Introducing the OSTIV Meteorological Panel

Linking Science and Air Sports

P3.8

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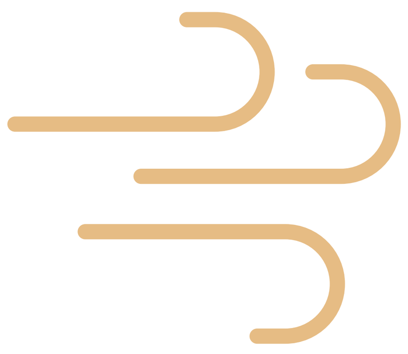
interests

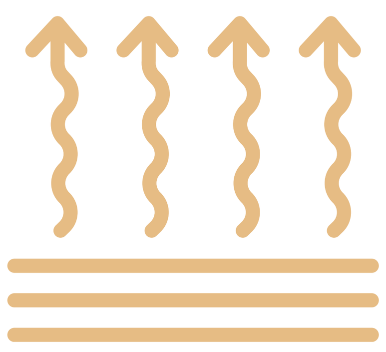
We aim to communicate scientifically robust results in aviation meteorology relevant to the gliding and paragliding community. Does your research relate to one of the following fields?



boundary layer **turbulence**: lee rotors, gusts

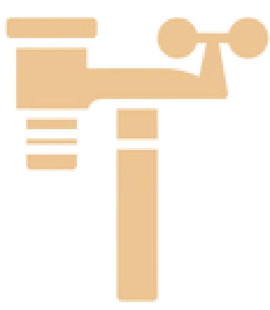
convection: thermals, slope winds, thermally-driven flows

orographically forced flow: lee waves, foehn, channeling



NWP: convection forecasts: surface energy balance, convection, mixing

NWP: high resolution **wind forecasts** and forecast validation

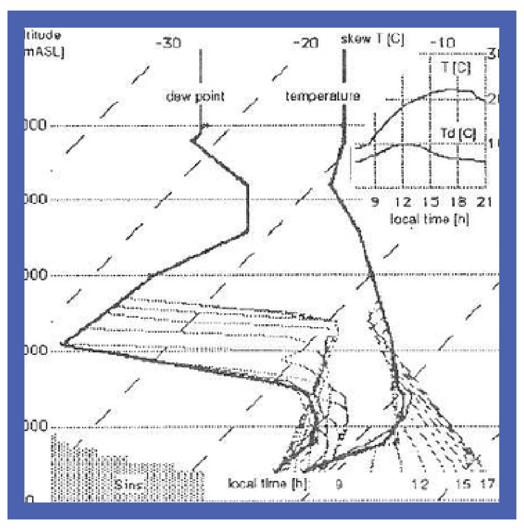


weather observations: network maintenance and expansion

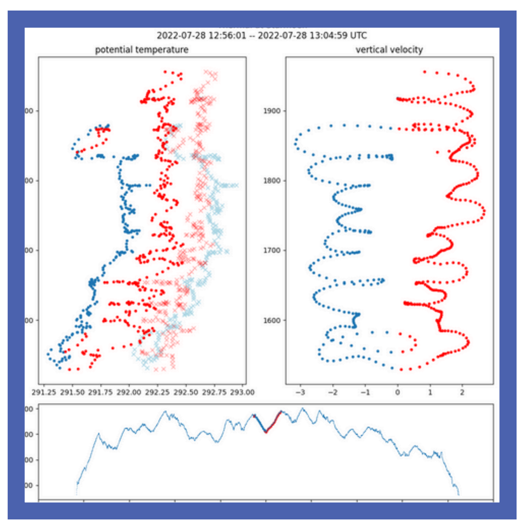
resources

We want to serve as a point of contact and reference for researchers with questions related to air sports . Perhaps you could profit from or contribute to one of the following resources?

