

# Big Data Analytics Platform: Publication list

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The publications listed in this document refer to contributions with at least one co-author associated with the Big Data Analytics Platform (BDAP) team. Numerous publications are the result of fruitful collaborations with JRC colleagues and external partners. The activities that led to BDAP (also known as JEODPP) started as a JRC pilot project on Big Data back in 2015. Publications by BDAP team members prior to this date are not listed in this document.

The reference peer-reviewed publication for BDAP/JEODPP to refer to in publications reporting on research exploiting BDAP services is <http://doi.org/10.1016/j.future.2017.11.007>.

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## 1 Books

- [1] P. Soille, S. Lumnitz, and S. Albani, Eds., *Proc. of the 2023 Conference on Big Data from Space (BiDS'23)*, ESA-JRC-SatCen, Vienna, Austria: Publications Office of the European Union, Nov. 2023. DOI: 10.2760/46796.
- [2] P. Soille, S. Loekken, and S. Albani, Eds., *Proc. of the 2021 Conference on Big Data from Space (BiDS'21)*, ESA-JRC-SatCen, Munich, Germany: Publications Office of the European Union, Feb. 2021. DOI: 10.2760/125905.
- [3] P. Soille, S. Loekken, and S. Albani, Eds., *Proc. of the 2019 Conference on Big Data from Space (BiDS'19)*, ESA-JRC-SatCen, Munich, Germany: Publications Office of the European Union, Feb. 2019. DOI: 10.2760/848593.
- [4] P. Soille and P. Marchetti, Eds., *Proc. of the 2017 Conference on Big Data from Space (BiDS'17)*, ESA-JRC-SatCen, Toulouse, France: Publications Office of the European Union, Nov. 2017. DOI: 10.2760/383579.
- [5] P. Soille and P. Marchetti, Eds., *Proc. of the 2016 Conference on Big Data from Space (BiDS'16)*, ESA-JRC-SatCen, Tenerife, Spain: Publications Office of the European Union, Mar. 2016. DOI: 10.2788/854791.

## 2 Journal papers

- [1] R. d’Andrimont, M. Claverie, P. Kempeneers, D. Muraro, M. Yordanov, D. Peressutti, M. Batic, and F. Waldner, “AI4Boundaries: An open AI-ready dataset to map field boundaries with Sentinel-2 and aerial photography,” *Earth System Science Data*, vol. 15 (1), pp. 317–329, 2023. DOI: 10.5194/essd-15-317-2023.
- [2] P. Kempeneers, M. Claverie, and R. d’Andrimont, “Using a vegetation index as a proxy for reliability in surface reflectance time series reconstruction (RTSR),” *Remote Sensing*, vol. 15 (9), 2023. DOI: 10.3390/rs15092303.
- [3] P. Soille and P. Vogt, “Morphological spatial pattern analysis: Open source release,” *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Science*, vol. XLVIII-4/W1-2022, 2022. DOI: 10.5194/isprs-archives-XLVIII-4-W1-2022-427-2022.
- [4] P. Kempeneers, T. Kliment, L. Marletta, and P. Soille, “Parallel processing strategies for geospatial data in a cloud computing infrastructure,” *Remote Sensing*, vol. 14 (2), 2022. DOI: 10.3390/rs14020398.
- [5] V. Syrriis and S. Loekken, “Editorial of special issue: ”machine and deep learning for earth observation data analysis”,” *Remote Sensing*, vol. 13, 2021. DOI: 10.3390/rs13142758.
