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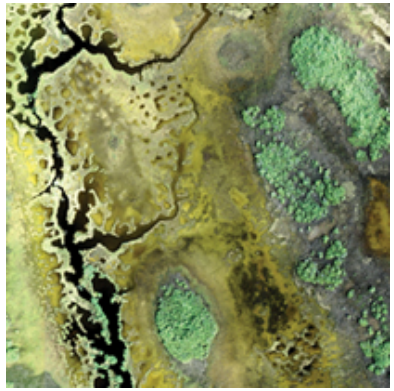
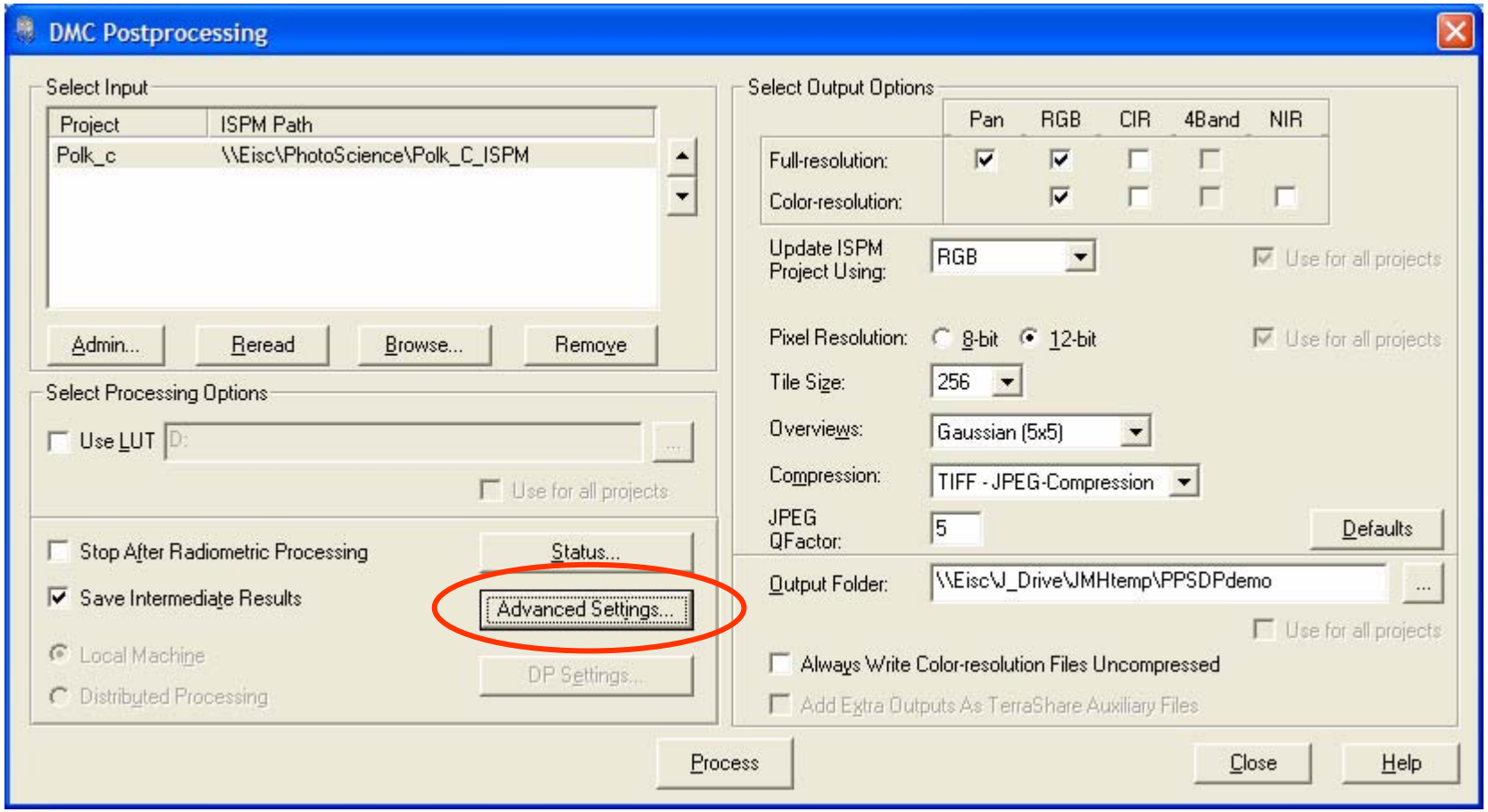
Post Processing Topics

