

1.2 Activities of SUITMA: from origin to future

Introduction – first urban soil movements and foundation of Working Group SUITMA

Soil science in comparison to other scientific disciplines is relatively young, and the acknowledgment of the science of Soils of Urban, Industrial, Traffic, Mining and Military Areas (SUITMAs) is even younger. The science of SUITMAs is an interdisciplinary branch of investigation within the general topic of soil science. It has its origin in several fields such as soil survey, pollution and health impacts, green infrastructure, storm and sewage drainage, and urban planning and engineering (Burghardt et al. 2015). One of the earliest scientific documented investigations about urban, industrial and mining soils, and the effects of toxic wastes on soil fertility, was recorded by Ferdinand Senft in 1847 (cited in Lehmann and Stahr 2007). The first attempt to survey urban soils and to establish an urban soil map was implemented by Mückenhausen and Mueller (1951). They mapped part of the city of Bottrop, Germany, which was heavily destroyed during World War II. In Poland, Skawina (1958) researched the soil formation processes on the waste heaps of the coal industry. Zemlyanitsky (1963) gave an early description of the chemical and physical properties of soils of Moscow. The soils of Washington, D.C., United States, were surveyed in the early 1970s (Smith 1976).

An international symposium on urban soils in Berlin, Germany, organized in 1981 by Blume and Schlichting (1982), was a successful first attempt to bring together urban soil scientists. Due to its physical and political isolation in the Cold War due to wall construction (1953–1989), the western part of Berlin was forced to supply all needs of its population within the city border. Therefore the highly human-affected soils of Berlin could not be neglected and became the focus for urban investigations for food security, waste discharge, recreation and environmental issues. The soils of the area of Berlin are now completely mapped and used for soil interpretations to address urban issues (Berlin 2013).

In the mid-1980s, more and more soil scientists started to work in urban areas worldwide. But experiences about urban soils were scarce. To meliorate this situation, and to give urban soil scientists a home and promote the formation of a sub-discipline urban soil science, national urban soil working groups started in Germany and the United States. In 1987 a group of soil scientists decided during a meeting in Essen, Germany to establish a working group (WG) on urban soils within the German Soil Science Society (AKS – Arbeitskreis Stadtböden der Deutschen Bodenkundlichen Gesellschaft). The WG was chaired until 2007 by Wolfgang Burghardt of University Essen. He outlined essentials of soil research in an urban environment (Burghardt 1994). German governmental support for a large urban soil investigation and mapping project (Blume and Schleuss 1997) enabled the preparation of a soil survey instruction for urban soils (AKS 1997) which was included in the soil survey manual of the Federal States of Germany (Arbeitsgruppe Boden 2005). The U.S. working group ICOMANTH (International Committee on Anthropogenic Soils), after several years of collaboration, published its first Circular Letter in 1995 (ICOMANTH 1995) and had its first large meeting and excursion in 1998 in Las Vegas, California (NRCS 1998). In Moscow, Russia, an International Conference “Problems of Anthropogenic Soil Formation” took place in 1997 (Lyubimova 1997). In France, research on technogenic soils started in the early 90s with a special interest in the quality of garden soils as support for food production (Schwartz and Morel 1995), and more generally in urban and industrial soils (De Kimpe and Morel 2000). Then prominent institutions such as the Academy of Agriculture of France and the French Association for Soil Science (AFES) provided a significant place for these

soils (1998–2002) with the inclusion of Anthrosols in the French Soil Reference base (Référentiel Pédologique Français 2008).