- [6] V. Syrriis and D. Geneiatakis, “On machine learning effectiveness for malware detection in Android OS using static analysis data,” *Journal of Information Security and Applications*, vol. 59, 2021. DOI: 10.1016/j.jisa.2021.102794.
- [7] M. Schramm, E. Pebesma, M. Milenković, L. Foresta, J. Dries, A. Jacob, W. Wagner, M. Mohr, M. Neteler, M. Kadunc, T. Miksa, P. Kempeneers, J. Verbesselt, B. Gößwein, C. Navacchi, S. Lippens, and J. Reiche, “The openEO API: Harmonising the use of Earth observation cloud services using virtual data cube functionalities,” *Remote Sensing*, vol. 13 (6), 2021. DOI: 10.3390/rs13061125.
- [8] R. d’Andrimont, A. Verhegghen, G. Lemoine, P. Kempeneers, M. Meroni, and M. van der Velde, “From parcel to continental scale – A first European crop type map based on Sentinel-1 and LUCAS Copernicus in-situ observations,” *Remote Sensing of Environment*, vol. 266, p. 112708, 2021. DOI: 10.1016/j.rse.2021.112708.
- [9] V. Syrriis, O. Pesek, and P. Soille, “SatImNet: Structuring training data for facilitating enhanced machine learning on satellite imagery,” *Remote Sensing*, 2020. DOI: 10.3390/rs12203358.
- [10] V. Syrriis, C. Corbane, M. Pesaresi, and P. Soille, “Mosaicking Copernicus Sentinel-1 data at global scale,” *IEEE Transactions on Big Data*, vol. 6 (3), pp. 547–557, Sep. 2020. DOI: 10.1109/TBDATA.2018.2846265.
- [11] M. Datcu, J. Lemoigne, S. Loekken, P. Soille, and G.-S. Xia, “Special issue on big data from space,” *IEEE Transactions on Big Data*, vol. 6 (3), pp. 427–429, Sep. 2020. DOI: 10.1109/TBDATA.2020.3015536.
- [12] C. Corbane, V. Syrriis, F. Sabo, P. Politis, M. Melchiorri, M. Pesaresi, P. Soille, and P. Kemper, “Convolutional neural networks for global human settlements mapping from Sentinel-2 satellite imagery,” *Neural Computing and Applications*, 2020. DOI: 10.1007/s00521-020-05449-7.
- [13] C. Corbane, P. Politis, P. Kempeneers, D. Simonetti, P. Soille, A. Burger, M. Pesaresi, F. Sabo, V. Syrriis, and T. Kemper, “A global cloud free pixel-based image composite from Sentinel-2 data,” *Data in Brief*, vol. 31, Aug. 2020. DOI: 10.1016/j.dib.2020.105737.
- [14] P. Kempeneers, O. Pesek, D. De Marchi, and P. Soille, “A python package for the analysis of geospatial data,” *International Journal of Geo-Information*, vol. 8 (10), 2019. DOI: 10.3390/ijgi8100461.
- [15] C. Corbane, F. Sabo, V. Syrriis, T. Kemper, P. Politis, M. Pesaresi, P. Soille, and K. Osé, “Application of the symbolic machine learning to Copernicus VHR imagery: The European settlement map,” *Geoscience and Remote Sensing Letters*, vol. 17 (7), pp. 1153–1157, Jul. 2020. DOI: 10.1109/LGRS.2019.2942131.
- [16] V. Syrriis, P. Hasenohr, B. Delipetrev, A. Kotsev, and P. Soille, “Evaluation of the potential of convolutional neural networks and random forests for multi-class segmentation of Sentinel-2 imagery,” *Remote Sensing*, vol. 11 (8), p. 4, 2019. DOI: 10.3390/rs11080907. [Online]. Available: <https://cidportal.jrc.ec.europa.eu/services/webview/jeodpp/ml-showcase/>.

