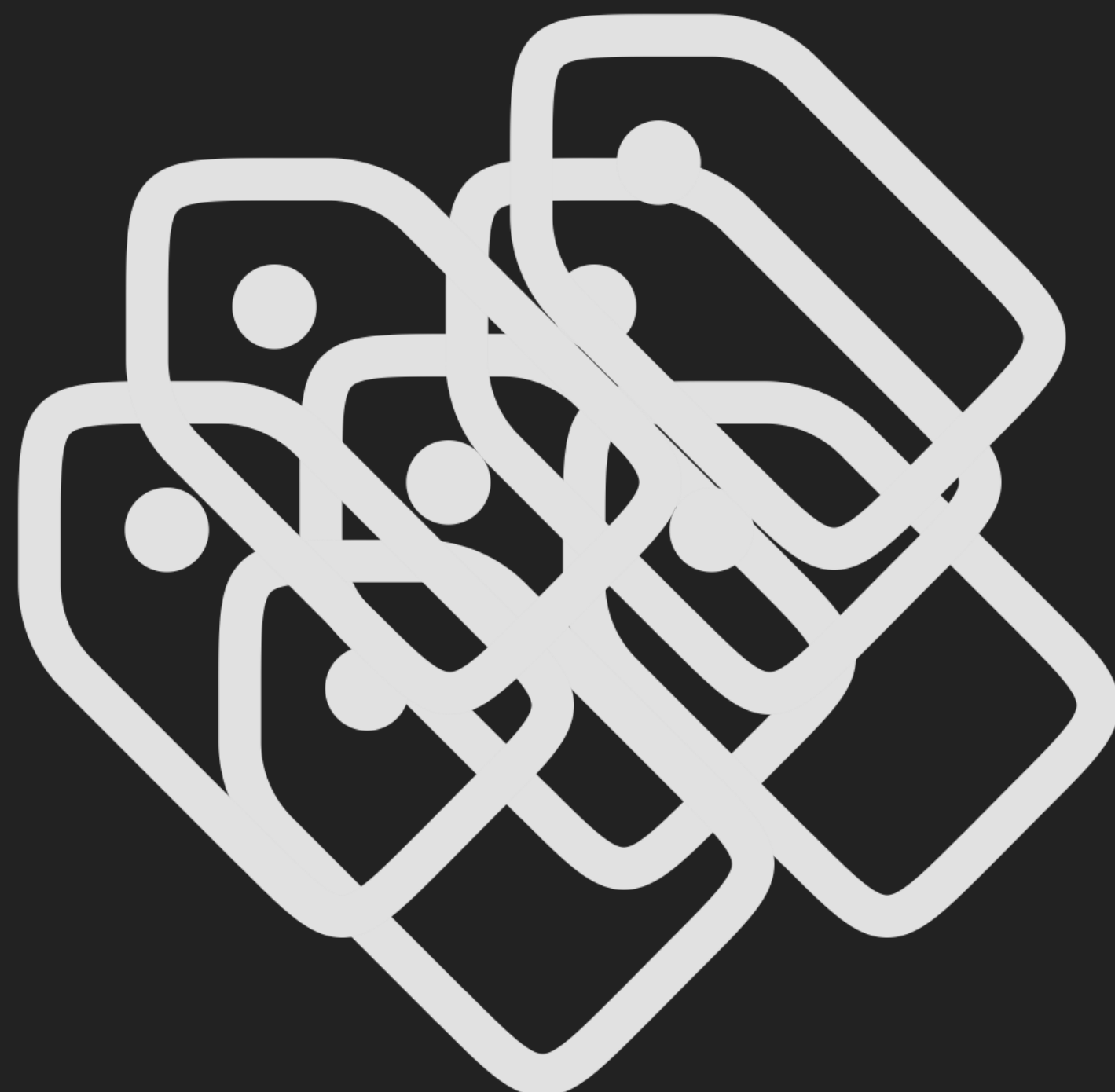
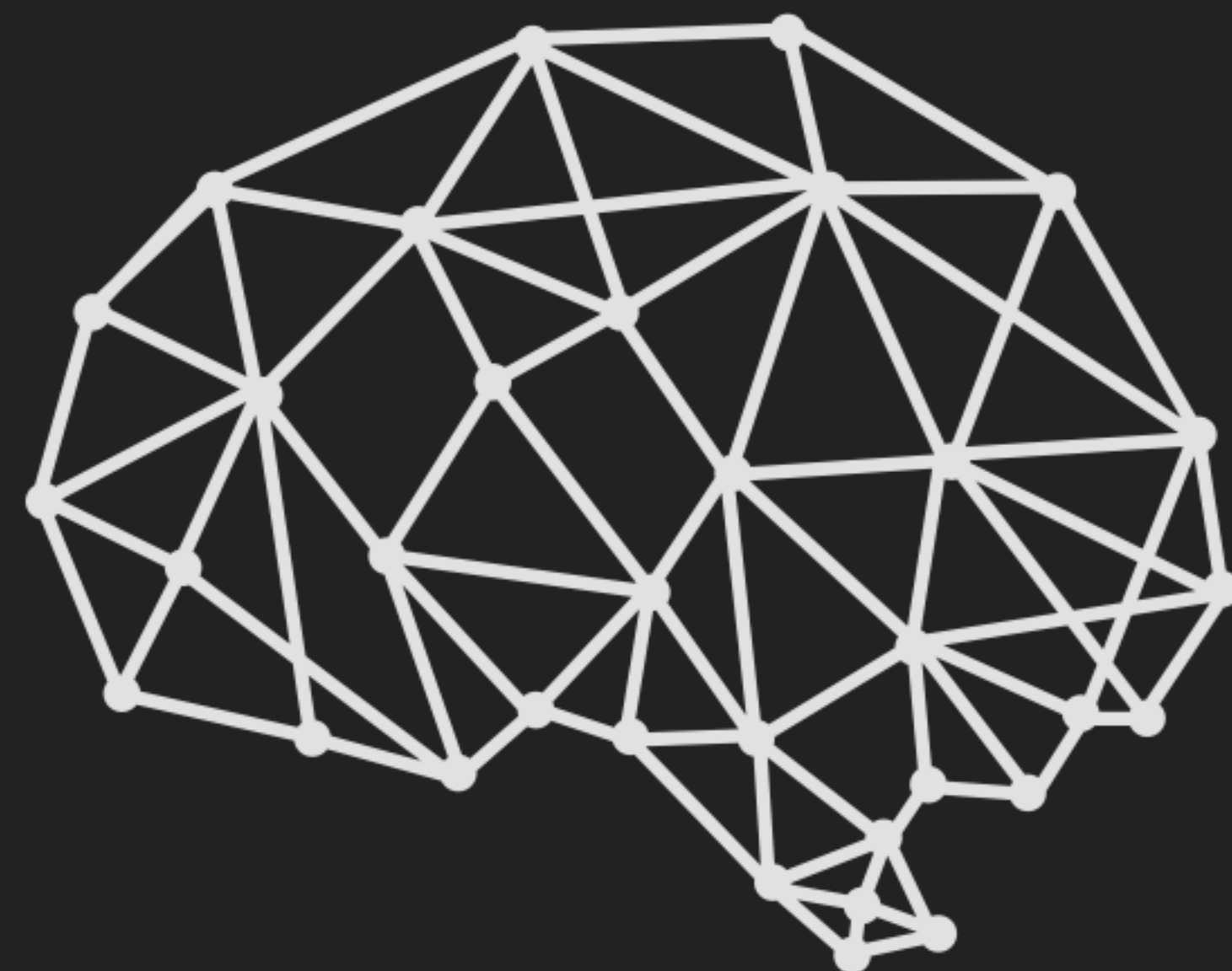
**Milena Marin**  
**@milena\_iul**

