

Publications of Team Natural Hazards (since 2013)

Peer-reviewed journal publications

- Martinis, S., Plank, S., Cwik, K., 2018: The use of Sentinel-1 time-Series data to improve flood Monitoring in arid areas. *Remote Sensing*, 10 (582), 1-13.
- Bettinger, M., Martinis, S., Plank, S., 2018: An automatic process chain for detecting burn scars using Sentinel-2 data. *South-Eastern European Journal of Earth Observation and Geomatics*, 1-4.
- Plank, S., Nolde, M., Richter, R., Fischer, C., Martinis, S., Riedlinger, T., Schöpfer, E., Klein, D. 2018: Monitoring of the 2015 Villarrica volcano eruption by means of DLR's Experimental TET-1 satellite. *Remote Sensing*, 10, Seiten 1-17.
- Tsyganskaya, V., Martinis, S., Marzahn, P., Ludwig, R., 2018: Detection of temporary flooded vegetation using Sentinel-1 time series data. *Remote Sensing*, 20, 1-23.
- Tsyganskaya, V., Martinis, S., Marzahn, P., Ludwig, R., 2018: Comparison of SAR-based approaches for the detection of partly flooded vegetation – a review. *International Journal of Remote Sensing*, 39 (8), 2255-2293.
- Plank, S., Karg, S., Martinis, S. 2018: Full-polarimetric burn scar mapping - the differences of active fire and post-fire situations. *International Journal of Remote Sensing*, 40 (1), 253-268.
- Li, Y., Martinis, S., Plank, S., Ludwig, R. 2018: An automatic change detection approach for rapid flood mapping in Sentinel-1 data. *International Journal of Remote Sensing*, 73, 123-135.
- Plank, S., Martinis, S., 2018: A fully automatic burnt area mapping processor based on AVHRR imagery - a TIMELINE thematic processor. *Remote Sensing*, 10 (341), 1-15.
- Selvakumar, S., Plank, S., Rossi, C., Geiß, C., Middleton, C. 2018: Remote monitoring to predict bridge scour failure using Interferometric Synthetic Aperture Radar (InSAR) stacking techniques. *International Journal of Applied Earth Observation and Geoinformation*, 73, 463-470.
- Aravena P., P.M., Spröhnle, K., Geiß, C., Schoepfer, E., Plank, S., Taubenböck, H. 2018: Multi-sensor feature fusion for very high spatial resolution built-up area extraction in temporary settlements. *Remote Sensing of Environment*, 209, 793-807.
- Cao, W., Twele, A., Martinis, S., Plank, S., 2017: A Three-class Change Detection Methodology for SAR-data based on Hypothesis Testing and Markov Random Field Modeling, *International Journal of Remote Sensing*, 39, 488-504.
- Plank, S., Jüssi, M., Martinis, S., Twele, A., 2017: Mapping of flooded vegetation by means of polarimetric Sentinel-1 and ALOS-2/PALSAR-2 imagery. *International Journal of Remote Sensing*, 3831-3850.
- Martinis, S., Twele, A., Plank, S., Zwenzner, Danzeglocke, J., H., Strunz, G., Lüttenberg, H-P., Dech, S. 2017: The International 'Charter Space and Major Disasters': DLR's

contributions to emergency response worldwide. *Photogrammetry, Remote Sensing, Geoinformation*, 85, 317-325.

- Confuorto, P., Di Martire, D, Centolanza, G., Iglesias, R., Mallorqui, J.J., Novellino, A., Plank, S., Ramondini, M., Thuro, K., Calcaterra, D. 2017: Post-failure evolution analysis of a rainfall-triggered landslide by Multi-Temporal Interferometry SAR approaches integrated with geotechnical analysis. *Remote Sensing of Environment*, 188, January 2017, 51-72.
- Spröhnle, K., Fuchs, E.-M., Aravena, P. 2017: Object-based analysis and fusion of optical and SAR satellite data for dwelling detection in Refugee camps. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10 (5), 1780-1791.
- Plank, S., Twele, A., Martinis, S., 2016: Landslide mapping in vegetated areas using change detection based on optical and polarimetric SAR data. *Remote Sensing*. 8 (307), 1-20.
- Twele, A., Cao, S., Plank, S., Martinis, S., 2016: Sentinel-1 based flood mapping: a fully-automated processing chain. *International Journal of Remote Sensing*, 13, 2990–3004.
- Cerra, D., Plank, S., Lysandrou, V., Tian, J. 2016: Cultural Heritage Sites in Danger – Towards Automatic Damage Detection from Space. *Remote Sensing*, 8 (9), 781.
- Martinis, S., Kuenzer, C., Wendleder, A., Huth, J., Twele, A., Roth, A., Dech, S., 2015: Comparing four operational SAR-based water and flood detection approaches. *International Journal of Remote Sensing*, 36 (13), 3519-3543.
- Martinis, S., Rieke, C., 2015: Backscatter analysis using multi-temporal and multi-frequency SAR data in the context of flood mapping at River Saale, Germany. *Remote Sensing*, 7, 7732-7752.
- Martinis, S., Twele, A., Kersten, J., 2015: A fully automated TerraSAR-X based flood service. *ISPRS Journal of Photogrammetry and Remote Sensing*, 104, 203-212.
- Gokon, H., Post, J., Stein, E., Martinis, S., Twele, A., Mück, M., Geiss, C., Koshimura, S., Matsuoka, M. 2015: A method for detecting buildings destroyed by the 2011 Tohoku earthquake and tsunami using multi-temporal TerraSAR-X data. *IEEE Geoscience and Remote Sensing Letters*, 12 (6), 1277-1281.
- Kersten, J. 2014: Simultaneous feature selection and Gaussian mixture model estimation for supervised classification problems. *Pattern Recognition*, 47 (8), 2582-2595.
- Bernhard, E.-M., Twele, A., Martinis, S., 2014: The effect of vegetation type and density on X-band SAR backscatter after forest fires. *Photogrammetrie, Fernerkundung und Geoinformation*, 4, 275-285.
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- Plank, S. 2014: Rapid Damage Assessment by Means of Multi-Temporal SAR - A Comprehensive Review and Outlook to Sentinel-1. *Remote Sensing* 6, 4870-4906
- Martinis, S., Twele, A., Strobl, C., Kersten, J., Stein, E., 2013: A multi-scale flood monitoring system based on fully automatic MODIS and TerraSAR-X processing chains. *Remote Sensing*, 5, 5598-5619.

