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DEPARTMENT OF GEOGRAPHY

Proposed Dissertation Topics (2020-2021)

No.	Supervisors	Proposed Dissertation Title	Brief Description
1.	Dr Mia M Bennett (Email: mbennett@hku.hk)	COVID-19 and its impacts on tourism	The global COVID-19 pandemic is having an unprecedented effect on global flows of people and transportation on which the tourism industry heavily depends. Discuss any aspect of how you see COVID-19 impacting tourism both in the present and in the future, post-pandemic stage. What will change about borders, airports, biosecurity, and how people travel? How might the pandemic influence outbound travel from Greater China (Mainland China, Hong Kong, Macau, etc.)? What kinds of travel restrictions are arising, and which do you think may remain in place? What new technologies could monitor how tourists travel? These are just a few questions that may be relevant to your study of COVID-19 and tourism, and you are encouraged to explore other aspects as well.
2.	Dr Wendy Y Chen (Email: wychen@hku.hk)	Societal preferences for river restoration in Hong Kong	Hong Kong's rives have been significantly modified, degraded and polluted. Recently the SAR government is planning to restore these rivers so as to transform them into ecologically healthy and aesthetically beautiful blue spaces. This study will investigate public references for various river restoration attributes using a social survey. Detailed analysis will be undertaken to understand the potential factors influencing preference heterogeneity.

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3.	Dr Ben A Gerlofs (Email: bgerlofs@hku.hk)	Urban Aperture: Hong Kong's Place in Cinema	This project would systematically explore Hong Kong's contemporary and/or historical cinematic portrayal, focusing on a specific genre, time period, and/or production category (among other possible variables). The project would examine the city's various appearances as setting (a place where certain things happen or are possible) and/or character (the city as protagonist/antagonist, the city that evolves, adapts, provides, seduces, kills, haunts, etc.) in film, along with its analytically apparent normative treatment (derision, laud, curiosity, etc.) by the auteurs in question. The project's dual objectives would be to better understand both perceptions of Hong Kong and how real and fictive urban geography can serve artistic and narrative purposes.
4.	Dr Benjamin L Iaquinto (Email: iaquinto@hku.hk)	Provide a review of geographical fire research in Australia. Explain the vulnerability of Australian communities to fire and how they could become more resilient. Discuss in relation to climate change and the expected impacts associated with drier conditions.	Fire has been a common feature of the Australian landscape for thousands of years. Aboriginal Australians have long used fire as a land management tool and as a way to care for country. Fire continues to have a profound impact on the lives of all Australians. The devastating bushfire season of 2019-20 has renewed calls for alternative land management strategies that can reduce the severity of fires and improve the resilience of Australian communities to fire. But climate change is expected to extend the bushfire season and lead to more intense blazes. This dissertation will engage with the literature of climate change vulnerability, resilience, adaptation and mitigation as it applies to Australia.
5.	Dr Peter K Koh (Email: peterkoh@hku.hk)	Using a Systems Approach to Examine Eating Behaviour among Hong Kong's University Students	Researchers and dietitians stress the importance of healthy eating behaviours at a younger age to maintain a healthy lifestyle and to prevent chronic diseases. Especially, the period of university education is a critical transition time in one's life because there are substantial changes in lifestyles from secondary school to university and ultimately to career. University students as young adults become more responsible for choices and behaviours in their daily lives. Food intake habit is one of noteworthy transitions. When taking food, university students become more independent from their families and spend more times by

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			alone or with peer groups. Increasingly they are exposed to a wider option to choose food than in their earlier stages of life. Therefore, having a healthy and balanced dietary habit is harder to achieve than expected for young adults. To understand complex, dynamic interactions between multiple factors of food intake among young adults, this project aims to use a systems approach. Over the last decades, systems science—a computational approach focusing to understand a social event by comprehensively understanding its complex elements and their interactions at different levels and scales—has gained popularity in many disciplines. This study will focus on developing agent-based modelling, one of systems science methods, which simulates each individual university student's (e.g. a person) behaviours and interactions in a responsive environment. For example, agent-based modelling allows researchers to model and visualise an individual's behaviour on where to eat food considering income, time, preference of food outlet types, and proximity to food outlets, etc. To achieve this goal, this study has set the following objectives: Objectives: 1) Develop an agent-based model to represent a system that simulates the food environment of Hong Kong's university students including individual-level factors and restaurant locations; 2) Identify transformative strategies to improve healthy eating habits by comparing hypothetical scenarios; and 3) Develop a visualisation tool to raise the awareness of healthy food intake habits among policymakers and the public.
6.	Dr Rafaele Lafortezza (Email: raffa@hku.hk)	The key role of protected areas and nature reserve design in enhancing biodiversity and landscape conservation	European landscapes harbour a wide range of species which make this biogeographical region one of the world's most significant biodiversity hotspots. The majority of species are associated with protected areas and nature reserves within the well-known Natura 2000 network. Review and discuss the

