



Geodesy in Croatia, 2015–2018

*Report submitted to the International Association of Geodesy
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This report presents a brief overview of research activities in the field of geodesy in Croatia in the period from 2015 to the end of 2018. The geodetic research has been carried out mainly at the Geodetic Faculty (GEOF), University of Zagreb and to a smaller extent at the Faculty of Civil Engineering, Architecture and Geodesy (FGAG), University of Split and at the State Geodetic Administration (SDA) and University North of Varaždin. Research activities resulted in about a dozen international peer-review (WoS) publications and a dozen of editor's books and book chapters.

FP7 and Horizon 2020 projects:

High-Resolution Solar Physics Network (SOLARNET), Duration: 1/4/2013–31/3/2017, Leader: Roman Brajša Ph.D.

European Solar Telescope Preparatory Phase (PRE-EST), Duration: 2017–2021, Principal Investigator: Davor Sudar Ph.D.

Croatian Science Foundation scientific projects:

Development of Multipurpose Land Administration System (DEMLAS), Duration: 1/9/2014–31/8/2018, Principal Investigator: Prof. Miodrag Roić.

Solar and Stellar Variability (SOLSTEL), Duration: 1/9/2014–31/8/2018, Principal Investigator: Bojan Vršnak Ph.D.

Geospatial Monitoring of Green Infrastructure by Means of Terrestrial, Airborne and Satellite Imagery (GEMINI), Duration: 1/3/2017–1/3/2021, Principal Investigator: Prof. Damir Medak.

Education of New Doctors of Science, Duration: 1/1–31/12/2015, Principal Investigator: Bojan Vršnak Ph.D.

Projects where the Faculty of Geodesy is a partner:

Advanced Forest Environmental Services Assessment (AFORENSA), Duration 1/7/2014–30/6/2018, Leader: Ivan Pilaš Ph.D., Leader at the Faculty of Geodesy: Prof. Damir Medak.

Other international scientific-research projects:

ESO Development Plan Study: Solar Research with ALMA, Duration: 1/11/2014–30/4/2017, Principal Investigator: Roman Brajša PhD.

Cosmic Ray Modulation by Solar Coronal Mass Ejections (CORAMOD), bi-lateral project Croatia–Germany, MZOS–DAAD, Duration: 1/1/2015–31/12/2016, Principal Investigator: Roman Brajša Ph.D.

European Social Fund (Operational Program “Human Resources Development” 2007–2013): Increasing Competitiveness by Developing Researchers in Physics of the Sun (PoKRet), Duration: 22/7/2015–22/10/2016, Principal Investigator: Mateja Dumbović Ph.D.D.

World Bank scientific project: Implementation of the Land Governance Assessment Framework (LGAF) in the Republic of Croatia, Duration: 2–10/2015, Principal Investigator: Prof. Miodrag Roić.

International Croatian-Montenegrin scientific project „GIS baza podataka zaštićenih područja na primjeru objekata geonasljeđa“, Duration: 2015–2016, Principal Investigator: Prof. Miljenko Lapaine.

Erasmus+ KA2 Capacity Building in the Field of Higher Education project 574150: Western Balkans Academic Education Evolution and Professional’s Sus-

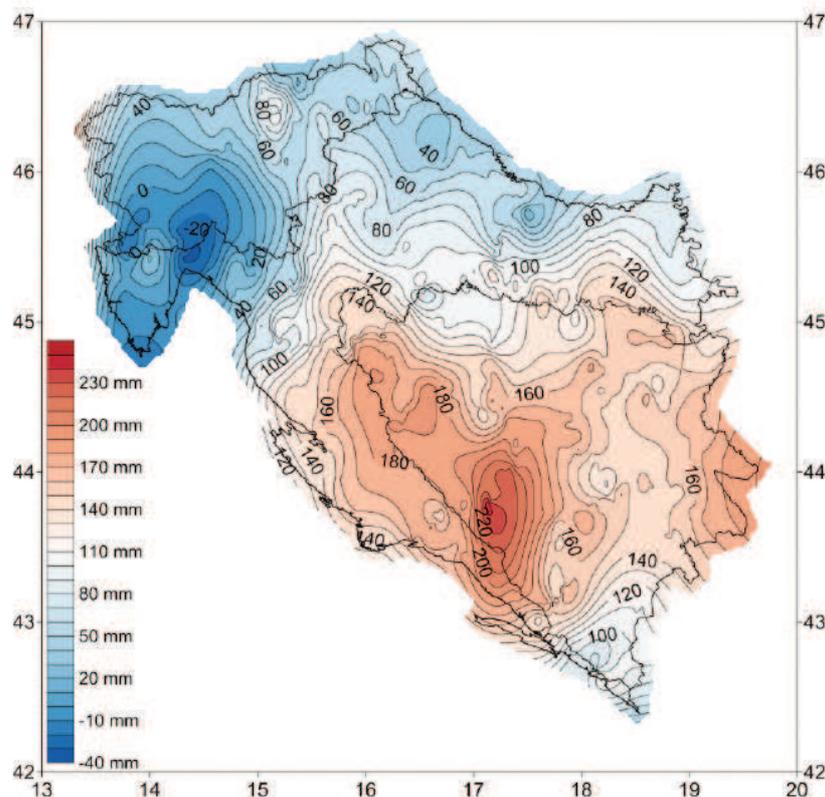


Figure 1. Grid model – parameter ΔH_0 (according to Rožić, 2017).

tainable Training for Spatial Dana Infrastructures (BESTSDI), Duration: 15/10/2016–14/10/2019, Principal Investigator: Prof. Željko Bačić.

