



Interactive comment on “Ozone sonde cell current measurements and implications for observations of near-zero ozone concentrations in the tropical upper troposphere” by H. Vömel and K. Diaz

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The comment by Ziemke et al. is interesting and emphasizes the challenge for reaching consistent conclusions from very different observation platforms. The SHADOZ network of tropical ozone soundings was in parts motivated by the question whether tropospheric ozone concentrations over the Pacific are lower than those over the other half of the equatorial belt. This question has been conclusively answered not only by the SHADOZ network, but also by a number of other observing systems. Therefore it is encouraging to see that the study by Ziemke reaches the same conclusion. Whether

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ozone concentrations within convective clouds are significantly lower compared to the large scale environment was a question raised by Kley et al. (1996) leading to the speculation of unidentified ozone chemistry within convective clouds or unusual dynamics, transporting boundary layer air, where ozone concentrations may be extremely low, into the upper troposphere. Our study indicates that these processes may not be required to explain the observations and that near zero ozone concentrations in the tropical upper troposphere derived from ozone sonde observations are based on a data processing artifact. Thus these observations would no longer support the study by Ziemke et al. (2009), who also found near zero ozone concentrations inside the top of deep convective clouds. Although ozone sondes are usually not launched into or fail in the core of deep convective clouds, they are occasionally launched into the convective outflow and into the anvils that form at the top of deep convective clouds. Given that the lifetime of ozone at these altitudes is on the order of weeks to months, it appears unlikely that ozone soundings in the convective outflow would not be representative of the ozone concentration inside deep convective clouds.

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