Jeff Hyatt Technical Support Analyst



INTERGRAPH

PPS Advanced Settings



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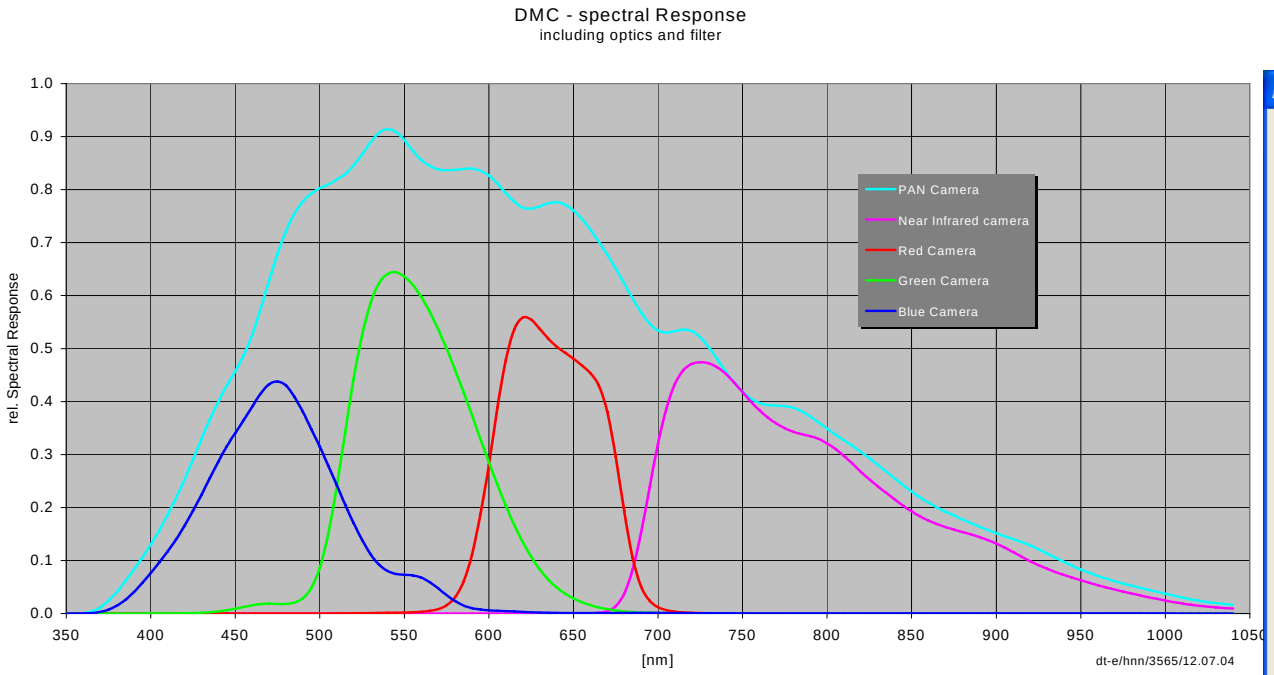
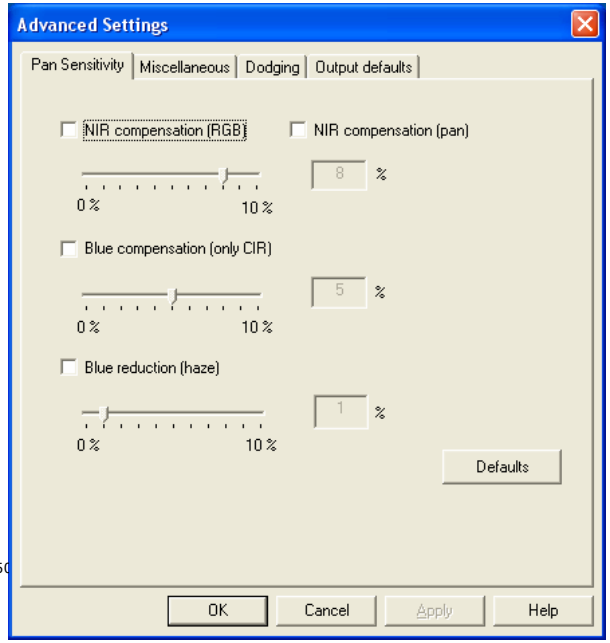
Simple NIR and Blue compensation





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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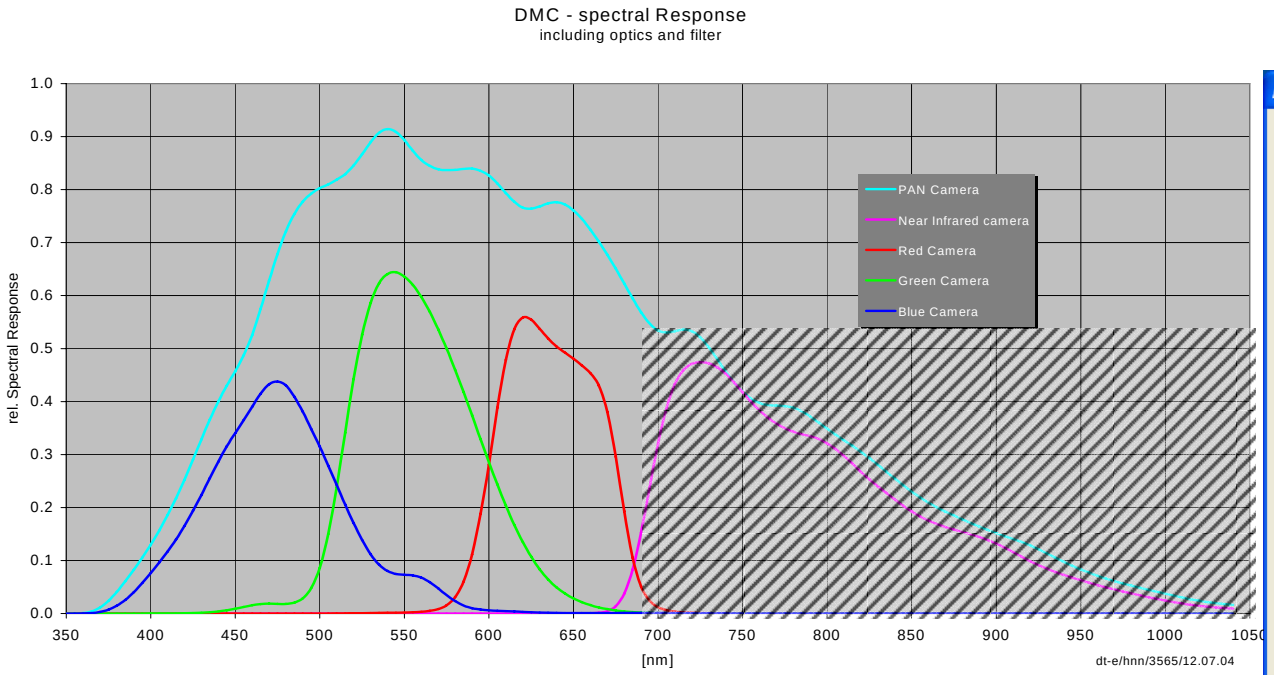
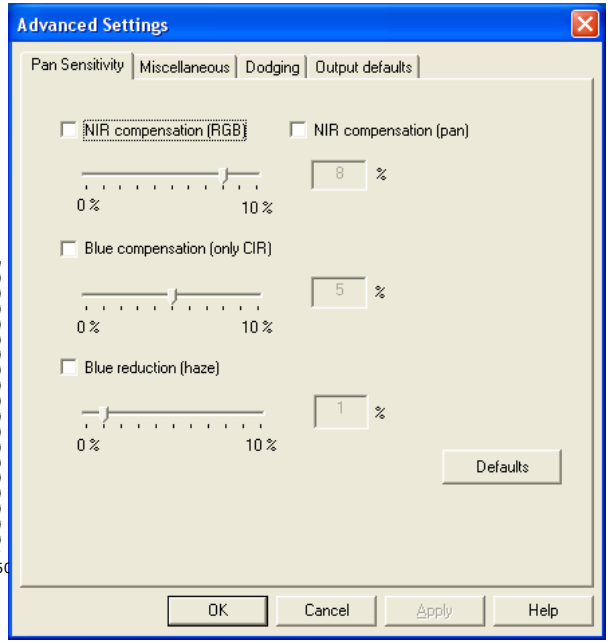
Simple NIR compensation (for RGB products)