Erasmus+ KA2 Sector Skills Aliances project 591991: Towards an Innovative Strategy for Skills Development and Capacity Building in the Space Geo-information Sector Supporting Copernicus User Uptake (EO4GEO), Duration: 1/1/2018–31/12/2021, Principal Investigator: Prof. Željko Bačić.

List of publications

- Abramić, A., Kotsev, A., Cetl, V., Kephelopoulos, S. and Paviotti, M. (2017): A spatial data infrastructure for environmental noise data in Europe, *Int. J. Environ. Res. Public Health*, **14**, 726–740, DOI: [10.3390/ijerph14070726](https://doi.org/10.3390/ijerph14070726).
- Bačić, Ž., Ključanin, S. and Poslončec-Petrić, V. (2017): Analysis of mid-term national spatial data infrastructure strategies in the Western Balkan, *Sci. J. Civ. Eng.*, **6**, 85–92.
- Bačić, Ž., Jogun, T. and Majić, I. (2018): Integrated sensor systems for smart cities, *Teh. vjesn.*, **25**, 277–284, DOI: [10.17559/TV-20160620125732](https://doi.org/10.17559/TV-20160620125732).
- Balenović, I., Gašparović, M., Simić Milas, A., Berta, A. and Seletković, A. (2018): Accuracy assessment of digital terrain models of lowland pedunculate oak forests derived from airborne laser scanning and photogrammetry, *Cro. J. For. Eng.*, **39**, 117–128.
- Banak, A., Pikelj, K., Lužar-Oberiter, B. and Kordić, B. (2017): Characteristics of Pleistocene aeolian – alluvial sediments of the northern coastal cliff of Vrgada island (Adriatic sea, Croatia), *Rev. Paralia*, **4**, 17–22, DOI: [10.5150/cmcm.2017.004](https://doi.org/10.5150/cmcm.2017.004).
- Baričević, V., Landek, I. and Šantek, D. (2018): Poboljšanje modela podataka CROTIS-a za temeljni paket i objektne cjeline građevine i promet, *Geod. list*, **95**, 277–292 (in Croatian).
- Batinić, M., Galić, M., Trogrlić, B., Divić, V., Racetin, I. and Mihanović, A. (2018): Combined photogrammetry and mechanical testing of fired clay brick, *Materwiss. Werksttech.*, **49**, 1399–1408, DOI: [10.1002/mawe.201700106](https://doi.org/10.1002/mawe.201700106).
- Baučić, M. and Medak, D. (2015): Web GIS for airport emergency response – UML model, *Promet*, **27**, 155–164, DOI: [10.7307/ptt.v27i2.1562](https://doi.org/10.7307/ptt.v27i2.1562).
- Brajša, R., Sudar, D., Benz, A. O., Skokić, I., Bárta, M., De Pontieu, B., Kim, S., Kobelski, A., Kuhar, M., Shimojo, M., Wedemeyer, S., S. White, S., Yagoubov, P. and Yan, Y. (2018): First analysis of solar structures in 1.21 mm full-disc ALMA image of the Sun, *Astron. Astrophys.*, **613**, A17, 9 pp, DOI: [10.1051/0004-6361/201730656](https://doi.org/10.1051/0004-6361/201730656).
- Cetl, V., Kliment, T. and Jogun, T. (2017): A comparison of address geocoding techniques – case study of the city of Zagreb, Croatia, *Surv. Rev.*, **50**, 1–10, DOI: [10.1080/00396265.2016.1252517](https://doi.org/10.1080/00396265.2016.1252517).
- Cetl, V., Kotsev, A. and Dusart, J. (2018): Data-driven economies in the Western Balkans, *Int. Sci. J.: MMM GI*, **10**, 7–21.
- Dumbović, M., Devos, A., Vršnak, B., Sudar, D., Rodriguez, L., Ruždjak, D., Leer, K., Vennerstrøm, S. and Veronig, A. (2015): Geoeffectiveness of coronal mass ejections in the SOHO era, *Sol. Phys.*, **290**, 579–612, DOI: [10.1007/s11207-014-0613-8](https://doi.org/10.1007/s11207-014-0613-8).
- Dumbović, M., Vršnak, B. and Čalogović, J. (2016): Forbush decrease prediction based on remote solar observations, *Sol. Phys.*, **291**, 285–302, DOI: [10.1007/s11207-015-0819-4](https://doi.org/10.1007/s11207-015-0819-4).
- Dumbović, M., Srivastava, N., Rao, Y., Vršnak, B., Devos, A. and Rodriguez, L. (2017): Validation of the CME geomagnetic forecast alerts under the COMESEP alert system, *Sol. Phys.*, **292**, A96, 14 pp, DOI: [10.1007/s11207-017-1120-5](https://doi.org/10.1007/s11207-017-1120-5).
- Dumbović, M., Čalogović, J., Vršnak, B., Temmer, M., Mays, L., Veronig, M. A. and Piantchitsch, I. (2018): The drag-based ensemble model (DBEM) for coronal mass ejection propagation, *Astrophys. J.*, **854**, A180, 11 pp, DOI: [10.3847/1538-4357/aaa66](https://doi.org/10.3847/1538-4357/aaa66).

