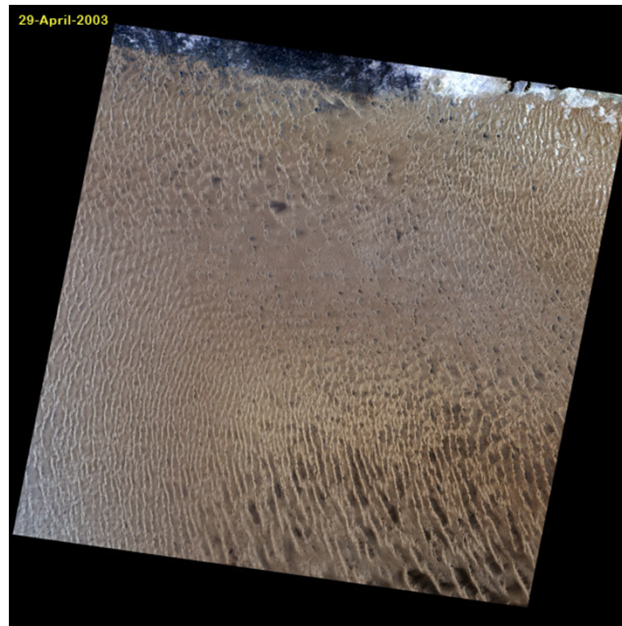


CEOS WGCV IVOS)



**Libya 4
Community Workshop**

**Nigel Fox
CEOS IVOS chair**



IVOS



IVOS MISSION statement

Mission

“To ensure high quality calibration and validation of infrared and visible optical data from Earth observation satellites and validation of higher level products”

IVOS: Vision



To facilitate the provision of 'fit for purpose' information through enabling data interoperability and performance assessment through an 'operational' CEOS coordinated & internationally harmonised Cal/Val infrastructure consistent with QA4EO principles.

To Include:

- *Pre-flight characterisation & calibration*
- *Test – sites*
- *Comparisons*
- *Agreed methodologies*
- *Interchangeable/readable formats*
- *Results/metadata - databases*

Need Key Infrastructure to be established and maintained independent of sensor specific projects and/or agencies

IVOS



Post launch vicarious Cal/Val:



Critical for all EO optical missions to facilitate:

- **Interoperability**
- **Bias assessment/removal**
- **Sensor drift monitoring/correction**
- **End to end performance check**

CEOS strategy: evaluate, consolidate & establish ‘best practise’

Test sites / ‘methods’ with documented procedure & uncertainty

- **Different approaches optimum for different purposes**
- **Need to establish ‘degree of equivalence’ between similar &**

different methods & consistent traceability



Test sites

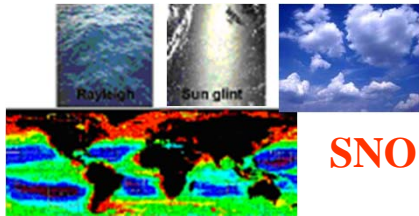
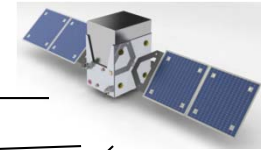
- **Aim for relatively few to encourage multi-satellite data collection**
 - **~5 -10 autonomous instrumented/ground characterised**
 - **6 psuedo-invariant deserts (only observed from sats)**
- **Need Site characteristics**
- **atmospheric variability**
- **multiple acquisitions**

Have wide CEOS agency support & recognised as core focus and achievement for Cal/Val

Conceptual operational network



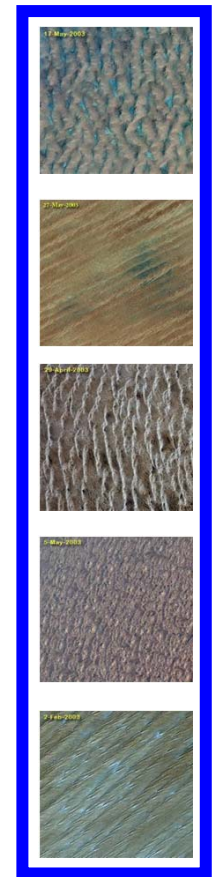
Absolute sensor



Linked by Satellite
(Reference sensor
/ensemble)

Database / results
- SADE
- Dimitri
- CEOS

Pseudo-Invariant Sites
Long term trends
Stability Monitoring



Instrumented Sites (LANDNET)

IVOS
Radiometric Gain



IVOS 2010 (JRC) Workshop led to establishment of WGs to consider 'best practise' / relative consistency/applicability of different methodologies
CEOS and WMO-GSICS



WGs on methodology and data format

- **WG1: Use of Deep Convective Cloud**

Lead: D Doelling (NASA)

Participant:

**Call for participants
& leads still open.....**

- **WG2: Rayleigh Scattering**

Lead: P Henry (CNES)

Participant: M Bouvet (ESA)* , L Bourg (ACRI)