- [17] D. McNerney, P. Kempeneers, M. Marron, and R. E. McRoberts, “Analysis of broadleaf encroachment in coniferous forest plantations using multi-temporal satellite imagery,” *International Journal of Applied Earth Observation and Geoinformation*, vol. 78, pp. 130–137, 2019. DOI: 10.1016/j.jag.2018.12.005.
- [18] J. H. Uhl, H. Zoraghein, S. Leyk, D. Balk, C. Corbane, V. Syrris, and A. J. Florczyk, “Exposing the urban continuum: Implications and cross-comparison from an interdisciplinary perspective,” *International Journal of Digital Earth*, vol. 13 (1), pp. 22–44, 2020. DOI: 10.1080/17538947.2018.1550120.
- [19] P. Zarco-Tejada, A. Hornero, P. Beck, T. Kattenborn, P. Kempeneers, and R. Hernández-Clemente, “Chlorophyll content estimation in an open-canopy conifer forest with sentinel-2a and hyperspectral imagery in the context of forest decline,” *Remote Sensing of Environment*, vol. 223, pp. 320–335, 2019. DOI: 10.1016/j.rse.2019.01.031.
- [20] P. Soille, A. Burger, D. De Marchi, P. Kempeneers, D. Rodriguez, V. Syrris, and V. Vasilev, “A versatile data-intensive computing platform for information retrieval from big geospatial data,” *Future Generation Computer Systems*, vol. 81 (4), pp. 30–40, Apr. 2018. DOI: 10.1016/j.future.2017.11.007.
- [21] C. Corbane, G. Lemoine, M. Pesaresi, T. Kemper, F. Sabo, S. Ferri, and V. Syrris, “Enhanced automatic detection of human settlements using sentinel-1 interferometric coherence,” *International Journal of Remote Sensing*, vol. 39 (3), pp. 842–853, 2018. DOI: 10.1080/01431161.2017.1392642.
- [22] P. Kempeneers and P. Soille, “Optimizing Sentinel-2 image selection in a big data context,” *Big Earth Data*, vol. 1 (1–2), pp. 145–158, 2017. DOI: 10.1080/20964471.2017.1407489.
- [23] C. Corbane, M. Pesaresi, P. Politis, V. Syrris, A. J. Florczyk, P. Soille, L. Maffenini, A. Burger, V. Vasilev, D. Rodriguez, F. Sabo, L. Dijkstra, and T. Kemper, “Big earth data analytics on Sentinel-1 and Landsat imagery in support to global human settlements mapping,” *Big Earth Data*, vol. 1 (1–2), pp. 118–144, 2017. DOI: 10.1080/20964471.2017.1397899.
- [24] C. Santamaria, M. Alvarez, H. Greidanus, V. Syrris, P. Soille, and P. Argentieri, “Mass processing of Sentinel-1 images for maritime surveillance,” *Remote Sensing*, vol. 9 (7), pp. 678/1–678/20, 2017. DOI: 10.3390/rs9070678.
- [25] A. J. Florczyk, S. Ferri, V. Syrris, T. Kemper, M. Halkia, P. Soille, and M. Pesaresi, “A new european settlement map from optical remotely sensed data,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 9 (5), pp. 1978–1992, May 2016. DOI: 10.1109/JSTARS.2015.2485662.
- [26] P. Marchetti, P. Soille, and L. Bruzzone, “A special issue on big data from space for geoscience and remote sensing,” *IEEE Geoscience and Remote Sensing Magazine*, vol. 4 (3), pp. 7–9, Sep. 2016. DOI: 10.1109/MGRS.2016.2586852.
- [27] M. Pesaresi, C. Corbane, A. Julea, A. Florczyk, V. Syrris, and P. Soille, “Assessment of the added-value of Sentinel-2 for detecting built-up areas,” *Remote Sensing*, vol. 8 (4), p. 299, 2016. DOI: 10.3390/rs8040299.
- [28] M. Pesaresi, V. Syrris, and A. Julea, “A new method for earth observation data analytics based on symbolic machine learning,” *Remote Sensing*, vol. 8, May 2016. DOI: 10.3390/rs8050399.
- [29] M. Pesaresi, D. Ehrlich, S. Ferri, A. Florczyk, S. Freire, F. Haag, M. Halkia, A. M. Julea, T. Kemper, and P. Soille, “Global human settlement analysis for disaster risk reduction,” *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, vol. XL-7/W3, pp. 837–843, 2015. DOI: 10.5194/isprsarchives-XL-7-W3-837-2015.
- [30] V. Syrris, S. Ferri, D. Ehrlich, and M. Pesaresi, “Image enhancement and feature extraction based on low-resolution satellite data,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 8 (5), pp. 1986–1995, May 2015. DOI: 10.1109/JSTARS.2015.2417864.

