

Thirty-Two Years Japanese-German Meetings on Urban Climatology and Urban Planning

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Abstract

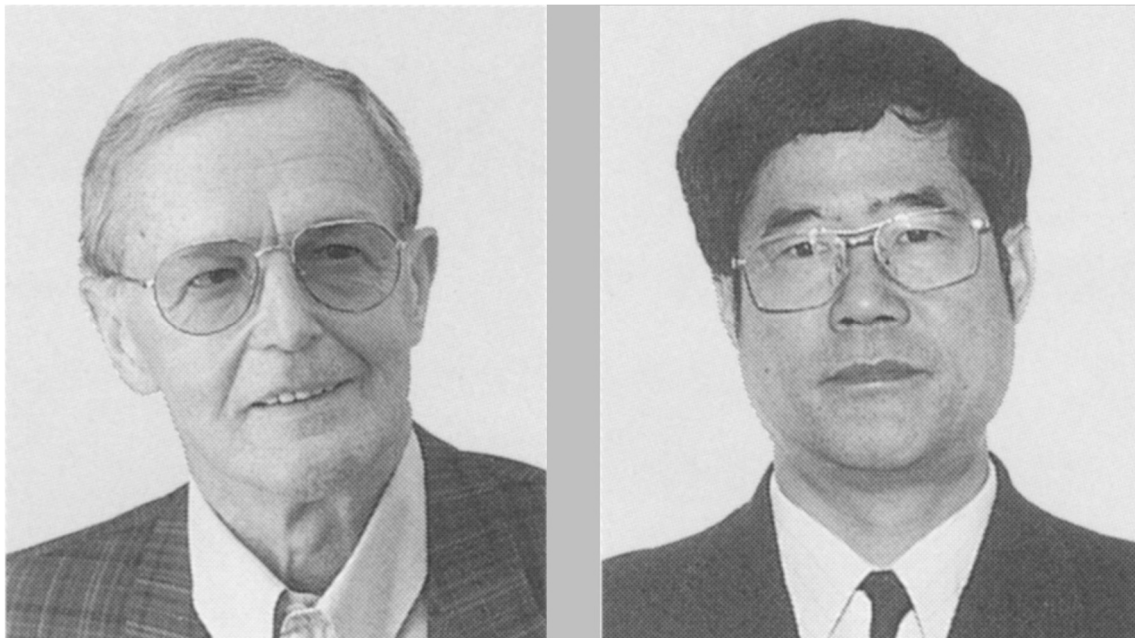
Since 20 years, there are regular meetings of Japanese and German urban climatologists and town planners. The meetings were alternating in Germany and Japan. The 9th meeting 2026 is in Berlin. The previous meetings were in Karlsruhe, Kobe, Essen, Tsukuba, Freiburg, Hiroshima, Hannover and Osaka. A brief review shows the great interest from both sides for the exchange of experience in this field of urban climatology, which got more importance due to the ongoing climate change.

1. Introduction

It was 1994 when the first small Japanese - German Meeting on urban climate and urban planning took place in Karlsruhe organized by Prof. Moriyama, Prof. Hoeschele and Dipl. Met. Zimmermann.

So the 7th Meeting in Hannover 2014 can look back to 20 years cooperation of Japanese and German climatologist and planners. These past 20 years are reviewed in a short documentation.

Fig. 1: The fathers of the meetings; Prof. K. Hoeschele (left) and Prof. M. Moriyama (right)



For nearly ten years lively contacts have been maintained between the Department of Architecture and Civil Engineering at the Kobe University, Japan, and the Institut für Meteorologie und Klimaforschung, Forschungszentrum Karlsruhe/Universität Karlsruhe

(IMK) till 1994. The idea of organizing a scientific meeting under the heading "Klimaanalyse für die Stadtplanung" with an increased attendance had been conceived in that cooperation by Dr. Moriyama during a 10 months stay at the IMK.

