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Interactive comment on "Is there a stratospheric fountain?" *by* J.-P. Pommereau and G. Held

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Thanks for comments and the many useful suggestions and references. We agree that the use of the term "stratospheric fountain" is confusing and thus not the best metaphor for describing what we have observed since the idea promoted by Newel and Gould-Stewart (1981) was that of a dehydration process associated with convection over the "Maritime Continent". However, in contrast to this old concept, there are now several indications available of the opposite, that is hydration by injection of ice crystals well above the thermal tropopause over land convective areas (Kley et al., 1982, Kelly et al., 1993, Nielsen et al., 2007, Corti et al., 2008, Khaykin et al. 2009, Chaboureau et al., 2007), for which we have used the term of "geyser like injection" (Khaykin et al. 2009), indicative of a mixing of tropospheric with stratospheric air. Since water vapour is not the subject here, and to avoid confusion, we simply change the title for "Impact on the thermal structure of the TTL". We definitely agree with the suggestion of mak-

ing better reference to older work and thank the referee for providing us with a list of relevant publications we were not always aware of. We took the time to read carefully and included them in the discussion. Thanks also for the suggestion of using PDFs. We have added several of these, allowing a better description of the overall impact of convection on the thermal structure (Fig. 3) and the diurnal change of temperature at several levels (Fig. 5), and of the diurnal variation of radar echo tops height (Fig. 7), all indeed very instructive. Commentary 8934 Temperature diurnal cycle in the TTL. Reference to NOAA GFS (Richard et al., 2006) added in the discussion of the diurnal cycle, together with the observations of Johnson and Kriete, (1982) off the coast of Borneo and of the ARM radiosondes in Niger (Cairo et al., 2010). 8935 Reports of convective stratosphere penetration. Sentence changed and enriched by additional references. "The occurrence of convective overshoots reaching 20 km with local upward velocities of up to 50-100 m/s is known for long (e.g. Vonnegut and Moore 1958, Burnham 1970, Roach and James 1973, Cornford and Spavins 1973, Tuck et al., 1986 for a summary, Fujita 1992, Danielsen 1993)" References to cyclones (Ebert and Holland 1986 and Tuck et al. 1997), as well as high total water at high levels over Panama (Kley et al., 1982), Northern Australia (Kelly et al 1993, Knollendberg et al. 1993) also taken. 8936 Original Drain reference Gage et al. ignored to me, also. The same for Richard et al. 2006, regarding the temperature diurnal cycle in the NOAA NCEP AVN model. 8937 Reference to subtropical maximum potential temperature Tuck et al. 2003 added. 8942 Discussion. Information provided by all suggested references carefully taken into account.

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