

FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam

Presented by the FIG Working Week 2019,
April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life
and Environmental Resilience"



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Remote Sensing Data in Mapping Plastics at Surface Water Bodies

Gordana Jakovljević (Bosnia and Herzegovina),

Miro Govedarica (Serbia)

Flor Álvarez Taboada (Spain)

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**The World produce more then 300 millions of tons
of plastic every year**



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Almost every pieces of plastic ever made is still on our planet in one or another form



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8 millions of tones end up in ocean every year



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Till 2050 there will be more plastic than fish in the ocean

Source: <https://www.plasticpollutioncoalition.org/bft/2015/8/16/cleaning-up-the-oceans-plastic-soup>

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How does plastic end up in the ocean?

90 % of plastic in our ocean comes from just **10** rivers



Citrum River, Indonesia

source: <https://www.thepetitionsite.com/takeaction/239/515/979/>

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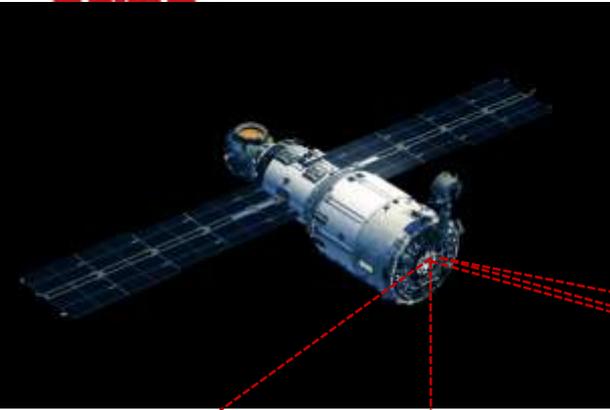


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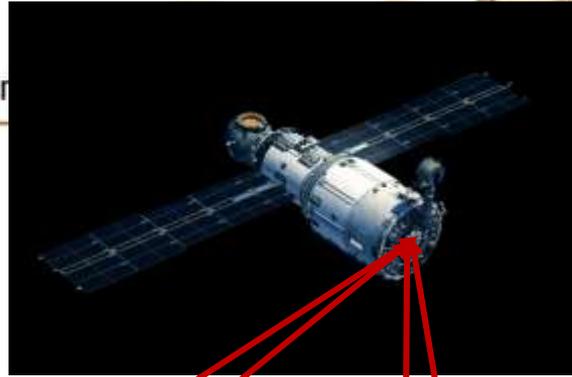




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scattering

absorption

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D



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Data

Band	W ¹ [μm]	R ¹ [m]
Blue	0.45-0.51	0.46
Green	0.51-0.58	0.46
Red	0.63-0.69	0.46
NIR	0.77-0.895	0.46



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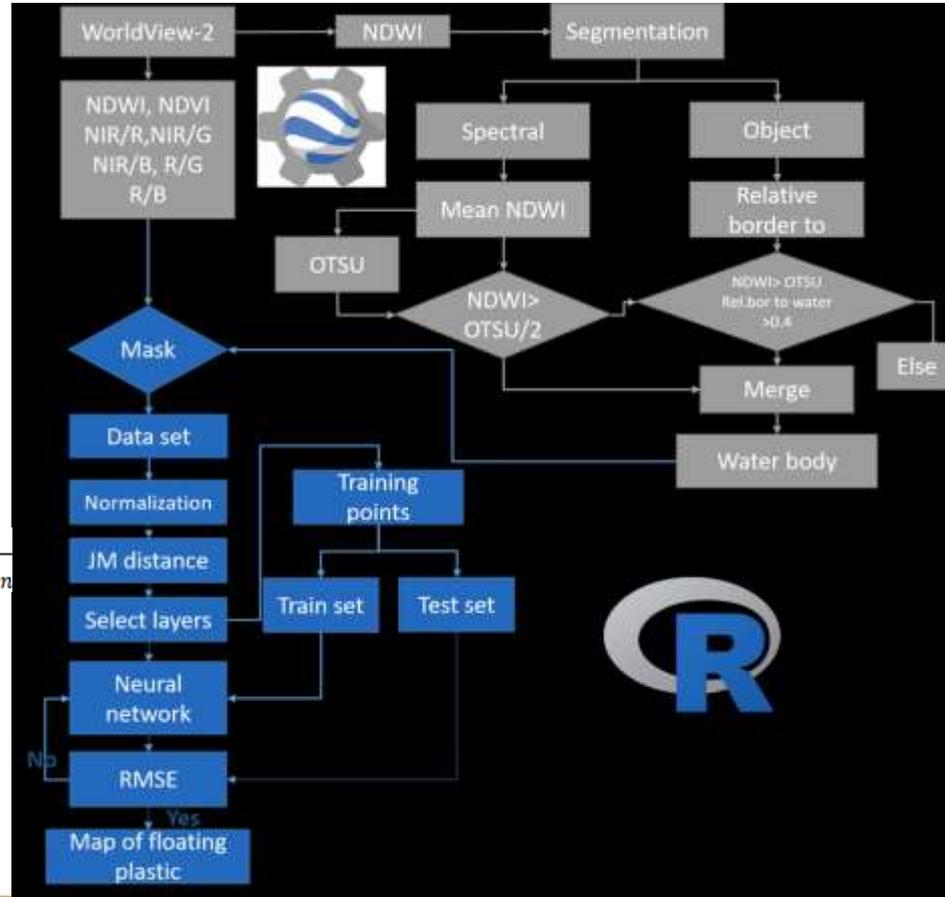
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Workflow