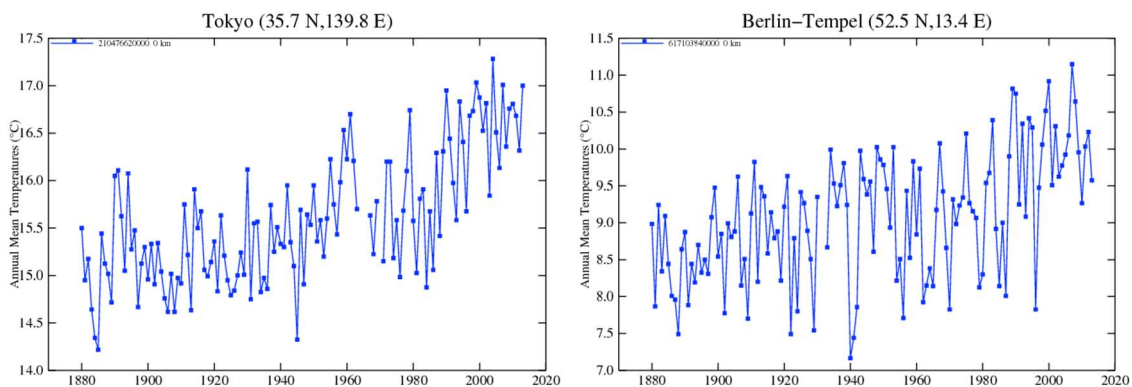
There have been remarkable developments in climate analysis in recent years, they make evident that this topic commands particular interest, both in the research sector and in practical planning. Considering the general increase in environmental consciousness, it is required to a growing extent to take into account the specific climatic conditions of the region or of the site in planning towns, settlements or individual buildings.

The climate and the conditions of life are different in Japan and in Central Europe; but the growing number of similar environmental problems and the development of similar scientific tools to analyze and to tackle these problems, are promising preconditions for a Japanese - German cooperation.

In the first meetings there was no focus to climate change. But during the 4th meeting in Tsukuba an own session (4 papers) with the title "Climate Change and Urban Planning" took place. The changes in climate (heat and floods) caused by the global warming in the cities is now a great challenge for the urban climatologists and urban planners because there is a need to think about climate change adaptation strategies.

The main problems in the cities will be heat and floods. In big cities the temperature increase is much higher than the global warming because this effect is overlaid with the heat island (UHI) of the cities.

Fig. 2: Temperature increase in Tokyo and Berlin (1880-2014) (Source: GISS, 2014)



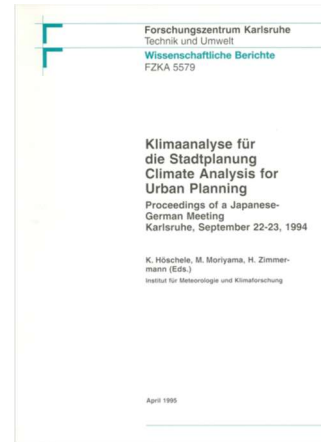
Influenced by the alternating meetings on urban climatology in Germany and Japan a lot of additional cooperation between Japanese and German researchers on the topic of urban climate and urban planning was established. This was combined with a lot of mutual visits.

Only a few persons of the first meeting in 1994 are now active. Most of them are retired or are going to be retired but a new generation of climatologists and planners will continue this cooperation and meetings.

2. Japanese-German Meetings on Urban Climatology and Urban Planning

2.1 Karlsruhe September 22 – 23, 1994 (First Meeting)

Excursion to Strassburg



The meeting took place in Karlsruhe on September 22 and 23, 1994. About 40 participants, among them 18 from Japan, attended the event which had been organized by Prof. K. Hoeschele, IMK, Dr. M. Moriyama, Kobe, with assistance by Dipl. Met H. Zimmermann, IMK, and Mr. H. Miyazaki, Sanda, Hyogo.

Some participants of this meeting had already attended preceding Conferences and symposia:

"Climate-Building-Housing", Karlsruhe University, 1986, "Urban Climate, Planning and Building", Kyoto, 1989, "Planning Applications of Urban and Building Climatology", Berlin, 1991 and CUTEST'92, Tohwa University, Fukuoka. Now they used the opportunity of this meeting to report on the current state of their studies and to present new results.