- Duplančić Leder, T., Leder, N. and Hećimović, Ž. (2016): Split Metropolitan area surface temperature assessment with remote sensing method – Određivanje površinske temperature tla područja Splita metodom daljinske detekcije, *Građevinar*, **68**, 895–905, DOI: [10.14256/JCE.1661.2016](https://doi.org/10.14256/JCE.1661.2016).
- Duplančić Leder, T. and Leder, N. (2018): Land surface temperature determination in the town of Mostar area, *Teh. vjesn.*, **25**, 1219–1226, DOI: [10.17559/TV-20160815131129](https://doi.org/10.17559/TV-20160815131129).
- Flego, V. and Roić, M. (2018): Land tenure registration on the marine areas in Croatia, *Ocean Coast. Manage.*, **166**, 72–81, DOI: [10.1016/j.ocecoaman.2018.03.008](https://doi.org/10.1016/j.ocecoaman.2018.03.008).
- Forstner, J. L., Guo, J., Wimmer-Schweingruber, R. F., Hassler, D. M., Temmer, M., Dumbović, M., Jian, L. K., Appel, J. K., Čalogović, J., Ehresmann, B., Heber, B., Henning, L., Posner, A., Steigies, C. T., Vršnak, B. and Zeitlin, C. J. (2018): Using forbush decreases to derive the transit time of ICMEs propagating from 1 AU to Mars, *J. Geophys. Res. – Space Physics*, **123**, 39–56, DOI: [10.1002/2017JA024700](https://doi.org/10.1002/2017JA024700).
- Gašparović, M., Seletković, A., Berta, A. and Balenović, I. (2017): The evaluation of photogrammetry-based DSM from low-cost UAV by LiDAR-based DSM, *Seefor – South-East Eur. For.*, **8**, 117–125, DOI: [10.15177/seefor.17-16](https://doi.org/10.15177/seefor.17-16).
- Gašparović, M., Dobrinić, D. and Medak, D. (2018): Analiza prostorne točnosti zračnih i satelitskih snimaka grada Zagreba, *Geod. list*, **72**, 1–14 (in Croatian).
- Gašparović, I., Gašparović, M. and Medak, D. (2018): Determining and analysing solar irradiation based on freely available data: A case study from Croatia, *Environ. Dev.*, **26**, 55–67, DOI: [10.1016/j.envdev.2018.04.001](https://doi.org/10.1016/j.envdev.2018.04.001).
- Gašparović, M. and Jogun, T. (2018): The effect of fusing Sentinel-2 bands on land-cover classification, *Int. J. Remote Sens.*, **39**, 822–841, DOI: [10.1080/01431161.2017.1392640](https://doi.org/10.1080/01431161.2017.1392640).
- Gorički, M., Poslončec-Petrić, V., Frangeš, S. and Bačić, Ž. (2017): Analysis of solar potential of roofs based on digital terrain model, *ISPRS Archives*, **XLII-4/W3**, 37–41, DOI: [10.5194/isprs-archives-XLII-4-W3-37-2017](https://doi.org/10.5194/isprs-archives-XLII-4-W3-37-2017).
- Green, L., Torok, T., Vršnak, B., Manchester, W. and Veronig, A. (2018): The origin, early evolution and predictability of solar eruptions, *Space Sci. Rev.*, **214**, A46, 52 pp, DOI: [10.1007/s11214-017-0462-5](https://doi.org/10.1007/s11214-017-0462-5).
- Grgić, M., Varga, M. and Bačić, T. (2015): Empirical research of interpolation methods in distortion modeling for the coordinate transformation between local and global geodetic datums, *J. Surv. Eng.*, **142**, A46, 52 pp, DOI: [10.1061/\(ASCE\)SU.1943-5428.0000154](https://doi.org/10.1061/(ASCE)SU.1943-5428.0000154).
- Grgić, M., Jukić, S., Nerem, R. S. and Bačić, T. (2017): Satelitska altimetrija: Tehnologija i primjena u geodeziji, *Geod. list*, **71**, 307–326 (in Croatian).
- Grgić, M., Nerem, R. S. and Bačić, T. (2017): Absolute sea level surface modeling for the Mediterranean from satellite altimeter and tide gauge measurements, *Mar. Geod.*, **40**, 239–258, DOI: [10.1080/01490419.2017.1342726](https://doi.org/10.1080/01490419.2017.1342726).
- Gulam, V., Gajski, D. and Podolszki, L. (2018): Photogrammetric measurement methods of the gully rock wall retreat in Istrian badlands, *Catena*, **160**, 298–309, DOI: [10.1016/j.catena.2017.09.024](https://doi.org/10.1016/j.catena.2017.09.024).
- Hećimović, Ž., Župan, R. and Duplančić Leder, T. (2015): Unique grid cell identification of Croatian official map grids, *J. Maps*, **11**, 506–514, DOI: [10.1080/17445647.2014.935500](https://doi.org/10.1080/17445647.2014.935500).
- Hofmeister, S. J., Veronig, A., Reiss, M. A., Temmer, M., Vennerstrom, S., Vršnak, B. and Heber, B. (2017): Characteristics of low-latitude coronal holes near the maximum of solar cycle 24, *Astrophys. J.*, **835**, A268, 17 pp, DOI: [10.3847/1538-4357/835/2/268](https://doi.org/10.3847/1538-4357/835/2/268).
- Ibrahim, S., Shanmugaraju, A., Moon, Y. J., Vršnak, B. and Umapathy, S. (2018): Properties and relationship between solar eruptive flares and coronal mass ejections during rising phase of solar cycles 23 and 24, *Adv. Space Res.*, **61**, 540–551, DOI: [10.1016/j.asr.2017.09.015](https://doi.org/10.1016/j.asr.2017.09.015).
- Jajac, N., Kilić, J. and Rogulj, K. (2018): An integral approach to sustainable decision- making within maritime spatial planning – A DSC for the planning of anchorages on the Island of Šolta, Croatia, *Sustainability*, **11**, 1–27, DOI: [10.3390/su11010104](https://doi.org/10.3390/su11010104).
- Jeleč, M., Varevac, D. and Rajčić, V. (2018): Cross-laminated timber (CLT) – A state of the art report, *Građevinar*, **70**, 75–95, DOI: [10.14256/JCE.2071.2017](https://doi.org/10.14256/JCE.2071.2017).

