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Water vapor total column measurements using astronomical spectroscopic archives at Observatoire de haute-Provence

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Water vapor total column measurements at Observatoire de Haute Provence (5° E, +43° 55' N), south of France, were obtained using observations of astronomical objects made between July 1994 and December 2004 on the 193-cm telescope with the high-resolution spectrometer Elodie. Spectra of stars, nebulae, and other astronomical objects were taken regularly during 10 years. More than 18 000 spectra from 400 nm to 680 nm are available on-line in the Elodie Archive. This archive, usually explored by astronomers, contains information to study the atmosphere of the Earth. Water vapor absorption lines appear in the visible in delimited bands that astronomers often avoid for their spectral analysis. We used the Elodie Archive with two objectives: firstly, to retrieve seasonal variability and long-term trend of atmospheric water vapor, and secondly, to remove signatures in spectra for further astronomical or geophysical use. We will present recent progresses in our spectral analysis and the effect on retrieved water vapor amount. Retrieval of other atmospheric parameters like atmospheric temperature and refractive index will be discussed.