

PERSONAL INFORMATION

Giulia Tagliabue


| Gender Female | Date of birth 25/11/1990 | Nationality Italian

CURRENT POSITION

Postdoc fellowship at the Remote Sensing of Environmental Dynamics Laboratory (LTDA), University of Milano - Bicocca (Milano, Italy)

WORK EXPERIENCE

3 Jun 2015 - 30 Sept 2016

Scientific co-worker

Forschungszentrum Jülich GmbH, Institute of Bio- & Geosciences, Plant Sciences (IBG-2), Jülich, Germany

Scientific supervisor: Prof. Uwe Rascher

- Elaboration of field measurements and airborne hyperspectral data for the analysis of the functional and structural state of vegetation
- Use of optical sensors for the long-term quantitative detection of sun-induced chlorophyll fluorescence emitted from vegetation

SCIENTIFIC ACTIVITIES

Projects

2018 - Present

- CHIME Mission Requirement Consolidation (European Space Agency): sensitivity analysis on the retrieval of plant traits from multispectral and hyperspectral remotely sensed data

2015 - 2016

- TR32 - Transregional Collaborative Research Centre (Deutsche Forschungsgemeinschaft): analysis of patterns in soil-vegetation-atmosphere systems

Field campaigns

Involved in international field campaigns aimed at acquiring high quality reflectance and fluorescence measurements from the leaf to the canopy scale over different vegetated targets:

May – July 2020

- Jolanda di Savoia (Italy): participation to the CHIME campaign funded by ESA (European Space Agency) for collecting vegetation samples for the assessment of the accuracy in the retrievals from PRISMA spaceborne imagery;

July - August 2018

- Braccagni (Italy): participation to the ATMOFLEX campaign funded by ESA aimed at measuring sun-induced chlorophyll fluorescence at multiple scales for validating the atmospheric correction schemes and collecting plant trait measurements for validation of airborne and satellite retrievals;

March 2018

- Aranjuez (Spain): participation to a field campaign organised in collaboration with the Rey Juan Carlos University (Mostoles, Spain) aimed at acquiring drone RGB, multispectral and thermal imagery, ground hyperspectral measurements and ancillary field measurements in a dryland ecosystem;

- July 2016** ▪ Udine (Italy): participation to the SoyFLEX2 campaign funded by ESA aimed at extending the analysis on two soybean varieties started in July 2015 with the SoyFLEX campaign;
- May 2016** ▪ Majadas de Tietar (Spain): participation to a field campaign organised by Forschungszentrum Jülich to intensively test the instrumentation (e.g.: hyperspectral line-scanner spectrometer, non-imaging systems designed to continuously measure sun-induced chlorophyll fluorescence) in order to achieve highly reliable and accurate measurements of fluorescence under field conditions;
- June 2015** ▪ Campus Klein Altendorf, Rheinbach (Germany): participation to the SoyFLEX campaign funded by ESA in the framework of the activities to support the selection of FLEX (FLuorescence EXplorer) as ESA's Earth Explorer 8 mission

Skills acquired: spectral measurements using spectroradiometers (ASD FieldSpec Pro (ASD Inc., Longmont, USA), Ocean Optics HR4000, Ocean Optics QEPro (Ocean Optics, Dunedin, USA)) for calibration/validation and vegetation measurement; indirect biophysical and biochemical vegetation parameters measurements (SPAD-502Plus (Konica Minolta, Tokyo, Japan), Nikon E8400 camera + fish eye (Nikon, Tokyo, Japan), SunScan (Delta-T Devices Ltd, Cambridge, UK)); atmospheric characterisation measurements (Microtops II Sunphotometer (Solar Light Company Inc, Glenside, USA)); thermal measurements (FLIR Thermal camera (Wilsonville, USA))

