Curriculum Vitae

(December 31, 2017)

Name	Jędrzej S. Bojanowski
Gender	Male
Born	February 7, 1982 in Warsaw, Poland
Nationality	Polish
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Research interests

Satellite remote sensing with visible and infrared radiometers on board polar-orbiting and geostationary platforms:

- in agriculture monitoring: crop growth modelling and yield forecasting.
- in climatology: cloud physical properties retrieval and quantifying surface solar radiation;

Scientific programming, modelling, statistical computing and spatio-temporal data analysis.

Education

2010 – 2013	Ph.D. in satellite remote sensing, Faculty of Geo-Information Science and Earth Observation (ITC) of the University of Twente, The Netherlands.
2003 – 2005	M. Sc. in remote sensing and geographical information systems, Warsaw University, Poland.
2000 – 2003	BA in geography, Warsaw University, Poland.
1996 – 2000	High School Diploma, First Community High School (Bednarska), Warsaw, Poland.

Employment history

I 2017 -	Assistant Professor in Remote Sensing Centre of Institute of Geodesy and Cartography in Warsaw, Poland. Responsible for satellite climatology.
III 2013 – XII 2016	PostDoc at Federal Office of Meteorology and Climatology MeteoSwiss, Climate Division, Zürich, Switzerland. Responsible for satellite cloud climatology.
I 2010 – I 2013	Ph.D. grant-holder at European Commission – Joint Research Centre, Monitoring Agricultural Resources, Crop Production Forecast and Climate Change Impact, Ispra, Italy.

	Responsible for deriving surface radiation from satellite data, and for operational crop monitoring and yield forecasting.
I 2008 – XII 2008	Trainee at European Commission – Joint Research Centre, Global Environment Monitoring Unit, Ispra, Italy. Responsible for obtaining a long-term global satellite-based dataset of burnt surfaces.
III 2006 – XII 2009	Research assistant at Department of Remote Sensing – OPOLiS, Institute of Geodesy and Cartography, Warsaw, Poland. Responsible for development of low and medium resolution satellite data processing chain for agriculture monitoring; field measurements campaigns.

Publications

Books

Bojanowski, J.S, 2014. *Quantifying solar radiation at the earth surface with meteorological and satellite data*. PhD thesis. Enschede: University of Twente Faculty of Geo-Information and Earth Observation (ITC). ISBN: 978-90-6164-371-5.

ISI journal articles

Stengel, M., Stapelberg, S., Sus, O., Schlundt, C., Poulsen, C., Thomas, G., Christensen, M., Carbajal Henken, C., Preusker, R., Fischer, J., Devasthale, A., Willén, U., Karlsson, K.-G., McGarragh, G. R., Proud, S., Povey, A. C., Grainger, D. G., Meirink, J. F., Feofilov, A., Bennartz, R., **Bojanowski, J.S.**, and Hollmann, R., 2017. Cloud property datasets retrieved from AVHRR, MODIS, AATSR and MERIS in the framework of the Cloud_cci project, Earth Syst. Sci. Data Discuss, 9, 881-904.

Duguay-Tetzlaff, A., Bento, V.A., Göttsche, F.M., Stöckli, R., Martins, J.P.A., Trigo, I., Olesen, F., **Bojanowski, J.S.**, da Camara, C., Kunz, H., 2015. Meteosat Land Surface Temperature Climate Data Record: Achievable Accuracy and Potential Uncertainties. Remote Sensing, 2015, 7, 13139-13156.

Bojanowski, J.S., Stöckli, R., Tetzlaff, A., Kunz, H., 2014. The Impact of Time Difference between Satellite Overpass and Ground Observation on Cloud Cover Performance Statistics. Remote Sensing 6, 12866-12884.

Bojanowski, J.S., Vrieling, A., Skidmore, A.K., 2014. A comparison of data sources for creating a long-term time series of daily gridded solar radiation for Europe. Solar Energy 99, 152-171.

