

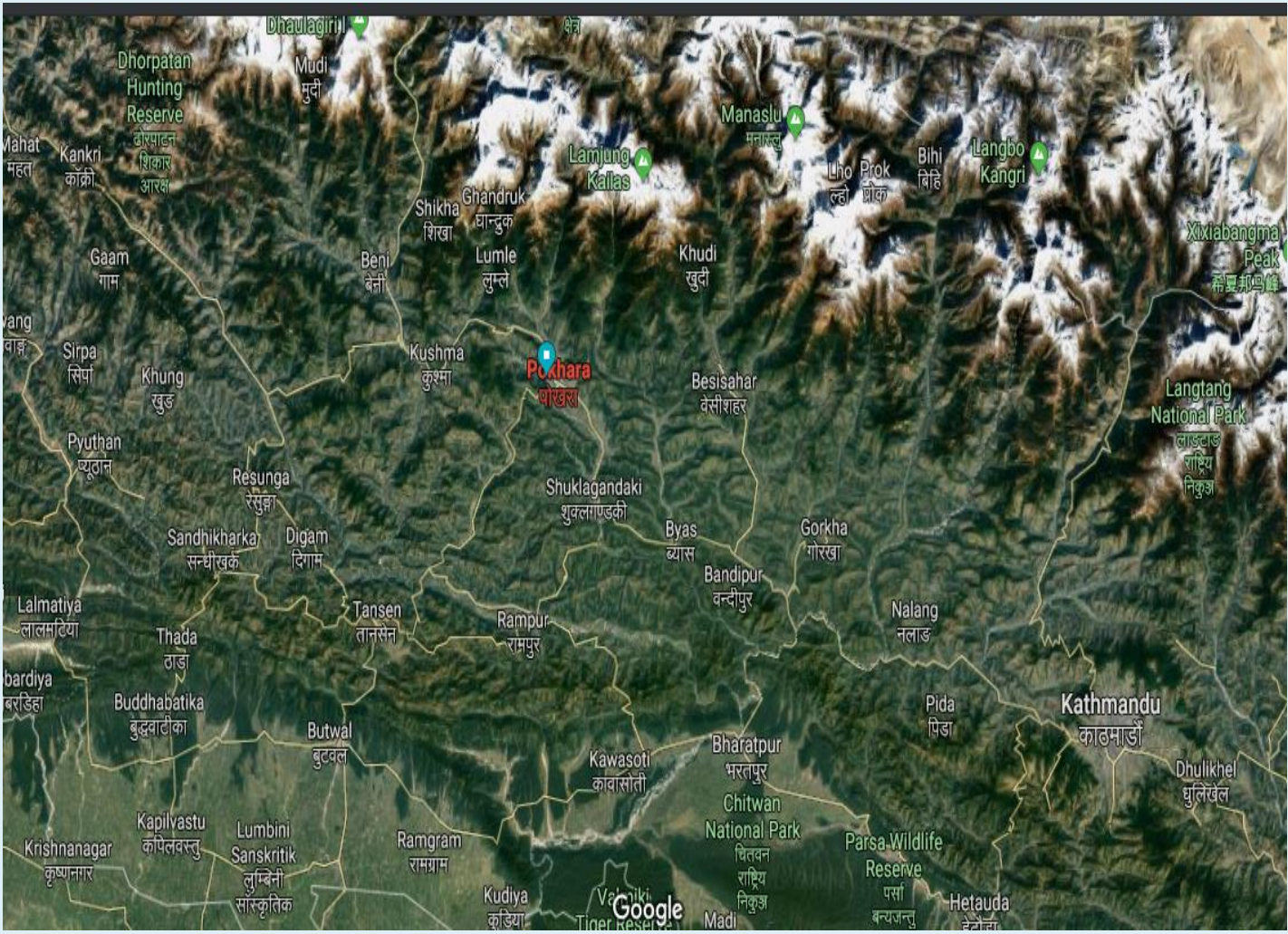
# Overview of winter air quality in Pokhara Valley, Nepal during airborne measurements

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## Background and Motivation