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			role of protected areas and nature reserve design in supporting regional biodiversity and landscape conservation at large.
7.	Dr Nicky YF Lam (Email: yunlam@hku.hk)	Exploration of STEM Education in Geography	The paradigm shift of Geography education has emerged in recent years to reflect the needs of society on interdisciplinary knowledge. The incorporation of STEM (e.g., applied sciences) and field works in physical geography for environmental and sustainability education has driven this major movement. In this study, the student will perform a literature search on the subject matter and examine the recent trends of the movement. Suggestions and recommendations for the existing Geography curriculum in Hong Kong should be discussed. *For More Information*: https://www.meiji.ac.jp/cip/english/research/opinion/Takashi_Nakazawa.html
8.	Prof PC Lai (Email: pclai@hku.hk)	*(No topic suggested – have already a student doing Honours Dissertation in 2020/21.)*	
9.	Dr Yongsung Lee (Email: yongsung@hku.hk)	Big data for better understandings of human behaviors in cities	With advanced information and communication technologies (ICT), we now have access to massive data in diverse formats, many of which are collected real time with high frequencies. In response, researchers and analysts employ innovative analytical approaches to effectively handle these so-called "big data", and extract insights on human behaviors and choices. Unfortunately, more often than not, they are able to document rich and nuanced patterns in data with high spatial/temporal resolutions, but they do not necessarily produce fresh insights out of these patterns, in part because of lack of effective research design. In this context, in this dissertation, students will examine the merits and shortcomings of often-used big data with temporal/spatial information, and develop a typology of existing analyses with big data in the context of urban geography. These big data include, but are not limited to, cellphone GPS data,

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			Twits with geotags, the latest transit schedules (e.g., GTFS), Google street views, business review services (e.g., Yelp), short-term home rental services (e.g., Airbnb), and trip logs of new mobility services (e.g., ridehailing and bike/scooter sharing). In so doing, students will take a few dimensions into account: e.g., the effectiveness of big data in answering a research question of interest, the ways that big and conventional data complement one another, the representativeness, coverage, and inherent bias of big data, the aggregation of individual observations (and the potential for ecological fallacy), and the like. If necessary/desirable, students will narrow down to certain types of big data (e.g., cellphone GPS data), or certain subfields in urban geography (e.g., transportation).
10.	Dr JB Li (Email: jinbao@hku.hk)	Decadal variation of the El Niño impacts on Hong Kong winter precipitation and its relation to the Pacific Decadal Oscillation	El Niño exerts strong influence on Asian climate. How El Niño may affect summer climate in Asia has been extensively discussed, but its long-term influence on winter climate has been less explored. The objectives of the project are to 1) reveal the long-term relationship between El Niño and Hong Kong winter precipitation by using both observational and reanalysis datasets, 2) disclose whether there is decadal variation of the impacts of EI Niño on Hong Kong winter precipitation during 1884-2019, and 3) clarify how the Pacific Decadal Oscillation may have modulated the teleconnection of EI Niño on Hong Kong winter precipitation at decadal time scales. The student will be the primary investigator of this project and be responsible for reviewing existing literature to gain insights into the research topic. He/she also needs to collect all necessary climate data, learn about the existing techniques commonly adopted in this field, perform most of the data analysis, and write a formal report to present the findings.

