

Working Group on Calibration and Validation (WGCV)

Infrared Visible and Optical Sensors (IVOS) subgroup: #31

Nigel Fox NPL (with UKSA support) Perth, 2019



Introductions



20 seconds:

Name Organisation Particular specialism / interest





Objectives of meeting



- Information exchange between agencies
 Up and down through CEOS
- Reporting on progress on projects
- Interactions/activities in other related groups
- Updates on work-plan / new project ideas/collaborations
- Communications
- Responses to WGCV: Review GHG paper, ARD support, CalVal portal (site naming convention), Summary of Status of vicarious Cal, Terminology



Wednesday Mar 27th

IVOS Plenary Meeting

08:30A M	Registration/Entrance Logistics			
09:00	Welcome by CSIRO hosts	(CSIRO & GA):		
09:30	IVOS chair Intro	Nigel Fox (NPL)	Meeting intro Brief Introductions Objectives Agenda Actions Terms of reference IVOS report to CEOS WGCV 42/43	
10:15		Break		
10:45	CEOS WGCV and CEOS in	itiatives		
10:45	Introduction and discussion on how IVOS can and should contribute	Cindy Ong (WGCV chair, CSIRO)	CEOS & CEOS WGCV workplan - WGCV chair report - Carbon task force actions?	
11:15	Analysis Ready Data	Medhavy Thankappan Anderson (GA)	Intro and Discussion on ARD CARD4L and how we can help review compliance etc	
12:00	Pre-flight/on-board Cal workshop planning	Fox	Update	
12:10	Cal/Val portal CEOS website	Steffen Dransfield	Update and discussion inc site hierachy	
12:40		Lunch		
14:00	Australian activities			
14:00	Pinnacles site	Cindy Ong/lan Lau/Peter (CSIRO)	Instruments and site characteisatoin	
14:40	Surface reflectance validation in Australia	Byrne/Broomall (GA)	Presentation on activities and good practices	
15:00	Ocean Colour activities in Australia	David Antoine (Curtin Univ)		lation

