Including airglow measurements in ionospheric data assimilations

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Recent global and systematic measurements of ultraviolet airglow from space based platforms (e.g., TIMED/GUVI, DMSP/SSUSI, COSMIC/TIP) contain a wealth of information about the structure of the ionosphere. The interpretation of these measurements in terms ionospheric variables, however, requires modeling of the physical processes involved in the observation, and thus require some care in their incorporation into an assimilation scheme. In addition, the large data volume of these measurements requires the practical considerations of computational efficiency and storage to be accounted for in any operational assimilation. We will present here a number of alternative schemes for incorporation of airglow measurements into global assimilations and the relevant tradeoffs for including them in operational algorithms