- **WG3: Sun Glint**

Lead:

Participant: S Lavender (ARGANS)

- **WG4: Use of fixed ground sites e.g. SADE, DIMITRI, Landnet, invariant desert sites (but not requiring ground measured data)**

Lead: X Briottet

Participant: D Smith (RAL), P Henry (CNES),
M Bouvet (ESA)*, L Bourg (ACRI)

- **WG5: Simultaneous Nadir Observation**

Lead:

Participant: S Kumar (ISRO), S Saunier (Mag)

**WORKING GROUPS NEED INPUT FROM OTHER AGENCIES TO ENSURE
HARMONISATION AND BEST PRACTISE/EXPERTISE**



CEOS IVOS Working Group 4: Fixed Sites

Methodology intercomparison initial results summary

Chair: (Marc Bouvet)



CEOS/IVOS WG4 (Use of Fixed Sites) comparison Protocol



- ❖ A reference dataset will be produced by ARGANS and CNES consisting of extractions in the CNES SADE format, from 3 sites, 5 sensors and over 4 consecutive years.
- ❖ Validation of dataset by sample comparison of independent extractions from SADE and DIMITRI - *Key activity initially differences found*
- ❖ The common reference dataset will consist of TOA reflectances averaged over a region of interest. The reference dataset will consist of cloud screened data.
- ❖ No further cloud screening should to be applied by participants to focus the comparisons on the core of the methodologies rather than the cloud screening approach.
- ❖ Each participant will systematically apply their method to the reference dataset and produce a set of standardised results.

Libya 4
Niger 2
Dome-C

Polder-3
AATSR
MERIS
VGT 2
MODIS-A

2006
2007
2008
2009

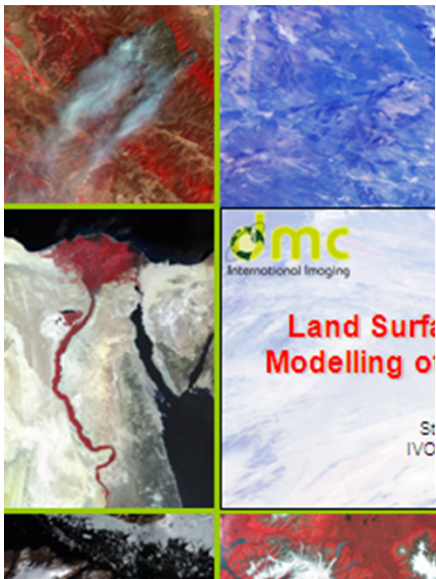
ACRI/RAL/ONERA/ESA:
DIMITRI

CNES: SADE
(Desert methodology)

RAL: Drift Monitoring.

VITO: RTM simulation
over Deserts

Sensor to se



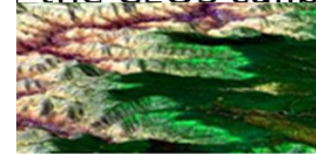
Monitoring Stability of VIIRS Radiometric Response

Slawomir Blonski, Changyong Cao, Sirish Uprety, and Xi Shao

NOAA / NESDIS / STAR

Presented at the CEOS IVOS-24 Meeting, Sioux Falls, South Dakota, May 8-10, 2012

Terra ASTER at the CEOS calibration sites



4
in Sioux Falls



O (GSJ),
A (ITRI),
(GSJ)

il and Science Technology

Absolute Calibration of Optical Using Pseudo Invariant Calibrators (PICS) Initial concepts

Dennis Helder
Nischal Mishra
Sandip Shrestha

Image Processing Laboratory
SDSU



South Dakota State University
Image Processing Lab

IVOS

Toulouse, France
April 13 – 15, 2011

Gyanesh Chander (SGT/USGS EROS)
Email: gchander@usgs.gov



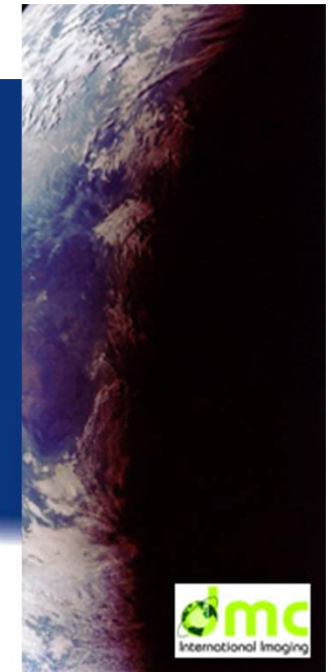
CENTRE NATIONAL D'ÉTUDES SPATIALES

ETM+ vs Terra/MODIS Cross Calibration over Desertic Sites &

Accuracy Assessment using Hyperion Data

Patrice Henry, Bertrand Fougne, Sophie Lacherade,
Philippe Gamet, Denis Blumstein - CNES
Thomas Colin - CS

