

Remote Sensing Technology Institute

Institut für Methodik der Fernerkundung

Scientific Record 2018 – 2020



This living document reports the current status of IMF's and TUM-LMF/SiPEO's scientific activities and achievements starting from 2018. Sort criteria and template follow the structure of DLR institute reports.

Scientific Record 2018 – 2020 (7.05.21)

This Documentation chapter covers scientific activities of IMF and TUM-LMF/-SiPEO staff in the time period between January 2018 and 2020.

Scientific Record 2018 – 2020 (7.05.21) 2

Teaching and Education	4
Lectures at Technical University of Munich (TUM)	4
Lectures at other Universities	6
Non University Courses and Tutorials	7
Internal Seminar Series	10
Academic Degrees	11
Professorship Appointments	11
Habitations and Venia Legendi	11
Doctoral Theses.....	11
Master/Diploma/Bachelor Theses.....	14
Scientific Exchange	17
Guest Scientists	17
Professional Leaves	19
Conferences	21
Patents	22
Filed Patent Applications.....	22
Granted Patents	22
Awards	24
Memberships	28
Memberships in Remote Sensing related Boards	28
Editorial Memberships	31
Publications	34
Publications in ISI or Scopus Journals.....	34
2020.....	34
2019.....	38
2018.....	43
Other Publications with Full Paper Review	47
2020.....	47
2019.....	49
2018.....	52
Books.....	55
2020.....	55
2019.....	55
2018.....	55

Book Contributions	55
2020.....	55
2019.....	56
2018.....	56
Other Publications	56
2020.....	56
2019.....	56
2018.....	57

Teaching and Education

Lectures at Technical University of Munich (TUM)

University courses conducted by IMF/LMF/SiPEO staff from 2018 until 2020 (lecturers of TUM-LMF/SiPEO in *italic typeface*). Winter semester courses are listed in the year of beginning.

University	Title	Lecturers	2018	2019	2020	2021	2022	2023
TUM	Photogrammetrie und Fernerkundung IV (Vorlesung + Übung)	<i>Körner, M.</i> <i>Auer, S.</i> <i>Schmitt, M.</i> <i>Eineder, M.</i>	■	■	■			
TUM	Satellitenfernerkundung (Vorlesung + Übung)	<i>Körner, M.</i> <i>Auer, S.</i> <i>Schmitt, M.</i> <i>Eineder, M.</i>	■	■	■			
TUM	Systems Theory and Signal Processing (Lecture + Tutorial)	Bamler, R. Zhu, X.	■	■	■			
TUM	Systemtheorie u. Signalverarbeitung (Vorlesung + Übung)	Bamler, R. Zhu, X.	■	■	■			
TUM	Introduction into Microwave and SAR Remote Sensing	Eineder, M.	■	■	■			
TUM	Estimation Theory (Lecture + Tutorial)	Bamler, R. Kurz, F. Zhu, X.	■	■	■			
TUM	Estimation Theory and Machine Learning (Lecture + Tutorial)	Bamler, R. Kurz, F. Zhu, X. <i>Körner, M.</i>			■			
TUM	Schätztheorie (Vorlesung + Übung)	Bamler, R. Kurz, F. Zhu, X.	■	■	■			
TUM	Remote Sensing – Advanced Methods	Eineder, M. Trautmann, T. Zhu, X. <i>Schmitt, M.</i>	■	■	■			
TUM	Fernerkundung und Signalverarbeitung	Eineder, M. Trautmann, T. Zhu, X. <i>Schmitt, M.</i>	■	■	■			
TUM	Seminar Remote Sensing	Zhu, X.	■	■	■			

University	Title	Lecturers	2018	2019	2020	2021	2022	2023
TUM	Bildverstehen Grundlagen – Übung	<i>Körner, M. Koch, T.</i>	■					
TUM	Bildverstehen – Vertiefte Methoden	<i>Körner, M. Liebel, L. Schneider, M.</i>	■	■	■			
TUM	Bildverstehen – Aktuelle Ansätze des Maschinellen Lernens	<i>Körner, M. Liebel, L. Schneider, M.</i>	■	■	■			
TUM	Electrodynamics	Efremenko, D.	■	■	■			
TUM	Nonlinear Optimisation	Efremenko, D.	■	■				
TUM	Inverse Probleme in der Theorie des Strahlungstransports	Efremenko, D.			■			
TUM	Multisensor-Datenfusion	<i>Schmitt, M.</i>	■	■				

Lectures at other Universities

University courses conducted by IMF staff from 2018 until 2020.
 Winter semester courses are listed in the year of beginning.

University	Title	Lecturers	2018	2019	2020	2021	2022	2023
Jena	SAR-Signalverarbeitung (SAR-EDU)	Auer, S. Eineder, M. Lehner, S. Pleskachevsky, A.	■	■	■			
Alcala, SP	Hyperspectral Remote Sensing	Cerra, D.	■	■				
Osnabrück	Methoden digitaler Bildverarbeitung	Cerra, D.	■					
Osnabrück	Praxis Methoden Digitaler Bildverarbeitung	Cerra, D.	■					
Bukarest, RO (Politehnica)	Principles of Remote Sensing	Datcu, M.	■					
Bukarest, RO (Politehnica)	Stochastic Proceses for Computer Vision	Datcu, M.	■					
Bukarest, RO (Politehnica)	Computer Vision and AI	Datcu, M.		■	■			
Paris, FR (CNAM, Sorbonne, CentraleSupélec, ONERA, ESIEE)	Lecture series in the frame of the "Chaire d'excellence internationale Blaise Pascal" on EO Data Science	Datcu, M.	■	■	■			
Augsburg	Applied Remote Sensing	Fischer, P. Langheinrich, M.	■					
München (HS)	Messtechnik II	Haschberger, P.	■	■	■			
Thessaloniki, GR	Satellite Remote Sensing	Loyola, D.	■	■	■			
Osnabrück	Fernerkundliche Umweltanalyse	Reinartz, P. D. Cerra	■	■	■			
Hannover	Operationelle Fernerkundung	Storch, T.	■	■				
Hannover	Big Geospatial Data	Werner, M.	■					

CNAM: Conservatoire National des Arts et Métiers
 ESIEE: École Supérieure d'Ingénieurs en Électrotechnique et Électronique
 HS: Hochschule
 LMU: Ludwig-Maximilians-Universität
 ONERA: Office National d'Etudes et de Recherches Aéropatiales

Non University Courses and Tutorials

Non university courses and tutorials conducted by IMF staff between 2018 and 2020 (Courses of the LMF/SiPEO in *italic* typeface)