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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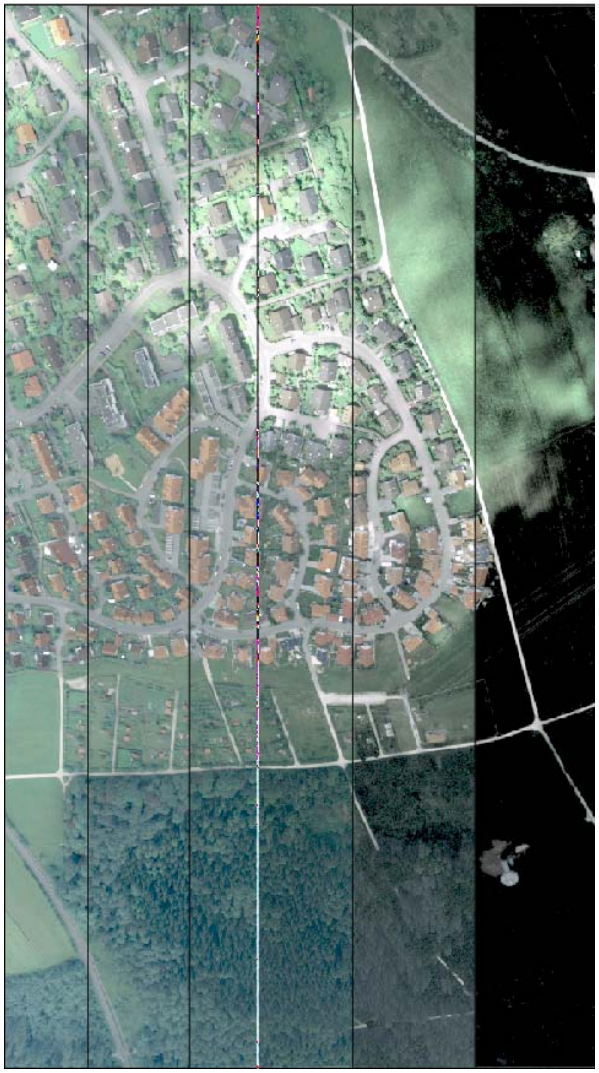
NIR compensation for RGB



0 5 10 15 20 30

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

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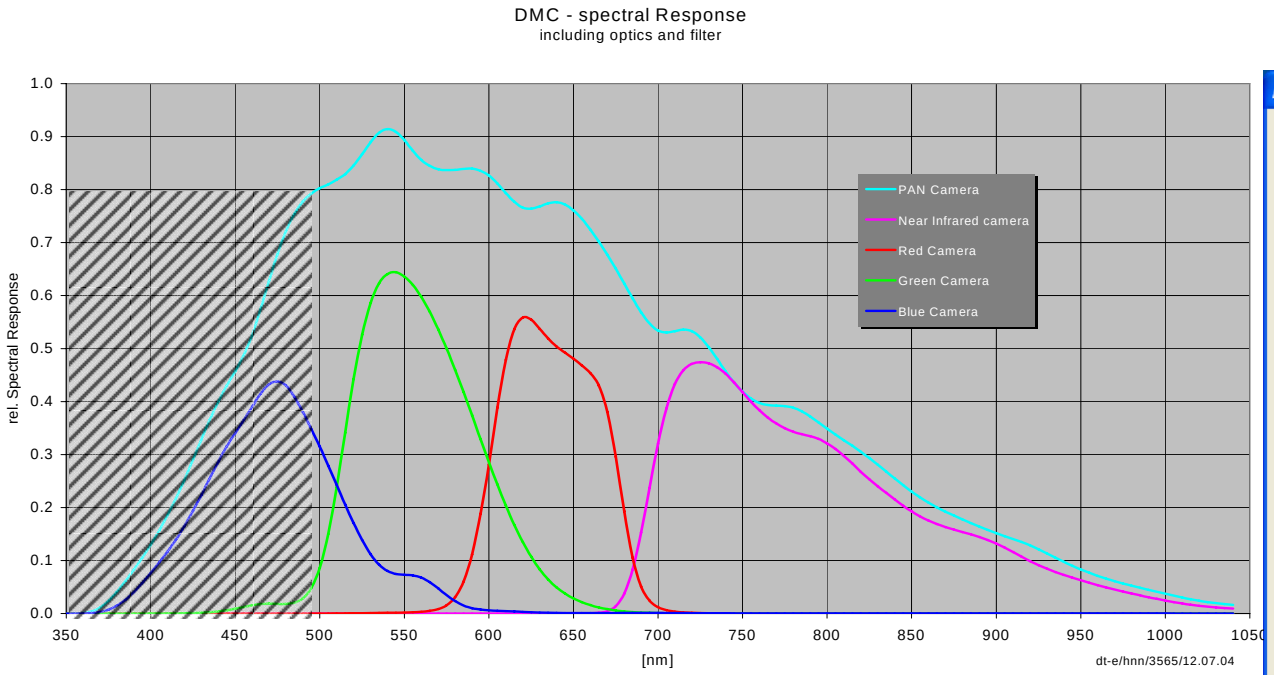
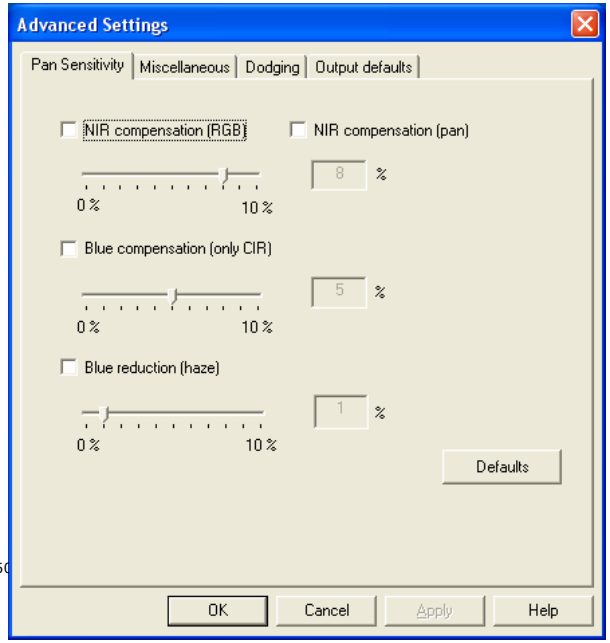
Simple Blue compensation (for CIR products)





