

# **Post Processing Topics**

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## **PPS Advanced Settings**



Select Input				- Select Output Option	าร					-
Project	ISPM Path				Pan	RGB	CIR	4Band	NIR	
Polk_c	\\Eisc\PhotoScience\Polk	C_ISPM	•	Full-resolution: Color-resolution:	V	<b>S</b>			Г	
				Update ISPM Project Using:	RGB	•			🔽 Use for	all projects
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Select Processing Options			Tile Si <u>z</u> e:	256 💌						
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# Simple NIR and Blue compensation





DMC - spectral Response including optics and filter

PAN sensitivity adjustments subtract unused spectrum from PAN sensor response (shown light blue), prior to merging with MS images during pan-sharpening

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# Simple NIR compensation (for RGB products)





DMC - spectral Response including optics and filter

PAN sensitivity adjustments subtract unused spectrum from PAN sensor response (shown light blue), prior to merging with MS images during pan-sharpening

NIR compensation for RGB images:

 $PAN_{reduce} = PAN - f_{NIR} \cdot NIR$ 

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# NIR compensation for RGB





- Make colors (green) more natural
- It is recommend to use the default settings
- Values > 15 darken shadows (information lost)



# Simple Blue compensation (for CIR products)





PAN sensitivity adjustments subtract unused spectrum from PAN sensor response (shown light blue), prior to merging with MS images during pan-sharpening

Blue compensation for CIR images:

$$PAN_{reduce} = PAN - f_{Blue} \cdot Blue$$

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### Blue compensation for CIR images





- Not as obvious as the NIR compensation
- Reason: Spectral Range differs
  - Blue: 380 600 nm
  - IR : 680 1050 nm



### Haze Reduction



Advanced Settings	×
Pan Sensitivity Miscellaneous Dodging Output defaults	
NIR compensation (RGB)     NIR compensation (pan)	
0% 10%	
□ Blue reduction (haze)	
Defaults	
OK Cancel Apply Help	

### Reduce blue in the PAN image (RGB)

$$PAN_{reduce} = PAN - f_{Haze} \cdot Blue$$

### With NIR and Haze correction (RGB)

$$PAN_{reduce} = PAN - f_{NIR} \cdot NIR - f_{Haze} \cdot Blue$$

- Rayleigh-diffusion (Particle <0.1 λ)</li>
  - Diffusion in the atmosphere (gas)
  - Causes "Blue Sky"

### • Mie-diffusion (Particle > 0.1 $\lambda$ )

- Independent from the wave length
- Diffusion at dust, water vapour
- Haze
  - Combined Rayleigh and Mie-Diffusion
  - Function of the flying height (and a lot of other parameters (humidity, temperature, dust, ...)



### Miscellaneous – Sharpen



Advanced Settings
Pan Sensitivity Miscellaneous Dodging Output defaults
Sharpen 0 0 0 0 0 0 0 0 0 0 0 0
Low Resolution image size 3072 x 2048 (Color-Res size) 13824 x 7680 (High-Res size) Default
OK Cancel Apply Help

#### Sharpen

- 5 x 5 separable Filter
- Sharpen value set filter coefficient
- Filter does not move edges

### Low Resolution image size

- Low-Res Size
  - 4.75 scale to virtual image
  - Left upper corner to the virtual image at 128,768 (row column)

### High-Res Size

- Registered to virtual image
- Easier to implement own
   PAN-Sharpening Algorithm

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### Miscellaneous – Sharpen example







**Default: No Sharpening** 

Best Result with Sharpen Value <30

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## Dodge

Advanced Settings	X				
Pan Sensitivity Miscellaneous Dodging	Output defaults				
Settings	12 - Bit Settings Intensity Adjustment Parameters				
Mi <u>n</u> imum: 31	Kemel Size: 15				
Maximum: 4000	Subtile Size: 64				
Use an input overview	Darken Maximum: 575				
Target Average Intensity	Brighten Maximum: 575				
Auto Ca <u>l</u> culate	Pixel Intensity Adjustments				
Delete <u>o</u> riginal images after dodging					
	De <u>f</u> aults				
ОК	Cancel <u>A</u> pply Help				





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### Dodge



Experiment with standalone tool in ImageStation Raster Utilities:



Transfer settings to PPS Advanced Settings for production

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### Dodge - Subtile





Separate LUT calculated for each subtile based on average pixel value(s) -up to 30k subtiles

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### Dodge – Subtile and Smoothing Kernel

Advanced Settings					
Pan Sensitivity Miscellaneous Dodging Output defaults					
Dodge after post processing 12 - Bit Settings					
Use Intensities Range Intensity Adjustment Parameters					
Min_imum: 31 <u>K</u> ernel Size: 15 <b>•</b>					
Maximum: 4000					
Use an input overview         Darken Maximum:         575					
Target Average Intensity Brighten Maximum: 575					
Auto Calculate     Pixel Intensity Adjustments					
Intensity: 2047 Transparency 0					
Delete <u>o</u> riginal images after dodging					
De <u>f</u> aults					
OK Cancel <u>A</u> pply Help					





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### Dodge – Intensity settings

Advanced Settings					
Pan Sensitivity Miscellaneous Dodging	Output defaults				
✓       Dodge after post processing         Settings       Use Intensities Range         Minimum:       31         Maximum:       4000         ✓       Use an input overview	12 - Bit Settings Intensity Adjustment Parameters <u>K</u> emel Size: 15 Subtile Size: 64 Darken Maximum: 575				
Target Average Intensity Auto Ca <u>l</u> culate Intensit <u>y</u> : 2047	Brighten Maximum: 575 Pixel Intensity Adjustments Transparency				
Delete <u>o</u> riginal images after dodging					
Defaults					
ОК	Cancel <u>A</u> pply Help				



- "Intensities range" excludes e.g. black border from dodge calculations
- "Target Average Intensity" sets aimpoint for tone of output image tiles. Autocalculate is independant for each image band, can cause color shifts
- Darken & Brighten maximums set limits on amount of adjustment that can occur in any given tile.

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# Dodge – example (12-bit DMC image)





Row,Col: 194.55, 1925.60 Values: 2151, 2079, 1709



- PPS Advanced Settings provide tools for image adjustment during production processing
- Some tools are "experimental", i.e. we have not established clear guidance for optimal adjustment
- Subjective, and subject to flight conditions
- Questions?

