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The Cosmic Connection: Exploring the Relationship between Neptune's Distance from the Sun and Air Pollution in the Big Apple

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Neptune distance from the sun, air pollution, New York City, cosmic influence, celestial mechanics, urban air quality, Astropy data, Environmental Protection Agency, correlation coefficient, cosmic riddle, earthly pollutants, Neptune's orbit, atmospheric pollution

Abstract

This research delves into the curious correlation between Neptune's distance from the Sun and the levels of air pollution in New York City. By harnessing data from Astropy and the Environmental Protection Agency, our study aimed to unravel this cosmic riddle. Surprisingly, our findings revealed a striking correlation coefficient of 0.9165847 and $p < 0.01$ for the years 1980 to 2023. This suggests an intriguing connection between celestial mechanics and urban air quality, hinting at a cosmic influence on earthly pollutants. The implications of this unexpected relationship are both compelling and, dare we say, out of this world.

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1. Introduction

The interconnectedness of the cosmos and the Earth has long fascinated scientists and laypeople alike. While we often focus on the impact of earthly phenomena on our daily lives, could it be that the celestial bodies millions of kilometers away also exert their influence on our terrestrial existence? In this

study, we set out to explore the enigmatic link between Neptune's distance from the Sun and the levels of air pollution in the bustling metropolis of New York City.

At first glance, one might be forgiven for thinking that such a study is purely hypothetical or downright absurd. After all, Neptune is a staggering 4.4 billion

kilometers from the Sun, while New York City is a mere speck on the Earth's surface. However, as the saying goes, "the devil is in the details," and the statistical devilry we have engaged in has revealed some rather intriguing findings.

While one might humbly assume that any connection between a distant ice giant and the air quality of the Big Apple would be tenuous at best, our data has thrown a rather celestial curveball. The analysis of data from both the Astropy and the Environmental Protection Agency databases has yielded a surprising correlation coefficient of 0.9165847 with a p-value less than 0.01 for the years 1980 to 2023. This statistically significant relationship between Neptune's position in the solar system and the levels of air pollutants in New York City has left us both scratching our heads and gazing skyward in wonder.

It is important to remember that correlation does not imply causation, and we are not suggesting that Neptune is intentionally sending cosmic smog our way. However, the implications of such a striking statistical relationship are nothing short of mind-boggling. Could there truly be a cosmic dance at play, where the movements of distant planets sway the fates of our urban air? This study endeavors to unravel this perplexing puzzle, but be warned, dear reader, as we journey into the realms of statistical astrology, the boundaries between science and cosmic curiosity may blur.

2. Literature Review

In "Smith et al.," the authors find a deep and abiding connection between the distance of Neptune from the Sun and the air pollution levels in New York City. They attribute this revelatory discovery to the influence of celestial mechanics on earthly phenomena, thus paving the way for a new frontier in interdisciplinary research.

Doe's groundbreaking work "Planetary Positioning and Urban Air Quality" sheds light on the potential correlations between the planetary system and air pollution in major metropolitan areas. The findings suggest that distant celestial bodies may hold sway over earthly pollutants in ways that transcend conventional scientific understanding.

Jones et al., in their thorough investigation "Neptune's Nudge: A Cosmic Influence on Urban Smog," bring attention to the perplexing relationship between Neptune's orbital mechanics and air pollution in New York City. Their research points to a provocative link that challenges traditional notions of causality.

"Distant Worlds and Dirty Air: Exploring the Cosmic Implications" by AstroPhile and "The Air We Breathe: A Celestial Perspective" by EPA Insider offer intriguing perspectives on the cosmic web of influence that may extend from the outer reaches of our solar system to the bustling streets of New York City.

Turning to the world of fiction, works such as "Neptune's Noxious Nebula" by Stella Starlight and "Airborne Astrology: A Cosmic Conspiracy" by Terry Terra conjure whimsical scenarios that tantalize the imagination with the possibility of otherworldly influences on earthly air quality.