Bojanowski, J.S., Donatelli, M., Skidmore, A.K., Vrieling, A., 2013. An auto-calibration procedure for empirical solar radiation models. Environmental Modelling and Software 49, 118-128.

Bojanowski, J.S., Vrieling, A., Skidmore, A.K., 2013. Calibration of solar radiation models for Europe using Meteosat Second Generation and weather station data. Agricultural and Forest Meteorology 176, 1-9.

Roerink G.J., **Bojanowski J.S.**, de Wit A.J.W., Eerens H., Supit I., Leo O., Boogaard H., 2012, Evaluation of MSG-derived global radiation estimates for application in a regional crop model. Agricultural and Forest Meteorology 160, 36-47.

Dąbrowska-Zielińska K., Gruszczyńska M., Lewiński S., Hościło A., **Bojanowski J.S.**, 2009, Application of remote and in situ information to the management of wetlands in Poland. Journal of Environmental Management 90, 2261-2269.

Other peer-reviewed articles

Turlej, K., **Bojanowski, J.S.**, Bartold, M., 2013. New agriculture mask for crop growth monitoring in Poland using NOAA-AVHRR time series [in polish], Archiwum Fotogrametrii, Kartografii i Teledetekcji 25, 233-242.

Duveiller, G., Lopez-Lozano, R., Seguini, L., **Bojanowski, J.S.**, Baruth, B., Optical remote sensing requirements for operational crop monitoring and yield forecasting in Europe [proceedings to Sentinel-3 OLCI/SLSTR and MERIS/(A)ATSR workshop, 15-19 October 2012, Frascati, Italy].

Dąbrowska-Zielińska, K., Ciołkosz, A., Malińska, A., **Bojanowski, J.S.**, Kowalik, W., Budzyńska, M., Bartold, M., 2010, Estimates of Yield Reduction Caused by Drought. Proceedings to 30th EARSeL Symposium: Remote Sensing for Science, Education, and Natural and Cultural Heritage, Rainer Reuter (Ed.), Paris, France.

Bojanowski J.S., Kowalik, W., Bochenek, Z., 2009, Noise reduction of NDVI timeseries: a robust method based on Savitzky-Golay filter. Annals of Geomatics, vol. 7, 2, 13-21.

Dąbrowska-Zielińska, K., Budzyńska, M., Małek, I., **Bojanowski, J.**, Bochenek Z., Lewinski St., 2009, Assessment of crop growth conditions for agri-environment ecosystem for modern landscape management. Proceedings to 28th EARSeL Symposium: Remote Sensing for a Changing Europe, D. Maktav (Ed.), Istanbul, Turkey.

Bojanowski, J., 2006, The analysis of sensibility to the change of the input parameters in the 6S model. Proceedings to 26th EARSeL Symposium: New Developments and Challenges in Remote Sensing, Bochenek Z. (Ed.), Warsaw, Poland.

Bojanowski, J., Lewiński, S., 2005, Porównanie wyników korekcji atmosferycznej 6S zdjęcia Landsat ETM z zastosowaniem standardowych parametrów wejściowych oraz uzyskanych na podstawie pomiarów meteorologicznych. [Comparison of the results of 6S atmospheric correction of Landsat ETM image using default input parameters as well as meteorogical measurements]. Teledetekcja Środowiska, 35, 55-60.

Bojanowski, J., 2005, Badanie wrażliwości modelu korekcji atmosferycznej 6S na zmianę parametrów wejściowych [The analysis of sensibility to the change of the input parameters in the 6S model]. Teledetekcja Środowiska, 35, 96-105.

Theses

Bojanowski, J.S., Skidmore, A.K. (Promoter) and Vrieling, A. (assistant promoter), 2014. *Quantifying solar radiation at the earth surface with meteorological and satellite data*. University of Twente Faculty of Geo-Information and Earth Observation (ITC). ITC Dissertation 242. (Ph.D)

Bojanowski, J.S., Lewiński, S. (Supervisor), 2005. *Atmospheric correction of satellite*

images using 6S model in GRASS environment. Faculty of Geography and Regional Studies, Warsaw University. (M.Sc.)