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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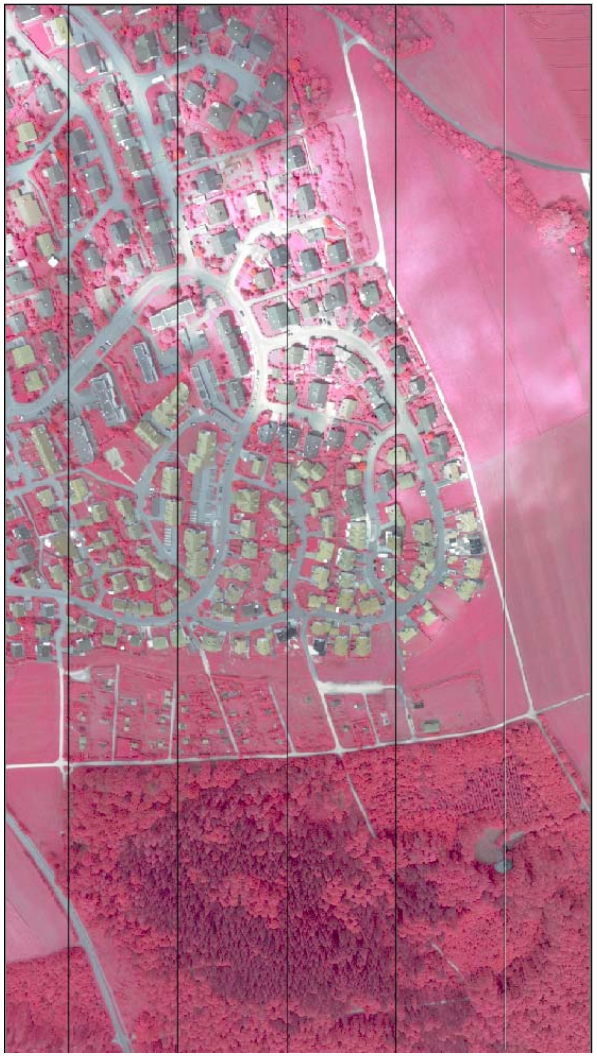
Blue compensation for CIR images



0 5 10 15 20 30

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

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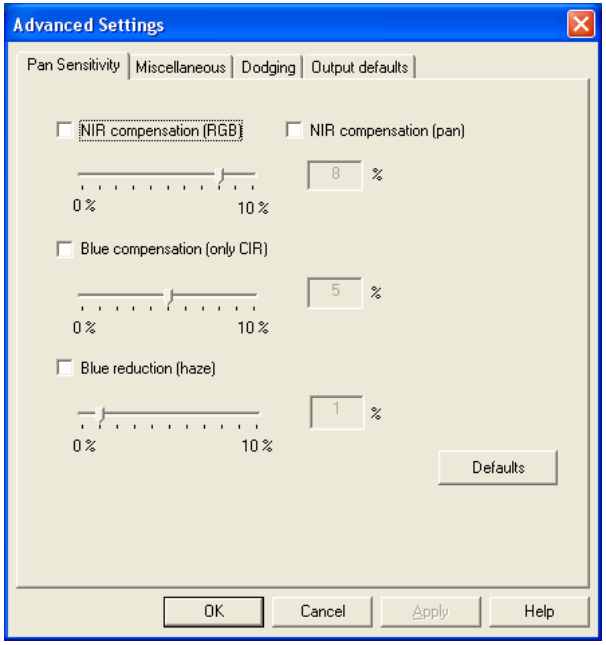
Haze Reduction



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)**
  - Diffusion in the atmosphere (gas)
  - Causes “Blue Sky“
- **Mie-diffusion (Particle > 0.1 λ)**
  - 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, …)

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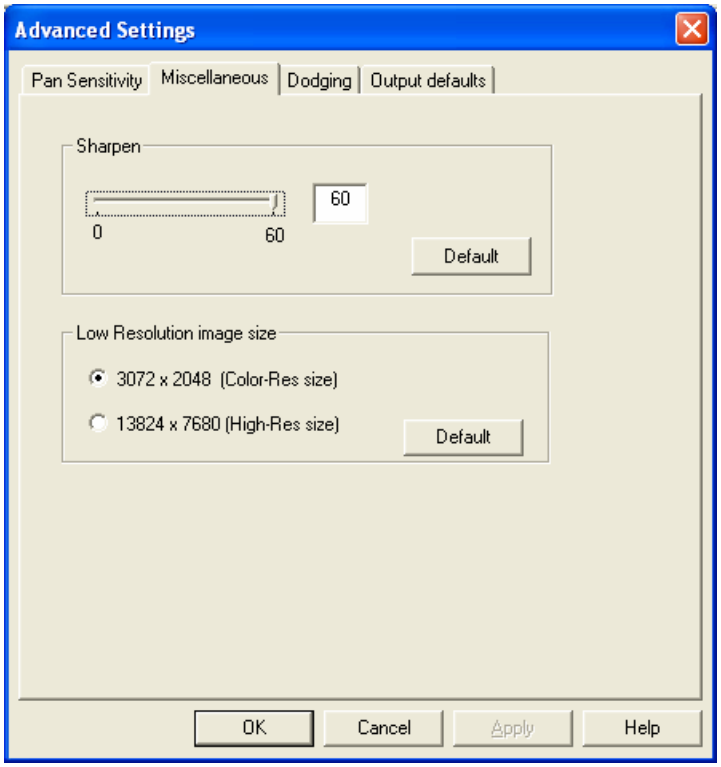
Miscellaneous – Sharpen