EDUCATION

- Nov 2015 – 20 Feb 2019** Ph.D. in Chemical, Geological and Environmental Sciences EQF 8
University of Milano - Bicocca, Department of Earth and Environmental Sciences (DISAT), Remote Sensing of Environmental Dynamics Laboratory (LTDA), Milano, Italy
Ph.D. Thesis title: "Linking vegetation optical properties from multi-source remote sensing to plant traits and ecosystem functional properties"
Tutor: Dr. Micol Rossini
- Nov 2012 - 23 Mar 2015** Master's degree in Sciences and Technologies for Environment & Landscape (LM-75) EQF 7
University of Milano - Bicocca, Milano, Italy
Department of Earth and Environmental Sciences (DISAT)
Thesis title: "Airborne hyperspectral remote sensing for forest ecosystems monitoring: species mapping and plant traits retrieval"
Supervisor: Dr. Micol Rossini; Co-Supervisors: Dr. Cinzia Panigada, Dr. Roberto Colombo
Degree mark: 110/110 with honors
- Oct 2009 - 5 Nov 2012** Bachelor's degree in Environmental Sciences and Technologies (L-32) EQF 6
University of Milano - Bicocca, Milano, Italy
Department of Earth and Environmental Sciences (DISAT)
Thesis title: "Determination of arsenic and cadmium effect on the growth of the bioindicator *Trifolium repens* L."
Supervisor: Dr. Sandra Citterio; Co-Supervisor: Dr. Alessandra Ghiani
Degree mark: 109/110

TRAINING & SUMMERSCHOOLS

- 19-23 June 2017** Summerschool "RS4forestEBV - Airborne remote sensing for monitoring essential biodiversity variables in forest ecosystems"
Organised by EUFAR (European Facilities for Airborne Research) and ITC-University of Twente (Enschede, The Netherlands) and held at Bavarian Forest National Park (St. Oswald, Germany) and German Aerospace Center (DLR) (Oberpfaffenhofen, Germany)
- 26-30 June 2017** Training course on "Earth Observation data for environmental monitoring"
Organised by Università degli Studi di Milano-Bicocca (Milano, Italy) and held at Università degli Studi di Milano-Bicocca (Milano, Italy)
- 3-14 July 2017** Training course on "Open source software for spatial data analysis"
Organised by Università degli Studi di Milano-Bicocca (Milano, Italy) and held at Università degli Studi di Milano-Bicocca (Milano, Italy)
- 9-11 January 2016** Statistics course using R
Organised by Università degli Studi di Milano-Bicocca (Milano, Italy) and held at Università degli Studi di Milano-Bicocca (Milano, Italy)

PERSONAL SKILLS

Mother tongue Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user

- Job-related skills** Remote Sensing-related skills:
- Image pre-processing techniques: geometric correction (CaliGeo software, Specim Ltd., Oulu, Finland); atmospheric correction (ATCOR radiative transfer code)
 - Elaboration of multi-spectral and hyperspectral data acquired using sensors mounted on-board different platforms (UAV, airborne and satellite scale)
 - Image classification
 - Plant traits retrieval using physically based, statistical and hybrid approaches
 - Field data acquisition
- Computer skills**
- Microsoft Office™ tools
 - GIS softwares (ArcGIS®, QGIS) and ENVI® for remotely sensed imagery elaboration
 - Programming languages: R, IDL
 - Adobe® CS tools (Bridge, Photoshop)
- Driving licence** B