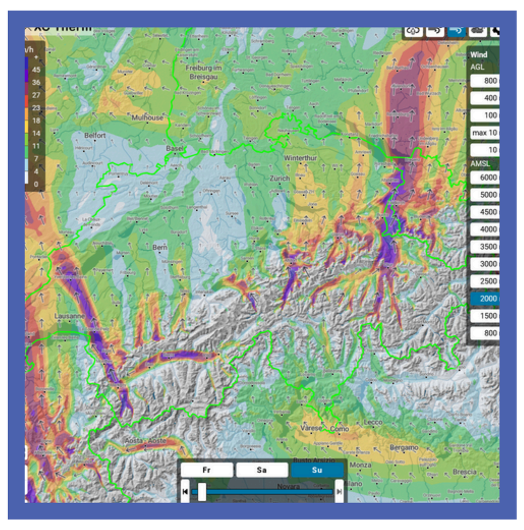
Technical Soaring: publications since 1950 [1]



best-practices for convection forecasting [2]



sensor-equipped flights [3]



specialized operational forecasts [4]

pilots' unique knowledge of local weather phenomena

weather stations, datasets, and obs. networks [5]

join us

Join us in strengthening the cooperation between air sports and science through the OSTIV Meteorological Panel.
Contact us via **met@ostiv.org** or sign up via **sign-up form** here:

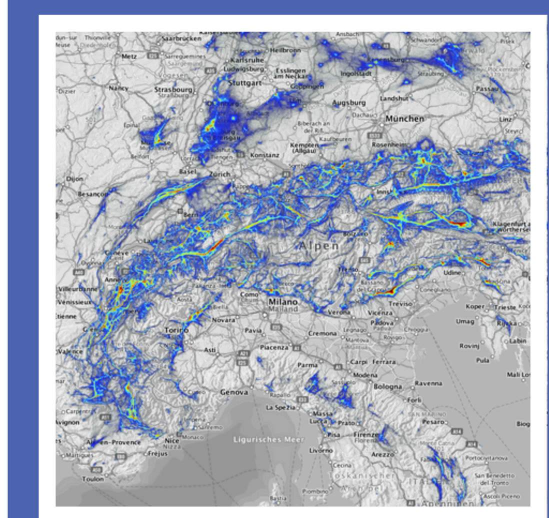
- OSTIV Met Panel active membership
- OSTIV Met Panel newsletter

www.ostiv.org

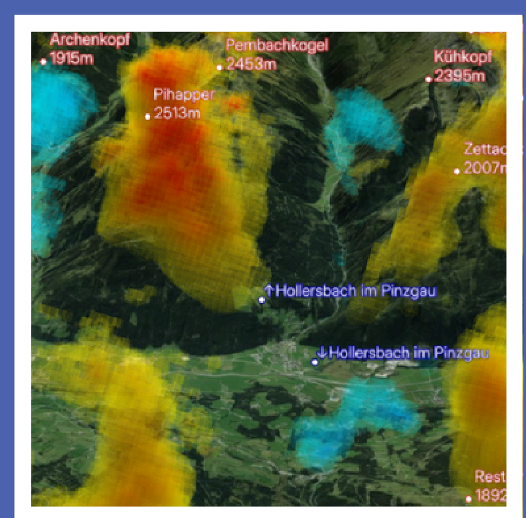
flight track data

Paragliders and gliders generate an unparalleled stream of atmospheric observations: Their flight instruments record **GPS position and altitude**, tracing thermals and other boundary-layer circulations along **tens of millions of flown kilometers each year** [6].

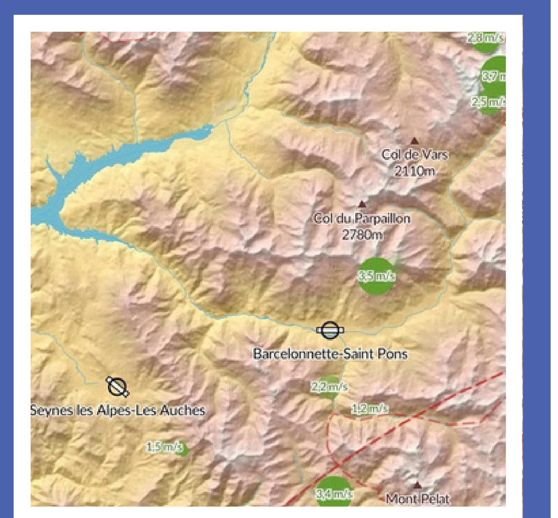
This makes the data both abundant and highly relevant for atmospheric research, offering a **cost-effective and scalable complement** to traditional measurements. However, **challenges** remain, including laborious data crawling, limited coverage (in time and space), observation biases (strong updrafts along closed ridges), and human factors (pilots' skills and decision-making). Thus, efforts are underway to establish **standardized approaches** for flight track data analysis.



big data [8]
example: a map of thermal hotspots from thermal.kk7.ch



three-dimensional [8]
example: a 3D visualization of updrafts from incurrents.com



real-time [7]
example: live thermals (strength, radius, timing) from weglide.org

Such datasets open new possibilities for boundary-layer research, from characterizing recurring phenomena like **thermally-driven flows, free convection, small-scale turbulence** under a variety of atmospheric conditions, to improving weather prediction through **data assimilation and forecast verification** [9].

sources and scientific reading

The following list is not exhaustive, and no claim of completeness is made.
All references and links can be found on our webpage.