$$X = \frac{x_i - x_{min}}{x_{max} - x_{min}}$$



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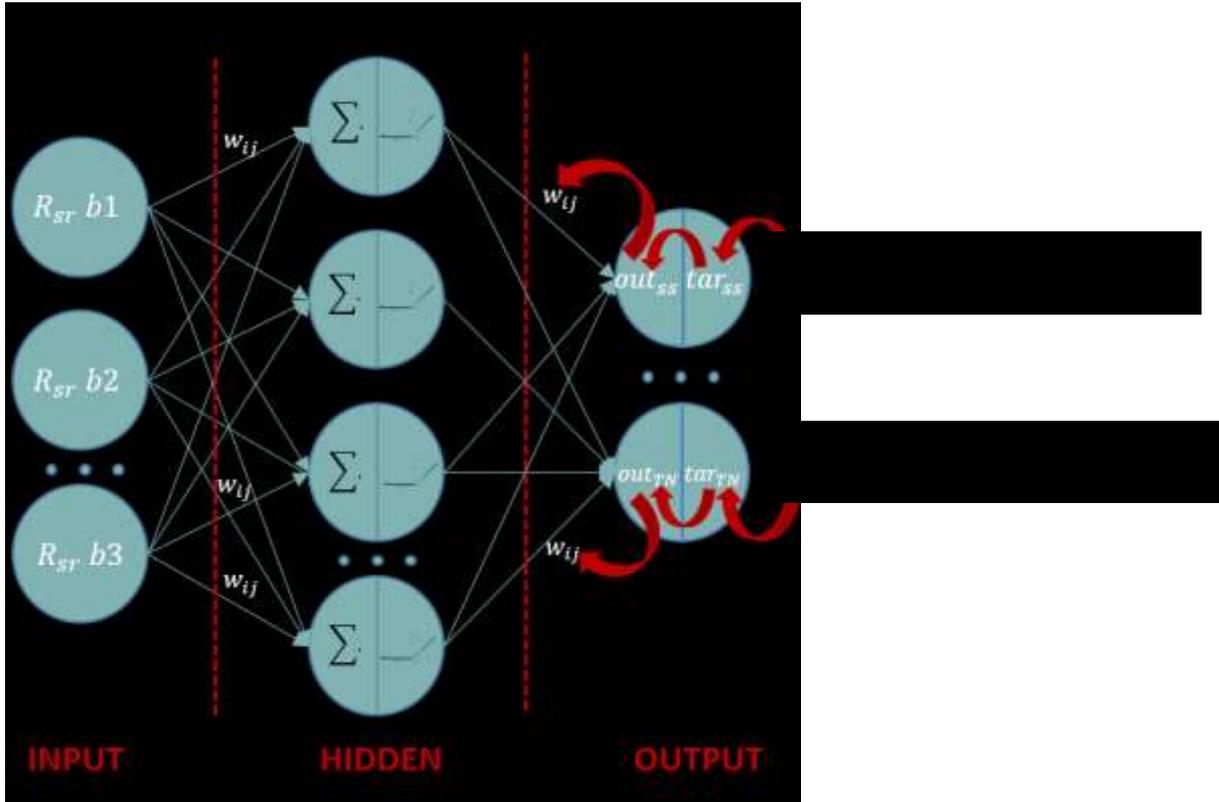
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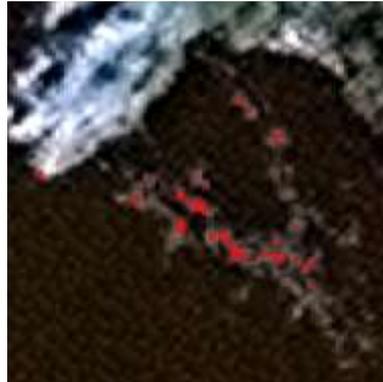
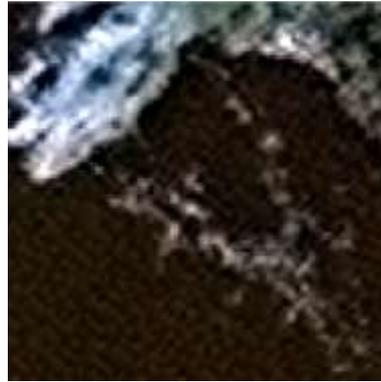
Results