ADDITIONAL INFORMATION

Peer Reviewed Publications

- Tagliabue, G, Panigada, C, Celesti, M, Cogliati, S, Colombo, R, Migliavacca, M, Rascher, U, Rocchini, D, Schüttemeyer, D, Rossini, M (2020). Sun-induced fluorescence heterogeneity as a measure of functional diversity. *Remote Sensing of Environment*, Volume 247, 15 September 2020, 111934, DOI: 10.1016/j.rse.2020.111934
- Fawcett, D, Panigada, C, Tagliabue, G, Boschetti, M, Celesti, M, Evdokimov, A, Biriukova, K, Colombo, R, Miglietta, F, Rascher, U, Anderson, K (2020). Multi-Scale Evaluation of Drone-Based Multispectral Surface Reflectance and Vegetation Indices in Operational Conditions. *Remote Sensing*, 2020, 12(3), 514, DOI: 10.3390/rs12030514
- Gentili, R, Baroni, C, Panigada, C, Rossini, M, Tagliabue, G, Armiraglio, S, Citterio, S, Carton, A, Salvatore, MC (2020). Glacier shrinkage and slope processes create habitat at high elevation and microrefugia across treeline for alpine plants during warm stages. *Catena*, Volume 193, October 2020, 104626, DOI: 10.1016/j.catena.2020.104626
- Blanco Sacristan, J, Panigada, C, Tagliabue, G, Gentili, R, Colombo, R, de Guevara, M, Maestre, FT, Rossini, M (2019). Spectral diversity successfully estimates the α -diversity of biocrust-forming lichens. *Remote Sensing*, 11(24), 2942, DOI: 10.3390/rs11242942
- Tagliabue, G, Panigada, C, Dechant, B, Baret, F, Cogliati, S, Colombo, R, Migliavacca, M, Rademske, P, Schickling, A, Schüttemeyer, D, Verrelst, J, Rascher, U, Ryu, Y, Rossini, M (2019). Exploring the spatial relationship between airborne-derived red and far-red sun-induced fluorescence and process-based GPP estimates in a forest ecosystem. *Remote Sensing of Environment*, 2019, 231, DOI: 10.1016/j.rse.2019.111272
- Panigada, C, Tagliabue, G, Zaady, E, Rozenstein, O, Garzonio, R, Di Mauro, B, De Amicis, M, Colombo, R, Cogliati, S, Miglietta, F, Rossini, M (2019). A new approach for biocrust and vegetation monitoring in drylands using multi-temporal Sentinel-2 images. *Progress in Physical Geography*, 2019, 43 (4), 496-520, DOI: 10.1177/0309133319841903
- Tagliabue, G, Panigada, C, Colombo, R, Fava, F, Cilia, C, Baret, F, Vreys, K, Meuleman, K, Rossini, M (2016). Forest species mapping using airborne hyperspectral APEX data. *Miscellanea Geographica*, 20 (1), 28-33. DOI: 10.1515/mgrsd-2016-0002

- Scientific Conferences**
- Attended**
- AGU Fall Meeting 2019, 9-13 December 2019, San Francisco, USA (*oral presentation*)
 - ESA Living Planet Symposium, 13-17 May 2019, Milano, Italy (*oral and poster presentation*)
 - International Network on Remote Sensing of Terrestrial and Aquatic Fluorescence, 5-8 March 2019, Davos, Switzerland (*poster presentation*)
 - AGU Fall Meeting 2018, 10-14 December 2018, Washington DC, USA (*oral presentation*)
 - Chemical, Geological and Environmental Sciences Ph.D. Day, 18 May 2018, Milano, Italy (*poster presentation*)
 - COST ES1309 OPTIMISE Final Conference, 21-23 February 2018, Sofia, Bulgaria (*oral presentation*)
 - GHG Flux Workshop, From Photosystems to Ecosystems, 24-26 October 2017, Potsdam, Germany (*oral presentation*)
 - FLEX - Remote Sensing of Fluorescence, Photosynthesis and Vegetation Status, 17-19 January 2017, ESA-ESRIN, Frascati, Italy (*oral presentation*)
 - SAIL35 Symposium, 27-28 September 2016, Enschede, The Netherlands (*poster presentation*)
 - ESA Living Planet Symposium, 9-13 May 2016, Prague, Czech Republic (*poster presentation*)
 - XIX ASITA National Conference, 29 September-1 October 2015, Lecco, Italy (*oral presentation*)