Cooperation between WG Urban Soils of the German Soil Science Society and the Laboratoire Sols et Environnement UMR 1120 UL-INRA of the Université de Lorraine, Vandœuvre-lès-Nancy, France was the impulse to establish an international working group Urban Soils. This was straightaway welcomed and supported by Wilfried E.H. Blum, the Secretary General of the International Soil Science Society (ISSS, today International Union of Soil Science, IUSS). During the 16th World Congress of Soil Science (16 WCSS), the International WG Urban Soils – Soils of Urban, Industrial, Traffic and Mining Areas (WG SU/SUITMA) of the ISSS was founded on August 20th, 1998 in Montpellier, France. The first Chair and Vice Chair, respectively, of the WG US became Wolfgang Burghardt, University Essen, Germany, and Jean Louis Morel, Université de Lorraine, Nancy, France, who held these positions until 2007. During the 4th SUITMA Congress 2007 in Nanjing, China the previous Vice Chair Jean Louis Morel was elected new Chair. Gan-Lin Zhang, Department of Soil Resources and Remote Sensing of the Institute of Soil Science of Chinese Academy of Science was elected as Vice Chair. During 8th SUITMA conference 2015 in Mexico City, Kye-Hoon John Kim from Department of Environmental Horticulture, University of Seoul, Korea was elected Chair.

The IUSS WG SU/SUITMA had its first symposium at the 16 WCSS in Montpellier on 'Urban and suburban soils: nature, management and risks for human health' (Burghardt 1999). The symposium was visited by 34 participants from 16 countries. The excursion 'A-1 of the 16th WCSS': Lorraine, Alsace, Franche-Comté' offered the study, evaluation and management of urban and industrial soils (including a quick visit beyond the French border, in the Saarbrücken, Germany). The excursion was attended by 22 soil scientists (Rasio 1998).

The WG SU/SUITMA has been present at all subsequent World Congresses of Soil Science organizing special sessions dedicated to technogenic soils:

- in Bangkok, Thailand during the 17th Congress (2002) with symposium *Improving knowledge about soils and their functions in urban, industrial and mining areas for better life*;
- in Philadelphia, USA during the 18th Congress (2006) with symposium *Soils in Urban Eco-systems: Characteristics and Functioning*;
- in Brisbane, Australia during the 19th Congress (2010) with symposium *Pedogenesis and functioning of soils in urban and industrial areas*;
- in Jeju, South Korea during the 20th Congress (2014) with symposium *Urban soils – properties, functions and evolution*.

SUITMA conferences

Since the creation of IUSS WG SU/SUITMA, eight conferences dedicated exclusively to soils of urban areas (in a broad sense) have already been organized: in Essen, Germany, in 2000; Nancy, France, in 2003; Cairo, Egypt, in 2005; Nanjing, China, in 2007; New York City, USA, in 2009; Marrakech, Morocco, in 2011; in Toruń, Poland, in 2013 and in Mexico City, Mexico, in 2015. Since 2003, SUITMA meetings have taken place every second year.

The original 2000 SUITMA conference in Essen, Germany, was organized as several parallel sessions. This concept was changed by Jean Louis Morel at the second SUITMA Conference in Nancy, France. Since then, at SUITMA conferences (Burghardt 2003, 2006, 2008) all presentations are given in one block. Thus, all participants can stay together to convene throughout the conference. This concept has proved very successful by bringing the conference attendants much closer together, to cooperate and to form a community of urban soil scientists.

A summary of each conference held so far is as follows:

Essen 2000

The first international conference of the WG SUITMA was in Essen, Germany from July 12th to 18th 2000 in co-operation with DBG-Deutsche Bodenkundliche Gesellschaft/German Soil Science Society, AFES – Association Francaise pour l'Etude du Sol/French Soil Science Society (Burghardt 2001) and the University Essen, Germany (Burghardt 2001). The 1st SUITMA Conference was chaired by Wolfgang Burghardt.

The Conference was attended by 161 colleagues from 37 countries. A great advantage for the SUITMA-Conference was the participation of colleagues from Africa, Asia, Australia, South and North America. There was a strong demonstration of the necessity that soil science had to go into cities all over the world. Accordingly, the motto of the conference was 'the CITY has SOILS – the CITY needs SOILS' (Burghardt 2001). There were 3 days of 214 oral and poster presentations, as well as small group discussions on the objectives of the conference themes, a research partner mediation event, presentations of 19 cities, the presentation of five urban soils maps (Kiel, Eckernförde, Oberhausen, Herne, Stuttgart) and 5 one day excursions.