### 3 Conference proceedings

- [1] D. De Marchi, A. Burger, P. Soille, and P. Kempeneers, “Develop data-centric web apps in Jupyter with Voilà and VOIS,” in *Cloud Storage Synchronization and Sharing (CS3 2024)*, CERN, Mar. 2024, pp. 2–4. [Online]. Available: <https://indico.cern.ch/event/1332413/book-of-abstracts.pdf>.

- [2] D. De Marchi, A. Burger, F. Eyraud, and P. Soille, “VOIS library: Pushing data science dashboards to the limits,” in *Cloud Storage Synchronization and Sharing (CS3 2023)*, CERN, Mar. 2023, pp. 2–4. [Online]. Available: <https://indico.cern.ch/event/1210538/book-of-abstracts.pdf>.
- [3] P. Soille, A. Burger, D. De Marchi, P. Hasenohr, P. Kempeneers, M. Scavazzon, and R. Igolotti, “A journey over the open source software landscape of the JRC Big Data Analytics Platform,” in *Proc. of BiDS’23*, 2023, pp. 101–104. DOI: 10.5281/zenodo.10214201.
- [4] C. Chiarelli, P. Kempeneers, P. Soille, and R. Ugolotti, “From STAC to policy support using the JRC Big Data Analytics Platform,” in *Proc. of BiDS’23*, 2023. DOI: 10.5281/zenodo.10218289.
- [5] L. De Felice, R. Ugolotti, and P. Kempeneers, “Surface water detection framework using Sentinel-2 and hierarchical random forest models,” in *Proc. of BiDS’23*, 2023, pp. 121–124. DOI: 10.2760/46796.
- [6] R. d’Andrimont, M. Claverie, F. Dentener, F. Galimberti, I. Guerrero, P. Kempeneers, G. Lemoine, M. Machefer, M. Meroni, M. Olvedy, X. Rotllan-Puig, A. Verhegghen, M. van der Velde, M. Yordanov, and M. Zampieri, “Transforming agriculture monitoring and policy evaluation in Europe through satellite-derived high-resolution crop maps,” in *Proc. of BiDS’23*, 2023, pp. 141–144. DOI: 10.2760/46796.
- [7] C. Chiarelli, D. De Marchi, I. Ioannou, P. Kempeneers, T. Kliment, P. Soille, and R. Ugolotti, “A data-centric platform for scientific support to EU policies,” in *PV2023*, CERN, May 2023. [Online]. Available: <https://indico.cern.ch/event/1188041/contributions/5309454>.
- [8] A. Burger and F. Eyraud, “EOS instance at the Joint Research Centre,” in *EOS Workshop*, CERN, Apr. 2023. [Online]. Available: <https://indico.cern.ch/event/1227241/book-of-abstracts.pdf>.
- [9] S. Pérez-Carabaza, V. Syrris, P. Kempeneers, and P. Soille, “Crop classification from Sentinel-2 time series with temporal convolutional neural networks,” in *International Geoscience and Remote Sensing Symposium (IGARSS)*, 2021, pp. 6500–6503. DOI: 10.1109/IGARSS47720.2021.9554358.
- [10] M. Scavazzon, A. Burger, F. Eyraud, and P. Tognoli, “EOS at the Joint Research Centre,” in *EOS Workshop*, CERN, CERN, Feb. 2021. [Online]. Available: [https://indico.cern.ch/event/985953/contributions/4234476/attachments/2198741/3718102/2021\\_EOS\\_WS\\_JRC.pdf](https://indico.cern.ch/event/985953/contributions/4234476/attachments/2198741/3718102/2021_EOS_WS_JRC.pdf).
- [11] D. De Marchi, A. Burger, and P. Soille, “JupyterLab for earth observation applications with HTCondor scaling and Voilà dashboarding,” in *Cloud Storage Synchronization and Sharing (CS3 2021)*, CERN, Jan. 2021, p. 43. [Online]. Available: <https://indi.to/yFzwb>.
- [12] D. De Marchi, A. Burger, and P. Soille, “From Jupyter notebooks to web dashboards for big geospatial data analysis,” in *Book of abstracts of CS3 2020 - Workshop on Cloud Storage Synchronization and Sharing Services*, B. Chan, Ed., CERN, Jan. 2020, p. 43. DOI: 10.5281/zenodo.2545482. [Online]. Available: [https://indico.cern.ch/event/854707/contributions/3680468/attachments/1977586/3292165/JEODPP\\_CS3\\_Copenhagen\\_2020.pdf](https://indico.cern.ch/event/854707/contributions/3680468/attachments/1977586/3292165/JEODPP_CS3_Copenhagen_2020.pdf).
- [13] A. Burger, M. Scavazzon, P. Tognoli, and F. Eyraud, “EOS as storage back-end for jrc scientific data processing,” in *EOS Workshop*, CERN, Ginevra, Switzerland: CERN, Feb. 2020. [Online]. Available: <https://indico.cern.ch/event/862873/contributions/3724441/>.
- [14] D. Rodriguez, L. Marletta, and P. Soille, “Dynamic batch service with HTCondor and Kubernetes,” in *Book of abstracts of HTCondor European Conference 2019*, JRC, Joint Research Centre, Ispra (Italy): CERN, 2019. [Online]. Available: <https://indi.to/9Xdcg>.
- [15] D. De Marchi, C. Wirnhardt, and P. Soille, “From interactive to distributed computing of land parcel signatures using HTCondor,” in *Book of abstracts of HTCondor European Conference 2019*, JRC, Joint Research Centre, Ispra (Italy): CERN, 2019. [Online]. Available: <https://indi.to/5Zjwv>.
- [16] L. Martinez-Sanchez, D. Rodriguez-Aseretto, P. Soille, and P. S. A. Beck, “Large-scale aerial photo processing for tree health monitoring with HTCondor,” in *Book of abstracts of HTCondor European Conference 2019*, JRC, Joint Research Centre, Ispra (Italy): CERN, 2019. [Online]. Available: <https://indi.to/5rzDR>.
- [17] C. Corbane and D. Rodriguez, “Large scale mapping of human settlements from earth observation data with JEO-batch of the JRC Earth Observation Data and Processing Platform,” in *Book of abstracts of HTCondor European Conference 2019*, JRC, Joint Research Centre, Ispra (Italy): CERN, 2019. [Online]. Available: <https://indi.to/Cwx4b>.