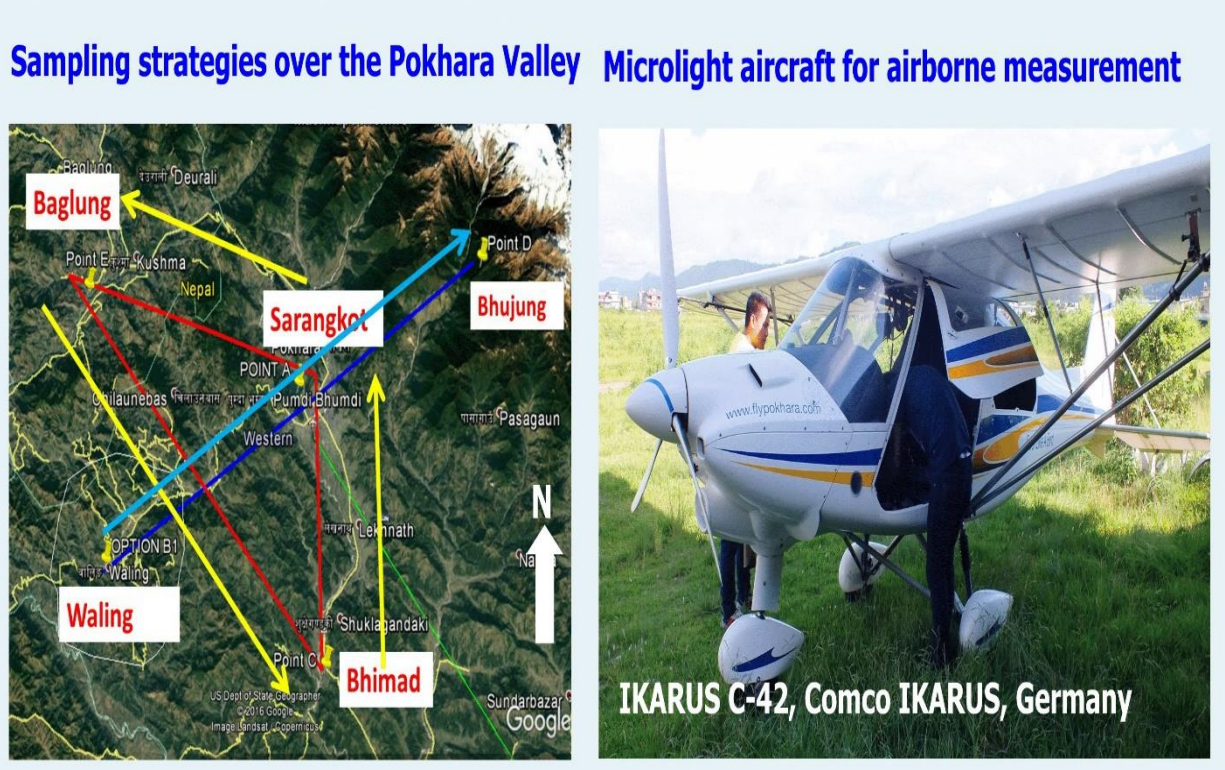
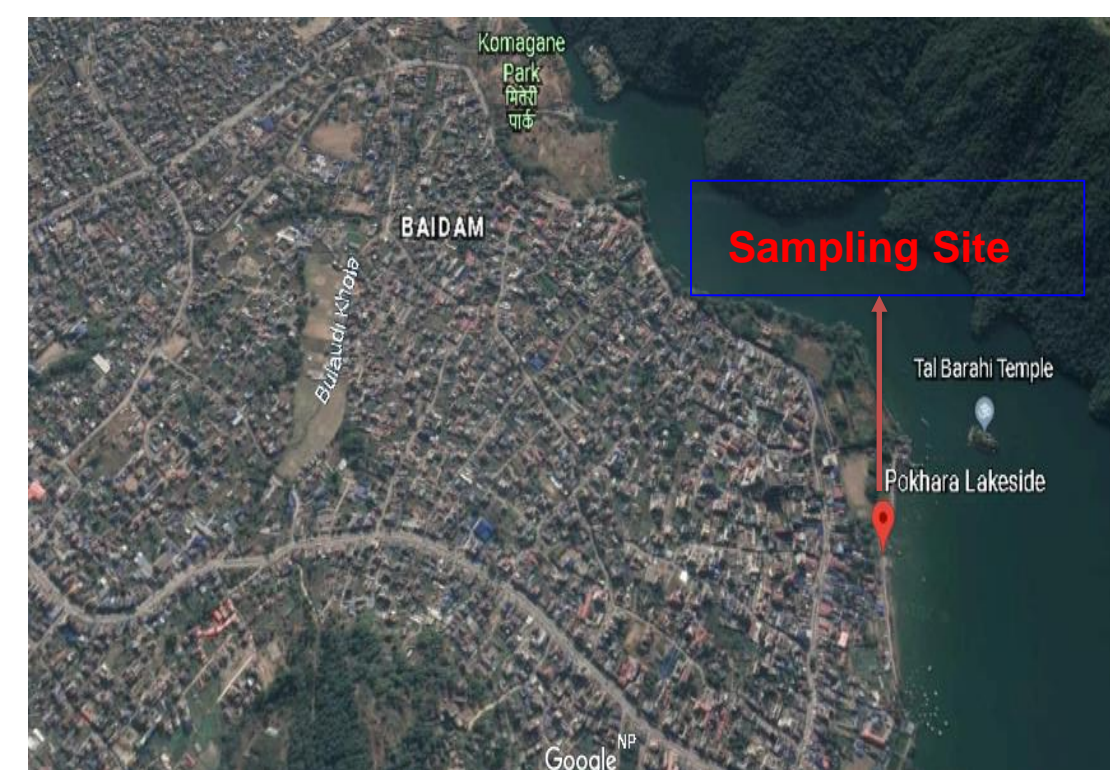
Pokhara Valley(PV), is the second largest metropolitan city of Nepal situated in the foothill of Himalayas. No previous study has been carried out studying the potential source areas (PSAs) contributing to PM pollution over the Valley using Potential Source Contribution Function (PSCF) and Concentration-Weighted Trajectory (CWT) approach.



