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MDPI

Editorial

Air—A New Open Access Journal

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Air (ISSN 2813-4168) is a new peer-reviewed, international, open access online academic journal for scientists in different disciplines related to air's composition and impacts. It focuses on topics such as emissions, physical effects, chemical processes, and engineering control measures for gaseous, microbes, and particulate compounds in the regional, urban, indoor, and micro-environment, and their associated impacts on human comfort, health, air quality, and ecosystems.

This journal provides a platform for original research results in the broad areas of air science, technology, management, and governance. Papers published in *Air* will advance the international scientific community's understanding of air that will influence regulations, management, and protection of air resources, ecosystems, and human health with sustainable urban development. It will drive future scientific research and sustainable technology development efforts with air science.

Air covers an extensive and ever-expanding research area. Global issues such as new airborne viruses, novel disinfection agents, chemicals, and air purification technology require further investigation, which will lead to an increase in the publication volume. Figure 1 indicates a significant increasing trend of 11% per year in the number of published journal articles indexed by the Web of Science core collection in 2000–2022 on 12 selected *Air*-related subjects. MDPI was ranked the third publisher in the period (based on the number of publications). The top five hot topics in this research area are air monitoring (25%), air quality model (14%), air policy (10%), air quality control (10%), and air quality and health (10%). Figure 2 depicts the relative growth of articles in the 12 subjects compared to those published in 2000. The average growth of publications was about ninefold. The topmost growing areas are air quality and sustainability (46 times), air quality and climate (20 times), air quality and comfort (16 times), air and human performance (15 times), and air quality and health (14 times), respectively.

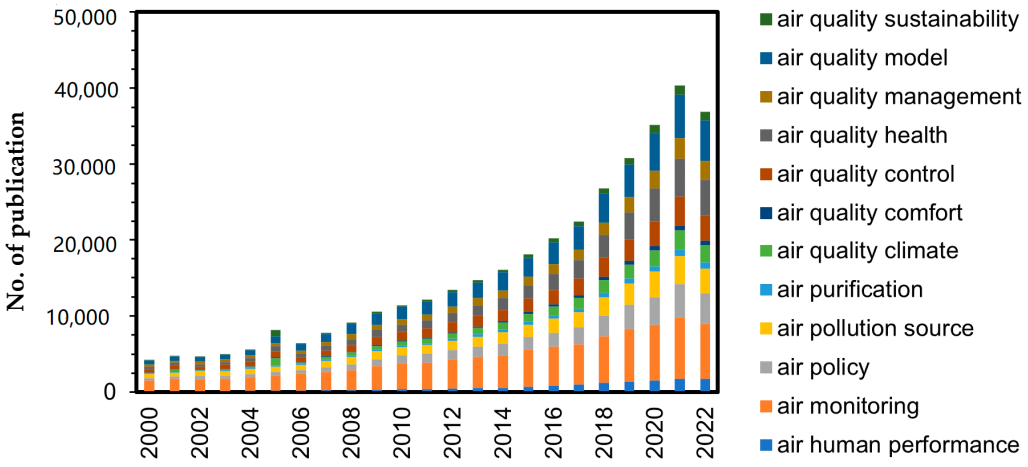

Figure 1. Publication volume in 2000–2022 (Web of Science Core Collection).

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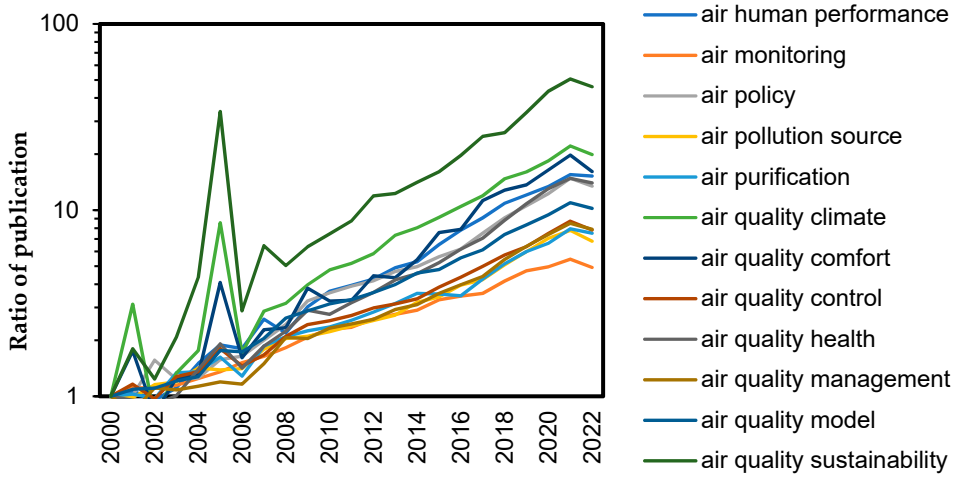

Figure 2. Publication growth ratio in 2000–2022 (Web of Science Core Collection).

