

ATISE Wind: Auroral Thermosphere Ionosphere Spectrometer Experiment - Wind measurement

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Résumé

Solar activity poses a critical threat to terrestrial and orbiting infrastructure, yet a lack of high-resolution dynamic data in the upper atmosphere hinders accurate mitigation. To bridge this gap, the **ATISE Wind** project introduces a static interferometer designed to measure thermospheric and ionospheric winds with better temporal resolution than previous wind measurement instruments. Unlike traditional Fabry Perot devices constrained by mechanical optical path differences scanning (often exceeding one minute), the ATISE Wind instrument utilizes a **Fizeau-based architecture**. Eliminating moving parts enables direct interferogram measurements in just a **few seconds**. Successfully demonstrated during a 2026 ground-based campaign in Skibotn, the system proved its potential for near-future high efficiency even under low sky brightness conditions (≈ 15 kR). Exposure time down to 1s could be used to determine such wind speeds for the red (630 nm) and green lines (557 nm). Future developments will focus on real-time velocity retrieval to ensure robust monitoring of winds from both ground and space, as well as developing a design with the lowest possible sensitivity to environmental conditions.

*Intervenant