- Jovanović, N. and Župan, R. (2017): Analiza stanja vegetacije prije i nakon šumskih požara pomoću satelitskih snimaka Sentinel-2 na području Dalmacije, *Geod. list*, **71**, 233–248 (in Croatian).
- Jurkin, E., Šimić Horvath, M., Volenec, V. and Beban-Brkić, J. (2018): Harmonic quadrangle in isotropic plane, *Turk. J. Math.*, **42**, 666–678, DOI: [10.3906/mat-1607-35](https://doi.org/10.3906/mat-1607-35).
- Kilić, J., Jajac, N. and Marović, I. (2018): GIS-based decision support concept to planning of land acquisition for realization of urban public projects, *Croat. Oper. Res. Rev.*, **9**, 11–24, DOI: [10.17535/crorr.2018.0002](https://doi.org/10.17535/crorr.2018.0002).
- Kranjčić, N., Župan, R. and Rezo, M. (2018): Satellite-based hyperspectral imaging and cartographic visualization of bark beetle forest damage for the city of Čabar, *Teh. vjesn.*, **12**, 39–43, DOI: [10.31803/tg-20171219085721](https://doi.org/10.31803/tg-20171219085721).
- Krtalić, A., Poslončec-Petrić, V. and Vrgoč, S. (2018): Koncept otkrivanja ilegalnih odlagališta otpada na području grada Zagreba primjenom metoda daljinskih istraživanja, *Geod. list*, **72**, 37–54 (in Croatian).
- Landek, I., Frangeš, S. and Marjanović, M. (2017): Proposal for establishment of the basic national topographic model (BNTM) in the Republic of Croatia, *Geod. vestn.*, **61**, 263–277, DOI: [10.15292/geodetski-vestnik.2017.02.263-277](https://doi.org/10.15292/geodetski-vestnik.2017.02.263-277).
- Lawrance, M. B., Shanmugaraju, A. and Vršnak, B. (2015): Investigation of X-class flare-associated coronal mass ejections with and without DH Type II radio bursts, *Sol. Phys.*, **290**, 3365–3377, DOI: [10.1007/s11207-015-0811-z](https://doi.org/10.1007/s11207-015-0811-z).
- Lefèvre, L., Vennerstrøm, S., Dumbović, M., Vršnak, B., Sudar, D., Arlt, R., Clette, F. and Crosby, N. (2016): Detailed analysis of solar data related to historical extreme geomagnetic storms: 1868–2010, *Sol. Phys.*, **291**, 1483–1531, DOI: [10.1007/s11207-016-0892-3](https://doi.org/10.1007/s11207-016-0892-3).
- Long, D. M., Bloomfield, D. S., Chen, P. F., Downs, C., Gallagher, P. T., Kwon, R. Y., Vanninathan, K., Veronig, A. M., Vourlidas, A., Vršnak, B., Warmuth, A. and Žic, T. (2017): Understanding the physical nature of coronal “EIT waves”, *Sol. Phys.*, **292**, A7, 24 pp, DOI: [10.1007/s11207-016-1030-y](https://doi.org/10.1007/s11207-016-1030-y).
- Lužar-Oberiter, B., Kordić, B. and Mezga, A. (2017): Digital modelling of the Late Albian Solaris dinosaur tracksite (Istria, Croatia), *Palaio*, **32**, 739–749, DOI: [10.2110/palo.2017.034](https://doi.org/10.2110/palo.2017.034).
- Mader, M., Matijević, H. and Roić, M. (2015): Analysis of possibilities for linking land registers and other official Registers in the Republic of Croatia based on LADM, *Land Use Policy*, **49**, 606–616, DOI: [10.1016/j.landusepol.2014.10.025](https://doi.org/10.1016/j.landusepol.2014.10.025).
- Mahrous, A., Alielden, K., Vršnak, B. and Youssef, M. (2018): Type II solar radio burst band-splitting: Measure of coronal magnetic field strength, *J. Atmos. Solar-Terr. Phys.*, **172**, 75–82, DOI: [10.1016/j.jastp.2018.03.018](https://doi.org/10.1016/j.jastp.2018.03.018).
- Manchester, W., Kilpua, E. K., Liu, J., Ying D., Lugaz, N., Riley, T., Török, T. and Vršnak, B. (2017): The physical processes of CME/ICME evolution, *Space Sci. Rev.*, **212**, 1159–1219, DOI: [10.1007/s11214-017-0394-0](https://doi.org/10.1007/s11214-017-0394-0).
- Matoš, B., Zajc, M., Kordić, B., Tomljenović, B. and Gosar, A. (2017): Quaternary fault activity in the SW Pannonian Basin: GPR surveying in Bilogora (NE Croatia), *Geol. Q.*, **61**, 18–36, DOI: [10.7306/gq.1308](https://doi.org/10.7306/gq.1308).
- Miler, M., Todić, F. and Ševrović, M. (2016): Extracting accurate location information from a highly inaccurate traffic accident dataset: A methodology based on a string matching technique, *Transp. Res. Part. Emerg. Technol.*, **68**, 185–193, DOI: [10.1016/j.trc.2016.04.003](https://doi.org/10.1016/j.trc.2016.04.003).
- Miljković, V., Gajski, D. and Vela, E. (2017): Spatial calibration of the hyperspectral line scanner by the bundle block adjusting method, *Geod. list.*, **71**, 127–142.
- Möstl, Ch., Rollett, T., Frahm, R. A., Liu, Y. D., Long, D. M., Colaninno, R. C., Reiss, M. A., Temmer, M., Farrugia, Ch. J., Posner, A., Dumbović, M., Janvier, M., Démoulin, P., Boakes, P., Devos, A., Kraaikamp, E., Mays, M. L. and Vršnak, B. (2015): Strong coronal channelling and interplanetary evolution of a solar storm up to Earth and Mars, *Nat. Commun.*, **6**, A7135, 6 pp, DOI: [10.1038/ncomms8135](https://doi.org/10.1038/ncomms8135).
- Odak, I., Tomić, H. and Mastelić Ivić, S. (2017): Vrednovanje fragmentacije poljoprivrednog zemljišta, *Geod. list*, **71**, 215–232 (in Croatian).