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11.	Prof George CS Lin (Email: gcsline@hku.hk)	Urban Redevelopment in Chinese Cities: A Comparative Study of Beijing and Guangzhou	This proposed dissertation intends to compare and contrast the pattern and processes of urban redevelopment in Beijing and Guangzhou, investigate their political and cultural underpinnings and critically evaluate their economic, geographical and social consequences.
12.	Prof Becky PY Loo (Head) (Email: bpyloo@hku.hk)	Road-crossing facilities and walkability in a district in Hong Kong	The student is expected to collect information about the pedestrian road-crossing facilities in a local district of his/her choice. Various walkability indicators will then to be collected in order to identify areas for improvement. The student is expected to have background in GIS and interest in transportation.
13.	Dr JX Qian (Email: jxqian@hku.hk)	Cultural issues in urban and regional development	The close entanglement between culture and urban/regional development has been at the centre of inquiries that reverberate among both academics and policy makers. In urban contexts across the developed world and emerging economies, the post-industrial transition has ushered in the valorisation of culture as a key economic asset, while the extraction of economic value is increasingly dependent on the perpetual production of spectacles, symbols and meanings. In this context, ideas about culture-based urban development, regeneration and governance figure prominently in academic accounts and policy rhetorics. In peripheral regions that are still to be integrated into the global economy, likewise, the notion of development has departed from the modernist model of assimilating and homogenising peoples and places according to universal norms of progress and market efficiency. Instead, concerns over cultural diversity, preservation of cultural heritage, and indigenous people's cultural citizenship have been incorporated into broader agendas of economic development and state intervention. Indeed, culture-based urban and regional development has been praised as a socially more sustainable and human-sensitive approach towards development. To enrich our understanding of the intersection of culture and urban/regional development, it is imperative to adopt critical perspectives to interrogate the "economization" of culture and its economic utility. We need to develop nuanced analyses of the

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			changing social, cultural, economic and political relations that make cultural production and negotiation possible in the first place and are in turn recalibrated and reconstituted by an ascending cultural economic regime. Indeed, culture-based development generates different constellations of social, economic and political consequences for different groups, and must be unpacked in terms of decentred, heterogeneous social formations.
14.	Dr LS Ran (Email: lsran@hku.hk)	Magnitude and drivers of greenhouse gas emissions from arid river catchments: a case study of the Kuye River on Chinese Loess Plateau	Although river networks comprise less than 0.5% of the Earth's land surface, large quantities of carbon are washed from the terrestrial environment into rivers and the resulting carbon fluxes constitute a significant component of the global carbon cycle. Recent research suggests that river systems act not only as land-to-ocean vectors, but also as dynamic conduits degassing greenhouse gases (GHGs) into the atmosphere. Export of riverine carbon remains one of the least constrained components of the terrestrial carbon cycle. The amount of terrestrially-derived carbon entering rivers is 2.7-5.7 PgC/year, of which only 0.9 PgC/yea reaches the oceans. A substantial fraction is ultimately either degassed into the atmosphere as greenhouse gases (GHGs) or sequestrated in sediments. However, uncertainties on current emission estimates are large due to the absence of comprehensive, spatially resolved measurements of riverine carbon cycle. Existing studies are primarily concerned with tropical and boreal rivers, while arid and temperate rivers are substantially under-represented in the literature. Global estimates of GHG emissions are hampered by the lack of a clear understanding of geographical variability of the riverine carbon cycle and GHG dynamics. In this study, we will quantitatively examine the magnitude of greenhouse gas emissions from the arid Kuye River basin (drainage area: 8706 km^2) on the Chinese Loess Plateau by using datasets obtained from four campaigns of field sampling and measurement. Floating chambers were deployed to measure GHG emissions across the water-air interface. In addition, we will critically investigate the underlying mechanisms that govern the GHG emissions and explore the biogeochemical implications for the global carbon cycle and climate change.

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			***Note**: Field sampling has been conducted in 2018 and 2019 and field sampling results are now available.*
15.	Dr Calvin P Tribby (Email: ctribby@hku.hk)	COVID-19, physical activity, and public space: balancing infectious and chronic disease prevention strategies	Governments have enacted drastic measures in response to the COVID-19 pandemic. Some measures, such as closing of gyms, swimming pools, and beaches have limited the physical activity opportunities for Hong Kong residents. This paper will explore the scientific basis for closing these sites. It will elaborate on the trade-off between short-term measures to curtail the pandemic and their effects on other health behaviors and the associated long-term health outcomes.
16.	Dr Frank Van Der Wouden (Email: fvdw@hku.hk)	Hong Kong employee mobility and knowledge-sets.	People increasingly move between jobs. In economic geography there is an interest in what 'type' of people are mobile and how their knowledge-sets relate to that of the business and city they leave and move to. Economic geographers and labor economics have long hypothesized that individuals are more likely to move when their knowledge-set doesn't 'match' well with that of their current company / city and move to a company / city where their knowledge has a better match. Using a unique long-run data-set, this project explores employee mobility in Hong Kong and investigates to what extent the match between knowledge-sets determines mobility. Students are expected to have an interest in big-data analytics and have the ability to work in R or willing to learn.
17.	Dr Steven HS Zhang (Email: zhanghs@hku.hk)	Seeing large scale urban expansion from the space	The world has witnessed unprecedented urbanization process within the recent decades. According to the UN Department of Economic and Social Affairs (UN

