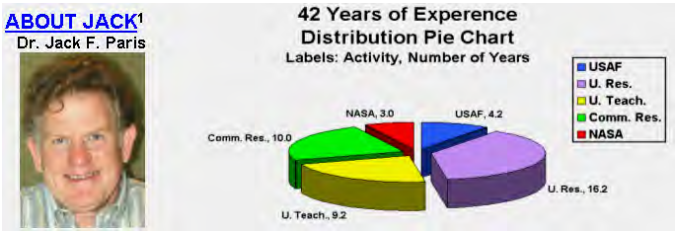
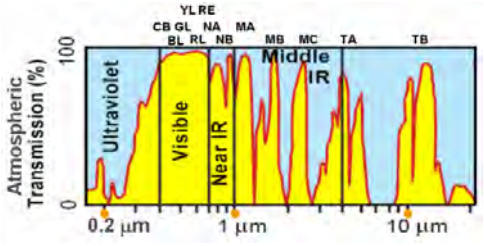
TABLE OF CONTENTS[1]: List of *FAQs* and Related *Scripts*

BIO:



FAQs_A: Remote Sensing Tutorial



Input Landsat 7 ETM+ Natural Color Rasters:
Stockton, CA, September 30, 2001
Uncalibrated image digital numbers (DNs).
Image is too dark … colors are not true.

FAQs_B: SRFI.SML: SML for Standardized Reflectance Factor Index

Output Product Option 1

Option 1 produces a **calibrated SRFI** product that **relates** to the **top of the atmosphere.**

SRFItoa

This product has haze and is too blue.
This product is good for assessing clouds.

Output Product Option 2

Option 2 produces a **calibrated SRFI** product that is **corrected** for the **effects of atmospheric-path reflectance.**

SRFIapc

This product has less haze; but, it is too red.

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FAQs_B: *Concluded*

Output Product Option 3

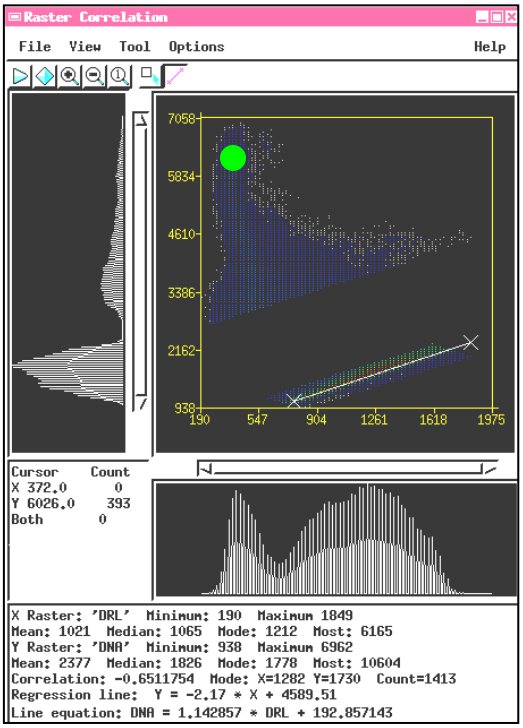
Option 3 produces a **calibrated SRFI** product that is **corrected** for **all atmospheric effects.**

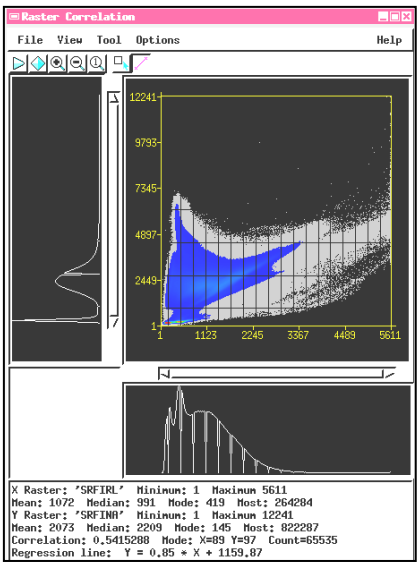
SRFIsfc

This product has no haze. It has true color. It contains accurate estimates of surface reflectance. But, it still contains terrain-based SHADING effects.

FAQs_C: DIAG.SML: SML for Diagnostic Analyses of SRFI Rasters to Isolate Key Biophysical Features: "Pure Pixels" Representing Bare Soil and Dense Vegetation

Color Infrared Display of **Diagnostic Pixels**.





Above
Raster Correlation plot for all pixels.

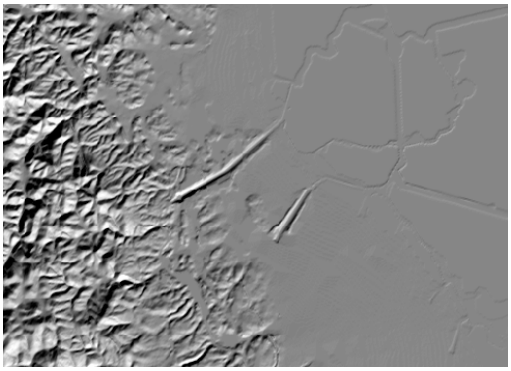
DNA vs. DRL

SRFINA vs. SRFIRL

Left
Raster Correlation plot for diagnostic pixels. This plot includes only identified pure pixels that are likely to represent bare soil or dense vegetation in the scene.