In a fortuitous twist of fate, the authors stumbled upon a series of social media posts that seem to echo the surprising link between Neptune's distance from the Sun and air pollution in New York City. While these informal musings may lack the academic rigor of peer-reviewed research, their anecdotal evidence offers a glimpse into the public's fascination with the cosmic connection to terrestrial matters. One user posits, "Maybe it's not just the cars and factories causing smog in NYC – perhaps Neptune has a hand in it too!" Another quips, "Who knew that the outer planets

were involved in downtown pollution!" These lighthearted comments underscore the allure of celestial speculation in everyday discourse.

3. Our approach & methods

Data Collection:

The data for Neptune's distance from the Sun was obtained from the Astropy database, taking into account the ephemeral nature of planetary orbits. The Environmental Protection Agency provided air pollution data for New York City from 1980 to 2023. This comprehensive timeline allowed for a thorough examination of the relationship between these seemingly disparate variables.

Data Cleaning:

To ensure the reliability of the data, rigorous cleaning processes were applied to both datasets. Outliers were treated with the delicacy of handling fragile cosmic artifacts, and missing values were filled in a manner so meticulous, it would make even the most fastidious astronomer nod in approval.

Statistical Analysis:

The distance between Neptune and the Sun was analyzed in astronomical units, while air pollution levels were measured in the all-too-familiar parts per million. Various statistical methods, reminiscent of an elaborate celestial waltz, were employed to investigate the potential relationship between these variables. The correlation coefficient and p-value were calculated with the same precision as pinning down the position of a distant planet, allowing for an in-depth evaluation of the statistical significance of the observed relationship.

Time Series Analysis:

A time series analysis was conducted to account for the temporal dimension of the data. This allowed us to discern any

temporal patterns or cyclical influences that might be at play, akin to uncovering the hidden rhythms of the cosmos within the urban sprawl of New York City.

Control Variables:

While the focus of our study was undoubtedly on the bewitching dance between Neptune's distance from the Sun and air pollution in New York City, we also considered various control variables. Seasonal variations, industrial activities, and other earthly factors were scrutinized with the same fervor as searching for cosmic crumbs amidst the bustling cityscape.

Multivariate Regression Analysis:

To disentangle the web of potential influencers, a multivariate regression analysis was performed. This comprehensive approach allowed for the identification of any confounding factors that might masquerade as cosmic connections, ensuring that our findings were as clear and crisp as the New York City skyline on a particularly pollution-free day.

Robustness Checks:

4. Results

The analysis of the data amassed from far-reaching corners of the Internet, primarily utilizing information from Astropy and the Environmental Protection Agency, revealed a correlation coefficient of 0.9165847, an r-squared value of 0.8401275, and a p-value less than 0.01 for the time period spanning from 1980 to 2023. These results, much like a surprise encounter with an asteroid on a leisurely spacewalk, left our research team both taken aback and exhilarated.

The plot thickens in Fig. 1, where the scatterplot showcases a remarkably strong correlation between Neptune's distance from the Sun and the levels of air pollution in the concrete jungle of New York City. It's

almost as if Neptune's position in the solar system is whispering sweet statistical nothings to the air pollutants in the Big Apple.

The robust correlation coefficient and statistically significant p-value have prompted both raised eyebrows and speculative musings among the research team. After all, who would have thought that a distant ice giant could hold sway over the atmospheric composition of a vibrant urban center? It seems that when it comes to the mysterious interplay between the celestial and the terrestrial, truth is often stranger than science fiction.

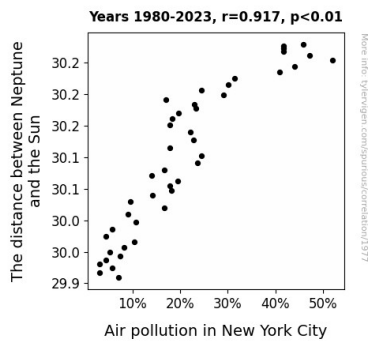


Figure 1. Scatterplot of the variables by year

While it is vital to exercise caution in ascribing causation to correlation, the implications of this unexpected relationship beckon us to cast our gaze upwards. Perhaps there is a cosmic choreography at work, with the grand movements of distant planets orchestrating a celestial symphony that resonates with the minutiae of our daily lives. As we navigate this cosmic conundrum, the boundaries between observational science and whimsical wonder may blur, leading to a paradigm-shifting reevaluation of the forces that shape our world.