**FIVE YEARS AGO...**



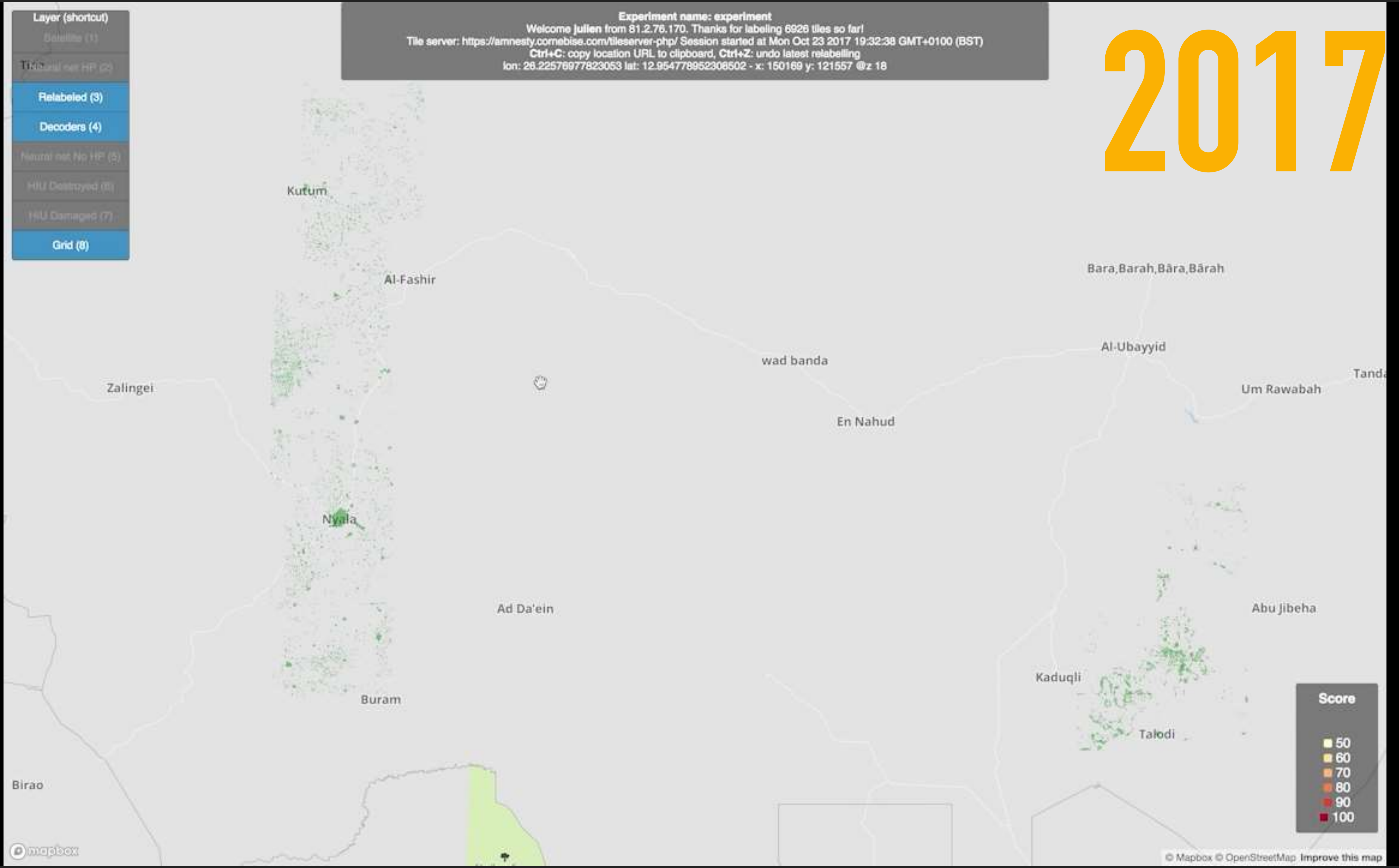






# 2017

Experiment name: experiment  
Welcome Julien from 81.2.76.170. Thanks for labeling 6928 tiles so far!  
Tile server: <https://amnesty.cornelise.com/tiles/tiles.php> Session started at Mon Oct 23 2017 19:32:38 GMT+0100 (BST)  
Ctrl+C: copy location URL to clipboard, Ctrl+Z: undo latest relabelling  
lon: 26.22576977823053 lat: 12.954778952308502 - x: 150169 y: 121557 @z 18







4M\$













SALSA	2	38	74
IRON	2	28	32
DEXTER	2	16	18
HAMMER	2	14	14
KPART	2	22	28
CHALKER	2	12	12
MUSTANG	2	0	12
SWING	2	26	8
HITCH	2		24
WOLFGANG	2	23	37
BOSSA	2	20	18