- Paunzen, E., Handler, G., Lendl, M., Baumann, B., Rab, Ch., Meingast, S., Rode-Paunzen, M., Netopil, Martin, A., Victoria, Z., Liying, Z., Zejda, M. and Božić, H. (2017): Search for variables in six Galactic open clusters, *New. Astron.*, **52**, 133–139, DOI: [10.1016/j.newast.2016.10.012](https://doi.org/10.1016/j.newast.2016.10.012).
- Piatschitsch, I., Vršnak, B., Hanslmeier, A., Lemmerer, B., Veronig, A., Hernandez-Perez, A., Čalogović, J. and Žic, T. (2017): A numerical simulation of coronal waves interacting with coronal holes. I. Basic features, *Astrophys. J.*, **850**, A88, 12 pp, DOI: [10.3847/1538-4357/aa8cc9](https://doi.org/10.3847/1538-4357/aa8cc9).
- Piatschitsch, I., Vršnak, B., Hanslmeier, A., Lemmerer, B., Veronig, A., Hernandez-Perez, A. and Čalogović, J. (2018): Numerical simulation of coronal waves interacting with coronal holes, II, Dependence on Alfvén speed inside the coronal Hole, *Astrophys. J.*, **857**, A130, 16 pp, DOI: [10.3847/1538-4357/aab709](https://doi.org/10.3847/1538-4357/aab709).
- Piatschitsch, I., Vršnak, B., Hanslmeier, A., Lemmerer, B., Veronig, A., Hernandez-Perez, A. and Čalogović, J. (2018): Numerical simulation of coronal waves interacting with coronal holes. III. Dependence on initial amplitude of the incoming wave, *Astrophys. J.*, **860**, A24, 17 pp, DOI: [10.3847/1538-4357/aabe7f](https://doi.org/10.3847/1538-4357/aabe7f).
- Pikelj, K., Ružić, I., Ilić, S., James, M. R. and Kordić, B. (2018): Implementing an efficient beach erosion monitoring system for coastal management in Croatia, *Ocean. Coast. Manage.*, **156**, 223–238, DOI: [10.1016/j.ocecoaman.2017.11.019](https://doi.org/10.1016/j.ocecoaman.2017.11.019).
- Pokupić, M., Varga, M. and Bašić, T. (2018): Modeli geomorfometrijskih parametara i drenažnih mreža za prostor Republike Hrvatske, *Hrvatski geografski glasnik*, **80**, 61–76, DOI: [10.21861/HGG.2018.80.01.03](https://doi.org/10.21861/HGG.2018.80.01.03).
- Poljančić Beljan, I., Jurdana-Šepić, R., Brajša, R., Sudar, D., Ruždjak, D., Hržina, D., Pötzi, W., Hanslmeier, A., Veronig, A., Skokić, I. and Wöhl, H. (2017): Solar differential rotation in the period 1964–2016 determined by the Kanzelhöhe data set, *Astron. Astrophys.*, **606**, A72, 10 pp, DOI: [10.1051/0004-6361/201731047](https://doi.org/10.1051/0004-6361/201731047).
- Pribičević, B., Govorčin, M. and Đapo, A. (2017): Surface deformation monitoring in the Republic of Croatia with MT-InSAR, *Annual of the Croatian Academy of Engineering*, **1**(25), 371–381.
- Racetin, I. (2015): Feature definitions in feature catalogues, *Cartogr. J.*, **52**, 67–72, DOI: [10.1179/1743277413Y.0000000039](https://doi.org/10.1179/1743277413Y.0000000039).
- Radanović, M. and Bašić, T. (2018): Accuracy assessment and comparison of interpolation methods on geoid models, *Geod. vestn.*, **62**, 68–78, DOI: [10.15292/geodetski-vestnik.2018.01.68-78](https://doi.org/10.15292/geodetski-vestnik.2018.01.68-78).
- Radanović, M., Razumović, I. and Rožić, N. (2017): Analiza kvalitete Hrvatskog transformacijskog modela visina primjenom računalnog programa HTMV_bbi_v.2, *Geod. list*, **71**, 109–126 (in Croatian).
- Radanović, M. and Rožić, N. (2018): Ispitivanje kvalitete kinematičkog modela recentnih relativnih visinskih gibanja Zemljine kore na teritoriju poluotoka Istre, *Geod. list*, **72**, 75–92 (in Croatian).
- Rotter, T., Veronig, A., Temmer, M. and Vršnak, B. (2015): Real-time solar wind prediction based on SDO/AIA coronal hole dana, *Sol. Phys.*, **290**, 1355–1370, DOI: [10.1007/s11207-015-0680-5](https://doi.org/10.1007/s11207-015-0680-5).
- Rožić, N. (2017): Quality evaluation of height movement kinematic model of the Earth's crust on the Croatian territory, *Geofizika*, **34**, 67–92, DOI: [10.15233/gfz.2017.34.1](https://doi.org/10.15233/gfz.2017.34.1).
- Rumora, L., Miler, M. and Medak, D. (2018): Utjecaj fuzije snimki na promjenu površine šumskog područja koristeći nenadziranu klasifikaciju, *Šumar. list*, **1–2**, 67–75, (in Croatian), DOI: [10.31298/sl.142.1-2.6](https://doi.org/10.31298/sl.142.1-2.6).
- Ruždjak, D., Brajša, R., Sudar, D., Skokić, I. and Poljančić Beljan, I. (2017): A relationship between the solar rotation and activity analysed by tracing sunspot groups, *Sol. Phys.*, **292**, A179, 11 pp, DOI: [10.1007/s11207-017-1199-8](https://doi.org/10.1007/s11207-017-1199-8).
- Ruždjak, D., Sudar, D., Brajša, R., Skokić, I., Poljančić Beljan, I., Jurdana Šepić, R., Hanslmeier, A., Veronig, A. and Pötzi, W. (2018): Meridional motions and Reynolds stress determined by using Kanzelhöhe drawings and white light solar images from 1964 to 2016, *Sol. Phys.*, **293**, A59, 12 pp, DOI: [10.1007/s11207-018-1286-5](https://doi.org/10.1007/s11207-018-1286-5).
- Selvarani, G., Shanmugaraju, A., Vršnak, B. and Lawrance, B. (2017): Investigation on m-class flare-associated coronal mass ejections with and without DH Type II radio bursts, *Sol. Phys.*, **292**, A74, 18 pp, DOI: [10.1007/s11207-017-1097-0](https://doi.org/10.1007/s11207-017-1097-0).

