Operational processing sequence

Start → Process input metrics → Color-align images?

Preliminary Configuration

No → Configure analysis ←→ Complete preparation

Yes → Color align images → Stop

Consecutvive Image Processing

Read image values → Read diff values → Read masking values → Compute feature values

Perform analysis ←→ Detect level 1 alerts

Perform analysis ←→ Detect level 2 alerts

Output alert results → More Images?

Yes / No → Stop

Config folder contents

Center file listing:
- diff
- mask
- chip_locations.csv
- color_weights.csv
- config_errors.txt
- input_metrics.pxm.csv
- template_values_level_1.csv
- template_values_level_2.csv
- template_versions_level_1.csv
- template_versions_level_2.csv

chip_locations.csv

	A	B	C	D
1	Image	Chip Row	Chip Column	
2	visual_23	669	754	
3	visual_24	635	750	
4	visual_24	637	750	
5	visual_25	585	746	
6	visual_25	635	746	
7	visual_25	637	744	

color_weights.csv

	A	B	C	D
1	0.2126	0.7152	0.0722	
2				
3				

template_values_level_2.csv

	A	B	C	D	E	F	G	H	I
1	types	1							
2	type	rows	columns						
3	0	7	7						
4	row\col	0	1	2	3	4	5	6	
5	0	-0.88409	-0.88409	-0.88409	-0.88409	-0.88409	-0.88409	-0.88409	
6	1	-0.88409	0.361135	0.361135	0.361135	0.361135	0.361135	-0.88409	
7	2	-0.88409	0.361135	1.61931	1.61931	1.61931	0.361135	-0.88409	
8	3	-0.88409	0.361135	1.61931	2.485435	1.61931	0.361135	-0.88409	
9	4	-0.88409	0.361135	1.61931	1.61931	1.61931	0.361135	-0.88409	
10	5	-0.88409	0.361135	0.361135	0.361135	0.361135	0.361135	-0.88409	
11	6	-0.88409	-0.88409	-0.88409	-0.88409	-0.88409	-0.88409	-0.88409	

template_versions_level_2.csv

	A	B	C	D
1	type	versions		
2	0	3		
3		version	scale	rotation deg
4		0	9	0
5		1	9	45
6		2	9	90
7				

input_metrics.pxm.csv

	A	B	C	D
1	This is a PixMin(TM) Analysis Development Kit configuration file.			
2				
3	Name	Value	Description	
4	input image folder	{input_me	This path points to a fold	
5	input pixel rows	696	This positive integer shou	
6	input pixel columns	870	This positive integer shou	
7	configuration metrics folder	{input_me	This path points to a fold	
8	color alignment	0	If set to one, PixMin perf	
9	feature standardizing option	1	If set to one, PixMin stan	
10	feature masking option	0	If set to one, PixMin eval	
11	feature diff option	12	If set to one, PixMin find	
12	level 1 alert block and output	48	This is the number of pix	
13	level 1 template matching basi	1	Each pixel's level 1 match	
14	level 1 pixel match cutoff valu	25	PixMin produces level 1 p	
15	level 1 alert block cutoff value	20	Each level 1 alert block's	
16	level 1 maximum alerts	200	This is the maximum num	
17	level 2 skip option	0	If set to one, no level 2 d	
18	criteria pass-through option	0	If set to one, the criterion	
19	level 2 alert block size	2	This is the number of pix	
20	level 2 template matching basi	1	Each pixel's level 2 match	
21	level 2 pixel match cutoff valu	5	PixMin produces level 2 p	
22	level 2 alert block cutoff value	4	Each level 2 alert block's	
23	level 2 maximum alerts	200	This is the maximum num	
24	analysis	c	This metric determines o	
25	output detection folder	{input_me	This path points to a fold	
26	no normal output option	0	Normal image output ma	
27	output alert map border width	3	PixMin distinguishes aler	
28	internal border removal optior	1	If set to one, PixMin rem	

2

Continuous operation deployment example

Configure PZT → Trigger sensor

Trigger PixMin

Analyze ← Yes — Alert? — No

Prior

Current

Future

Current → Future

3
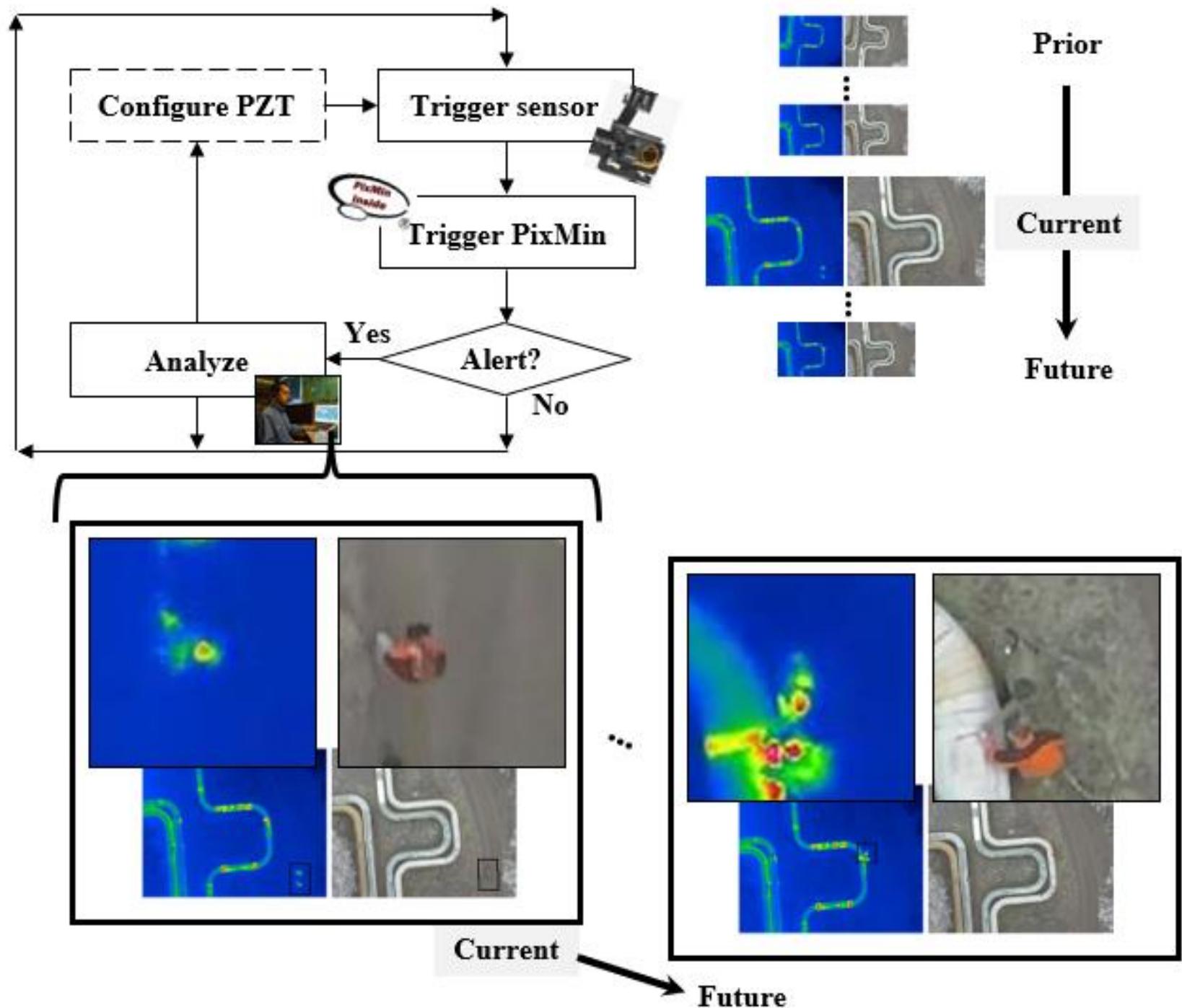
ADK use-case organization

Use-case Reports

- 1a_PixMin_image_processing_overview.pdf
- 1b_PixC_overview.pdf
- 2_1_PixMin_caribou_detection.pdf
- 2_2_PixMin_Wildlife_trail_camera_photo_triage.pdf
- 2_3_PixMin_threat_detection_from_fixed_cameras.pdf
- 2_4_PixMin_obstacle_detection.pdf
- 2_5_PixMin_timely_asset_management.pdf
- 2_6_PixMin_warm_body_event_detection.pdf
- 2_7_PixMin_underwater_threat_detection.pdf
- 2_8_PixMin_marine_mammal_detection.pdf
- 2_9_PixMin_wildlife_drone_camera_triage.pdf
- 2_10_PixMin_ripple_detection.pdf
- 2_11_PixMin_anomaly_detection_from_displays.pdf
- 2_12_PixMin_rocket_classification.pdf
- 2_13_PixMin_image_color_variability_correction.pdf
- 2_14_FlawView_introduction.pdf
- 3_2_PixMin_added_value_potential_determination.pdf
- 3_2_use-case_evaluation_imagery_desirables.pdf

Use-case folders

- 1_caribou_detection
- 2_tortoise_fixed_camera_cetection
- 3_threat_fixed_camera_detection
- 4_obstacle_detection
- 5_asset_management
- 6_warm_body_detection
- 7_underwater_object_detection
- 8_whale_detection
- 9_tortoise_drone_detection
- 10_ripple_detection
- 11_display_change_detection
- 12_rocket_classificaton
- 13_imagery_color_alignment
- 14_rope_flaw_detection

Use-case sub-folders

- analysis
- config
- input_images
- output
- output_archive

4

Input image color value organization

Image color feature value organization

row\col	0	1	2	3	4	5	6
0	0	1	2	3	4	5	6
1	7,360	7,361	7,362	7,363	7,364	7,365	7,366
2	14,720	14,721	14,722	14,723	14,724	14,725	14,726
3	22,080	22,081	22,082	22,083	22,084	22,085	22,086
4	29,440	29,441	29,442	29,443	29,444	29,445	29,446

	7,353	7,354	7,355	7,356	7,357	7,358	7,359
	7,353	7,354	7,355	7,356	7,357	7,358	7,359
	14,713	14,714	14,715	14,716	14,717	14,718	14,719
	22,073	22,074	22,075	22,076	22,077	22,078	22,079
	29,433	29,434	29,435	29,436	29,437	29,438	29,439
	36,793	36,794	36,795	36,796	36,797	36,798	36,799

row							
4906	36,108,160	36,108,161	36,108,162	36,108,163	36,108,164	36,108,165	36,108,166
4907	36,115,520	36,115,521	36,115,522	36,115,523	36,115,524	36,115,525	36,115,526
4909	36,130,240	36,130,241	36,130,242	36,130,243	36,130,244	36,130,245	36,130,246
4910	36,137,600	36,137,601	36,137,602	36,137,603	36,137,604	36,137,605	36,137,606
4911	36,144,960	36,144,961	36,144,962	36,144,963	36,144,964	36,144,965	36,144,966

	36,115,513	36,115,514	36,115,515	36,115,516	36,115,517	36,115,518	36,115,519
	36,122,873	36,122,874	36,122,875	36,122,876	36,122,877	36,122,878	36,122,879
	36,137,593	36,137,594	36,137,595	36,137,596	36,137,597	36,137,598	36,137,599
	36,144,953	36,144,954	36,144,955	36,144,956	36,144,957	36,144,958	36,144,959
	36,152,313	36,152,314	36,152,315	36,152,316	36,152,317	36,152,318	36,152,319