Sharpen

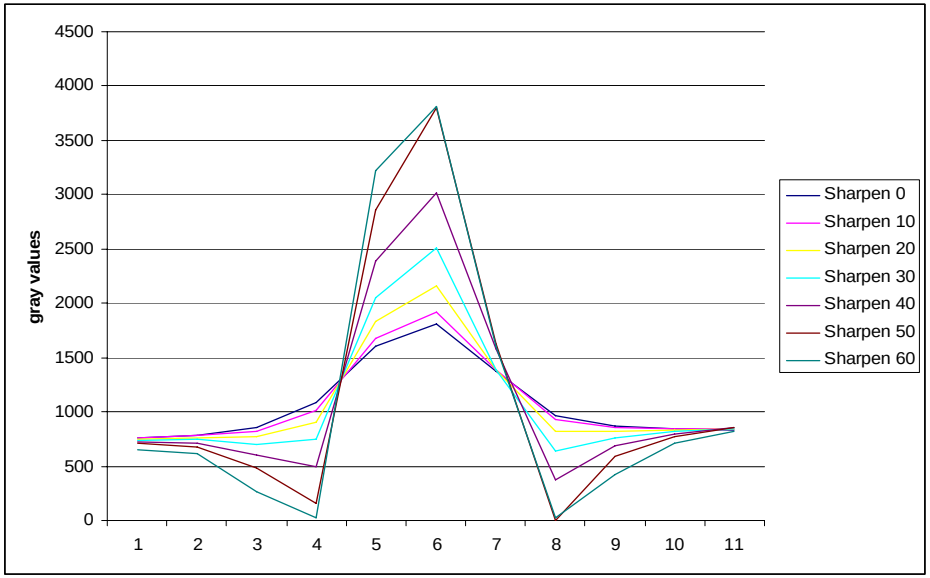
- **5 x 5 separable Filter**
- **Sharpen value set filter coefficient**
- **Filter does not move edges**

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

Miscellaneous – Sharpen example

0 10 20 30 40 50 60



- **Default: No Sharpening**
- **Best Result with Sharpen Value <30**

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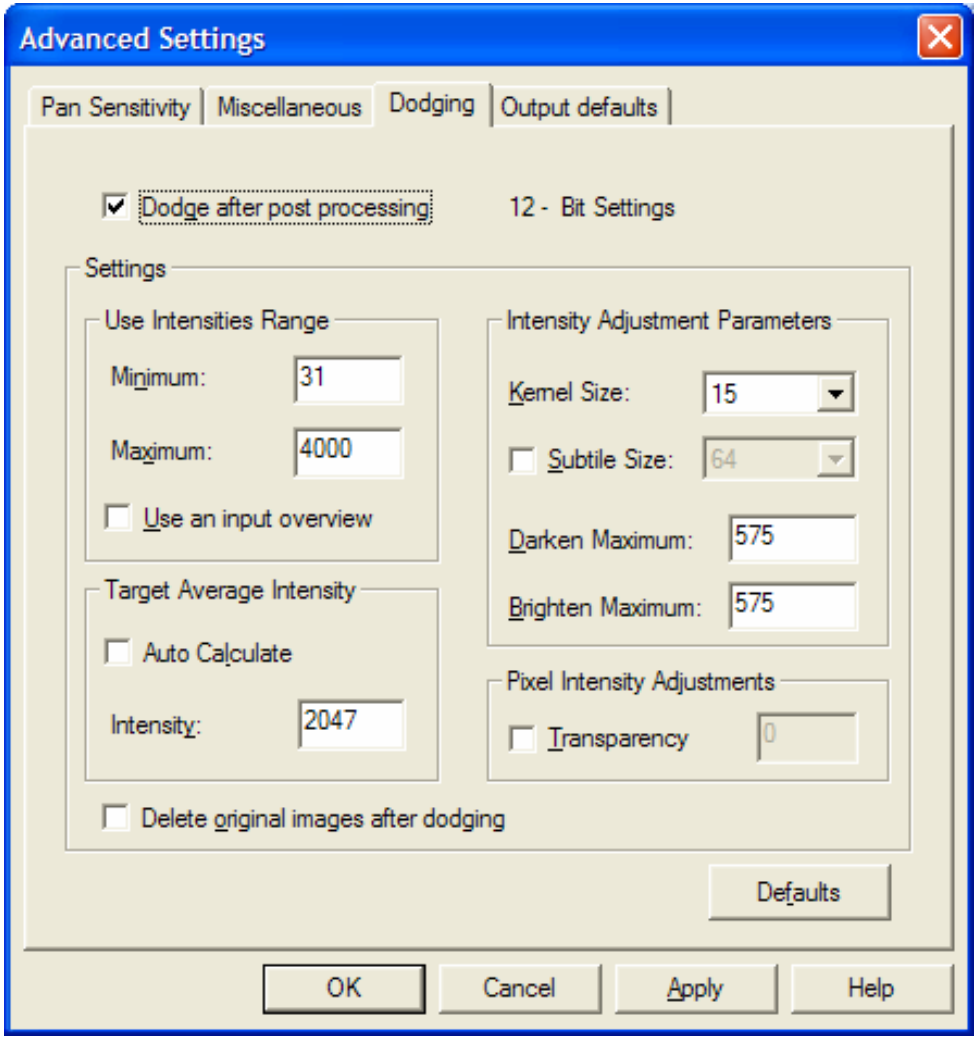
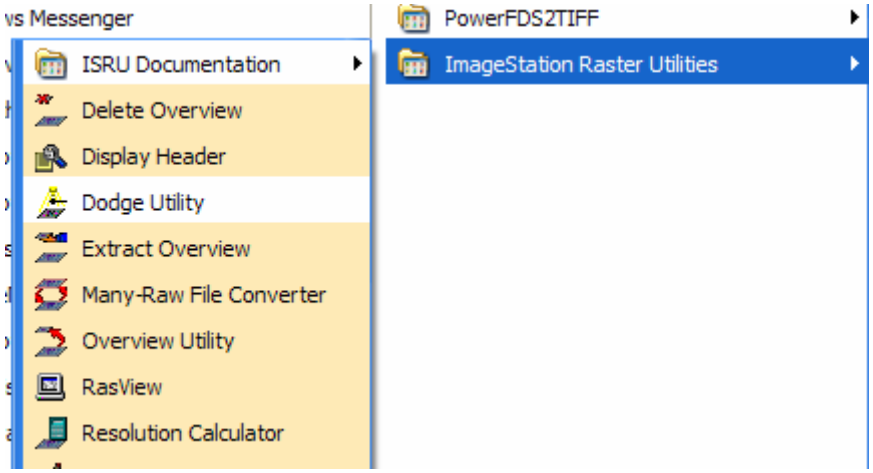
Dodge


