Copernicus Sentinel-5 Precursor Validation Team Workshop, 11-14 Nov. 2019, ESA/ESRIN, Frascati (Rome) Italy.		
	Title	**Presenter**
Monday 11 November 2019		
Opening		
13:10 - 13:25	Welcome	N. Hanowski - ESA - Italy
13:25 - 13:50	Logistics/ Scope of Meeting/S5p Mission Status	C. Zehner - ESA - Italy
Level 1		
13:50-14:10	S5p Level 1 Product Status	P. Veefkind - KNMI - The Netherlands
14:10-14:30	Tracking TROPOMI (Bands 1-6) performance with solar (V1) irradiances	S. Marchenko - SSA/NASA -USA
14:30-14:50	Discussion	
Campaigns		
14:50 - 15:10	Overview of the TROPOMI Validation Experiment in The Netherlands	A. Apituley - KNMI - The Netherlands
15:10 - 15.30	Overview and calibration/validation plans of the Geostationary Environment Monitoring Spectrometer (GEMS)	H-J. Lee - ESC/NIR - Korea
15.30 - 16:00	Coffee Break	
Total Ozone		
16:00 - 16:20	TROPOMI/S5P near-real time and offline total ozone column products	C. Lerot - BIRA/IASB - Belgium
16.20 - 16:40	First Total Ozone Column validation results of TRO3VALAG project	J. Christodoulakis - NK. University of Athens - Greece
16:40 - 17:00	TROPOMI S5P total ozone column global validation within the VALTOZ project	K. Garane - LAP/AUTH - Greece
17:00 - 17:20	Global validation of S5P OFFL V1.05/1.07 total ozone by comparisons with S5P IUP-WFDOAS V4 total ozone	M. Weber - University of Bremen - Germany
17:20 - 17:50	Operational validation of Sentinel-5p TROPOMI near-real time and offline total ozone column products	T. Verhoelst - BIRA/IASB - Belgium
17:50 - 18:00	Discussion	
18:00 - 19:00	Icebreaker	

Tuesday 12 November 2019		
Tropospheric Ozone		
09:00-09:20	TROPOMI S5P tropospheric ozone columns data retrieval and validation	K-P. Heue - DLR - Germany
09:20-09:40	Assessment of Sentinel-5p Tropospheric Ozone using SHADOZ Ozonesonde Network Data	D. Hubert - BIRA/IASB - Belgium
09:40-10:00	S5p/TROPOMI tropical tropospheric ozone: verification of the CCD operational algorithm L2__O3_TCL and advances of the CSA prototype	K-U. Eichmann - University of Bremen - Germany
10:00-10:30	Discussion	
10:30-11:00	Coffee Break	
Aerosol Information		
11:00-11:20	Aerosol Index: overview of intercomparison results and future updates	D. Stein Zweers - KNMI - The Netherlands
11:20-11:40	S5P/TROPOMI Aerosol Layer Height Product validation and recent improvements	M. De Graaf - KNMI - The Netherlands
11:40-12:00	Validation of UV Aerosol Index and Aerosol Layer Height Product from S5P TROPOMI	P. Ciren - NOAA - USA
12:00-12:20	Investigating the vertical and horizontal distribution of trace gases and aerosols with the 4-Azimuth-MAX-DOAS in Mainz, Germany	J. Remmers - MPI - Germany
12:20-13:00	Discussion	
13:00-14:00	Lunch Break	
Clouds		
14:00-14:20	TROPOMI/Sentinel-5 Precursor cloud products version 2 and validation	A. Argyrouli - DLR - Germany
14:20-14:40	S5P-NPP Cloud Product Status/Plans	R. Siddans - RAL - UK
14:40-15:00	Validation of Sentinel-5p retrieved cloud height using the ground-based CLOUDNET network	S. Compernolle - BIRA/IASB - Belgium
15:00-15:30	Discussion	
15:30-16:00	Coffee Break	
Sulfur Dioxide		
16:00-16:20	TROPOMI SO2 retrievals: L2 product status, planned evolution and validation	N. Theys - BIRA/IASB - Belgium
16:20-16:40	Profiling Volcanic SO2 with Balloonsondes in Costa Rica for TROPOMI Validation: An update	H. Selkirk - NASA - USA
16:40-17:00	Anthropogenic and volcanic point source SO2 emissions derived from TROPOMI onboard Sentinel 5 Precursor: first results	V. Fioletov - Environment and Climate Change - Canada
17:00-17:20	Characterization of uncertainty in the volcanic SO2 product of S5P/TROPOMI based on detailed field observations from air, ground and the sea.	S. Arellano - Chalmers University of Technology - Sweden
17:20-17:40	Application of back trajectory modelling to TropOMI SO2 observations to retrieve sub-daily volcanic fluxes	C. Hayer - University of Manchester - UK
17:40-18:00	Discussion	