## Study Goals

The study was conducted over the Valley with an aim to understand the air pollution scenario during winter and to provide support to the airborne campaign. The study also intends to identify PSAs contributing to PM<sub>2.5</sub> pollution over the Valley.

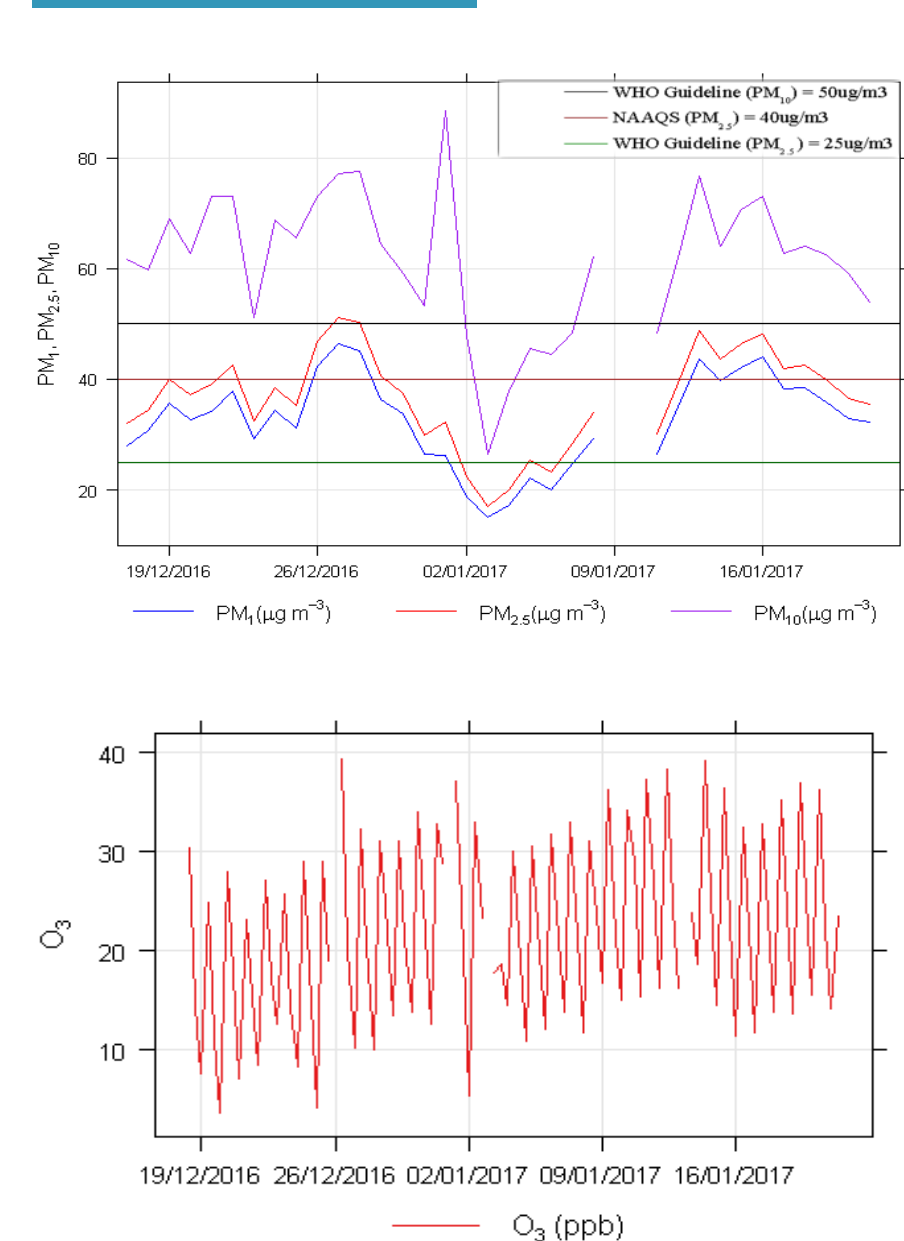
## DATA AND ANALYSIS



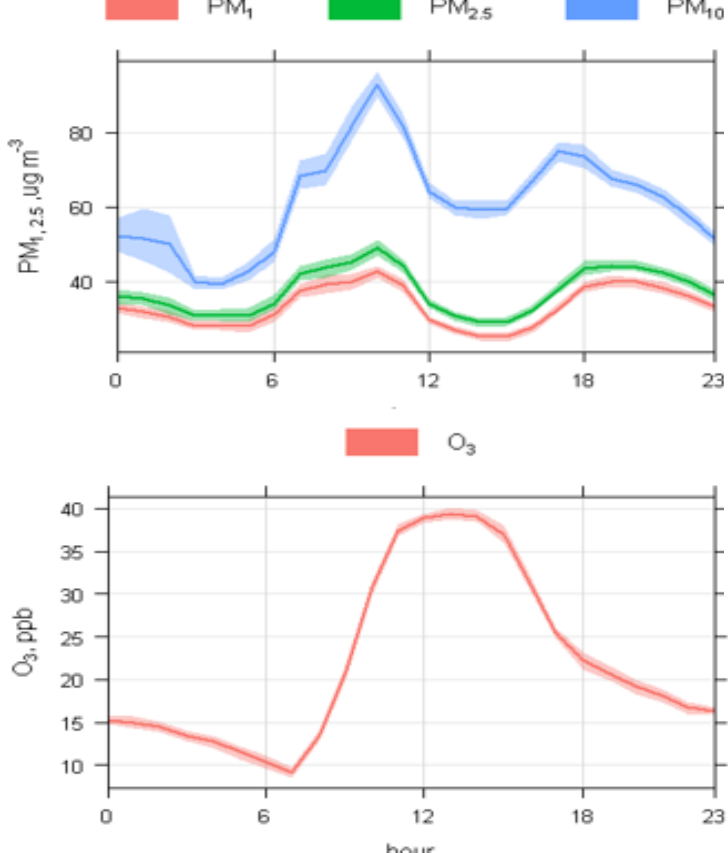
### Ground Measurements/Data Sources :