- [18] P. Kempeneers and S. P., “Full resolution global Sentinel-2 mosaics: An effective and efficient method based on quicklooks and cloud masks,” in *Living Planet Symposium*, 2019.
- [19] A. Verhegghen, K. Janouskova, V. Syrris, B. Combal, E. Hugh, and F. Achard, “Mapping African dry forests with Sentinel 1 and 2 time series: A case study over Tanzania,” in *Living Planet Symposium*, 2019.
- [20] E. Pebesma, W. Wagner, P. Soille, M. Kadunc, N. Gorelick, M. Schramm, J. Verbesselt, J. Reiche, M. Mohr, J. Dries, A. Jacob, M. Neteler, S. Gebbert, C. Briese, and P. Kempeneers, “openEO: analyses earth observation data based on user-defined raster and vector data cube views,” in *Geophysical Research Abstracts*, vol. 20, 2019. [Online]. Available: <https://meetingorganizer.copernicus.org/EGU2019/EGU2019-9737.pdf>.
- [21] D. De Marchi and P. Soille, “Advances in interactive processing and visualisation with JupyterLab on the JRC big data platform (JEODPP),” in *Proc. of BiDS’19*, 2019, pp. 45–48. DOI: 10.5281/zenodo.3239239.
- [22] C. Corbane, P. Panagiotis, P. Kempeneers, M. Pesaresi, D. Rodriguez, V. Syrris, and P. Soille, “Automatic image data analytics from a global Sentinel-2 composite for the study of human settlements,” in *Proc. of BiDS’19*, 2019, pp. 89–92. DOI: 10.2760/848593. [Online]. Available: <https://cidportal.jrc.ec.europa.eu/services/shared/pdfs/corbane-etal2019bids.pdf>.
- [23] M. Schramm, E. Pebesma, W. Wagner, J. Verbesselt, J. Dries, C. Briese, A. Jacob, M. Mohr, M. Neteler, T. Mistelbauer, M. Tomasz, S. Gebbert, B. Gößwein, M. Kadunc, P. Kempeneers, and N. Gorelick, “openEO —A standardised connection to and between earth observation service providers,” in *Proc. of BiDS’19*, 2019, pp. 229–232. DOI: 10.5281/zenodo.2601916.
- [24] A. Burger, P. Hasenohr, D. De Marchi, and P. Soille, “Advanced geo-spatial data analysis with Jupyter,” in *Book of abstracts of CS3 2019 - Workshop on Cloud Storage Synchronization and Sharing Services*, B. Chan, Ed., CERN, 2019, p. 43. DOI: 10.5281/zenodo.2545482.
- [25] D. Rodriguez and P. Soille, “A versatile environment for large-scale geospatial data processing with HT-Condor,” in *Book of abstracts of HTCondor European Conference 2018*, RAL, Oxford, UK: CERN, 2018. [Online]. Available: <https://indico.cern.ch/event/611296/contributions/2604355/>.
- [26] E. Pebesma, W. Wagner, P. Soille, M. Kadunc, N. Gorelick, M. Schramm, J. Verbesselt, J. Reiche, M. Appel, J. Dries, A. Jacob, M. Neteler, S. Gebbert, C. Briese, and P. Kempeneers, “openEO: an open API for cloud-based big Earth Observation processing platforms,” in *Geophysical Research Abstracts*, vol. 20, 2018. [Online]. Available: <https://meetingorganizer.copernicus.org/EGU2018/EGU2018-4957-1.pdf>.
- [27] A. Burger, V. Veselin, and P. Soille, “EOS as storage back-end for geospatial data analysis,” in *CERN EOS Workshop*, 2018. [Online]. Available: [https://indico.cern.ch/event/656157/contributions/2866322/attachments/1594530/2524833/CERN\\_EOS-WS\\_Burger\\_Vasilev\\_20180205.pdf](https://indico.cern.ch/event/656157/contributions/2866322/attachments/1594530/2524833/CERN_EOS-WS_Burger_Vasilev_20180205.pdf).
- [28] A. Burger, P. Hasenohr, D. De Marchi, and P. Soille, “Integrated processing and sharing services for geospatial data,” in *Book of abstracts of CS3 2018 - Workshop on Cloud Storage Synchronization and Sharing Services*, B. Chan, Ed., CERN, 2018, p. 9. DOI: 10.5281/zenodo.1157141.
- [29] P. Soille, A. Burger, D. De Marchi, P. Hasenohr, P. Kempeneers, D. Rodriguez, V. Syrris, and V. Vasilev, “The JRC Earth Observation Data and Processing Platform,” in *Proc. of BiDS’17*, 2017, pp. 271–274. DOI: 10.5281/zenodo.3239211.
- [30] D. De Marchi, A. Burger, P. Kempeneers, and P. Soille, “Interactive visualisation and analysis of geospatial data with Jupyter,” in *Proc. of BiDS’17*, 2017, pp. 71–74. DOI: 10.5281/zenodo.3248741.
- [31] P. Kempeneers and P. Soille, “Optimising Sentinel-2 image selection in a big data context,” in *Proc. of BiDS’17*, 2017, pp. 177–180. DOI: 10.2760/383579.
- [32] V. Syrris, C. Corbane, and P. Soille, “A global mosaic from Copernicus Sentinel-1 data,” in *Proc. of BiDS’17*, 2017, pp. 267–270. DOI: 10.5281/zenodo.3371079.
- [33] C. Corbane, M. Pesaresi, P. Politis, V. Syrris, A. Florczyk, P. Soille, L. Maffenini, A. Burger, V. Vasilev, D. R. Aseretto, F. Sabo, L. Dijkstra, and T. Kemper, “Mass processing of Sentinel-1 and Landsat data for mapping human settlements at global level,” in *Proc. of BiDS’17*, 2017, pp. 52–55. DOI: 10.2760/383579.