Lecturer	Location	Subject	2018	2019	2020	2021	2022	2023
Bamler, R.	EUSAR	SAR Interferometry and Tomography	■					
Bamler, R.	CCG	SAR Interferometry	■					
Cerra, D.	CCG/ESA	Hyperspectral Remote Sensing	■	■				
Datcu, M.	CAST	Artificial Intelligence for EO	■					
Datcu, M.	DLP GRSS, IN	Artificial Intelligence for EO		■				
Datcu, M.	ICIP	Big Data Analytics for EO	■					
Datcu, M.	IET Intern. Radar Conference	Big SAR Data Science	■					
Datcu, M.	BIT	EO Data Intelligence	■					
Datcu, M.	IGARSS	EO Big Data Intelligence	■	■				
Datcu, M.	Workshop on Quantum Computing, Köln	Quantum Machine Learning	■					
Datcu, M.	Romanian Academy, RO	Space Technology: The Change of Paradigm		■				
De Zan, F.	TUM Int.	SAR Interferometry and Tandem-L		■				
Eineder, M.	TUM Int.	SAR Introduction	■	■				
Eineder, M.	CCG	SAR Remote Sensing	■	■	■			
Eineder, M.	CCG/ESA	Microwave Remote Sensing	■	■				
Fritz, T.	TUM Int.	TerraSAR-X & TanDEM-X		■				
Gege, P.	CeNAT	WASI Training	■	■				
Gomba, G.	TUM Int.	Ionospheric Effects in SAR		■				
Hamidouche, M.	CCG	Infrared Astronomy: Unveiling the Hidden Universe	■	■	■			
Haschberger, P.	CCG	Spektrometer und Kalibrierung	■	■	■			
Jacobsen, S.	TUM Int.	SAR Oceanography		■				

Lecturer	Location	Subject	2018	2019	2020	2021	2022	2023
Körner, M.	KIT	Deep Learning with Feed-Forward & Recurrent Models		■				
Krauß, T.	CCG	Fernerkundung aus dem Weltraum mit multispektralen, hyperspektralen und Stereoaufnahmen	■	■	■			
Lehner, S.	EUSAR	Operational Remote Sensing by Exploiting Space-Based SAR Data	■					
Lehner, S.	CCG	SAR Oceanography	■					
Lichtenberg, G.	CCG/ESA	Atmospheric Remote Sensing, Radiative Transfer, Neutral Atmosphere	■					
Schmitt, M.	TUM Int.	Data Fusion in Remote Sensing		■				
Schreier, F.	CCG	Atmosphärische Fernerkundung – Strahlungstransportmodelle und Inversionsverfahren	■	■	■			
Trautmann, T.	CCG/ESA	Space-Borne Remote Sensing – Atmosphere		■				
Zhu, X.	EUSAR	Deep Learning in Remote Sensing	■					
Zhu, X.	WHISPERS	Deep Learning in Remote Sensing	■					
Zhu, X.	Uni Fairbanks, USA	Deep learning in Remote Sensing		■				
Zhu, X.	TUM Int.	AI for Earth Observation		■				
Zhu, X.	TUM Int.	Advanced InSAR		■				
Zhu, X.	LMU	Artificial Intelligence and Data Science in Earth Observation			■			
Zhu, X.	Wageningen University & Research, NL	Urban Geo-information Retrieval from Social Media Data			■			
Zhu, X.	Bonn University	Artificial Intelligence and Data Science in Earth Observation			■			
Zhu, X.	Munich Aerospace	Artificial Intelligence and Data Science in Earth Observation			■			

BIT: Beijing Institute of Technology
 CAST: China Academy of Space Technology
 CCG: Carl-Cranz-Gesellschaft
 CeNAT: Centro Nacional de Alta Tecnología, Costa Rica
 CNAM: Conservatoire National des Arts et Métiers
 DLP GRSS: Distinguished Lecturer Program, Geoscience and Remote Sensing Society

ESA: European Space Agency
EUSAR: European Conference on Synthetic Aperture Radar
ICIP: International Conference on Image Processing
IGARSS: International Geoscience and Remote Sensing Symposium
ISPRS: International Society for Photogrammetry and Remote Sensing
KIT: Karlsruher Institut für Technologie
LMU: Ludwig-Maximilians-Universität München
NASA GSFC: National Aeronautics and Space Administration, Goddard Space Flight Center
TUM Int.: TUM International GmbH
WHISPERS: Workshop on Hyperspectral Image and Signal Processing

Internal Seminar Series

Title	Comments
IMF Seminar	10 – 15 presentations per year, IMF and guest scientists
Seminars of IMF sections	seminars of IMF-ATP: 15 – 20 and IMF-SAR/IMF-DAS: 5 – 10 presentations per year, IMF and guest scientists
IMF Doktorandentage	annual event, 15 – 20 PhD status presentations
Doktorandenseminar TUM (LMF, SiPEO)	approx. 15 presentations per year, PhD presentations and reading sessions
TUM/DLR Summer School	annual 3 days event, 50 PhD and scientists, guest lecturers
Various Summer Schools	HGF Alliances, Munich Aerospace, SAR Education Initiative

Academic Degrees

Professorship Appointments

Professorship appointments of IMF or TUM-LMF/SiPEO (in *italic* typeface) staff between 2018 and 2020.

Name	Professorship	University	Year
<i>Mou, L.</i>	Guest Professor	München (TU)	2020
<i>Schmitt, M.</i>	Professor	München (Hochschule)	2020
<i>Singha, S.</i>	Assistant Adjunct Professor	Calgary/Canada	2020
<i>Cerra, D.</i>	Visiting Professor	Osnabrück	2018
<i>Loyola, D.</i>	Visiting Professor	Thessaloniki/Greece (Aristotle University)	2018

Habilitations and Venia Legendi

Habilitations awarded, supervised or completed by IMF or TUM-LMF/SiPEO (in *italic* typeface) staff between 2018 and 2020.

Name	Subject	University	Year	Reviewers
<i>Schmitt, M.</i>	Data Fusion for SAR and Optical Remote Sensing	München (TU)	2019	Prof. Zhu Prof. Bamler Prof. Hinz

Doctoral Theses

Doctoral Theses completed by IMF or TUM-LMF/SiPEO (in *italic* typeface) staff between 2018 and 2020.

Name	Title	University	Year	Reviewers
<i>Ge, N.</i>	Sparse Recovery in Spaceborne SAR Tomography	München (TU)	2020	Zhu, X. Bamler, R. Ferro-Famil, L.
<i>Hu, J.</i>	From Remote Sensing Data to Urban Patterns: A Topology Guided Data Fusion Paradigm	München (TU)	2020	Zhu, X. Bamler, R. Reinartz, P.
<i>Huang, Z.</i>	A Study On Synthetic Aperture Radar Image Classification With Deep Learning	Chinese Academy of Sciences	2020	Lei, B. Pan, Z. Datcu, M.
<i>Hughes, L.</i>	Deep Learning for Matching High-Resolution SAR and Optical Imagery	München (TU)	2020	Schmitt, M. Zhu, X. Tupin, F.