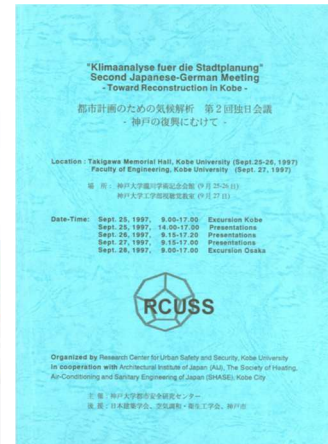
The issues of "Klimaanalyse für die Stadtplanung" have been presented in 14 papers and 14 posters. The afternoon of the first day of the meeting was devoted to four detailed review papers, the second day to shorter presentations and poster discussions. The individual topics were related to:

- Measurements in the urban boundary layer.
- Means of satellite assisted remote sensing in urban climatology
- Numerical simulations of atmospheric processes in urban and rural areas
- Methods of classifying the climatic conditions in towns
- Influences of the meso-climate on urban planning
- Legal requirements concerning urban planning
- Energy exchange between buildings and their environment
- Impacts of urban settlements on the distribution of precipitation
- Practical implementation of climatological knowledge in urban planning.

With the publication of all available papers and posters presented at the meeting the editors of the proceedings intend to address a larger community and to give incentives to do research work, apply knowledge of climatology, and promote communication at an international level.

2.2 Kobe September 25 – 28, 1997 (Second Meeting)

Klimaanalyse fuer die Stadtplanung – Toward Reconstruction in Kobe -
Excursion to Kobe and Osaka



At the end of the meeting in Karlsruhe, the participants promised to come together for a second meeting in Kobe in two years. Two years had passed since the meeting and then, the scientists are invited for the Second Japanese-German Meeting, Kobe, September 25-28, 1997.

The Second Japanese-German meeting was organized by the Research Center for Urban Safety and Security, Kobe University-The organization was founded after the great earthquake which took place on January 17, 1995. Many houses and lifelines were destroyed. Now there reconstruction was one of the most important tasks in Kobe. There was the chance to bring in the knowledge on urban climate and urban meteorology in the planning of reconstruction. This makes the meeting to a highly topical event.

All together 64 participants among them 10 German guest Speakers, attended the event which had been organized by T. Okimura. Kobe, M. Moriyama, Kobe and H, Zimmermann, Karlsruhe. The first day started with a Kobe-excursion, giving an overview on the city and an introduction to the consequences of the earthquake and the progress of restoration.

During the meeting time 32 papers and 8 posters were presented. The topics were related to: Restoration Planning in Kobe, Applied Urban Climatology, Human Biometeorology. Wind field, Measurements, Numerical analysis of Urban Climate. The meeting was supported by:

- Faculty of Engineering, Kobe University
- Architectural Institute of Japan
- The society of Heating, Air-Conditioning and Sanitary Engineering of Japan
- Kobe City
- Hyogo Science and Technology Associat Jon
- Osaka Gas Co., Lid

In the Strategy for recovery of Kobe after the great earthquake new green corridors were planned coming from the Rokko Mountains to the coastline. This seems to be important for good ventilation of the city but also as evacuation zones for the whole population. Also a new coastline zone should give Kobe a new good image.

This recovery now is mostly completed but in planning is a new vision a so called post recovery.

Fig. 3: Green recovery plan of Kobe after the Hanshin-Awaji earthquake

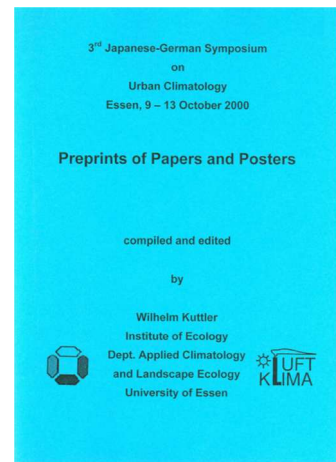


In combination with the Japanese-German meeting a “Global EcoFair ’97 Kobe International Pre-Forum” took place in preparation of the third conference of the parties to the United Nations in Kyoto (with the aim of a Framework Convention on Climate Change (Kyoto Protocol)). Three guest speakers in the meeting were urban climatologists from Germany.