The 2022 Web of Science Core Collection database lists approximately 20,000 journal articles on 'air quality', 'air monitoring', or 'air pollution'. Based on the paper counts, MDPI is the second-largest publisher, with about 3500 papers, including 13 highly cited (top 1% of an academic field) articles [1–13]. Among 17,000 keywords involved in the 3500 published papers, 96 co-occurring keywords at a threshold of 35 times or more (i.e., ≥1% publications) were identified. This excluded similar keywords used in the search, i.e., air, air quality, air monitoring, air pollutant, ambient air, pollutant, pollution, quality, and monitoring. Figure 3 shows the co-keyword network of the keywords visualized using the bibliometric analysis software VOSviewer [14]. The size of a keyword node represents the keyword occurrence frequency. A link between two nodes represents a co-occurrence relationship, with the thickness indicating the length strength.

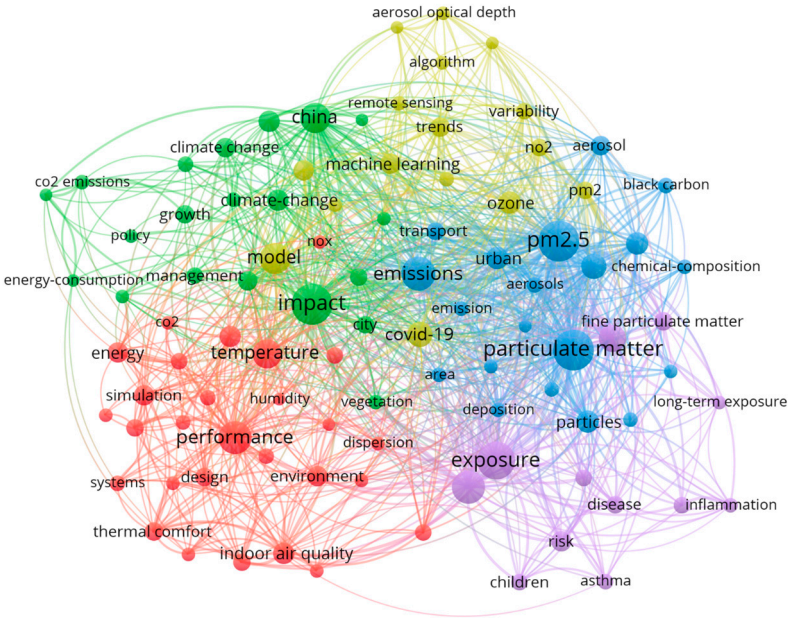

Figure 3. Co-keyword network visualization based on 'air quality', 'air monitoring', or 'air pollution' occurrences.

The keywords were presented as five clusters, as listed in Table 1.

Table 1. Co-occurrence keywords.

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Performance	Impact	PM2.5	model	exposure
temperature	China	particulate matter	ozone	health
indoor air quality	Impacts	emissions	COVID-19	mortality
Environment	climate	PM10	trends	fine particulate matter
energy	climate change	particles	prediction	risk
simulation	cities	source apportionment	PM2.5	association
system	city	urban	machine learning	disease
thermal comfort	climate change	aerosol	variability	long-term exposure
ventilation	urbanization	transport	NO_2	children
efficiency	growth	black carbon	remote sensing	oxidative stress
volatile organic compounds	carbon	aerosols	models	inflammation
design	vegetation	area	aerosol optical depth	asthma
optimization	consumption	deposition	MODIS	
indoor air quality	region	chemical-composition	validation	
buildings	CO_2 emissions	dust	deep learning	
parameters	dynamics	emission	algorithm	
systems	energy consumption	ultrafine particles		
water	management	polycyclic aromatic hydrocarbons		
removal	economic growth	heavy metals		
humidity	policy	identification		
CO_2				
NOX				
sustainability				
flow				
dispersion				
combustion				
behaviour				
kinetics				

Cluster 1 is defined by 28 keywords which are mainly attributed to the built environment, content, and impacts. The five contributing keywords (performance, temperature, indoor air quality, environment, and energy) contribute one-third of the total link strength of this cluster. The keyword 'building' and the directly linked nodes, i.e., thermal comfort,

flow, simulation, energy, system, performance, indoor air quality, and environment, contributed to half of the cluster's total length strength. Issues related to indoor air quality, sick building syndrome, and approaches for healthy buildings are the typical research focuses [1,2].