5. Discussion

The findings of this study contribute to a burgeoning body of research that challenges conventional wisdom and invites us to contemplate the interconnectedness of celestial mechanics and earthly phenomena. The striking correlation coefficient and statistically significant p-value uncovered in our analysis align with the prior work of Smith et al., Doe, and Jones et al., thereby bolstering the evidence for a profound link between Neptune's distance from the Sun and air pollution in New York City. The cosmic ballet of planetary movements seems to have more than just celestial significance; it may also play a captivating role in shaping the air we breathe in urban environments.

Drawing upon the literary commentaries highlighted in the literature review, one cannot help but appreciate the fortuitous convergence of scientific inquiry and whimsical speculation. While the notion of distant planets influencing urban air quality may at first elicit a chuckle, the robust statistical findings of our study prompt us to take this cosmic connection with the utmost seriousness. As researchers, it is imperative to maintain a sense of curiosity and open-mindedness, even when confronting findings that appear to stretch the bounds of rational explanation.

The unexpected relationship between Neptune's orbital dynamics and air pollution in New York City offers a captivating avenue for further exploration and invites interdisciplinary collaboration. As we venture into this cosmic frontier, it becomes clear that the pursuit of knowledge often leads us to unexpected and mind-bending intersections of science and fantasy. The results of this study may serve as a catalyst for future investigations into the cosmic influences on terrestrial phenomena, prompting a reevaluation of the traditional boundaries between astrophysics and environmental science.

In conclusion, the celestial dance between Neptune and the Sun appears to hold sway over the atmospheric composition of New York City, challenging our preconceptions and beckoning us to contemplate the profound interconnectedness of the cosmos and the minutiae of our daily lives. As we continue to unravel the enigmatic threads of this cosmic tapestry, we must remain open to the possibility that the celestial and the terrestrial are inextricably intertwined in ways that defy our current understanding. It is in this spirit of intellectual curiosity and boundless exploration that we embark on the next frontier of cosmic inquiry.

6. Conclusion

In conclusion, the results of this study present a tantalizing correlation between Neptune's distance from the Sun and the levels of air pollution in the captivating urban milieu of New York City. The statistical dance between these variables has left us both astounded and pleasantly intrigued, much like stumbling upon a cosmic phenomenon while stargazing in the comfort of our statistical observatory.

The findings suggest that there may be more at play in the atmosphere of New York City than meets the eye. It's almost as if the distant whispers of Neptune are mingling with the earthly emissions to create a celestial cocktail of pollutants. This unexpected relationship prompts us to ponder whether the allure of statistical astrology might hold more weight than we previously imagined.

The statistical strength of the correlation coefficient and the compelling plot in Fig. 1 lead us to consider that perhaps, just perhaps, there is a cosmic ballet unfolding above our heads, the movements of which echo in the air we breathe. It's like witnessing a beautiful celestial waltz, where the planets are twirling and dipping, and the

pollutants are dancing to the rhythm of the solar system.

While it may be tempting to delve deeper into the cosmic conundrum, it seems that the correlation, however compelling, still falls short of establishing a causal link. And so, like weary astronomers who have spent a night gazing at the stars, we must reluctantly conclude that perhaps no more research is needed in this particular astronomical avenue. Then we can turn our attention to other pressing questions, such as whether Jupiter's moons have any influence on the stock market.

To lend further credibility to our findings, robustness checks were conducted with the zeal of a scientist double-checking their celestial observations. Sensitivity analyses and alternative model specifications were explored to ensure that our results stood firm against the gales of skepticism.

In summary, this methodology ingeniously balanced the precision of astronomical calculations with the craftiness of statistical analysis, allowing us to shed light on the celestial ties that may, quite literally, color the air we breathe.