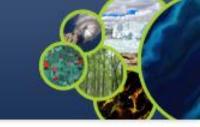


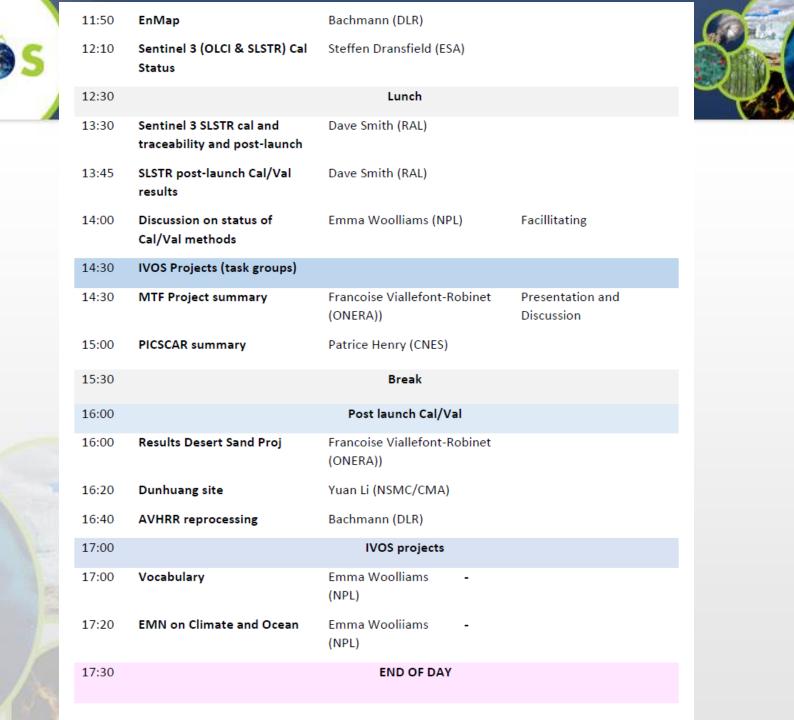


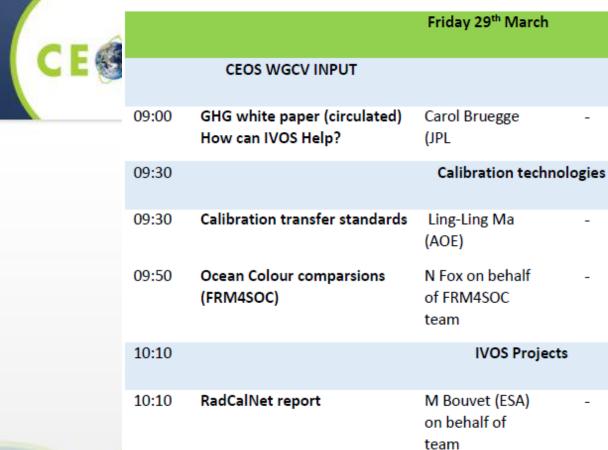
15:20

15:40	Sensor	radiometric calibration	/monitoring methods	(
15:40	•	Yigit Aytak (SSAI/NASA)	Detector based Pre-flight cal techniques	
16:00		Marc Bouvet (ESA)/Emma Woolliams (NPL)	Ground based radiometric cal of moon	
16:20		Kevin Turpie (UoM/NASA)) Rem	Lunar calibrations by Aircraft	
16:40	DIMITRI toolbox advancements	Alhammoud (Argans))	Use with S2 and S3 (remote)	
17:000		Metrology me	thods	
17:00		Emma Woolliams (NPL)		
17:20.		End of day	1	
		Hosted DINNER TBD ~1	8:00	
		Thursday 28th Marc	h	
09:00	Sensor to Sensor to surfac	e cross-comparison/Vali	idation	
09:00	BRDF validation of MODIS data over Railroad Valley	Carol Bruegge (JPI	.) Inc discussion	
	Plus solar irradiance			
09:40	Intercomparison of GEO an LEO using RadCaTSA	nd Jeff Czapla Myers	(UoA)	
10:00	On Orbit performance of VIIRS	Xiong (NASA)		
10:20	Sensor to Sensor to surfac	e cross-comparison/Vali	idation	
10:20	Aster: RadCalNet sites	Hirokazu Yamamo	to (AIST)	
10:40	DESIS on board ISS	Bachmann (DLR)		
11:00		Break		
11:20	USGS EROS CalVal Update landsat, PICS, Radcalnet	inc Cody Anderson (U	SGS)	lidation

Break







- 10:40 Break **Review of Actions** 11:00 -Recommendations -
 - Future topics -
 - Work plan -

Next meeting

AOB

12:00

Friday 29th March

N Fox

End of Meeting

Carol Bruegge Facilitated discussion _



Summary of activities

- IVOS 30 @ ESTEC,Noordwijk, Holland. hosted by ESA Mar 2018
- 24 agency/orgs represented
- 30 attendees + 7 remote
- Most themes and topics (work-plan discussed or summarised
- 4 th MTF workshop (Mar 2018)
- ~ PICSCAR webex (Joint GSICS)
 - (several)



Special Projects:

- RadCalNet team met Mar 2018 Various telecons
- O-colour workshop Oct 2018
- Terminology task team established



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"



Terms of Reference



- 1. Promote international and national collaboration in the calibration and validation of all IVOS member sensors.
- 2. Address all sensors (ground based, airborne, and satellite) for which there is a direct link to the calibration and validation of satellite sensors;
- 3. Identify and agree on calibration and validation requirements and standard specifications for IVOS members;
- 4. Identify test sites and encourage continuing observations and inter-comparison of data from these sites;
- 5. Encourage the preservation, unencumbered and timely release of data relating to calibration and validation activities including details of pre-launch and in flight parameters.
- 6. In the context of calibration and validation encourage the full consideration of "traceability" in all activities involved in the end-to-end development of an EO product including appropriate models and algorithmstation

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.

- Pre-flight characterisation & calibration
- Test sites
- Comparisons
- Agreed methodologies
- Community Good Practices
- Interchangeable/readable formats
- Results/metadata databases

Key Infrastructure to be established and maintained independent of sensor specific projects and/or agencies Working Group on Calibration and Validation

Work plan



- Structured into themes and led by 'champions' (Plus specific projects)
 - Look to develop community good practises
 - Organise comparisons
 - Shared learning (research activities)
 - Shared infrastructure / tools / Methods
 - Recommendations as needed
- Land surface reflectance
- Ocean colour (link to IOCCG, VC-OCR etc)
- Czapler Myers (U of Arizona USA)
 - Zibordi (JRC, EU) & Murakami (JAXA JPN)
- Surface Temperature (link to VC-SST, GHRSST) Corlett (U of Leicester, UK)
- Geo spatial image quality

- Helder (SDSU, USA) & Viallefont (ONERA F)
- Atmospheric Correction (Link to AC subgroup) Thome (NASA, USA)
- RT codes (context of IVOS use in calibration) ? Working Group on Calibration and Validation

Specific projects/cross-cutting

- RadCalNet
- PICSCAR (with GSICS)
- SST/LST cross-comparison (+ VC-SST & LPV Fox (NPL, UK) (instrument Cal for LST)
- O-Colour Vicarious Cal comparisons Fox (NPL, UK)
- Vocabulary

- Woolliams (NPL, UK

- Others in progress/development/related
 - Establishing a CEOS Reference and method of use for L1 radiometric interoperability (with GSICS) (including potential tools/databases)
 - Good practise for convolving spectral data sets (solar/surface/sensor bandwidth) Selection of Reference Solar irradiance spectrum(CEOS WGCV (sub-groups) & GSICS)
 - Comparison of Rayleigh and Sun-Glint methods
 and Validation

- Bouvet (ESA)
- Henry (CNES, F)

IVOS Recommendations/info to CEOS WGCV 43/44

R.2018-1	CEOS-WGCV-IVOS proposes to WGCV that validation of surface reflectance be the subject of either a new task force or the extension of ACIX.
R.2018-2	CEOS-WGCV-IVOS proposes to WGCV the holding of a workshop on pre-flight calibration of optical (VIS, SWIR, TIR) sensors in Europe in late 2018 or 2019 that is organised around specific calibration challenges and which is focussed on calibration engineers from Agencies and industry, while also involving the Science PIs of key missions.