Name	Title	University	Year	Reviewers
<i>Koch, T.</i>	Automated and Precise 3D Building Reconstruction using UAVs	München (TU)	2020	Bamler, R. Fraundorfer, F. Gerke, M.
<i>Krieger, L.</i>	Retrieval of glaciological parameters from SAR data and mass balance modelling of glaciers in Northeast Greenland	München (TU)	2020	Eineder, M. Bamler, R. Horwarth, M.
<i>Mou, L.</i>	Deep learning in remote sensing video analysis	München (TU)	2020	Zhu, X. Bamler, R. Tuia, D.
<i>Qiu, C.</i>	Deep Learning for Multi-Scale Mapping of Urban Land Cover from Space	München (TU)	2020	Zhu, X. Schmitt, M.
<i>Traganos, D.</i>	Development of seagrass monitoring techniques using remote sensing data	Osnabrück	2020	Reinartz, P. Topouzelis, K. Waske, B.
<i>Zhao, J.</i>	Research on SAR Image Object/Land Fine Interpretation Methods	Shanghai (Jiao Tong)	2020	Yu, Y. Xiong, H.
<i>Bagheri, H.</i>	Fusion of TanDEM-X data and optical imagery for 3D reconstruction of urban areas	München (TU)	2019	Zhu, X. Schmitt, M. Reinartz, P.
<i>Bittner, K.</i>	Building Information Extraction and Refinement from VHR Satellite Imagery using Deep Learning Techniques	Osnabrück	2019	Reinartz, P. Fraundorfer, F.
<i>Gisinger, Ch.</i>	SAR Imaging Geodesy – Towards Absolute Coordinates with Centimeter Accuracy	München (TU)	2019	Pail, R. Eineder, M. Sörgel, U.
<i>Heublein, M.</i>	Atmospheric Tomography using GNSS and InSAR Measurements	München (TU)	2019	Hinz, S. Zhu, X.
<i>Hong, D.</i>	Regression-Induced Representation Learning and Its Optimizer: A Novel Paradigm to Revisit Hyperspectral Imagery Analysis	München (TU)	2019	Zhu, X. Chanussot, J. Xia, G.
<i>Kang, J.</i>	Object-based Multibaseline SAR Interferometry	München (TU)	2019	Zhu, X. Bamler, R. Sörgel, U.
<i>Kuschk, G.</i>	Efficient Large-Scale Stereo Reconstruction using Variational Methods	München (TU)	2019	Cremers, D. Möller, M.
<i>Liu, S.</i>	Satellite measurements of total and tropospheric NO ₂	München (TU)	2019	Doicu, A. Bamler, R. Wenig, M.

Name	Title	University	Year	Reviewers
Montazeri, S.	Geodetic Synthetic Aperture Radar Interferometry	München (TU)	2019	Zhu, X. Eineder, M. Sörgel, U.
Partovi, T.	Levels of Generalization on Automatic Building Reconstruction from Digital Surface Models	Osnabrück	2019	Reinartz, P. Fraundorfer, F.
Shi, Y.	3D urban mapping with SAR interferometry	München (TU)	2019	Bamler, R. Eineder, E. Fraundorfer, F.
Yague-Martinez, N.	Investigation of novel interferometric SAR acquisition modes to support the modelling of earthquake and volcanic processes	München (TU)	2019	Eineder, M. Bamler, R. Moreira, A.
Zhuo, X.	Semantic Information Extraction from UAV Imagery and Aerial Imagery	München (TU)	2019	Bamler, R. Reinartz, P. Fraundorfer, F.
Ansari, H.	Efficient High-Precision Time Series Analysis for Synthetic Aperture Radar Interferometry	München (TU)	2018	Bamler, R. Eineder, M. Hanssen, R.
Baier, G.	Interferometric Algorithms for Medium Resolution Sensors with Massive Coverage	München (TU)	2018	Zhu, X. Bamler, R. Reigber, A.
Göritz, A.	From laboratory spectroscopy to remote sensing: Methods for the retrieval of water constituents in optically complex waters	München (TU)	2018	Bamler, R. Bracher, A. Damm, A.
Merkle, N.	Geo-localization Refinement of Optical Satellite Images by Embedding Synthetic Aperture Radar Data in Novel Deep Learning Frameworks	Osnabrück	2018	Reinartz, P. Hinz, S.

LMU: Ludwig-Maximilians-Universität München
TU: Technical University

Master/Diploma/Bachelor ThesesMaster (M) / Diploma (D) / Bachelor (B) theses completed at IMF or TUM-LMF/SiPEO (in *italic typeface*) between 2018 and 2020.

Name	Subject	University	Year	M/D/B
Berghäuser, P.	Entwicklung einer UAV-Steuerungssoftware zur optimierten autonomen Rehkitzdetektion	München (HS)	2020	B
Duka, L.	Fine tuning of a haze detection threshold in atmospheric correction of spaceborne optical imagery	München (LMU)	2020	B
<i>Greza, M.</i>	Transferring Features between Visual and Olfactorial Neural Networks for Object	München (TU)	2020	M
Jangir, S. K.	Aerial and Satellite Image Enhancement with Super Resolution using Deep Learning	München (TU)	2020	M
Römke, R.	Optimierung und Evaluierung eines automatischen Rehkitzdetektionsalgorithmus auf Basis eines Convolutional Neural Networks (CNN)	Duale Hochschule Baden-Württemberg	2020	B
Saporta, P.	Spatio-temporal analysis of a short-term systematic phase bias in Synthetic Aperture Radar interferograms over Sicily	München (TU)	2020	M
Schneider, M.	Automatic Shadow Detection and Removal in Aerial and Satellite Imagery using CNNs	München (TU)	2020	M
Sdralia, V.	Precise Geodetic Positioning of Corner Reflectors and SAR ECR-C with Sentinel-1	München (TU)	2020	M
Seifert, K.	Entwicklung von Methoden zur Erstellung hochpräziser georeferenzierter Karten aus Luftbildern für das autonome Fahren	Würzburg-Schweinfurt (HS)	2020	B
Suo, S.	Semantic Segmentation with Remote Sensing Data and Reference Labels Based on Simulation Methods	Stuttgart	2020	M
<i>Yang, W.</i>	Automatic Registration of Optical Images and TomoSAR Point Clouds	München (TU)	2020	M
<i>Yirong, X.</i>	Visual question answering in high-resolution remote sensing	München (TU)	2020	M
<i>Zagst, S.</i>	Herausforderungen beim Aufbau eines regionalen Data Cubes	München (TU)	2020	B
<i>Angermann, L.</i>	Satellitengestützte Bathymetrie zur Erstellung einer Tiefenkarte des Ismaninger Speichersees	München (TU)	2019	B
Bathmann, M.	Topographic Change Detection in the Wadden Sea Using Remote Sensing Data	Hamburg	2019	B
<i>Chen, Y.</i>	Mapping soil moisture for South Africa from Sentinel-2 data	München (TU)	2019	M

Name	Subject	University	Year	M/D/B
De Meester, J.	Simulation of representative nocturnal satellite imagery for urban areas with high spectral and high spatial resolution	Hannover	2019	M
Gstaiger, V.	3D Informationen aus Fernerkundungsdaten für den Bevölkerungsschutz - Nutzungsmöglichkeiten am Beispiel zweier Großveranstaltungen	Bonn	2019	M
Günzel, D.	FPGA-Prototyping eines SAR Bildprozessors zur Erkennung von Eisbergen	Bremen	2019	M
Jain, H.	Machine Learning Methods for Ozone Total Column Retrieval from Sentinel-5 Precursor Data: Application to Synthetic and Real Measurements	Berlin (TU)	2019	M
Joachim, L.	Wolkenerkennung in Satellitenaufnahmen des sichtbaren Spektralbereichs bei Nacht	Stuttgart	2019	M
Meraner, A.	Deep learning-based SAR-optical data fusion for cloud removal in Sentinel-2 imagery	München (TU)	2019	M
Madadikhaljan, M.	Single-Image Dehazing on Aeria Imagery Using Convolutional Neural Networks	Stuttgart	2019	M
Ohlhof, J.	Klassifikation von Gewässern in Sentinel-Satellitenbildern	München (TU)	2019	B
Sachße, L.	Prädiktion von Bildsequenzen aus Tiefendaten	München (TU)	2019	M
Stelzig, F.	Softwareimplementierung für zwei Spektrometer auf einem UAV	München (HS)	2019	B
Themann, B.	Upscaling of Field Measurements for the Validation of the Sentinel-2 Level-2A Product	Berlin (Humboldt)	2019	M
Yu, W.	Deep learning-based SAR image segmentation into layover, shadow and others	München (TU)	2019	M
Bürgmann, T.	Matching of TerraSAR-X derived ground control points to optical image elements using deep learning	München (TU)	2018	M
Fuentes Reyes, M.	Image-to-image-translation to support the interpretation of SAR imagery	München (TU)	2018	M
Geißendörfer, O.	Evaluierung von Methoden zur monokularen Tiefenschätzung aus Bildern	München (TU)	2018	B
Han, S.	Building modeling and monitoring using social media images	München (TU)	2018	M
Knöttner, J.	Trennung von parkenden und am Verkehr teilnehmenden Fahrzeugen basierend auf einer automatischen Verkehrserfassung aus Luftbildern	Würzburg-Schweinfurt (HS)	2018	B