- Plank, S., Singer, J., Thuro, K. 2013: Assessment of number and distribution of persistent scatterers prior to radar acquisition using open access land cover and topographical data. *ISPRS Journal of Photogrammetry and Remote Sensing* 85, 132-147.
- Gokon, H., Post, J., Stein, E., Martinis, S., Twele, A., Mück, M., Koshimura, S., 2013: Machine learning based method for detecting tsunami devastated area using TerraSAR-X data. - *Journal of Japan Society of Civil Engineers, Ser. B2 (Coastal Engineering)*, 69, 2.

Book chapters and monographs

- Müller, I., Hipondoka, M., Winkler, K., Gessner, U., Martinis, S., Taubenböck, H. 2018: Monitoring flood and drought events - earth observation for multiscale assessment of water-related hazards and exposed elements. In: *Climate change and adaptive land management in southern Africa - assessments, changes, challenges, and solutions Biodiversity & Ecology* (6). Klaus Hess Publishers, 136-143.
- Shakya, H. 2018: Computing flood frequency and Duration from Earth Observation data. Master thesis, Technical University of Munich, Germany.
- Miesgang, C. 2018: Evaluierung, Kalibrierung und Validierung eines Algorithmus zur Detektion von Brandflächen mit Sentinel-3 OLCI Daten auf Basis der Active Level Set Methode. Master thesis, University of Munich, Germany.
- Baumhoer, C. 2017: An automated approach to estimate large-scale flood volumes based on SAR satellite imagery and different DEMs - a risk management support. Master thesis, Rheinische Friedrich-Wilhelms-Universität Bonn, Germany.
- Karg, S. 2017: Burn scar detection using polarimetric ALOS-2 time-series data. Master thesis, Global Change Ecology, Germany.
- Cerri, M. 2017: Flood simulation using HEC-RAS model calibrated with remotely sensed water mask: a case study of Mulde River, Germany. Thesis, Technical University of Munich, Germany.
- Li, P. 2017: Evaluation and improvement of a dual-channel method for detection and quantification of high-temperature events based on FireBIRD data. Master thesis, University of Stuttgart, Germany.
- Cwik, K. 2017: Flood mapping with the Sentinel-1 time-series data in arid areas. Master thesis, Technical University of Munich, Germany.
- Strunz, G., Martinis, S., Schöpfer, E., 2016: Beiträge der Fernerkundung zur Unterstützung des Katastrophenmanagements und der humanitären Hilfe. In: *Handbuch Geodäsie - Band Photogrammetrie und Fernerkundung*, Springer.
- Confuorto, P. 2016: From site-scale to large areas monitoring of ground deformation phenomena by integration of different DInSAR techniques in Crotona Province (Southern Italy). PhD thesis, Università di Napoli Federico II, Italy.
- Bettinger, M. 2016: Entwicklung einer Prozesskette zur automatischen Detektion von Brandflächen auf der Basis von Sentinel-2 Daten. Master thesis, Technical University of Munich, Germany.

