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## **Using High Performance Computing to run large-scale WRFChem Acid Deposition Modelling over the Highveld Region of South Africa**

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Acid deposition has been studied extensively over the Highveld region of South Africa due to its high density of acid emissions arising mostly from power generation and petrochemical production. Although deposition of acid species has been modelled using dispersion models, the modelling of atmospheric chemistry and acid deposition has not been undertaken to any meaningful extent in South Africa. Furthermore, the potential of WRFChem, the Weather, Research and Forecasting (WRF) model coupled with Chemistry, has yet to be realized within an African context mainly due to the high computing power required to compute even the smallest of domain sizes. With a domain size of over 300 000 km<sup>2</sup>, which equates to over 75 000 grid cells, over a two-year modelling period, computational power was a limiting factor to the success of the research. Access to high performance computing and more specifically the ability to split the processing across multiple processors is instrumental in running this computationally intensive model. And has been the limiting factor for further research in South Africa on this topic. This presentation provides a review of the benefits of using High Performance Computing for running WRFChem when compared with local micro-servers.

### **Presenter Biography**

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