Name	Subject	University	Year	M/D/B
<i>Kolsch, K.-H.</i>	Google Earth Engine: Globale Analysen basierend auf Fernerkundungsdaten	München (TU)	2018	B
Kretz, M.	Design and construction of a light source setup for stray light measurements in array spectrometers	Karlsruhe (KIT)	2018	M
<i>Li, Q.</i>	Building Footprint Generation Using Deep Learning Methods	München (TU)	2018	M
<i>Okuneva, E.</i>	Global Non-urban Local Climate Zones Classification with Sentinel-2 Images	München (TU)	2018	M
<i>Rußwurm, M.</i>	Multi-temporal land cover classification with convolutional recurrent networks	München (TU)	2018	M
<i>Sachße, L.</i>	Depth-Guided Video Frame Prediction	München (TU)	2018	M
Sheu, C.-Y.	Automatic 3D lane marking reconstruction using multi-view aerial imagery	Stuttgart	2018	M
Villamil Fajardo, S.	Synthetic retrievals of cloud parameters from DSCOVER/EPIC measurements	München (TU)	2018	M
<i>Wang, Y.</i>	Unsupervised Domain Adaptation for Image Classification	München (TU)	2018	M
Wenzl, M.	Hyperspektrale Klassifizierung des Untergrunds im Flachwasser	München (TU)	2018	M

DHBW: Duale Hochschule Baden-Württemberg
 FH: Fachhochschule
 FU: Freie Universität
 HS: Hochschule
 KIT: Karlsruher Institut für Technologie
 LMU: Ludwig-Maximilians-Universität
 TU: Technical University

Scientific Exchange

Guest Scientists

Visiting scientists (≥ 4 weeks) hosted by IMF and TUM-LMF/SiPEO between 2018 and 2020.

Name	Period	Home Institution	Funding
Bandopadhyay, S.	Feb – Apr 2020	Poznań University of Life Sciences, Poland	Poznań University of Life Sciences, Poland
Banerjee, B.	Jun 2019	IIT Bombay, India	Bavarian State Ministry for Science, Research & the Arts
Dirscherl, M.	Feb – Jun 2018	University of Island	University of Island
Dong, Y.	Feb 2019 – Jul 2020		DAAD
Eppler, J.	Jun – Sep 2018	Simon Fraser University, Canada	Simon Fraser University
Fraser, C.	Sep – Oct 2019	University of Melbourne, Australia	DAAD
Klemmer, K. (@SiPEO)	Nov 2020 – Apr 2021	University of Warwick, UK & New York University, USA	ERC Starting Grant
Ma, L.	Mar 2019 – Feb 2021	Nanjing University, China	Alexander-von-Humboldt Foundation
Ma, X.	Feb 2020 – Feb 2021	Jiangsu Secona Normal University, China	China Scholarship Council
Pang, L.	Oct 2018 – Aug 2019	Beijing University of Civil and Engineering Architecture, China	China Scholarship Council
Saha, S.	Mar – Jun 2019		Fondazione Bruno Kessler
Sarris, A.	Jan – Mar 2018	Foundation for Research and Technology Hellas, Greece	DAAD
Semakova, E.	Okt – Nov 2020		DAAD
Tampu, T.	Sep 2020 – Jul 2021	University of Tartu Ülikool, Estonia	University of Tartu Ülikool, Estonia
Tzu-Hsin, K.	Jun – Jul 2019	Aarhus University, Denmark	Novo Nordisk Foundation
Xiang, D. (@SiPEO)	Nov 2020 – Oct 2022	Chinese Academy of Sciences, China	Alexander-von-Humboldt-Foundation
Yao, J.	Sep 2019 – Sep 2020	Xi'an Jiaotong University, China	China Scholarship Council
Zhang, F.	Aug 2018 – Jul 2019	Nanjing University of Information Science & Technology, Nanjing, Jiangsu, China	Alexander-von-Humboldt Foundation

Name	Period	Home Institution	Funding
Zhang, R.	Sep 2020 – Sep 2021	Beihang University, China	China Scholarship Council

Professional LeavesPeriods of stay (≥ 4 weeks) by IMF and TUM-LMF/SiPEO (*italic*) staff at external institutions between 2018 and 2020.

Staff Member	Institution	Period	Funding
Bittner, K.	Technische Universität Graz, Austria	Oct – Dec 2018	DAAD
Gomba, G.	Jet Propulsion Laboratory, Pasadena, USA	Oct 2018	DLR
Ge, N.	Institut d'Électronique et de Télécommunications de Rennes, France	Jan 2020	
Hong, D.	Grenoble Institute of Technology, France	Mar – Jun 2018	DLR
Hua, Y.	University of Wageningen, Netherlands	Nov – Dec 2019	DLR
<i>Hughes, L.</i>	University of Wageningen, Netherlands	Sep – Oct 2019	
<i>Kang, J.</i>	Technische Universität Graz, Austria	Aug – Sep 2018	TUM
<i>Koch, T.</i>	IPN - Computing Research Center, Mexico City, Mexico	Mar – Apr 2018	TUM
Lehner, S.	Simon Fraser University, Vancouver, Canada	Feb – Apr 2018	DLR
<i>Liebel, L.</i>	RIKEN Center for Advanced Intelligence Project, Tokyo, Japan	Mar – Apr 2020	DAAD
Liu, S.	Belgian Institute for Space Aeronomy, Brussels, Belgium	Mar 2018	DLR
Loyola, D.	NOAA Center for Satellite Applications and Research	Jun – Jul 2019	NOAA
Meringer, M.	Tokyo Institute of Technology, Japan	Apr – May 2018 Apr – May 2019	TIT
Mou, L.	University of Cambridge, England	Apr – May 2019	TUM
<i>Qiu, C.</i>	University of Pavia, Italy	Oct – Dec 2019	TUM
<i>Rußwurm, M.</i>	ESRIN PhiLab, Frascati, Italy	Jun 2018	TUM
	University of Southern Brittany (Vannes Institute of Technology) / Institut de Recherche en Informatique et Systèmes Aléatoires, Vannes, France Université Rennes 2, France	Nov 2018 – Feb 2019	TUM
	Stanford University, California, USA	Mar – Apr 2020	DAAD
<i>Shi, Y.</i>	University of Cambridge, England	Apr – May 2019	TUM
Singha, S.	University of Tromsø, Norway	Apr – May 2018	DLR
Traganos, D.	University of Queensland, Brisbane, Australia	Apr – Jun 2018	DLR
Xie, Y.	ETH Zürich, Switzerland	Oct – Dec 2020	DLR

Conferences

Major conferences, colloquia and workshops (co-)organized by IMF and TUM-LMF/SiPEO between 2018 and 2020.