**Freddie Kalaitzis**



**Michel Deudon**



**Zhichao Lin**

**TWO YEARS AGO...**

# Leaderboard

Name	Submissions	Last Submission	Best Submission	Best Score
rarefin	46	June 1, 2019, 4:34 a.m.	June 1, 2019, 4:34 a.m.	0.947388637793901
SuperPip	43	June 1, 2019, 2:39 a.m.	June 1, 2019, 2:39 a.m.	0.948844910272775
ledzeppelin	86	May 31, 2019, 9:58 p.m.	May 27, 2019, 5:25 p.m.	0.955016888143629
luis	9	May 30, 2019, 12:44 p.m.	May 30, 2019, 12:44 p.m.	0.9626599626701344
PIC4SeR	15	May 31, 2019, 9:59 p.m.	May 31, 2019, 9:59 p.m.	0.9721971077481462
EscVM	20	May 31, 2019, 9:31 p.m.	May 21, 2019, 6:05 a.m.	0.9785367146826757
SuperDeep	38	June 1, 2019, 2:17 a.m.	June 1, 2019, 2:17 a.m.	0.9807595119230784
NicolasRave	36	May 29, 2019, 9:11 p.m.	May 11, 2019, 10:21 a.m.	0.9838661966668009
shirolk	6	June 1, 2019, 1:38 a.m.	June 1, 2019, 1:38 a.m.	0.9839087449897879
vural94	6	May 7, 2019, 5:41 p.m.	May 6, 2019, 4:35 p.m.	0.987814154597023
Herve	23	April 4, 2019, 10:27 p.m.	April 2, 2019, 10:12 a.m.	0.9892327635664252
henyau	7	May 21, 2019, 4:32 p.m.	May 17, 2019, 2:14 p.m.	0.991665293451024
Farhan	2	May 24, 2019, 3:09 p.m.	May 24, 2019, 10:09 a.m.	0.9930954868419666

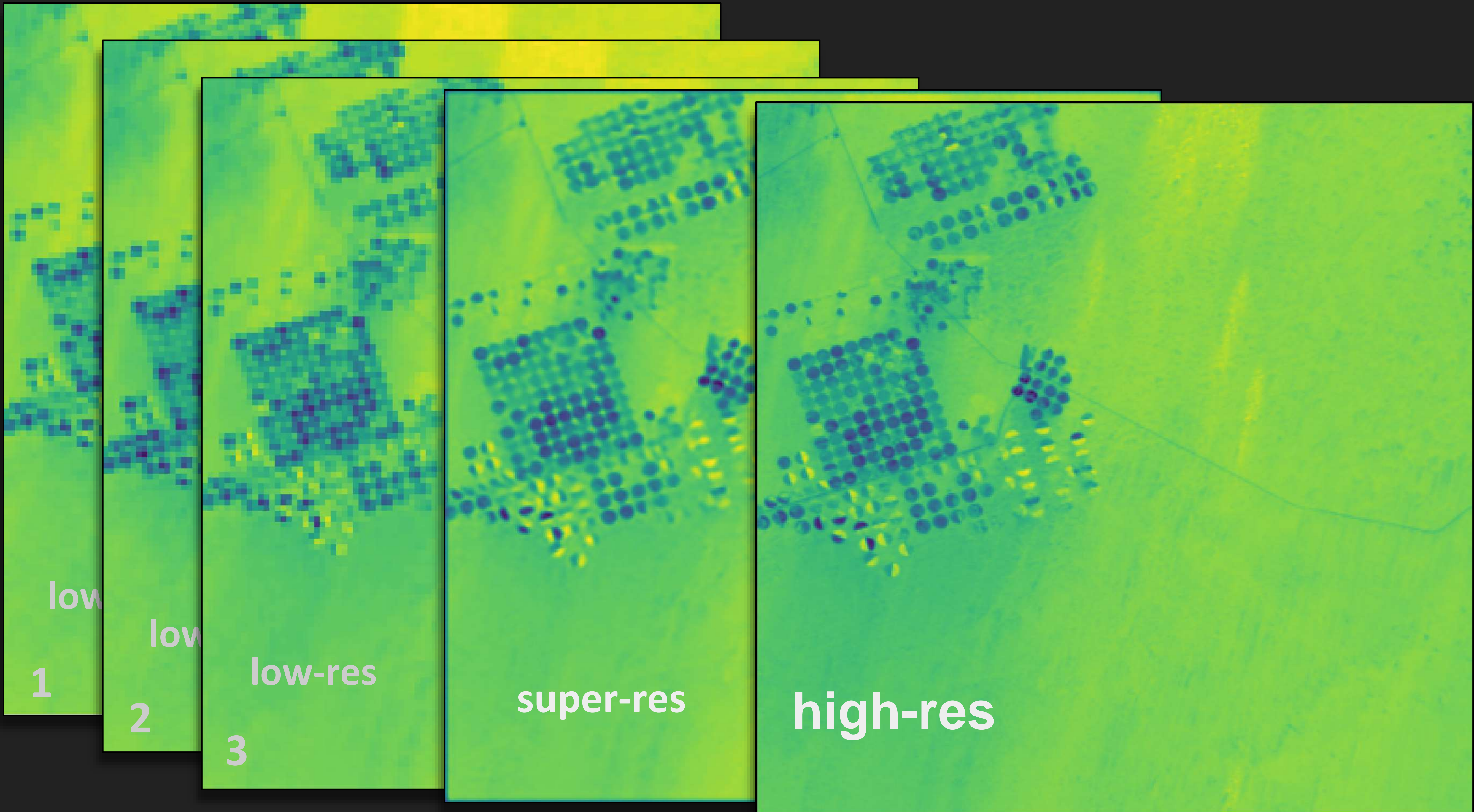
Farhan	2	May 24, 2019, 3:09 p.m.	May 24, 2019, 10:09 a.m.	0.9930954868419666
henyau	7	May 21, 2019, 4:32 p.m.	May 17, 2019, 2:14 p.m.	0.991665293451024
Herve	23	April 4, 2019, 10:27 p.m.	April 2, 2019, 10:12 a.m.	0.9892327635664252
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NicolasRave	36	May 29, 2019, 9:11 p.m.	May 11, 2019, 10:21 a.m.	0.9838661966668009
SuperDeep	38	June 1, 2019, 2:17 a.m.	June 1, 2019, 2:17 a.m.	0.9807595119230784
EscVM	20	May 31, 2019, 9:31 p.m.	May 21, 2019, 6:05 a.m.	0.9785367146826757
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rarefin	46	June 1, 2019, 4:34 a.m.	June 1, 2019, 4:34 a.m.	0.947388637793901