Advanced Settings
Pan Sensitivity
Miscellaneous
Dodging
Output defaults
Dodge after post processing
12 - Bit Settings
Settings
Use Intensities Range
Minimum:
31
Maximum:
4000
Use an input overview
Target Average Intensity
Auto Calculate
Intensity:
2047
Intensity Adjustment Parameters
Kernel Size:
15
Subtile Size:
64
Darken Maximum:
575
Brighten Maximum:
575
Pixel Intensity Adjustments
Transparency
0
Delete original images after dodging
Defaults
OK
Cancel
Apply
Help

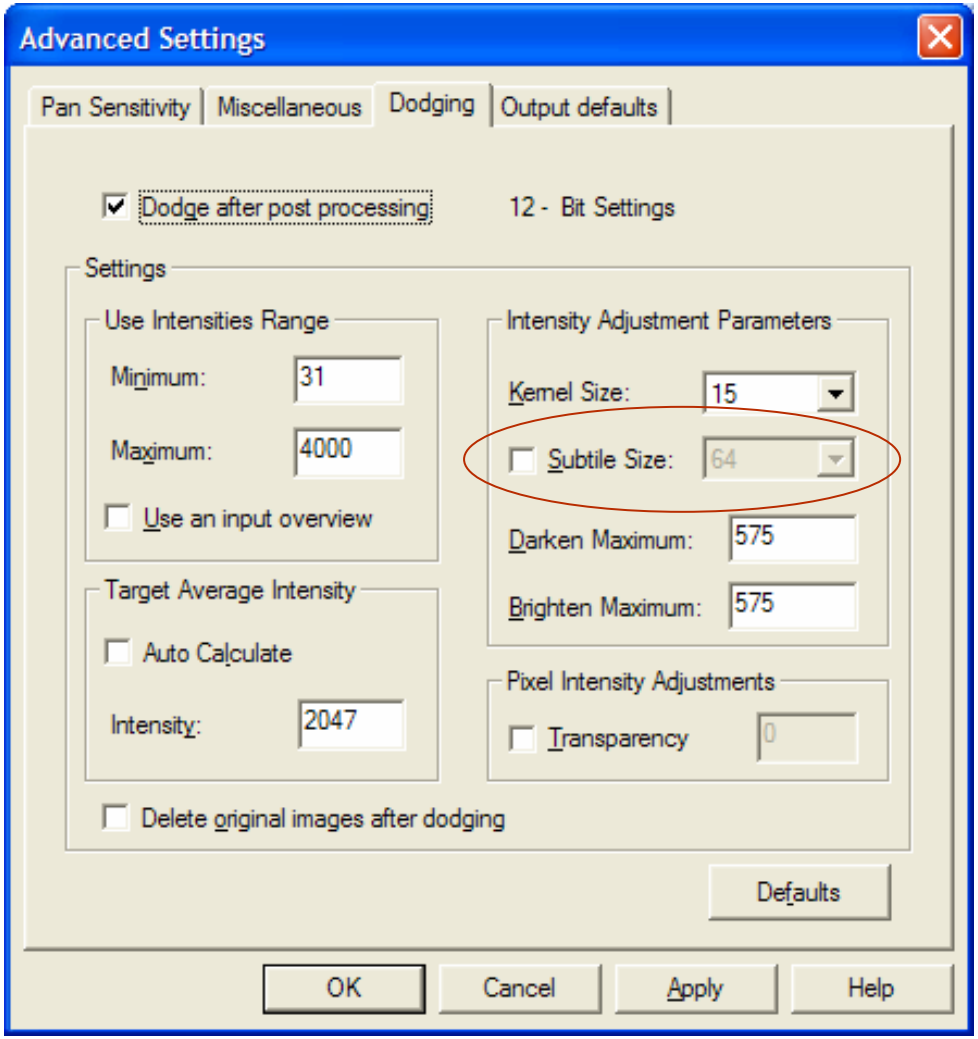
Dodge

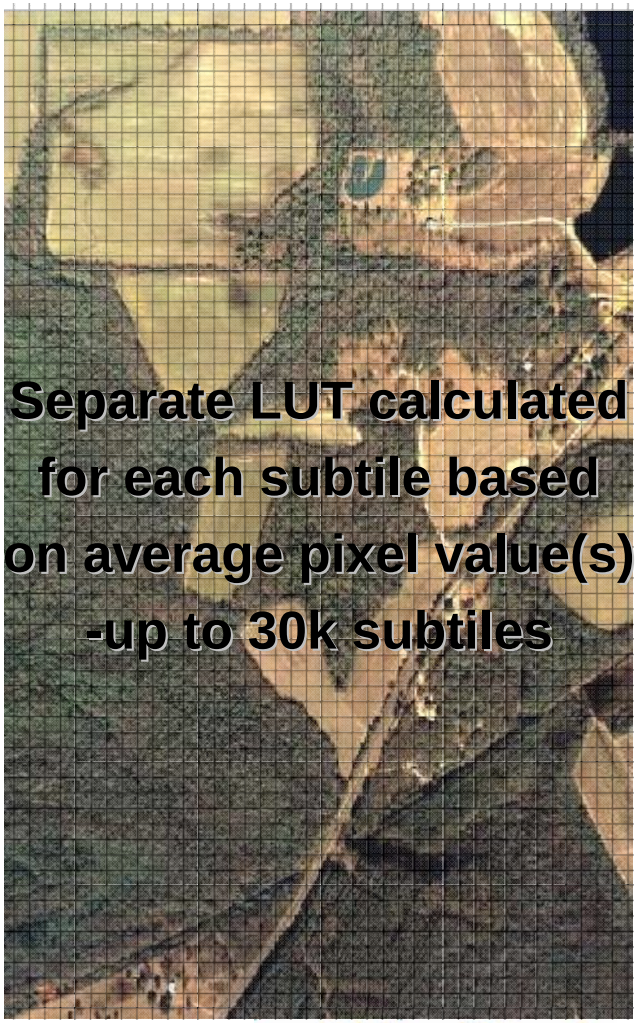
- **Experiment with standalone tool in ImageStation Raster Utilities:**