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			DESA), the urban area only accounts for approximately 1% of the global land cover but hosts the 55% population by 2018, which is expected to increase to 68% by 2050. Anthropogenic activities lead to intensive urban expansion. It's projected that the global urban land will triple the area circa 2000 by 2030, which brings along with various ecological and environmental impacts like biodiversity, habitat and carbon storage loss globally, and urban heat island and non-point source pollution locally. The 2030 agenda Sustainable development goals 11 illustrated the importance of safe, resilient and sustainable cities and human settlements, which urges for the sustainable urban development. With the large-scale, fast and timeliness ability, remote sensing techniques can be an efficient tool for "seeing" the urban expansion changes from the space. Multisource spaceborne remote sensing techniques including optical remote sensing, synthetic aperture radar (SAR) and nighttime light data will be used for monitoring the locations, magnitudes and rates of urban expansion and assessing its cause and impacts mechanism, which can further support the eco-friendly, sustainable, and resilient urban development.
18.	Dr Hugo WL Mak (Email: hwlmak@hku.hk)	A study on Air Pollution: Spatial and Temporal Detection of Air Pollutants & Retrieval of PM 2.5 Maps in Greater Bay Area (GBA) through Numerical Means	Improving health conditions and tackling air pollution problems are critical challenges for human beings. In particular, identification of accurate spatial variations and originated sources of air pollutants (e.g., PM 2.5 (fine particulate matter), NO_2, SO_2, O_3), as well as their temporal and diurnal variations are of paramount importance. This is because excessive pollutants accumulating in the atmosphere can exert adverse health effects on human beings, at the same time diminish our quality of lives. Therefore, the first goal of this project is to understand the chemical compositions and spatial characteristics of aforementioned pollutants in air, then to conduct analysis of ground pollutant measurement datasets obtained from available air quality monitoring stations within Greater Bay Area (GBA), for example from Environmental Protection

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			Department of Hong Kong. For example, the Kolmogorov-Zurbenko (KZ) filter method provides us with a statistical tool in obtaining the time series of air quality attributes, while convolution techniques can also be applied to remove surrounding noise, detecting clear pollution profiles will help governments to conduct better air quality managements. The second goal of this project is to investigate the relationship between ground pollutant measurements and meteorological attributes obtained from numerical simulations or from Hong Kong Observatory (HKO), then to develop techniques to retrieve high resolution ground PM 2.5 maps within GBA throughout recent years, by combining different datasets (e.g., meteorological and ground observation datasets, satellite images, land use datasets etc.). These techniques can be developed based on physical and environmental mechanisms, pure statistical means, or the combination of regression and machine learning approaches. All related datasets will be provided in this project, and we expect students to be able to understand how air quality varies within GBA and quantify respective climate impacts using data analytic tools explored throughout the project.
19.	Dr YJ Li (Email: yjli2510@hku.hk)	Exploring the relationship between land use planning and renewable energy development	Distributed energy generation has created new interfaces between renewable energy and the built environment. Components such buildings and transportation infrastructures can function as platforms for energy production, conversion, and distribution. Traditional spatial planning, especially land-use planning, gives little consideration to this energy-generating potential of the built environment. What is missing is a set of planning tools to build renewable energy technologies into the existing urban fabric. This is made evident by prevalent siting disputes and conflicts arising from energy infrastructure installations. For example, in the absence of planning codes in Australia to regulate overshadowing of rooftop solar systems, disputes can only be decided in the courts. The existing concepts and tools in land use planning hardly

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			suffices to accommodate the development of renewable energies required by the imperatives of climate change, energy security, and economic revitalization. The goal of this research is to understand the role of spatial planning in renewable energy development. Building on two bodies of literature, namely integrated spatial-energy planning and socio-technical transition, we are going to identify the limits and possibilities within the current land-use planning system to accommodate and scale up innovative energy technologies and to promote equitable results. The site of this research will be the Greater Bay Area. Research questions include (1) What's the relationships between renewable energy technologies and urban planning? (What type of technologies are being adopted in the urban context? Which particular planning concepts, tools, stages, and processes are utilized to organize these technologies?) (2) How are the renewable energy projects (e.g. rooftop PV, district energy, waste-to-energy, solar-based charging stations, deep geothermal, etc.) planned and implemented? (3) What particular characteristics and elements in the urban planning system, or innovations, promote/obstruct effective and equitable results? By answering these questions, the research will sketch a bridge between the renewable energy institutions and the urban planning systems. Then it will develop a new set of concepts and instruments to improve and leverage the synergy.

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31 August 2020