Parameters	Instrument
Size distribution (0.3-20µm)	GRIMM 1.108
Ozone monitoring	Model 205 dual beam Ozone monitor (2B technologies)
Black Carbon Concentration	Micro Aeth (AE51)
SMPS, Nano particle sizer	• TSI SPMPS 3910 • OPS Model 3330
Meteorological Parameters	• Boundary Layer Height (ERA interim ) • Wind speed/ Wind direction (Campbell Scientific AWS) • Temperature/ Humidity (weatherunderground)

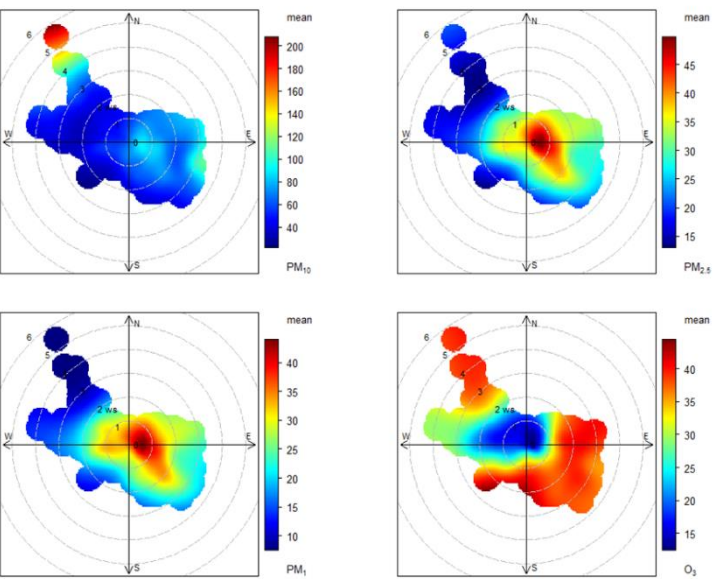
## RESULTS



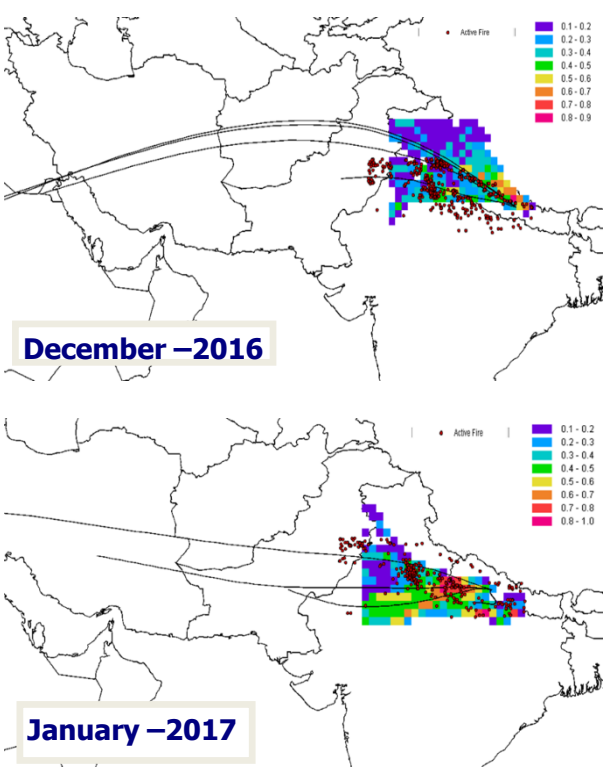
1. Time series of PM and O<sub>3</sub>



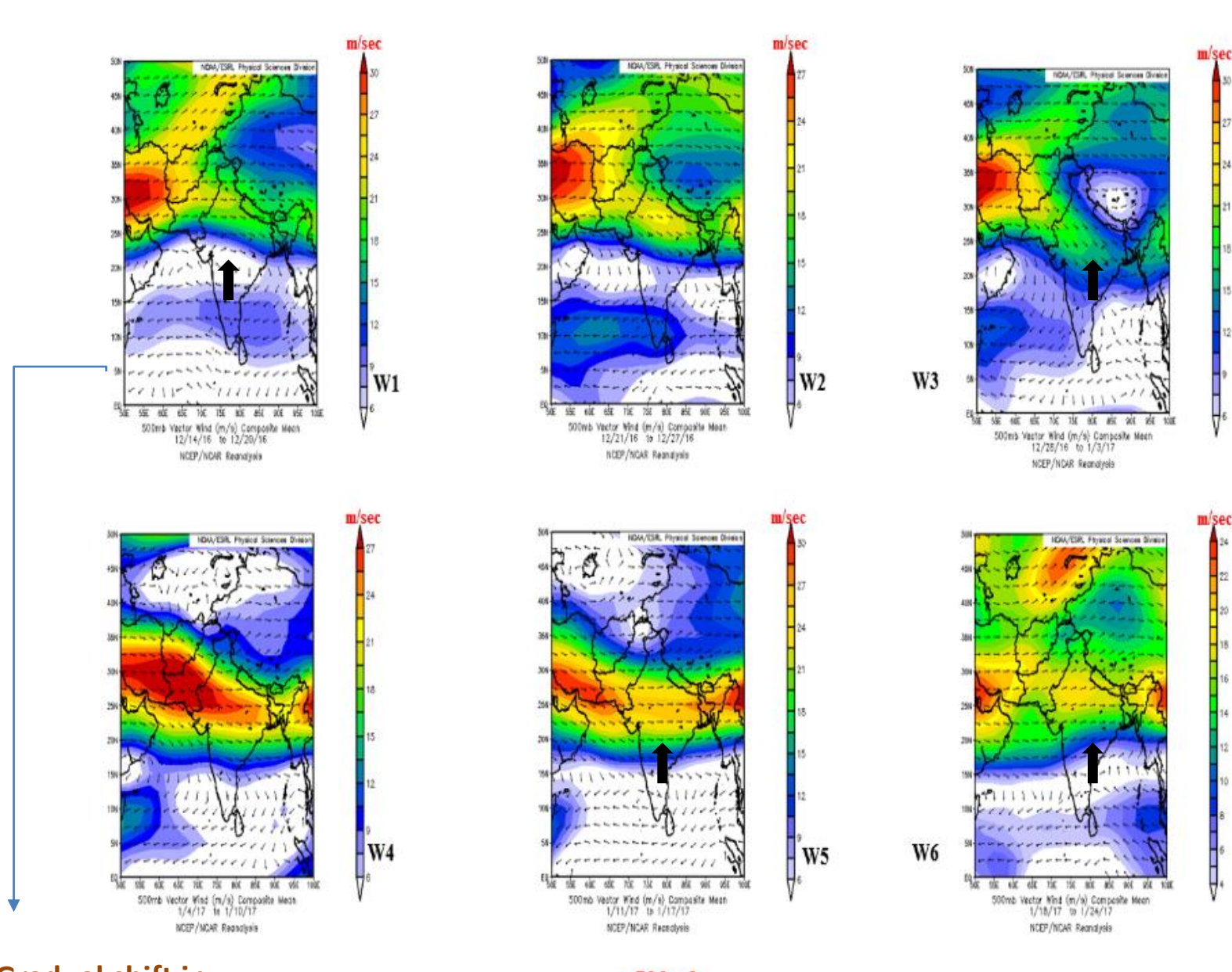
2. Diurnal Variation of PM and O<sub>3</sub>



3. Polar plot – PM and O<sub>3</sub>



5. PSCF distribution during Dec/Jan 2016



Gradual shift in 500mb wind from westerly to south westerly

4. 500mb wind vector

## CONCLUSIONS

- The air quality over Pokhara is poor, exceeding the WHO guidelines throughout the sampling period.
- Temporal variation of fine particulate matter indicates local emission with low winds influencing PM<sub>2.5</sub> and PM<sub>1</sub>.
- Variation in PM<sub>10</sub> was, regional transport of coarse particles.
- PSCF and CWT analysis indicates transboundary (across India-Nepal border) local sources regions contributing to PM<sub>2.5</sub> deposition in PV.

## Acknowledgments

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