Fig. 4: Lecturer of the Pre-Forum “Global EcoFair ’97 in Kobe

2.3 Essen October 9 – 13, 2000 (Third meeting)

Excursion to Stuttgart and Freiburg



The third Japanese-German Meeting was in Essen 2000. It was organized by Prof. W. Kuttler and his staff from the Institute of Ecology, Department Applied Climatology, University of Essen. From the 53 participants were 33 from Japan. 24 papers and 19 posters were presented. The topics were:

- heat island effects, local winds
- air pollution and odours
- human and plant biometeorology
- urban energy and urban humidity
- urban climate modelling
- urban climate and climate change

The **excursion to Stuttgart** was combined with an informative Urban Climate Sightseeing Tour in Stuttgart and surrounding. From the “Fernsehturm” the tour goes to a new urban development “Scharnhäuser Park” and the Neckar valley with the old Daimler Museum.

Fig. 5: Member of the urban climate sightseeing tour in Stuttgart



2.4 Tsukuba November 30th – December 4th, 2005 (fourth meeting) Excursion to Nagano



The 4 th Japanese-German Meeting on Urban Climatology - Climate Analysis for Urban Planning - CONFERENCE / Tsukuba, 30 th Nov. - 2 nd Dec., 2005 KLIMAATLAS WORKSHOP & EXCURSION / Nagano, 3 rd - 4 th Dec., 2005	
<< Program >>	
30 th November, at NIES	
9:00-9:30 Registration	
9:30-9:40 Opening Ceremony (chair person: ICHINOSE Toshiko)	
- Welcome Speech, Vice-president, Mr. Takashi IJUMA, NIES	
- Today's Schedule	
9:40-12:30 Session & Measurement of Urban Climate (chair person: ICHINOSE Toshiko)	
A.1*	Jürgen BAUMKELLER Stuttgart - on the way to a sustainable development - climatic aspects - (Keynote Lecture)
A.2	Tadayuki KYOTA, Akira TANIGUCHI, Naoyasu KYOTA and Yasuhisa NAKAMURA A STUDY ON INFLUENCE OF LAND AND SEA BREEZE ON AIR TEMPERATURE IN HIROSHIMA WIDE AREA IN SUMMER SEASON
A.3	Naohi TAKAGI, Kazuhiko IMAI, Takashi HAMADA and Yasuhisa YAMASHITA MOVING MEASUREMENT RESEARCH ON THE ACTUAL CONDITION OF URBAN CLIMATE IN INFLYING PROVINCIAL CITIES
A.4	Atsumasa YOSHIDA, Masaru MORIYAMA and Kazuma SONOBU Stationary Measurement and Analysis of Thermal Environment in Osaka Area, Japan
A.5	Yoshiko JYUJIMURA and Hisaoki WATANABE THE ACTUAL CONDITIONS OF URBAN CLIMATE CHARACTERISTICS IN SUMMER FOR SENDAI CITY AREA - THE CLASSIFICATION OF URBAN CLIMATE CHARACTERISTICS AND THE RELEVANCE BETWEEN IT AND AIR TEMPERATURE DISTRIBUTIONS
A.6	Heinrich YODA Klimaatlas and action program in Fukuoka City
A.7	J.H. ELM, G.SCHERER, U.FRIEDRICH and J.HÖPPEL Insperrenz, Climate-relevant Planning Objectives in Germany and the Application for South Korea
- Lunch -	

During the fourth Japanese-German Meeting organized from the National Institute for Environmental Studies in Tsukuba (Prof. Ichinose, Prof. Ashie), 45 papers were presented. Fifty persons took part of the meeting. The main topics were:

- Measurement of Urban Climate
- Measurement of Micro Climate
- Climate Change and Urban Climate
- Remote Sensing and GIS
- Numerical Modeling of Urban Climate
- Numerical Modeling of Micro Climate
- Application for Urban Planning

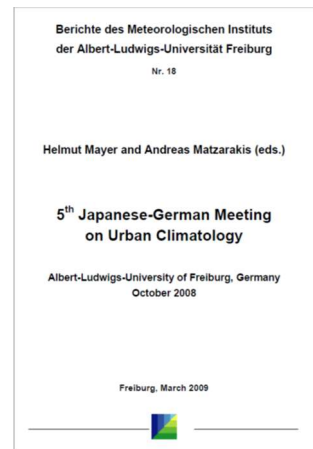
On 3rd December, at NAGANO a “Klimaatlas Workshop” was arranged together with citizens of Nagano, the local university, Japanese and German experts. This workshop was very inspired for all participants.