Level 1 and output chip alert blocks

rowcol	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	#
1	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
2	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
3	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
4	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
5	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
6	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
7	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
8	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
9	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114
10	#	111	112	113	114	115	116	117	118	119	120	121	122	123	124	#

Normal input and output folder contents: whale detection use-case

input_images

output

0_alerts

alerts

chips

full

whale_5_0_alerts.png

whale_1.jpg whale_2.jpg whale_3.jpg whale_4.jpg
whale_5.jpg whale_6.jpg whale_7.jpg whale_8.jpg

whale_1_1986_71 03.png
whale_2_1390_47 99.png
whale_2_1435_46 63.png
whale_3_3975_45 98.png
whale_4_2514_15 97.png
whale_6_590_574 4.png
whale_7_3584_32 13.png
whale_8_1628_20 48.png
whale_8_3933_38 66.png

	A	B	C
1	Image	Chip row	Chip col
2	whale_1	7103	1986
3	whale_2	4799	1390
4	whale_2	4663	1435
5	whale_3	4598	3975
6	whale_4	1597	2514
7	whale_6	5744	590
8	whale_7	3213	3584
9	whale_8	3866	3933
10	whale_8	2048	1628

whale_1_1_alerts.png
whale_2_2_alerts.png
whale_3_1_alerts.png
whale_4_1_alerts.png
whale_6_1_alerts.png
whale_7_1_alerts.png
whale_8_2_alerts.png

Level 1 and 2 *triage*: whale detection example
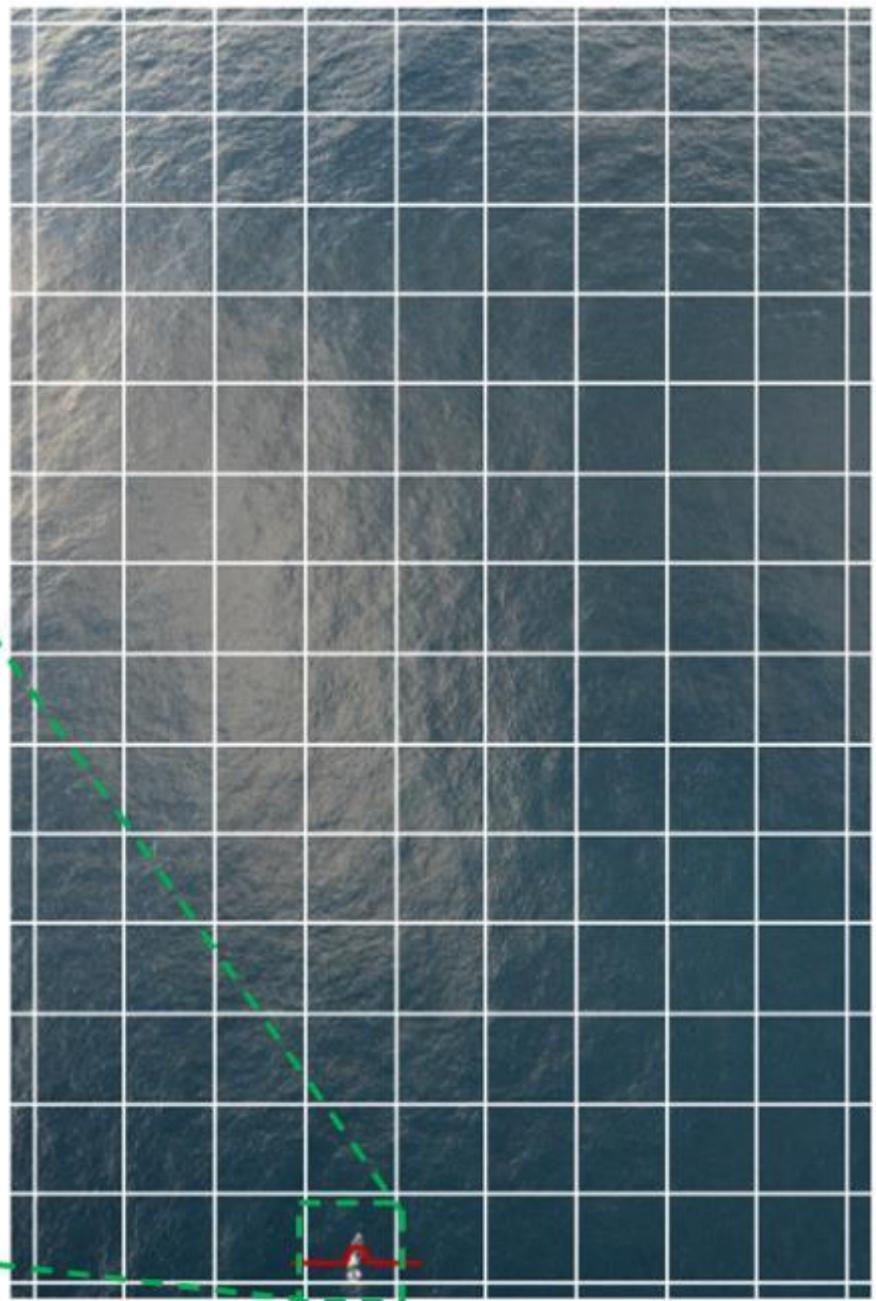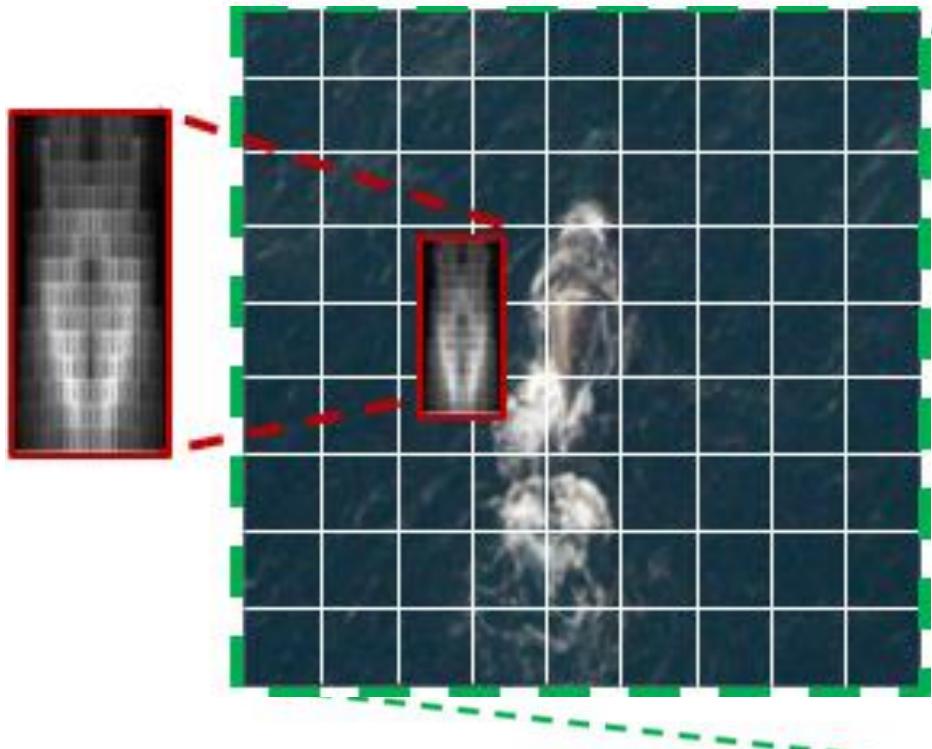
Template values library (Appendix C)

Spike contrast

Cone contrast
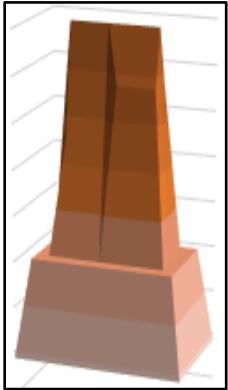
Submerged sphere contrast

Level 1

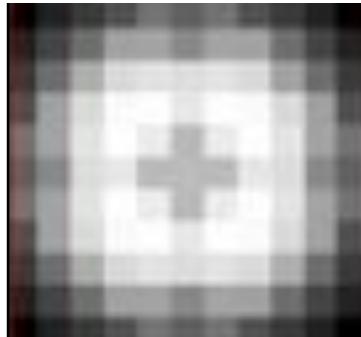Level 2
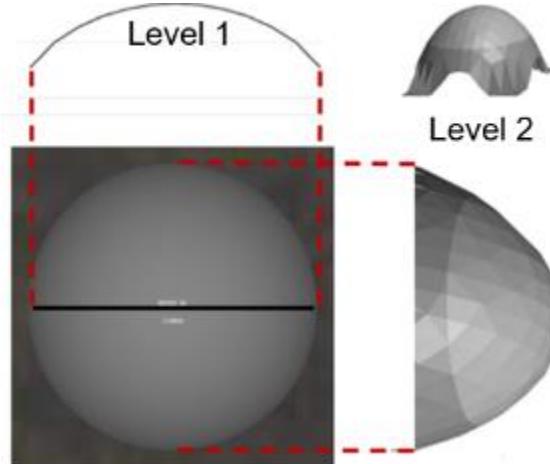
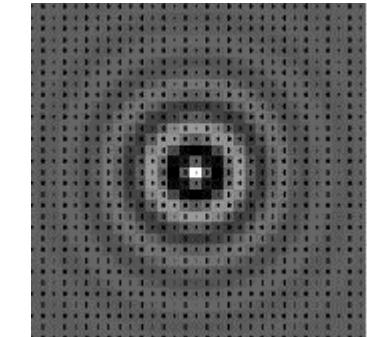**One-dimensional ripple contrast**
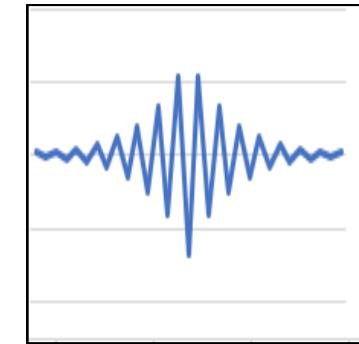
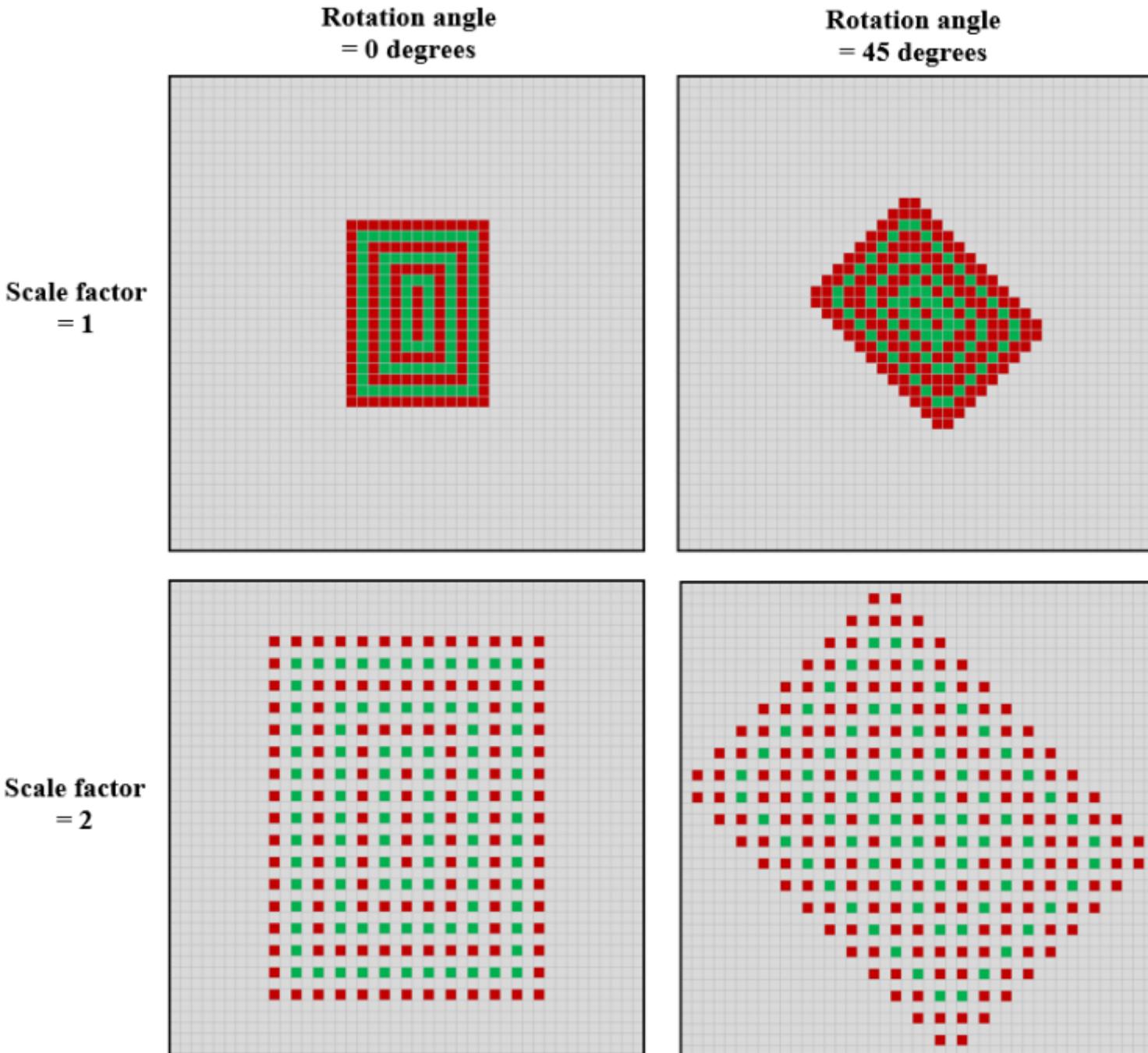**Whale body contrast**
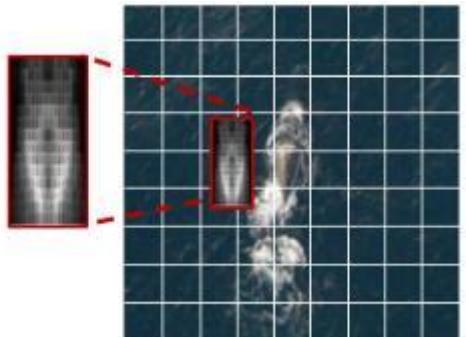
Annulus contrast