- [34] A. Burger and P. Soille, “Web-based interactive analysis and visualisation of Earth Observation data at petabyte scale,” in *Book of Abstracts of Cloud Services for Synchronisation and Sharing*, 2017. [Online]. Available: <https://indico.cern.ch/event/565381/contributions/2402650/contribution.pdf>.
- [35] A. Burger, V. Vasilev, P. Soille, G. Iztok, and D. Rodriguez, “EOS as storage back-end for Earth Observation data processing at the EC Joint Research Centre,” in *EOS Workshop*, CERN, Geneva, Switzerland: CERN, Feb. 2017. [Online]. Available: <https://indico.cern.ch/event/591485/contributions/2450251/>.
- [36] V. Vasilev, D. Rodriguez, P. Soille, and A. Burger, “Flexible and cost-effective petabyte-scale architecture with HTCondor processing and EOS storage backend for Earth Observation applications,” in *Book of abstracts of HTCondor European Conference 2017*, DESY, Hamburg, Germany: CERN, 2017. [Online]. Available: <https://indico.cern.ch/event/611296/contributions/2604353/>.
- [37] D. Rodriguez, V. Vasilev, and P. Soille, “Experiences with HTCondor universes on a petabyte scale platform for Earth Observation data processing,” in *Book of abstracts of HTCondor European Conference 2017*, DESY, Hamburg, Germany: CERN, 2017. [Online]. Available: <https://indico.cern.ch/event/611296/contributions/2604355/>.
- [38] A. Burger and P. Soille, “Towards an infrastructure for interactive Earth Observation data analysis and processing,” in *Book of Abstracts of Cloud Services for Synchronisation and Sharing*, B. Chan, Ed., ETH Zürich, CERN, 2016, p. 27. DOI: 10.5281/zenodo.44783.
- [39] P. Soille, A. Burger, D. Rodriguez, V. Syrris, and V. Vasilev, “Towards a JRC Earth observation data and processing platform,” in *Proc. of BiDS’16*, 2016, pp. 65–68. DOI: 10.5281/zenodo.3248713.
- [40] V. Syrris, D. Rodriguez, and P. Soille, “Task allocation in high performance processing of geospatial data,” in *Proc. of the 2016 Conference on Big Data from Space (BiDS’16)*, P. Soille and P. Marchetti, Eds., Publications Office of the European Union, 2016, pp. 111–114. DOI: 10.2788/854791. [Online]. Available: <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC98347/syrris-etal2016bids.pdf>.
- [41] M. Pesaresi, V. Syrris, and A. Julea, “Analyzing big remote sensing data via symbolic machine learning,” in *Proc. of the 2016 Conference on Big Data from Space (BiDS’16)*, P. Soille and P. Marchetti, Eds., Publications Office of the European Union, 2016, pp. 156–159. DOI: 10.2788/854791.
- [42] N. I. Stilianakis, V. Syrris, P. Thomas, P. Peeter, G. Sandra, K. Stella, M. Spiros, B. Agoritsa, P. Danai, V. John, and H. Christos, “Identification of climatic factors affecting the epidemiology of human West Nile virus infections in Northern Greece,” *PLoS ONE*, vol. 11 (9), 2016. DOI: 10.1371/journal.pone.0161510.
- [43] M. Pesaresi, D. Ehrlich, S. Ferri, A. Florczyk, S. Freire, M. Halkia, A. Julea, T. Kemper, P. Soille, and V. Syrris, “The global human settlement layer,” in *Mapping Urban Areas from Space (MUAS) conference (abstract book)*, Frascati, Italy: European Space Agency, 2015. [Online]. Available: [http://due.esrin.esa.int/muas2015/files/Abstract\\_Book\\_MUAS.pdf](http://due.esrin.esa.int/muas2015/files/Abstract_Book_MUAS.pdf).