WorldView-2

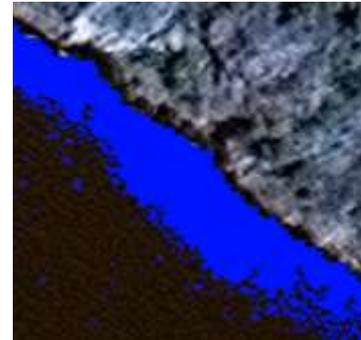
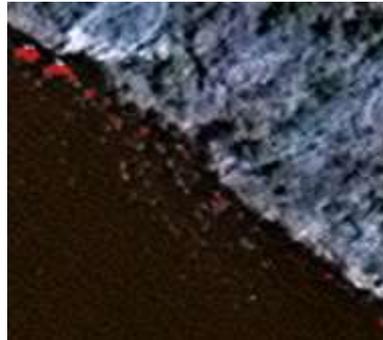
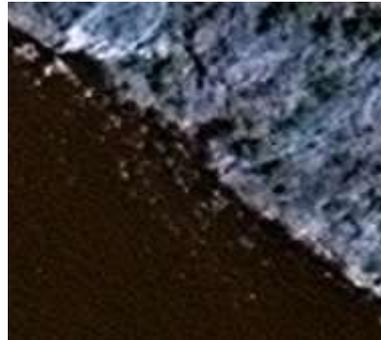
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SVM

(a)



(b)



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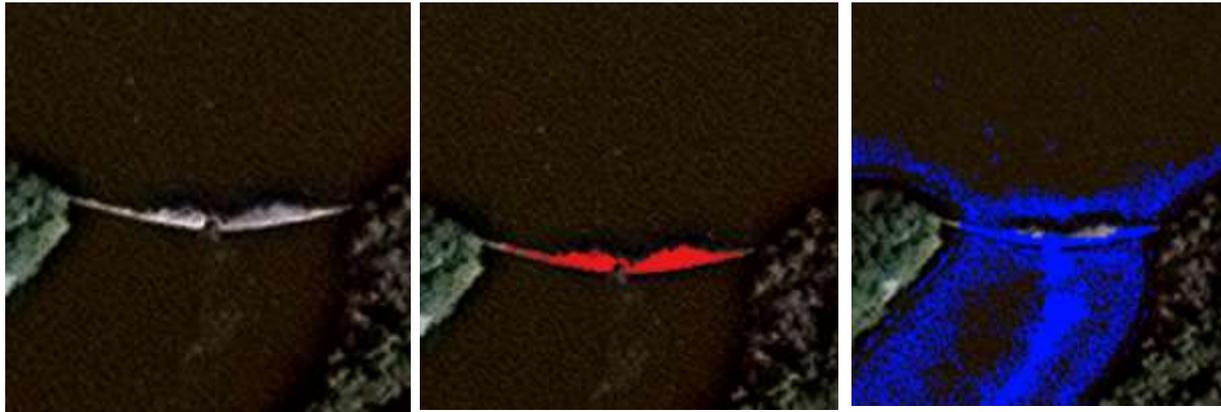
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Results

(c)



(d)