Fig. 6: Some members of the “Klimaatlas workshop” in Nagano



2.5 Freiburg October 6 – 11, (2008) (fifth meeting)

Excursion to Basel and Stuttgart



In continuation of the well-known conference series “Japanese-German Meeting on Urban Climatology”, the Meteorological Institute, Albert-Ludwigs-University of Freiburg, hosted the 5th Japanese-German Meeting on Urban Climatology. Under the subject “Applied urban climatology meets the challenge of climate change”, the 5th Japanese-German Meeting on Urban Climatology took place from October 6-8 2008 in the auditorium of the Albert-Ludwigs-University of Freiburg and included excursions to Basel (9 October 2008) and Stuttgart (10-11 October 2008). The excursions were organized by the Institute of Meteorology, Climatology and Remote Sensing, Department of Environmental Sciences, Basel University (Switzerland) and the City of Stuttgart, Office of Environmental Protection, Department of Urban Climate. 105 scientists from 13 countries attended the 5th Japanese-German Meeting on Urban Climatology. Most were from Japan (42) and Germany (31) followed by Hong Kong (6), Korea (6), the Netherlands (5), Switzerland (5), Hungary (3), P.R. China (2) and Canada, Chile, New Zealand, Russia and Spain (by 1).

The oral and poster presentations at the auditorium of the Albert-Ludwigs-University of Freiburg were into the fields:

- Urban heat island,
- Urban air flow,
- Urban air pollution,
- Blue and green,
- Urban modelling,
- Energy and fluxes,
- Urban biometeorology,
- Urban design and planning,
- Impacts of climate change on urban climate.

All 85 scientists, who contributed to the 5th Japanese-German Meeting on Urban Climatology by an oral or a poster presentation, were invited to submit an extended abstract for the proceedings of this meeting. The available proceedings contain 51 extended abstracts.

The Wine Tasting at the State Viniculture Institute in Freiburg included the granting of the honorary doctorate to Prof. Masakazu Moriyama:



Fig. 7: Honorary doctorate
The Department of Biology and Geography, University of Duisburg-Essen, Germany, awards to Prof. Dr. M. Moriyama, Kobe University, Japan, the Academic Honorary Degree PhD in Natural Sciences honoris causa (Dr. rer. nat. h.c.) recognizing his merits for the promotion of planning-orientated urban climatology as well as his commitment to the interdisciplinary cooperation between German and Japanese fellow researchers.

Excursion to Basel and Stuttgart

In the Chrischona Tower the scientists of the Institute of Meteorology, Climatology and Remote Sensing (Basel University) gave an overview about the research in **Basel** like energy fluxes on green roofs and heat fluxes during the BUBBLE experiment.

In **Stuttgart** a one day workshop was arranged from the Department of Urban Climatology (City of Stuttgart) with the title “Urban Climate and Climate Change”.

Nearly 100 persons took part, Climatologists and Urban Planners. Discussed were the different laws and possibilities of implementing urban climate results in urban planning processes.

Fig. 8: Participants to the workshop urban planning and climate change



The excursion in Stuttgart was finished on October 11 with the visit of the old city Esslingen and the champagne producer Kessler. Also the landscape of Stuttgart with all the vineyards (400 ha) were visited.

