



## **Are springtime Arctic ozone concentrations predictable from wintertime observations?**

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Unprecedented cold stratospheric temperatures in January 2016 raised concerns of large Arctic springtime ozone losses. Fortunately this did not occur due to a sudden warming mid-season. Motivated by the 2015/16 winter, we aim here to answer the question: are springtime Arctic ozone concentrations predictable from wintertime observational records? To this end we investigate the suitability of wintertime mean polar cap temperature and temperature extremes as predictors of springtime ozone. Our results show that springtime ozone can only be ‘forecast’ with short lead-times, and even then with limited accuracy. Further, we show that ozone earlier in the season shows higher predictive skill than temperature, which can be understood as ozone reflecting both the chemical and dynamical conditions over the polar cap. Our results indicate that wintertime temperatures have more limited skill than suggested previously, and are not the best predictor of the state of the Arctic ozone layer in spring.