

**Statistical Analysis of Dust Disaster Occurrence and Representation of
Smart City Conceptual Model for its Collation
(Case Study: Ilam and Dehloran Cities)**

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Extended Abstract:

1- INTRODUCTION

In spite of technology progressives, natural hazards have caused damage to property and life in many cities around the world. Part of the damage is related to inadequate cognition of correct response to natural hazards. The dust natural hazard occurrence has attracted public attention in the recent years. Lack of attention to natural hazards has not only affected society economically, but it has also affected the life of residents in the society due to heavy damage.

2- THEORETICAL FRAMEWORK

Dust is one of the most important natural hazard, which has attracted the attention of scientists in different aspects. Assessment of dust is important in most areas of Iran, from the viewpoint of medical and sanitary problems, pulmonary respiratory and optic diseases. The dust phenomenon, as a global hazard, occurs in the dry and semi arid regions of earth. Because of Iran's location in the arid and semi arid belt of earth, it is repeatedly exposed to different synoptic and local dust systems. The main reason for the dust phenomenon, is the effect of wind force on the areas with texture and particles suspended in the air and spread out in the regional climate condition. Recent occurrence of droughts has increased this phenomenon.

3- METHODOLOGY

The paper was done by analytical-statistical method. At first, the time distribution of dust phenomenon occurrence was considered and analyzed. Next, the relation of climatic parameters with dust occurrence was analyzed based on Pearson correlation coefficient and multiple regression, and subsequently, the seasonal and annual

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wind rise of the area was drawn. Finally a smart city conceptual model was identified as a solution for confrontation with this phenomenon.

4- RESULTS & DISCUSSION

The dust disaster occurred appropriate to air warming in a time period of about five months from April to August. The most severe dust day occurred in the months of July and May. This phenomenon does not have similar distributions by the impacts of geographical condition. In the Ilam city with higher height and latitude, there were less occurrences than Dehloran city. There aren't significant relations between climatic parameters and dust days in Ilam city. However in Dehloran station, except significant relations between variables, the high determination coefficient (R^2) shows the main effect of climatic parameters in phenomenon occurrence.

5- CONCLUSIONS & SUGGESTIONS

The creation source control of dust phenomenon is not easily removable and national and transnational strategic plans are required. The representation of solutions is important for compatibility and decrease of consequences and effects. By preparing the intelligent and electronic city infrastructure, we will be able to have citizens who manage their daily time and exposure to dust phenomenon in the lowest time.

Key words: Climatic parameters, Dust, Disaster, Smart city.

References

1. Azizi, G., Miri, M., & Nabavi, S. O. (2011). *Dust phenomenon detection in the west of Iran. Quarterly of Dry Areas Geographical Studies*, 7, 103-118. (in Persian)
2. Behzadfar, M. (2003). Urgencies and obstacles of smart city creation in Iran. *Journal of Beautiful Arts*, 15, 14-27. (in Persian)
3. Blais, P. (1996). How the information revolution ? is shaping communities. *Planning Commissioners Journal*, 24, 16-32.
4. Dehghanpour Farashah, A. (2005). *Synoptical - statistical analysis of dust storm in the central plateau of Iran*. Unpublished Doctoral Dissertation of Physical Geography, Climatology, Kharazmi University, Tehran. Iran. (in Persian)
5. Ekestrom, M., Mctainsh, G. H., & Chappell, A. (2004). Australian dust storm: Temporal trends and relationships with synoptic pressure distributions (1960-1999). *International Journal of Climatology*, 24, 1581-1599.
6. Engestaler, S. (2001). *Dust storm frequencies and their relationships to land surface conditions*. Germany: Fridrich – Schiller University Press.

7. Farmanbar, A., Baharvand, M., & Baghteyari Chahar Lang, B. (2009). Electronic municipality situation in Bushehr city. *Second International conference of Electronic Municipality, Tehran, Iran*. Retrieved from <http://www.civilica.com/Pager-Emun02015>. Pdf. (in Persian)
8. Fazeli, D. (2011). *Synoptic evaluation of dust effect on human health in the Ilam province*. Unpublished M.A. Dissertation of Climatology in Environment Planning, Islamic Azad University of Tehran, Tehran, Iran. (in Persian)
9. Fei, J., David, D. Z., Harry, F. L., & Yong – Jian, H. (2012). Extreme dust storm disaster in northern China in AD 1523. *Asian Geographer*, 29(2), 77-87.
10. Gong, D. Y., Mao, R., & Fan, Y. D. (2006). East Asian dust storm and weather disturbance: Possible links to the Arctic oscillation. *International Journal of Climatology*, 26, 1379-1396.
11. Khoshakhlagh, F., Najafi, M. S., Zamanzad, S. M., Shirazi, M. H., & Samadi, M. (2013). Assessment of dust cargo compositions in the west and southwest of Iran. *Journal of Environmental Hazards & Geography*, 6, 17-36. (in Persian)
12. Kyani, A. (2011). Smart city third millennium urgency in electronic municipality integrated connections (representation of smart city conceptual – Executive model with emphasize on Iran cities). *Journal of Environment Preparation*, 14, 1-19. (in Persian)
13. Kyani, A., Fazelnia, G., & Rezaei, B. (2011). Assessment and prioritization of the natural hazards in Zabul city. *Journal of Geography and Environmental Studies*, 1(1), 98-111. (in Persian)
14. Rasoli, A., Sarisarraf, B., & Mohammadi, G. (2010). The trend analysis of dust climatic occurrence recent 55 years in the west of Iran in by non-parametric statistical methods. *Quarterly of Physical Geography*, 9, 15-28. (in Persian)
15. Shaemi, A., & Habibi Nokhandan, M. (2009). *Global warming, ecological and existence*. Mashhad: Tarjoman Kharad Press. (in Persian)
16. Shamsipour, A., & Safarrad, T. (2012). Synoptic – Satellite analysis of dust phenomenon. *Journal of physical Geography Research*, 79, 111-126. (in Persian)
17. Sissakian, V.K., Al-Ansari, N., & Knutsson, S. (2013). Sand and dust storm events in Iraq. *Natural Science*, 2(10), 1084-1094.
18. Tao, G., Lijuan, S. U., Qingxia, M. A., Haiying, L. I., Xicang, K. I., & Xiao, Y. (2003). Climatic analysis on increasing dust storm frequency in the springs of 2000 and 2001 in inner Mongolia. *International Journal of Climatology*, 23, 1743-1755.
19. Xie, S., Zohang, Y., Li Q., & Tang, X. (2005). Characteristics of air pollution in Beijing during sand- dust storm periods. *Journal of Water, Air and Soil Pollution*, 5, 217-229.

20. Yarahmadi, D., & Azizi, G. (2007). Multivariation analysis of relation between Iran's seasonal precipitation amount and climatic indicators. *Journal of Geography Researches*, 62, 161-174. (in Persian)
21. Zhang, Q. Y., Zhao, X. Y., & Zhang, Y. L. (2002). Preliminary study on sand-dust storm disaster and countermeasures in China. *Chinese Geographical Science*, 12(1), 9-13.
22. Zolfaghari, H., & Abedzadeh, H. (2005). Synoptic analysis of dust systems in the west of Iran. *Journal of Development and Geography*, 6, 173-187. (in Persian)

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