# Results

Name	Submissions	Last Submission	Best Submission	Final Score
SuperPip	43	May 31, 2019, 9:39 p.m.	May 31, 2019, 9:39 p.m.	0.9474466476281652
rarefin	46	May 31, 2019, 11:34 p.m.	May 31, 2019, 11:34 p.m.	0.9477450367529225
ledzeppelin	86	May 31, 2019, 4:58 p.m.	May 27, 2019, 12:25 p.m.	0.9576339586408439
luis	9	May 30, 2019, 7:44 a.m.	May 30, 2019, 7:44 a.m.	0.9626599626701344
PIC4SeR	15	May 31, 2019, 4:59 p.m.	May 31, 2019, 4:59 p.m.	0.9721971077481462
EscVM	20	May 31, 2019, 4:31 p.m.	May 21, 2019, 6:05 a.m.	0.9785367146826757
SuperDeep	38	May 31, 2019, 9:17 p.m.	May 31, 2019, 9:17 p.m.	0.9807595119230784
NicolasRave	36	May 29, 2019, 4:11 p.m.	May 11, 2019, 10:21 a.m.	0.9838661966668009
shirolk	6	May 31, 2019, 8:38 p.m.	May 31, 2019, 8:38 p.m.	0.9839087449897879
vural94	6	May 7, 2019, 12:41 p.m.	May 6, 2019, 4:35 p.m.	0.987814154597023
Herve	23	April 4, 2019, 5:27 p.m.	April 2, 2019, 10:12 a.m.	0.9892327635664252
henyau	7	May 21, 2019, 11:32 a.m.	May 17, 2019, 2:14 p.m.	0.991665293451024
Farhan	2	May 24, 2019, 10:09 a.m.	May 24, 2019, 10:09 a.m.	0.9930954868419666
willy	4	March 8, 2019, 11:57 a.m.	March 8, 2019, 11:57 a.m.	0.9934605649438908

willy	4	March 8, 2019, 11:57 a.m.	March 8, 2019, 11:57 a.m.	0.9934605649438908
Farhan	2	May 24, 2019, 10:09 a.m.	May 24, 2019, 10:09 a.m.	0.9930954868419666
henyau	7	May 21, 2019, 11:32 a.m.	May 17, 2019, 2:14 p.m.	0.991665293451024
Herve	23	April 4, 2019, 5:27 p.m.	April 2, 2019, 10:12 a.m.	0.9892327635664252
vural94	6	May 7, 2019, 12:41 p.m.	May 6, 2019, 4:35 p.m.	0.987814154597023
shirolk	6	May 31, 2019, 8:38 p.m.	May 31, 2019, 8:38 p.m.	0.9839087449897879
NicolasRave	36	May 29, 2019, 4:11 p.m.	May 11, 2019, 10:21 a.m.	0.9838661966668009
SuperDeep	38	May 31, 2019, 9:17 p.m.	May 31, 2019, 9:17 p.m.	0.9807595119230784
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rarefin	46	May 31, 2019, 11:34 p.m.	May 31, 2019, 11:34 p.m.	0.9477450367529225