The contributions were published as proceedings in 4 Volumes of 1149 pages (Burghardt and Dornauf 2000) and distributed at the conference.

The program of the first SUITMA conference was divided into themes (Burghardt 2001), with the intent to highlight the themes of SUITMA at its inception. There were three major themes of the conference and subdivided into 22 subtopics:

- A – the Unknown Urban Soil – Detection, Resources and Face;
- B – Application of Soil Information;
- C – Soil Quality and Problems.

The contributions to theme A were numerous. They concerned field and laboratory methods, historical urban soils, field survey and soil maps, classification of urban soils, man-made substrates. Definitely lower was the number of contributions to theme B. This topic was only just discovered by soil scientists at that time so the subject research was preliminary. At the conference, sludge and waste, storm water infiltration, vegetable gardens, green areas, playing grounds and city planning issues were represented. The session C had a very good resonance with the participants. The great number of contributions dealt with soil quality, soil degradation, soil protection, soils of biotops/pedotops, soil remediation, specific problems of industrial, traffic and mining areas. Two of the proposed 22 subtopics did lack contributions: City management and soils of burial grounds. For us soil scientists it meant that we would need to encourage research about these very important themes (Burghardt 2001).

Similar to all later SUITMA conferences, the 1st SUITMA Conference had a main aim to show urban soils and to discuss their features and problems in the field. The large old industrial area of the Ruhr with its heavy and chemical industry and hard coal mining areas was very qualified for that purpose. Five one day excursions were organized:

- A – Modified soils (by stratification, mixing, compaction, contamination, humus accumulation, fine earth reduction by skeleton content, ground water lowering);
- B – Soils from man-made substrates (rubble, waste, sludge, ash, slag, thermal cleaned soil);
- C – Urban soil use (park, forest, vegetable garden, playground, storm water infiltration, biotopes);
- D – Extreme contaminated soils, soils as sources of fine dust (PM₁₀),
- E – Soils from hard coal mining and soil reclamation.

In total, 25 soil profiles were presented and discussed, and 9 additional sites were visited (Burghardt 2001).

Nancy 2003

Three years after the successful Essen conference, it was decided to pursue the activities with a biannual frequency. The second conference, chaired by J.L. Morel, was organized from July 7 to 11, 2003, in Nancy, Lorraine, France (Palais des Congrès). It was organized by the GIS-FI (*Groupement d'Intérêt Scientifique sur les Friches Industrielles* – Scientific Consortium for Research on Brownfields – <http://www.gisfi.fr>) under the umbrella of IUSS, AFES and DBG. This conference put a special emphasis on industrial sites (Burghardt 2003). Indeed, as in many areas where heavy industry had been predominant during the 20th century, the Lorraine Region faced a dramatic depression of its industrial activity from the 80's. As a result, large brownfields appeared, which were characterized by deeply disturbed soils that presented high levels of pollution (e.g., PAHs, metals). Attendance reached 130 participants from 20 countries. The conference was organized in six sessions, including:

- methods for the study of urban soils and classification (14 contributions)
- biological properties of urban soils (13 contributions),
- pollution dynamics and transfer risks (30 contributions),
- physical and chemical properties of urban soils (16 contributions),
- remediation of degraded or polluted soils (11 contributions),
- historical (7 contributions), health (6 contributions) and legal aspects (6 contributions).

A book of abstracts of oral and poster communications was published along with a CD-ROM. The region around Nancy, Lorraine, and of the Saarland next to it, offer excellent possibilities for tours about the themes of SUITMA (coal and iron mining, iron and steel production, First World War). Four one-day tours were organized (C. Schwartz, L. Florentin):

- Industrial soils from mining residues, dumps and coal mining areas;
- Soils with modified physical properties due to mining and military activities in the Red Zone of Verdun;
- Industrial soils from an iron-steel industry area
- Urban soils.