Pyramid contrast
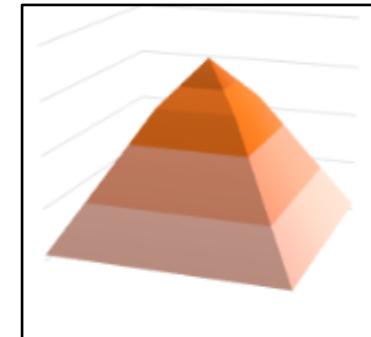
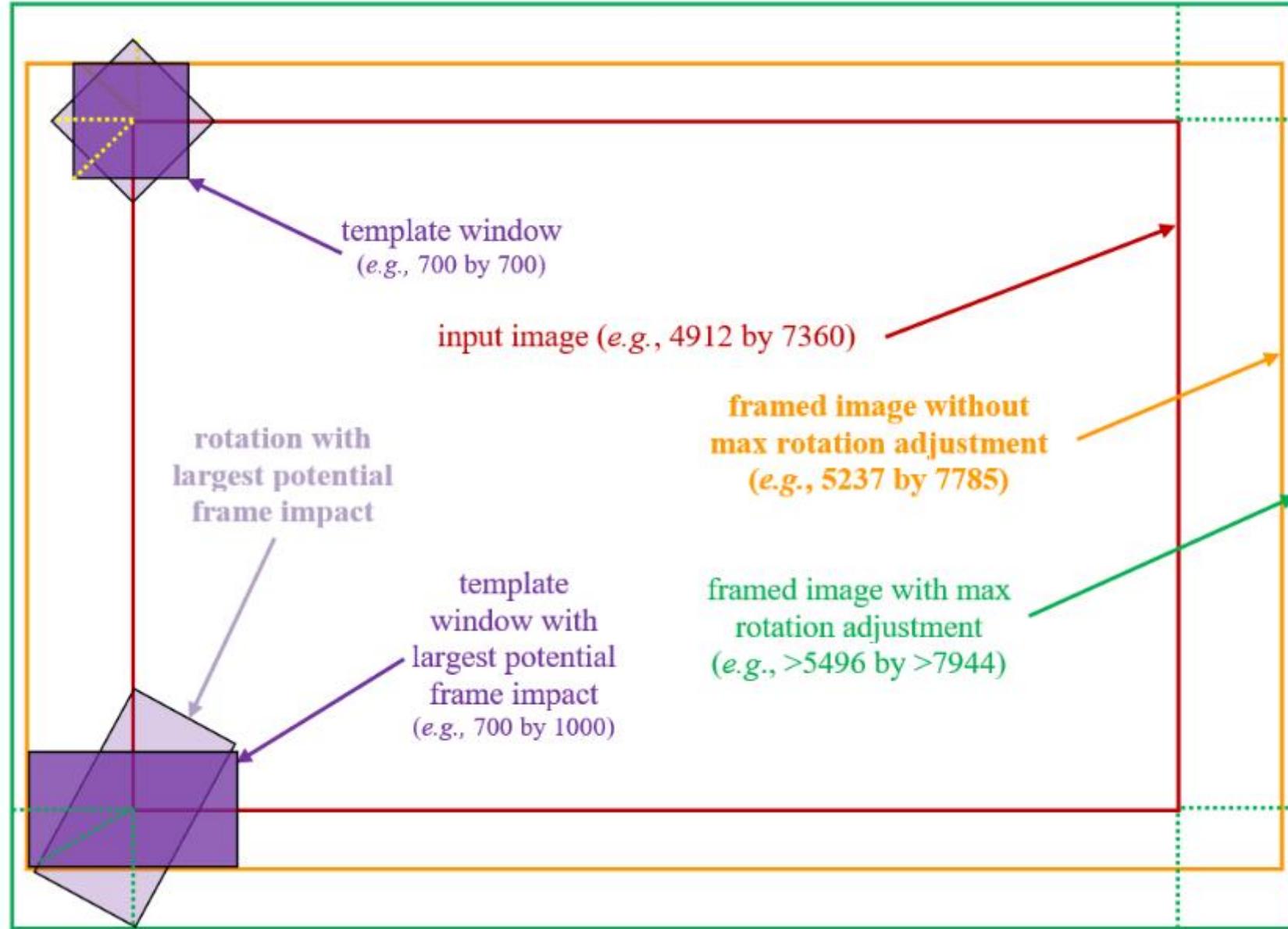**Two-dimensional ripple contrast**

Template versions: ROI rotating and scaling
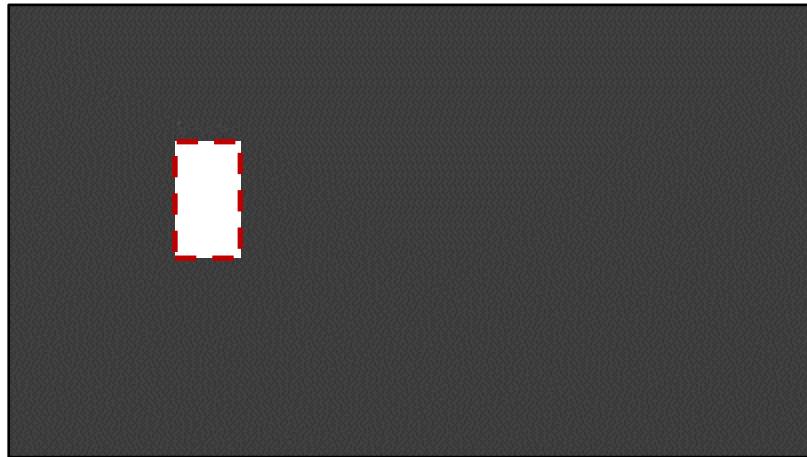
Template coverage at image boundaries

template window
(*e.g.*, 700 by 700)

input image (*e.g.*, 4912 by 7360)

rotation with largest potential frame impact

framed image without max rotation adjustment
(*e.g.*, 5237 by 7785)

template window with largest potential frame impact
(*e.g.*, 700 by 1000)

framed image with max rotation adjustment
(*e.g.*, >5496 by >7944)

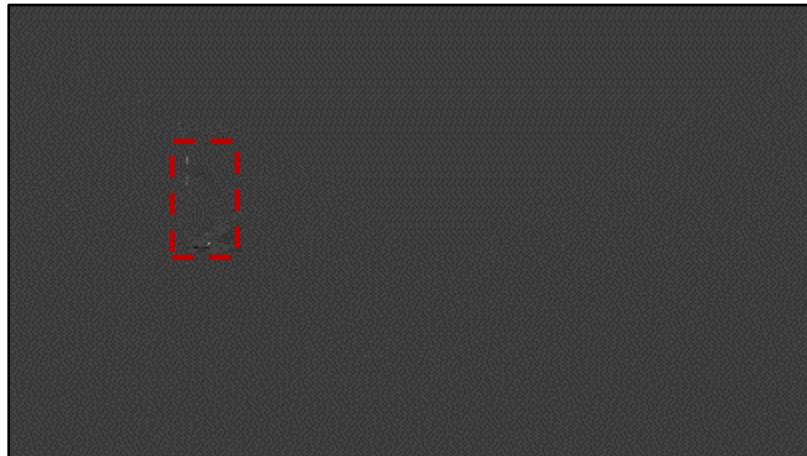**Mirrored frames**
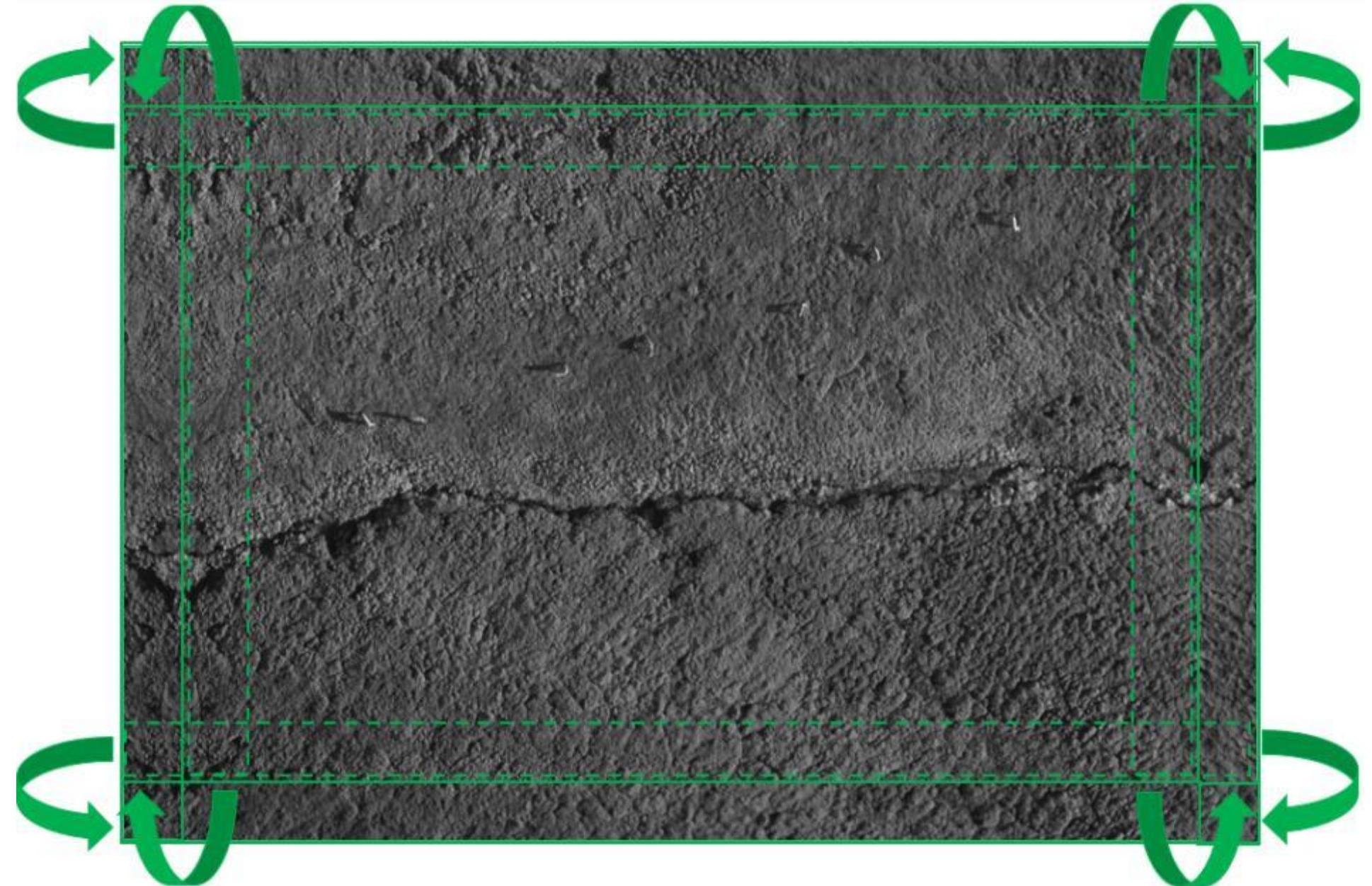
Image masking and differencing