Date	Event	Location	Participants
23 – 24 Oct 2019	Workshop „Praktische Nutzung der Binnengewässer-Fernerkundung“	Oberpfaffenhofen	45
23 – 26 Sep 2018	WHISPERS 2018 (General Chair)	Amsterdam, NL	400

Patents

Filed Patent Applications

Name	Patent	Patent No	Year	Countries
Rosenbaum, D. Pypetz, M. Zumkeller, T.	Vorrichtung und Verfahren zur kontaktlosen Erfassung der Steuerwege von Luftfahrzeugen bei der Durchführung von Flugerprobungen	DE10 2019 101738.6	2019	DE
Borg, E. Schmidt, K.	Verfahren und Anordnung zum Kalibrieren flugobjektmontierter Sensoren	DE10 2018 208738.5	2018	DE, EP
Pleskachevsky, A.	Verfahren zur Herleitung von Seestatusparametern	DE10 2018 123440.6	2018	DE, US

DE = Germany, AT = Austria, AU = Australia, BR = Brasilien, CA = Canada, CH = Switzerland, ES = Spain, EP = European Patent Organization, FR = France, GB = United Kingdom, IT = Italy, NL = The Netherlands, RU = Russia, SE = Sweden, US = USA

Granted Patents

Name	Patent	Patent No.	Year	Countries
Israel, M. Schwarzmaier, T. Tank, V. Rupprecht, V. Nitsche, R. Fackelmeier, A.	Verfahren und Vorrichtung zur Suche und Erkennung von in landwirtschaftlichen Feldern und Wiesen versteckten Tieren	DE 10 2009 039601	2020	DE
Klarner, R. Runge, H.	Fahrerassistenzsystem	EP 3411276	2020	EP, US, DE, FR, GB, NL, SE
Runge, H. Suchandt, S.	Schiffsdetektion in Interferometrie-Radardaten	EP 3019889	2020	EP, ES, FR, GB, IT
Borg, E. Schmidt, K. Schmidt, K. Renke, F. Spengler, D.	Verfahren zum Schätzen eines Zustandes eines Globalstrahlungssensors und Messstation mit Globalstrahlungssensor	DE10 2018 204146	2019	DE
Duque Biarge, S. Parizzi, A. De Zan, F.	Automatic three-dimensional geolocation of SAR targets and simultaneous estimation of tropospheric propagation delays using two long-aperture SAR images	EP 3156818	2019	FR, ES, IT
Israel, M.	Verfahren zum Auffinden von Lebewesen aus der Luft sowie Flugobjekt zum Auffinden von Lebewesen aus der Luft	DE 10 2012 221580	2019	DE, CH, AT

Name	Patent	Patent No.	Year	Countries
Runge, H. Klarner, R.	Positionsbestimmung eines Fahrzeugs auf oder über einer Planetenoberfläche	EP 3049825	2019	EP, US, FR, GB, IT
Runge, H. Krauß, T.	Verfahren und Vorrichtung zur Georeferenzierung von Luftbilddaten	DE 10 2016 123286	2019	DE, EP, AT, FR, ES
Klarner, R. Runge, H.	System zur Fahrerunterstützung	DE 10 2014 106890	2018	DE, EP, FR, GB, NL, SE

For country abbreviations see footnote to previous table of Filed Patent Applications

Awards

Awards granted to IMF and TUM-LMF/SiPEO (in *italic typeface*) staff between 2018 and 2020.

Year	Award	Laureates (only IMF, LMF/SiPEO)	Subject
2020	DLR-Nachwuchsgruppenleitung	Bittner, K.	AI for 3D Building Modeling
2020	2 nd Prize IEEE GRSS Data Fusion Contest 2020	Cerra, D. Merkle, N. Henry, C. Alonso, K. d'Angelo, P. Auer, S. Bahmanyar, R. Yuan, X. Bittner, K. Langheinrich, M. Zhang, G. Pato, M. Tian, J. Reinartz, P.	Land cover classification with low- and high-resolution labels
2020	3 rd Prize IEEE GRSS Data Fusion Contest 2020	Cerra, D. Merkle, N. Henry, C. Alonso, K. d'Angelo, P. Auer, S. Bahmanyar, R. Yuan, X. Bittner, K. Langheinrich, M. Zhang, G. Pato, M. Tian, J. Reinartz, P.	Land cover classification with low-resolution labels
2020	1 st Place Three Minute Thesis Competition IGARSS 2020 (virtual)	<i>Gawlikowski, J.</i>	Robust Machine Learning Based Data Fusion Methods
2020	IEEE GRSS Highest Impact Paper Award 2020	Ghamisi, P.	Deep Feature Extraction and Classification of Hyperspectral Images Based on Convolutional Neural Networks (10/2016)
2020	Geodäsie-Preis (Gesellschaft für Geodäsie, Geoinformation und Landmanagement und Nico Rüpke-Stiftung)	<i>Li, Q.</i> Auer, S. <i>Schmitt, M.</i> <i>Shi, Y.</i> Zhu, X.	KI-basierte Detektion von Gebäuden mittels Deep Learning und amtlichen Geodaten zur Baufallerkundung

Year	Award	Laureates (only IMF, LMF/SiPEO)	Subject
2020	Best Paper Award, EarthVision 2020	<i>Rußwurm, M.</i> <i>Körner, M.</i>	Meta-Learning for Few-Shot Land Cover Classification
2020	Lehrpreis 2020, Fachschaft Luftfahrt, Raumfahrt Geodäsie (TU Munich)	<i>Schmitt, M.</i>	Übung „Fernerkundung und Signalverarbeitung“
2020	VDV-Landespreis Bayern 2020	Seifert, K.	Entwicklung von Methoden zur Erstellung hochpräzise georeferenzierter Karten aus Luftbildern für das autonome Fahren
2020	Best Paper Award 2020 International Journal of Image and Data Fusion	Tian, J.	Fusion of multispectral imagery and DSMs for building change detection using belief functions and reliabilities
2020	ERC Proof-of-Concept Grant	Zhu, X.	AI4SmartCities
2019	1 st Prize IEEE GRSS Data Fusion Contest 2019	d'Angelo, P. Cerra, D. Azimi, S. Merkle, N. Tian, J. Auer, S. Pato, M. de los Reyes, R. Zhuo, X. Bittner, K. Krauss, T. Reinartz, P.	Multi-view Semantic Stereo Challenge
2019	Best Poster Award 2019, MRSS/PIA 2019 (Munich)	<i>Aigner, S.</i> <i>Körner, M.</i>	FutureGAN: Anticipating the Future Frames of Video Sequences using Spatio-Temporal 3d Convolutions in Progressively Growing Autoencoder GANs
2019	Fall 2019 AVT Team Panel Excellence Award	Lindermeir, E.	Outstanding contributions to the NATO AVT (Applied Vehicle Technology) Program of Work
2019	Best Paper Award 2019 SPIE Journal of Applied Remote Sensing	Reinartz, P.	Deep learning decision fusion for the classification of urban remote sensing data
2019	GeodätUM Award 2019	<i>Schmitt, M.</i>	Best geodesy-related lecture at TUM Department of Civil, Geo and Environmental Engineering
2019	Best Reviewer Award, MRSS/PIA 2019 (Munich)	<i>Schmitt, M.</i>	