FAQs_D: TERCOR.SML: SML that Corrects SRFI Rasters for Terrain-Shading Effects

A required input raster is a SHADING raster. SHADING is produced by the TNTmips "Slope, Aspect, Shading" Process.



This is a **SRFI** product that is **corrected** for **all atmospheric effects** and is **corrected** for **terrain-shading effects.**
SRFIsfc,tercor

No haze; true color; accurate estimates of surface reflectance; terrain-based SHADING effects have been removed.

Perpendicular Vegetation Index: PVI
This is a **calibrated vegetation index** product based on **SRFIsfc,tercor** values.

Bright tones indicate dense green vegetation: PVI values up to 2000.

Medium dark tones indicate bare soil: PVI values from 950 to 1050.

Black tones indicate water and man-made materials: PVI values from 700 to 950.

PVI is designed mainly for diagnostic purposes.

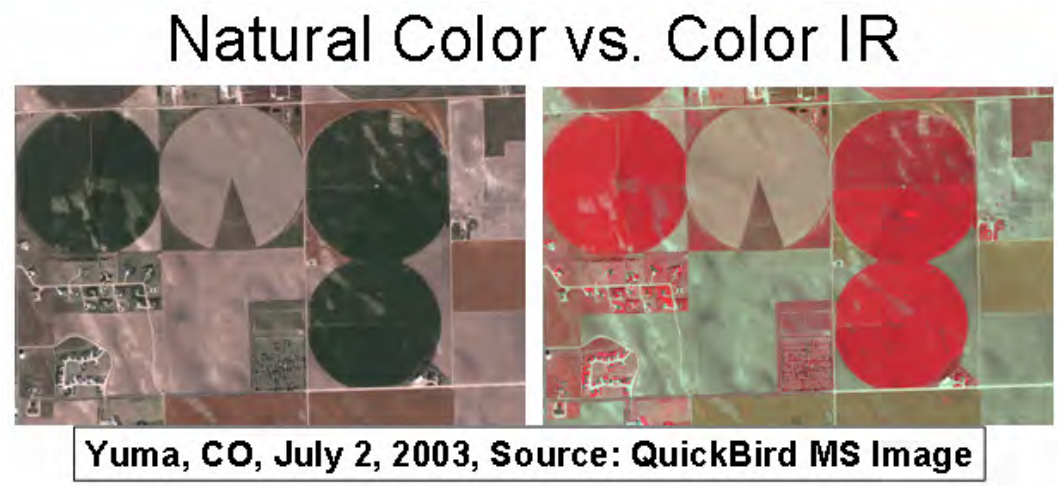
More appropriate, *customized* Vegetation Index rasters can be produced by the author's new Grand Unified Vegetation Index (GRUVI.SML) script.

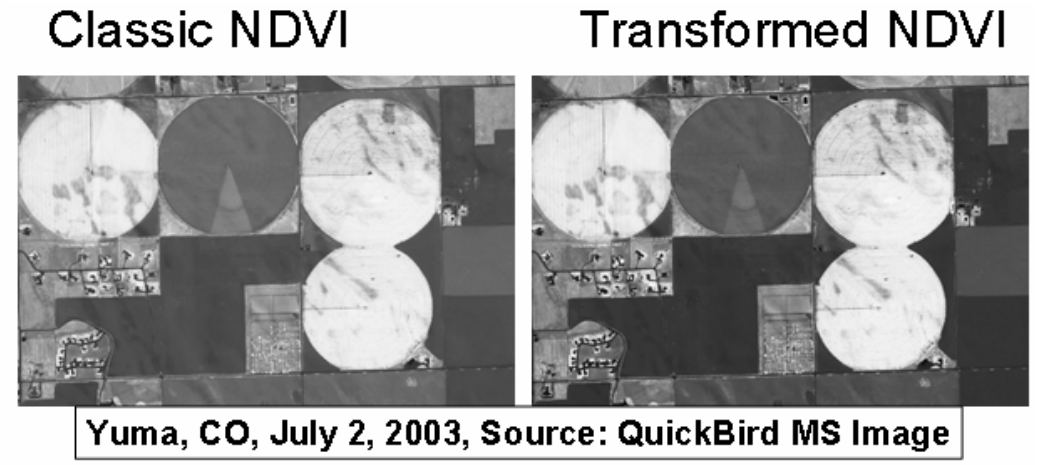
For more information about this script and about other SMLs that are "Under Construction," go to Page TOC 4.

