

Spot 5 Supermode®

Supermode processing offers significantly improved resolution - from 5 to 2.5 m - in the SPOT 5 panchromatic band, and can also yield 2.5 m colour images when combined with SPOT 5 10 m colour images.

Colour or B&W 2.5 m products are ideally suited to mapping, urban planning, agriculture, surveillance, telecom and many other applications, giving users the ability to observe and map vast areas at scales up to 1:10 000. In most cases, they offer a more cost-effective solution than other data sources and image production processes.

Supermode is an image sampling process unique to SPOT 5 that yields a 2.5 m image from two 5 m black-and-white images acquired simultaneously. This new concept was patented by the French space agency CNES.

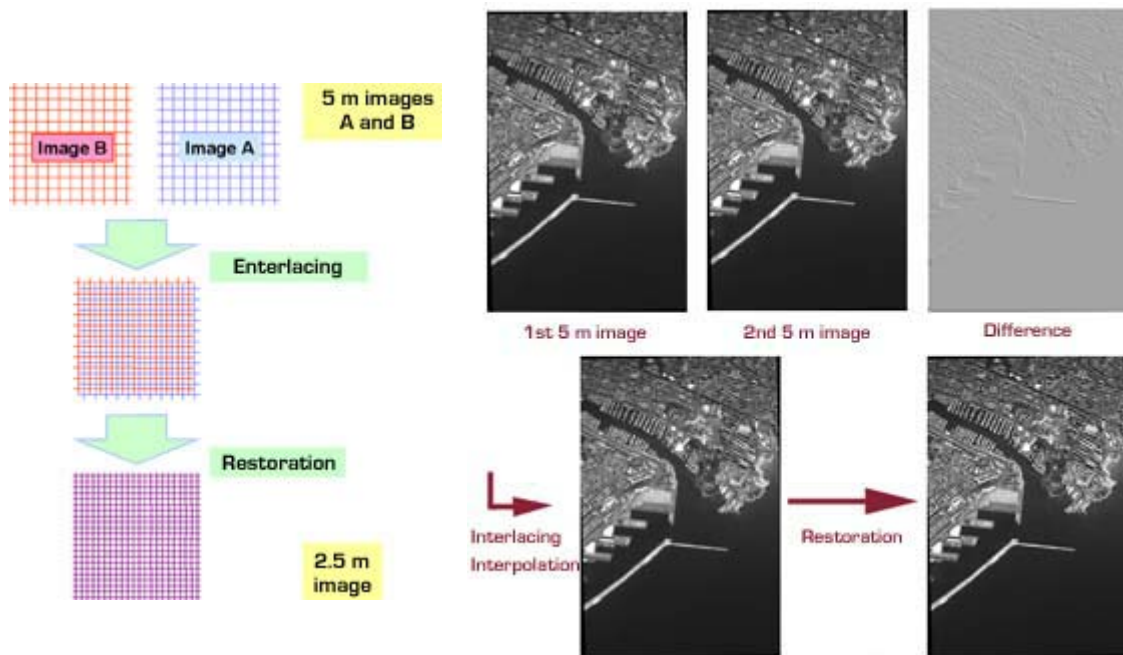
Onboard processing

Imagery is acquired by two dedicated arrays of CCD detectors vertically and horizontally offset by one half-pixel (2.5 m) in the focal plane. The instrument thus generates two 5 m images that are downlinked separately.

Ground processing

Final Supermode products are generated in three steps:

- interpolation which consists in interlacing the two images acquired by the offset arrays and interpolating "missing" pixels to obtain an image that is twice as sharp,
- deconvolution which compensates for blurring introduced by the instrument by applying a filter representing the instrument's inverse transfer function,
- noise removal which reduces the noise in the image (amplified by deconvolution) to an acceptable preset level.



This three-step process produces a single 2.5 m black-and-white image of 24,000 x 24,000 pixels from two 5 m images of 12,000 x 12,000 pixels...