- Conference contributions**
- **Tagliabue G**; Panigada C; Dechant B; Baret F; Cogliati S; Colombo R; Migliavacca M; Rademske P; Schickling A; Schüttemeyer D; Verrelst J; Rascher U; Ryu Y; Rossini M (2019). Sun-induced chlorophyll fluorescence as a measure of photosynthesis in a forest ecosystem. ESA Living Planet Symposium; Milano; Italy; 13-17 May 2019
 - **Tagliabue G**; Panigada C; Blanco Sacristán J; Ladrón de Guevara M; Celesti M; Julitta T; Maestre F; Miglietta F; Rossini M (2019). Sun-induced chlorophyll fluorescence of biocrusts: a challenging signal to understand challenging environments. ESA Living Planet Symposium; Milano; Italy; 13-17 May 2019
 - **Tagliabue G**; Panigada C; Blanco Sacristán J; Ladrón de Guevara M; Celesti M; Julitta T; Maestre F; Miglietta F; Rossini M (2019). *Can we measure sun-induced chlorophyll fluorescence emitted by biocrusts?* International network on remote sensing of terrestrial and aquatic fluorescence; Davos; Switzerland; 5-8 March 2019
 - Rossini M; **Tagliabue G**; Celesti M; Cogliati S; Colombo R; Migliavacca M; Rascher U; Rocchini D; Schüttemeyer D; Panigada C (2019); *Estimating functional diversity using sun-induced fluorescence in terrestrial ecosystems*. International network on remote sensing of terrestrial and aquatic fluorescence; Davos; Switzerland; 5-8 March 2019
 - **Tagliabue G**; Panigada C; Dechant B; Cogliati S; Colombo R; Migliavacca M; Rademske P; Schickling A; Schüttemeyer D; Verrelst J; Rascher U; Ryu Y; Rossini M (2018). *Linking red and far-red sun-induced chlorophyll fluorescence to photosynthesis in a forest ecosystem through HyPlant high-resolution airborne imagery*. AGU Fall Meeting 2018; Washington DC; USA; 10-14 December 2018
 - Cogliati S; Colombo R; Celesti M; **Tagliabue G**; Rascher U; Schickling A; Rademske P; Alonso L; Sabater N; Drusch M; Schüttemeyer D (2018). *Retrieval of the fluorescence emission by atmospheric forward modelling and spectral fitting*. International Geoscience and Remote Sensing Symposium 2018; Valencia; Spain; 22-27 July 2018
 - Blanco Sacristán J; Panigada C; **Tagliabue G**; Biriukova K; Ladrón de Guevara M; Maestre F; Anderson K; Rossini M (2018). *Semi-arid ecosystem monitoring using thermal and hyperspectral data*. European Geosciences Union General Assembly; Vienna; Austria; 8-13 April 2018
 - Di Mauro B; Baccolo G; Franzetti A; Ambrosini R; Pittino F; Garzonio R; Leoni B; Gargan A; **Tagliabue G**; Colombo R; Rossini M (2018). *Investigating algal blooms on ice in an Alpine glacier*. European Geosciences Union General Assembly; Vienna; Austria; 8-13 April 2018
 - Celesti M; van der Tol C; Cogliati S; Colombo R; Miglietta F; Panigada C; Pinto F; Rascher U; Schüttemeyer D; **Tagliabue G**; Yang P; Rossini M (2018). *Analysis of short-term vegetation dynamics combining hyperspectral measurements and RTM's inversion*. COST ES1309 OPTIMISE Final Conference; Sofia; Bulgaria; 21-23 February 2018
 - **Tagliabue G**; Panigada C; Dechant B; Celesti M; Cogliati S; Colombo R; Julitta T; Meroni M; Schickling A; Schüttemeyer D; Rascher U; Verrelst J; Ryu Y; Rossini M (2018). *Linking sun-induced fluorescence and photosynthesis in a forest ecosystem*. COST ES1309 OPTIMISE Final Conference; Sofia; Bulgaria; 21-23 February 2018