- Pfeuffer, C. 2016: Opportunities of satellite based remote sensing for the long-term monitoring of volcanoes. Thesis.
- Becker, C. 2016: Global flood detection using Sentinel-2A-MSI by combining histogram-based and regional methods compared with an automated Random Forest approach. Master thesis, University of Munich, Germany.
- Tavri, A. 2016: Flood monitoring based on multi-temporal Sentinel-1 data - a synergistic approach of amplitude data with interferometric coherence. Master thesis, Technical University of Munich, Germany.
- Martinis, S., Kuenzer, C., Twele, A., 2015: Flood studies using Synthetic Aperture Radar data. In Thenkabail, P. (Ed.): Remote Sensing Handbook Vol. III, Remote Sensing of Water Resources, Disasters and Urban Studies, Taylor & Francis, London, UK, 145-173.
- Kuenzer, C., Huth, J., Martinis, S., Linlin, Lu, Dech, S., 2015: SAR time series for the analysis of inundation patterns in the Yellow River Delta, China. In Kuenzer, C., Dech, S., Wagner, W. (Eds.): Time Series analyses revealing Land Surface Dynamics, Springer, The Netherlands, 427-441.
- Fissmer, B. 2015: Multitemporal analysis and statistical evaluation of Radar backscatter and bi-static coherence of flood affected areas. Master thesis, Ruhr-University of Bochum, Germany.
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- Rieke, C. 2014: Analyse und statistische Auswertung von multitemporalen Radardaten für die verbesserte Hochwasserdetektion. Bachelor thesis, Friedrich-Schiller-University of Jena, Germany.
- Chow, C. 2014: Evaluation of the applicability of a probabilistic terrain descriptor to improve the thematic accuracy of DLR's TerraSAR-X based Flood Service (TFS). Master thesis.
- Fuermann, M. 2014: Evaluation von Methoden zur Erkennung von aktiven Feuern mit AVHRR. Bachelorarbeit, Ludwig-Maximilians-University of Munich, Germany.
- Warth, G. 2013: Automatische Hochwassererkennung anhand der Verwendung bistatischer Kohärenzdaten der TanDEM-X Mission. Master thesis, University of Tübingen, Germany.
- Bettinger, M. 2013: Verbesserung eines automatischen MODIS-basierten Hochwasserprozessors durch Methoden zur Trennung von Wasserflächen und Wolkenschatten. Bachelor thesis, Hochschule Munich, Germany.
- Cao, W. 2013: Change Detection using TerraSAR-X data. Diploma thesis, University of Stuttgart.

Conference papers and presentations

- Martinis, S, Wieland, M., Bettinger, M. 2018: Flood mapping from space. GIZ Joint Symposium 2018 Economy & Social Development, 11.-13. Sept. 2018, Bad Neuenahr, Germany.

- Martinis, S., Twele, A., Plank, S., Danzeglocke, J., Zwenzner, H., Strunz, G., Lüttenberg, H-P., Dech, S. 2018: DLR's contributions to emergency response within the International Charter Space and Major Disasters. IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 22.-27. Jul. 2018, Valencia, Spain.
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- Tsyganskaya, V., Marzahn, P., Martinis, S., Ludwig, R. 2018: Sentinel-1 time-series for the detection of temporary flooded vegetation. European Geosciences Union General Assembly 2018, 08.-13. April 2018, Vienna, Austria.
- Plank, S., Martinis, S., 2018: Earth Observation-based Monitoring of Volcanoes - the contribution of the International Charter 'Space and Major Disasters'. Physics of Volcanoes 2018, 01.-02. March 2018, Kiel, Germany.
- Bettinger, M, Martinis, S., Plank, S. 2017: An Automatic Process Chain for Detecting Burn Scars Using Sentinel-2 Data. In: Conference Proceedings of EARSeL 11th 2017, 25.-27. Sep. 2017, Chania, Greece.
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- Selvakumaran, S., Plank, S., Rossi, C. & Geiß, S. 2018: Using InSAR stacking techniques to predict bridge collapse due to scour. IEEE Proceedings of International Geoscience and Remote Sensing Symposium, IGARSS 2018, 23 – 27 July, Valencia, Spain.
- Martinis, S., Caspard, M., Plank, S., Clandillon, S., Haouet, S., 2017: Mapping burn scars, fire severity and soil erosion susceptibility in southern France using multisensoral satellite data. IGARSS 2017, Fort Worth, USA, 23.-28.07.2017.
- Martinis, S., 2017: Improving flood mapping in arid areas using Sentinel-1 time series data. IGARSS 2017, Fort Worth, USA, 23.-28.07.2017.
- Plank, S., Jüssi, M., Martinis, S., Twele, A., 2017: A Combining polarimetric Sentinel-1 and ALOS-2/PALSAR-2 imagery for mapping of flooded vegetation. IGARSS 2017, Fort Worth, USA, 23.-28.07.2017.
- Cao, W., Plank, S., Martinis, S., 2017: Automatic SAR-based Flood detection using hierarchical tile-ranking thresholding and fuzzy logic. IGARSS 2017, Fort Worth, USA, 23.-28.07.2017.

- Martinis, S., Brcic, R., Plank, S., Tavri, A., Rodriguez Gonzalez, F., 2017: The use of the Sentinel-1 InSAR Browse service on ESA's Geohazards Exploitation Platform for improved disaster monitoring. Fringe 2017, Helsinki, Finland, 05.-09.06.2017.
- Plank, S., Strobl, C., Lorenz, E., Nolde, M., Paproth, C., Säuberlich, T., Martinis, S., Klein, D., 2017: DLR's FireBird mission monitoring the 2014/15 Holuhraun fissure eruption. Physics of Volcanoes 2017, Munich, Germany, 8-9 March 2017.
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