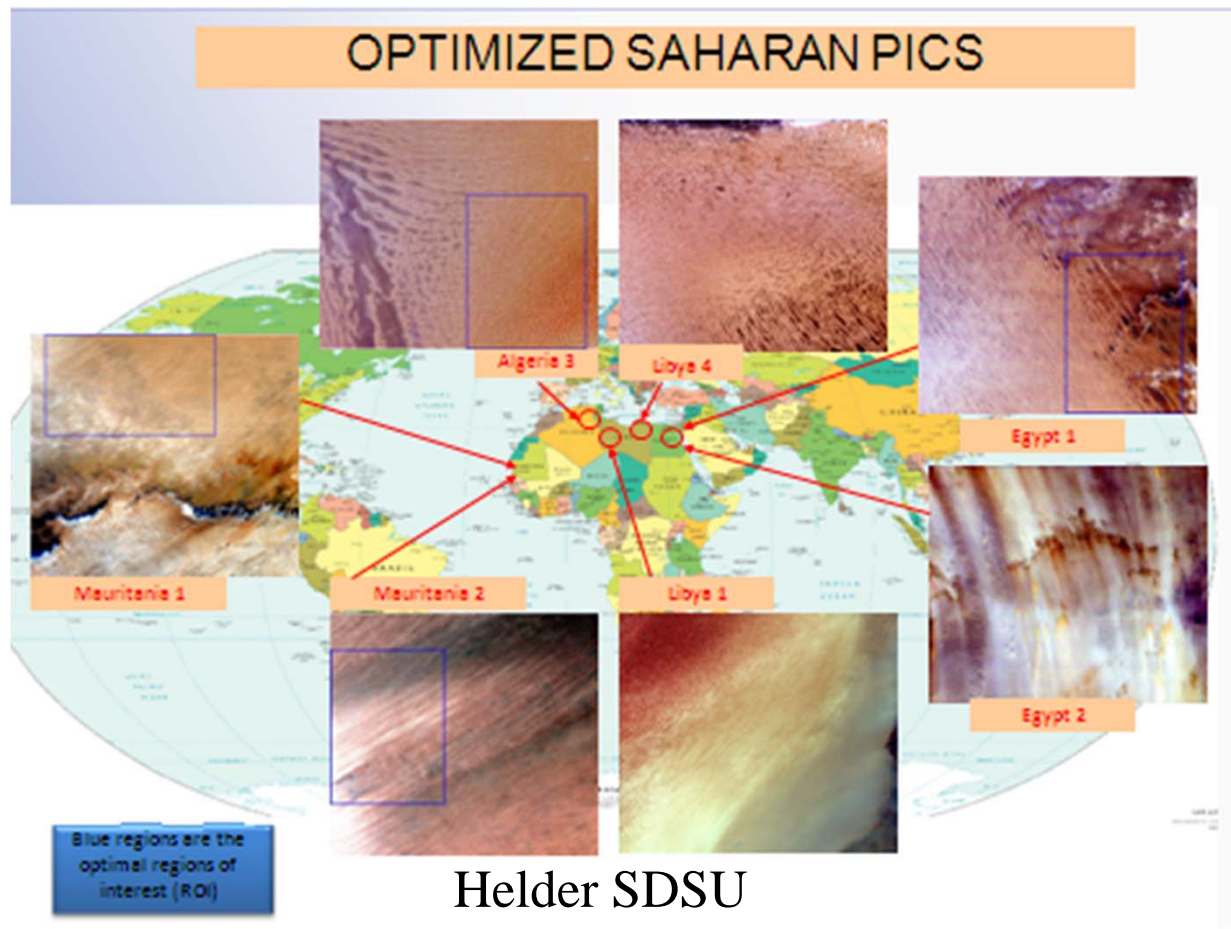
Gyanesh Chander - USGS



CEOS IVOS workshop on: Libya 4 (Oct 4-5 2012 CNES Paris)



**CEOS 'non-instrumented' Test sites for Stability
and sensor to sensor cross-comparison**



- ~25 attendees
- Working meeting
- Focus on one site
- Share ideas
- Different sensors
- Cal/comparison methods
- Site characteristics
– observed/modelled
- High and medium res
- **What can & might be achievable?**

Future tools/infrastructure



- **CEOS / GSICS access to SADE database of CNES - long time base multi-sensor acquisition data over key test sites**
- **DIMITRI data-base and comparison tool - open access via Cal/Val portal**
- **‘Test data set and protocol’ - open access via Cal/Val portal**
- **CEOS COVE - Acquisition/comparison planning and past opportunities tool**

CEOS WGCV plenary 35 ISRO Sep 23-28 2012

- **USGS Sensor cross-comparison tool and acquisitions data base**
- **WGISS CWIC tool – IDN linked search/find and order tool for multi-sensor data granules – temporally & spatially defined**
 - **User interface for CEOS test sites now under development**