



## **Processing of Cassini VIMS surface images of Titan : spatial and spectral filtering**

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The VIMS imaging spectrometer onboard CASSINI provides hyperspectral images of Titan in 352 spectral channels from 0.3 to 5.1  $\mu\text{m}$ . Infrared channels are particularly useful to map the surface of Titan through narrow atmospheric transmission windows. VIMS can be used for geomorphological studies thanks to the imaging capabilities. The spectral dimension is used to investigate the composition of the surface materials. We focus here on the improvement of the S/N ratio both for surface imaging and spectral studies. The best images in terms of contrast are acquired in the 2  $\mu\text{m}$  window, where the signal from the surface is still strong and the scattering by the atmosphere (an effect decreasing with increasing wavelength) already low enough. However, we show that the mapping of surface features can be significantly improved by using a series of processing steps. we obtained our best results by - 1 coadding several spectral channels (up to 12) in the 7 methane windows, 2- oversampling the actual cube resolution by a factor of four, 3- applying a bilinear interpolation to smooth the pixels, 4- applying an unsharp mask procedure. This unsharp mask procedure is similar to the one used for ISS images. We also perform a spectral filtering using the Minimum Noise Fraction transform. This is particularly useful to improve the S/N ratio of VIMS spectra in the 5 micron region, when low exposure times have been used. Examples of these processing steps will be given.