Mask File Values

Input Image File

Image Difference Values

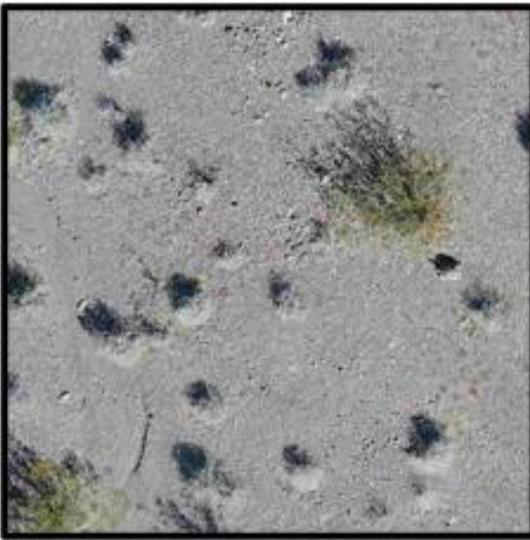Output Alert Map File

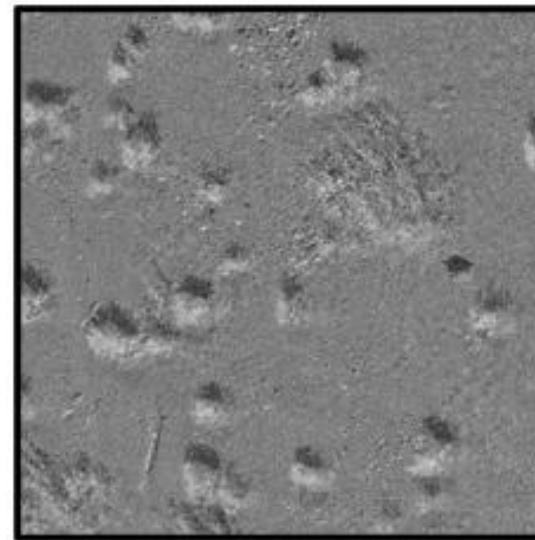# Pixel alignment example: input images and differenced features
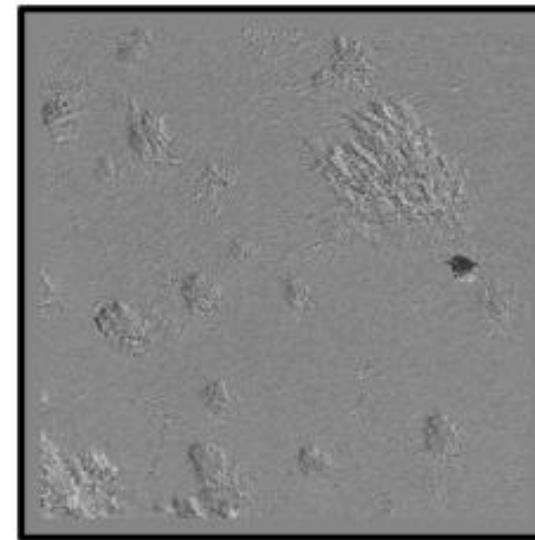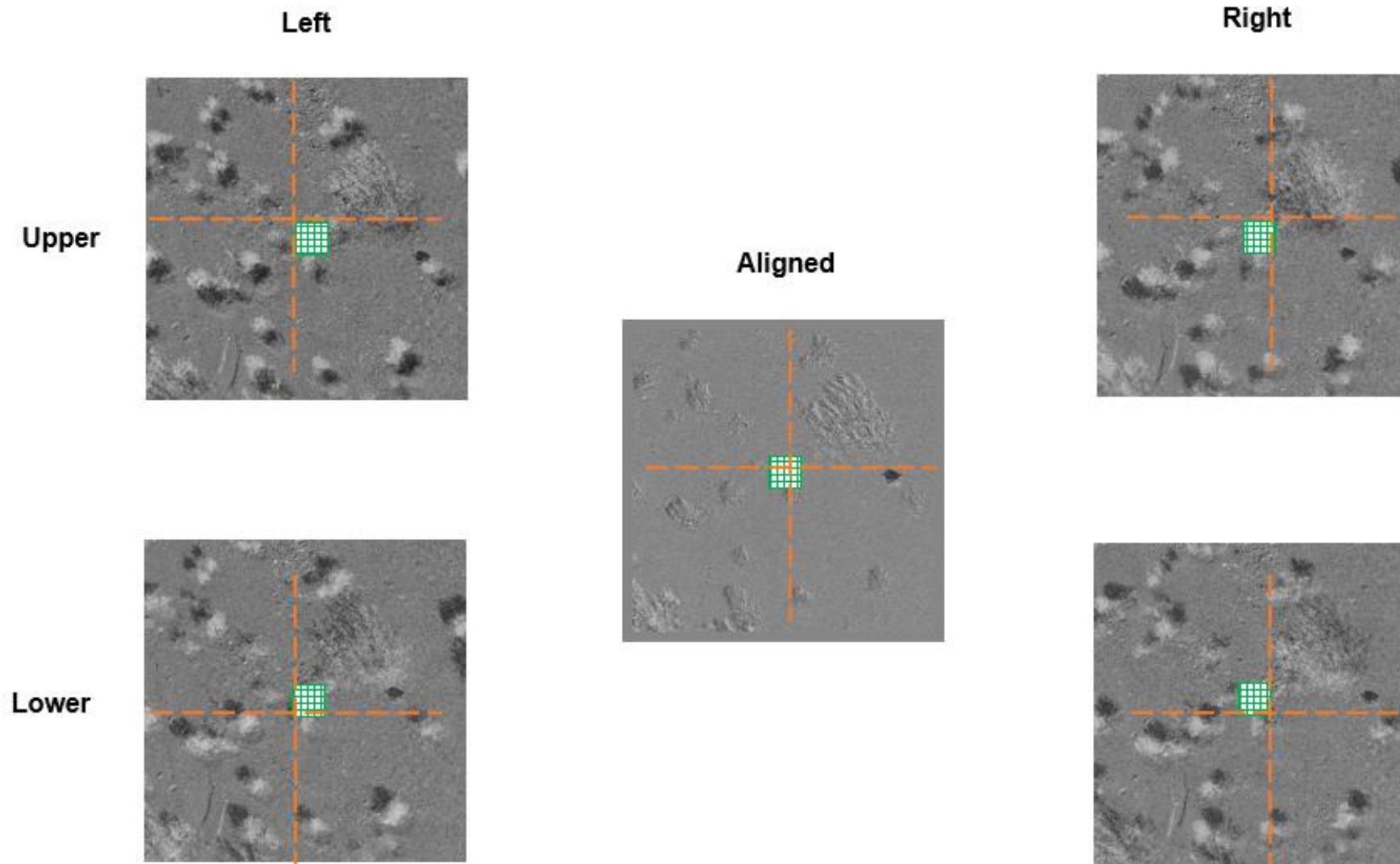
Input image with target