- **Tagliabue; G;** Celesti; M; Cogliati; S; Colombo; R; Dechant; B; Julitta; T; Meroni; M; Miglietta; F; Moreno; J; Panigada; C; Schickling; A; Schüttemeyer; D; Rascher; U; Ryu; Y; van der Tol; C; Verrelst; J; Rossini; M (2017). *Summary of ESA Fluorescence EXplorer (FLEX) field campaigns aiming at linking fluorescence and photosynthesis*. GHG Flux Workshop - From Photosystems to Ecosystems; Potsdam; Germany; 24-26 October 2017
- Blanco Sacristán; J; Panigada; C; **Tagliabue; G;** Biriukova; K; Ladrón de Guevara; M; García-Gómez; M; Maestre; F; Rossini; M (2017). *Semi-arid ecosystem monitoring with remotely-sensed data*. GHG Flux Workshop - From Photosystems to Ecosystems; Potsdam; Germany; 24-26 October 2017
- Rossini; M; Celesti; M; Cogliati; S; Colombo; R; Damm; A; Julitta; T; Juszczak; R; Migliavacca; M; Miglietta; F; Panigada; C; Perez-Priego; O; Pinto; F; Rascher; U; Reichstein; M; Sakowska; K; Schickling; A; Schüttemeyer; D; **Tagliabue; G;** van der Tol; C (2017). *Sun-Induced Fluorescence for Assessing Vegetation Functioning from Remote*. 10th EARSeL SIG Imaging Spectroscopy Workshop; Zurich; Switzerland; 19-21 April 2017
- **Tagliabue; G;** Panigada; C; Baret; F; Celesti; M; Cogliati; S; Colombo; R; Julitta; T; Schickling; A; Schüttemeyer; D; Verrelst; J; Rascher; U; Rossini; M (2017). *HyPlant Images to Investigate the Capability of FLEX and Sentinels to Monitor a Mixed Forest Ecosystem*. Remote Sensing of Fluorescence; Photosynthesis and Vegetation Status (FLEX); Frascati; Italy; 17-19 January 2017
- Cogliati; S; Verhoef; W; Sabater; N; Alonso; L; Moreno; J; Rascher; U; Middleton; E; Mohammed; G; Drusch; M; Schüttemeyer; D; **Tagliabue; G;** Celesti; M; Rossini; M; Panigada; C; Colombo; R (2017). *Updates on Fluorescence Retrieval Algorithm Based on Spectral Fitting Approach and Results on High-Resolution Radiance Observations*. Remote Sensing of Fluorescence; Photosynthesis and Vegetation Status (FLEX); Frascati; Italy; 17-19 January 2017
- Rossini; M; Panigada; C; Zaady; E; Celesti; M; Cogliati; S; Colombo; R; Di Mauro; B; Garzonio; R; Julitta; T; **Tagliabue; G;** Rascher; U; Miglietta; F (2017). *Semi-arid ecosystem monitoring: a new perspective with sun-induced fluorescence and Sentinel observations*. Remote Sensing of Fluorescence; Photosynthesis and Vegetation Status (FLEX); Frascati; Italy; 17-19 January 2017
- Cendrero-Mateo; M; Sakowska; K; Celesti; M; Schickling; A; **Tagliabue; G;** Panigada; C; Julitta; T; Burkart; A; Alonso; L; Juszczak; R; Cogliati; S; Rossini; M; Colombo; R; Rascher; U; Miglietta; F (2017). *Sun Induced Fluorescence: a bottom-up approach in chlorophyll-deficient and green soybean*. Remote Sensing of Fluorescence; Photosynthesis and Vegetation Status (FLEX); Frascati; Italy; 17-19 January 2017
- Schickling; A; Alonso; L; Celesti; M; Cogliati; S; Colombo; R; Damm; A; Hanus; J; Julitta; T; Juszczak; R; Matveeva; M; Miglietta; F; Moreno; J; Panigada; C; Pinto; F; Rossini; M; Schüttemeyer; D; **Tagliabue; G;** Zemek; F; Rascher; U (2017). *The Hyperspectral Plant imaging spectrometer – HyPlant: An assessment on multiyear campaign activities*. Remote Sensing of Fluorescence; Photosynthesis and Vegetation Status (FLEX); Frascati; Italy; 17-19 January 2017
- Celesti; M; Pinto; F; Alberti; G; Bozzi; E; Cilia; C; Cogliati; S; Damm; A; Delle Vedove; G; Guanter; L; Julitta; T; Juszczak; R; Matveeva; M; Palombo; A; Panigada; C; Pignatti; S; Sakowska; K; Schickling; A; Schüttemeyer; D; Strozecki; M; **Tagliabue; G;** Tudoroiu; M; van der Tol; C; Colombo; R; Miglietta; F; Rascher; U; Rossini; M (2017). *Short-Term Dynamics of Sun-Induced Chlorophyll Fluorescence to Detect Variations in Photosynthetic Efficiency: An Applied Case Study Using Ground and Airborne Data*. Remote Sensing of Fluorescence; Photosynthesis and Vegetation Status (FLEX); Frascati; Italy; 17-19 January 2017

