



## Setting formula output options from within a formula

### Introduction

The Options! dialog can be opened from the menu bar when a formula is active. This allows you to set the formula output interactively:

- the **image type** (numerical format used for the image data) - the default is the same format as the first image in a Bilko set.
- Whether or not to **stack the output** images
- How to handle the **null values** used to represent missing data.

You can also set these output options from within the formula itself. This is helpful if you want to use a formula again and again, and don't want to have remember to do this using Options! from the menu bar. It essential, when running Bilko in 'batch mode'.

### Formula options commands

The following examples show you how to override some of the default **Formula Options** settings from within a Bilko formula document. Each setting applies to all successive statements or until changed by a newer set command.

#### Output image type

```
set output 8u; # 8 bits unsigned
set output 16s; # 16 bits signed
set output 32f; # 32 bit float
set output 0; # reset back to default
```

These are just some example. You can combine the bits [8,16,32] with the flags [u,s,f] to match the output type to any of the types used by Bilko.

#### Stack output images

```
set output stacked; # stack output image
set output single; # don't stack output images
```

A new stack is created after each occurrence of the 'set output stacked' option.

The output stack is by default given the same name as the formula that created it. You can override this behaviour as in the following example:

```
set output stacked "name for stack"; # stack output images in a set called "name for a stack"
```

#### Use special handling for Nulls

```
set nulls on; # this turns null handling on (this is the default if nothing is specified)
set nulls off; # this turns null handling off
```

#### Process Nulls as

```
set nulls in 23.5; # nulls are treated as the value 23.5 in formula calculations
set nulls in nan; # nulls are treated as if they were 'not a number' in formula calculations
```

#### Output Nulls as

```
set nulls out 23.5; # nulls are set to the value 23.5 in the output
set nulls out nan; # nulls are are set to 'not a number' in the output
set null out max; # nulls are set to the maximum value of the output type
set nulls out min; # nulls are set to the minimum value of the output type
```