Year	Award	Laureates (only IMF, LMF/SiPEO)	Subject
2019	Best Student Paper Award, JURSE 2019 (Vannes/F)	Stark, T. Zhu, X.	Slum Mapping in Imbalanced Remote Sensing Datasets Using Transfer Learned Deep Features
2019	Remote Sensing 10 th Anniversary Best Paper Award 2019	Storch, T. Müller, R.	The EnMAP Spaceborne Imaging Spectroscopy Mission for Earth Observation
2019	Outstanding Paper Award, WHISPERS 2019 (Amsterdam/NL)	Zhang, G. Cerra, D. Müller, R.	Towards the Spectral Restoration of Shadowed Areas in Hyperspectral Images based on Nonlinear Unmixing
2018	2 nd Prize IEEE GRSS Data Fusion Contest 2018	Cerra, D. Pato, M. Carmona, E. Tian J. Azimi, S. Müller, R. Bittner, K. Henry, C. Vig, E. Kurz, F. Bahmanyar, R. d'Angelo, P. Alonso, K. Fischer, P. Reinartz, P.	Multimodal Land Use Classification
2018	Distinguished Lecturer for the IEEE Geoscience and Remote Sensing Society	Datcu, M.	
2018	Ad Astra Award for Excellence in Science (Romanian Researchers' Association)	Datcu, M.	
2018	Best Paper Award, ALLDATA 2018 (Athens/Greece)	Dumitru, C. Schwarz, G. Datcu, M.	Monitoring of Coastal Environments Using Data Mining
2018	2018 Richard M. Goody Award	Efremenko, D.	Atmospheric Radiation and Remote Sensing
2018	DLR-Wissenschaftspreis 2018	Fritz, T. (co-author)	Generation and performance assessment of the global TanDEM-X digital elevation model
2018	Best Reviewer Award 2017 (IEEE Geoscience and Remote Sensing Letters)	Ghamisi, P.	
2018	1 st Place Student Paper Award, EUSAR 2018 (Aachen)	Kang, J. Wang, Y. Zhu, X.	Low Rank Modeling based Multipass InSAR technique

Year	Award	Laureates (only IMF, LMF/SiPEO)	Subject
2018	Länderpreis 2018 (Verband deutscher Vermessungsingenieure)	Knöttner, J.	Trennung von parkenden und am Verkehr teilnehmenden Fahrzeugen basierend auf einer automatischen Verkehrserfassung aus Luftbildern
2018	Outstanding Contribution to Reviewing (ISPRS TC I Midterm Symposium, Karlsruhe)	<i>Schmitt, M.</i>	
2018	Best Paper Honourable Mention (ISPRS TC I Midterm Symposium, Karlsruhe)	<i>Schmitt, M.</i> <i>Hughes, L.</i> Zhu, X.	The SEN1-2 Dataset for Deep Learning in SAR-Optical Data Fusion
2018	Junior Fellow (TU München)	Vig, E.	
2018	PRACE Ada Lovelace Award for HPC 2018 (Partnership for Advanced Computing in Europe)	Zhu, X.	Global Urban Modeling
2018	Leopoldina Early Career Award 2018	Zhu, X.	
2018	Heinz Maier-Leibnitz-Medaille (TU München)	Zhu, X.	

Memberships

Memberships in Remote Sensing related Boards

Member	Agency/ Institution	Board	2018	2019	2020	2021	2022	2023
Bamler, R.	DLR Agency	Program Board Earth Observation	■	■	■			
	HGF	Helmholtz Incubator Information and Data Science	■	■	■			
	HGF	Spokesman: Helmholtz Program Topic Earth Observation	■	■	■			
	HGF	Steering Board HIP			■			
Baumgartner, A.	IEEE	Chair: Hyperspectral Test and Calibration (P4001)	■	■	■			
Birk, M.	ESA	MIPAS Quality Working Group	■					
	ESA	Sentinel 5 Precursor Quality Working Group		■	■			
Datcu, M.	ESA	Programme Board for Earth Observation			■			
De Zan, F.	ESA	ROSE-L Mission Advisory Group			■			
Eineder, M.	ESA	EGMS Technical Steering Committee			■			
Gege, P.	CSIRO	AquaWatch Australia Science Team			■			
Gottwald, M.	DLR	SCIAMACHY Science Advisory Group	■					
	WMO	Polar Space Task Group	■					
Heiden, U.	GEO	Land Degradation Neutrality Initiative			■			
	CEOS	Ad Hoc Team on Sustainable Development Goals			■			
	DLR	EnMAP Science Advisory Group			■			
	IEEE/GRSS	Geoscience Spaceborne Imaging Spectroscopy Technical Committee			■			
Lichtenberg, G.	DLR	SCIAMACHY Science Advisory Group	■					
Lindermeir, E.	NATO	National PoC: Cross Domain Platform EO Signature Prediction (AVT-281)	■	■	■			
Loyola, D.	CEOS	Topic Lead: Atmospheric Composition Virtual Constellation	■	■	■			

Member	Agency/ Institution	Board	2018	2019	2020	2021	2022	2023
	ESA	Sentinel 4 Mission Advisory Group	■	■	■			
	ESA	Sentinel 5 Mission Advisory Group	■	■	■			
	ESA	Sentinel 5 Precursor Quality Working Group	■	■	■			
	ISPRS	Co-Chair: Remote Sensing of Atmospheric Environment (WG III/8)	■	■	■			
Main-Knorn, M.	ESA	Sentinel 2 Mission Performance Center	■	■				
Pflug, B.	ESA	Sentinel 2 Mission Performance Center	■	■	■			
	ESA	Sentinel 2 Quality Working Group	■	■	■			
Slijkhuis, S.	ESA/ EUMETSAT	GOME/GOME-2 Science Advisory Group	■	■	■			
Storch, T.	ESA	CHIME Mission Advisory Group			■			
Trautmann, T.	ESA	Sentinel 5 Precursor Mission Advisory Group	■					
	DLR	METImage Science Advisory Group	■	■	■			
Wagner, G.	ESA	MIPAS Quality Working Group	■					
Zhu, X.	MIAI	International Scientific Committee			■			
	Alexander- von- Humboldt Foundation	Vice-Chair, Member: Selection Committee	■	■	■			
	PRACE	Scientific Steering Committee			■			
	GFZ	Scientific Advisory Board			■			
	GDS	Scientific Advisory Board		■	■			
	HGF	Steering Committee MUDS		■	■			
	HGF	Steering Board HAICU		■	■			
	HGF	Steering Board HIDA			■			
	Copernicus	Copernicus Masters University Challenge, Expert panel			■			
	IEEE	IEEE Medal for Environmental and Safety Technologies Committee		■	■			
	IEEE	IEEE-GRSS Special Awards Committee	■	■	■			