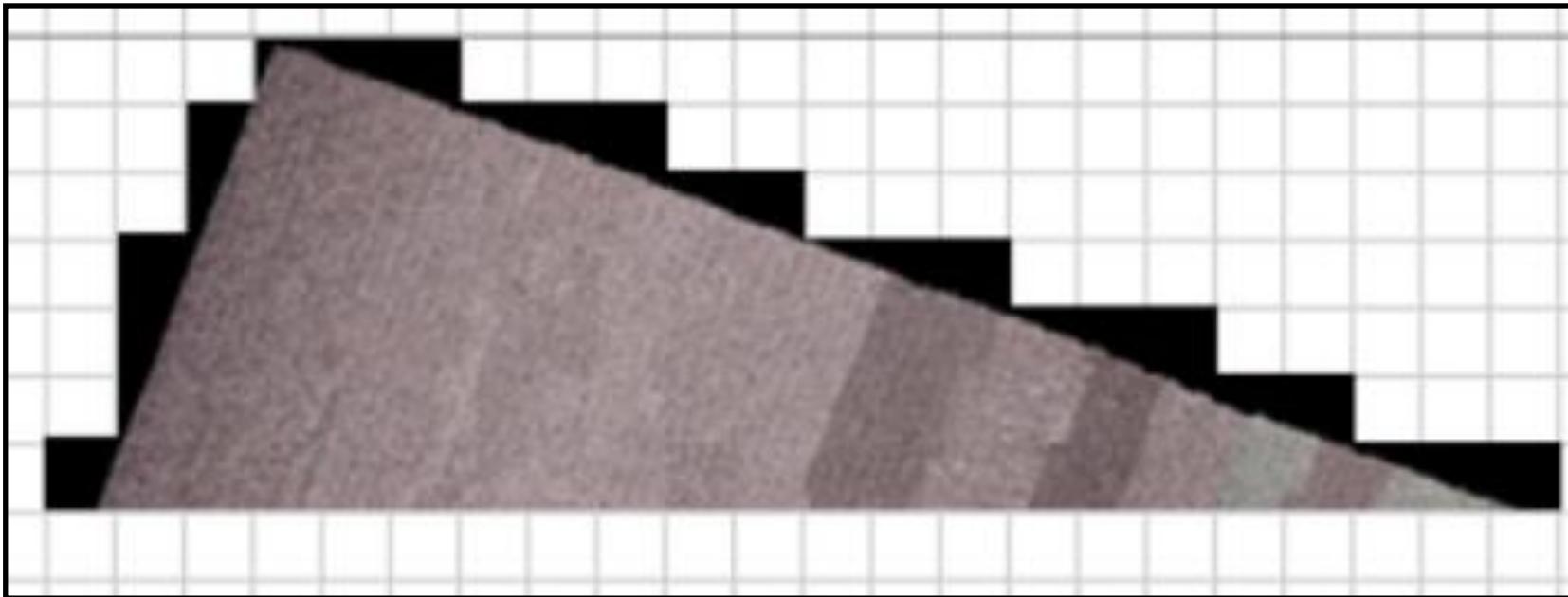Input image with no target

Differenced features without pixel alignment
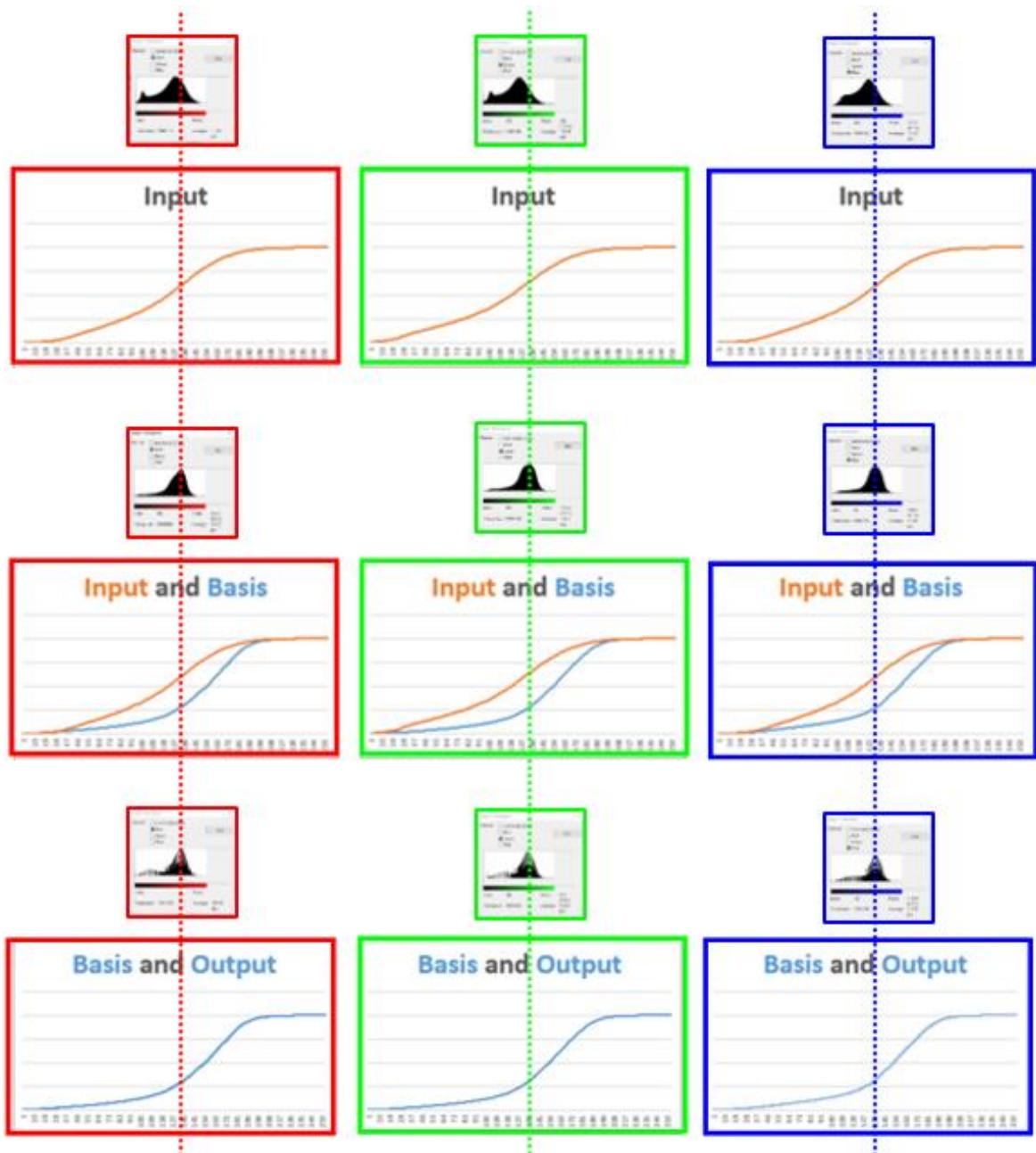
Differenced features with pixel alignment

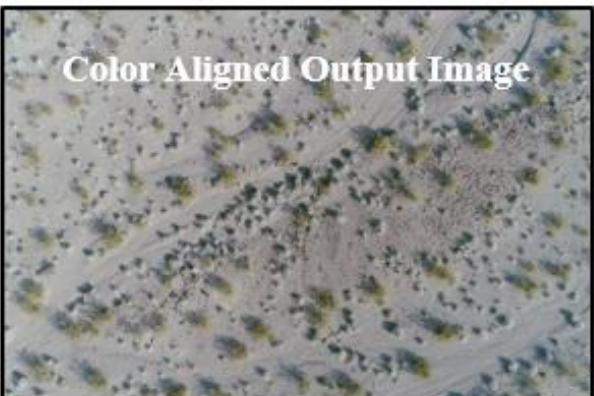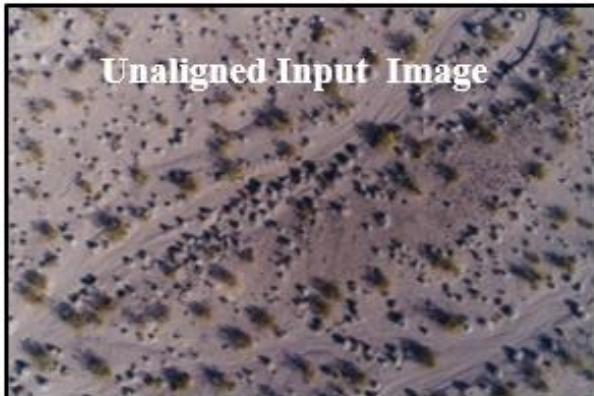# Pixel alignment example: shifted crosshairs and their alignment effects

Color variability problem

Color alignment example

Unaligned Input Image

Color Alignment Basis Image

Color Aligned Output Image

Input

Input

Input

Input and Basis

Input and Basis

Input and Basis

Basis and Output

Basis and Output

Basis and Output

Configuration Imperative: *processing speed matters!*

Preliminary configuration

Consecutive image processing. For each image:

    Read input image color pixel values

    Read and/or process differencing values if necessary

    Read and/or process image masking values if necessary

    Convert image pixel RGB values to pixel feature values

    Process level 1 alerts

      For each Level 1 template type:

        For each Level 1 template version within type:

          For each pixel row:

            For each pixel column:

              For each template row:

                For each template column:

                  Evaluate pixel cutoff values using one of eight criteria

      Produce level 1 analysis ouput if necessary

  Process level 2 alerts (as above)

  Output normal alert media

Termination

An example calculation (level 1 only):
  4912 image rows * 7360 image columns *
  64 template rows * 64 template columns*
  4 template types * 8 template versions
  = 592 <u>billion</u> calculations per image!

Evaluate cutoff values using one of these criteria:
- Sums of absolute differences without masking
- Sums of absolute differences with masking
- Projections without masking
- Projections with masking
- Standard deviations without masking
- Standard deviations with masking
- Correlations without masking
- Correlations with masking

Whale detection use-case configuration

input_metrics..pxm.csv

	Name	Value	Description
3	Name	Value	Description
4	input image folder	{input_me	This path points to a folder containing PixMin i
5	input pixel rows	7360	This positive integer should be the same as the
6	input pixel columns	4912	This positive integer should be the same as the
7	configuration metrics folder	{input_me	This path points to a folder containing configur
8	color alignment	0	If set to one, PixMin performs image color aligr
9	feature standardizing option	1	If set to one, PixMin standardizes feature value
10	feature masking option	0	If set to one, PixMin evaluates selected pixels
11	feature diff option	0	If set to one, PixMin finds a diff folder inside th
12	level 1 alert block and output chip size	513	This is the number of pixel rows and columns i
13	level 1 template matching basis	1	Each pixel's level 1 match value measures how
14	level 1 pixel match cutoff value	14	PixMin produces level 1 pixel alerts when pixe
15	level 1 alert block cutoff value	50	Each level 1 alert block's pixel level alert count
16	level 1 maximum alerts	2	This is the maximum number of level 1 alerts p
17	level 2 skip option	0	If set to one, no level 2 detection will occur so
18	criteria pass-through option	0	If set to one, the criterion values calculated pe
19	level 2 alert block size	57	This is the number of pixel rows and columns i
20	level 2 template matching basis	2	Each pixel's level 2 match value measures how
21	level 2 pixel match cutoff value	3.5	PixMin produces level 2 pixel alerts when pixe
22	level 2 alert block cutoff value	750	Each level 2 alert block's pixel level alert count
23	level 2 maximum alerts	2	This is the maximum number of level 2 alerts p
24	analysis	d	This metric determines output analysis data. If
25	output detection folder	{input_me	This path points to a folder containing PixMin o
26	no normal output option	0	Normal image output may not be necessary wh
27	output alert map border width	7	PixMin distinguishes alerted regions within ale
28	internal border removal option	1	If set to one, PixMin removes borders within o

template_values_level_1.csv

template_versions_level_1.csv

template_values_level_2.csv

template_versions_level_2.csv

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Analysis output folder structure

output → Contains 0_alerts and alerts subfolders

level_1 → Contains an *analysis_alert_counts_level_1.csv file* as well

type_0_version_0

0_alerts → Contains unalerted image heat map *.png* files

alerts

chips → Contains alerted chip heat map *.png* files

full → Contains alerted image heat map *.png* files

type_0_version_1 → Same structure as first type and version

type_0_version_2 → Same structure as first type and version

level_2 → Same structure as level_1

Analysis input and output example

ANALYSIS INPUT CONFIGURATION EXAMPLE

INPUT *chip_locations.csv* FILE CONTENTS

row/col		A	B	C	D
	1	Image	Chip row	Chip column	
0	2	config_snippet_01b	7015	7103	
1	3	config_snippet_02b	4450	4799	
2	4	config_snippet_02b	4963	4663	
3	5	config_snippet_03a	6502	2048	
4	6	config_snippet_03a	1885	202	
5	7	config_snippet_03b	3424	109	
6	8	config_snippet_03b	2911	403	
7	9	config_snippet_03c	2910	403	
8	10	config_snippet_03c	3937	403	

INPUT IMAGE FILES

0	config_snippet_01a
1	config_snippet_01b
2	config_snippet_01c
3	config_snippet_02a
4	config_snippet_02b
5	config_snippet_02c
6	config_snippet_03a
7	config_snippet_03b
8	config_snippet_03c

TEMPLATE COMBINATIONS

Types	Versions
0	0
0	1
1	0

NOTES

1. Files are shown for analysis **a** only. Normal output is not shown.
   Folder name fonts are **bold.** Filename fonts are *red italics.*
2. Type **b** filename extensions are *.h5* instead of *.png* .
   Otherwise, type a and type b output names are the same.
3. same folder names and filenames as **type_0_version_0**
4. same folder names and filenames as **type_0_version_0**
5. same folder names and filenames as **level_1**
6. Besides the output media shown, if *b_no_normal_image_output* = 0,
   the ADK will output the usual normal detection media.