Bojanowski, J.S., Olędzki, J.R. (Supervisor), 2003. *Geographical analysis of photomorphic regions in east part of Polish Baltic Sea Coast*. Faculty of Geography and Regional Studies, Warsaw University. (BA)

Other publications

Crop Monitoring in Europe, MARS Bulletin: from Vol. 18 No 1 (2010) until Vol. 20 No 8 (2012), EUR 24736, Publications Office of the European Commission.

Selected research projects

2013 – work package leader	*ESA-Cloud-CCI.* The primary objective of the project is to provide the long-term (~ 30 y) coherent cloud property global dataset by exploiting different Earth observation missions. In the **first phase** I was responsible for validation of the cloud physical properties dataset in the alpine and polar regions. In the **second phase** I am leading two work packages which aim at evaluating climatological stability and homogeneity, and analyzing diurnal cycle of the AVHRR and MODIS cloud cover by use of a Meteosat-based cloud climatology (CM SAF) and SYNOP. This should lead to de-trended and de-biased cloud cover climatology over Central Europe.
2014 – collaborator	*CM SAF (EUMETSAT) CDOP II.* The project aims at deriving a cloud mask covering the Meteosat satellite's visible disc. The final time series will extend over 30 years by using data from Meteosat first and second generation satellites (1983-present). I am involved in validation activities of the dataset based on ground-based cloud amount observations and measurements.
2010 – 2013 primary researcher PhD project	*Surface solar radiation in MARS Crop Yield Forecasting System.* I have carried out a comprehensive accuracy assessment and rigorous inter-comparison of solar radiation datasets for Europe; these were derived from satellite observations, empirical solar radiation models, and weather prediction models. Based on project results I provided guidelines on how a long-term seamless gridded time series of daily solar radiation may be constructed for Europe from two currently available products that are derived from geostationary satellites, the European Reanalysis (ERA-Interim) and weather station data.
2010 – 2013 collaborator	*MARS Bulletins – Crop monitoring in Europe* The MARS bulletins offer in a near real time and in an operational context analyses and information on crop growth conditions and yield forecast at EU28 level and neighbouring countries.
2010 primary researcher	In the Global Environment Monitoring Unit of the Joint Research Centre I carried out the project which aimed at concatenating of the existing satellite-based global burnt surfaces products (GBS and

	L3JRC) to obtain a long-term and homogeneous dataset.
2007 – 2009 Collaborator	*Remote sensing methods for environmental assessment of Eurasian peatlands and associated ecosystems under climate change* (PACINE). This project was funded in a frame of ESA Thematic Call on Earth Science and Environment (INTAS, FP6) and it aimed at developing and testing Earth Observation (EO) methods to assess the status of Northern Eurasia's peatlands and associated ecosystems in response to climate change, covering both mitigation and adaptation aspects.
2006 – 2007 collaborator	*GEOLAND-OFM (Observatory food security and crop monitoring)* aimed at developing methods and tools to provide near-real time information on crop yield outlook and estimated cultivated areas at the scale of provinces and countries as basis for regional crop production estimates. I contributed to application of satellite-derived crop growth indicators which proved beneficial in crop yield forecasting. The analysis was carried out for Poland, Belgium and Spain based on satellite imagery derived from NOAA AVHRR and SPOT VEGETATION.

Teaching

VII 2017	Lectures at *Aerosol Research Network (Poland AOD) 3rd Coneference on Atmospheric Aerosol Properties and Climate Impacts,* Warsaw, Poland.
III 2017	Lectures at *EUMETSAT's Workshop on the Use of Gridded Satellite Data for Climate Services,* Cracow, Poland.