low

1

low

2

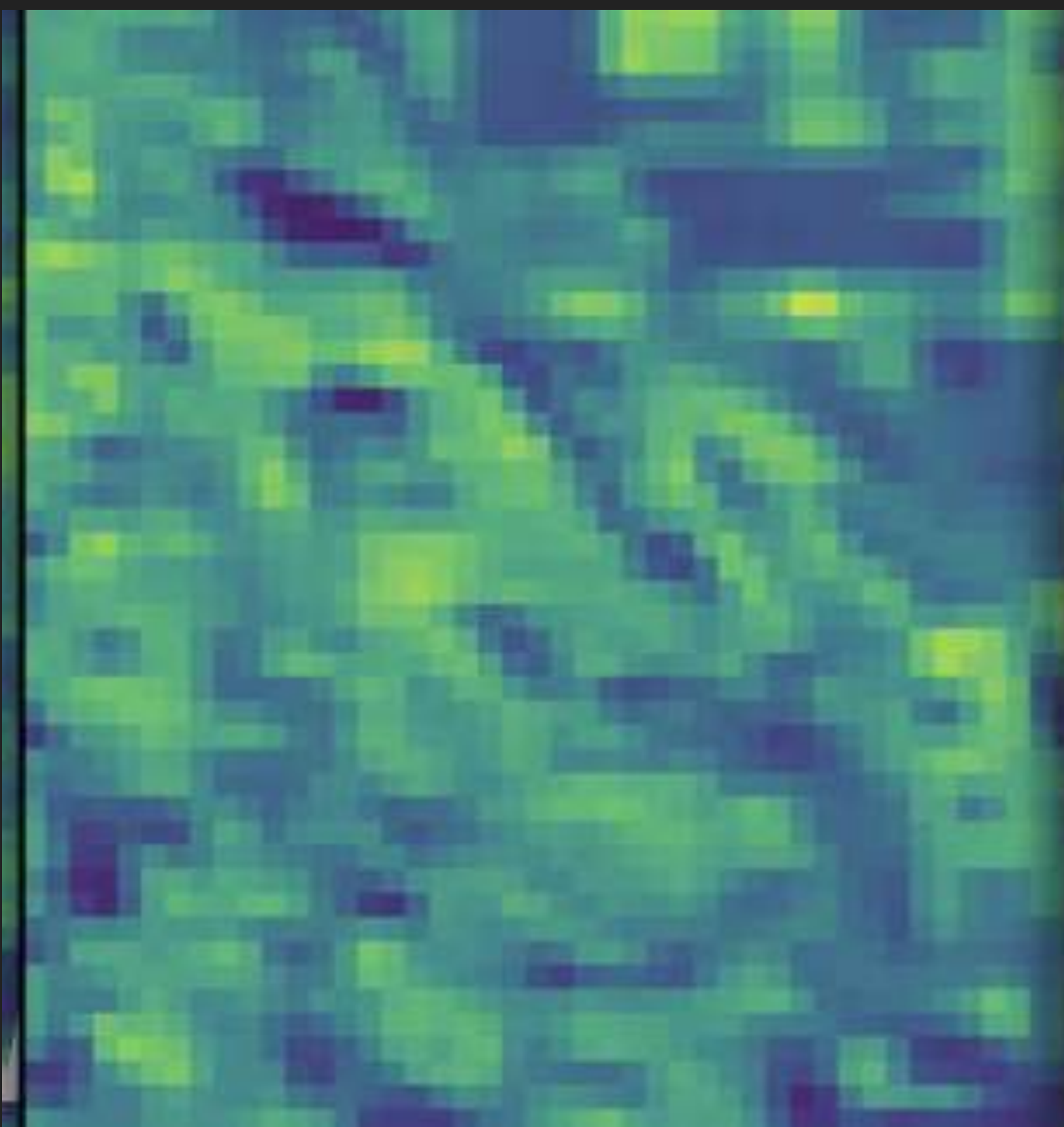
low-res

3

super-res

high-res

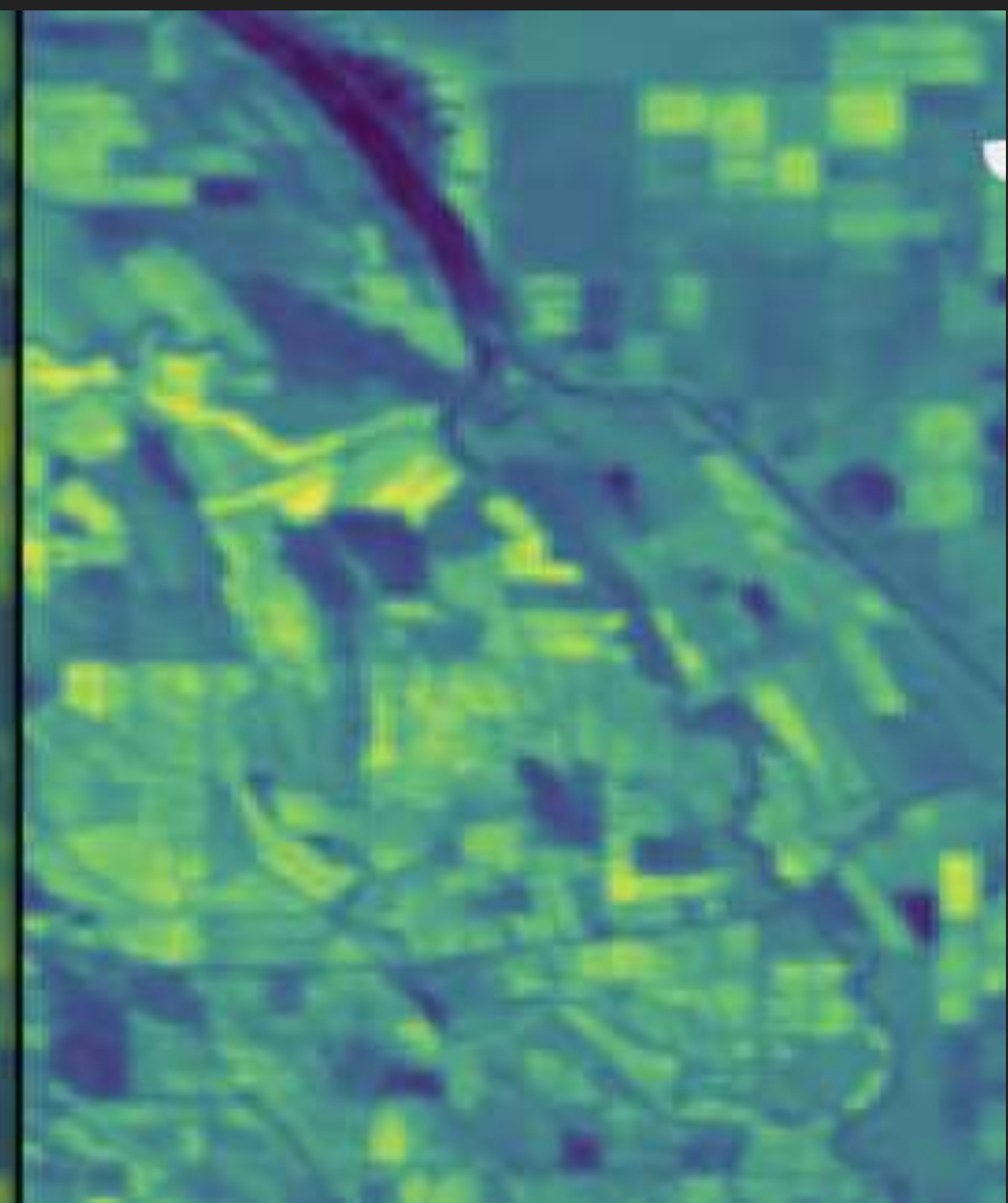




low-res

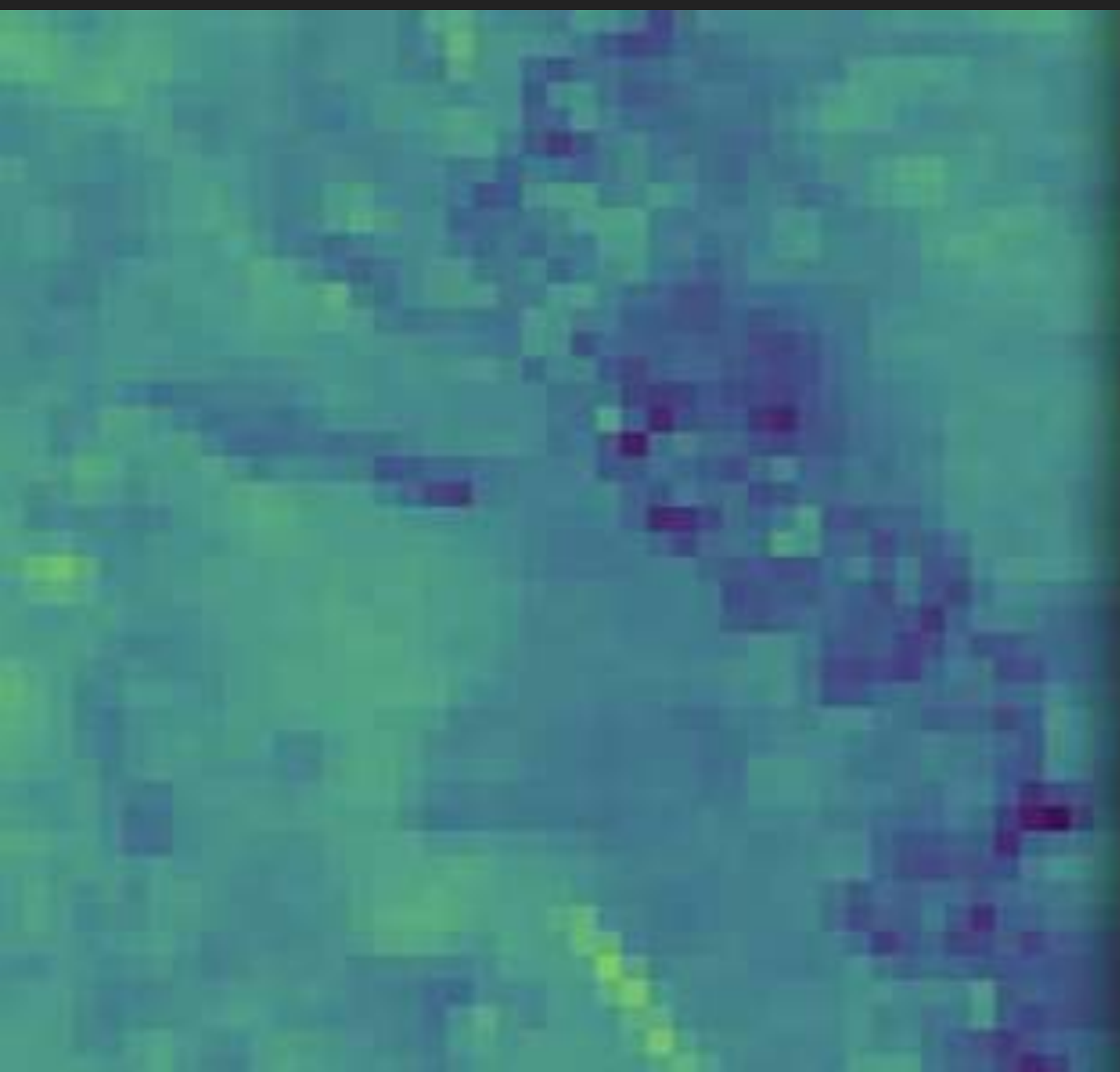


super-res

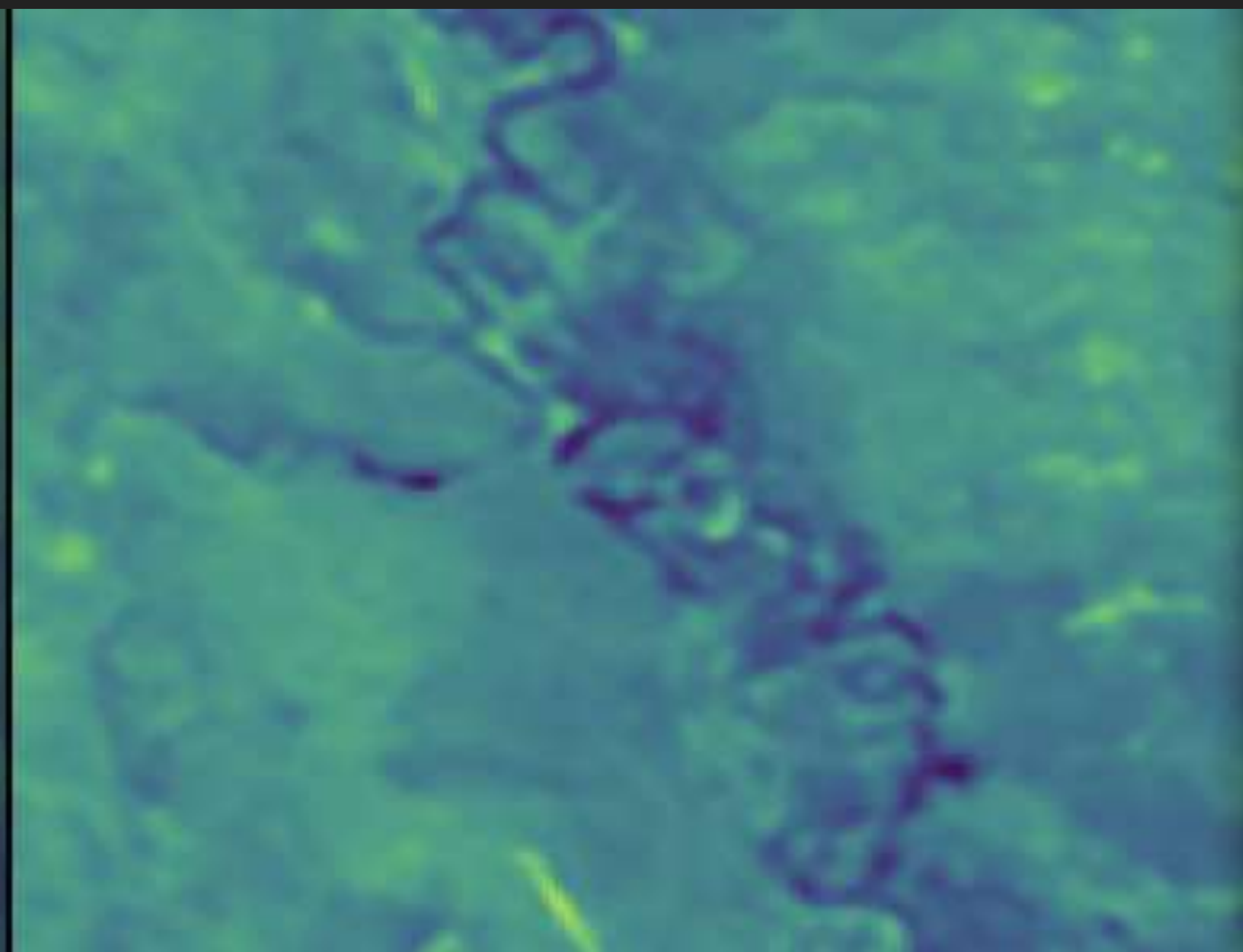


high-res

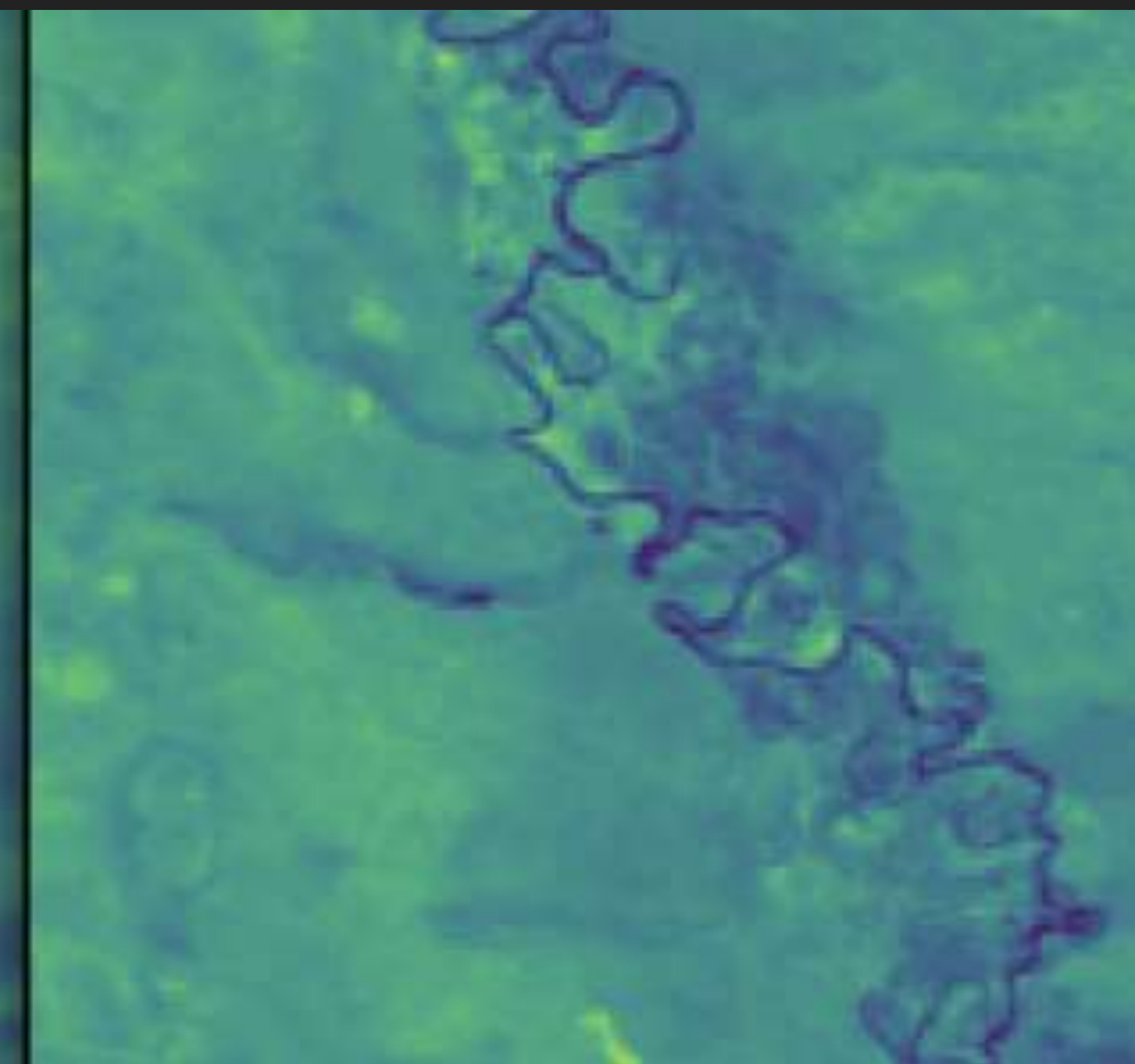