FAQs_E: GRUVI. SML: SML that Makes GRand Unified Vegetation Index Rasters: GRUVI & GRUBI

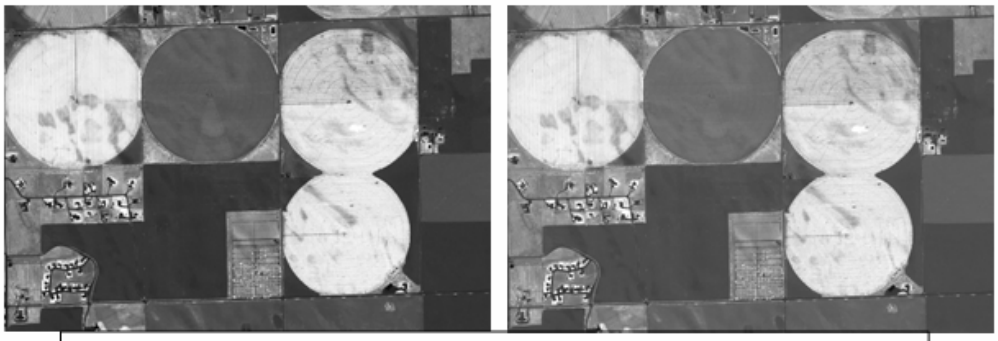
This script will enable the user to extract a customized, calibrated vegetation index from a pair of rectilinear feature-space rasters. The user can elect to transform the rectilinear feature-space rasters to align the Line of Bare Soils (from DIAG.SML) to the diagonal of a transformed feature space. The user can select a dense vegetation point in the rectilinear feature space. GRUVI.SML then produces a GRUVI raster and a GRand Unified Brightness Index (GRUBI) raster. With certain user-selected parameters, GRUVI values will be identical to NDVI, SAVI, TSAVI, PVI, or VIs between these classic VIs. The user can elect to optimize the GRUVI Background Noise Parameter, bmp, by using a pre-selected Test Area that contains an example of an area affected by background noise. One option will be to use Tasseled Cap Greenness (TCG) and Tasseled Cap Brightness (TCB) rasters as input to GRUVI.SML; see Item G below.

Examples of the output of GRUVI.SML are shown below:



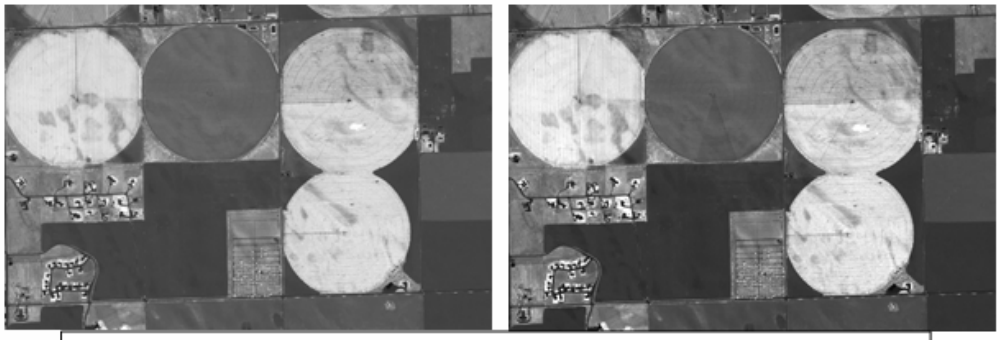


Classic TSAVI Classic SAVI



Yuma, CO, July 2, 2003, Source: QuickBird MS Image

Optimized GRUVI Weighted-Diff VI



Yuma, CO, July 2, 2003, Source: QuickBird MS Image

SML *Scripts* and *FAQs*:

FAQs_F: TASCAP.SML: SML that Makes Customized Tasseled Cap Features Rasters

This script will enable the user to make a guided, customized rotational transformation of a set of n-space SRFI rasters to produce a new set of rasters that are like the classic *Tasseled Cap Transformation* products that have been developed for Landsat and IKONOS imagery. TASCAP.SML differs from the classic case as follows:

- **Instead of image DNs, TASCAP.SML uses calibrated SRFI rasters. This puts TASCAP.SML on a firm, quantitative foundation that is the same for all imagery sources.**
- **The user can select key biophysical "points" in SRFI n-space to guide the TASCAP process. While most users will opt to select these "points" to achieve traditional TC Greenness (TCG), TC Brightness (TCB), and other TC components (e.g., "yellowness," "wetness," and even "non-such"), it will be possible for the user to develop exotic TC rasters that serve to isolate the spectral signatures of a target biophysical class vis-à-vis other sources of biophysical "noise."**

FAQs_G: WATER.SML: SML that Merges Water Features with Land Features into a Single Enhanced Image

This script will merge enhanced natural-color images of water-covered areas with enhanced color infrared or panchromatic images of land areas to achieve one useful image for manual interpretation purposes. A future version of this SML will also include pansharpening of the colors in both the water and land areas using pre-conditioned PAN imagery. For the color infrared land features, normal PAN will be used. For the natural color water features, a modified version of PAN called visible-region-PAN (VRP) will be used.

FAQs_H: OBJECT.SML: SML that Finds Agricultural Fields and Make Related Polygons

This script will identify simple scene objects such as agricultural fields. This will be a poor man's spatial feature recognition SML that produces polygons. With these polygons, pixel-level spectral properties, represented by SRFI or GRUVI or TASCAP raster values, can be associated with each spatial object (each polygon).