[1] - journals: Organisation Scientifique et Technique Internationale du Vol a Voile (OSTIV). (1950). Technical Soaring (Journal). https://ostiv.org/publications/publications.html (image)

[2] - soaring flight meteorology: Organisation Scientifique et Technique Internationale du Vol a Voile (OSTIV) Meteorological Panel, & World Meteorological Organization (WMO). (2009). WMO Handbook: Weather Forecasting for Soaring Flight. (image);

[3] - sensor-equipped flights: Duscha, C., Pálenik, J., Spengler, T., & Reuder, J. (2023). gLidar project: An atmospheric convection research project using data from sailplanes, paragliding and LIDARs. Atmospheric Measurement Techniques, 16(21), 5103–5123. https://doi.org/10.5194/amt-16-5103-2023 image); Hardt, D., Schaefer, I., & Rohde-Brandenburger, K. (2025, to be published). Measuring temperature and humidity distributions in thermal updrafts. Technical Soaring.; Neininger, B., & Reinhardl, M. E. (1986). Meteorological aircraft data set of the "First Himalayan Soaring Expedition."; Meteo Tracker. https://meteotracker.com/;

[4] - specialized forecasts: Moser, D., & Lezuo, T. (2025). XC Therm - Thermal Forecasts for Pilots. https://xctherm.com (image); Méler, A. (2025). Paraglidable. https://paraglidable.com; Scutter, M. (2025). Skysight Weather. https://skysight.io/; Goretzki, B., & Mein, J. (2025). Top Meteo. https://topmeteo.eu/; Hertz, B. (2025). Burnair Map - Für brevetierte Gleitschirmpiloten. https://www.burnair.ch/;

[5] - ground station data: Reif, M., & Schmid, F. (2025). Breezedude. https://breezedude.de (image); Savary, Y. (2025). Winds Mobi. https://winds.mobi; Hertz, B. (2025). Burnair Map - Für brevetierte Gleitschirmpiloten. https://www.burnair.ch/; Lotopon srl. (2025).

[6] - flight track data: Wießner, M., Leihkamm, S., Dibbern, J., Althaus, M., & Ferreira, N. (2025). Weglide. https://www.weglide.org/; XC platform. (2025). XContest. https://www.xcontest.org; and other national contests

[7] - live flight data: Wießner, M., Leihkamm, S., Dibbern, J., Althaus, M., & Ferreira, N. (2025). Weglide Copilot. https://copilot.weglide.org/; XC platform. (2025). XContest. https://www.xcontest.org; Bromhead, T. (2025). Puretrack. https://puretrack.io/; Hertz, B. (2025). Burnair Map - Für brevetierte Gleitschirmpiloten. https://www.burnair.ch/;

[8] - flight track data visualizations: von Känel, M. (2025). Kk7 - Thermal Maps. https://thermal.kk7.ch; Bousquet, D. (2025). Incurrents. https://incurrents.com/map; Méler, A. (2025). Paraglidable. https://paraglidable.net;

[9] - flight track data for science: Ultsch, A., Curtius, J., & Maul, C. (2016). Data Mining for Atmospheric Gravity Waves (Lee Waves). Technical Soaring, 40.; Ultsch, A. (2012). Swarm Data Mining for the Fine Structure of Thermals. Technical Soaring, 36; J. Palenik, T. Spengler, H. Hauser (2021). IsoTrotter: Visually Guided Empirical Modelling of Atmospheric Convection. IEEE Transactions on Visualization and Computer Graphics, vol. 27, no. 2, pp. 775-784, doi: 10.1109/TVCG.2020.3030389;

[**10] - image credits**: Scheel, M. (2025). Images for OSTIV Met Panel.