2.6 Hiroshima September 21 – 24, 2012 (sixth meeting) Excursion to Atomic Bomb Dome, Miyajima, Saijo



6th Japanese-German Meeting on Urban Climatology "Climate Analysis for Urban Planning"		
Program		
09:00-10:00		
Registration (10:00-20:30) Place: 6th Floor, Miyakenomori Nexus21, Hiroshima Institute of Technology, 4067-1 http://www.itsukaichi.jp/miyakenomori/nexus21		
10:30-12:00		
Meeting (10:30-12:00) Place: Nexus21, Miyakenomori Nexus21, Hiroshima Institute of Technology http://www.itsukaichi.jp/miyakenomori/nexus21		
10:30	1	Opening Remarks Nobuyoshi Kiyota (Hiroshima Institute of Technology) Tetsuya Tanaka (University of Urban and Environmental Studies) Ryosuke Kuroda (University of Tsukuba)
10:30-10:45	Chair: Jürgen Rappeler (University of Stuttgart)	
10:45	2	The cooling effect of tree and sea breezes in the Osaka region - influence of heat advection by sea breeze on urban climate Akihiro Yamada (Osaka University)
10:45	3	Numerical simulation study of estimating urbanization effects on the climate in Tokyo, China Takanori Inoue (Tokyo Metropolitan University)
10:45	4	CFD analysis on thermal environmental characteristics in city blocks due to varying wind directions Yusaku Takahashi (Osaka University)
10:45	5	Development of a large scale simulation model for urban areas Yoshihiro Inoue (Fukuoka Institute of Technology) Takashi Inoue (Osaka University) Shinjiro Inoue (Osaka University)
10:45	6	The climate factors that affect LID estimation in the tropics: A case study of urban Kuala Lumpur Nurul Huda (Hiroshima University) Nurul Huda (Osaka University) Shaharudin Yusoff (Osaka University)
10:45-11:15	Coffee	
11:15-12:15	Session 2 Chair: Shinya Ishiyama (Osaka University)	
11:15	7	Effect of solar radiation on thermal sensation in outdoor based on human thermal load Masaru Shimada (Atsuta University)
11:15	8	Factors influencing human thermal comfort in urban environment Yoshio Kishino (University of Datsing College)
11:15	9	Influence of urban form and its influence on urban ventilation in hot climate environment Yoshio Kishino (University of Datsing College)
11:15	10	Influence of vertical surfaces on thermal environment based on measurements of 3D outdoor heat transports Kiyoshi Suzuki (Hiroshima University) Kiyoshi Suzuki (Osaka University)
12:15-13:15	Lunch (Place: 10th floor in Miyakenomori Nexus21)	

The sixth meeting on Urban Climatology took place at Miyakenomori Nexus21, Hiroshima Institute of Technology (Prof. N. Kiyota, Prof. T. Tanaka) (Itsukaichi Campus). From the 60 participants 9 were coming from Germany. There were 40 oral presentation and 13 posters with the main topics:

- Observation, Wind tunnel experiment
- Urban climate model
- Biometeorology
- Klimaatlas (Urban Environmental Climate Map)
- Remote Sensing and GIS
- Climate sensitive urban design and planning
- Climate sensitive architectural design

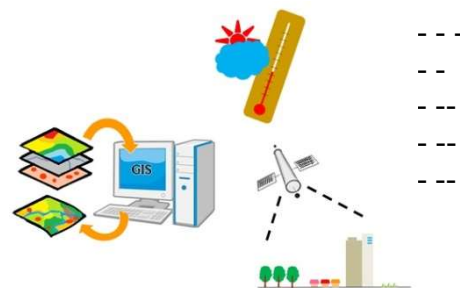


Fig. 9: The staff of the 6th meeting in Hiroshima



The meeting was under the impression of the atomic bomb which destroyed Hiroshima on August 6th 1945. In the Atomic Bomb Museum this event is documented with the demand for peace. Miyajima (World Heritage) with the famous Itsukushima Shrine was one aim of the excursion. Another was the visit of Saijo well known as the “Sake town”.

2.7 Hannover October 6 -10, 2014 (seventh meeting)

Excursion to Hannover Baroque Gardens, Kronsberg, Solar Energy Research



73 participants

45 from Japan and other countries

57 presentations

10 posters

The 7th Japanese-German Meeting on Urban Climatology take place at the Institute of Meteorology and Climatology, Leibniz University Hannover, Germany (Prof. Dr. G. Gross). Specific topics are:

Urban meteorology and climate
(e.g. energy budget, heat island, air flow, hydrology, microclimate)