## 4 Conference presentations (oral or poster)

- [1] A. Burger, F. Eyraud, and M. Scavazzon, “EOS site report of the Joint Research Centre,” in *EOS Workshop*, CERN, Mar. 2022. [Online]. Available: <https://indico.cern.ch/event/1103358/book-of-abstracts.pdf>.
- [2] D. De Marchi and P. Soille, *Voilà dashboards for policy support*, Presentation at the Jupyter Con 2020, Oct. 2020. [Online]. Available: <https://cfp.jupytercon.com/2020/schedule/presentation/190/voila-dashboards-for-policy-support/>.
- [3] R. d’Andrimont, A. Verhegghen, M. M., G. Lemoine, P. Strobl, P. Kempeneers, and M. van der Velde, “A Sentinel-1 based European crop parcel map using 2018 in-situ LUCAS Copernicus observations,” in *EO4AGRI conference*, ESA, 2020.

- [4] P. Soille, “Exploratory visualisation and interactive analysis of big geospatial data,” in *EUDataViz’2019*, 2019. [Online]. Available: <https://op.europa.eu/documents/5632147/6564047/EU+DataViz+2019+-+Presentation+-+TS-03-01+-+062+-+Pierre+Soille.pptx/924fb729-7959-7cca-90e6-4fd35215ecfa?version=1.0&download=true>.
- [5] P. Soille, *Big data at jrc*, Presentation at the opening session of the 2019 Big Data from Space conference (BiDS’19), Feb. 2019. [Online]. Available: <https://az659834.vo.msecnd.net/eventsairwesteuprod/production-nikal-public/fad098b050c6446c8cd7056361c60892>.
- [6] D. De Marchi and P. Soille, *Advances in interactive processing and visualisation with JupyterLab on the JRC big data platform (JEODPP)*, Presentation at the 2019 Big Data from Space conference (BiDS’19), Feb. 2019. [Online]. Available: <https://az659834.vo.msecnd.net/eventsairwesteuprod/production-nikal-public/e19a3c2756ab4b4aaa2f4be8bd71ff51>.
- [7] C. Corbane, P. Panagiotis, P. Kempeneers, M. Pesaresi, D. Rodriguez, V. Syrris, and P. Soille, *Automatic image data analytics from a global Sentinel-2 composite for the study of human settlements*, Presentation at the 2019 Big Data from Space conference (BiDS’19), Feb. 2019. [Online]. Available: <https://az659834.vo.msecnd.net/eventsairwesteuprod/production-nikal-public/da34c89c72a3409f8a7921b42217903b>.
- [8] A. Burger, “EOS as storage back-end for JRC scientific data processing,” in *EOS Workshop*, CERN, Ed., Feb. 2019. [Online]. Available: <https://cds.cern.ch/record/2659480>.
- [9] P. Soille, *The big data platform initiative of the EC Joint Research Centre*, Presentation at the data analytics Workshop for official statistics (daWos), Sep. 2018. [Online]. Available: [https://ec.europa.eu/eurostat/cros/system/files/dawos18\\_lecture.soille.jeodpp.pdf](https://ec.europa.eu/eurostat/cros/system/files/dawos18_lecture.soille.jeodpp.pdf).
- [10] P. Soille and D. De Marchi, *Interactive geospatial data analytics using JupyterLab*, Presentation at the data analytics Workshop for official statistics (daWos), Sep. 2018. [Online]. Available: [https://ec.europa.eu/eurostat/cros/system/files/dawos18\\_lecture.soille.jeodpp.pdf](https://ec.europa.eu/eurostat/cros/system/files/dawos18_lecture.soille.jeodpp.pdf).
- [11] D. De Marchi and P. Soille, *Big geospatial data visualization and analysis in Jupyter*, Presentation at the EuroSciPy 2018 conference, Trento, Italy, Sep. 2018. [Online]. Available: <https://www.euroscipy.org/2018/descriptions/Big%20geospatial%20data%20visualization%20and%20analysis%20in%20Jupyter.html>.
- [12] P. Soille, *Big eo data at jrc: Activities, ideas, and vision*, Slides of presentation at 2017 EODC FORUM, 9–10 May, Vienna, Austria, 2017.
- [13] C. Santamaria, M. Alvarez, H. Greidanus, V. Syrris, P. Soille, and P. Argentieri, *Ship traffic in the Med Sea*, Poster presented at Space Solutions for Resilience in the Mediterranean, Malta, 26–27/6, 2017.
- [14] P. Soille, *Petabyte scale processing and analysis for remote sensing applications*, Slides presented at the multivariate Signal Processing and Analysis for Remote Sensing Applications —multivariate Signal Processing and Analysis for Remote Sensing Applications— mSPARSA 2017, Brasov, Romania, Jul. 2017.
- [15] P. Kempeneers, D. De Marchi, and P. Soille, *Big geospatial data for policy*, Poster presented at the GEO-WEEK, Washington D.C. 2017.
- [16] L. Martinez, M. Di Leo, Y. Chemin, P. Zarco-Tejada, B. de La Fuente Martin, R. Rodriguez-Aseretto, P. Kempeneers, P. Soille, and P. Beck, “Detecting stressed and pest-affected trees in aerial photos through machine learning: A proof of concept,” in *Conference on Free and Open Source Software for Geospatial (FOSS4G)-Europe*, Paris, Jul. 2017. [Online]. Available: [https://git.osgeo.org/gogs/foss4g-europe/foss4g-europe-2017-paris/src/master/presentations/2017-07-21/academic\\_track/foss4g-europe-2017-Detecting\\_stressed\\_and\\_pest-affected\\_trees\\_in\\_aerial\\_photos\\_through\\_machine\\_learning\\_a\\_proof\\_of\\_concept-MDiLeo-LMartinez-YChemin-P-JZarco-Tejada-BdeLaFutente-Martin-BPieterSA.pdf](https://git.osgeo.org/gogs/foss4g-europe/foss4g-europe-2017-paris/src/master/presentations/2017-07-21/academic_track/foss4g-europe-2017-Detecting_stressed_and_pest-affected_trees_in_aerial_photos_through_machine_learning_a_proof_of_concept-MDiLeo-LMartinez-YChemin-P-JZarco-Tejada-BdeLaFutente-Martin-BPieterSA.pdf).
- [17] C. Corbane, M. Pesaresi, V. Syrris, T. Kemper, P. Politis, P. Soille, A. Florczyk, F. Sabo, D. Rodriguez, L. Maffeni, and S. Ferri, *Global mapping of human settlements with Sentinel-1 and Sentinel-2 data: Recent developments in the Global Human Settlement Layer*, Slides of presentation at WorldCover’2017, ESA, Frascati, Italy, Mar. 2017. [Online]. Available: <http://worldcover2017.esa.int/files/2.2-p1.pdf>.
- [18] P. Soille, *Big data solutions for EO pursued at JRC*, Slides of presentation at 2016 EODC FORUM, 31st May–1st June, Vienna, Austria, 2016.