Cluster 2 is attributed to policy, management, and impact on air pollution and quality issues, e.g., carbon reduction and sustainable development. Air quality/policy as a driving force and its effects on various sustainable developments (urban planning, green finance, and air emission standard) are reported [3–7]. Keywords including 'impact (impacts)' contributed 28% and 'climate' contributed 16% of the total link strength—26% related to geographic locations.

Cluster 3 relates to pollutants and source apportionment. This cluster presents the most vital link strength related to air research. The top 5 (out of 20) contributing keywords account for 60% of the cluster link strength. Three of the five keywords (PM2.5, particulate matter, emissions, PM10, and particles), are particle related, indicating the parameter typically adopted in many studies in source apportionment, e.g., [7]. The emission inventories are developed and could be further refined with sensing and data technologies [8].

Cluster 4 appears with model development and applications, with advanced measurement and monitoring techniques. Applications of advanced techniques, such as machine learning, deep learning, satellite remote sensing, and the Moderate Resolution Imaging Spectroradiometer (MODIS), are included in this cluster. The top 5 (out of 16) contributing keywords are model, ozone, COVID-19, trends, and prediction, comprising 50% of the total link strength of this cluster. Air pollution and quality modelling of various digital techniques are highly cited topics (e.g., assimilation, Bayesian, deep learning, stochastic approaches, and neural networks) [8–11].

Cluster 5 addresses health and related issues. Air pollution, associated diseases, and their impacts on health systems are specific topics [12,13]. The top 5 (out of 12) keywords identified by the total link strength are exposure, health, mortality, fine particulate matter, and risk. They contribute 70% of the total link strength of the cluster.

In light of the above, *Air* publishes papers reflecting the broad categories of interest in these fields:

- Air quality for health and comfort.
- Air pollution and source characterisation.
- Air purification and control techniques.
- Air management, policy control, monitoring, and modelling.
- Air–human interaction and sustainable development.

As a multidisciplinary journal, *Air* reflects the broad categories of interest in aerosols and bioaerosols, air pollution physics and chemistry, air pollutant sources, emissions, sensing, exposure control, health impact and risk assessment, air pollutant transport, transformation and fate, air quality, monitoring and modelling, impacts on climate, eco-systems, urban environment, indoor environment and microenvironment, and human response and public health in relation to exposure to air pollutants, air purification, ventilation, and other environmental control techniques. The research results present the basic and essential information to allow governors, policymakers, scientists, engineers, designers, building managers, owners, and operators to provide a sustainable, safe, healthy, and comfortable urban and built environment for human habitation.

The first issue of *Air* (Volume 1, Issue 1) covers a range of relevant topics, including (but not limited to) air pollution, monitoring and managing chemical and particulate emissions from various machinery sources, and activities for sustainable cities. As an editor, I would like to see healthy competition from researchers and practitioners representing diverse academic, research and development, governance, and control fields to shape the character of *Air*, starting with great potential by filling a unique niche.

Conflicts of Interest: The author declares no conflict of interest.

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Short Biography of Author

Dr. L.T. Wong is an associate head and associate professor of the Department of Building Environment and Energy Engineering at The Hong Kong Polytechnic University. He was appointed as the Hong Kong Baptist University's court member in 2016–2021 and council member in 2022–2023. Dr. Wong earned his bachelor's degree and Ph.D. from The Hong Kong Polytechnic University in 1992 and 1997, respectively. He was the programme leader of BEng(Hons) in Building Services Engineering (with a specialism in Fire Engineering) in 1997–2002 and BEng (Hons) in Building Sciences and Engineering since 2020, and MSc in Fire and Safety Engineering in 2003–2008. He received the Hans B. Thorelli Award at the 2006 Awards for excellence and, in 2011, the highly commended award winner at the Literati Network Awards for Excellence by Emerald Literati Network. He was ranked in the world's top 2% of scientists released by Stanford University in 2021 and 2022. His research interests include environmental quality and water and safety systems for the built environment.