Wednesday 13 November 2019		
Carbon Monoxide/Methane		
09:00-09:20	The Sentinel 5 Precursor CO and CH4 operational data product: status and planning	J. Landgraf - SRON - The Netherlands
09:20-09:40	Sentinel-5P methane and carbon monoxide product validation using global TCCON and NDACC-IRWG data (TCCON4S5P and MPC results)	M. Kumar Sha - BIRA/IASB - Belgium
09:40-10:00	Low-resolution FTIR spectrometers for the validation of S-5P CH4 and CO products	M. Kumar Sha - BIRA/IASB - Belgium
10:00-10:20	Comparisons of TROPOMI CH4 measurements with ACE-FTS	T. Wizenberg - Uviersity of Toronto - Canada
10:20-11:00	Coffee Break	
Carbon Monoxide/Methane		
11:00-11:20	Sentinel-5 Precursor methane and carbon monoxide columns: Comparisons of scientific WFM-DOAS and operational retrievals	M. Buchwitz - University of Bremen - Germany
11:20-11:40	Retrieving methane total column from TROPOMI measurements: algorithm improvements and validation results	A. Lorente - SRON - The Netherlands
11:40-12:00	The Collaborative Carbon Column Observing Network (COCCON): status and perspective	F. Hase - KIT - Germany
12:00-12:20	Physics based machine learning for Sentinel 5P SWIR retrieval validation	E. Malina - ESA - The Netherlands
12:20-12:40	Qualitative Validation of TROPOMI L2 CO, NO2, and AI Products for use in Tracking the Impacts of Fire Emissions Plumes on Ambient Air Quality in the US	A. Huff - NOAA - USA
12:40-13:00	Discussion	
13:00-14:00	Lunch Break	
Nitrogen Dioxide		
14:00-14:20	The TROPOMI NO2 product: validation, recent updates and development plans	H. Eskes - KNMI - The Netherlands
14:20-14:40	Verification of TROPOMI S5p NO2 columns with the scientific IUP Bremen product	A. Richter - University of Bremen - Germany
14:40-15:00	Comparison of TROPOMI/Sentinel 5 Precursor NO2 observations with ground-based measurements in Helsinki	I. Ialongo - FMI - Finland
15:00-16:20	Evaluation of TROPOMI Tropospheric NO 2 VCDs over Xuzhou, China	K. Qin - University of Mining and technology - China
15:20-15:40	Using airborne- and ground-based high-resolution NO2 columns to evaluate S5PTROPOMI Tropospheric NO2 product	L. Judd - NASA - USA
15:40-16:00	Coffee Break	
Nitrogen Dioxide		
16:00-16:20	Validation of TROPOMI S5P tropospheric NO2 using ground-based MAX-DOAS and additional mobile DOAS campaign measurements	K. Lange - University of Bremen - Germany
16:20-16:40	Sentinel-5p Tropospheric NO2 Data Assessment using MAXDOAS and Direct-Sun Measurements	G. Pinardi - BIRA/IASB - Belgium
16:40-17:00	Global Assessment of TROPOMI NO2 Data Using Improved OMI NO2 Standard	L. Lamsal - NASA - USA
17:00-17:20	Assessment of Sentinel-5p Stratospheric NO2 Data using NDACC Zenith-Scattered-Light DOAS Measurement	T. Verhoelst - BIRA/IASB - Belgium
17:20-17:40	Effect of Urban Boundary-layer turbulence on NO2 tropospheric columns retrieved from Pandora-2S	S. Casadio - Serco - Italy
17:40-18:00	Discussion	
20:00-22:00	Non Hosted Dinner	

Thursday 14 November 2019		
Formaldehyde		
09:00-09:20	Current status and validation of the S5P Formaldehyde L2 operational product	I. De Smedt - BIRA/IASB - Belgium
09:40-10:00	Validation of TROPOMI HCHO observations over the US and over open ocean with SEAC4RS and ATom-4 aircraft mission data	J. Stavrakou - BIRA/IASB - Belgium
10:00-10:20	Validation of TROPOMI/S5P HCHO using UV-Vis DOAS and FTIR ground-based networks	C. Vigouroux - BIRA/IASB - Belgium
10:20-10:40	Airborne Measurements of CH2O Obtained During the Long Island Sound Tropospheric Ozone Study (LISTOS): Comparisons with TROPOMI L2 product.	S. Janz - NASA - USA
10:40-11:00	Discussion	
11:00-11:30	Coffee Break	
Uncertainty Characterisation		
11:30-11:50	Improved S5p uncertainty characterization (calculation/reporting)	T. von Clarmann - KIT - Germany
11:40-12:00	Uncertainty characterisation of (non-satellite) atmospheric measurements with specific detail of the reference quality measurements being undertaken by GRUAN	T. Gardiner -NPL - UK
12:00-12:20	Uncertainty characterisation and harmonisation for Sentinel-5p products	A. Keppens - BIRA/IASB - Belgium
12:20-13:00	Discussion	
13:00-14:00	Lunch Break	
14:00-16:00	Session Summaries and Discussion	