GCP-WUDAPT Workshop on Global Urban Carbon Mapping:

For contribution to Future Earth Knowldege Action Networks

This workshop is organized back to back with the Future Earth committees meeting in Thun, Switzerland

Date: June 29-July 1

Venue: Hotel Freienhof Thun

Organizers:

Global Carbon Project (GCP)

Yoshiki Yamagata (NIES), Ayyoob Sharifi (GCP Tsukuba International Office)

World Urban Database and Access Portal Tools (WUDAPT)

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Future Earth

Alyson Surveyer (Lead Coordination Officer, Future Earth Montreal Hub)

Outline:

The Future Earth Scientific Committee and Engagement Committee meeting will be held on 29-30 June, 2016 in Switzerland (Thun). GCP-Tsukuba International Office in Collaboration with WUDAPT would like to take this opportunity to organize a workshop on building a global urban knowledge network for informing global research on cities and urbanization. This activity is aimed to contribute to the Cities Knowledge Action Network (CKAN) under Future Earth. Organizing the workshop during the Future Earth meeting provides the opportunity for active involvement of key Future Earth people in the activity.

The main objective of the workshop is to discuss strategies for creating a platform for gathering quantitative and qualitative data at various urban scales, ranging from individual buildings, to neighborhoods, and municipalities. Special focus will be on mapping carbon emissions. Better understanding of emission patterns is essential for developing action plans for low carbon development and tracking their achievement. Such data are also essential for assessment purposes and for developing future scenarios. Over the past few years several bottom-up and top-down approaches have been undertaken to map carbon emissions of cities. However, these activities are often fragmented, lack transparency, follow different protocols that undermine their comparability, require high investment in terms of finance and personnel, and more importantly fail to integrate

emission data with data on other socio-economic, institutional, and environmental factors (Gurney et al., 2015)[1].

During the workshop participants will discuss various strategies for addressing these challenges and develop a collaborative framework for creating a global database on cities. The WUDAPT initiative has already made a significant progress in creating urban databases for various cities around the world. The database on cities' carbon emissions will be linked with the WUDAPT database. It will also be integrated with the Global Carbon Atlas, which is today an international reference that provides annual updates on country-based carbon emissions.

The Global Carbon Atlas (globalcarbonatlas.org) is an online platform to explore and visualize global and regional data on carbon fluxes resulted from human activities and natural processes. It is a community effort under the umbrella of the GCP based on the contributions of many research institutions and individual scientists around the world. The Atlas has an intention to work on design and development of non-profit public access City Emission interactive application. A core set of carbon fluxes can be obtained through global urban GHG emission database developed at WUDAPT platform within a commonly understandable framework of the methodology used to generate the emission datasets and implied map-based products.

The proposed visualization should present local government's community GHG inventory reporting results over time, with potential at some point in the future for visualization of actions and commitment when deemed possible, as well as its benchmarking analysis according to population, urban area, GDP, etc. It should present local government's total GHG inventory as well as sectorial breakdown (e.g. electricity production, industry, transportation, residential/commercial buildings, etc.) to further illustrate the major sources of local emissions.

This City Emission component in the Global Carbon Atlas will further advance collaborative international research on the functioning of the cities, its impact and interactions with the climate system.

Relationship between the proposed workshop and the Cities KAN

The Cities KAN intends to create a platform for engagement of a variety of research and stakeholder groups in providing knowledge on sustainable urbanization. IPCC report shows us that next 2-3 decades are crucial to influence low carbon urbanization and city development. The implications of multiple urban scenarios for global emission profile will be enormous. Building a database on cities' carbon emissions will be essential for analyzing the implications of different urbanization trajectories and urban typologies vis-à-vis key drivers. Insights provided by analyzing cities' emission data help the researchers and policy makers understand potential mitigation wedges of urbanization. Overall, it is hoped that outputs of this activity shed more light on what

[1] Gurney, K.R., Romero-Lankao, P., Seto, K.C., Hutyra, L.R., Duren, R., Kennedy, C., Grimm, N.B., Ehleringer, J.R., Marcotullio, P., Hughes, S., Pincetl, S., Chester, M.V., Runfola, D.M., Feddema, J.J., Sperling, J. (2015) Track urban emissions on a human scale. Nature 525, 179-181.

alternative urbanization scenarios mean for the ability of urban areas to manage global carbon. The activity is in alignment with the objectives of the Cities KAN. In particular, it aims to provide a key source of knowledge that can be used by researchers and decision makers in their efforts toward transition to sustainable urban futures.

Program

Day 1, June 29, 2016

Morning	
10:00-10:30	Opening remarks / Aims of the workshop / Introductions
10.30-12:00	**Presentations** • Yoshiki Yamagata: Possible Approaches for Urban Carbon Mapping: From national (municipality inventory based) to district (Remote sensing based) level case studies in Japan • Anna Peregon: The Global Carbon Atlas: toward city emissions component • Gerald Mills: The WUDAPT vision and status • Jason Ching: Preliminary guidance applying building typology framework for generating WUDAPT form and function parameter fields and linkage to GHG
Afternoon	
13:00-17:00	**Presentations** • Johan Feddema: Overview of the GCP-WUDAPT project proposal and applications of LCZs • Oscar Brousse: WUDAPT: A relevant data producing tool? Overviewing new strategies • Dev Niyogi: WUDAPT and SDGs • Martino Pesaresi: The Global Human Settlement Layer (GHSL) • Perry Yang: Urban carbon mapping of four global downtowns: Manhattan, Tokyo, Shanghai and Atlanta • Felix Creutzig: Building urban typologies by contextualized accounting of GHG emissions • Shobhakar Dhakal and Arkarlat Kunvitaya: Urban form's implications on energy and infrastructure cost in 8 cities in Thailand • Kevin Gurney: Track carbon emissions on a human scale (by skype) • Veronique Bouchet: GURME and WMO Wrap Up/Summary

Day 2, June 30, 2016

Morning	
09:00-09:30	Opening remarks
09:30-12:00	• Discussion on synergies between GCP and WUDAPT for carbon emission mapping and modelling • Development of a draft GCP-WUDAPT project proposal on carbon emission mapping and modelling
Afternoon	
13:00-17:00	• Presentation of the draft GCP-WUDAPT project proposal on carbon emission mapping and modelling • Discussion and brainstorming to revise the draft plan • Discussion of existing resources on urban carbon emission mapping • Recommend potential global cities to start with • Outline potential contribution/inputs from participants

Day 3, July 01, 2016

Morning	
09:00-12:00	• Report back a summary of discussions to Future Earth representatives • Opportunities to collaborate with Future Earth UKAN, DKAN and other core projects • Create a list of action items • Outline of a paper to a high level journal
Afternoon	
13:00-17:00	• Continued meetings with Future Earth and UKAN

List of participants

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