PROPOSAL

Application of Machine Learning in Predicting Gaseous Properties of Earth Atmosphere

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Objective: To accelerate the data-driven aspect of the calculation of optical properties from temperature,pressure and gaseous concentration of the atmosphere using machine learning.

DataSet: Atmospheric profiles from RFMIP(Radiative Forcing Intercomparison Project)

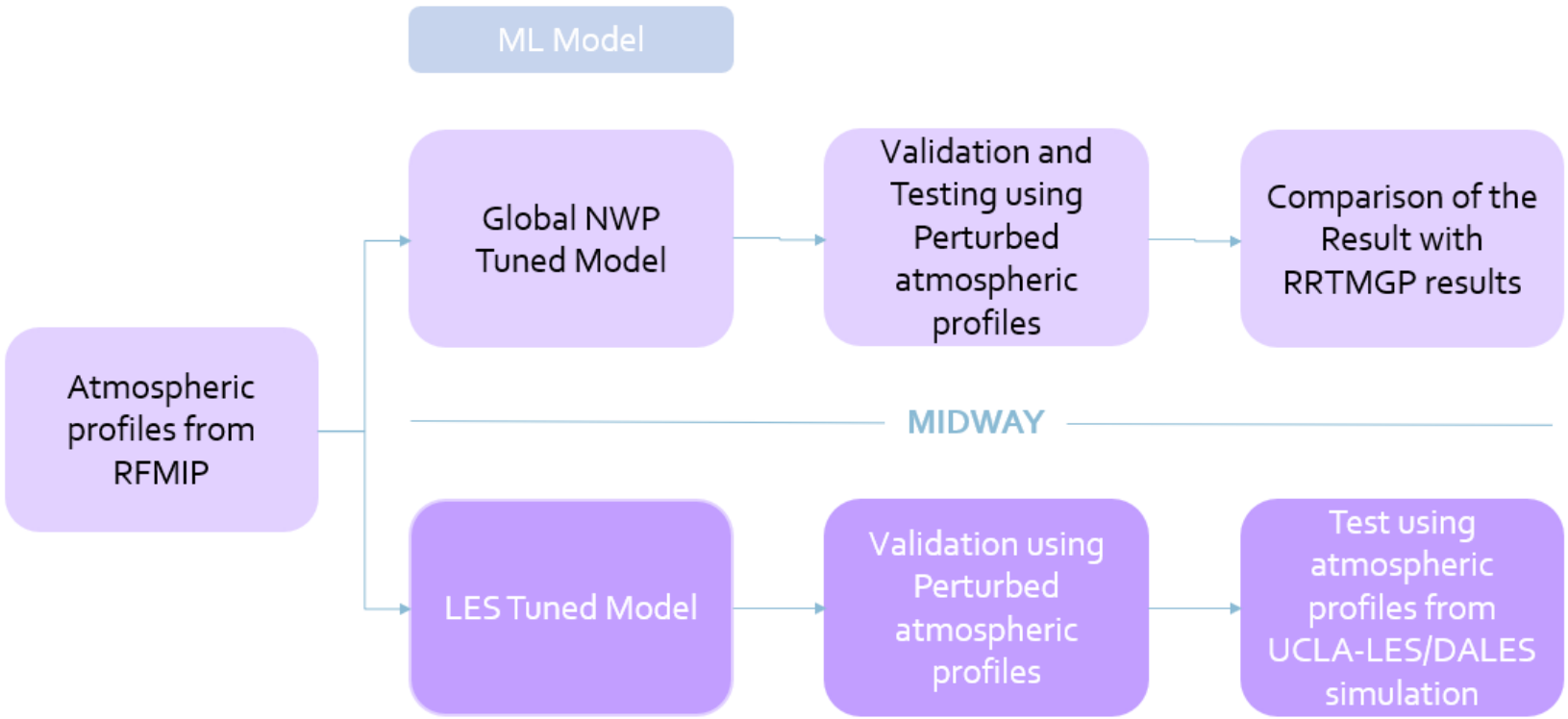
References:

- Veerman, Menno A., et al. "Predicting atmospheric optical properties for radiative transfer computations using neural networks." Philosophical Transactions of the Royal Society A 379.2194 (2021): 20200095.
- Ukkonen, Peter. "Exploring pathways to more accurate machine learning emulation of atmospheric radiative transfer." Journal of Advances in Modeling Earth Systems 14.4 (2022): e2021MS002875.
- Ukkonen, Peter, et al. "Accelerating radiation computations for dynamical models with targeted machine learning and code optimization." Journal of Advances in Modeling Earth Systems 12.12 (2020): e2020MS002226.

Work Division:

- Anna-Slide Preparation,Report Writing,Programming,Data Processing
- Sumegha-Slide Preparation,Report Writing,Gathering Data,Programming

WorkFlow



- NWP-Numerical Weather Prediction
- LES-Large Eddy Simulation
- DALES-Dutch Atmospheric Large Eddy Simulation
- RRTMGP-Rapid Radiative Transfer Model Parametrization