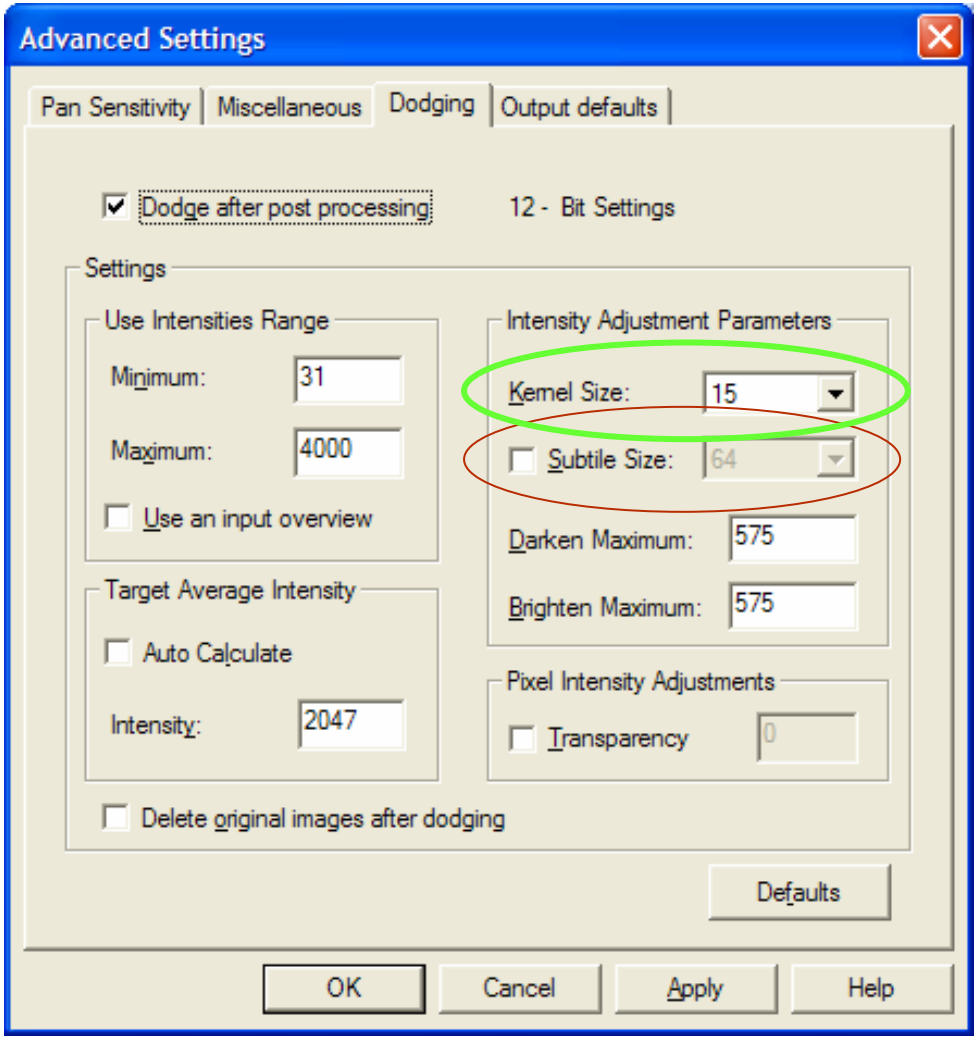
- **Transfer settings to PPS Advanced Settings for production**