- **Tagliabue; G;** Panigada; C; Verrelst; J; Baret; F; Cogliati; S; Colombo; R; Rascher; U; Schickling; A; Rossini; M (2016). *Links between sun-induced chlorophyll fluorescence and biophysical variables in a forest ecosystem*. SAIL35 Symposium; Enschede; The Netherlands; 27-28 September 2016
- Panigada; C; Rossini; M; Zaady; E; **Tagliabue; G;** Celesti; M; Di Mauro; B; Cogliati; S; Colombo; R; Rascher; U; Miglietta; F (2016). *Remote sensing of sun-induced fluorescence for biological soil crust monitoring*. Biocrust 3; Moab; Utah; 26-30 September 2016
- Rossini M; Panigada C; Zaady E; Di Mauro B; **Tagliabue G;** Celesti M; Cogliati S; Colombo R; Rascher U; Miglietta F (2016). *Mapping of biogenic soil crusts based on innovative remote sensing methods*. Rend. Online della Società Geologica Italiana; Suppl. n. 1 al Vol. 40 (2016) - 88° Congresso SGI; Napoli 2016. ISSN 2035-8008
- **Tagliabue; G;** Panigada; C; Baret; F; Cogliati; S; Colombo; R; Guanter; L; Pinto; F; Rascher; U; Schickling; A; Van der Tol; C; Zarco-Tejada; P; Rossini; M (2016). *Analysis of sun-induced chlorophyll fluorescence and biophysical variable patterns in a mixed forest*. Proceedings of ESA Living Planet Symposium 2016; Prague; Czech Republic; 9-13 May 2016. SP-740; ISBN 978-92-9221-305-3
- Celesti; M; Rossini; M; Cogliati; S; Panigada; C; **Tagliabue; G;** Fava; F; Julitta; T; Colombo; R (2016). *Comparison of sun-induced chlorophyll fluorescence retrievals from several commercial spectroradiometers: an optimal setup for field measurements and aerial product validation*. EGU General Assembly 2016; Vienna; Austria; 17-22 April 2016
- **Tagliabue; G;** Panigada; C; Colombo; R; Cilia; C; Fava; F; Baret; F; Schickling; A; Rascher; U; Vreys; K; Meuleman; K; Rossini; M (2015). *Telerilevamento iperspettrale da aereo per il monitoraggio di ecosistemi forestali: mappa di specie e stima di parametri biofisici*. Proceedings of XIX ASITA Conference; Lecco; Italy; 29 September-1 October 2015. ISBN 978-88-941232-2-7