

Water Vapour Isotopologues Measurements From FORUM Observation Using KLIMA Retrieval Code

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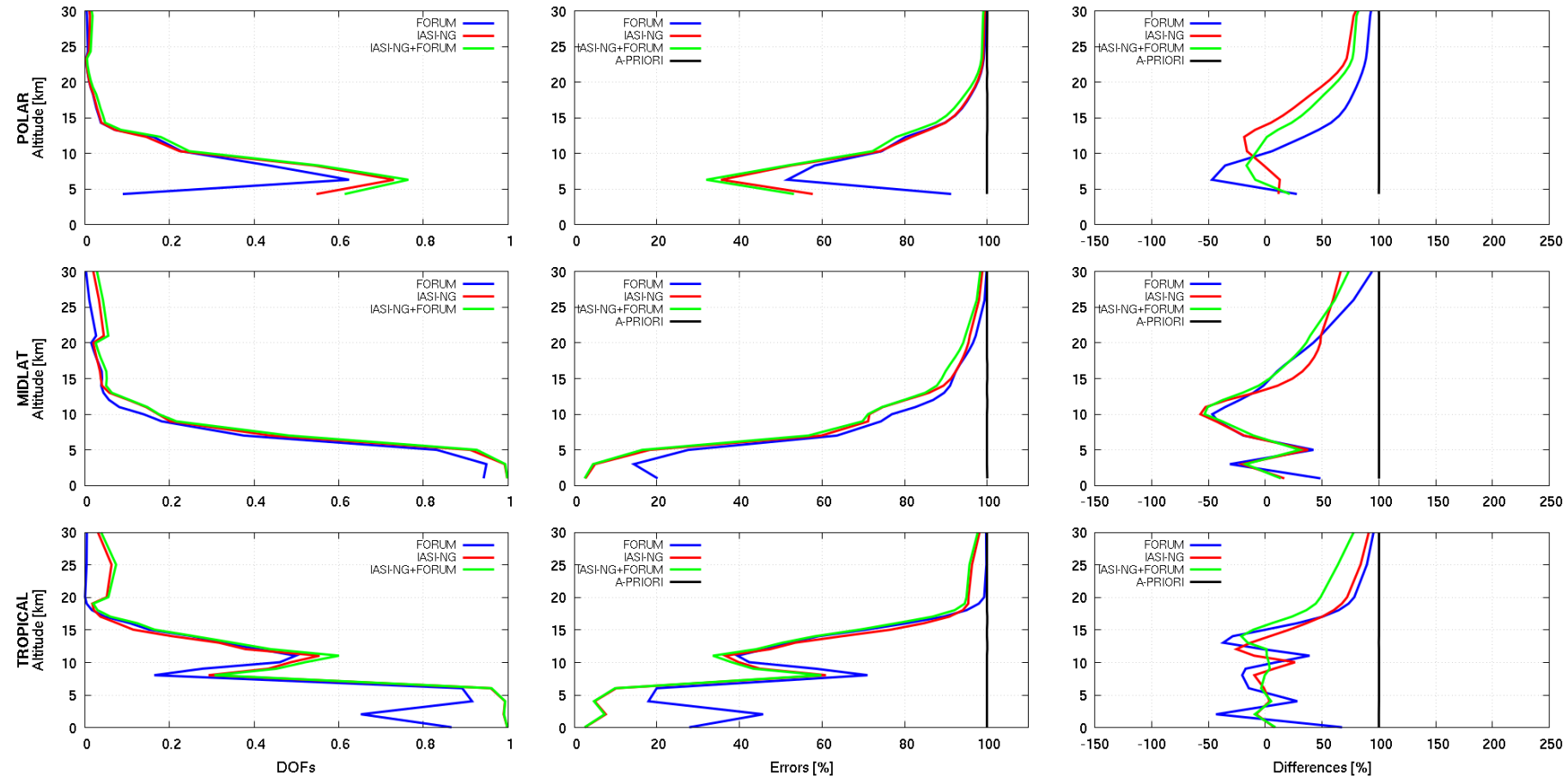
Research Focus and Motivations

- **Motivations:** Distribution of stable water isotopes depends on many climate factors such as vapour source conditions, circulation, local precipitation and temperature. Their knowledge is important to improve NWP modelling.
- **Object:** Assessment of the feasibility of the retrieval of water vapour isotopologues from FORUM observations, compared with retrieval from IASI-NG measurements.
- **Methods:** KLIMA code (forward and retrieval model) used for simulating FORUM and IASI-NG observations and computing inverse processing. Extensive use in previous projects (*FORUM-req*, *FORUM-E2Es*, *FORUM-FIRMOS*) and current use in *FORUM-SCIENCE*.
- **Simulations configuration:** 3 geographical scenarios (polar, tropical, midlat); 3 fittings (FORUM, IASI-NG, IASI-NG + FORUM); 4 averaging strategies (1, 4, 100, 900 observations); numerical evaluation of degrees of freedom, precision, and accuracy.



Selected Results

- Small but measurable FORUM contribute.
- Tropical scenario shows the FORUM most significant performance.
- The higher the number of observations, the smaller the FORUM/IASI-NG gap in the error.



HDO retrieval results - 100 averaged observations: DOFs, retrieval errors, and [retrieved-true] values differences (respectively on the left, center, and right) at three different scenarios (Polar, Midlat, and Tropical).