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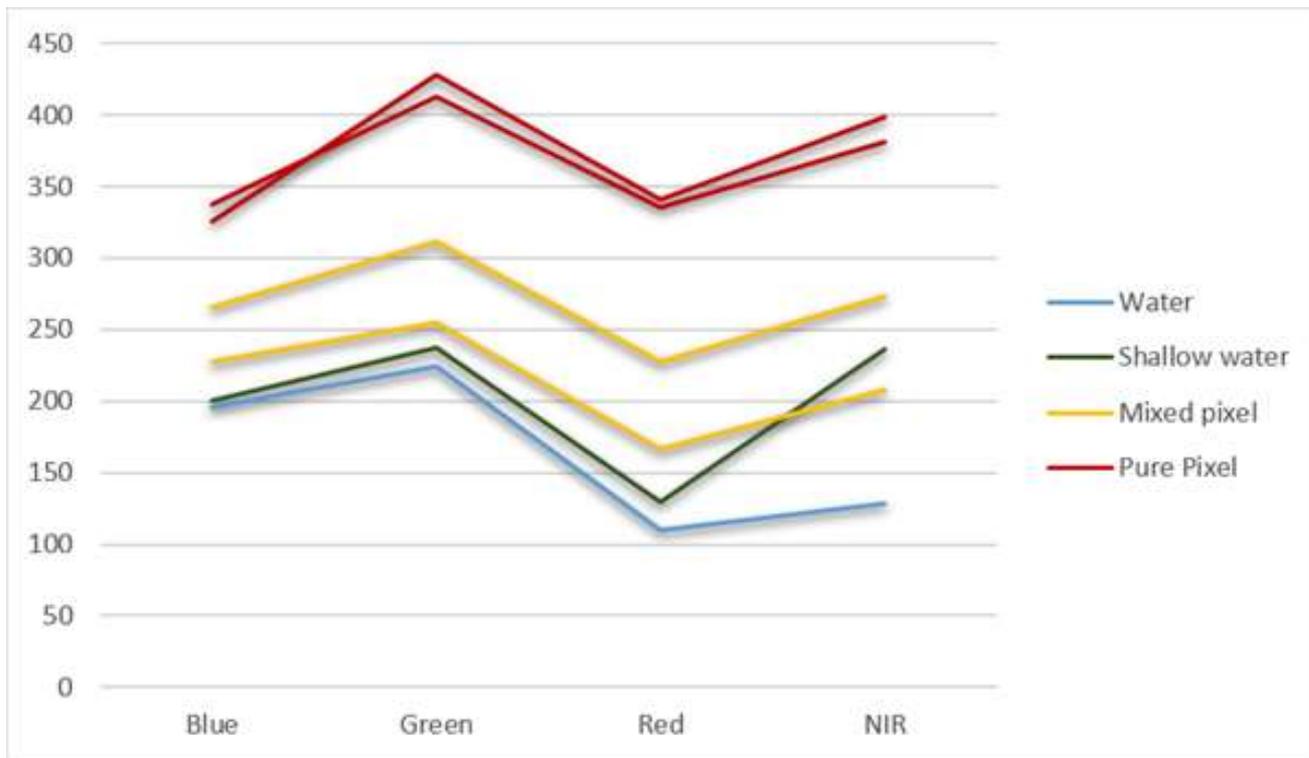
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Results



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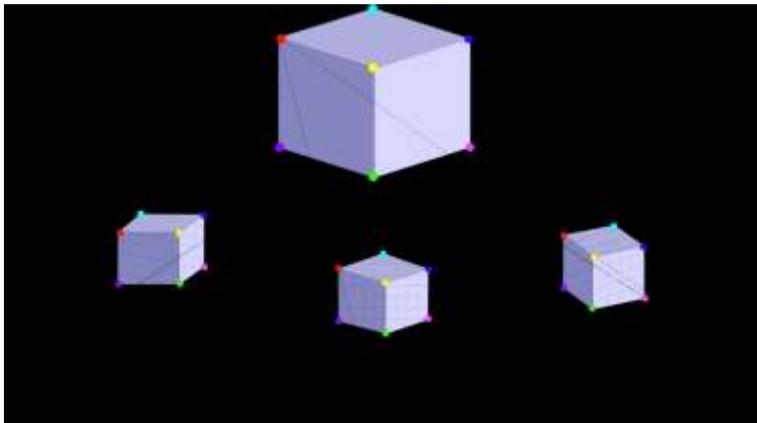
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Image resolution [MP]	Altitude of image capture [m]	Forward overlap [%]	Side overlap [%]	Number of Images	Area covered [ha]
42	80	70	70	356	91.36

SfM



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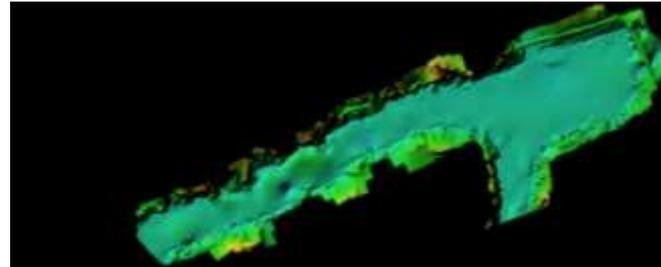
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SfM