CEGS

CEOS Minutes and Actions of IVOS 30

	ACTION				
	number	Activity	Date		
	AP.2018-1 Carried over AP.2017-2	Nigel Fox to ensure we hold a half to one day workshop to evaluate state-of the art on sensor L1 interoperability and the different methods used for comparisons to prioritise a work plan	Next IVOS		
	AP.2018-2 carried over AP.2017-4	All to identify where possible simple examples at the application level (typically 3 or higher) where the impact of Cal/Val (at Level 1) can be demonstrated particularly quantitatively. Nigel Fox to liaise with Steffen Dransfeld to get an appropriate location in the CalVal wiki to store these "stories"	Next IVOS		
	AP.2018-3 carried over AP2017-12	Emma Woolliams and Patrice Henry to explore requirements for the uncertainty analysis for modelling-related case studies (BRDF or spectral modelling of PICS).	Next IVOS		
	AP.2018-4	Following suggestion from Mike Rast, Steffen Dransfeld and Nigel Fox to explore prospect of an end-to-end benefit of Cal/Val for SST (Linking FRM4STS and SLSTR/ATSR+ series)	Next IVOS		
	AP.2018-5	Nigel Fox to ensure there is a link on the CalVal portal to the new recommended solar spectrum	WGCV 43		
	AP.2018-6	Jeff Czapla-Myers supported by Cody Anderson to scope by WGCV 43 meeting the goals of the new task group on surface reflectance validation as a set of bullet points and then to send this to IVOS to get volunteers to join the task group. After this to hold an initial teleconference for the task group.	WGCV 43		
	AP.2018-7	Nigel Fox to discuss within IVOS who should represent IVOS at the IGARSS meeting of the new IEEE standardisation group.	By IGARSS 2018		
	AP.2018-8	Anyone interested to propose potential locations/dates for preflight cal workshop	By September 2018		
	AP.2018-9	Nigel Fox to provide to WGCV the IVOS perspective on priorities and structures for the preflight calibration workshop	WGCV meeting April 2018		
	AP.2018-10	Francoise Villefont-Robinet to send Sebastien Wagner, Tom Stone and NOAA contacts (GSICS lunar group) a summary report of IVOS work on MTF so that this can connect to the lunar calibration of MTF and to suggest a cross-comparison of approaches.	Next IVOS		

Minutes and Actions of IVOS 30

CEÓS

	AP.2018-11 AP.2018-12		Sebastien Wagner to invite Aime Meygret to attend a GSICS meeting to present the CNES lunar calibration work at a GSICS meeting.	GSICS meeting
			Anyone interested to contact Lingling Ma about attending the workshop in August/September 2018 on the Chinese radiometric calibration activities	April 2018
	AP.2018-13 Anyone interested to provide Vincent Leroy with any requirements for RT code development		April 2018	
AP.2018-14		'b	igel Fox to support the organisation of CEOS/GSICS workshop on benchmark/cal reference sensors in Europe in 2019 and make 70S membership aware.	Next IVOS
AP.2018-15			nyone interested to volunteer as candidate to be IVOS epresentative in WGCV test site approval panel.	WGCV 43
AP.2018-16		 Following successful review of uncertainty documentation by RadCalNet, Marc Bouvet on behalf of the RadCalNet WG to submit recommendation to accept the sites to the new Test Site Admissions Panel and then to open the portal to the public, linked through the CEOS WGCV CalVal Portal. 		Next IVOS
AP	AP.2018-17		nyone interested to contact Jeff Czapla-Myers about articipating in the Railroad Valley comparison in May 2018.	May 2018
AP.2018-18			nyone interested in the TNO calibration facility to contact Ralph nel with user requirements.	Next IVOS

Minutes and Actions of IVOS 30

CEOS

AP.2018-19	Patrice Henry to look at the requirements coming from the workshop (Nigel's final presentation slide 3) to check that we are working towards these items in the PICSCAR group and to provide a response that can be highlighted as a "news story".	Next IVOS
AP.2018-20	Emma Woolliams to review the recommendations coming from the workshop (Nigel's final presentation slides 5/6) to check that we are working towards these items in the vocabulary/uncertainty group and to provide a response that can be highlighted as a "news story"	Next IVOS
AP.2018-21	Nigel Fox to find a way of bringing the sea surface temperature good practice guides to come under the IVOS envelope.	Next IVOS
AP.2018-22	Everyone to find ways of making our impact widely known and to prepare "stories" that show what we have done.	Next IVOS
AP.2018-23	Emma Woolliams to complete the minutes and Nigel Fox to send these to IVOS along with a link to all presentations onto the CalVal portal.	April 2018
AP.2018-24 Nigel Fox to organise dates and practicalities for the nex meeting.		Next IVOS