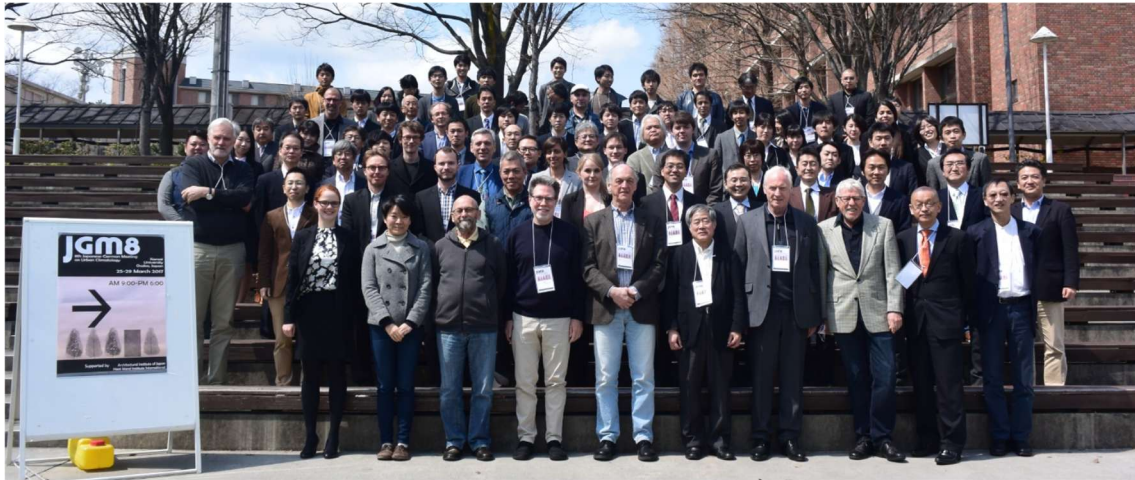
Urban environment pollution
(e.g. emission and chemistry, air quality, emergency preparedness)

Urban biometeorology
(e.g. indoor and outdoor environment, health impacts, urban vegetation)

Urban climate and global change
(e.g. urban vulnerability, urban drivers)

Urban economics and social issues
(e.g. planning and urban design, urban materials, energy consumption)

2.8 Osaka March 25-29, 2017 (8th meeting)



Kansai University, Osaka, Japan

Supported: Architectural Institute of Japan, Heat Island Institute International

Local Organizing Committee

Hiroshi Miyazaki (Kansai University), Chair

Yoshiki Junimura (Gifu University)

Kosuke Kittaka (Kobe University)

Kaoru Matsuo (Hiroshima University)

Yuma Morinaka (Toyohashi University of Technology)

Masakazu Moriyama (Setsunan University)

Hideki Takebayashi (Kobe University)

Takahiro Tanaka (Hiroshima University)

28 Presentations, 36 Poster

Excursion: Koyasan Temples



2.8 Berlin Sept. 28- Oct. 02, 2017 (9th meeting)



3. Conclusion and outlook

The results of the Japanese-German Meeting normally are published in the proceedings with the extended abstracts, but besides this also good practice were collected in different publications.

With the ninth Japanese-German Meeting on Urban Climatology this meeting can look back to thirty-two years. It is a successful story and it is to hope that this meeting will go on in the future may be with a new generation.

Fig.10: Some publications on the topic urban climatology





4. Literature

Proceedings 1st Japanese-German Meeting, Hoeschele K., Moriyama M., Zimmermann H. (Eds.) (1995), Klimaanalyse für die Stadtplanung – Climate Analysis for Urban Planning, Institute of Meteorology and Climate Research

Proceedings 2nd Japanese-German Meeting, Okimura T., Moriyama M., Zimmermann H. (Eds.) (1998), Report of research center for urban Safety and security, Kobe University, Special Report No. 1

Proceedings 3rd Japanese-German Meeting, Kuttler W. (Eds) (2000., Dept. Applied Climatology and Landscape Ecology, University of Essen

Proceedings 5th Japanese-German Meeting, Mayer H., Matzarakis A. (Eds.) (2009), Ber. Meteor. Inst. Univ. Freiburg Nr. 18, Meteorological Institute, Albert-Ludwigs-University of Freiburg,

Proceedings 6th Japanese-German Meeting, Kiyota N. (Hiroshima Institute of Technology), Tanaka T. (Hiroshima University) (2012)

Proceedings 7th Japanese-German Meeting, Institute of Meteorology University Hannover (2014)

Proceedings 8th Japanese-German Meeting, Kansai University, Japan (2017)

Acknowledgment

Thanks to all Organizer and their staffs who had organized all the meetings

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