RESULTING ANALYSIS OUTPUT MEDIA

output (note 1)

level_1

type_0_version_0

0_alerts
- *config_snippet_01a.png*
- *config_snippet_01c.png*
- *config_snippet_02a.png*
- *config_snippet_02c.png*

alerts

full
- *config_snippet_01b.png*
- *config_snippet_02b.png*
- *config_snippet_03a.png*
- *config_snippet_03b.png*
- *config_snippet_03c.png*

chips
- *config_snippet_01b_7015_7103.png*
- *config_snippet_02b_4450_4799.png*
- *config_snippet_02b_4963_4663.png*
- *config_snippet_03a_6502_2048.png*
- *config_snippet_03a_1885_202.png*
- *config_snippet_03b_2911_403.png*
- *config_snippet_03c_2910_403.png*
- *config_snippet_03c_3937_403.png*

type_0_version_1 (note 3)

type_1_version_0 (note 4)
- *analysis_statistics_level_1.csv*

level_2 (note 5)

Analysis output: level 1 statistics "from_ADK" tab

	A	B	C	D	E	F	G	H	I	J	K	L
1	Image	Chip Row	Chip Col.	Type	Version	# Alerts	Hit Ratio	Max. Val.	Max Row	Max Col.	Type	
2	config_snippet_01a	Image	Total	0	0	0	NA	8.48492	3198	0	Level 1 All	
3	config_snippet_01a	Image	Total	0	1	0	NA	9.25206	5085	16	Level 1 All	
4	config_snippet_01a	Image	Total	0	2	0	NA	8.92843	4848	696	Level 1 All	
5	config_snippet_01b	Image	Total	0	0	1085	NA	18.1598	7140	1950	Level 1 All	
6	config_snippet_01b	7015	1944	0	0	1085	INF	18.1598	7140	1950	Level 1 Block	
7	config_snippet_01b	Image	Total	0	1	553	NA	17.1132	7131	1954	Level 1 All	
8	config_snippet_01b	7015	1944	0	1	553	INF	17.1132	7131	1954	Level 1 Block	
9	config_snippet_01b	Image	Total	0	2	1	NA	14.0238	7134	1961	Level 1 All	
10	config_snippet_01b	7015	1944	0	2	1	INF	14.0238	7134	1961	Level 1 Block	
11	config_snippet_01c	Image	Total	0	0	0	NA	9.1081	645	469	Level 1 All	
12	config_snippet_01c	Image	Total	0	1	0	NA	8.68499	4494	43	Level 1 All	
13	config_snippet_01c	Image	Total	0	2	0	NA	8.15123	4176	63	Level 1 All	
14	config_snippet_02a	Image	Total	0	0	0	NA	9.59671	6824	4520	Level 1 All	
15	config_snippet_02a	Image	Total	0	1	0	NA	9.17267	6860	4527	Level 1 All	
16	config_snippet_02a	Image	Total	0	2	0	NA	11.4106	7295	3825	Level 1 All	
17	config_snippet_02b	Image	Total	0	0	603	NA	17.9756	4634	1435	Level 1 All	
18	config_snippet_02b	4450	1431	0	0	554	INF	17.9756	4634	1435	Level 1 Block	
19	config_snippet_02b	4963	1431	0	0	49	INF	15.3774	4706	1435	Level 1 Block	
20	config_snippet_02b	Image	Total	0	1	68	NA	15.3498	4702	1432	Level 1 All	
21	config_snippet_02b	4450	1431	0	1	554	INF	15.3498	4702	1432	Level 1 Block	
22	config_snippet_02b	4963	1431	0	1	11	INF	15.02	4777	1402	Level 1 Block	
23	config_snippet_02b	Image	Total	0	2	0	NA	13.2803	4694	1441	Level 1 All	
24	config_snippet_02b	4450	1431	0	2	0	0 / 0	13.2803	4694	1441	Level 1 Block	
25	config_snippet_02b	4963	1431	0	2	0	0 / 0	12.7515	4713	1429	Level 1 Block	
26	config_snippet_02c	Image	Total	0	0	0	NA	7.12442	4679	4907	Level 1 All	
27	config_snippet_02c	Image	Total	0	1	0	NA	8.47096	7297	3527	Level 1 All	
28	config_snippet_02c	Image	Total	0	2	0	NA	10.8306	7357	3501	Level 1 All	

from_ADK | sorted_Chip_Row_Then_Image | cutoff_highlights

Analysis output: level 1 statistics "sorted..." tab Totals

	A	B	C	D	E	F	G	H	I	J	K
1	Image	Chip Row	Chip Col.	Type	Version	# Alerts	Hit Ratio	Max. Val.	Max Row	Max Col.	Type
2	config_snippet_01a	Image	Total	0	0	0	NA	8.48492	3198	0	Level 1 All
3	config_snippet_01a	Image	Total	0	1	0	NA	9.25206	5085	16	Level 1 All
4	config_snippet_01a	Image	Total	0	2	0	NA	8.92843	4848	696	Level 1 All
5	config_snippet_01b	Image	Total	0	0	1085	NA	18.1598	7140	1950	Level 1 All
6	config_snippet_01b	Image	Total	0	1	553	NA	17.1132	7131	1954	Level 1 All
7	config_snippet_01b	Image	Total	0	2	1	NA	14.0238	7134	1961	Level 1 All
8	config_snippet_01c	Image	Total	0	0	0	NA	9.1081	645	469	Level 1 All
9	config_snippet_01c	Image	Total	0	1	0	NA	8.68499	4494	43	Level 1 All
10	config_snippet_01c	Image	Total	0	2	0	NA	8.15123	4176	63	Level 1 All
11	config_snippet_02a	Image	Total	0	0	0	NA	9.59671	6824	4520	Level 1 All
12	config_snippet_02a	Image	Total	0	1	0	NA	9.17267	6860	4527	Level 1 All
13	config_snippet_02a	Image	Total	0	2	0	NA	11.4106	7295	3825	Level 1 All
14	config_snippet_02b	Image	Total	0	0	603	NA	17.9756	4634	1435	Level 1 All
15	config_snippet_02b	Image	Total	0	1	68	NA	15.3498	4702	1432	Level 1 All
16	config_snippet_02b	Image	Total	0	2	0	NA	13.2803	4694	1441	Level 1 All
17	config_snippet_02c	Image	Total	0	0	0	NA	7.12442	4679	4907	Level 1 All
18	config_snippet_02c	Image	Total	0	1	0	NA	8.47096	7297	3527	Level 1 All
19	config_snippet_02c	Image	Total	0	2	0	NA	10.8306	7357	3501	Level 1 All
20	config_snippet_03a	Image	Total	0	0	70	NA	15.5613	4944	4911	Level 1 All
21	config_snippet_03a	Image	Total	0	1	499	NA	20.5964	6482	169	Level 1 All
22	config_snippet_03a	Image	Total	0	2	168	NA	16.4591	6494	167	Level 1 All
23	config_snippet_03b	Image	Total	0	0	891	NA	20.6517	3210	1469	Level 1 All
24	config_snippet_03b	Image	Total	0	1	623	NA	19.6374	3213	1463	Level 1 All
25	config_snippet_03b	Image	Total	0	2	977	NA	18.5611	3091	1450	Level 1 All
26	config_snippet_03c	Image	Total	0	0	145	NA	16.9251	4154	4911	Level 1 All
27	config_snippet_03c	Image	Total	0	1	204	NA	16.6993	3353	4219	Level 1 All
28	config_snippet_03c	Image	Total	0	2	417	NA	17.7928	4033	4225	Level 1 All

from ADK | **sorted Chip Row Then Image** | cutoff highlights

Analysis output: level 1 statistics "sorted..." tab chips

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Image	Chip Row	Chip Col.	Type	Version	# Alerts	Hit Ratio	Max. Val.	Max Row	Max Col.	Type		
29	config_snippet_01b	7015	1944	0	0	1085	INF	18.1598	7140	1950	Level 1 Block		
30	config_snippet_01b	7015	1944	0	1	553	INF	17.1132	7131	1954	Level 1 Block		
31	config_snippet_01b	7015	1944	0	2	1	INF	14.0238	7134	1961	Level 1 Block		
32	config_snippet_03a	6502	405	0	0	13	0.565217	14.6235	6501	166	Level 1 Block		
33	config_snippet_03a	6502	405	0	1	284	2.86869	20.5964	6482	169	Level 1 Block		
34	config_snippet_03a	6502	405	0	2	38	0.292308	16.4591	6494	167	Level 1 Block		
35	config_snippet_02b	4963	1431	0	0	49	INF	15.3774	4706	1435	Level 1 Block		
36	config_snippet_02b	4963	1431	0	1	11	INF	15.02	4777	1402	Level 1 Block		
37	config_snippet_02b	4963	1431	0	2	0	0 / 0	12.7515	4713	1429	Level 1 Block		
38	config_snippet_02b	4450	1431	0	0	554	INF	17.9756	4634	1435	Level 1 Block		
39	config_snippet_02b	4450	1431	0	1	554	INF	15.3498	4702	1432	Level 1 Block		
40	config_snippet_02b	4450	1431	0	2	0	0 / 0	13.2803	4694	1441	Level 1 Block		
41	config_snippet_03c	3937	3996	0	0	0	0	11.9366	4175	4213	Level 1 Block		
42	config_snippet_03c	3937	3996	0	1	23	0.139394	14.872	3689	4012	Level 1 Block		
43	config_snippet_03c	3937	3996	0	2	119	0.730061	17.7928	4033	4225	Level 1 Block		
44	config_snippet_03b	3424	1431	0	0	670	167.5	20.6517	3210	1469	Level 1 Block		
45	config_snippet_03b	3424	1431	0	1	526	9.74074	19.6374	3213	1463	Level 1 Block		
46	config_snippet_03b	3424	1431	0	2	529	3.26543	18.5176	3208	1467	Level 1 Block		
47	config_snippet_03b	2911	1431	0	0	217	54.25	17.8938	2989	1536	Level 1 Block		
48	config_snippet_03b	2911	1431	0	1	43	0.796296	16.2801	3078	1479	Level 1 Block		
49	config_snippet_03b	2911	1431	0	2	286	1.76543	18.5611	3091	1450	Level 1 Block		
50	config_snippet_03c	2910	4838	0	0	62	0.746988	15.8717	2906	4907	Level 1 Block		
51	config_snippet_03c	2910	4838	0	1	16	0.09697	14.6492	2882	4903	Level 1 Block		
52	config_snippet_03c	2910	4838	0	2	135	0.828221	16.6325	2905	4887	Level 1 Block		
53	config_snippet_03a	1885	3483	0	0	34	1.47826	15.5273	1986	3716	Level 1 Block		
54	config_snippet_03a	1885	3483	0	1	116	1.17172	16.8889	1994	3711	Level 1 Block		
55	config_snippet_03a	1885	3483	0	2	0	0	13.1117	1991	3722	Level 1 Block		

