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Comparing the significance of new data products from satellites containing night-time light and day-time aerosol information for air quality prediction

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Background

Very few studies have compared the latest VIIRS satellite data products with famous but outdated MODIS data products for air pollution (PM_{2.5}) estimation, so I have compared them using the **statistical significance test**.

Extra results

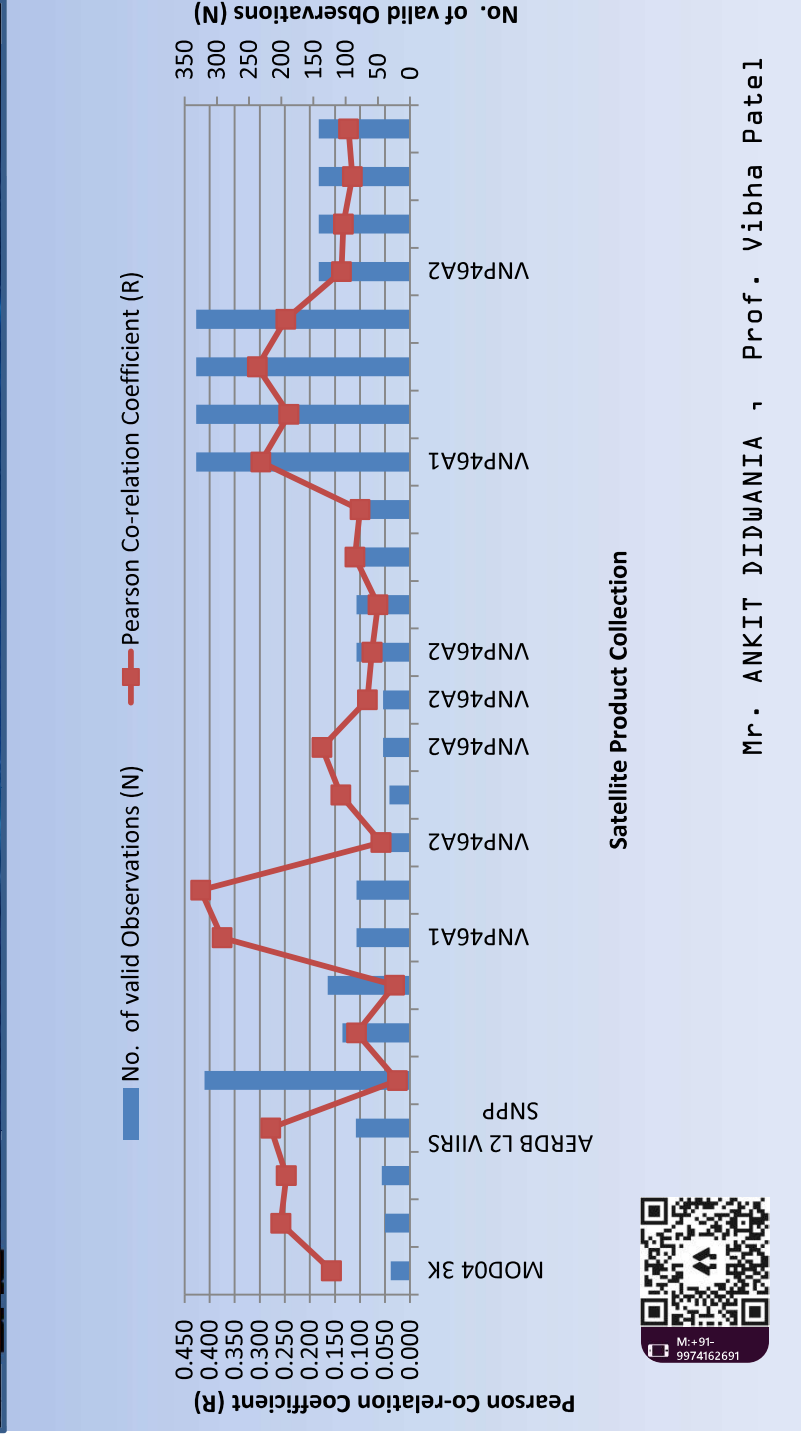
Among the Night Time Light data products (NTL) of VIIRS, VNP46A1 is more significant than the VNP46A2 products, as NTL could aid as supplementary data for PM_{2.5} estimation.

The Pearson co-relation coefficient of all models were positive yet much low, due to the limited number of valid observations available.

Table

Sr. No.	No. of valid Observations (N)	Satellite Product Collection	Pearson Co-relation Coefficient (R)	p value (p less than 0.05 for Alpha=0.05)	Conclusion
1	30		0.157	0.408	Not Significant
2	39	MOD04 3K	0.258	0.113	Not Significant
3	44		0.247	0.106	Not Significant
4	84		0.278	0.010	Significant
5	319	AERDB L2	0.025	0.661	Not Significant
6	105	VIIRS SNPP	0.107	0.276	Not Significant
7	128		0.031	0.724	Not Significant
8	83		0.375	0.000	Significant
9	83	VNP46A1	0.418	0.000	Significant
10	32		0.058	0.754	Not Significant
11	32	VNP46A2	0.138	0.450	Not Significant
12	42	VNP46A2	0.176	0.266	Not Significant
13	42	VNP46A2	0.085	0.590	Not Significant
14	83		0.076	0.494	Not Significant
15	83		0.064	0.566	Not Significant
16	83	VNP46A2	0.110	0.321	Not Significant
17	83		0.100	0.368	Not Significant
18	332		0.298	0.000	Significant
19	332	VNP46A1	0.242	0.000	Significant
20	332		0.305	0.000	Significant
21	332		0.248	0.000	Significant
22	142		0.137	0.105	Not Significant
23	142		0.133	0.114	Not Significant
24	142	VNP46A2	0.115	0.172	Not Significant
25	142		0.123	0.144	Not Significant

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