Two main decisions were made during the closing session: i) addition of "Military" areas to take into account soils deeply transformed by wars and military activities, and cover the total spectrum of SUITMAs, and ii) to settle the Working Group SUITMA under the roof of Division III "Soil Use and Management" which was chaired from 2002 to 2010 by Wolfgang Burghardt in the new structure of IUSS. Finally, the working group decided to have the third and fourth conferences outside Europe and North America, in countries where strong growth of urban agglomeration occurs, i.e. in Cairo for the third SUITMA-conference in 2005, and in Nanjing, in 2007.

Cairo 2005

The third SUITMA conference was convened from 17th to 25th November 2005 in Cairo, Egypt. The organizers belong to the soil science department of the University of El-Zagazig, assisted by personnel from the Egyptian Geological Survey and the Egyptian Society of Crystallography. Professor Salah A. Tahoun was the president of the conference. Adopted themes were: properties of unconventional soils; methodology and classification; industrial, traffic, and mining pollution; cycling of city fluids and solid refuse; desertification and urban expansion; consumed mining and military areas; historical sites; and conventional soils.

Activities of the conference comprised field excursions and scientific deliberations. The first pre-conference excursion visited the bentonite quarry of El-Fayoum Province and the mineral extraction plant from the brackish water of Lake Karoun, 100 km west of Cairo. The second ex-

cursion visited stabilized sand dunes 50 km northeast of Cairo, followed by an afforestation project utilizing treated sewage effluents. The post-conference excursion over the period of 22–25 November visited the Mediterranean Coast, Siwa Oasis, El-Alamain as a remnant military area of World War II, and Alexandria as a coastal urban center. Time was taken to dig representative soil profiles in localities, features were discussed, and samples were collected.

On November 19th, a total of 194 registered participants including 76 international guests coming from 22 countries began their scientific deliberations. There were 10 oral presentation sessions dealing with 47 contributions (Burghardt 2006). Ample time was allocated to specific and general discussions. There were also three poster presentation sessions dealing with 70 contributions. The authors of the best three posters were recognized with encouragement and appreciation. A book of abstracts carrying 117 volunteered contributions was published in hard and digital copies. Accepted peer-reviewed papers were edited by Salah A. Tahoun and subsequently published in 2008 at www.eun.eg/suitma

Nanjing 2007

The 4th International Conference on Urban Soils – Soils of Urban, Industrial, Traffic, Mining and Military Areas (US/SUITMA) was held in Nanjing, China, during October 18–27, 2007, taking the Institute of Soil Science, Chinese Academy of Sciences as the conference venue. The Chair of the organizing committee was Prof. Gan-Lin Zhang. More than 120 participants from 19 countries attended the conference. The indoor session consisted of three major parts:

Part 1: Methodologies, including: i) Soil survey, description, terminology standardization and sampling in urban areas; ii) Laboratory methods for urban soils; iii) Soil classification and mapping in urban areas;

Part 2: Impacts of urbanization on soil resources, including: i) Land use change under urbanization; ii) Pedogenesis and quality changes of urban soils; iii) Physical aspects of urban soil changes; iv) Chemical aspects of urban soil changes; v) Biological aspects of urban soil changes; vi) Historical aspects of urban soil formation and characterization;

Part 3: Urban soils in relation to urban ecosystem, including: i) Ecological impact of urbanization in regional and global scales; ii) Urban soils and greenery plants; iii) Urban soils in relation to water environment; iv) Biogeochemical cycling of life-dependent materials in urban ecosystem; v) Pollution status and control of urban soils; vi) Remediation of contaminated SUITMA; vii) Ecological assessment of urban soil quality; viii) Ecology-based urban land use planning.

There were 43 oral and 85 poster presentations. From the 1st to the 4th, SUITMA conferences experienced a shift of their main topics. In the beginning pollution and classification of urban soils were the main topics. At SUITMA 4, the effect of diverse types of urban land use on soil characteristics, the new properties soils inherited from them, functions, and methods of assessment of it, from particular urban properties and for urban services, have become top themes (Burghardt 2008).