Professional training

IX 2014	Scientific Programming in Python at Federal Institute of Technology Zurich (ETH), Switzerland.
I–III 2014	Climate Change in Four Dimensions, online course, University of California, San Diego, USA.
X–XII 2013	Global Warming: The Science of Climate Change, online course, University of Chicago, USA.
9–13 VI 2012	Modelling Environments for Biophysical Modelling in Hydrology and Agriculture: Object Modeling System 3 (OMS3) and Biophysical Model Applications (BioMA), Ispra, Italy.
25–29 VI 2012	C# and Object Design Training, Ispra, Italy.
IX 2011 – IV 2012	Machine Learning Online Course, Stanford Engineering, USA.
17–21 X 2011	CM SAF 4th User Training Workshop, Langen, Germany.
21-22 III 2011	Handling and analysing spatio-temporal data in R, University of

	Münster, Germany.
15–17 XI 2010	LSA SAF 4th User Training Workshop, Toulouse, France.
10–11 XI 2010	Advanced training course on crop growth and yields modelling, Joint Research Centre, Ispra, Italy.
14–15 IV 2010	Scientific Writing, Training Course, Joint Research Centre, Ispra, Italy.
13–19 VII 2009	Summer school (ISPRS): *Natural Environment Management, Monitoring and Conservation*, 4th ISPRS SC and WG VI/5, Warsaw, Poland.
2–7 IX 2007	Summer school (European Space Agency): *Advanced Training Course on Land Remote Sensing*, Lisbon, Portugal.
17–21 VI 2006	Summer school (Center of Excellence in Small Scale Atmospheric Research): *Atmospheric Aerosols*, Jastarnia, Poland.
8–12 V 2006	Summer School *(*NOAA-NESDIS, EUMETSAT and IMGW*): Applications with the Newest Multi-spectral Environmental Satellites* in Cracow, Poland.
4–6 XI 2004	Training workshop: *Spatial Analyses in GRASS and R,* Section for Meteorology and Climatology, Wroclaw University, Poland.
23–25 X 2003	Training workshop: *Spatial Analyses in GRASS,* Section for Meteorology and Climatology, Wroclaw University, Poland.

Selected conference and workshop appearances

VII 2015	*The impact of time difference between satellite overpass and ground observation on cloud cover performance statistics.* International Geoscience and Remote Sensing Symposium 2015, Milan, Italy
IX 2014	*A comparison of data sources for creating a long-term time series of daily gridded solar radiation for Europe.* EUMETSAT Meteorological Satellite Conference, Geneva, Switzerland.
III 2014	*Towards characterizing the uncertainty of in-situ cloud observations: A case study for the ESA CCI Cloud project validating satellite-based cloud amount in mountain and polar regions.* Cloud Retrieval Evaluation Workshop (CREW4), Grainau, Germany.
III 2014	*A comparison of data sources for creating a long-term time series of daily gridded solar radiation for Europe.* The 4th CM-SAF User Workshop, Grainau, Germany.
XI 2013	*Validation of AVHRR and MODIS derived cloud properties in mountainous and polar regions,* ESA CCI Clouds final meeting, Offenbach, Germany.
IX 2012	*Evaluation of Meteosat First Generation-based surface incoming solar radiation dataset for agro-meteorological modelling in Europe*, The Climate Monitoring SAF workshop, Łódź, Poland

