

**Citation:** *Seham Mostafa & Nada Saleh Mohammed (2021), Environmental Assessment of climatic performance of coastal cities as a mechanism to achieve sustainable development: Hurghada city, International Design Journal, Vol. 11 No. 5, (September 2021) pp 151-160*

## **Environmental Assessment of climatic performance of coastal cities as a mechanism to achieve sustainable development: Hurghada city**

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### **Paper History:**

**Paper received 18<sup>th</sup> May 2021, Accepted 5<sup>th</sup> July 2021, Published 1<sup>st</sup> of September 2021**

### **Abstract:**

Egypt faces many environmental problems. The increase in the urban population has led to an increase in the number of housing units, which changes the urban climate, or what is known as the phenomenon of the thermal urban thermal island, which is one of the biggest urban environmental problems facing the world in recent times and what followed from the steady consumption of energy, pollution and shortage resources and lack of quality of life. Hence the role of environmental sustainability and what it offers as solutions to some of these problems. Since the wind element is one of the important elements in improving the efficiency and quality of the built environment, reducing energy and thermal comfort. The main objective of the research is to focus on the importance of Computational Fluid Dynamics (CFD) simulation programs in improving the efficiency of urban settlement performance by studying natural ventilation for human health and thermal comfort, especially in the coastal communities that suffer from thermal comfort problems as an aid to planners and architects in urban planning and design to reach planning and design decisions and strategies in line with environmental sustainability standards. To achieve the main objective of the research, the importance of simulation programs was addressed to reach procedures and recommendations prepared to achieve sustainability and thermal comfort, the CFD model and related software treatments were applied and integrated as a small-scale wind assessment system through a number of stages, including program inputs from climatic elements and urban formation to be evaluated With the aim of guiding decision makers when designing and planning any urban assembly in order to achieve sustainable urban development.

### **Keywords:**

*Wind simulation programs, environmental assessment, thermal comfort, environmental sustainability assessment, sustainable environmental planning, climate analysis.*

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