Pre- and post-conference tours were organized. The pre-conference tour was devoted to major urban soils (including sub-urban areas as well) in Nanjing. The 2-day post-conference tour was arranged in an ancient copper mining city – Tongling of Anhui Province where copper tailings and rehabilitation of mining areas were investigated.

The election of the chair persons was conducted. Prof. Jean-Louis Morel from University of Lorraine, France was elected as Chair of SUITMA WG and Prof. Gan-Lin Zhang from Institute of Soil Science, Chinese Academy of Sciences was elected as the Vice Chair.

New York City (NYC) 2009

SUITMA held its fifth conference from September 20 to 25, 2009, in New York City, marking the first time the group met in the Americas. Hosting were the United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) and the New York City Soil and Water Conservation District (NYCSWCD), along with the Queens College School of Earth and Environmental Sciences. Cooperators included the New York City Department of Parks and Recreation (NYCDPR) and Department of Environmental Protection (NYCDEP); the GAIA Institute, the Central Park Conservancy (CPC), and the USDI-National Park Service (NPS).

The main program was held at the City University of New York (CUNY) Graduate Center in midtown Manhattan. In attendance were 125 participants from 16 countries representing 5 continents (Fig. 1.2-1). The 37 oral presentations and 36 posters were organized to highlight the direction of current research in urban soil science: Urban Hydrology, Soil Contaminants, Soil Carbon and Land Use, Technosols, and Urban Soil Survey.

Two days of field tours through all five boroughs of NYC emphasized urban applications of soil survey information and highlighted NRCS partners in the City. The NPS tidal marsh restoration project at Big Egg Marsh, the subaqueous soil survey work conducted by the NRCS for eelgrass restoration, both in Jamaica Bay; the Pennsylvania Avenue Landfill native plant revegetation project (NYCDEP) in Brooklyn; and a Million Trees project site (NYCDPR) in Kissena Corridor Park, Queens, were visited. A tour was provided of the (NYCDPR) Native Plant Center in Staten Island, a 13-acre greenhouse, nursery, and seed bank complex providing native plants



Fig. 1.2-1. Participants of SUITMA 5 conference in New York City (2009).

and seeds for restoration efforts. Storm water management projects included an example of the NYCDPR's *Greenstreets* program in upper Manhattan, and an innovative system designed by the GAIA Institute at the City's metal and plastic recycling center on the Bronx River.

The conference proved to be a valuable networking event that not only brought together the SUITMA community, but connected it to New York City environmental professionals and USDA-NRCS soil scientists, fostering several new cooperative efforts. It also served to underscore some practical applications of urban soil science and strengthen the USDA-NRCS presence in New York City and the urban environment at large.

Marrakech 2011

The 2011 Sixth SUITMA conference was held in Marrakech, Morocco from 3 to 7 October. It was co-organized by the Faculté des Sciences et Techniques of Marrakech, University Cadi Ayyad and the GISFI (<http://www.gisfi.fr>). The Chairman of SUITMA 6 Scientific Committee was Prof. Boularbah Ali. More than one hundred participants (Fig. 1.2-2) attended the conference and a total of 45 communications and 48 posters were presented in four sessions: session 1: SUITMA properties and diversity, contamination, and remediation; session 2: role of SUITMAs in global change and water quality; session 3: biodiversity in SUITMAs; and session 4: SUITMAs as buffer for human health and social stability (Dickinson et al. 2013). Eleven selected papers were peer reviewed and published in special issue of the *Journal of Soils and Sediments* (13(3), 2013), which focuses on the properties, processes, evolution, and management of soils in urban and human-altered environments. Besides a three-day conference, two days were spent on field trips in Marrakech and its vicinity to examine soils and landscapes, soil-based restoration, research, and mapping projects under semi-arid climate and to study the impacts of the mining activities on the soils. During the field tour, different profiles of urban soils of Marrakech and industrial soils from Kettara mine, were presented and their chemical, physical and some biological (total number of culturable cells of bacteria and fungi, dehydrogenase and respiration activities) properties were discussed. Also a post-conference tour was organized in Senegal to address issues related to urban soils under tropical conditions. The 3 days tour was organized by Ndeye Fall of the Institut National de Pédologie (INP/DG), Dakar, Senegal.