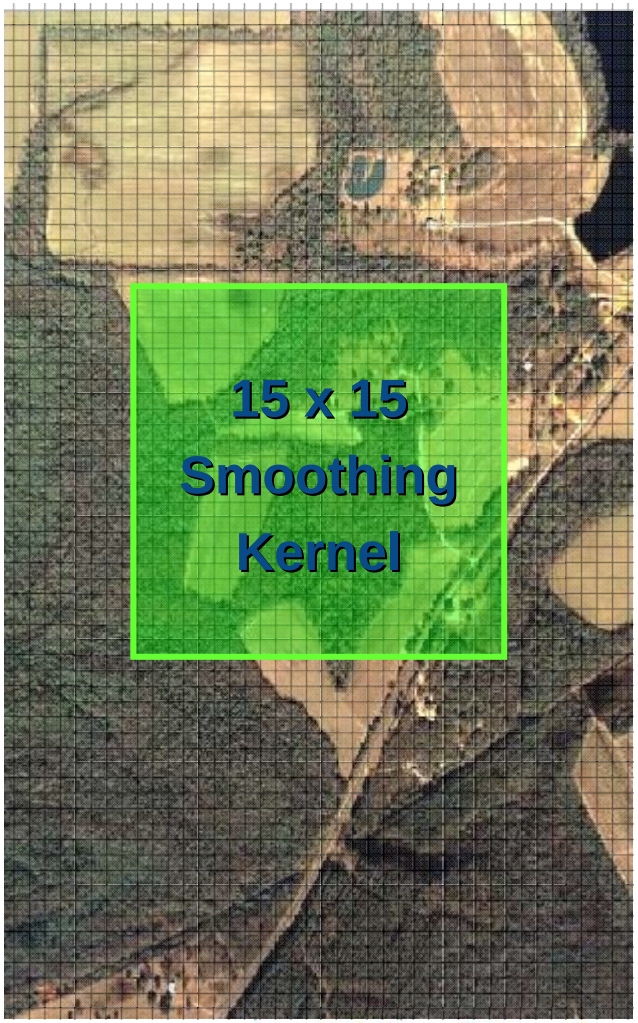
Dodge - Subtile



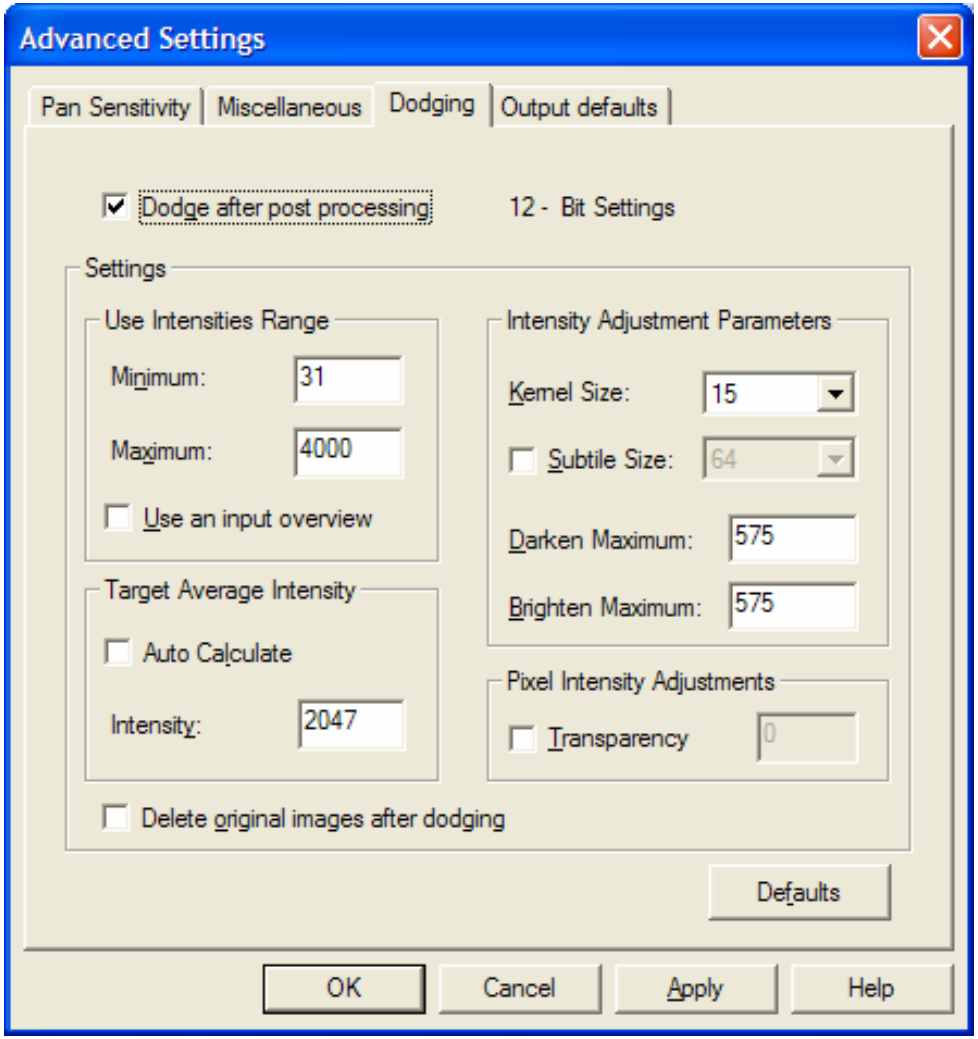


Dodge – Subtile and Smoothing Kernel





Dodge – Intensity settings



- **"Intensities range" excludes e.g. black border from dodge calculations**
- **"Target Average Intensity" sets aimpoint for tone of output image tiles. Auto-calculate 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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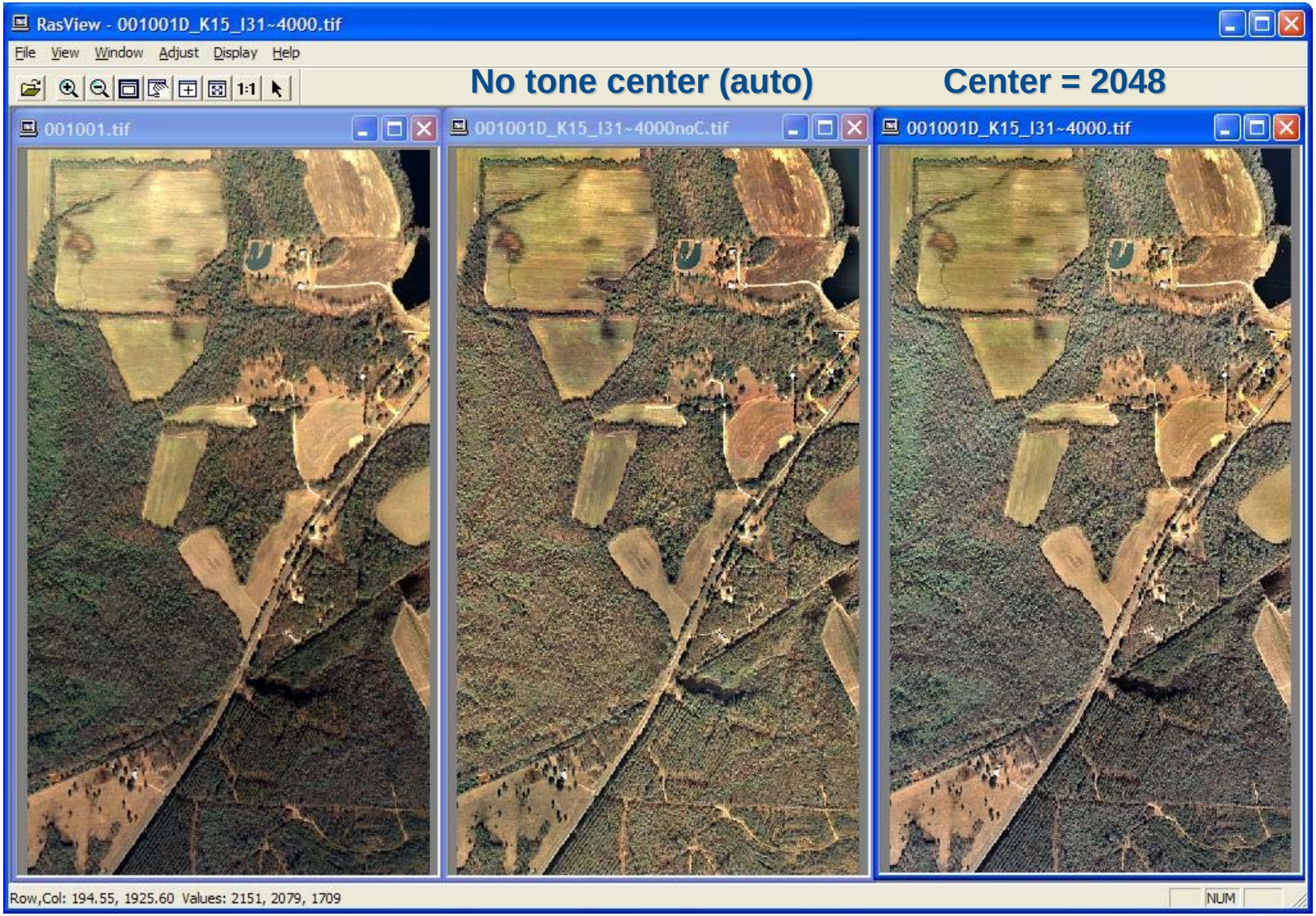
Dodge – example (12-bit DMC image)



Conclusions

- **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?**

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