## 5 Science for policy, technical, and other technical reports

- [1] K. Boniface, C. Gioia, L. Pozzoli, T. Diehl, S. Dobricic, J. Fortuny Guasch, H. Van Wimersma Greidanus, T. Kliment, J. Kucera, G. Janssens-Maenhout, P. Soille, P. Strobl, and J. Wilson, *Europe's Earth Observation, Satellite Navigation and Satellite Communications Missions and Services for the benefit of the Arctic*. Joint Research Centre of the European Commission, 2021. DOI: 10.2760/270136.
- [2] V. Syrris, P. Hasenohr, D. De Marchi, P. Kempeneers, A. Burger, and P. Soille, "Jrc big data analytics survey 2020," Joint Research Centre of the European Commission, Tech. Rep., 2021. [Online]. Available: <https://webgate.ec.europa.eu/connected/groups/bigdataeoss/blog/2021/03/22/big-data-analytics-survey-2020-results?ru=58163&sr=stream>.
- [3] K. Boniface, C. Gioia, L. Pozzoli, T. Diehl, S. Dobricic, J. Fortuny Guasch, H. Van Wimersma Greidanus, T. Kliment, J. Kucera, G. Janssens-Maenhout, P. Soille, P. Strobl, and J. Wilson, *Europe's Space capabilities for the benefit of the Arctic*. Joint Research Centre of the European Commission, 2020. DOI: 10.2760/43511.
- [4] A. Anderberg, B. D. Asturiol, *et al.*, "Artificial intelligence at JRC," Joint Research Centre of the European Commission, Tech. Rep., 2019. DOI: 10.2760/705074.
- [5] P. Castello, A. Belward, X. Goenaga Beldarrain, G. La Placa, C. Lavalle, P. Loekkemyhr, D. Mair, L. Marcaletti, M. Marin Ferrer, P. Paruolo, M. Raykovska, M. Saisana, S. Schade, P. Soille, D. Tarchi, V. Tarditi, X. Troussard, E. Tzimas, F. Wastin, M. Wilikens, and C. Wittwehr, *Knowledge Management for Policy: Stocktaking of one year of JRC activities*. Joint Research Centre of the European Commission, 2017. DOI: 10.2760/105829.
- [6] D. Simonetti, A. Marelli, D. Rodriguez, V. Veselin, P. Strobl, A. Burger, P. Soille, F. Achard, H. Eva, H.-J. Stibig, and R. Beuchle, *Sentinel-2 Web platform for REDD+ monitoring, Online web platform for browsing and processing Sentinel-2 data for forest cover monitoring over the Tropics* (JRC Technical Report). Joint Research Centre of the European Commission, 2017. DOI: 10.2760/790249.
- [7] E. Pebesma, W. Wagner, M. Schramm, A. Von Beringe, C. Paulik, M. Neteler, J. Reiche, J. Verbesselt, J. Dries, E. Goor, T. Mistelbauer, C. Briese, C. Notarnicola, R. Monsorno, C. Marin, A. Jacob, P. Kempeneers, and P. Soille, *OpenEO: a Common, Open Source Interface Between Earth Observation Data Infrastructures and Front-End Applications*. Zenodo, Nov. 2017. DOI: 10.5281/zenodo.1065474.
- [8] M. Pesaresi, D. Ehrlich, S. Ferri, A. J. Florczyk, S. Freire, M. Halkia, A. Julea, T. Kemper, P. Soille, and V. Syrris, "Operating procedure for the production of the global human settlement layer from Landsat data of the epochs 1975, 1990, 2000, and 2014," Joint Research Centre of the European Commission, Tech. Rep. EUR 27741 EN, 2016. DOI: 10.2788/253582.

## 6 Data sets

- [1] L. De Felice, P. Kempeneers, and J.-F. Pekel, "Sentinel-2 global-scale open access labelled dataset," Joint Research Centre of the European Commission, Tech. Rep., 2023. DOI: 10.2905/03625cf9-5d2a-49ac-a536-7979fbc131a8.
- [2] R. d'Andrimont, Verhegghen, Astrid, G. Lemoine, P. Kempeneers, M. Meroni, and M. van der Velde, "EUCROPMAP 2018," Joint Research Centre of the European Commission, Tech. Rep., 2021. [Online]. Available: <http://data.europa.eu/89h/15f86c84-eae1-4723-8e00-c1b35c8f56b9>.
- [3] C. Corbane, F. Sabo, P. Politis, and V. Syrris, *GHS-BUILT-S2 R2020A - GHS built-up grid, derived from Sentinel-2 global image composite for reference year 2018 using Convolutional Neural Networks (GHS-S2Net)*, 2020. DOI: 10.2905/016D1A34-B184-42DC-B586-E10B915DD863.

- [4] P. Kempeneers and P. Soille, “Global mosaic of Copernicus Sentinel-2 L2A data 2017,” Joint Research Centre of the European Commission, Tech. Rep., 2019. [Online]. Available: <http://data.europa.eu/89h/cbf1016c-2970-477a-9533-4ac8e10abb92>.
- [5] V. Syrris, C. Corbane, M. Pesaresi, and P. Soille, “Mosaic of Copernicus Sentinel-1 data at global scale,” Joint Research Centre of the European Commission, Tech. Rep., 2018. DOI: 10.2905/jrc-bigdataeoss-s1-mosaic. [Online]. Available: <https://cidportal.jrc.ec.europa.eu/services/webview/jeodpp/databrowser/?default=jeodppS1Mosaic2016>.
- [6] T. Kemper, C. Corbane, D. Ehrlich, A. Florczyk, S. Freire, L. Maffenini, M. Melchiorr, M. Pesaresi, P. Politis, M. Schiavina, P. Soille, and V. Syrris, “GHS built-up grid, derived from Landsat, multitemporal (1975, 1990, 2000, 2014) IR 2017 version 1.0,” Joint Research Centre of the European Commission, Tech. Rep., 2017. [Online]. Available: [http://cidportal.jrc.ec.europa.eu/ftp/jrc-opendata/GHSL/GHS\\_BUILT\\_LDSMT\\_GLOBE\\_R2015B/](http://cidportal.jrc.ec.europa.eu/ftp/jrc-opendata/GHSL/GHS_BUILT_LDSMT_GLOBE_R2015B/).