Fig. 1.2-2. Participants of SUITMA 6 conference in Marrakech (2011).

Toruń 2013

The 2013 Seventh SUITMA conference was held in Toruń from 16th to 20th September. It was co-organized by the Department of Soil Science and Landscape Management, Faculty of Earth Sciences, Nicolaus Copernicus University and the Polish Soil Science Society. The Chairman of the SUITMA 7 Scientific Committee was Przemysław Charzyński. More than 110 participants



Fig. 1.2-3. Participants of SUITMA 7 conference in Toruń (2013).

(Fig. 1.2-3) from 24 countries from all inhabited continents attended the event, and a total of 47 oral and 74 posters were presented in six sessions, apart from the plenary one (Morel et al. 2015a):

- Classification of SUITMAs (13 contributions);
- SUITMAs as a resource of goods (18 contributions);
- Degradation of SUITMAs and human health (58 contributions)
- SUITMAs and climate change (6 contributions)
- Biodiversity in SUITMAs (13 contributions);
- SUITMAs and culture (10 contributions).

Selected papers based on presented reports were published in special issues of *Journal of Soils and Sediments* (15(8), 2015) and *Soil Science and Plant Nutrition* (61 (S1), 2015).

Two days of conference were spent on field trips in Toruń and in the nearby places in Kuyavian-Pomeranian Province. *Ekranic Technosols* of Toruń Airfield, constructed soils (Linic Technosols) on Toruń Strongholds, 'Paleotechnosols' of Grodno–Lusatian fortified settlement from older part of Hallstatt period, soils of military training fields and *Spolic Technosols* in the area affected by soda industry (Inowrocław) were presented. The conference was completed with a 4-day post conference tour in Poland and in Czech Republic (organised in cooperation with *Research Institute for Soil and Water Conservation, Prague, Czechia*). Soils of the reclaimed external dumping ground of opencast brown coal mine in Bełchatów, the problems with landscape slumps under mining spaces in the area around Karvina and Orlova, problems of soil contamination by petroleum hydrocarbons and reclamation of the area of abandoned military range and military airport in Mlada Boleslav district were presented.

Two books were published especially for the conference, including *Technogenic Soils of Poland* (Charzyński et al. 2013a) and *Technogenic Soils Atlas* (Charzyński et al. 2013b), and can be downloaded here: <http://www.suitma7.umk.pl/>.

Mexico City 2015

The Eighth SUITMA conference was held in Mexico City from September 20th till 25th, 2015 at the National Autonomous University of Mexico (UNAM). It was organized by soil scientists from the Institutes of Geology and Geography, the chairpersons being Christina Siebe, Silke Cram and Eleonora Ramírez. There were 112 registered participants attending the meeting, coming from 18 different nations (Fig. 1.2-4).



Fig. 1.2-4. Participants of SUITMA 8 conference in Mexico City (2015).

Within the 3 conference days 10 sessions with a total of 49 oral and 74 poster presentations took place, covering the topics: (i) soil ecological functions in urban planning and management, (ii) urban soils and human health, (iii) restoration and reclamation of environmental liabilities, (iv) soil forming processes in Technosols, (v) soil and city biodiversity, (vi) soils as archives of settlement history, (vii) food production in urban and peri-urban areas, (viii) soil conservation to improve water management in urban areas, and (ix) geological hazards in urban and peri-urban areas (www.geologia.unam.mx:8080/~cisu/suitma8/).