Dens point cloud



Orthophoto

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Results

Predicted/true	water	plastic
Water	78	2
Plastic	0	131

OA = 99.04 %, Kappa = 0.98

	Commission error	Omission error
Water	2.5	0
Plastic	0	1.5

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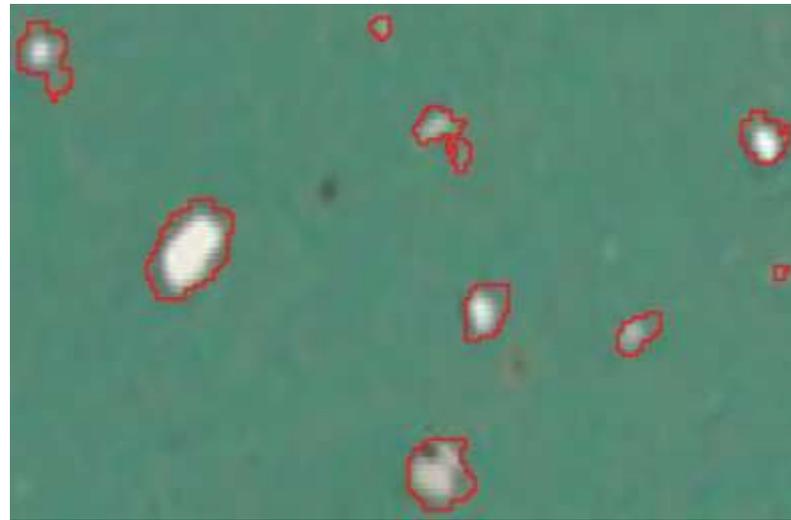
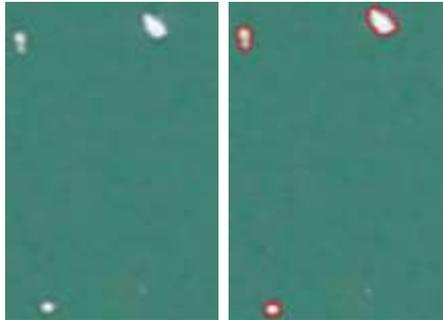
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Results



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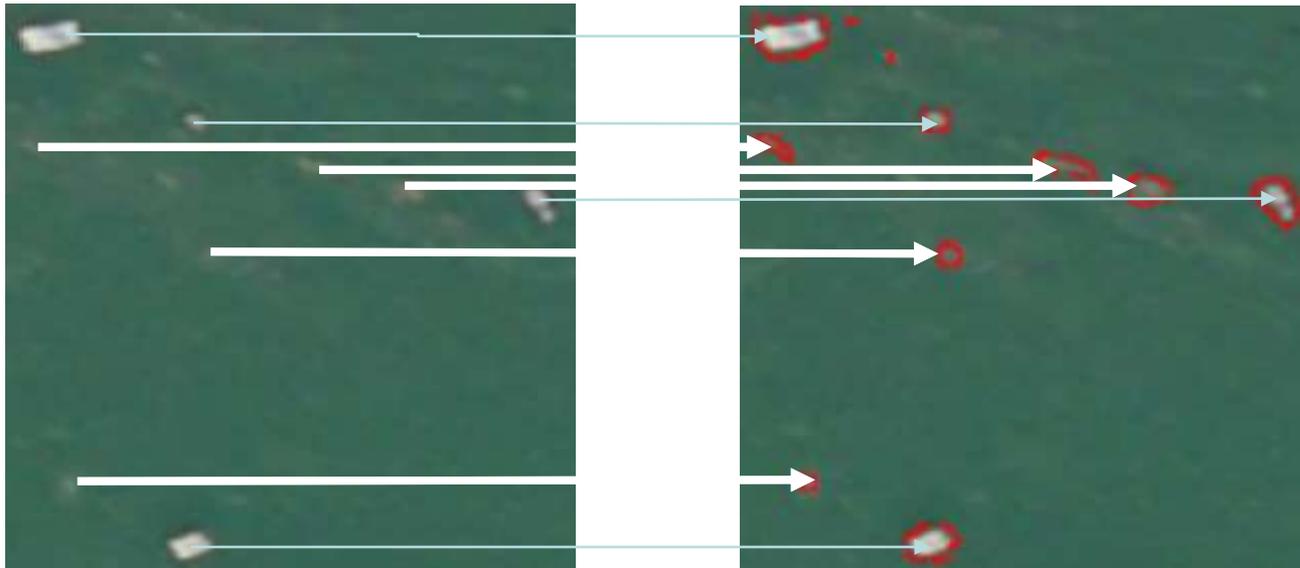
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Results



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Conclusion



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Thank you for attention!

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