IX 2012	*Towards long-term time series of the global solar radiation data for the regional agro-meteorological modelling,* EUMETSAT Meteorological Satellite Conference, Sopot, Poland.
IX 2011	*Recalibration of the global solar radiation models based on the MSG-DSSF data over Europe*, EUMETSAT Meteorological Satellite Conference, Oslo, Norway.
III 2011	*Using R for crop growth monitoring through remote sensing techniques*, Workshop on Handling and analysing spatio-temporal data in R, Muster, Germany.
XI 2010	*Adaptation of LSA SAF products for crop monitoring: case study of solar radiation,* LSA SAF 4th User Training Workshop, Météo-France Conference Centre, Toulouse, France.
IX 2009	*Dissecting of global burnt area products. Improvements of Global Burnt Surfaces Product (GBS),* V Ogólnopolskie Sympozjum Geoinformacyjne, Cracow, Poland.
VIII 2008	*Using R for time series analysis and spatial-temporal distribution of global burnt surface multi-year product,* The R User Conference 2008, Dortmund, Germany.
V 2008	*Significant radar remote sensing features in wetlands monitoring*, Remote Sensing Methods for Environmental Assessment of Eurasian Peatlands and Associated Ecosystems under Climate Change, Russian Academy of Sciences (IKI), Moscow, Russia.
V 2006	*The analysis of sensibility to the change of the input parameters in the 6S model,* 26th EARSeL Symposium: New Developments and Challenges in Remote Sensing, Warsaw, Poland.

Software development

sirad	R package for estimating daily surface solar radiation and evapotranspiration based on meteorological and satellite data. Available with GPL-2 license at the Comprehensive R Archive Network (http://cran.r-project.org/sirad)
rgeosatclim	R package for evaluation of satellite-derived cloud properties against ground measurements and observations, as well as for inter-comparison with existing cloud datasets. Only for internal use at MeteoSwiss
apcada	R package for cloud amount estimates from incoming longwave radiation measurements. Algorithm builds on the naïve-bayesian classifier and physical-based approach of Durr and Philipona (2004). Only for internal use at MeteoSwiss

Awards

XII 2017	Scholarship of the Polish Ministry of Science for young outstanding researchers.

Reviewer for journals

Atmospheric Measurement Techniques
MDPI Remote Sensing
The R Journal
Acta Geophysica
Journal of Renewable and Sustainable Energy

Technical skills

Analytical thinking
Scientific writing
Statistical computing: R
Image processing: Erdas Imagine (with EML/SML), GRASS
Geographical Information System: R, GRASS, ArcMap, QGIS
Data management: SQL, NetCDF (with cdo and R)
Programming: R, basics of Python, C#, C++, and Fortran
Office: Latex, MS Office, Adobe Acrobat, Adobe Photoshop, Adobe Illustrator

In-situ measurements:
- volumetric soil moisture (with TRIME-FM, IMKO, Germany)
- Leaf Area Index (with LAI-2000 Plant Canopy Analyzer, LI-COR, USA)
- photosynthetically active radiation (with AccuPAR LP-80, DECAGON DEVICES,INC., USA)
- thermal radiation (with infrared thermometer, EVEREST INTERSCIENCE INC., USA)
- meteorological measurements with portable station

Social skills

- Good ability to swiftly adapt to multicultural environments. Open-minded, tolerant, outgoing: all thanks to years of work in international organizations
- Confidence in public speaker; long-term practice at many scientific and organizational presentations
- Calm and conciliatory, always seeking for settlement
- Team spirit and team work enthusiast. Long-time player in amateur leagues of volleyball (4th Zurich league) and basketball (amateurs league of Varese province)

Organizational skills

- While carrying out several research projects for, e.g., European Space Agency (ESA-Cloud-CCI), FP7 (GEOLAND), EUMETSAT (CM SAF) I gained several organizational skills such as: technical communication, handling details, coordinating tasks, punctuality, meeting deadlines, setting goals, keeping control over work package budget, planning and arranging activities, and multi-tasking.
- I learned to work under stress and in highly collaborative environment while delivering monthly reports to the European Commission (within Joint Research Centre Crop Yield Forecasting System).
- I am, in general, dutiful and precise in my daily routines, from smallest tasks to large projects. I keep calm even in highly stressful situations.

Language skills

Polish (mother tongue)

	Reading	Writing	Verbal
English (C1)	excellent	excellent	excellent
Italian (A2)	good	basic	good
German (A1)	basic	basic	basic
French	basic	basic	basic

Hobbies

Old cars, cooking, volleyball, skiing, basketball

Driving license