**low-res**



**super-res**



**high-res**



**“TECHNOLOGY – NO MATTER HOW WELL  
DESIGNED – IS **ONLY A MAGNIFIER** OF HUMAN  
INTENT AND CAPACITY.”**

**Kentaro Toyama (2015)**

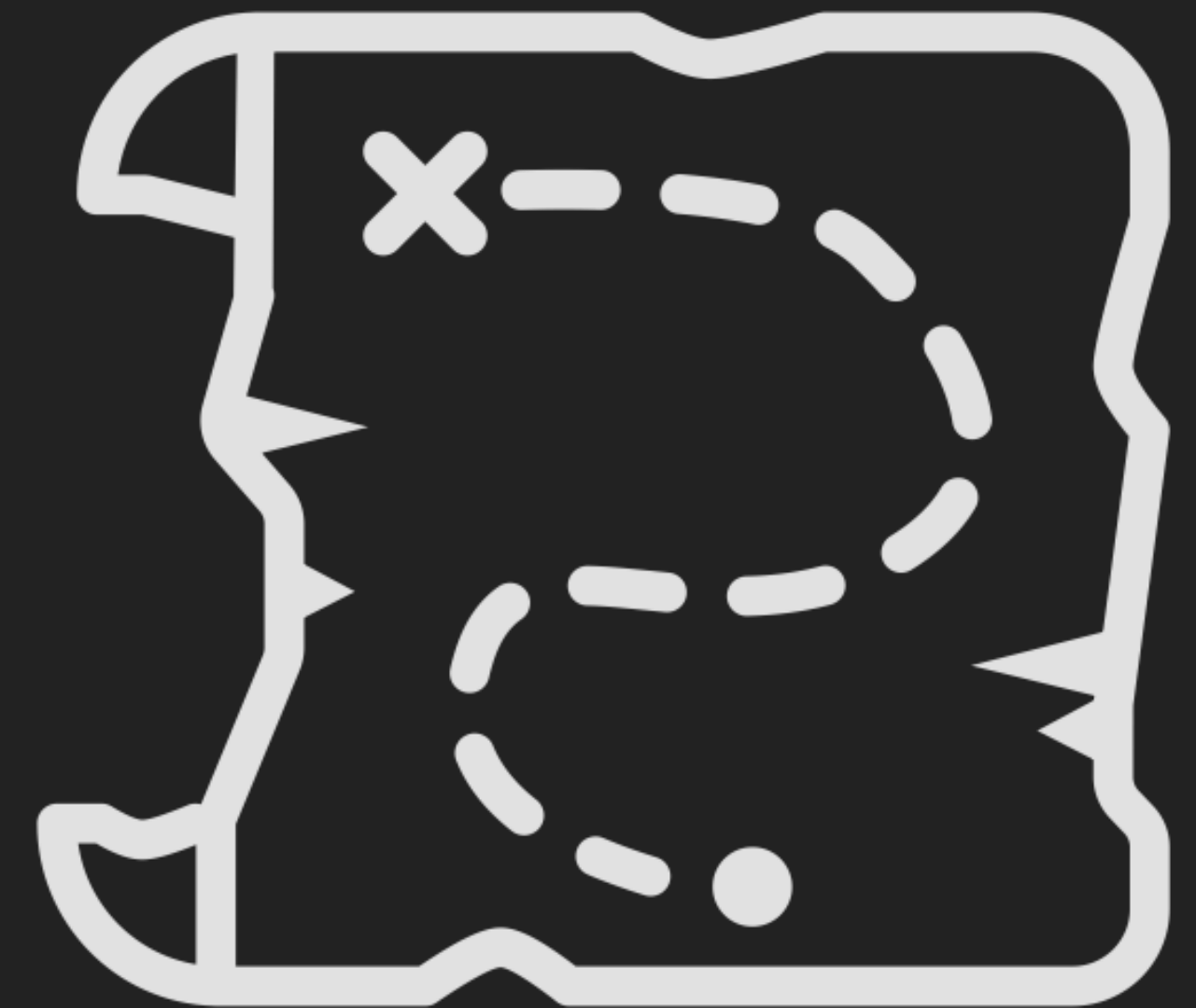


**PARTNER HAND IN HAND WITH  
CHANGE ACTORS: EMPOWER THEM**



# NAVIGATING PITFALLS

- ▶ Path to **concrete impact**? Batting average vs “measure”