from_ADK | **sorted_Chip_Row_Then_Image** | cutoff_highlights

Ready | Accessibility: Good to go

Analysis output: level 1 statistics "cutoff..." tab

Analysis output: level 2 "from_ADK" tab excerpts

	A	B	C	D	E	F	G	H	I	J	K	L
1	Image	Chip Row	Chip Col.	Type	Version	# Alerts	Hit Ratio	Max. Val.	Max Row	Max Col.	Type	
2	config_snippet_01b	7015	1944	0	0	545	NA	4.60949	7219	1979	Level 2 All	
3	config_snippet_01b	7015	1944	0	0	202	0.58892	SAME	461	292	Level 2 Block	
4	config_snippet_01b	7015	1944	0	1	443	NA	4.41357	7160	1941	Level 2 All	
5	config_snippet_01b	7015	1944	0	1	236	1.1401	SAME	402	254	Level 2 Block	
6	config_snippet_01b	7015	1944	0	2	819	NA	4.15779	7076	1966	Level 2 All	
7	config_snippet_01b	7015	1944	0	2	284	0.53084	SAME	318	279	Level 2 Block	
8	config_snippet_01b	7015	1944	0	3	274	NA	4.02477	7225	1992	Level 2 All	
9	config_snippet_01b	7015	1944	0	3	186	2.11364	SAME	467	305	Level 2 Block	
10	config_snippet_01b	7015	1944	0	4	430	NA	4.62513	7220	1990	Level 2 All	
11	config_snippet_01b	7015	1944	0	4	314	2.7069	SAME	462	303	Level 2 Block	
12	config_snippet_01b	7015	1944	0	5	1264	NA	4.80535	7003	1987	Level 2 All	
13	config_snippet_01b	7015	1944	0	5	543	0.75312	SAME	245	300	Level 2 Block	
14	config_snippet_01b	7015	1944	0	6	238	NA	3.76048	7139	1936	Level 2 All	
15	config_snippet_01b	7015	1944	0	6	238	INF	SAME	381	249	Level 2 Block	
16	config_snippet_01b	7015	1944	0	7	263	NA	4.05241	7247	1947	Level 2 All	
17	config_snippet_01b	7015	1944	0	7	263	INF	SAME	489	260	Level 2 Block	
18	config_snippet_01b	7015	1944	0	8	1003	NA	4.42564	7238	1961	Level 2 All	
19	config_snippet_01b	7015	1944	0	8	521	1.08091	SAME	480	274	Level 2 Block	
20	config_snippet_01b	7015	1944	0	9	1097	NA	4.82573	7238	1972	Level 2 All	
21	config_snippet_01b	7015	1944	0	9	556	1.02773	SAME	480	285	Level 2 Block	
22	config_snippet_01b	7015	1944	0	10	275	NA	3.77223	7137	1971	Level 2 All	
23	config_snippet_01b	7015	1944	0	10	177	1.80612	SAME	379	284	Level 2 Block	
24	config_snippet_01b	7015	1944	0	11	919	NA	4.47058	7221	1962	Level 2 All	
25	config_snippet_01b	7015	1944	0	11	402	0.77756	SAME	463	275	Level 2 Block	
26	config_snippet_02b	4450	1431	0	0	741	NA	4.96469	4625	1420	Level 2 All	
27	config_snippet_02b	4450	1431	0	0	452	1.56401	SAME	432	246	Level 2 Block	
28	config_snippet_02b	4450	1431	0	1	462	NA	4.51134	4698	1436	Level 2 All	
29	config_snippet_02b	4450	1431	0	1	304	1.75	SAME	505	262	Level 2 Block	

from_ADK | sorted_Type_Then_Image | cutoff_highlights | (+)

Analysis output: level 2 "sorted ..." tab "All" excerpts

	Image	Chip Row	Chip Col.	Type	Version	# Alerts	Hit Ratio	Max. Val.	Max Row	Max Col.	Type
26	config_snippet_02b	4963	1431	0	0	319	NA	4.3718	4760	1503	Level 2 All
27	config_snippet_02b	4963	1431	0	1	482	NA	4.21705	4762	1506	Level 2 All
28	config_snippet_02b	4963	1431	0	2	488	NA	4.355	4765	1514	Level 2 All
29	config_snippet_02b	4963	1431	0	3	345	NA	4.52244	4769	1521	Level 2 All
30	config_snippet_02b	4963	1431	0	4	142	NA	4.06258	4765	1517	Level 2 All
31	config_snippet_02b	4963	1431	0	5	272	NA	4.21626	4755	1511	Level 2 All
32	config_snippet_02b	4963	1431	0	6	70	NA	3.78846	4758	1382	Level 2 All
33	config_snippet_02b	4963	1431	0	7	132	NA	3.75776	4707	1427	Level 2 All
34	config_snippet_02b	4963	1431	0	8	59	NA	3.7145	4707	1433	Level 2 All
35	config_snippet_02b	4963	1431	0	9	146	NA	3.85733	4708	1451	Level 2 All
36	config_snippet_02b	4963	1431	0	10	146	NA	3.91513	4743	1527	Level 2 All
37	config_snippet_02b	4963	1431	0	11	0	NA	2.94018	4748	1523	Level 2 All
38	config_snippet_03a	6502	405	0	0	0	NA	3.49909	6492	152	Level 2 All
39	config_snippet_03a	6502	405	0	1	0	NA	3.45281	6633	344	Level 2 All
40	config_snippet_03a	6502	405	0	2	134	NA	4.2169	6508	163	Level 2 All
41	config_snippet_03a	6502	405	0	3	37	NA	3.66974	6491	172	Level 2 All
42	config_snippet_03a	6502	405	0	4	92	NA	4.00725	6490	176	Level 2 All
43	config_snippet_03a	6502	405	0	5	28	NA	3.78763	6547	202	Level 2 All
44	config_snippet_03a	6502	405	0	6	0	NA	3.01205	6490	153	Level 2 All
45	config_snippet_03a	6502	405	0	7	0	NA	3.17574	6650	355	Level 2 All
46	config_snippet_03a	6502	405	0	8	0	NA	3.46803	6506	181	Level 2 All
47	config_snippet_03a	6502	405	0	9	0	NA	3.39876	6583	217	Level 2 All
48	config_snippet_03a	6502	405	0	10	0	NA	3.43674	6580	215	Level 2 All
49	config_snippet_03a	6502	405	0	11	0	NA	3.0108	6423	238	Level 2 All

from_ADK | **sorted_Type_Then_Image** | cutoff_highlights

Analysis output: level 2 "sorted ..." tab "Block" excerpts

	Image	Chip Row	Chip Col.	Type	Version	# Alerts	Hit Ratio	Max. Val.	Max Row	Max Col.	Type
134	config_snippet_02b	4963	1431	0	0	169	1.12667	SAME	54	329	Level 2 Block
135	config_snippet_02b	4963	1431	0	1	196	0.68532	SAME	56	332	Level 2 Block
136	config_snippet_02b	4963	1431	0	2	179	0.57929	SAME	59	340	Level 2 Block
137	config_snippet_02b	4963	1431	0	3	186	1.16981	SAME	63	347	Level 2 Block
138	config_snippet_02b	4963	1431	0	4	79	1.25397	SAME	59	343	Level 2 Block
139	config_snippet_02b	4963	1431	0	5	130	0.91549	SAME	49	337	Level 2 Block
140	config_snippet_02b	4963	1431	0	6	52	2.88889	SAME	52	208	Level 2 Block
141	config_snippet_02b	4963	1431	0	7	110	5	SAME	1	253	Level 2 Block
142	config_snippet_02b	4963	1431	0	8	59	INF	SAME	1	259	Level 2 Block
143	config_snippet_02b	4963	1431	0	9	144	72	SAME	2	277	Level 2 Block
144	config_snippet_02b	4963	1431	0	10	113	3.42424	SAME	37	353	Level 2 Block
145	config_snippet_02b	4963	1431	0	11	0	0 / 0	SAME	42	349	Level 2 Block
146	config_snippet_03a	6502	405	0	0	0	0 / 0	SAME	247	4	Level 2 Block
147	config_snippet_03a	6502	405	0	1	0	0 / 0	SAME	388	196	Level 2 Block
148	config_snippet_03a	6502	405	0	2	134	INF	SAME	263	15	Level 2 Block
149	config_snippet_03a	6502	405	0	3	37	INF	SAME	246	24	Level 2 Block
150	config_snippet_03a	6502	405	0	4	92	INF	SAME	245	28	Level 2 Block
151	config_snippet_03a	6502	405	0	5	24	6	SAME	302	54	Level 2 Block
152	config_snippet_03a	6502	405	0	6	0	0 / 0	SAME	245	5	Level 2 Block
153	config_snippet_03a	6502	405	0	7	0	0 / 0	SAME	405	207	Level 2 Block
154	config_snippet_03a	6502	405	0	8	0	0 / 0	SAME	261	33	Level 2 Block
155	config_snippet_03a	6502	405	0	9	0	0 / 0	SAME	338	69	Level 2 Block
156	config_snippet_03a	6502	405	0	10	0	0 / 0	SAME	335	67	Level 2 Block
157	config_snippet_03a	6502	405	0	11	0	0 / 0	SAME	178	90	Level 2 Block

from_ADK | **sorted_Type_Then_Image** | cutoff_highlights

Analysis output: level 2 "cutoff_highlights" tab excerpts

Analysis tools: target chip reorientation

Input Chip
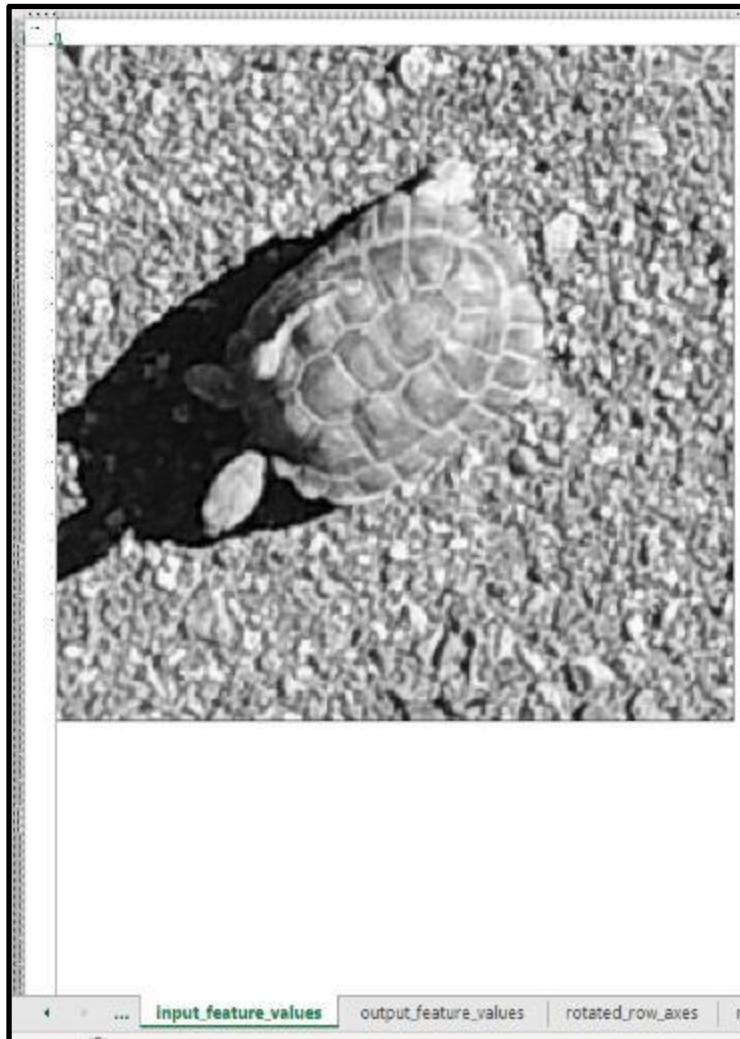
Reoriented Chip
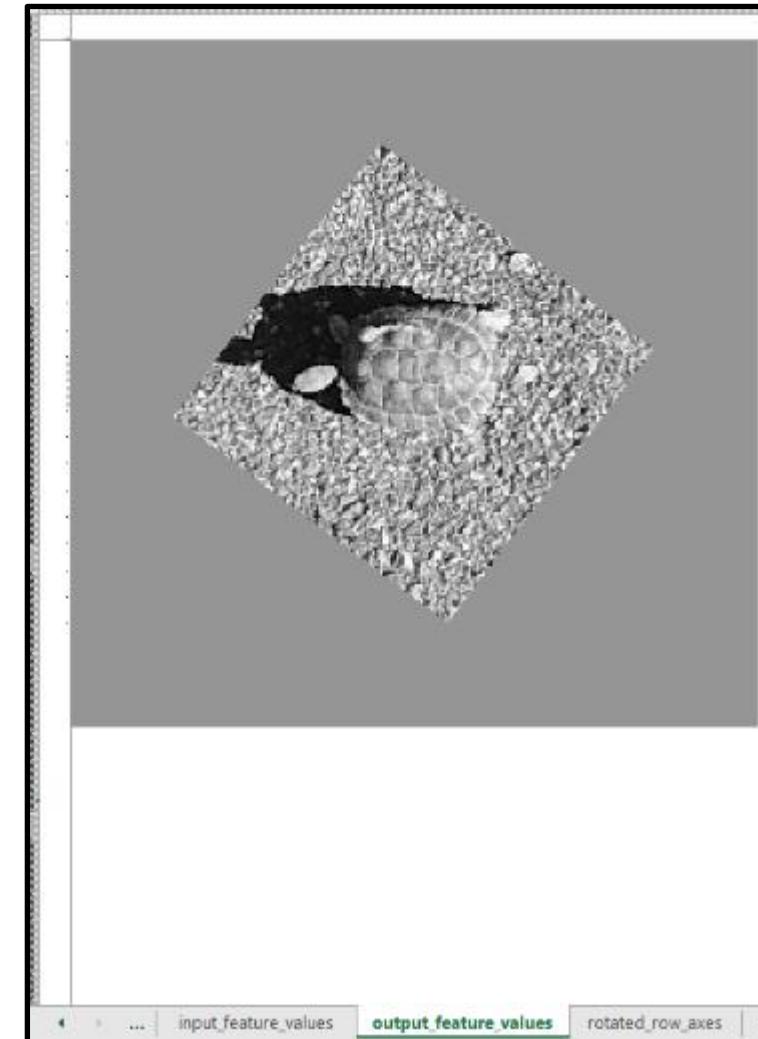
Example:
Scale Factor = 2
Rotation = 37°