- Schmieder, B., Aulanier, G. and Vršnak, B. (2015): Flare-CME models: An observational perspective, *Sol. Phys.*, **290**, 3457–3486, DOI: [10.1007/s11207-015-0712-1](https://doi.org/10.1007/s11207-015-0712-1).
- Shimojo, M., Bastian, T. S., Hales, A. S., White, S. M., Iwai, K., Hills, R. E., Hirota, A., Phillips, N. M., Sawada, T., Yagoubov, P., Siringo, G., Asayama, S., Sugimoto, M., Brajša, R., Skokić, I., Bárta, M., Kim, S., de Gregorio-Monsalvo, I., Corder, S. A., Hudson, H. S., Wedemeyer, S., Gary, D. E., De Pontieu, B., Loukitcheva, M., Fleishman, G. D., Chen, B., Kobelski, A. and Yan, Y. (2017): Observing the sun with the Atacama large millimeter/submillimeter array (ALMA): High-resolution interferometric imaging, *Sol. Phys.*, **292**, A87, 28 pp, DOI: [10.1007/s11207-017-1095-2](https://doi.org/10.1007/s11207-017-1095-2).
- Sudar, D., Skokić, I., Brajša, R. and Saar S. H. (2015): Steps towards a high precision solar rotation profile: Results from SDO/AIA coronal bright point data, *Astron. Astrophys.*, **575**, A63, 6 pp, DOI: [10.1051/0004-6361/201424929](https://doi.org/10.1051/0004-6361/201424929).
- Sudar, D., Saar, Steven H., Skokić, I., Poljančić Beljan, I. and Brajša, R. (2016): Meridional motions and Reynolds stress from SDO/AIA coronal bright points data, *Astron. Astrophys.*, **587**, A29, 6 pp, DOI: [10.1051/0004-6361/201527217](https://doi.org/10.1051/0004-6361/201527217).
- Sudar, D., Vršnak, B. and Dumbović, M. (2016): Predicting coronal mass ejections transit times to Earth with neural network, *Mon. Not. R. Astron. Soc.*, **456**, 1542–1548, DOI: [10.1093/mnras/stv2782](https://doi.org/10.1093/mnras/stv2782).
- Sudar, D., Brajša, R., Skokić, I., Poljančić Beljan, I. and Wöhl, H. (2017): Meridional motion and Reynolds stress from Debrecen photoheliographic data, *Sol. Phys.*, **292**, A86, 13 pp, DOI: [10.1007/s11207-017-1105-4](https://doi.org/10.1007/s11207-017-1105-4).
- Tavra, M., Duplančić Leder, T. and Cetl, V. (2018): Stakeholders needs requisite analysis: towards Croatian marine spatial data infrastructure establishment, *Teh. vjesn.*, **25**(Suppl. 1), 176–182, DOI: [10.17559/TV-20160607222834](https://doi.org/10.17559/TV-20160607222834).
- Šljivarić, M., Rezo, M. and Grgić, I. (2018): Methods of modelling the distortion caused by different amount and orientation of coordinate corrections between two coordinate systems at various locations, *Teh. vjesn.*, **25**, 1–9, DOI: [10.17559/TV-20160117124803](https://doi.org/10.17559/TV-20160117124803).
- Šljivarić, M., Rezo, M. and Pavasović, M. (2018): Residual filtering methods for the purpose of computing the coordinate transformation distortion model, *Teh. vjesn.*, **25**, 1650–1658, DOI: [10.17559/TV-20170323001149](https://doi.org/10.17559/TV-20170323001149).