Member	Agency/ Institution	Board	2018	2019	2020	2021	2022	2023
	IEEE	IEEE-GRSS Publication Awards Committee		■	■			

CEOS: Committee on Earth Observation Satellites
 CSIRO: Commonwealth Scientific and Industrial Research Organisation
 ESA: European Space Agency
 EUMETSAT: European Organisation for the Exploitation of Meteorological Satellites
 HGF: Helmholtz-Gemeinschaft Deutscher Forschungszentren
 IEEE: Institute of Electrical and Electronics Engineers
 IEEE/GRSS: IEEE Geoscience and Remote Sensing Society
 JAXA: Japan Aerospace Exploration Agency
 NASA: National Aeronautics and Space Administration
 WMO: World Meteorological Organization

Editorial Memberships

Member	Journal / Book / Series	Publisher	2018	2019	2020	2021	2022	2023
Auer, S.	Remote Sensing Special Issue, Guest Editor	MDPI		■	■			
Bamler, R.	Remote Sensing Special Issue, Guest Editor	MDPI	■					
d'Angelo, P.	ISPRS Journal of Photogrammetry and Remote Sensing, Guest Editor	Elsevier		■	■			
Datcu, M.	SAR in Big Data Era, Guest Editor	MDPI	■					
	Information processing for unmanned aerial vehicles (UAVs) in surveying, mapping, and navigation, Guest Editor	Taylor & Francis	■					
	Geo-spatial Information Science, Guest Editor	Taylor & Francis	■					
	Transactions on Big Data	IEEE	■	■	■			
	Remote Sensing Special Issue, Guest Editor	MDPI	■	■	■			
	International Journal of Image and Data Fusion, Editor	Taylor & Francis	■	■	■			
	Explainable AI4EO Training and Benchmarks: Data Sets Methodologies and Tools, Guest Editor	IEEE			■			
	Frontiers in Remote Sensing, Guest Editor	Frontiers			■			
Doicu, A.	Journal of Quantitative Spectroscopy and Radiative Transfer, Editor	Elsevier			■			
Eineder, M.	Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Guest Editor	IEEE			■			
	Remote Sensing Special Issue, Guest Editor	MDPI	■					
Fritz, T.	Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Guest Editor	IEEE			■			
	Frontiers in Remote Sensing, Review Editor	Frontiers			■			
Gege, P.	Remote Sensing Special Issue, Guest Editor	MDPI			■			
	Remote Sensing Special Issue, Guest Editor	MDPI			■			
Heiden, U.	Remote Sensing Special Issue, Guest Editor	MDPI			■			
Lehner, S.	Remote Sensing Special Issue, Guest Editor	MDPI	■					
Loyola, D.	Atmospheric Measurement Techniques	EGU	■	■	■			

Member	Journal / Book / Series	Publisher	2018	2019	2020	2021	2022	2023
	Computational Intelligence in Robotics, Review Editor	Frontiers	■	■	■			
	Atmospheric Chemistry and Physics; Guest Editor	EGU		■	■			
Reinartz, P.	International Journal of Image and Data Fusion	Taylor & Francis	■	■	■			
	Remote Sensing	MDPI	■	■	■			
Schmitt, M.	Geoscience and Remote Sensing Letters	IEEE	■	■	■			
	Journal of Photogrammetry, Remote Sensing and Geoinformation Science	DGPF	■	■	■			
	Remote Sensing Special Issue, Guest Editor	MDPI		■	■			
Singha, S.	Remote Sensing Special Issue, Guest Editor	MDPI		■	■			
Slijkhuis, S.	Atmospheric Measurement Techniques	EGU	■					
Tian, J.	Remote Sensing Special Issue, Guest Editor	MDPI	■	■				
Velotto, D.	Remote Sensing Special Issue, Guest Editor	MDPI		■				
Wang, Y.	Geoscience Data Journal	Wiley			■			
Zhu, X.	Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Guest Editor	IEEE	■					
	Journal of Applied Remote Sensing	SPIE	■					
	International Journal of Geoinformatics, Guest Editor	AgIT	■					
	Computer Vision and Image Understanding, Guest Editor	Elsevier	■					
	Remote Sensing Special Issue, Guest Editor	MDPI		■				
	Transactions on Geoscience and Remote Sensing	IEEE	■	■	■			
	Transactions on Computational Imaging, Associate Editor	IEEE		■	■			
	Geoscience and Remote Sensing Letters, Guest Editor	IEEE			■			

AgIT: Association for Geoinformation Technology
 DGPF: Deutsche Gesellschaft für Photogrammetrie, Fernerkundung und Geoinformation

EGU: European Geosciences Union
IEEE: Institute of Electrical and Electronics Engineers
ISPRS: International Society for Photogrammetry and Remote Sensing
MDPI: Multidisciplinary Digital Publishing Institute
SPIE: International Society for Optics and Photonic

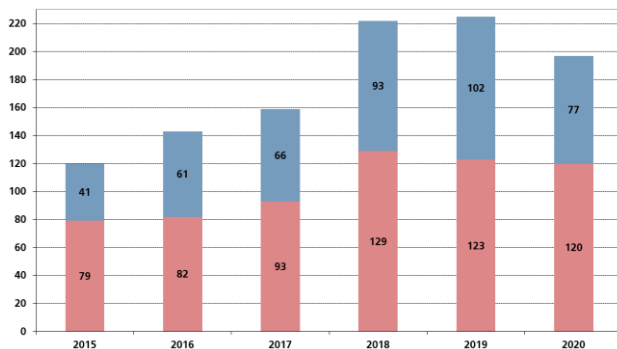
Publications

This chapter lists in reverse chronological order for the time period between January 2018 and 2020

- publications in ISI and SCOPUS journals
- other publications with full paper review
- books and book contributions
- other publications.

Internal reports as well as doctoral, diploma, Master and Bachelor theses are not listed.

IMF authors appear in **bold** typeface, employees of the TUM-LMF/SIPEO are ***in bold and italic*** typeface.



IMF's publication activities; red: publications in ISI and SCOPUS journals; blue: other publications with full paper review (status 12.03.2021).