Analysis tools: mask builder

Analysis tools: IrfanView
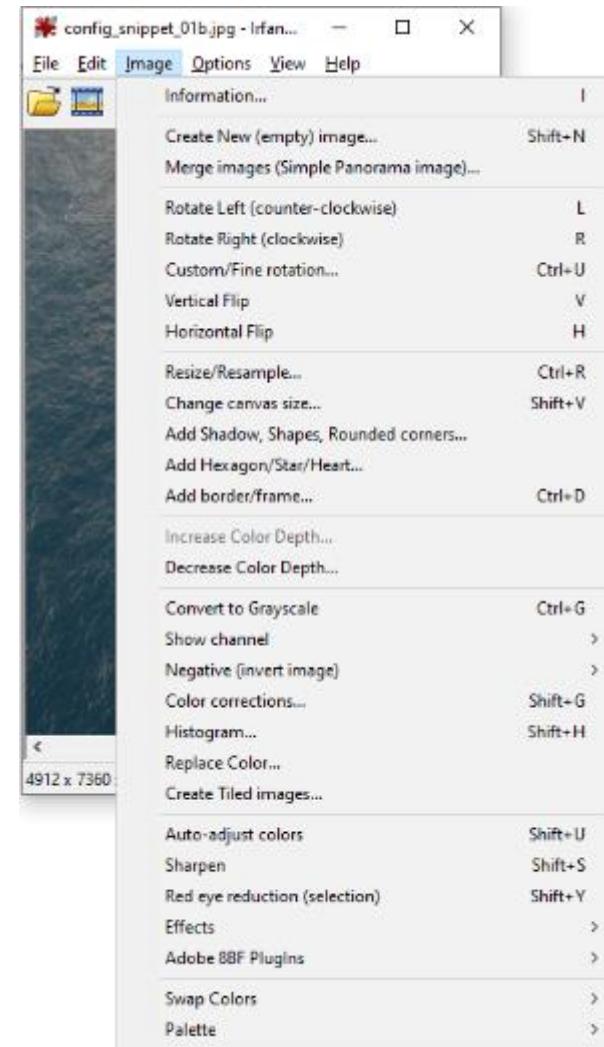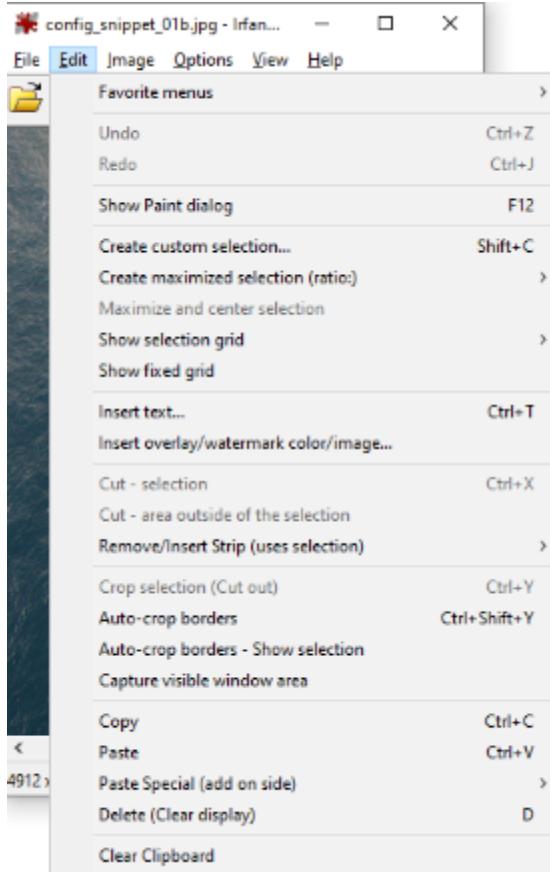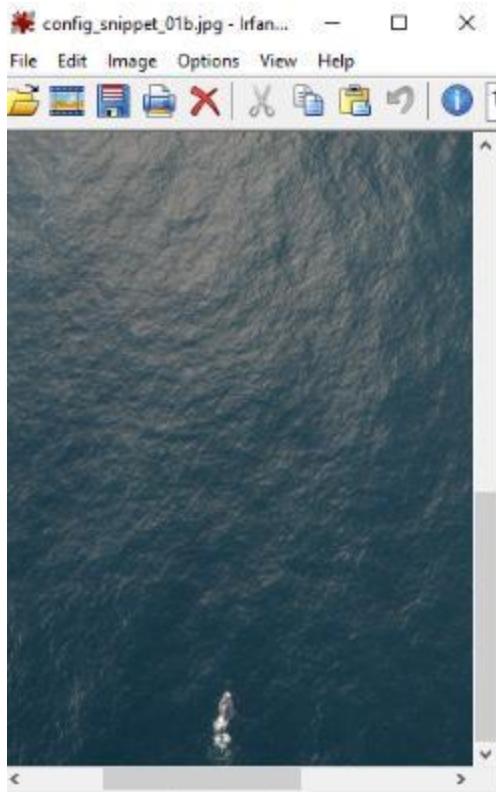
Analysis tools: HDFView
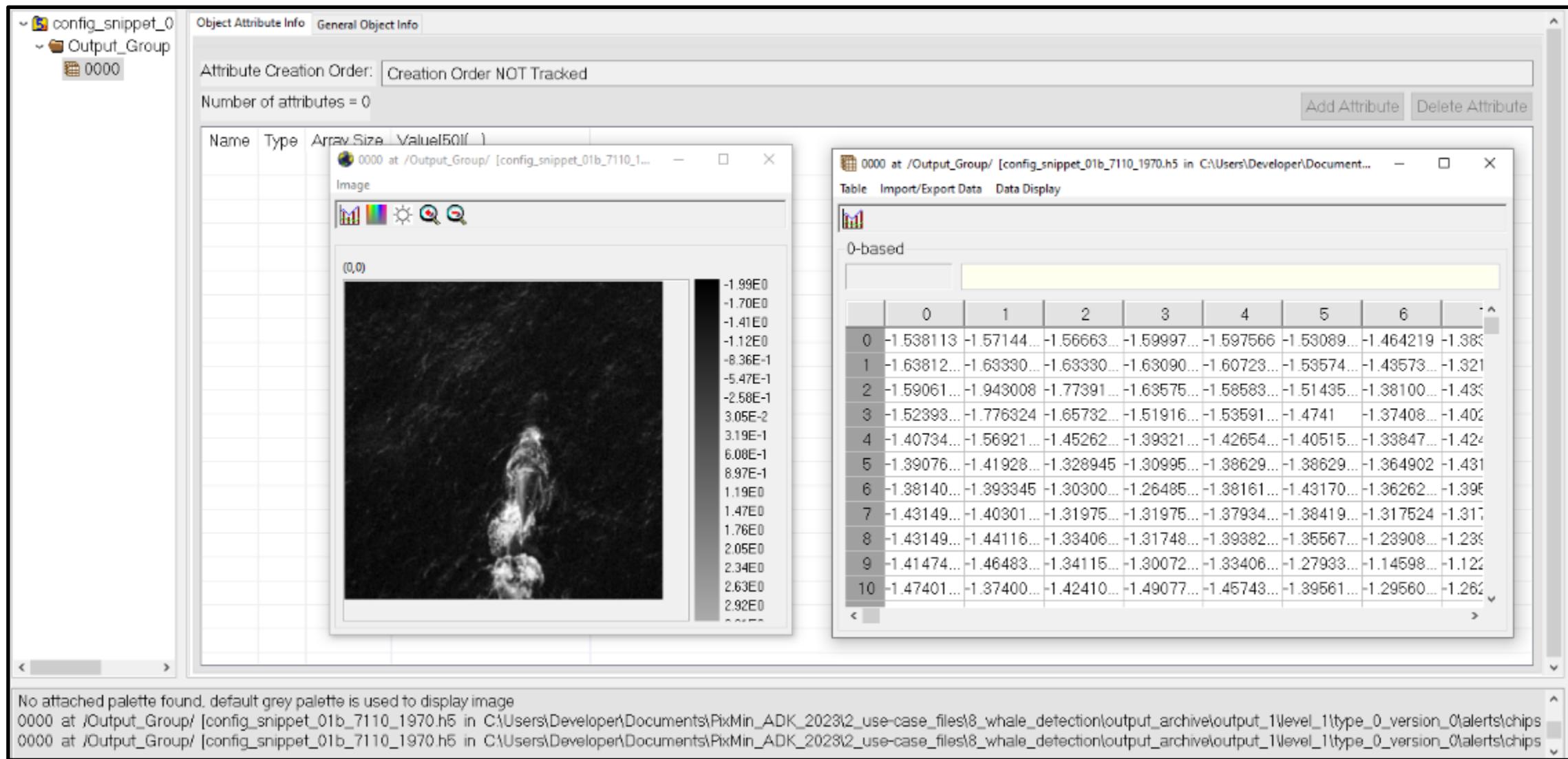
Analysis tools: flight plan coverage calculator