- Tavra, M., Jajac, N. and Cetl, V. (2017): Marine spatial data infrastructure development framework: Croatia case study, *ISPRS Int. J. of Geo-Inf.*, **6**(4), A117, 1–15, DOI: [10.3390/ijgi6040117](https://doi.org/10.3390/ijgi6040117).
- Tomić, H., Mastelić Ivić, S. and Roić, M. (2018): Land consolidation suitability ranking of cadastral municipalities: information-based decision-making using multi-criteria analyses of official registers' Dana, *ISPRS Int. J. of Geo-Inf.*, **7**(3), A87, 1–17, DOI: [10.3390/ijgi7030087](https://doi.org/10.3390/ijgi7030087).
- Tutić, D., Jogun, T., Kuveždić Divjak, A. and Triplat Horvat, M. (2017): World political map from OpenStreetMap data, *J. Maps*, **13**, 67–73, DOI: [10.1080/17445647.2017.1323683](https://doi.org/10.1080/17445647.2017.1323683).
- Tutić, D., Štanfel, M. and Triplat Horvat, M. (2018): Multi-criteria land evaluation of suitability for the sport of foot orienteering: a case study of Croatia and Slovenia, *ISPRS Int. J. of Geo-Inf.*, **7**(6), A227, 17 pp, DOI: [10.3390/ijgi7060227](https://doi.org/10.3390/ijgi7060227).
- Varga, M. and Bašić, T. (2015): Accuracy validation and comparison of global digital elevation models over Croatia, *Int. J. Remote Sens.*, **36**, 170–189, DOI: [10.1080/01431161.2014.994720](https://doi.org/10.1080/01431161.2014.994720).
- Varga, M., Grgić, M. and Bašić, T. (2015): Empirical comparison of the geodetic coordinate transformation models: a case study of Croatia, *Surv. Rev.*, **48**, 1–13, DOI: [10.1080/00396265.2015.1104092](https://doi.org/10.1080/00396265.2015.1104092).
- Vennerstrom, S., Lefevre, L., Dumbović, M., Crosby, N., Malandraki, O., Patsou, I., Clette, F., Veronig, A., Vršnak, B., Leer, K. and Moretto, T. (2016): Extreme geomagnetic storms – 1868–2010, *Sol. Phys.*, **291**, 1447–1481, DOI: [10.1007/s11207-016-0897-y](https://doi.org/10.1007/s11207-016-0897-y).
- Vlastelica, G., Pikelj, K. and Kordić, B. (2017): Erosional processes acting on coastal cliffs in the Split urban zone, Croatia, *Rev. Paralia*, **4**, 79–84, DOI: [10.5150/emcm.2017.015](https://doi.org/10.5150/emcm.2017.015).
- Vranić, S., Matijević, H. and Roić, M. (2015): Modelling outsourceable transactions on polygon based cadastral parcels, *Int. J. Geog. Inf. Sci.*, **29**, 454–474, DOI: [10.1080/13658816.2014.981190](https://doi.org/10.1080/13658816.2014.981190).
- Vršnak, B. (2016): Solar eruptions: The CME-flare relationship, *Astron. Nachr.*, **337**, 1002–1009, DOI: [10.1002/asna.201612424](https://doi.org/10.1002/asna.201612424).