One and a half days of the conference were further dedicated to field trips in the metropolitan area of Mexico-City. Problems such as accelerated surface sealing, land subsidence due to groundwater overexploitation, flood hazards and surface runoff regulation, groundwater pollution and overexploitation, wind erosion in peri-urban areas affecting air quality, waste production and disposal, rehabilitation of industrial liabilities were discussed at the different excursion stops. Soils developed out of rubble debris, saline-alkaline lake deposits, or in prehispanic floating gardens were shown, as well as soils which function as archives of more than 2000 years of settlement history within the basin of Mexico. Also examples of reforestation of environmentally strategic ravines, clean-up strategies of former industrial sites, green roofs installed by different institutions and the conservation program of ecological soil functions at the university campus were demonstrated.

Half day of the meeting was dedicated to a soil education fair, in which conference participants showed outreach activities to promote social awareness on soil ecological functions to conference participants and to children from a nearby primary school. The outreach program of the Institute of Geology named "Terramóvil" can be seen here www.geologia.unam.mx:8080/igl/index.php/terramovil.

One post conference tour showed archaeo-urban soils at the Teotihuacan archaeological site, soils of the largest wastewater irrigated area worldwide in the Mezquital valley and soils on mine waste deposits of the Guanajuato mining district in Central Mexico. Another three days tour went to the city of Xalapa, state Veracruz, east of Mexico City. Deep weathered soils formed on volcanoclastic materials were shown as well as their degradation by accelerated urban growth and deforestation, which leads to increasing landslide hazards and liquefaction processes. Pre-

ventive and remediation solutions that have been taken by the government such as contention walls or vegetation covers were demonstrated and their effectiveness discussed.

Other SUITMA activities

The WG SUITMA is not only active for the biannual conferences but it is present as mentioned above at the IUSS congresses with a dedicated symposium on the features of strongly anthropised soils. It also actively participates to the EUROSIL congresses (Freiburg, 2004; Vienna, 2008; Bari, 2012; Istanbul, 2016), and was present at the ASA-CSSA-SSSA annual meeting (e.g., Long Beach, 2014), and at meetings of other national Soil Science societies, such as in Brazil (Natal, 2015), France (e.g., Chambéry, 2014), Germany (e.g., Munich, 2015). It also participates in other related distinguished scientific meetings to spread the advances in knowledge of those particular soils (e.g., EGU, Vienna; INQUA, Nagoya, 2015).

The best papers presented at biannual SUITMA conferences are published in the *Journal of Soil and Sediments (JSS)*. So far, three special issues have been published, related to the conferences of Marrakech (2011), Torun (2013) and Mexico (2015). This association between SUITMA and the *J. Soils and Sediments* is described in a short note: “*An interdisciplinary working group of the ‘International Union of Soil Science’ dedicated to soils strongly modified by human activities*” (2008) 8:206–207. Also, special issues of scientific journals are published under the SUITMA umbrella, e.g., *Journal of Soil and Plant Nutrition* (2015). Finally a wiki was created to offer a collaborative platform (2009) and contribute to increase the visibility of SUITMA: http://ticri.univ-lorraine.fr/urban_soils/en/index.php/Soils_of_Urban,_Industrial,_Traffic,_Mining_and_Military_Areas

Last but not least, SUITMA activities are also strong interactions between colleagues who have known each other for more than 15 years, which generate close collaboration, including joint projects, joint publications, and joint actions.

SUITMA future

WG SUITMA recently established a website: <https://sites.google.com/site/wgsuitma/>. It will be a platform to share knowledge about technogenic and anthropogenic soils and to exchange important information about it. It also will be a place of intercommunication and establishment of cooperation and serve to promote knowledge about SUITMAs as well.

Despite its history of nearly 20 years, WG SUITMA still needs to know more on the properties, functioning, impacts and long-term evolution of the soils under major human influence for better understanding of their role in anthropogenic and technogenic areas and for better managing of the urban ecosystem. Communication between stakeholders of SUITMA and soil scientists to improve the services that are expected from sustainable development of SUITMA is essential.

The next two SUITMA conferences will be organized in Moscow, Russia in 2017 and in Seoul, South Korea in 2019.

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