Publications in ISI or Scopus Journals

2020

- [1] Afanas'ev, V. P., Basov, A. Y., Budak, V. P., **Efremenko, D. S.**, Kokhanovsky, A. A.: *Analysis of the Discrete Theory of Radiative Transfer in the Coupled "Ocean-Atmosphere" System: Current Status, Problems and Development Prospects*, Journal of Marine Science and Engineering, 8 (3), pp. 1-17, 2020.€135256€
- [2] Ali, A., Darvishzadeh, R., Skidmore, A., Heurich, M., Paganini, M., **Heiden, U.**, Mücher, S.: *Evaluating Prediction Models for Mapping Canopy Chlorophyll Content Across Biomes*, Remote Sensing, 12 (1788), pp. 1-23, 2020.€135121€
- [3] Bak, J., Liu, X., **Birk, M.**, **Wagner, G.**, Gordon, I. E., Chance, K.: *Impact of using a new ultraviolet ozone absorption cross-section dataset on OMI ozone profile retrievals*, Atmospheric Measurement Techniques (AMT), 13 (11), pp. 5845-5854, 2020.€135927€
- [4] **Baumgartner, A.**, **Köhler, C. H.**: *Transformation of point spread functions on an individual pixel scale*, Optics Express, 28 (26), pp. 38682-38697, 2020.€139768€
- [5] Bialak, A., Goodman, T., Woolliams, E., **Brachmann, J.**, **Schwarzmaier, T.**, Kuusk, J., Ansko, I., Vabson, V., Lau, I. C., MacLellan, C., Marty, S., Ondrusek, M., Servantes, W., Taylor, S., Van Dommelen, R., Barnard, A., Vellucci, V., Banks, A. C., Fox, N., Vendt, R., Donlon, C., Casal, T.: *Results from Verification of Reference Irradiance and Radiance Sources Laboratory Calibration Experiment Campaign*, Remote Sensing, 12 (14), pp. 2020_1-2020_18, 2020.€129773€
- [6] **Birk, M.**, **Wagner, G.**, **Loos, J.**, Shine, K. P.: *3 µm Water vapor self- and foreign-continuum: New method for determination and new insights into the self-continuum*, Journal of Quantitative Spectroscopy & Radiative Transfer, 253, pp. 107134, 2020.€133087€
- [7] Budak, V. P., **Efremenko, D. S.**, Smirnov, P. A.: *Fraunhofer diffraction description in the approximation of the light field theory*, Light and Engineering, 28 (5), pp. 25-30, 2020.€136891€
- [8] **Camero Unzueta, A.**, Toutouh, J., Alba, E.: *Random error sampling-based recurrent neural network architecture optimization*, Engineering Applications of Artificial Intelligence, 96, pp. 103946, 2020.€137071€
- [9] **Chan, K. L.**, **Valks, P.**, **Slijkhuis, S.**, **Köhler, C.**, **Loyola, D.**: *Total column water vapor retrieval for Global Ozone Monitoring Experience-2 (GOME-2) visible blue observations*, Atmospheric Measurement Techniques (AMT), 13 (8), pp. 4169-4193, 2020.€136285€
- [10] **Chan, K. L.**, Wiegner, M., van Geffen, J., De Smedt, I., Alberti, C., **Cheng, Z.**, Ye, S., Wenig, M.: *MAX-DOAS measurements of tropospheric NO₂ and HCHO in Munich and the comparison to OMI and TROPOMI satellite observations*, Atmospheric Measurement Techniques (AMT), 13 (8), pp. 4499-4520, 2020.€136288€
- [11] Chaudhuri, U., Banerjee, B., Bhattacharya, A., **Datcu, M.**: *A Deep Learning Based Model For Cross-Modal Retrieval In Remote Sensing*, Pattern Recognition Letters, 131, pp. 456-462, 2020.€130883€
- [12] Chaudhuri, U., Banerjee, B., Bhattacharya, A., **Datcu, M.**: *CMIR-NET: A deep learning based model for cross-modal retrieval in remote sensing*, Pattern Recognition Letters, 131, pp. 456-462, 2020.€140996€
- [13] Chaudhuri, U., Banerjee, B., Bhattacharya, A., **Datcu, M.**: *CrossATNet - a novel cross-attention based framework for sketch-based image retrieval*, Image and Vision Computing, 104, pp. 104003, 2020.€138086€
- [14] Chen, T.-H., **Qiu, C.**, **Schmitt, M.**, **Zhu, X. X.**, Sabel, C. E., Prishchepov, A. V.: *Mapping horizontal and vertical urban densification in Denmark with Landsat time-series from 1985 to 2018: a semantic segmentation solution*, Remote Sensing of Environment, 251, pp. 112096, 2020.€136187€

- [15] Coldewey-Egbers, M., **Loyola, D.**, Labow, G., Frith, S.: *Comparison of GTO-ECV and adjusted MERRA-2 total ozone columns from the last 2 decades and assessment of interannual variability*, Atmospheric Measurement Techniques (AMT), 13, pp. 1633-1654, 2020.€130245€
- [16] **Datcu, M.**, Grivei, A. C., **Espinoza Molina, D.**, **Dumitru, C. O.**, Reck, C., Manilici, V., **Schwarz, G.**: *The Digital Earth Observation Librarian: A Data Mining Approach for Large Satellite Images Archives*, Big Earth Data, 4 (3), pp. 265-294, 2020.€134309€
- [17] **de los Reyes, R.**, **Langheinrich, M.**, **Schwind, P.**, **Richter, R.**, **Pflug, B.**, **Bachmann, M.**, **Müller, R.**, **Carmona, E.**, **Zekoll, V.**, **Reinartz, P.**: *PACO: Python-Based Atmospheric Correction*, Sensors, 20 (5), pp. 1-21, 2020.€134562€
- [18] De Meester, J., **Storch, T.**: *Optimized Performance Parameters for Nighttime Multispectral Satellite Imagery to Analyze Lightings in Urban Areas*, Sensors, 20 (11), pp. 3313_1-3313_21, 2020.€135301€
- [19] **del Águila, A.**, **Efremenko, D. S.**, **Molina García, V.**, Kataev, M. Yu.: *Cluster Low-Streams Regression Method for Hyperspectral Radiative Transfer Computations: Cases of O2 A- and CO2 Bands*, Remote Sensing, 12 (8), pp. 1-19, 2020.€134698€
- [20] **Doicu, A.**, **Efremenko, D. S.**, **Trautmann, T.**: *A Spectral Acceleration Approach for the Spherical Harmonics Discrete Ordinate Method*, Remote Sensing, 12 (22), pp. 3703, 2020.€137491€
- [21] **Doicu, A.**, Eremin, Y., Wriedt, T.: *Transition matrix of a nonspherical layered particle in the non-local optical response theory*, Journal of Quantitative Spectroscopy & Radiative Transfer, 254, pp. 107196, 2020.€138266€
- [22] **Doicu, A.**, Eremin, Y., Wriedt, T.: *Transition matrix of a nonspherical particle in the non-local optical response theory*, Journal of Quantitative Spectroscopy & Radiative Transfer, 242, pp. 106756, 2020.€138262€
- [23] **Doicu, A.**, Mishchenko, M., **Trautmann, T.**: *Electromagnetic scattering by discrete random media illuminated by a Gaussian beam I: Derivation of the radiative transfer equation*, Journal of Quantitative Spectroscopy & Radiative Transfer, 256, pp. 107301, 2020.€138259€
- [24] **Doicu, A.**, Mishchenko, M., **Trautmann, T.**: *Electromagnetic scattering by discrete random media illuminated by a Gaussian beam II: Solution of the radiative transfer equation*, Journal of Quantitative Spectroscopy & Radiative Transfer, 256, pp. 107297, 2020.€138261€
- [25] Donner, S., Kuhn, J., Van Roozendaal, M., Bais, A., Beirle, S., Bösch, T., Bognar, K., Bruchkouski, I., **Chan, K. L.**, Dörner, S., Drosoglou, T., Fayt, C., Frieß, U., Hendrick, F., Hermans, C., Jin, J., Li, A., Ma, J., Peters, E., Pinardi, G., Richter, A., Schreier, S. F., Seyler, A., Strong, K., Tirpitz, J.-L., Wang, Y., Xie, P., **Xu, J.**, Zhao, X., Wagner, T.: *Evaluating different methods for elevation calibration of MAX-DOAS (Multi Axis Differential Optical Absorption Spectroscopy) instruments during the CINDI-2 campaign*, Atmospheric Measurement Techniques (AMT), 13 (2), pp. 685-712, 2020.€134891€
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