- Vršnak, B., Žic, T., Lulić, Slaven, Temmer, M. and Veronig, A. (2016): Formation of coronal large-amplitude waves and the chromospheric response, *Sol. Phys.*, **291**, 88–115, DOI: [10.1007/s11207-015-0822-9](https://doi.org/10.1007/s11207-015-0822-9).
- Vršnak, B., Dumbović, M., Čalogović, J., Verbanac, G. and Poljančić Beljan, I. (2017): Geomagnetic effects of corotating interaction regions, *Sol. Phys.*, **292**, A140, 20 pp, DOI: [10.1007/s11207-017-1165-5](https://doi.org/10.1007/s11207-017-1165-5).
- Vučić, N., Roić, M., Mader, M., Vranić, S. and van Oosterom, P. (2017): Overview of the Croatian Land Administration System and the possibilities for its upgrade to 3D by existing data, *ISPRS Int. J. of Geo.-Inf.*, **6**(7), A223, 20 pp, DOI: [10.3390/ijgi6070223](https://doi.org/10.3390/ijgi6070223).
- Vujić, E. (2015): Short-term tests of Potassium dIdD vector magnetometer, *Acta Geophys.*, **63**, 1276–1295, DOI: [10.1515/acgeo-2015-0039](https://doi.org/10.1515/acgeo-2015-0039).
- Vujić, E. and Brkić, M. (2015): Data reduction of Croatian geomagnetic repeat stations surveys by using the spherical elementary current systems method, *Studia Geophys. Geod.*, **59**, 635–646, DOI: [10.1007/s11200-015-0517-6](https://doi.org/10.1007/s11200-015-0517-6).
- Vujić, E. (2016): On data interpolation at three Croatian repeat stations by using the spherical elementary currents systems method, *Acta Geophys.*, **64**, 320–335, DOI: [10.1515/acgeo-2016-0005](https://doi.org/10.1515/acgeo-2016-0005).
- Vujić, E. and Brkić, M. (2016): Estimation of influence of unequal secular variation on geomagnetic data reduction, *Stud. Geophys. Geod.*, **60**, 162–176, DOI: [10.1007/s11200-015-0823-z](https://doi.org/10.1007/s11200-015-0823-z).
- Vujić, E. and Brkić, M. (2016): Spherical elementary current systems method applied to geomagnetic field modeling for Adriatic, *Acta Geophys.*, **64**, 930–942, DOI: [10.1515/acgeo-2016-0045](https://doi.org/10.1515/acgeo-2016-0045).
- Wang, Y., Zhang, Q., Liu, J., Shen, Ch., Shen, F., Yang, Z., Žic, T., Vršnak, B., Webb, D.F., Liu, R., Wang, S., Zhang, J., Hu, Q. and Zhuang, B. (2016): On the propagation of a geoeffective coronal mass ejection during 15–17 March 2015, *J. Geophys. Res. – Space Physics*, **121**, 7423–7434, DOI: [10.1002/2016JA022924](https://doi.org/10.1002/2016JA022924).
- Wedemeyer, S., Bastian, T., Brajša, R., Barta, M., Hudson, H., Fleishman, G., Loukitcheva, M., Fleck, B., Kontar, E., DePontieu, B., Tiwari, S., Kato, Y., Soler, R., Yagoubov, P., Black, J. H., Antolin, P., Gunar, S., Labrosse, N., Benz, A. O., Nindos, A., Steffen, M., Scullion, E., Doyle, J. G., Zaqarashvili, T., Hanslmeier, A., Nakariakov, V. M., Heinzl, P., Ayres, T. and Karlicky, M., (2015): The SSALMON Group, SSALMON – The solar simulations for the atacama large millimeter observatory network, *Adv. Space Res.*, **56**, 2679–2692, DOI: [10.1016/j.asr.2015.05.027](https://doi.org/10.1016/j.asr.2015.05.027).
- Wedemeyer, S., Bastian, T., Brajša, R., Hudson, H., Fleishman, G., Loukitcheva, M., Fleck, B., Kontar, E., DePontieu, B., Yagoubov, P., Tiwari, S. K., Soler, R., Black, J. H., Antolin, P., Scullion, E., Gunar, S., Labrosse, N., Ludwig, H.-G., Benz, A. O., White, S. M., Hauschildt, P., Doyle, J. G., Nakariakov, V. M., Ayres, T., Heinzl, P., Karlicky, M., Van Doorselaere, T., Gary, D., Alissandrakis, C. E., Nindos, A., Solanki, S. K., Rouppe van der Voort, L., Shimojo, M., Kato, Y., Zaqarashvili, T., Perez, E., Selhorst, C. L. and Barta, M. (2016): Solar science with the atacama large millimeter/submillimeter array – A new view of our Sun, *Space Sci. Rev.*, **200**, 1–73, DOI: [10.1007/s11214-015-0229-9](https://doi.org/10.1007/s11214-015-0229-9).
- White, S. M., Iwai, K., Phillips, N. M., Hills, R. E., Hirota, A., Yagoubov, P., Siringo, G., Shimojo, M., Bastian, T. S., Hales, A. S. et al. (2017): Observing the Sun with the Atacama Large Millimeter/submillimeter Array (ALMA): Fast-scan single-dish mapping, *Sol. Phys.*, **292**, A88, 28 pp, DOI: [10.1007/s11207-017-1123-2](https://doi.org/10.1007/s11207-017-1123-2).
- Žic, T., Vršnak, B. and Temmer, M. (2015): Heliospheric propagation of coronal mass ejections: Drag-based model fitting, *Astrophys. J. Suppl. S.*, **218**, 32-1–32-7, DOI: [10.1088/0067-0049/218/2/32](https://doi.org/10.1088/0067-0049/218/2/32).
- Župan, R. and Frangeš, S. (2015): Map of the Diocese of Požega (Diocesis Posegana), *J. Maps*, **11**, 496–505, DOI: [10.1080/17445647.2014.978908](https://doi.org/10.1080/17445647.2014.978908).
- Župan, R., Frangeš, S. and Jagetić, J. (2018): Roman Catholic Diocese of Varaždin (Diocesis Varasdinum), *J. Maps*, **14**, 509–516, DOI: [10.1080/17445647.2018.1498033](https://doi.org/10.1080/17445647.2018.1498033).