- ▶ Get **rid of hype**
- ▶ No “**Tech Savior**”, no “**White Savior**”
- ▶ Identify **right depth of tech**
- ▶ Hard question to researchers:
  - ▶ Are you here to **solve a problem**
  - ▶ or to **illustrate your method**?
- ▶ Plan for **Scale and Sustainability**
  - ▶ **Hackathon syndrome**: GitHub as a cemetery
  - ▶ Beyond research: where are the **engineers** and **designers**?







$\Phi$ -lab



eo-learn



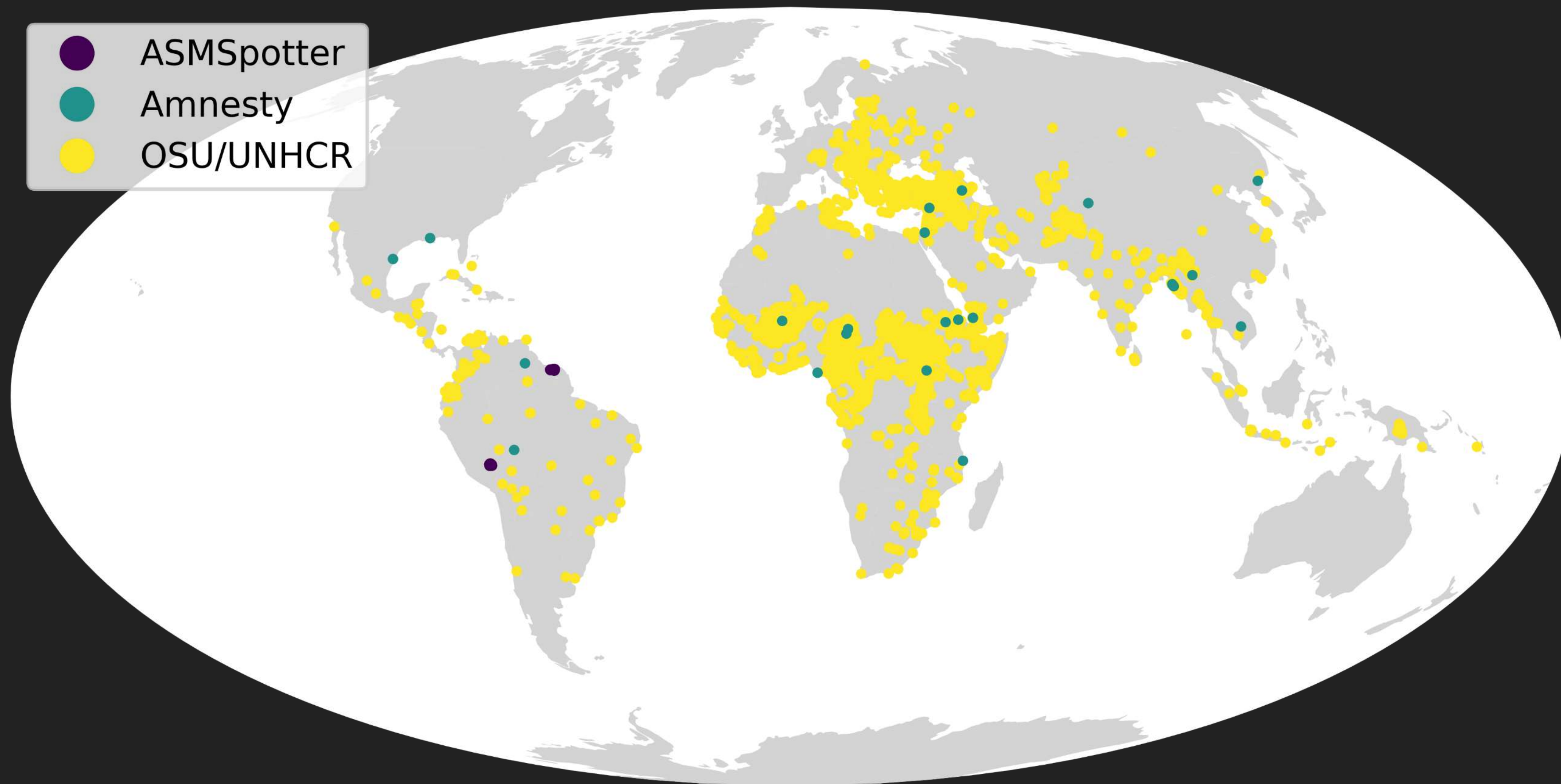
Freddie Kalaitzis  
@alkalait



Ivan Orsolic  
@ivanorsolic

TODAY!

















► @JCornebise  
julien@cornebise.com

Email “Interested”

Remember why  
Dream often  
Dream big